BIDDING DOCUMENTS

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS
CONSULTING ENGINEERING
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA. PRINEVILLE, OR.

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FOR

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS CONSULTING ENGINEERING, LLP

Klamath Falls, Oregon

ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Oregon

Job No. 462-00

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ADVERTISEMENT FOR BIDS

ADVERTISEMENT FOR BIDS
C-FLUME REPLACEMENT

Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

Klamath Irrigation District invites Bids for the construction of **C-Flume Replacement - 2016.** The Work for this Contract includes the demolition of approximately 4,400 linear feet of existing reinforced, above-grade concrete irrigation flume and construction of new 10-foot buried and elevated pipe and associated irrigation system improvements. The elevated pipe will be supported by both concrete spread footings and pile-supported cap beams. Associated work includes various fittings, access structures, improvements for irrigation delivery, permanent access roads, transitions from and to existing ditches, and an emergency wasteway structure. The estimated start work date is June 29, 2016. The estimated substantial Completion date is June 29, 2018, and the final completion date is July 27, 2018.

Sealed Bids for the described Project will be received by Darin Kandra at the office of Klamath Irrigation District at 6640 KID Lane, Klamath Falls, Oregon 97603, until 2:00 p.m., local time, April 25, 2016, at which time the Bids received will be publicly opened and read.

The Contractor is subject to the applicable provisions of ORS 279C.800 through ORS 279C.870, the Oregon Prevailing Wage Law.

This Project is being funded in part through the United States Bureau of Reclamation.

Bid security shall be furnished in accordance with the Instructions to Bidders.

All Bidders must be on the official Planholders List in order to their Bid to be accepted.

The Issuing Office for the Bidding Documents is: Jeremy Morris, Adkins Consulting Engineering, LLP. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 8:00 a.m. and 5:00 p.m.

The digital Bidding Documents may be downloaded for a non-refundable payment of $25.00 by inputting the QuestCDN eBidDoc Number on the website. The eBidDoc Number may be obtained by calling Adkins Consulting Engineering (541-884-4666) after March 27, 2016. Assistance with free QuestCDN membership registration, document downloading, and working with the digital Project information may be obtained at QuestCDN.com, at 952-233-1632, or via e-mail at info@questcdn.com. The Contract Documents will be available for download after March 27, 2016. No paper sets will be provided for bidding purposes.

Bidding Documents may also be examined at the following locations:

Klamath Irrigation District, 6640 KID Lane, Klamath Falls, Oregon
Adkins Consulting Engineering, 2950 Shasta Way, Klamath Falls, Oregon
Anderson Perry & Associates, Inc., 1901 N. Fir Street, La Grande, Oregon
Anderson Perry & Associates, Inc., 214 E. Birch Street, Walla Walla, Washington

The Owner is an equal opportunity employer. Minority and women-owned businesses are encouraged to bid. Minority and women-owned businesses should indicate they are a minority on the Planholders List.

A pre-bid conference will be held at 10:00 a.m., local time on April 11, 2016, at Klamath Irrigation District, 6640 KID Lane, Klamath Falls, Oregon 97603. Bidders are highly encouraged to attend due to the size and complexity of the Project.

Owner: **Klamath Irrigation District**
By: **Darin Kandra**
Title: **Interim District Manager**
Date: **March 27, 2016**

+ + END OF ADVERTISEMENT FOR BIDS + +

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 5 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. Qualifications and Experience of the Proposer and its Subcontractors:

1. Describe the length of time the Proposer and its major subcontractors have been in business. The Proposer must have a current valid Oregon Contractor's License.

2. List projects similar to the District's project completed within the past ten years and those currently under construction. Include concise descriptions of these projects including project outcomes such as project quality, timely completion, delivery of project within its originally approved budget, natural resource agency condition compliance, adjoining property owner satisfaction, and overall client satisfaction. Provide the name, organization, and telephone number of references for at least three of the projects.

3. Provide a clear organizational chart of the Proposer's team including identification of subcontractor firms and key personnel of the team.

4. Provide brief experience resumes for the Proposer's project manager and key team personnel demonstrating specific experience on projects of a similar nature, size, complexity, and scope. The District values highly qualified key personnel dedicated to the District's project.

5. Describe the Proposer's business organization, financial capabilities, and overall stability.

6. Indicate whether the Proposer is a "Resident" or "Non-Resident" proposer in the State of Oregon.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

3.05 Investigation of Bidder's qualifications shall be as per ORS Chapter 279C.375.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or

unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing or exhaustive investigations of Site conditions over and above that which Bidder feels is necessary to prepare their Bid.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and Work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime Contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to Contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

7.03 Written Addenda to the Contract Documents which, if issued, shall be uploaded to the QuestCDN website and made digitally available to all prospective Bidders. E-mail notification shall be sent to all prospective Bidders who have acquired digital Contract Documents at the respective e-mail addresses furnished for such purposes. Written Addenda shall be made digitally available not later than 72 hours prior to the date fixed for the opening of Bids. Failure of any Bidder to receive any such Addenda shall not relieve such Bidder from any obligation under the Bid as submitted. All Addenda so issued shall become part of the Contract Documents. It is the responsibility for all prospective Bidders to check the website prior to submitting his Bid to verify whether or not any Addenda have been issued for the Project.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's total Bid price and in the form of an irrevocable letter of credit issued by an insured institution as defined in ORS 706.008, or a cashier's or certified check, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE, "OR-EQUAL" ITEMS, AND PRE-BID SUBMITTALS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

11.04 Pre-Bid Submittals

A. The Bidder and/or Equipment/Materials Suppliers shall submit to the Engineer, 15 days prior to Bid opening, detailed pre-bid technical information for the following equipment and/or materials:

1. 10-foot diameter siphon pipe

B. Submittals shall contain sufficient information to allow the Engineer to evaluate the equipment and/or materials and shall meet the specific requirements of the applicable Technical Specifications. Pre-bid submittals for these items are required. Any such equipment or materials for which complete pre-bid submittals were not submitted to the Engineer for review, and which were not approved by the Engineer prior to the Bid, shall not be used by the Contractor in preparing their Bid on this Project. Specific submittal requirements may be outlined in applicable sections of the Technical Specifications. The Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the Work.

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute without an increase in Bid Price.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is a part of the Bidding Documents and is included in the Bidder's Packet, which may be bound separately.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and official address.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state Contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed Under Article 5 - Bid Schedule of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price and lump sum Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished a section labeled "Bidder's Packet," which includes a copy of the Bid Form, the Bid Bond Form, and other required documents. All documents in the Bidder's Packet shall be printed if not provided in hard copy form. The Bidder's Packet shall be completed in its entirety and submitted to the Owner as the Contractor's Bid.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to Klamath Irrigation District, Attn: Mark Stuntebeck, 6640 KID Lane, Klamath Falls, Oregon 97603.

15.03 Bids received after the date and time prescribed for the opening of Bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid,

and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders within seven days after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the Contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates (additive or deductive) will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner shall announce to all Bidders a "Base Bid plus alternates" budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be met. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its alternate Bids for which Owner determines funds will be available at the time of award. The Owner also reserves the right to authorize any portion of the alternative work at a later date during the construction Contract by Change Order at the prices stated in the Bid. If authorized at a later date to perform Alternative work, the Contractor will be given additional Contract time only for the additional work. All originally awarded Work shall be completed within the original Contract time.

Bid option work will not be used in comparison of Bids to determine the Successful Bidder. The Owner will have the option of authorizing some or all of the Bid Option work by Change Order at the prices stated in the Bid at a later date during construction. If authorized at a

later date to perform Bid Option work, the Contractor will be given additional Contract time only for the additional work. All originally awarded Work shall be completed within the original Contract time.

19.04

A. If a mistake is made and the intended correct Bid item is clearly evident on the face of the Bid Form, or can be substantiated from accompanying documents, the Owner may accept the Bid. Examples of mistakes that may be clearly evident on the face of the Bid Form document are typographical errors, errors in extending unit prices, transposition errors, and arithmetical errors. Mistakes that are clearly evident on the face of the Bid Form document also may include instances in which the intended correct Bid item is made clearly evident by simple arithmetic calculations. For example, a missing unit price may be established by dividing the total Bid item by the quantity of units for that item, and a missing or incorrect total Bid price for an item may be established by multiplying the unit price by the quantity when those figures are available on the Bid. For discrepancies between unit prices and extended prices, unit prices shall prevail.

   The Owner shall not accept a Bid in which a mistake is clearly evident on the face of the Bid Form document but the intended correct Bid is not clearly evident or cannot be substantiated from accompanying documents.

B. If the Bid amount for "Mobilization/Demobilization" listed on the Contractor's Bid Schedule exceeds 5 percent of the total Bid Price, this will be considered an arithmetic error and the "Mobilization/Demobilization" Bid item amount will be corrected to be 5 percent of the total Bid Price. The corrected total Bid Price will be used to determine the apparent low Bidder and to determine payment to the Contractor for the Bid item "Mobilization/ Demobilization."

19.05 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

A Responsible Bidder is a Bidder who, in the Owner's opinion, meets the standards of responsibility as defined in ORS 279.C.375(3).

19.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers. Such investigation shall be pursuant to ORS Chapter 270C.375.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance

documentation required to be delivered by the Contract Documents) to Owner. Owner shall deliver one fully executed counterpart of the Contract Documents to Successful Bidder, together with printed and electronic copies of the Contract Documents (unsigned) as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – ADDITIONAL REQUIREMENTS OF THE BID

22.01 Disclosure of First-Tier Subcontractors

A. Oregon law requires Bidders to disclose information about certain first-tier Subcontractors who will be furnishing labor or labor and materials when the Contract value for a Public Improvement is greater than $100,000 (see ORS 279.027). Specifically, when the Contract amount of a first-tier Subcontractor is greater than or equal to: (i) 5 percent of the Project Bid, but at least $15,000, or (ii) $350,000 regardless of the percentage, you must disclose the following information about that Subcontractor within two (2) hours of Bid closing:

1. The Subcontractor's name and address.
2. The Subcontractor's type of work being performed.
3. The dollar amount of the Subcontractor's work to be performed.

If no Subcontractors that are subject to the above disclosure requirements are anticipated, a Bidder shall so indicate "NONE" on the accompanying form.

B. THE OWNER MUST REJECT A BID IF THE BIDDER FAILS TO SUBMIT THE DISCLOSURE FORM WITH THIS INFORMATION BY THE STATED DEADLINE. OAR 137-049-0360.

C. To determine disclosure requirements, the Owner recommends that you disclose subcontract information for any Subcontractor as follows:

1. Determine the lowest possible Contract price. That will be the base Bid amount less all deductive alternate Bid amounts (exclusive of any options that can only be exercised after Contract award), if any.
2. Provide the required disclosure information for any first-tier Subcontractor whose potential labor or labor and materials Contract services (Subcontractor base Bid amount plus all additive alternate Bid amounts, exclusive of any options that can only be exercised after Contract award, if any) are greater than or equal to:
   a. 5 percent of that lowest Contract price, but at least $15,000, or
   b. $350,000 regardless of the percentage.
3. Total all possible work for each Subcontractor in making this determination (e.g., if a Subcontractor will provide $15,000 worth of services on the base Bid and $40,000 on an additive alternate, then the potential amount of Subcontractor's services is $55,000. Assuming that $55,000 exceeds 5 percent of the lowest Contract price, provide the disclosure for both the $15,000 services and the $40,000 services).

D. SUBMISSION. A Bidder shall submit the disclosure form included in the Bidder's Packet within two (2) working hours after Bid closing. See instructions on the form.

E. RESPONSIVENESS. Compliance with the disclosure and submittal requirements of ORS 279C.370 and this rule is a matter of Responsiveness. Bids which are submitted by Bid Closing, but for which the disclosure submittal has not been made by the specified deadline, are not Responsive and shall not be considered for Contract award. It shall be the Bidder's sole responsibility to ensure the Disclosure Form is delivered to the Owner within

the required two (2) working hours. Failure, for any reason, of the Owner to receive this form from the Bidder will be the total responsibility of the Bidder. The Owner will assume no responsibility or liability for the failure of the Owner's fax equipment or any other problem resulting in failure of the Disclosure Form to be received.

22.02 At least seven days before award of the Contract, the Owner may issue to each Bidder a Notice of Intent to Award in the form set forth in the Contract Documents. Said notice shall state the Bidder to whom Owner intends to award the Contract. Any protest of award must be filed with the Owner within seven (7) days of mailing of the Notice of Intent to Award. Protests shall be filed in writing to the person and place where Bids were received. All protests must be accompanied by sufficient documentation identifying the grounds and evidence on which the protest is based. The Owner will have a minimum of seven days in which to review the protest and supporting information. Owner's decision on the validity of the protest shall be determined final.

22.03 Pursuant to ORS 279A.120, in determining the lowest responsible Bidder, the Owner, for the purpose of awarding a Contract, shall add a percent increase in the Bid of each non-resident Bidder equal to the percent, if any, of the preference given to that Bidder in the state in which that Bidder resides.

22.04 Oregon law requires anyone who is engaged for compensation in construction activities to be registered with the State of Oregon Construction Contractors Board in accordance with ORS 701. Registration is required for any individual or business entity which advertises, offers, Bids, or arranges to do, or actually does any construction, alteration, remodeling, or repair involving residential, commercial, industrial, or public works improvements. This includes partnerships, corporations, and self-employed individuals, whether working by the hour, week, job, or "cost-plus," whether by written contract or oral agreement.

22.05 Bidder shall comply with all prevailing wage rates applicable to this Work.

22.06 Unless noted otherwise in the Bidding Documents, Bids shall include sales tax and all other applicable taxes and fees.

22.07 Contractor shall include applicable business and occupation, use, retail sales taxes in the various unit Bid prices or other Contract amounts. The retail sales taxes shall include those the Contractor pays on the purchase of materials, equipment, and supplies used or consumed in doing the Work.

22.08 Bidder shall comply with all prevailing wage rates applicable to this Work.

22.09 Unless noted otherwise in the Bidding Documents, Bids shall include sales tax and all other applicable taxes and fees.

22.10 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 23 – WAGE RATE REQUIREMENTS

23.01 This Project is subject to the following wage rate requirements as outlined in the Supplementary Conditions, Articles 19 and 20.

A. Prevailing Wage

B. Davis-Bacon Act

BIDDER'S PACKET

-- NOTICE --

The Bid Documents required to be submitted by the Contractor on this Contract are bound separately under the title "BIDDER'S PACKET." The Bidder's Packet, although bound separately, is a part of the Bidding Requirements for this project.

CONTRACT DOCUMENTS

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS
CONSULTING ENGINEERING
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA. PRINEVILLE, OR.

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is by and between Klamath Irrigation District ("Owner") and R&G Excavating, Inc. ("Contractor"). Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The demolition of approximately 4,400 linear feet of existing reinforced, above-grade concrete irrigation flume and construction of new 10-foot buried (HDPE Duromaxx) and elevated (Steel) pipe and associated irrigation system improvements. The elevated pipe will be supported by both concrete spread footings and pile-supported cap beams. Associated work includes various fittings, access structures, improvements for irrigation delivery, permanent access roads, transitions from and to existing ditches, and an emergency wasteway structure as shown in the Contract Documents, Addendums, and Drawings.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **C-Flume Replacement - 2016**

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Adkins Consulting Engineering, LLP.

3.02 The Owner has retained Adkins Consulting Engineering, LLP ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially completed on or before June 29, 2018, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before July 27, 2018.

B. Parts of the Work shall be substantially completed on or before the following Milestone(s):

C. Parts of the Work shall be substantially completed on or before the following Milestone(s):

1. Milestone 1 – Stage 1: This work consists of installing the Lost River diversion canal foundation and bridge, and the siphon pipe from Stations 3+50 to 19+25, 22+50 to 25+50, and 29+00 to 37+00: June 23, 2017.

2. Milestone 2 – Stage 2: This work consists of demolishing the existing flume at the railroad, highway, and up- and downstream transition structures, and complete remaining work for a functioning water delivery system: March 9, 2018.

3. Milestone 3 – Stage 3: complete demolition and restoration. The entire project shall be substantially complete by this date: June 29, 2018.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $10,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid Form, Article 5 - Bid Schedule, attached hereto as Exhibit A.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall process Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 5th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the

requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

   a. 95 percent of Work completed (with the balance being retainage).

   b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

1. Retainage will be deposited by Owner in an interest bearing account in a bank, mutual savings bank, or savings and loan association selected by the Owner. Interest from such account will be paid to the Contractor.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 6 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if

any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of Work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 of 7 to 7 of 7, inclusive).
2. Exhibit A: Contractor's Bid Form, Article 5 - Bid Schedule (pages 3 to 3, inclusive).
3. Exhibit B: Addenda *(if applicable)* (1 to 4, inclusive)
4. Performance Bond (not attached but incorporated by reference).
5. Payment Bond (not attached but incorporated by reference).
6. Other bonds (not attached but incorporated by reference).
7. Certificate of Insurance (not attached but incorporated by reference).
8. General Conditions (not attached but incorporated by reference).
9. Supplementary Conditions (pages 1 of 22 to 22 of 22, as in original contract documents, plus incorporated revisions in attached addendums) (not attached but incorporated by reference).
10. Wage Requirements (not attached but incorporated by reference).

11. Specifications as listed in the table of contents of the Contract Documents (not attached but incorporated by reference).

12. Appendix (not attached but incorporated by reference).

13. Drawings (not attached but incorporated by reference) consisting of a cover sheet and Sheets G1 to G16, A1 to A31, EP! To EP10, H1 to H3, and D1 to D9, inclusive.

14. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:

    a. Notice to Proceed

    b. Applications for Payment

    c. Requests for Interpretation

    d. Field Orders

    e. Work Change Directives

    f. Change Orders

    g. Contractor's Notice of Substantial Completion

    h. Certificate of Substantial Completion

    i. Contractor's Completion Certification

    j. Notice of Acceptability of Work

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in triplicate. Counterparts will be provided to Owner, Contractor, and Engineer, and the United States Bureau of Reclamation.

This Agreement will be effective on 7-6-2016 (which is the Effective Date of the Contract).

OWNER:

Klamath Irrigation District

By: Brent A. Cheyne

Title: President

Attest:

Title: Secretary

Address for giving notices:

Klamath Irrigation District

6640 KID Lane

Klamath Falls, Oregon 97603

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

CONTRACTOR:

R&G Excavating, Inc.

By:

Title: V.P.

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

Title: Operations Manager

Address for giving notices:

R&G Excavating, Inc.

39300 Montgomery Drive

Scio, Oregon 97374

License No.: OR CCB #65135
(where applicable)

R & G Excavating
39300 Montgomery Dr.
Scio, OR 97374
Office: (503) 394-2190
Fax: (503) 394-2169

AFFIDAVIT OF AUTHORITY TO SIGN FOR A CORPORATION

DATE: August 13, 2013

We, *R&G Excavating, Inc., 39300 Montgomery DR, Scio, OR 97374* certify that Gary Zellner, Del Bibler, and Sharon Zellner have the authority to execute contract agreements, bid bonds, performance bonds, payment bonds and loan agreements.

Gary Zellner, President

Del Bibler, Vice President

Sharon Zellner, Secretary

MINUTES OF THE ANNUAL MEETING OF THE SHAREHOLDERS
OF
R & G EXCAVATING, INC.

Pursuant to waiver of notice of meeting, the annual meeting of the shareholders of R & G EXCAVATING, INC., an Oregon corporation, was held on January 4, 1992. Present and voting were, all of the shareholders of the corporation.

The meeting was called to order by Gary L. Zellner, who acted as chairman and kept the minutes.

The chairman proposed that 10 shares of stock be issued by the Corporation be issued to Stephen Zellner, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that 10 shares of stock be authorized to be issued to Stephen Zellner.

The chairman proposed that 10 shares of stock be issued by the Corporation be issued to Delmar Bibler, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that 10 shares of stock be authorized to be issued to Delmar Bibler.

The chairman proposed that the Board of Directors be increased from one (1) director to three (3) directors, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that the Board of Directors be increased from one (1) director to three (3) directors.

The chairperson proposed that Delmar Bibler be elected as Vice-President of this corporation, whereupon the following resolution was made and unanimously adopted:

> RESOLVED, that Delmar Bibler be elected as Vice-President of this corporation.

The chairperson proposed that Stephen J. Zellner be elected as Secretary of this corporation, whereupon the following resolution was made and unanimously adopted:

> RESOLVED, that Stephen J. Zellner be elected as Secretary of this corporation.

W. WALLACE OGDAHL • Attorney at Law
515 High St. SE • PO Box 843 • Salem, OR 97308
(503) 399-9511 • Fax (503) 399-7904

There being no further business to come before the meeting, the same was adjourned.

SECRETARY

NOTICE OF THE ABOVE MEETING WAIVED AND ALL ACTIONS TAKEN THERE ARE HEREBY CONSENTED TO:

Gary L. Zellner, Shareholder

Delmar Bibler, Shareholder

Stephen J. Zellner, Shareholder

W. WALLACE OGDAHL • Attorney at Law

515 High St. SE • PO Box 843 • Salem, OR 97308
(503) 399-9511 • Fax (503) 399-7904

CONTRACT SUPPLEMENT

KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT – 2016

July 6, 2016

The following additions shall be made to the Construction Contract between Klamath Irrigation District (Owner) and R & G Excavating, Inc. (Contractor). By signing, both parties agree that this Contract Supplement is binding between the parties and incorporated into the Construction Contract.

The Contractor, Owner, and Engineer (Adkins Consulting Engineering) will meet in January, 2017 to discuss project funding, construction progress, and whether future funding may limit future construction Work. The Contractor and Owner will review options for managing construction Work costing up to one million ($1,000,000.00) dollars and agree upon one of the following options: (A) proceed as planned because the four million ($4,000,000.00) dollar loan from the Bureau of Reclamation (BOR) was delivered; (B) remove construction Work from the Contract if the BOR loan was not secured; (C) postpone construction Work until a later date when additional funds have been secured by Owner or from the BOR (January 2018) or internal annual assessments by the Owner (April 2018); or (D) perform the construction Work and invoice Owner at a later date, subject to the following conditions: (1) the Contractor may perform construction Work and delay invoicing for up to sixty (60) days without the accumulation of interest, and (2) after sixty (60) days, the Contractor may accrue interest at an annual rate of three (3) percent, or 0.25 percent per month.

Notice of hereby agreeing to the terms outlined above and the incorporation of these terms into the Construction Contract:

R&G Excavating, Inc.

Signature: _____

Printed Name: Gary Zellner

Title: President

Attested by Signature: _____

Attested by Printed Name: Glinda Ireland

Date: July 6, 2016

Klamath Irrigation District

Signature: _____

Printed Name: Brent A. Clayne

Title: President

Date: 6 July 2016

CONTRACT DOCUMENTS

FOR

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS CONSULTING ENGINEERING, LLP

Klamath Falls, Oregon

ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Oregon

Job No. 462-00

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NOTICE OF INTENT TO AWARD CONTRACT

TO: **All Bidders for the Project Listed Below**

DATE OF NOTICE: **May 16, 2016**

PROJECT NAME: **Klamath Irrigation District, Klamath Falls, Oregon**
C-Flume Replacement - 2016

NOTICE IS HEREBY GIVEN that the Klamath Irrigation District, (OWNER) intends to award the above-described Contract to the following apparent low bidder, based on OWNERS Board meeting held on May 12, 2016, option to select Duromaxx HDPE:

R&G Excavating, Inc.
(Name of Bidder)
39300 Montgomery Drive
(Street or P.O. Box)
Scio, OR 97374
(City and State)

NOTICE IS FURTHER GIVEN that any protest of the OWNER'S Notice of Intent to Award Contract must be filed with Klamath Irrigation District, 6640 KID Lane, Klamath Falls, OR 97603, (OWNER) on or before seven calendar days from the date of this Notice. Protests must be in writing stating the basis of the protest in detail as provided by Oregon Law and be physically received at the above address on or before said date.

If no protest is filed on or prior to said date, the OWNER will thereafter award the above described contract to the Bidder named above by issuance of a Notice of Award of Contract to said Bidder.

Dated this 16 day of May, 2016.

Adkins Consulting Engineering, LLP
Klamath Falls, Oregon

By Jeremy Morris
Project Manager

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

NOTICE OF AWARD

Date of Issuance: **May 23, 2016**

Owner: **Klamath Irrigation District**

Engineer: Adkins Consulting Engineering, LLP

Project: **C-Flume Replacement**

Bidder: **R & G Excavating**

Bidder's Address: **39300 Montgomery Dr., Scio, Oregon 97374**

TO BIDDER:

You are notified that Owner has accepted your Bid dated May 10, 2016 for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

The demolition of approximately 4,400 linear feet of existing reinforced, above-grade concrete irrigation flume and construction of new 10-foot buried (HDPE Duromaxx) and elevated (Steel) pipe and associated irrigation system improvements. The elevated pipe will be supported by both concrete spread footings and pile-supported cap beams. Associated work includes various fittings, access structures, improvements for irrigation delivery, permanent access roads, transitions from and to existing ditches, and an emergency wasteway structure as shown in the Contract Documents, Addendums, and Drawings.

The Contract Price of the awarded Contract is: $ 8,494,661.00

You must comply with the following conditions within 20 days of the date you receive this Notice of Award.

1. Notice of Award

Acknowledge acceptance of the Project award in the space provided on this Notice of Award form. Be sure to include the date, as well as the signature and title of the person signing the Award form. ***Return all three copies to the Engineer.***

2. Agreement Between Owner and Contractor

Date and sign all three copies of the attached Agreement form. ***Return all three copies*** to the Engineer.

3. Payment and Performance Bonds

Provide the Construction Performance and Payment Bonds. Enclosed are three copies of the Payment Bond and three copies of the Performance Bond forms. Include an appropriate Power of Attorney which is properly dated with each of the bonds. **Additionally, note that the date shown on the Payment and Performance Bonds must be on or after the date shown on the Agreement.** The date on the Power of Attorney should be the same as shown on the Bond. These Payment and Performance Bond forms must be used, and no others will be accepted. Return three completed copies to the Engineer.

4. Certificate of Insurance

Complete the enclosed Certificate of Insurance form. The enclosed Certificate of Insurance form is the only acceptable form to be used for this project. Standard ACORD forms from the insurance company will be

required to be attached to this form. Be sure to include Worker's Compensation certificates. Return all three copies to the Engineer.

5. Statutory Public Works Bond

The Contractor and applicable Subcontractors must file a Public Works Bond with the Construction Contractor's Board in accordance with Oregon Laws 2005, Chapter 360, Section 2. Verification that this bond has been filed by the Contractor must be submitted to the Engineer.

6. Other requirements

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 20 days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement and Contract Documents.

KLAMATH IRRIGATION DISTRICT

By: _____
(AUTHORIZED SIGNATURE)

Hollie Cannon
(NAME)

Manager
(TITLE)

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by R & G Excavating, Inc. this the 20th day of May, 2016.

By: _____

Name: Glinda Ireland

Title: Operations Manager

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PERFORMANCE BOND

CONTRACTOR *(name and address)*:
R & G Excavating, Inc.
39300 Montgomery Dr.
Scio, OR 97302

SURETY *(name and address of principal place of business)*:
Liberty Mutual Insurance Company
175 Berkeley St.
Boston, MA 02116

OWNER *(name and address)*:
Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount: $8,494,661.00
Description *(name and location)*: **C-Flume Replacement - 2016**
Klamath Falls, Oregon
Bond Number: 53S202351
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount: $8,494,661.00
Modifications to this Bond Form: [X] None [ ] See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

R & G Excavating, Inc. *(seal)*
Contractor's Name and Corporate Seal
By: _____
Signature
Del Bibler
Print Name
Vice President
Title
Attest: _____
Signature
Operations Manager
Title

SURETY

Liberty Mutual Insurance Company *(seal)*
Surety's Name and Corporate Seal
By: _____
Signature *(attach power of attorney)*
Ty Moffett
Print Name
Attorney-in-Fact
Title
Attest: _____
Signature
Witness
Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PAYMENT BOND

CONTRACTOR *(name and address)*:
R & G Excavating, Inc.
39300 Montgomery Dr.
Scio, OR 97302

SURETY *(name and address of principal place of business)*:
Liberty Mutual Insurance Company
175 Berkeley St.
Boston, MA 02116

OWNER *(name and address)*:
Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount: $8,494,661.00
Description *(name and location)*: **C-Flume Replacement - 2016**
Klamath Falls, Oregon

BOND
Bond Number: 53S202351
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount: $8,494,661.00
Modifications to this Bond Form: [X] None [ ] See Paragraph 18

Surety and Contractor, Intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	SURETY
R & G Excavating, Inc. *(seal)*	Liberty Mutual Insurance Company *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature *(attach power of attorney)*
Del Bibler	Ty Moffett
Print Name	Print Name
Vice President	Attorney-in-fact
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Operations Manager	Witness
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

   5.1 Claimants who do not have a direct contract with the Contractor,

      5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

      5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

   5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

   7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

   7.2 Pay or arrange for payment of any undisputed amounts.

   7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or

(2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1 Claim: A written statement by the Claimant including at a minimum:

        1. The name of the Claimant;
        2. The name of the person for whom the labor was done, or materials or equipment furnished;
        3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
        4. A brief description of the labor, materials, or equipment furnished;
        5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
        6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
        7. The total amount of previous payments received by the Claimant; and
        8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

    16.2 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

    16.3 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

    16.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    16.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7214651

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, A. G. Sadowski; Derek A. Sadowski; Kathleen M. Sadowski; Ty Moffett

all of the city of Salem, state of OR each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 21st day of December, 2015.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 21st day of December, 2015, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 27th day of May, 2016.

By: _____
Gregory W. Davenport, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

LMS_12873_122013

CERTIFICATE OF INSURANCE

Owner: **Klamath Irrigation District**

Contractor:

Engineer: **Adkins Consulting Engineering, LLP**

Project: **C-Flume Replacement - 2016**

The Name and Address of Insurers on this Project:

BITCO General Ins Corp, 3700 Market Square Circle, Davenport, IA 52807
Navigators Ins Co, One Penn Plaza, New York, NY 10119
SAIF Corporation, 400 High St SE, Salem, OR 97312
Everest Indemnity Ins Co, 477 Martinsville Rd, PO Box 830, Liberty Corner, NJ 07938

The Contractor certifies that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract.

Attached to this Certificate are the following:

- ✓ Standard ACORD Form
- ✓ Listing of Additional Insureds (Blanket)
- ✓ Statutory Public Works Bond Verification
- ✓ Other:

All policies contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 30 days' prior written notice has been given to Contractor. Within 3 days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

BITCO, Navigators, SAIF, Everest
Name of Insurance Company(s)

AG Sadowski Company
Insurance Agency

RA Guzman — 6/3/16
Signature of Authorized Insurance Agency Representative — Date

[signature] — 6/3/16
Signature of Contractor — Date

STATUTORY PUBLIC WORKS BOND

Surety bond #: 53S000016 CCB # (if applicable): 65135

We, R & G EXCAVATING, INC., as principal, and LIBERTY MUTUAL INSURANCE COMPANY, a corporation qualified and authorized to do business in the State of Oregon, as surety, are held and firmly bound unto the State of Oregon for the use and benefit of the Oregon Bureau of Labor and Industries (BOLI) in the sum of thirty thousand dollars (lawful money of the United States of America to be paid as provided in ORS chapter 279C, as amended by Oregon Laws 2005, chapter 360, for which payment well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by this agreement.

WHEREAS, the above-named principal wishes to be eligible to work on public works project(s) subject to the provisions of ORS chapter 279C, as amended by Oregon Laws 2005, chapter 360, and is, therefore, required to obtain and file a statutory public works bond in the penal sum of $30,000.00 with good and sufficient surety as required pursuant to the provisions of section 2, chapter 360, Oregon Laws 2005, conditioned as herein set forth.

NOW, THEREFORE, the conditions of the foregoing obligations are that if said principal with regard to all work done by the principal as a contractor or subcontractor on public works project(s), shall pay all claims ordered by BOLI against the principal to workers performing labor upon public works projects for unpaid wages determined to be due, in accordance with ORS chapter 279C, as amended by Oregon Laws 2005, chapter 360, and OAR Chapter 839, then this obligation shall be void; otherwise to remain in full force and effect.

This bond is for the exclusive purpose of payment of wage claims ordered by BOLI to workers performing labor upon public works projects in accordance with ORS chapter 279C, as amended by Oregon Laws 2005, chapter 360.

This bond shall be one continuing obligation, and the liability of the surety for the aggregate of any and all claims which may arise hereunder shall in no event exceed the amount of the penalty of this bond.

This bond shall become effective on the date it is executed by both the principal and surety and shall continuously remain in effect until depleted by claims paid under ORS chapter 279C, as amended by Oregon Laws 2005, chapter 360, unless the surety sooner cancels the bond. This bond may be cancelled by the surety and the surety be relieved of further liability for work performed on contracts entered after cancellation by giving 30 days' written notice to the principal, the Construction Contractors Board, and BOLI. Cancellation shall not limit the responsibility of the surety for the payment of claims ordered by BOLI relating to work performed during the work period of a contract entered into before cancellation of this bond.

IN WITNESS WHEREOF, the principal and surety execute this agreement. The surety fully authorizes its representatives in the State of Oregon to enter into this obligation.

SIGNED, SEALED AND DATED this 1ST day of JANUARY, 2010

Surety by:

LIBERTY MUTUAL INSURANCE COMPANY (Seal)
Company Name

Signature

TY MOFFETT, ATTORNEY-IN-FACT
Title (e.g. Attorney-in-Fact)

SEND BOND TO: **Construction Contractors Board**
PO Box 14140
Salem, OR 97309-5052
Telephone: (503) 378-4621

Principal by:

R & G EXCAVATING, INC.
Name

Signature

Pres
Title

39300 MONTGOMERY DR
Address

SCIO, OR 97374
City *State* *Zip*

S-7047 (7/06)

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

LIBERTY MUTUAL INSURANCE COMPANY
BOSTON, MASSACHUSETTS
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Liberty Mutual Insurance Company (the "Company"), a Massachusetts stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint

A. G. SADOWSKI, KATHLEEN M. SADOWSKI, DEREK A. SADOWSKI, TY MOFFETT, ALL OF THE CITY OF SALEM, STATE OF OREGON

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **FIFTY MILLION AND 00/100**********. DOLLARS ($ **50,000,000.00**********) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article XIII, Section 5 of the By-Laws, Garnet W. Elliott, Assistant Secretary of Liberty Mutual Insurance Company, is hereby authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Liberty Mutual Insurance Company has been affixed thereto in Plymouth Meeting, Pennsylvania this 18th day of August, 2010.

LIBERTY MUTUAL INSURANCE COMPANY

By _____
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 18th day of August, 2010, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Liberty Mutual Insurance Company; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Liberty Mutual Insurance Company thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2013
Member, Pennsylvania Association of Notaries

By _____
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article XIII, Section 5 of the By-laws of Liberty Mutual Insurance Company.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Liberty Mutual Insurance Company at a meeting duly called and held on the 12th day of March, 1980.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 1st day of January, 2010.

By _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or re al value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 6/1/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Robin Guzman
AG SADOWSKI COMPANY 1605 Liberty Street S.E. Salem OR 97302	PHONE (A/C, No, Ext): (503)362-2711 FAX (A/C, No): (866)581-6327 E-MAIL ADDRESS: robin@agsadowski.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : BITCO General Insurance Corporation	20095
INSURER B : Navigators Ins Co	42307
INSURER C : SAIF Corporation	36196
INSURER D : Everest Indemnity Ins Co	10851
INSURER E :	
INSURER F :	

INSURED
R & G EXCAVATING, INC.
39300 MONTGOMERY DR.
SCIO OR 97374

COVERAGES **CERTIFICATE NUMBER: 2015-16 PROJECTS** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	X		CLP 3 629 084	10/1/2015	10/1/2016	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS			CAP 3 629 072	10/1/2015	10/1/2016	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
A	X UMBRELLA LIAB X OCCUR			CUP 2 809 063	10/1/2015	10/1/2016	EA OCC / AGGREGATE	$ 1,000,000
B	X EXCESS LIAB CLAIMS-MADE			SE15EXC716610IV	10/1/2015	10/1/2016	EA OCC / AGGREGATE	$ 9,000,000
	DED X RETENTION $ 10,000			-Retention applies to UMB				$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			774592	10/1/2015	10/1/2016	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
D	Contractor's Pollution Liability			EF4P004112-161	1/13/2016	10/1/2016	Ea Pollution Condition Aggregate	$ 2,000,000 $ 4,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: C-Flume Replacement - 2016
Certificate Holder and all required entites are Additional Insured when required by written contract.
Endorsements attached: GL-3085 (09/11); A-2931 (11/99); and CA 04 44 10 13.

CERTIFICATE HOLDER

reception@adkinsengineerin

Klamath Irrigation District
6640 KID Lane
Klamath Falls, OR 97603

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Robin Guzman/ROBIN

Policy No.: CLP 3 629 084
Insured: R & G Excavating, Inc.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

UTILITY CONTRACTORS EXTENDED LIABILITY COVERAGE

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

It is agreed that the provisions listed below apply only upon the entry of an [X] in the box next to the caption of such provision.

A. [X] Partnership and Joint Venture Extension

B. [X] Contractors Automatic Additional Insured Coverage – Ongoing Operations

C. [X] Automatic Waiver of Subrogation

D. [X] Extended Notice of Cancellation, Nonrenewal

E. [X] Unintentional Failure to Disclose Hazards

F. [X] Broadened Mobile Equipment

G. [X] Personal and Advertising Injury - Contractual Coverage

H. [X] Nonemployment Discrimination

I. [X] Liquor Liability

J. [X] Broadened Conditions

K. [X] Automatic Additional Insureds – Equipment Leases

L. [X] Insured Contract Extension - Railroad Property and Construction Contracts

M. [X] Construction Project General Aggregate Limits

N. [X] Fellow Employee Coverage

O. [X] Property Damage to the Named Insured's Work

P. [X] Care, Custody or Control

Q. [X] Electronic Data Liability Coverage

R. [X] Consolidated Insurance Program Residual Liability Coverage

S. [X] Automatic Additional Insureds – Managers or Lessors of Premises

T. [X] Automatic Additional Insureds – State or Governmental Agency or Political Subdivisions – Permits or Authorizations

U. [X] Contractors Automatic Additional Insured Coverage – Completed Operations

V. [X] Additional Insured – Engineers, Architects or Surveyors

A. PARTNERSHIP AND JOINT VENTURE EXTENSION

The following provision is added to **SECTION II - WHO IS AN INSURED** :

The last full paragraph which reads as follows:

> No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

is deleted and replaced with the following:

> With respect to the conduct of any past or present joint venture or partnership not shown as a Named Insured in the Declarations and of which you are or were a partner or member, you are an insured, but only with respect to liability arising out of "your work" on behalf of any partnership or joint venture not shown as a Named Insured in the Declarations, provided no other similar liability

insurance is available to you for "your work" in connection with your interest in such partnership or joint venture.

B. CONTRACTORS AUTOMATIC ADDITIONAL INSURED COVERAGE – ONGOING OPERATIONS

SECTION II – WHO IS AN INSURED is amended to include as an additional insured any person or organization who is required by written contract to be an additional insured on your policy, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the project(s) designated in the written contract.

With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or

2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

C. AUTOMATIC WAIVER OF SUBROGATION

Item **8.** of **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, is deleted and replaced with the following:

8. Transfer of Rights of Recovery Against Others to Us and Automatic Waiver of Subrogation.

a. If the insured has rights to recover all or part of any payment we have made under this Coverage Form, those rights are transferred to us. The insured must do nothing after loss to impair those rights. At our request, the insured will bring "suit" or transfer those rights to us and help us enforce them.

b. If required by a written contract executed prior to loss, we waive any right of recovery we may have against any person or organization because of payments we make for injury or damage arising out of "your work" for that person or organization.

D. EXTENDED NOTICE OF CANCELLATION, NONRENEWAL

Item **A.2.b.** of the **COMMON POLICY CONDITIONS**, is deleted and replaced with the following:

A.2.b. 60 days before the effective date of the cancellation if we cancel for any other reason.

Item **9.** of **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS** , is deleted and replaced with the following:

9. WHEN WE DO NOT RENEW

a. If we choose to nonrenew this policy, we will mail or deliver to the first Named Insured shown in the Declarations written notice of the nonrenewal not less than 60 days before the expiration date.

b. If we do not give notice of our intent to nonrenew as prescribed in **a.** above, it is agreed that you may extend the period of this policy for a maximum additional sixty(60) days from its scheduled expiration date. Where not otherwise prohibited by law, the existing terms, conditions and rates will remain in effect during that extension period. It is further agreed that so long as it is not otherwise prohibited by law, this one time sixty day extension is the sole remedy and liquidated damages available to the insured as a result of our failure to give the notice as prescribed in **9. a.** above.

E. UNINTENTIONAL FAILURE TO DISCLOSE HAZARDS

Although we relied on your representations as to existing and past hazards, if unintentionally you should fail to disclose all such hazards at the inception date of your policy, we will not deny coverage under this Coverage Form because of such failure.

F. BROADENED MOBILE EQUIPMENT

Item **12.b.** of **SECTION V - DEFINITIONS** , is deleted and replaced with the following:

12.b. Vehicles maintained for use solely on or next to premises, sites or locations you own, rent or occupy.

G. PERSONAL AND ADVERTISING INJURY - CONTRACTUAL COVERAGE

Exclusion 2.e. of **SECTION I, COVERAGE B** is deleted.

H. NONEMPLOYMENT DISCRIMINATION

Unless "personal and advertising injury" is excluded from this policy:

Item **14.** of **SECTION V - DEFINITIONS** , is amended to include:

"Personal and advertising injury" also means embarrassment or humiliation, mental or emotional distress, physical illness, physical impairment, loss of earning capacity or monetary loss, which is caused by "discrimination."

SECTION V - DEFINITIONS , is amended to include:

"Discrimination" means the unlawful treatment of individuals based on race, color, ethnic origin, age, gender or religion.

Item **2. Exclusions** of **SECTION I, COVERAGE B** , is amended to include:

"Personal and advertising injury" arising out of "discrimination" directly or indirectly related to the past employment, employment or prospective employment of any person or class of persons by any insured;

"Personal and advertising injury" arising out of "discrimination" by or at your, your agents or your "employees" direction or with your, your agents or your "employees" knowledge or consent;

"Personal and advertising injury" arising out of "discrimination" directly or indirectly related to the sale, rental, lease or sub-lease or prospective sale, rental, lease or sub-lease of any dwelling, permanent lodging or premises by or at the direction of any insured; or

Fines, penalties, specific performance or injunctions levied or imposed by a governmental entity, or governmental code, law, or statute because of "discrimination."

I. **LIQUOR LIABILITY**

Exclusion 2.c. of **SECTION I, COVERAGE A** , is deleted.

J. **BROADENED CONDITIONS**

Items **2.a.** and **2.b.** of **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS** , are deleted and replaced with the following:

2. **Duties In The Event Of Occurrence, Offense, Claim Or Suit:**

a. You must see to it that we are notified of an "occurrence" or an offense which may result in a claim as soon as practicable after the "occurrence" has been reported to you, one of your officers or an "employee" designated to give notice to us. Notice should include:

(1) How, when and where the "occurrence" or offense took place;

(2) The names and addresses of any injured persons and witnesses; and

(3) The nature and location of any injury or damage arising out of the "occurrence" or offense.

b. If a claim is made or "suit" is brought against any insured, you must:

(1) Record the specifics of the claim or "suit" and the date received as soon as you, one of your officers, or an "employee" designated to record such information is notified of it; and

(2) Notify us in writing as soon as practicable after you, one of your officers, your legal department or an "employee" you designate to give us such notice learns of the claims or "suit."

Item **2.e.** is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS** :

2.e. If you report an "occurrence" to your workers compensation insurer which develops into a liability claim for which coverage is provided by the Coverage Form, failure to report such "occurrence" to us at the time of "occurrence" shall not be deemed in violation of paragraphs **2.a., 2.b., and 2.c.** However, you shall give written notice of this "occurrence" to us as soon as you are made aware of the fact that this "occurrence" may be a liability claim rather than a workers compensation claim.

K. **AUTOMATIC ADDITIONAL INSUREDS - EQUIPMENT LEASES**

SECTION II - WHO IS AN INSURED is amended to include any person or organization with whom you agree in a written equipment lease or rental agreement to name as an additional insured with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, at least in part, by your maintenance, operation, or use by you of the equipment leased to you by such person or organization, subject to the following additional exclusions.

The insurance provided to the additional insured does not apply to:

1. "Bodily injury" or "property damage" occurring after you cease leasing the equipment.

2. "Bodily injury" or "property damage" arising out of the sole negligence of the additional insured.

3. "Property damage" to:

   a. Property owned, used or occupied by or rented to the additional insured; or

   b. Property in the care, custody or control of the additional insured or over which the additional insured is for any purpose exercising physical control.

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

L. **INSURED CONTRACT EXTENSION - RAILROAD PROPERTY AND CONSTRUCTION CONTRACTS**

Item **9.** of **SECTION V - DEFINITIONS** , is deleted and replaced with the following.

9. "Insured Contract" means:

a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract";

b. A sidetrack agreement;

c. Any easement or license agreement;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;

e. An elevator maintenance agreement;

f. That part of any other contract or agreement pertaining to your business (including an indemnification of a municipality in connection with work performed for a municipality) under which you assume the tort liability of another party to pay for "bodily injury" or "property damage" to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph **f.** does not include that part of any contract or agreement:

(1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:

(a) Preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage; or

(2) Under which the insured, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in (1) above and supervisory, inspection, architectural or engineering activities.

M. CONSTRUCTION PROJECT GENERAL AGGREGATE LIMITS

This modifies **SECTION III - LIMITS OF INSURANCE** .

A. For all sums which can be attributed only to ongoing operations at a single construction project for which the insured becomes legally obligated to pay as damages caused by an "occurrence" under **SECTION I - COVERAGE A**, and for all medical expenses caused by accidents under **SECTION I - COVERAGE C** :

1. A separate Construction Project General Aggregate Limit applies to each construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.

2. The Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under **COVERAGE A**, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard," and for medical expenses under **COVERAGE C** regardless of the number of:

   a. Insureds;

   b. Claims made or "suits" brought; or

   c. Persons or organizations making claims or bringing "suits."

3. Any payments made under **COVERAGE A** for damages or under **COVERAGE C** for medical expenses shall reduce the Construction Project General Aggregate Limit for that construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Construction Project General Aggregate Limit for any other construction project.

4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expense continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Construction Project General Aggregate Limit.

B. For all sums which cannot be attributed only to ongoing operations at a single construction project for which the insured becomes legally obligated to pay as damages caused by an "occurrence" under **SECTION I - COVERAGE A**, and for all medical expenses caused by accidents under **SECTION I - COVERAGE C** :

1. Any payments made under **COVERAGE A** for damages or under **COVERAGE C** for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and

2. Such payments shall not reduce any Construction Project General Aggregate Limit.

C. Payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Construction Project General Aggregate Limit.

D. If a construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.

E. The provisions of **SECTION III - LIMITS OF INSURANCE** not otherwise modified by this endorsement shall continue to be applicable.

N. FELLOW EMPLOYEE COVERAGE

Exclusion 2.e. Employers Liability of **SECTION I, COVERAGE A**, is deleted and replaced with the following:

2.e. "Bodily injury" to

(1) An "employee" of the insured arising out of and in the course of:

(a) Employment by the insured; or

(b) Performing duties related to the conduct of the insured's business; or

(2) The spouse, child, parent, brother or sister of that "employee" as a consequence of paragraph **(1)** above.

This exclusion applies:

(1) Whether the insured may be liable as an employer or in any other capacity; and

(2) To any obligation to share damages with or repay someone else who must pay damages because of the injury.

This exclusion does not apply to:

(1) Liability assumed by the insured under an "insured contract"; or

(2) Liability arising from any action or omission of a co-"employee" while that co-"employee" is either in the course of his or her employment or performing duties related to the conduct of your business.

Item **2.a. (1)(a)** of **SECTION II - WHO IS AN INSURED** , is deleted and replaced with the following:

2.a. (1)(a) To you, to your partners or members (if you are a partnership or joint venture) or to your members (if you are a limited liability company), or to your "volunteer workers" while performing duties related to the conduct of your business.

O. PROPERTY DAMAGE TO THE NAMED INSURED'S WORK

Exclusion l of **SECTION I, COVERAGE A** . is deleted and replaced with the following:

l. Damage to Your Work

"Property damage" to "your work" arising out of it or any part of it and included in the "products completed operation hazard."

This exclusion applies only to that portion of any loss in excess of $50,000 per occurrence if the damaged work and the work out of which the damage arises was performed by you.

This exclusion does not apply if the damaged work or the work out of which the damage arises was performed on your behalf by a subcontractor.

P. CARE, CUSTODY OR CONTROL

Exclusion 2.j.4 of **SECTION I, COVERAGE A.** is deleted and replaced with the following:

2.j.4 Personal property in the care, custody or control of the insured. However, for personal property in the care, custody or control of you or your "employees," this exclusion applies only to that portion of any loss in excess of $25,000 per occurrence, subject to the following terms and conditions;

(a) The most that we will pay under this provision as an annual aggregate is $100,000, regardless of the number of occurrences.

(b) This provision does not apply to "employee" owned property or any property that is missing where there is not physical evidence to show what happened to the property.

(c) The aggregate limit for this coverage provision is part of the General Aggregate Limit and **SECTION III - LIMITS OF INSURANCE** is changed accordingly.

(d) In the event of damage to or destruction of property covered by this exception, you shall, if requested by us, replace the property or furnish the labor and materials necessary for repairs thereto, at actual cost to you, exclusive of prospective profit or overhead charges of any nature.

(e) $2,500 shall be deducted from the total amount of all sums you became obligated to pay as damages on account of damage to or destruction of all property of each person or organization, including the loss of use of that property, as a result of each "occurrence." Our limit of liability under the endorsement as being applicable to each "occurrence" shall be reduced by the amount of the deductible indicated above; however, our aggregate limit of liability under this provision shall not be reduced by the amount of such deductible. The conditions of the policy, including those with respect to duties in the event of "occurrence," claims or "suit" apply irrespective of the application of the deductible amount. We may pay any part or all of the deductible amount to effect settlement of any claim or "suit" and, upon notification of the action taken, you shall promptly reimburse us for such part of the deductible amount as has been paid by us.

Q. ELECTRONIC DATA LIABILITY COVERAGE

1. **Exclusion 2.p. Electronic Data of SECTION I, COVERAGE A,** is deleted and replaced with the following:

   2.p. Damages arising out of the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate "electronic data" that does not result from physical injury to tangible property.

2. The following definition is added to **SECTION V – DEFINITIONS:**

   "Electronic data" means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software (including systems and applications software), hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

3. For the purposes of this coverage, the definition of "property damage" in **SECTION V – DEFINITIONS** is replaced by the following:

   "Property damage" means:

   a. Physical injury to tangible property, including all resulting loss of use of that property. All such loss of use shall be deemed to occur at the time of the physical injury that caused it;

   b. Loss of use of tangible property that is not physically injured. All such loss of use shall be deemed to occur at the time of the "occurrence" that caused it; or

   c. Loss of, loss of use of, damage to, corruption of, inability to access, or inability to properly manipulate "electronic data", resulting from physical injury to tangible property. All such loss of "electronic data" shall be deemed to occur at the time of the "occurrence" that caused it.

For the purposes of this insurance, "electronic data" is not tangible property.

R. CONSOLIDATED INSURANCE PROGRAM RESIDUAL LIABILITY COVERAGE

With respect to "bodily injury", "property damage", or 'personal and advertising injury" arising out of your ongoing operations; or operations included within the "products-completed operations hazard", the policy to which this coverage is attached shall apply as excess insurance over coverage available to "you" under a Consolidated Insurance Program (such as an Owner Controlled Insurance Program or Contractors Controlled Insurance Program).

Coverage afforded by this endorsement does not apply to any Consolidated Insurance Program involving a "residential project" or any deductible or insured retention, specified in the Consolidated Insurance Program.

The following is added to **Section V – Definitions**

"Residential project" means any project where 30% or more of the total square foot area of the structures on the project is used or is intended to be used for human residency. This includes but is not limited to single or multifamily housing, apartments, condominiums, townhouses, co-operatives or planned unit developments and appurtenant structures (including pools, hot tubs, detached garages, guest houses or any similar structures). A "residential project" does not include military owned housing, college/university owned housing or dormitories, long term care facilities, hotels, motels, hospitals or prisons.

All other terms, provisions, exclusions and limitations of this policy apply.

S. AUTOMATIC ADDITIONAL INSUREDS - MANAGERS OR LESSORS OR PREMISES

SECTION II – WHO IS AN INSURED is amended to include:

Any person or organization with whom you agree in a written contract or written agreement to name as an additional insured but only with respect to liability arising out of the ownership, maintenance or use of that part of the premises, designated in the written contract or written agreement, that is leased to you and subject to the following additional exclusions:

This insurance does not apply to:

1. Any "occurrence" which takes place after you cease to be a tenant in that premises.

2. Structural alterations, new construction or demolition operations performed by or on behalf of the additional insured listed in the written contract or written agreement.

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

T. AUTOMATIC ADDITIONAL INSUREDS – STATE OR GOVERNMENTAL AGENCY OR POLITICAL SUBDIVISIONS – PERMITS OR AUTHORIZATIONS

SECTION II – WHO IS AN INSURED is amended to include any state or governmental agency or subdivision or political subdivision with whom you are required by written contract, ordinance, law or building code to name as an additional insured subject to the following provisions:

This insurance applies only with respect to operations performed by you or on your behalf for which the state or governmental agency or subdivision or political subdivision has issued a permit or authorization.

This insurance does not apply to:

1. "Bodily injury", "property damage" or "personal and advertising injury" arising out of operations performed for the federal government, state or municipality; or

2. "Bodily injury" or "property damage" included within the "products-completed operations hazard".

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

U. CONTRACTORS AUTOMATIC ADDITIONAL INSURED COVERAGE – COMPLETED OPERATIONS

SECTION II – WHO IS AN INSURED is amended to include as an additional insured any person or organization who is required by written contract to be an additional insured on your policy for completed operations, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the project designated in the contract, performed for that additional insured and included in the "products-completed operations hazard".

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

V. ADDITIONAL INSURED – ENGINEERS, ARCHITECTS OR SURVEYORS

SECTION II – WHO IS AN INSURED is amended to include as an additional insured any architect, engineer or surveyor who is required by written contract to be an additional insured on your policy, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations performed by you or on your behalf.

This includes such architect, engineer or surveyor, who may not be engaged by you, but is contractually required to be added as an additional insured to your policy.

With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:

This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or the failure to render any professional services, including:

1. The preparing, approving, or failing to prepare or approve maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or

2. Supervisory, inspection or engineering services.

This insurance is excess of all other insurance available to the additional insured, whether primary, excess, contingent or on any other basis, unless the written contract requires this insurance to be primary. In that event, this insurance will be primary relative to insurance policy(s) which designate the additional insured as a Named Insured in the Declarations and we will not require contribution from such insurance if the written contract also requires that this insurance be non-contributory. But with respect to all other insurance under which the additional insured qualifies as an insured or additional insured, this insurance will be excess.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - SPECIFIC ENTITIES

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

WHO IS AN INSURED is changed to include as an "insured" the person or organization named in this endorsement. However, the additional insured is an "insured" only for "bodily injury" or "property damage" arising out of work or operations performed by you or on your behalf for the additional insured and resulting from the ownership, maintenance or use of a "covered auto," by:

1. You, or
2. Any of your employees or agents; or
3. Anyone other than the additional insured or any employee or agent of the additional insured, while using with your permission a covered "auto" you own, hire or borrow.

ADDITIONAL INSURED:

Any person or organization for whom the named insured has agreed by written "insured contract" to designate as an additional insured subject to all the provisions and limitations of this policy.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured:
Endorsement Effective Date:

SCHEDULE

Name(s) Of Person(s) Or Organization(s):
"Any person or organization for whom the named insured is operating under written contract when such contract requires a waiver of subrogation."
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.

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NOTICE TO PROCEED

Owner:	**Klamath Irrigation District**
Contractor:	
Engineer:	**Adkins Consulting Engineering, LLP**
Project:	**C-Flume Replacement - 2016**
Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 20__]. *[see Paragraph 4.01 of the General Conditions]*

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the date of Substantial Completion is June 29, 2018, and the date of readiness for final payment is July 29, 2018.

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

The Contractor is required to return ***4*** signed copies of this Notice to Proceed to the Engineer within 10 days of the issue date.

Owner:	**Klamath Irrigation District**
Authorized Signature:	_____
By:	_____
Title:	_____
Date Issued:	_____

Accepted:

Contractor:	_____
Authorized Signature:	_____
By:	_____
Title:	_____
Date:	_____

Copy: Engineer

CONTRACTOR'S APPLICATION FOR PAYMENT NO. ___

To Owner: **Klamath Irrigation District**

From Contractor: _____

Project: **C-Flume Replacement - 2016**

Application Period: _____ through _____

Application Date: _____

Date of Substantial Completion			**Date Ready for Final Payment**		
Original:	_____		Original:	_____	
Revised:	_____		Revised:	_____	
On Schedule:	Yes	No	On Schedule:	Yes	No

Change Order Summary		
Approved Change Orders		
Number	Additions	Deductions
TOTALS	$0.00	$0.00
NET CHANGE BY CHANGE ORDERS	**$0.00**	

Current Contract Price

1. Original Contract Price	
2. Net Change by Change Orders	
3. Current Contract Price (1 plus 2)	$ -

Application For Payment

1. Total Work Completed and Stored to Date (see attached)	$ -
2. Retainage Withheld	
3. Retainage Paid	
4. Sales Tax (if Applicable)	
5. Liquidated Damages Withheld	
6. Less Previous Applications for Payments	
7. AMOUNT DUE THIS APPLICATION	**$** -

Contractor's Certification:

The undersigned Contractor certifies that (1) all previous progress payments received from Owner on account of Work done under the Contract referred to above have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials, and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Lien, security interest, or encumbrance); (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective; (4) Record Drawings and required job photos are up-to-date, accurate, and complete for Work performed; and (5) certified payroll forms are current and account for all applicable personnel.

Dated: _____ Contractor:

By: _____

Payment of $ _____ - _____ is recommended by Engineer:
(Line 7)

Adkins Consulting Engineering, LLP

Dated: _____ By: _____

Payment of $ _____ - _____ is approved by Owner:
(Line 7)

Klamath Irrigation District

Dated: _____ By: _____

Title: _____

CONTRACTOR'S APPLICATION FOR PAYMENT NO. ___
KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

Bid Item No.	Description	BID PRICES			TOTAL TO DATE	
		Qty.	Unit	Unit Price	Qty.	Amount
1						$0.00
2						$0.00
3						$0.00
4						$0.00
5						$0.00
6						$0.00
7						$0.00
8						$0.00
9						$0.00
10						$0.00
11						$0.00
12						$0.00
13						$0.00
14						$0.00
15						$0.00
16						$0.00
17						$0.00
18						$0.00
19						$0.00
20						$0.00
21						$0.00
22						$0.00
23						$0.00
24						$0.00
				Total Bid Items		**$0.00**

CONTRACTOR'S APPLICATION FOR PAYMENT NO. ___
KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

Change Orders:	TOTAL TO DATE	
	Qty.	Amount
Total All Change Orders	$	0.00

Materials Stored to Date:		
(Describe)		
Total Materials on Hand	$	0.00
TOTAL WORK COMPLETED AND MATERIALS STORED TO DATE	$	0.00

REQUEST FOR INTERPRETATION

RFI No. _____

Date:

Owner: **Klamath Irrigation District**

Contractor:

Engineer: **Adkins Consulting Engineering, LLP**

Project: **C-Flume Replacement - 2016**

Contractor requests interpretation concerning the following: (Describe request in detail.)

Reference: _____ _____

Specifications Drawing(s)/Detail(s)

_____ _____

Print Name Date

_____

Signature

Engineer's response to this RFI is as follows:

_____ _____

Print Name Date

_____

Signature

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FIELD ORDER

Field Order No. _____

Date of Issuance:

Owner: **Klamath Irrigation District**

Contractor:

Engineer: **Adkins Consulting Engineering, LLP**

Project: **C-Flume Replacement - 2016**

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01.A.3, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference: _____ Specification(s) _____ Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:	RECEIVED:
By: _____ Engineer (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____
Date: _____	Date: _____

Copy to: Owner

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WORK CHANGE DIRECTIVE

Work Change Directive No. _____

Date of Issuance:

Owner: **Klamath Irrigation District**

Contractor:

Engineer: **Adkins Consulting Engineering, LLP**

Project: **C-Flume Replacement - 2016**

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

☐ Non-agreement on pricing of proposed change.

☐ Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease].

Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price

☐ Cost of the Work ☐ Other

RECOMMENDED:	AUTHORIZED BY:	RECEIVED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

CHANGE ORDER

Change Order No.: _____

Date of Issuance:

Owner: **Klamath Irrigation District**

Contractor:

Engineer: **Adkins Consulting Engineering, LLP**

Project: **C-Flume Replacement - 2016**

The Contract is modified as follows upon execution of this Change Order:

Description of Changes (Supplemental description, Plans and Specifications attached, as applicable)	DECREASE in Contract Price	INCREASE in Contract Price
Subtotal	$0.00	$0.00
Total, Increase Less Decrease	$0.00	
Sales Tax (x.x%), if applicable	$0.00	
Net Change in Contract Price for this Change Order	$0.00	

JUSTIFICATION:

The amount of the Contract will be (Decreased) (Increased) (Unchanged) for this Change Order by the sum of: $0.00

Total Contract Price prior to this Change Order: _____

The Contract Price incorporating this Change Order: $0.00

Contract Times prior to this Change Order: _____

Date of Substantial Completion: _____

Date Ready for Final Payment: _____

The Contract period provided for Substantial Completion will be (Increased) (Decreased) (Unchanged). _____ days

Revised Date of Substantial Completion: _____

Revised Date Ready for Final Payment: _____

RECOMMENDED:

By: _____
Engineer (if required)

Title: _____

Date: _____

ACCEPTED:

By: _____
Owner (Authorized Signature)

Title: _____

Date: _____

ACCEPTED:

By: _____
Contractor (Authorized Signature)

Title: _____

Date: _____

CHANGE PROPOSAL

(To Be Completed by the Contractor When Requesting a Change Order [see 11.06 of the General Conditions])

Project: Klamath Irrigation District - C-Flume Replacement - 2016

Proposed Change Order No.: _____ **Date:** _____

By: _____ **Title:** _____

Contractor (Authorized Signature)

Date received by Engineer: _____

Received by: _____

(Print Name)

Change Order Description: _____

Justification: (Provide detailed description):

Labor: (Provide detailed breakdown of all labor cost, i.e., hours, rates, and classification):

Subtotal Labor: _____

_____ Overhead and Profit Labor: $ -

Equipment: (Provide detailed breakdown of all equipment cost, i.e., hours, rates, and classification):

Subtotal Equipment: _____

_____ Overhead and Profit Equipment: $ -

Materials: (Provide detailed breakdown of all materials associated with this Change Order):

Subtotal Materials: _____

_____ Overhead and Profit Materials: $ -

Subcontract Cost: (Attach this form for all subcontract work associated with this Change Order Item):

Subtotal Subcontract Cost: _____

_____ Overhead and Profit Subcontract: $ -

Other: (Provide detailed description): _____

Subtotal Other: _____

_____ Overhead and Profit Other: $ -

TOTAL ESTIMATED COST OF PROPOSED CHANGE ORDER: $ -

UNIT PRICE (If applicable): _____

Proposed Contract Time Change Associated with this Change Order:

____ Days. (*Provide Justification and Description*):

CONTRACTOR'S NOTICE OF SUBSTANTIAL COMPLETION

(Contractor)_____ hereby notifies the Engineer that construction Work on the Project **Klamath Irrigation District - C-Flume Replacement - 2016** has been substantially completed in accordance with all requirements of the Project Contract Documents. The Contractor also verifies that Operation and Maintenance Manuals and Record Drawings, as required by the Contract, have been submitted to the Engineer, and all system components have been properly installed, serviced, and lubricated where appropriate, and checked and tested for proper operation, all as recommended by the product manufacturer and as required by the Contract Documents. The Contractor further states that proper training has been given to the Owner's designated representative as to proper operation and service of the Project system and components.

The Contractor requests the Engineer issue a Certificate of Substantial Completion. The attached draft punch list prepared by the Contractor lists items that need to be completed or corrected.

By: _____
(Authorized Signature)

_____
(Name)

_____
(Title)

_____
(Date)

(All items below the dotted line shall be completed by the Engineer.)

Review by Engineer:

☐ An inspection is scheduled for _____ to determine the status of completion.
(Date and Time)

☐ Construction Work was found not to be substantially complete. The Contractor shall complete the necessary Work and resubmit a new "Contractor's Notice of Substantial Completion."

By: _____
(Authorized Signature)

_____
(Name)

_____
(Title)

_____
(Date)

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CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: **Klamath Irrigation District**
Contractor:
Engineer: **Adkins Consulting Engineers, LLP**
Project: **C-Flume Replacement - 2016**

This Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows:

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized Signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

CONTRACTOR'S COMPLETION CERTIFICATE

(Contractor)_____ hereby certifies that the Contract known as **Klamath Irrigation District - C-Flume Replacement - 2016** has been completed in accordance with all requirements of the Project Contract Documents and is ready for final payment. The Contractor further states that information contained in the Record Drawings and Operation and Maintenance Manual is complete, accurate, and properly describes equipment, materials, and system installed as a part of the Work. The Contractor further states that all information required by the Contract Documents has been submitted to the Engineer. The Contractor also certifies that all title and lien issues have been resolved and that full title to all Work, materials, and equipment has passed to the Owner free and clear of any liens or other title defects, or will so pass upon final payment, including materialmen and mechanics liens.

_____
Contractor (Authorized Signature)

_____
(Name)

_____
(Title)

_____
(Date)

(All items below the dotted line shall be completed by the Engineer.)

Review by Engineer:

☐ The Work appears to be complete and a final inspection is scheduled for _____.
(Date and Time)

☐ The Work was found not to be complete. The Contractor shall complete the necessary Work and resubmit a new "Contractor's Completion Certificate."

By: _____
Engineer (Authorized Signature)

_____
(Name)

_____
(Title)

_____
(Date)

Instructions: This form shall be completed by the Contractor when all Work is complete and the Project is ready for final payment.

NOTICE OF ACCEPTABILITY OF WORK

Owner:	**Klamath Irrigation District**
Contractor:	
Engineer:	**Adkins Consulting Engineering, LLP**
Project:	**C-Flume Replacement - 2016**

Date Project is Ready for Final Payment

The Engineer hereby gives notice to the above Owner and Contractor that Engineer has recommended final payment of Contractor subject to the provisions of 15.07 of the General Conditions, and, to the best knowledge and belief of the Engineer, the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, and the following terms and conditions of this Notice:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work ("Notice") is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.

2. This Notice reflects and is an expression of the Engineer's professional opinion.

3. This Notice is given as to the best of Engineer's knowledge, information, and belief as of the Notice Date.

4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's work) under Engineer's Agreement with Owner, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Agreement.

5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the related Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Construction Contract Documents, or to otherwise comply with the Construction Contract Documents or the terms of any special guarantees specified therein.

6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Adkins Consulting Engineering, LLP

_____
(Authorized Signature)

By:_____
(Name)

Title:_____

Date:_____

The Owner hereby accepts the Work on the above-referenced Project and concurs the Project is ready for final payment.

Klamath Irrigation District
(Owner)

_____
(Authorized Signature)

By:_____
(Name)

Title:_____

Date:_____

cc: Contractor

CONDITIONS OF THE CONTRACT

STANDARD GENERAL CONDITIONS

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Issued and Published Jointly by

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Engineer*—The individual or entity named as such in the Agreement.

21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

    d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

   a. Contractor shall submit the number of Samples required in the Specifications.

   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01.A.38 Add the following language at the end of the last sentence of Paragraph 1.01.A.38:

The General Requirements, Technical Specifications, and any Appendices are included under the definition of Specifications.

ARTICLE 2 - PRELIMINARY MATTERS

SC--2.06 Delete Paragraph 2.06 and replace it with the term [Deleted].

ARTICLE 3 - DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.03.B.2 Add the following new Paragraph after Paragraph 3.03.B.1.b:

Where a conflict occurs between or within Specifications and Drawings, the more stringent requirements shall control, unless approved otherwise in writing by the Engineer.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.03.A Delete Paragraph 4.03.A in its entirety and insert the following in its place:

Owner shall provide engineering surveys to establish reference points for construction which, in Engineer's judgment, are necessary to enable Contractor to proceed with the Work. Contractor shall protect and preserve the established reference points and property monuments and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel. The responsibilities for other construction staking shall be defined in the General Requirements.

ARTICLE 5 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.B:

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:

1. Report dated July 21, 2015 prepared by Foundation Engineering, Inc., entitled "Geotechnical Investigation, C-Flume Replacement Project, Klamath Falls, Oregon." The Technical Data contained in such report upon whose accuracy Contractor may rely are those indicated in the definition of Technical Data in the General Conditions.

E. Contractor may examine copies of reports and drawings identified in SC-5.03.C that were not included with the Bidding Documents at Adkins Consulting Engineering, LLP, during regular business hours, or may request copies from Engineer.

ARTICLE 6 - BONDS AND INSURANCE

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03.I.3 Amend Paragraph 6.03.I.3 by striking out the following text: "10" and inserting the following text: "30"

SC-6.03.I.3 Add the following language at the end of the last sentence of Paragraph 6.03.I.3:

The Contractor shall, within 20 days after such notification, provide replacement insurance which shall comply with the insurance requirements required by the Contract. Appropriate insurance certification shall be provided to the Owner. The Contractor shall stop Work if full insurance coverage is not in place.

SC-6.03.I.6 Add the following paragraph immediately after Paragraph 6.03.I.5:

When the Work is to be accomplished within the right-of-way of the State Highway or Transportation Department or on lands over which they have direct or indirect control, the Contractor's liability insurance policy shall contain endorsements as required by the respective agency at no cost or liability to the Owner. Immediate verbal and written notification of Contractor's failure to provide full replacement insurance coverage shall be given to the Engineer and Owner.

a. The State of Oregon, the Oregon Transportation Commission, and members thereof, its officers, agents, and employees are hereby included as named insured in the herein numbered policy, except as to Claims against the primary named insured for injury to their persons or damage to any of its or their property.

b. Cancellation of the endorsement or of the policy to which it is attached may be effected by agreement of the parties hereto, or by the company or the primary named insured giving not less than thirty (30) days' notice in writing and by certified mail to the Department of Transportation, Office of Maintenance and Operations, 800 Airport Road, Salem, Oregon 97301, said notice to commence to run from the date it is actually received at said office.

SC-6.03.I. 7 Add the following paragraph immediately after Paragraph 6.03.I.6:

When the Work is to be accomplished within the right-of-way of any railroad facility or on lands over which they have direct or indirect control, the Contractor shall provide Railroad Protective liability insurance in accordance with the railroad requirements as stated in construction permits or otherwise required by railroad company.

SC-6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:		Statutory
Federal, if applicable (e.g., Longshoreman's):		Statutory
Employer's Liability:		
Bodily injury, each accident	$	1,000,000
Foreign voluntary worker compensation		Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	$	2,000,000
Products - Completed Operations Aggregate	$	1,000,000
Personal and Advertising Injury	$	1,000,000
Each Occurrence (Bodily Injury and Property Damage)	$	1,000,000

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:		
Each person	$	1,000,000

Each accident	$	1,000,000
Property Damage:		
Combined Single Limit of	$	1,000,000

4. Excess or Umbrella Liability:

Per Occurrence	$	10,000,000
General Aggregate	$	10,000,000

5. Contractor's Pollution Liability:

Each Occurrence	$	500,000
General Aggregate	$	500,000

☒ If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following:
   a. Oregon Department of Transportation
   b. U.S. Bureau of Reclamation (BOR)

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.01.B Add the following language at the end of the last sentence of Paragraph 7.01.B:

The Contractor's superintendent shall be on the Project Site whenever any Work is being performed.

SC-7.02.B Add the following new subparagraphs immediately after Paragraph 7.02.B:

1. Regular working hours will be 10 hours in one day, or 40 hours in one week.
2. There may be certain Work elements (i.e., highway crossing) that will require working outside regular work hours. The Contractor shall notify the Engineer of these needs two weeks in advance in order to provide appropriate notification to the neighbors.

SC-7.02.C Add the following new paragraph immediately after Paragraph 7.02.B:

Owner shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. The Contractor shall submit an overtime schedule to

the Owner two weeks in advance for approval of additional expense. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.11.A Add the following new sentence to the end of Paragraph 7.11.A:

The Contractor shall provide all Record Documents required in the Contract Documents.

ARTICLE 8 - OTHER WORK AT THE SITE

SC-8.02.A Amend Paragraph 8.02.A by striking out the text "Supplementary Conditions" and inserting the following text:

General Requirements

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
3. Liaison:
    a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
    b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
    c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
4. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
5. Samples:
    a. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

b. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

6. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

7. Review of Work and Rejection of Defective Work:

   a. Conduct on-Site observations of Contractor's Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

   b. Report to Engineer whenever RPR believes that any part of Contractor's Work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of Work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

8. Inspections, Tests, and System Startups:

   a. Verify that tests, equipment, and systems startups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

   b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems startups.

9. Records:

   a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

   b. Record names, addresses, fax numbers, e-mail addresses, website locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

   c. Maintain records for use in preparing Project documentation.

10. Reports:

    a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and Schedule of Shop Drawing and Sample Submittals.

b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

11. Payment Requests: Review summary of Work performed to date with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. Completion:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the Work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's Work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 - AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

SC-11.03.A Add the following language to the end of Paragraph 11.03.A:

Work for which the Contractor may claim a price adjustment or extension of time shall require an executed Change Order or Work Change Directive in order to be considered authorized. Work performed by the Contractor without an executed Change Order or Work Change Directive shall constitute acceptance of the Work by the Contractor and shall constitute waiver of any claim for adjustment of the Contract Price or Contract Time as a result of said change.

SC-11.06.A.1 Delete Paragraph 11.06.A.1 in its entirety and insert the following in its place:

Procedures: The Contractor shall provide immediate verbal notice to the Engineer when the Contractor becomes aware of any condition or event which could or will result in a Change Proposal. Written notice stating the general nature of a possible Change Proposal shall be delivered by the Contractor to Engineer promptly (but in no event later than 5 days) after the start of the event giving rise thereto. The Contractor shall not proceed with work that could result in a Change Proposal without an approved Change Order or Work Change Directive. See Article 11.03.A and SC-11.03.A. Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner with the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. Failure of the Contractor to provide immediate verbal notice, or written notice within 5 days, or to submit a Change Proposal within the 30-day time period, as required above, will result in the Contractor's forfeiture of his right to file a Change Proposal or to file a Claim for the condition or event that could have resulted in a Contract time or price adjustment.

ARTICLE 12 - CLAIMS

SC-12.01.B Add the following language at the end of Paragraph 12.01.B:

The Claim shall be in sufficient detail to enable the other party to ascertain the basis and the amount of Claim. As a minimum, the following information must accompany any Claim submitted:

1. A detailed factual statement of the Claim providing all necessary dates, locations, items of Work, price adjustments, Contract Time adjustments, and other relevant and key information.

2. The name of each individual, official, or employee involved in or knowledgeable about the Claim.
3. The specific provisions of the Contract which support the Claim and a statement of the reasons why such provisions support the Claim.
4. If the Claim relates to a decision of the Engineer which the Contract leaves to the Engineer's discretion or as to which the Contract provides that the Engineer's decision is final, the claimant shall set out in detail all facts supporting its position relating to the decision of the Engineer.
5. The identification of any documents and the substance of any oral communications that support the Claim.
6. If an adjustment of Contract Time is sought:
    a. The specific days and dates for which it is sought.
    b. The specific reasons the claimant believes a time adjustment should be granted.
7. If price adjustment is sought, the exact amount sought shall be outlined in detail.

SC-12.01.C Add the following language at the end of Paragraph 12.01.C:

The Owner may consult the Engineer on the merits of any Claim made by the Contractor.

ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:
    1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
    2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Rental Rate Blue Book. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

ARTICLE 15 - PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01.B Delete Paragraph 15.01.B in its entirety and insert the following:

B. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review a summary of the Work completed to date for which the Contractor is requesting payment. The Contractor's summary shall be accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Contractor's summary of Work completed shall also be accompanied by documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. The Engineer will review the summary of Work submitted by the Contractor for which the Contractor is requesting payment. The Engineer will either concur with the Contractor's summary of Work to date or inform the Contractor where the Engineer does not agree with the Contractor's request. In the latter case, the Contractor may make the necessary corrections and resubmit the summary of Work completed to the Engineer.

3. Upon agreement between the Engineer and Contractor on the quantities of Work performed to date, the Engineer will, within 5 days of agreement, prepare the Application for Payment and submit it to the Contractor for Contractor's signature.

4. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

5. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

SC-15.01.C.1 Delete Paragraph 15.01.C.1 in its entirety and insert the following:

C. Review of Applications:

1. Within 5 days after receipt of each signed Application for Payment from the Contractor, Engineer will, in writing, recommend payment and present the Application to Owner.

SC-15.01.C.6 Add the following to Paragraph 15.01.C.6:

f. third-party claims filed or evidence indicating probably filing of such claims;

g. failure of Contractor to make payments properly or promptly to Subcontractors for material, labor, or equipment;

h. damage to Owner or others; or

i. failure of Contractor to file certified statements regarding payment of prevailing rates of wage.

SC-15.03 Substantial Completion

SC-15.03.A Delete Paragraph 15.03.A in its entirety and insert the following:

A. When Contractor considers the entire Work ready for its intended use, Contractor shall notify Owner and Engineer in writing, using the "Contractor's Notice of Substantial Completion" form, that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

SC-15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-15.03.C Delete Paragraph 15.03.C in its entirety and insert the following:

C. If Engineer considers the Work substantially complete, Engineer will prepare a punch list of items to be completed or corrected before final payment. The Engineer will then confer with the Owner to see if the Owner has any objections as to whether the Project is substantially complete or to the accuracy of the attached punch list. If, after considering any objections the Owner may have, the Engineer concludes that the Work is not substantially complete, Engineer will notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If the Owner has no objections, the Engineer will fix the date of Substantial Completion and execute and deliver to Owner and Contractor the Certificate of Substantial Completion with a punch list of items to be completed or corrected.

SC-15.03.E Delete Paragraph 15.03.E in its entirety and insert the following:

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. When the Work has been completed, the Contractor shall submit to the Engineer the "Contractor's Completion Certificate" form.

SC-15.05.A Delete Paragraph 15.05.A in its entirety and insert the following:

A. Upon receipt of the "Contractor's Completion Certificate" from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner, Contractor, and the BOR, and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

SC-15.06.B.1 Delete Paragraph 15.06.B.1 in its entirety and insert the following:

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, complete the Notice of Acceptability of Work and set the date the Project is ready for final payment. The Engineer will present the Application for Payment and Notice of Acceptability of Work to the Owner for approval and payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work appears to be acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

SC-15.08.A Delete Paragraph 15.08.A in its entirety and insert the following:

A. If within one year after the date the Project is ready for final payment (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.04 Delete Paragraphs 16.04.A and 16.04.B in their entirety and inset the following:

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 60 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to

Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 60 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 - FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of USA&M Arbitration Service of Portland, Oregon, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written

explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-19 Add Article 19 titled "Federal Requirements."

ARTICLE 19 - FEDERAL REQUIREMENTS

SC-19.01 Equal Opportunity Requirements

A. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

B. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the Subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

SC-19.02 Environmental Requirements

A. Access

1. Construction access would be established to define the points of entrance and/or exit to the construction site to stabilize and reduce the tracking of mud and dirt onto the public highway by construction vehicles. The stabilized construction entrances would be inspected to remove sediments that may have built up on a regular basis, or within 24 hours after storm events, and repaired as necessary.

2. Existing roads and staging areas will be used whenever possible for project activities. Use of privately owned land for access will only occur under and

consistent with executed temporary construction easements (acquired by the BOR prior to construction activities beginning).

3. Designation of areas with fencing or other barriers demarking construction areas, staging areas, and access points will be installed prior to and during all construction activities.

4. All construction activities will be confined to the BOR's right-of-way (R/W) or on land in which the BOR has acquired a temporary construction easement.

B. Air Quality

1. If a rock crusher is required for demolition activities, the Contractor will obtain an Air Quality Discharge Permit from the Oregon Department of Environmental Quality (DEQ) (pursuant to its website accessed at: http://www.deq.state.or.us/regulations/rules.htm) prior to bringing the rock crusher on-site. Additionally, the Contractor may need to submit a notice of construction, if applicable, through the DEQ office in Bend, Oregon, prior to crushing activities occurring.

2. The Owner and its Contractor will comply with all conditions imposed by the Oregon Water Resources Department (OWRD) under the limited license for use of water for dust abatement.

C. Biological-Fisheries

1. The BOR will obtain a Scientific Taking Permit from the Oregon Department of Fish and Wildlife (ODFW) prior to dewatering of the Lost River Diversion Crossing (LRDC). The BOR will conduct fish salvage and comply with the conditions of the permit and U.S. Fish and Wildlife Service (USFWS) recommendations. The Contractor will provide the Owner and BOR a minimum notice of 2 weeks prior to wanting to initiate dewatering of the LRDC. The BOR will then notify and coordinate with ODFW and USFWS.

D. Cultural and Paleontological Resources

1. In the case that any cultural or paleontological resources, either surface or subsurface are inadvertently discovered during construction, the BOR's Mid-Pacific Regional archaeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist. Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on federal land must immediately provide telephone notification of the discovery to the BOR's Mid-Pacific Regional archaeologist. Work will stop until the proper authorities are able to assess the situation on-site. This action will promptly be followed by written confirmation to the responsible federal agency official, with respect to federal lands. The Oregon State Historic Preservation Office officer and interested Native American Indian tribal representatives from appropriate Indian tribes will be promptly notified and consulted. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (43 CFR Part 10) and the Archaeological Resources Protection Act of 1979 (16 USC §470).

2. In the case that any paleontological resources, either surface or subsurface, are inadvertently discovered during construction, the BOR's Mid-Pacific Regional archaeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by the BOR's Mid-Pacific Region.

E. Hazardous Fuels and Materials

1. The Contractor will prepare a project-specific Spill Prevention Control and Countermeasure Plan to be approved by the BOR to address secondary containment, prevention of spills, spill containment and cleanup procedures, and materials on hand to accomplish the containment and cleanup of petroleum and other hazardous products that may be brought on site. The Plan must be approved by the BOR prior to moving any of these products on site and prior to any construction activity.

2. If on-site storage occurs, lubricants and fuels would be placed in temporary, clearly marked, aboveground containers and provided with secondary containment. Construction equipment would be maintained and inspected regularly. Any soil contaminated by fuel or oil would be removed and disposed of by the Contractor to an approved disposal site.

3. Any hazardous materials and other hazardous substances that are used in construction would be disposed of in accordance with applicable laws and regulations. Excess or unused quantities of hazardous materials would be removed upon Project completion. Although hazardous waste generation is not anticipated, any such waste produced during construction would be properly containerized, labeled, and transported to an approved hazardous waste disposal facility. All nonhazardous waste materials, including construction refuse, garbage, and sanitary waste, would be disposed of by removal from the work area to an approved disposal facility. Disposal of any and all materials by burning will not occur. All elements of the Hazardous and Toxic Control Plan, to be developed by the Contractor, will be implemented and followed throughout the duration of the Project work timeframe.

F. Land

1. After construction is complete, the Contractor shall seed the BOR's R/W with a suitable seed mix for the soil and landscape of the area. The purpose of this seeding will be to reduce erosion and sedimentation. If the soil has been compacted, the top layer of the soil should be tilled to allow for proper establishment of the plants' root systems. The seeded area shall be covered with certified weed-free mulch after the seed is applied.

G. Noise

1. Best management practices (BMPs) would be implemented to control temporary noise during construction, including mufflers on heavy equipment. The Contractor would follow all state and local noise ordinances. To reduce disruptive noise emissions, the Contractor would restrict construction activities to the following timeframes: 7:00 a.m. to 7:00 p.m., Monday through Sunday. Work outside this time period requires advance approval from the BOR or the

Owner. Upon approval, the Owner would be required to contact adjacent landowners prior to work commencing to inform them of the potential change in work hours and the anticipated level of temporary noise increases during specific construction activities. There would be no long-term increases to the ambient noise levels after construction is completed.

H. Records

1. The Contractor will keep all environmental permits, conditions, guidelines, the BOR's Safety and Health Standards (www.usbr.gov/ssle/safety/RSHS-all.pdf) and all plans and BMPs on the Project Site and readily available for reference by the BOR, the DEQ, the U.S. Army Corps of Engineers, USFWS, ODFW, and other appropriate state and local government inspectors.

I. Utilities

1. The Contractor will be responsible for locating, marking, and protecting all utilities within the work area prior to commencing ground-disturbing activities.

J. Water Quality

1. Silt fencing along the embankment of the LRDC and work areas along the C-Flume will be established prior to commencing the Project. Ponding would not be permitted behind the silt fences, as the fences will collapse under high pressure. The design of the silt fences will provide sufficient outlets to prevent overtopping. The maximum height of the silt fences should range between 18 and 36 inches above the ground surface (depending on the amount of upslope ponding expected). Silt fences will be inspected daily during periods of prolonged rainfall, immediately after each rainfall event, and weekly during periods of no rainfall. Any required repairs will be made immediately. Sediment must be removed when it reaches one-third to one-half the height of the silt fences. Fences will not be removed until the upslope area has been permanently stabilized with reseeded vegetation. Any sediment deposits remaining in place after the silt fences have been removed will be dispersed to conform to the existing grade.

2. Erosion control BMPs will be implemented during all ground-disturbing activities to reduce runoff and allow for infiltration, provide sediment trapping and support the establishment of permanent ground cover (e.g., vegetative cover). The Contractor shall also comply with the Erosion and Sediment Control Plan as outlined in the Environmental Assessment in the Appendices and modified in the National Pollutant Discharge Elimination System 1200-CA Permit. This plan and permit will serve to provide detailed information about the construction site, and serves as a blueprint for the location, installation, and maintenance of the erosion and sediment control measures to minimize erosion and reduce sediment entering the LRDC. Erosion prevention BMPs may include, but are not limited to surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

3. Temporary fills must be removed from the LRDC entirely and the affected areas returned to pre-construction conditions. The affected areas must be stabilized and revegetated, as appropriate.

4. The Contractor will implement all reasonably available controls and practices to minimize turbidity during in-water work.

5. The Contractor will comply with all conditions imposed by the OWRD under the limited license for use of water for dust abatement.

6. All materials (e.g., coffer dams, crane pad, and/or fish salvage tools) anticipated to be placed in the LRDC will be inspected by the BOR prior to installation to ensure they do not contain or are not coated with chemicals or like substances that could leach and affect present surface waters.

7. Coffer dams will be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing coffer dams by pushing material from LRDC bed or banks will not occur. The coffer dams will include sand and gravel bag dams lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the channel.

SC-19.03 Davis-Bacon and Related Acts

A. During the performance of the Work under this Contract, the Contractor must abide by the Labor Standards Provisions of the Davis-Bacon and Related Acts.

1. Wage Determination. The federal Davis-Bacon wage rates applicable to this Contract shall be the wage determination published 10 days prior to the Bid Opening. Davis-Bacon wage determinations can be obtained at the Davis-Bacon website: http://www.wdol.gov/dba.aspx#0

SC-20 Add Article 20 titled "STATE REQUIREMENTS"

ARTICLE 20 - STATE REQUIREMENTS

SC-20.01 Conditions Concerning Payment

A. In accordance with ORS 279C.505 the Contractor shall:

1. Make payment promptly, as due, to all persons supplying labor or material for the performance of the Work provided for in the Contract in accordance with ORS 279C.570;

2. Pay all contributions or amounts due the Industrial Accident Fund from the Contractor or Subcontractor incurred in the performance of the Contract;

3. Not permit any Lien or Claim to be filed or prosecuted against the State or a county, school district, municipality, municipal corporation, or subdivision thereof, on account of any labor or material furnished;

4. Pay to the Department of Revenue all sums withheld from employees under ORS 316.167.

B. If the Contractor fails, neglects, or refuses to make prompt payment of any Claim for labor or services furnished to the Contractor or Subcontractor by any person in connection with the Work as the Claim becomes due, the Owner may pay such Claim to the person furnishing the labor or services and charge the amount of the

payment against funds due or to become due the Contractor by reason of the Contract (reference ORS 279C.515).

C. If the Contractor or a first-tier Subcontractor fails, neglects, or refuses to make payment to a person furnishing labor or materials in connection with the Work within 30 days after receipt of payment from the Owner, the Contractor or first-tier Subcontractor shall owe the person the amount due plus interest charges commencing at the end of the 10-day period that payment is due under ORS 279C.580(4) and ending upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest charged to the Contractor or first-tier Subcontractor on the amount due shall equal three times the discount rate on 90-day commercial paper in effect at the Federal Reserve Bank in the Federal Reserve District that includes Oregon on the date that is 30 days after the date when payment was received from the Owner or from the Contractor, but the rate of interest shall not exceed 30 percent. The amount of interest may not be waived (reference ORS 279C.515).

D. If the Contractor or a Subcontractor fails, neglects, or refuses to make payment to a person furnishing labor or materials in connection with the public improvement Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580 (reference ORS 279C.515).

E. If the Contractor or a Subcontractor fails, neglects, or refuses to submit complete and appropriate certified payroll forms with the Application for Payment, the Owner shall retain 25 percent of the amount due the Contractor until such forms are submitted (reference ORS 279C.845).

SC-20.02 Conditions Concerning Hours of Labor (Reference ORS 279C.520 and ORS 279C.540)

A. The Contractor may not employ a person for more than 10 hours in one day, or 40 hours in one week, except in cases of necessity, emergency, or when the public policy absolutely requires it, and in such cases the employee shall be paid at least time and a half pay for the following:

1. For all overtime in excess of eight hours in any one day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday.
2. For all overtime in excess of ten hours in any one day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday.
3. For all Work performed on Saturday and on any legal holiday specified in ORS 279C.540.
4. Contractor shall give notice in writing to employees, either at the time of hire or before commencement of Work on the Project or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that employees may be required to work (reference ORS 279C.520 and 279C.540).
5. Any worker employed by the Contractor is foreclosed from collecting any overtime pay provided in ORS 279C.540, unless a Claim for overtime pay is filed

with the Contractor within 90 days from completion of the Contract (reference ORS 279C.545).

SC-20.03 Conditions Concerning Medical Care and Worker's Compensation (Reference ORS 279C.530)

A. The Contractor shall promptly, as due, make payment to any person, co-partnership, association, or corporation furnishing medical, surgical, and hospital care services or other needed care and attention, incident to sickness or injury, to the employees of the Contractor, of all sums that the Contractor agrees to pay for the services and all moneys and sums that the Contractor collected or deducted from the wages of employees under any law, contract, or agreement for the purpose of providing or paying for the services.

B. All employers, including the Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Worker's Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor shall ensure that each of its Subcontractors complies with these requirements.

SC-20.04 Prevailing Wages.

SC-20.04 Payment of Prevailing Wage Rates on Public Works Projects

A. The Contractor and all Subcontractors employing workers on this public works contract must pay workers not less than the applicable prevailing wage rate for each trade or occupation (reference: ORS 279C.838).

1. When a public works project is subject to the Oregon Prevailing Wage Law and the federal Davis-Bacon Act, the applicable prevailing wage rates are the higher wage rate of the Oregon prevailing wage rates and the Davis-Bacon prevailing wage rate for each worker trade or classification. The federal wage rates may be obtained at the following website: http://www.wdol.gov/dba.aspx#0

B. Owner Fee - The Owner will pay the required fee to the Prevailing Wage Unit of the Oregon Bureau of Labor and Industries for every contract awarded for a public works project which is regulated under the Prevailing Wage Law (ORS279.800 to 279.870). The amount of the fee is one tenth of one percent (0.001) of the Contract Price. The fee will be not less than $250 and not greater than $7,500. The Owner will pay the fee at the time the Owner enters into the public works contract. The Contract Price means the dollar amount of the original Contract and any subsequent Change Orders or adjustments. Within 30 days of the final progress payment, the Owner will submit a request for adjustment of the fee based on the final Contract Price (reference ORS 279C.825).

SC-20.05 Contractor's Relations with Subcontractors (Reference ORS 279C.580)

A. The Contractor shall include in each subcontract for property or services entered into by the Contractor or first-tier Subcontractor the following:

1. A payment clause that obligates the Contractor or first-tier Subcontractor to pay the associated Subcontractor for satisfactory performance under its subcontract within 10 days of receipt of such payment from the Owner or Contractor as applicable.

2. An interest penalty clause that obligates the Contractor, or first-tier Subcontractor, if payment is not made within 30 days after receipt of payment from the Owner, to pay the associated Subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract required above and in accordance with ORS 279C.580. The interest penalty shall be as outlined above and in ORS 279C.515 (2).

3. The Contractor shall verify that the first-tier Subcontractor has filed the required payroll and certified statement(s) with the Owner or Owner's representative before the Contractor may pay the first-tier Subcontractor any amount owned, or the Contractor shall retain a portion of payment due as required by OAR 839-025-0010.

4. All Contract provisions shall substantially comply with ORS 279C.580.

SC-20.06 Action on Payment Bonds

A. The Contractor shall respond to Claims against applicable payment bonds in accordance with ORS 279C.600 through ORS 279C.625. Such response shall include notification of Owner that a Claim has been filed.

SC-20.07 Public Works Bond

A. The Contractor shall have a public works bond filed with the Oregon Construction Contractors Board before starting Work unless exempt under ORS 279C.836 (7) or (8).

B. The Contractor shall require every Subcontractor to have a public works bond filed with the Oregon Construction Contractors Board unless exempt under ORS 279C.836 (7) or (8).

SC-20.08 Salvage and Recycling

A. If feasible and cost-effective, the Contractor shall salvage or recycle construction and demolition debris (reference ORS 279C.510).

SC-20.09 Environmental and Natural Resources (Reference ORS 279C.525)

A. The agencies listed below may have enacted ordinances or regulations which deal with the prevention of environmental pollution or the preservation of natural resources. The Contractor shall comply with any ordinances or regulations enacted or adopted by these agencies.

1. Federal Agencies:

Department of Agriculture
Forest Service
Natural Resources Conservation Service
Department of Commerce
National Marine Fisheries Service
Department of Defense
Army Corps of Engineers
Environmental Protection Agency
Department of Interior

Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Bureau of Land Management
Bureau of Indian Affairs
Bureau of Reclamation
Fish and Wildlife Service
Department of Labor
Occupational Safety and Health Administration
Department of Transportation
Coast Guard
Federal Highway Administration

2. State Agencies:

Department of Agriculture
Department of Environmental Quality
Department of Fish and Wildlife
Department of Forestry
Department of Geology and Mineral Industries
Department of Human Resources
Department of State Lands
Department of Transportation
Land Conservation and Development Commission
Occupational Safety and Health Division
Soil and Water Conservation Commission
Water Resources Department

3. Local Agencies:

City Council
County Court
County Road Department
Rural Fire Protection District
Other Special Districts

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GENERAL REQUIREMENTS

A. SUMMARY OF WORK

The Work for this Contract includes the demolition of approximately 4,400 linear feet of existing reinforced, above-grade concrete irrigation flume and construction of new 10-foot buried and elevated pipe and associated irrigation system improvements. The elevated pipe will be supported by both concrete spread footings and pile-supported cap beams. Associated work includes various fittings, access structures, improvements for irrigation delivery, permanent access roads, transitions from and to existing ditches, and an emergency wasteway structure. All Work required to complete the project shall be as shown on the Drawings and specified herein.

B. PROJECT SCHEDULE

			30 Days	
	Construction (includes weather delays and winter shutdowns)	Pre-final Inspection and Tentative List of Deficiencies	Corrective Work, Certifications, etc.	Final Inspection
START WORK DATE IN "NOTICE TO PROCEED" Estimated June 29, 2016	END OF CONSTRUCTION WORK AND "CONTRACTOR'S NOTICE OF SUBSTANTIAL COMPLETION" June 29, 2018	"CERTIFICATE OF SUBSTANTIAL COMPLETION"	"CONTRACTOR'S COMPLETION CERTIFICATION" AND REQUEST FOR FINAL APPLICATION FOR PAYMENT July 27, 2018	"FINAL ACCEPTANCE REPORT"

The Contractor shall commence the Work required in the Contract Documents on or after the START WORK DATE specified in the "Notice to Proceed." The Contractor must complete all construction work and certify to the Engineer in writing that the Work is substantially complete by June 29, 2018. The Contractor will then have 30 calendar days after receipt of the "Definitive Certificate of Substantial Completion" from the Engineer, specifying any particulars in which the Work is unsatisfactory, to perform any corrective Work and submit "Contractor's Completion Certification," Record Drawings, Operation and Maintenance (O&M) Manuals, and other documents, including the "Final Application for Payment," to the Engineer. No additional time will be granted for weather delays or winter shutdowns.

It should be clearly understood that all construction work shall be completed within the time allowed for substantial completion, and all corrective work, paperwork, etc., shall be completed and approved within the additional 30-day period. Liquidated damages will be assessed if either or both conditions are not satisfied by the Contractor. The time allowed for substantial

completion will include miscellaneous change orders up to five percent of the total bid amount without an increase in the Contract time.

The Contractor is cautioned to submit Shop Drawings when necessary and to order mechanical equipment and special order materials early in the project to avoid project delays.

Prior to the Preconstruction Conference or prior to starting the Work, whichever occurs first, the Contractor shall submit a preliminary progress schedule, including staging, and schedule of values to the Engineer as required in the General Conditions. The Contractor shall also submit an updated, detailed progress schedule with each monthly Application for Payment. The monthly Application for Payment will not be processed or approved without the updated progress schedule.

The Contractor shall sequence construction in such a manner as to provide continual operation of the existing flume and water delivery during the irrigation seasons. Close coordination with the Owner shall be maintained regarding schedules, tie-ins, and sequencing to ensure the integrity of the water delivery is maintained. To achieve this, the existing system will remain in service until the new system is completed and operational.

C. ABBREVIATIONS

The following abbreviations of Associations, units of measurement, and miscellaneous items are defined as they may be used in these Contract Documents or on the Drawings. This list may not be all-inclusive.

Associations

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute
APA	American Plywood Association
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
DFPA	Douglas Fir Plywood Association

DIPRA	Ductile Iron Pipe Research Association
IBC	International Building Code
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IPC	International Plumbing Code
IPCEA	Insulated Power Cable Engineers Association
ITE	Institute of Transportation Engineers
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
SAE	Society of Automotive Engineers
SDI	Steel Door Institute
SSPC	Steel Structures Painting Council
WWPA	Western Wood Products Association

Codes and Acts

MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEPA	National Environmental Policy Act
OAR	Oregon Administrative Rules
RCW	Revised Code of Washington (Laws of the State)
SEPA	State Environmental Policy Act
UL	Underwriters Laboratories, Inc.
WAC	Washington Administrative Code

Federal Agencies

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
DOD	Department of Defense
FHWA	Federal Highway Administration
LCDC	Land Conservation and Development Commission
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

State Agencies

DEQ	Oregon Department of Environmental Quality
DWS	Oregon Health Authority - Drinking Water Services

ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OWRD	Oregon Water Resources Department
WISHA	Washington Industrial Safety and Health Administration
WSDOT	Washington State Department of Transportation

Units of Measurement and Abbreviation (Partial Listing)

AC	Asbestos Cement or Asphalt Concrete
ACP	Asphalt Concrete Pavement
BST	Bituminous Surface Treatment
C.I.	Cast Iron
CL	Centerline
C.O.	Clean Out
Cl.	Class
cfm	Cubic Feet Per Minute
Conc.	Concrete
Culv.	Culvert
CY, C.Y., or Cu.Yd.	Cubic Yard(s)
DI	Ductile Iron
Dia.	Diameter
Ea.	Each
Elev., EL, or El.	Elevation
Est.	Estimate or Estimated
Extg.	Existing
F	Fahrenheit
F.F.	Finished Floor
FLG	Flange
fps	Feet Per Second
Ft.	Foot or Feet
gpm	Gallons Per Minute
HDPE	High Density Polyethylene
HMAC	Hot-Mix Asphalt Concrete
Hp	Horsepower
I.D.	Inside Diameter
I/I	Infiltration/Inflow
In.	Inch or Inches
Incl.	Including
Inv.El.	Invert Elevation
Irr	Irrigation
L	Liter
Lb.	Pound(s)

L.F. or Lin.Ft.	Linear Foot (Feet)
LS or L.S.	Lump Sum
Max.	Maximum
MH	Manhole
MJ	Mechanical Joint
Min.	Minimum
MPH	Miles Per Hour
N.T.S.	Not to Scale
O.C.	On Center
O.D.	Outside Diameter
PL	Plate
PVC	Polyvinyl Chloride
psi	Pounds Per Square Inch
Q	Flow Rate
R	Radius
REQD.	Required
RPM	Revolutions Per Minute
R/W	Right-of-Way
S	Sanitary Sewer
SCH	Schedule
SD	Storm Drain
SF, S.F., or Sq.Ft.	Square Foot
Sht.	Sheet
Stl.	Steel
SWL	Static Water Level
SY, S.Y., or Sq.Yd.	Square Yard
TDH	Total Dynamic Head
TM	Test Method
Typ.	Typical
W	Water
WS	Wood Stave

D. OTHER WORK AT THE SITE

Relocation of utilities by others may occur during the Project. The Contractor shall provide traffic control and pothole the existing utilities along the alignment of the proposed siphon pipe within the R/W of Highway 39 and provide elevations to the Engineer within 45 days of mobilizing on the Site (pothole work shall be considered incidental to the bid item "Temporary Protection and Direction of Traffic"). Any required relocation of utilities based on the provided data will be completed by others, but the Contractor will be responsible for coordinating Work and providing access and accommodation for others within the Project Site.

E. PROJECT WORK MEETINGS

The Contractor and/or their superintendent shall meet with the Owner and Engineer on a regular basis to review the progress of the Work, Work schedule, Project concerns, etc., as may be appropriate. The intent of this meeting will be to keep communication channels open and to keep all parties informed as to the status of the Work. Generally, the meeting shall be held weekly; however, it may be scheduled at other times if needed. In addition to these meetings, the Contractor and resident Project Representative shall meet monthly, in a Record Drawing Review meeting, prior to submitting the monthly Application for Payment. This meeting will be used to review Record Drawings being kept on the Project by the Contractor.

F. PERMISSIONS

The Contractor shall coordinate with any landowner prior to entering a property to make improvements or for general access. Construction access easements have been obtained for this Project. The Contractor shall be responsible to limit operations within the areas provided by the easements. All disturbed private and public areas shall be restored to pre-project conditions at the sole expense of the Contractor; such restoration is incidental to the bid item "Surface Restoration."

An Oregon Department of Transportation (ODOT) Permit to Occupy or Perform Operations Upon a State Highway has been obtained for Work on this Contract. See the Appendices of these Contract Documents for a copy of the permit.

G. ENVIRONMENTAL REQUIREMENTS

The Contractor shall be responsible for implementing requirements of the National Pollutant Discharge Elimination System 1200-CA Permit for erosion and sedimentation control as included in the Appendices of these Contract Documents.

The Contractor shall be responsible for implementing requirements of the U.S. Army Corps of Engineers Removal-Fill Permit as included in the Appendices of these Contract Documents.

The Contractor shall provide access and accommodation for an archaeological observer, fish biologist, or any other environmental compliance worker at the request of the Owner. Additional environmental requirements are found in Supplementary Conditions, SC-19.02.

An Oregon Water Resources Department Final Order Limited License has been obtained for water to be used for construction purposes on this Project. See the Appendices of these Contract Documents for a copy of this license.

H. MOBILIZATION/DEMOBILIZATION

1. Mobilization shall consist of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the Project Site for the establishment of offices, buildings, and other

facilities necessary for Work on the Project, for premiums on bond and insurance for the Project, special fees, and for other work and operations which the Contractor must perform or costs the Contractor must incur before beginning Work on the Project.

2. Demobilization shall consist of work and operations including, but not limited to, those necessary for the movement of personnel, equipment, and incidentals from the Project Site, as well as preparation of O&M materials and Record Drawings, Project photos, Project closeout, etc.

I. PROJECT SAFETY

1. The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work, including excavation safety. The Contractor shall comply with all applicable Laws and Regulations, ordinances, rules, and orders of any public body having jurisdiction as it relates to Project and Work safety. See applicable provisions of the General Conditions, as well as all other provisions of the Contract relative to Project and Work safety.

2. The Contractor shall maintain local access to area residents and emergency traffic throughout the life of the Project and coordinate construction activities closely with area residents to keep them informed of operations that may impact their use of any streets or roadways.

3. All signs, barricades, barriers, lights, cones, trench boxes, shoring/bracing, and other such "devices" required to warn, protect, or direct the public and workmen during the life of the Contract shall be furnished, installed, moved, and removed by the Contractor. When conditions warrant their use, flagpersons shall also be provided by the Contractor. The determination of what measures are required, in addition to those specifically called for by the Drawings and Specifications, shall be solely the responsibility of the Contractor.

4. The Engineer and Owner are not responsible for determining whether proper safety precautions, etc., are being utilized. Should the Contractor fail to furnish the necessary protective measures, the Owner or Engineer may, but shall not be required to, bring to the Contractor's attention by written notice of such failure and the Contractor shall undertake such corrective measures as is proper.

5. All construction Work shall be performed in accordance with the provisions of the Occupational Safety and Health Regulations of the Oregon Occupational Safety and Health Division, and other applicable regulations. It shall be the Contractor's responsibility to meet all requirements of Chapter 437 of the State of Oregon Administrative Rules. In addition, Oregon Revised Statutes (ORS) 757.542 through 757.562 and Oregon Administrative Rules (OAR) 860-024-0007 administered by the Oregon Public Utilities Commission shall apply.

6. The materials used for and the installation of all warning and traffic control devices shall conform to the applicable provisions of the Oregon Standard Specifications for Construction - 2015 edition, Sections 00220 and 00225, and the Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, current edition.

7. It shall be the Contractor's sole responsibility to provide a "competent person" as defined in the regulations to be on the Project Site during all trenching operations. The "competent person" appointed by the Contractor shall fulfill all requirements of the regulations.

8. Prior to opening an excavation, the Contractor shall arrange for field location of utility installations such as sewer, telephone, fuel, electric, gas, water lines, or any other underground installations that reasonably may be expected to be encountered during the excavation work. When excavation operations approach the estimated location of underground installations, the Contractor shall determine the exact location of the installations by safe and acceptable means. While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard workers.

9. The Contractor shall ensure that structural ramps that are used by workers as a means of access or egress from an excavation shall be designed by a competent person, in accordance with all requirements of the regulations.

10. Workers exposed to public vehicular traffic shall be provided with and shall wear warning vests or other suitable garments marked with, or made of, reflectorized or highly visible material. No worker shall be permitted underneath loads handled by lifting or digging equipment. Workers shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped in accordance with the regulations to provide adequate protection for the operator during loading and unloading operations.

11. The Contractor shall take adequate precautions, in accordance with the regulations, to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions. These precautions include providing proper respiratory protection or ventilation and, when controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, the Contractor shall provide testing as often as necessary to ensure that the atmosphere remains safe. The Contractor shall provide emergency rescue equipment, such as breathing apparatus, safety harness, etc., where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

12. The Contractor shall not allow work in excavations in which there is accumulated water or in excavations where water is accumulating, unless adequate precautions have been taken to protect workers against the hazards posed by water accumulations. The precautions necessary to protect workers adequately vary with each situation, but include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and life line. If the Contractor is controlling water or preventing it from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a competent person to ensure proper operation. If excavation work interrupts the natural drainage of surface water, such as streams, then diversion ditches, dikes or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.

13. In situations where the Contractor feels their trench operations pose a risk to the stability of adjoining buildings, walls, or other structures, the Contractor shall notify the Engineer and shall provide adequate support systems per the requirements of the regulations. Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to workers shall not be permitted except when the Contractor has retained a Registered Professional Engineer and said Registered Professional Engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity, or said Registered Professional Engineer has approved the determination that such excavation will not pose a hazard to workers.

14. Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect workers from the possible collapse of such structures. The Contractor shall provide adequate protection to all persons from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. The Contractor shall also provide protection by placing and keeping excavated materials or equipment at least two feet from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations or by a combination of both, if necessary.

15. The Contractor shall ensure that daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person appointed by the Contractor for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of Work and as needed throughout the shift. Inspection shall also be made after every rain storm or other hazard increasing occurrence. These inspections are only required when worker exposure can be reasonably anticipated. Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, the Contractor shall

remove workers from the hazardous area until the necessary precautions have been taken to ensure their safety.

16. It shall be the Contractor's responsibility to provide all physical barrier protection at all excavations. All wells, pits, shafts, etc., shall be barricaded or covered. Further, no trenches shall be left open at any time unless guarded with adequate barricades, warning lamps, and signs. Proper traffic and pedestrian control shall be provided by the Contractor.

17. The Contractor shall ensure that each worker in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with the regulations.

18. It shall be the Contractor's responsibility to design the sloping and benching systems for trench excavation in accordance with the requirements of the regulations stated herein. Where the Contractor takes the option to not utilize one of the standard tables or trench excavation designs contained in OAR Chapter 437, then it is the Contractor's responsibility to retain a Registered Professional Engineer to design said sloping and benching system. When the Contractor chooses this option, the design shall be in written form and shall include at least the following information:

    a. The magnitude of the slopes that were determined to be safe for the particular Project.

    b. The configurations that would determine to be safe for the particular Project.

    c. The stamp and signature of the Registered Professional Engineer approving the design.

19. At least one copy of the design shall be maintained at the Job Site while the slope is being constructed. After that time the design need not be at the Job Site, but a copy shall be made available to the Owner upon request.

20. Where the design of a support system, shield system, or other protective system is required, it shall be the Contractor's responsibility to meet all requirements of the regulations. It shall be the Contractor's responsibility to have on site at least one copy of the manufacturer's tabulated data which identifies the Registered Professional Engineer who approved the data or, when a support system or shield system or other protective system is not a standard manufactured item but is designed by a Registered Professional Engineer, at least one copy of the design shall be maintained at the Job Site during construction of the protective system. After that time, the design may be stored off the Job Site, but a copy of the design shall be made available upon request.

21. Prior to working in the extended railroad R/W, the Contractor shall provide 2 weeks' notice to the Owner so a railroad flagger can be acquired. The Contractor shall cooperate with the requirements outlined by the railroad flagger.

22. The Contractor shall provide access to accommodate BOR and Engineer survey crews for monitoring settlement of railroad footings, abutments, and tracks while working in the railroad R/W. The Contractor shall provide 2 weeks' notice to the Owner and Engineer of excavations near railroad abutments for monitoring and surveying.

23. Prior to performing work in the railroad R/W, the railroad will give a safety overview to be attended by the Contractor, Owner, Engineer, BOR, and the railroad company. This meeting may be coincident with the preconstruction meeting or at a later date as agreed upon by the aforementioned parties.

J. SHOP DRAWINGS/SUBMITTALS

1. The Contractor shall submit Shop Drawings or manufacturer's data sheets in accordance with the Schedule of Shop Drawings and Sample submittals. It should be noted that the Engineer may require Shop Drawings for other items as may be deemed necessary. The Contractor should review the requirements for Shop Drawings in Section 7.16 of the General Conditions. A minimum of five paper copies of each item shall be submitted, unless approved otherwise by the Engineer.

2. All submittals or resubmittals shall be accompanied by and furnished in accordance with the "Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificates of Compliance" form provided at the end of these General Requirements. All submittals shall be submitted at a time sufficiently early to allow review of same by the Engineer and to accommodate the rate of construction progress required under this Contract.

3. The Engineer will return two prints of each Shop Drawing to the Contractor, with comments noted thereon, within 15 calendar days (30 days for the Temporary Water Isolation Plan) following their receipt at the Engineer's office. The Contractor shall make any corrections required by the Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new Samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal to the Engineer by the second submission of the Drawing. The Owner reserves the right to withhold monies due the Contractor to cover additional costs of the Engineer's review beyond the second submission.

   a. If Shop Drawings are returned to the Contractor marked "NO EXCEPTIONS NOTED," formal revision and resubmittal of said Shop Drawings will not be required.

   b. If Shop Drawings are returned to the Contractor marked "NO EXCEPTIONS, PROVIDED THE FOLLOWING CONDITIONS ARE MET," formal revision and resubmittal of said Shop Drawings will not be required.

c. If Shop Drawings are returned to the Contractor marked "MAKE CORRECTIONS NOTED," formal revision and resubmittal of said Shop Drawings will not be required.

d. If Shop Drawings are returned to the Contractor marked "REVISE AND RESUBMIT," the Contractor shall revise said Shop Drawings and shall resubmit five copies of said revised Shop Drawings to the Engineer.

e. If Shop Drawings are returned to the Contractor marked "REJECTED," the Contractor shall revise said Shop Drawings and resubmit five copies of said revised Shop Drawings to the Engineer.

f. If Shop Drawings are returned to the Contractor marked "SUBMIT SPECIFIED ITEM," the Contractor shall submit material requested but shall not be required to resubmit all previous material.

4. For each resubmittal necessary, an additional 15 calendar days shall be allowed for review. The Contractor shall include copies of all approved submittal information in the Contractor's Record Drawings and Operation and Maintenance Manual. A copy of each Shop Drawing and Sample shall also be kept in good order by the Contractor at the job Site and shall be available to the Engineer.

Shop Drawings requirements shall include but are not limited to:

a. Siphon pipe, fittings, and appurtenances, including pipe wall calculations

b. Reinforcement diagrams

c. Concrete mix

d. Embankment material compliance data

e. Hot-mix asphalt material compliance

f. Fabricated steel members and mill certificates

g. Mechanical devices: slide gates, radial gate, meters, valves, etc.

h. Steel fencing, gates, grates, etc.

i. Any other major improvement shown on the Drawings or specified in the Contract Documents

K. QUALITY CONTROL

1. The Contractor shall be responsible for providing their own construction monitoring and quality control program. The Contractor shall provide and maintain a quality control program that will ensure the quality of the Work and materials incorporated into the

Project. The Contractor shall also perform all tests required by Laws and Regulations, ordinances, and orders of public authorities. The Contractor shall provide appropriate quality control personnel and testing facilities and certified testing personnel to perform the Work. A written quality control program shall be provided to the Engineer for their review prior to any Work being performed. The plan shall describe testing facilities, qualifications of quality control and testing personnel, testing frequency, and reporting schedule. Copies of all test results shall be provided to the Engineer for their review as soon as the test has been performed. This includes copies of daily worksheets. Materials, equipment, or Work which fails to meet the Contract requirements shall not be used in the Work.

2. The Engineer and their representatives will at all times have access to the Work. In addition, authorized representatives and agents of any participating federal or state agency shall be permitted to review all Work, materials, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any review or testing thereof. The Contractor shall notify testing personnel, including testing personnel provided by the Owner or Engineer, at least 24 hours in advance of operations to allow for personnel assignments and test scheduling. All materials to be tested shall be provided by the Contractor at their expense. After tests are completed, the Contractor shall be responsible for repairing test areas to match original conditions. The Contractor shall pay for all additional reviews and retesting required because of defective Work or ill-timed notices.

3. The Contractor shall submit Samples of the material to be utilized on the Project to the Engineer for their review. The Engineer or their representative may take additional Samples and provide check tests on material being incorporated into the Work to verify compliance with the requirements of the Contract Documents. Materials or workmanship found to be outside of the specification limits shall be replaced with suitable material at no expense to the Owner.

4. Tests or reviews by the Engineer or others shall not relieve the Contractor from their obligations to perform the Work in accordance with the requirements of the Contract Documents and does not make the Engineer, or others, an insurer of the Contractor's Work.

5. When tests are required, the technician or technicians performing any testing shall possess valid Western Alliance for Quality Transportation Construction (WAQTC) recognized certifications, ODOT recognized certifications, or American Concrete Institute (ACI) recognized certifications in the following disciplines:

   - Aggregate Testing Technician (AgTT)
   - Asphalt Testing Technician (AsTT)
   - Concrete Testing Technician (CTT)
   - Embankment and Base Testing Technician (EBTT)

- Density Testing Technician (DTT)
- ACI Concrete Strength Testing Technician (CSTT)
- ACI Concrete Field Testing Technician (CTT)
- Certified Aggregate Technician (CAgT) (WAQTC = AgTT)
- Certified Embankment and Base Technician (CEBT) (WAQTC = EBTT)
- Certified Density Technician (CDT) (WAQTC = DTT)
- Certified Asphalt Technician I (CAT-I) (WAQTC = AsTT)
- Certified Asphalt Technician II (CAT-II)
- Certified Mix Design Technician (CMDT)
- Quality Control Technician (QCT)
- Concrete Control Technician (CCT)
- Concrete Strength Technician (CST)
- Concrete Laboratory Testing Technician (CLTT)

6. Following are the minimum required tests and testing frequency that shall be included in the Contractor's quality control program for the materials listed. See the Technical Specifications for other testing and quality control requirements. If the Contractor fails to provide all or any part of the required quality control testing and corresponding reports for the Project after the Engineer has requested him to do so in writing, the Owner may elect to have the quality control work performed by others and withhold the actual cost of quality work plus $100 for each test performed from payments owed the Contractor on the Project.

   a. Trench Backfill Materials

      A minimum of one AASHTO T 180 laboratory density test will be performed for each testable material used as trench backfill, providing the maximum theoretical density and optimum moisture content of the material. A minimum of one nuclear gauge density test (ASTM D 2922) will be performed every 300 feet along the trench line on each lift of material to show required density is being achieved. Once an acceptable compaction method is established and verified with field density tests, the testing interval can be reduced to 600 feet along the trench line. If backfill material, methods, or compaction equipment changes, compaction testing shall immediately be performed to verify that density is being achieved and shall continue at 300-foot intervals until a new compaction method is verified.

   b. Earthwork

      A minimum of one AASHTO T 180 laboratory density test will be performed for each testable material used as embankment material, providing the maximum theoretical density and optimum moisture content of the material can be determined. A minimum of one nuclear gauge density test (ASTM D 2922) will be performed every 800 square yards on each lift of material to show required

density is being achieved. Once an acceptable compaction method is established and verified with field density tests, the testing interval can be reduced to one test each 1,600 square yards on each lift. If backfill material or compaction equipment changes, compaction testing shall immediately be performed to verify that density is being achieved and shall continue at 800 square yard intervals until a new compaction method is verified.

c. Base Rock

1) Testing required to qualify material source prior to production as outlined in the Technical Specifications.

2) Quality control testing required during production consists of the following:

Gradation	AASHTO T 27	Start of production and one test every 1,000 tons (three tests minimum)
Fracture Face	WAQTC TM-1	Start of production and one test every 3,000 tons (three tests minimum)
Sand Equivalent	AASHTO T 176	Start of production and one test every 3,000 tons (three tests minimum)

3) Compliance of base rock produced and stockpiled before the Award Date or Notice to Proceed of this Contract will be determined by the following:

a) Provide all production records for testing that was performed during production.

b) If production records are not available, provide post testing of the stockpile per AASHTO T 2 as follows:

Gradation	AASHTO T 27	One test every 1,000 tons in stockpile (three tests minimum)
Fracture Face	WAQTC TM-1	One test every 3,000 tons in stockpile (three tests minimum)
Sand Equivalent	AASHTO T 176	One test every 3,000 tons in stockpile (three tests minimum)

4) Compliance of base rock delivered to the Project Site will be determined by the following:

Gradation	AASHTO T 27	One test every 1,000 tons (three tests minimum)

Fracture Face	WAQTC TM-1	One test every 3,000 tons (three tests minimum)
Sand Equivalent	AASHTO T 176	One test every 3,000 tons (three tests minimum)

5) A minimum of one AASHTO T 180 laboratory density test will be performed on base rock material, providing the maximum theoretical density and optimum moisture content of the material can be determined. A minimum of one nuclear gauge density test (ASTM D 2922) will be performed every 800 square yards on each lift of base rock to show required density is being achieved. Once an acceptable compaction method is established and verified with field density tests, the testing interval can be reduced to one test each 1,600 square yards on each lift. If base rock material or compaction equipment changes, compaction testing shall immediately be performed to verify that density is being achieved and shall continue at 800 square yard intervals until a new compaction method is verified.

d. Aggregate Base Rock

1) Testing required to qualify material source prior to production as outlined in the Technical Specifications.

2) Compliance of aggregate base rock delivered to the Project Site will be determined by visual inspection by the Engineer.

e. Hot-Mix Asphalt Concrete (HMAC) Pavement

1) Testing required to qualify HMAC aggregate material source prior to production consists of the following (current ODOT certification of the material source can be substituted for this testing):

Soundness	AASHTO T 104
Abrasion	AASHTO T 96
Degradation	ODOT TM T-208
Lightweight Pieces	AASHTO T 113
Plastic Index	AASHTO T 103
Friable Particles	AASHTO T 112

2) Quality control testing required on HMAC aggregate during production consists of the following:

Gradation	AASHTO T 27	Start of production and one test every 1,000 tons (three tests minimum)
Sand Equivalent	AASHTO T 176	Start of production and one test every 3,000 tons (three tests minimum)
Fracture Face	WAQTC TM-1	Start of production and one test every 3,000 tons (three tests minimum)
Wood Particles	ODOT TM T-225	Start of production and one test every 3,000 tons (three tests minimum)
Elongated Pieces	ODOT TM T-229	Start of production and one test every 3,000 tons (three tests minimum)
Dust or Clay Coating	ODOT TM T-226	Start of production and one test every 3,000 tons (three tests minimum)

3) Compliance of HMAC aggregates produced and stockpiled before the Award Date or Notice to Proceed of this Contract will be determined by the following:

a) Provide all production records for testing that was performed during production.

b) If production records are not available, provide post testing of the stockpile per AASHTO T 2 as follows:

Gradation	AASHTO T 27	One test every 1,000 tons in stockpile (three tests minimum)
Sand Equivalent	AASHTO T 176	One test every 3,000 tons in stockpile (three tests minimum)
Fracture Face	WAQTC TM-1	One test every 3,000 tons in stockpile (three tests minimum)
Wood Particles	ODOT TM T-225	One test every 3,000 tons in stockpile (three tests minimum)
Elongated Pieces	ODOT TM T-229	One test every 3,000 tons in stockpile (three tests minimum)
Dust or Clay Coating	ODOT TM T-226	One test every 3,000 tons in stockpile (three tests minimum)

4) Quality control testing of hot-mix asphalt concrete pavement mixture required during placement is as follows:

Asphalt Content	AASHTO T 308	One test every 1,000 tons, one test per day minimum

Gradation	(Residual Agg. From AASHTO T 308)	One test every 1,000 tons, one test per day minimum
Maximum Specific Gravity	AASHTO T 209	One test every 1,000 tons, one test per day minimum
Compaction	WAQTC TM-8	5 tests every 1,000 tons
Percent Hydrated Lime	ODOT TM T-321	One test every 1,000 tons

Asphalt content, gradation, and maximum specific gravity testing will be performed at the start of production to verify the hot-mix asphalt mix design.

f. Portland Cement Concrete (PCC)

Aggregate testing is required to be completed with the mix design. Should additional testing of aggregate for PCC be deemed necessary by the Engineer, testing shall be performed by the Contractor as specified by ASTM C 33. Samples shall be selected at random from the stockpile and tested for conformance with the Specifications. The decision to perform aggregate testing and testing frequencies shall be left to the Engineer.

Quality control testing of PCC during and following placement is as follows:

Air Content	AASHTO T 152	One test per each set of cylinders
Slump	AASHTO T 119	One test per each set of cylinders
Concrete Temperature	AASHTO T 309 ASTM C 1064	One test per each set of cylinders
Strength	AASHTO T 22, AASHTO T 23, ASTM C 31, AND ASTM C 39	One set of five cylinders per 25 cubic yards (minimum one set per day)

7. In addition to the testing requirements of this section, all testing performed on work within the ODOT R/W shall be completed by the methods and frequencies required by the ODOT Manual of Field Testing Procedures (2015 edition).

L. REVIEW OF WORK

It is not the intent of the Owner or Engineer to provide continuous or full-time observation of all Work. When required by the Engineer, the Contractor shall provide the Engineer a daily report of their Work progress and proposed Work schedule for the next two days. This daily communication shall be a requirement of the Contract.

M. REQUEST FOR INTERPRETATION (RFI)

The Contractor may request information or seek clarification concerning the Work from the Engineer utilizing the "Request for Interpretation" form in the Contract Forms section of the Contract Documents. The Engineer will provide a written response to the RFI utilizing the form within 10 days of receipt of the RFI. If a change in the Contract requirements is necessary, the procedures in Article 11 of the General Conditions shall be followed.

N. COOPERATION WITH OTHERS

The Contractor shall cooperate with the residents and business owners in the area to provide good access to private property whenever possible. Sidewalks shall be kept clear at all times of any construction materials. Barricades, traffic cones, blinkers, and signing shall be used to direct the public through the Work area safely.

O. CONSTRUCTION STAKING

1. The Contractor shall carefully preserve benchmarks, reference points and stakes set by others. In the case of willful or careless destruction by the Contractor, the Contractor shall be charged with the resulting expense of replacement and shall be responsible for any mistakes or liability that may be caused by the loss or disturbance.

2. Any additional staking requested by the Contractor, replacement of stakes or hubs lost or disturbed by the Contractor, or due to vandalism or other reasons, or re-staking required because of improper construction will be done by the Engineer at the Contractor's expense or by a licensed professional land surveyor hired by the Contractor. The Engineer requires two business days' notice (excluding weekends and holidays) prior to the time the staking is required. The Contractor shall secure the Work area and protect all construction staking.

3. The Engineer will provide the following construction staking. All other staking required to construct the Project shall be provided by the Contractor.

    a. Siphon Pipe and Elevated Steel Pipe

    The Engineer shall provide stakes for line and grade, where required, at 100-foot stations along a predetermined offset to top of pipe. Double offset stakes will be provided for each change in grade or alignment. Turnouts will be staked.

    b. Concrete Structures

    The Engineer shall provide double offsets for structure corner locations with grades marked to top of footing elevation.

P. EXISTING SURVEY MONUMENTATION

1. The Contractor shall be responsible for the protection and perpetuation of existing land survey, property, or construction monuments shown on the Drawings, which are marked or are clearly visible on the ground.

2. The Contractor shall give the Engineer a minimum of 48 hours' notice prior to working in the vicinity of any such monument that the Contractor may disturb so the Owner can arrange for such monuments to be referenced. When proper notice is provided, the Owner shall have any disturbed monuments restored following construction. Should the Contractor fail to provide adequate notice to the Engineer, the Contractor shall be responsible for the expense of having the disturbed monument restored by a qualified surveyor.

Q. EXISTING UTILITIES

1. See applicable provisions of the General Conditions, as well as all other provisions of the Contract relative to Existing Utilities. The following utilities may be affected by the Contractor's Work:

   a. Power
   Pacific Power
   Contact Person: Builders Hotline
   Telephone No.: 1-800-469-3981

   b. Telephone
   CenturyLink
   Telephone No.: 1-877-348-9007

   c. Gas
   Avista Utilities
   Contact Person: Ron Grigsby, Avista Journeyman
   Telephone No.: 541-891-9911
   Contact Person: Jeff Daniels
   Telephone No.: 541-891-9908

   d. Cable Television
   Charter Communications
   Contact Person: Local Office
   Telephone No.: 1-888-438-2427

   e. Fiber Optic
   Zayo Group
   Contact Person: Joseph Kleinsasser
   Telephone No.: 720-549-2293

Level 3 Communications
Contact Person: John Trujillo
Telephone No.: 720-888-4465
Contact Person: Chris Klodetsky
Telephone No.: 720-888-7314

2. Known utilities and structures expected to be adjacent to or encountered in the Work are shown on the Drawings. Information on existing utilities may be provided by others and existing records may not be complete or accurate. It is expected there may be discrepancies and omissions in the location, size, and quantities of utilities and structures shown. Those shown are for convenience of the Contractor only, and no responsibility is assumed by either the Owner or Engineer for their accuracy. The Contractor shall work closely with the owner of any utilities or structures affected by the Work to avoid any damage.

3. The Contractor shall be responsible for the actual locating and protecting of existing utilities. The Contractor, prior to commencement of Work, shall contact existing Utility Companies such as water, sewer, power, telephone, gas, etc., to have the Utility Companies locate all utilities which will be affected by the Work to be performed. The Contractor shall give 48-hour notification in accordance with ORS 757. The "call before you dig" number is 811 or 1-800-332-2344. The Contractor shall perform all necessary coordination work with the Utility Companies in performing the Work and shall be fully responsible for any damage to existing utilities caused by the Contractor's operations. The Contractor shall make any advance exploration necessary to protect all existing utilities and to properly plan the installation of pipelines or other work to the design line and grade. No payment shall be made for this work for up to two hours of advanced backhoe excavation work necessary to locate each existing utility at each specific site. The Work shall include all labor, equipment, etc., necessary to perform the location work. These costs shall be understood to be included in the Contract Prices. Should the Contractor be unable to locate the existing utility after its location has been marked by the appropriate utility company and diligent effort made by the Contractor to locate the utility including up to two hours of backhoe excavation work for each utility at each location site, the Contractor may be entitled to additional compensation as outlined hereafter. When prior notice has been given to the Engineer and the Engineer gives approval, the Contractor shall be paid for all additional backhoe excavation work required to locate the utility on an hourly basis under the bid item "Additional Potholing" when listed in the Bid Schedule or through an approved Change Order. Any additional potholing work performed by the Contractor without prior written approval of the Engineer will not be paid for.

4. If a conflict develops between the design line and grade of a pipeline or Project improvement and an existing utility, the Engineer may adjust the pipeline grade or have the existing utility relocated. The existing utility may be relocated by the owner of the utility or its designated representative or by the Contractor upon the approval of the

utility owner and the Engineer. The Contractor shall perform all relocation work required by the Engineer. If the Contractor performs the relocation work, a Change Order shall be negotiated prior to any actual work unless payment for the work is specified otherwise.

5. The owner of the utilities shall normally be responsible for taking the utility out of service if necessary for the performance of the Work; i.e., shutting valves, etc. In the case of water valves, the owner of the water system may operate the valves or request the Contractor to do so. When the Contractor is requested to do so, the Contractor shall operate water valves as a normal part of the Work at no additional cost to the Owner. All water valves shall be operated as instructed by the owner of the valves. It can be expected that some valves may not fully operate properly which may require that additional valves be operated. This situation shall be considered a normal requirement of the Work.

6. The Contractor shall receive prior approval from the appropriate authority or utility owner before any public or private utility service is interrupted.

   a. The Contractor shall give a minimum of four hours' notice to all utility customers who will be affected by the Contractor's operations. No utility service shall be disconnected or interrupted for more than nine hours or as required by the utility owner, whichever is less, in any 24-hour period. When disruption of service will be longer than nine hours in any one day, the Contractor shall provide safe and appropriate temporary service. All temporary service shall be coordinated with the utility owner.

   b. When regular utility service interruption is required during the course of the Work, the Contractor shall submit a written plan to the Engineer and utility owner which details proposed Work plan notification procedures, and estimated extent of service interruption. The Contractor must obtain written approval of their plan from the utility owner prior to interrupting the utility service. As a minimum, notification shall include door hangers and public notification in the newspaper and radio, as appropriate. Personal contact shall be made where practical.

   c. The Contractor shall make every effort possible to provide continuous utility service to all utility customers. When special conditions exist where an interruption of utility service would create an extra hardship on the utility customer or create a hazardous condition, the Contractor shall provide continuous service. Particular care and planning must be arranged to provide continuous service of existing services or temporary services as approved by the utility owner and the Engineer.

   d. If the Contractor inadvertently damages or interrupts an existing utility, the Contractor shall immediately notify affected utility users and make

arrangements to provide temporary service to the parties affected and shall repair said utility as required by the utility owner and the Engineer at no cost to the Owner. If the Contractor fails to make immediate repairs and provide service as required, the Owner may have said work performed by others and deduct the cost of said work from payment to the Contractor.

7. The Contractor shall support and otherwise protect all pipes, conduits, cables, poles, and other existing services where they cross the trench or are otherwise undermined or affected by their Work. The Contractor shall restore the support of an undermined existing utility using select backfill compacted to 95 percent maximum density as determined by ASTM D 698.

R. PROGRESS OF THE WORK - CLEANUP

1. The Contractor shall arrange their work schedule such that all phases of Work, once started, shall be diligently pursued until completed. The intent is that the work area shall not be disturbed for undue periods of time. Work shall not be left uncompleted. If the Engineer determines that Work is not being diligently completed, the Engineer shall request the Contractor to complete said Work.

2. Cleaning up shall be a continuing process from the start of the Work to final acceptance of the Project. The Contractor shall, at all times, at their own expense and without further order, keep property on which Work is in progress free from accumulations of waste material or rubbish caused by employees or by the Work, and at all times during the construction period shall maintain structure sites, rights-of-way, easements, adjacent property, and the surfaces of streets and roads on which Work is being done in a safe condition for the Contractor's workers and the public.

   a. Accumulations of waste materials that might constitute a fire hazard will not be permitted.

   b. Spillage from the Contractor's hauling vehicles on traveled public or private roads shall be promptly cleaned up. The Contractor shall take appropriate action to control dust caused by their operations. This shall include, but not be limited to, watering of exposed areas, cleaning of roadways, etc. This is considered a normal part of the construction Project.

   c. Upon completion of the Work, the Contractor shall, at their own expense, remove all temporary structures, rubbish, waste material, equipment, and supplies resulting from their operations. They shall leave such lands in a neat and orderly condition that is at least as good as the condition in which they found them prior to their operations.

   d. Should the Contractor fail to provide said cleanup upon 24-hour written notice, the Owner shall have the right to perform such Work at the expense of the Contractor and withhold the cost from the Contractor's payments.

3. The Contractor shall replace or restore, equivalent to their original condition, all surfaces or existing facilities disturbed by their Work, whether within or outside of the Work areas. Restoration work will include, but is not limited to, roadways, utilities, structures, landscaping, etc.

4. Contractor shall comply with SC-19.02.

S. EXISTING EQUIPMENT REMOVAL AND SALVAGE

Existing equipment or materials removed by the Contractor during the course of the Work, which the Owner requests to be salvaged, shall remain the property of the Owner. The equipment and materials shall be removed with care to prevent unnecessary damage and shall be neatly stored at a location directed by the Engineer. Equipment or materials not to be salvaged as requested by the Owner shall be salvaged or recycled by the Contractor in accordance with ORS 279C.510(1) if feasible and cost effective.

The Contractor shall salvage and deliver to the Owner all clamps, jacks, stringers, and bracings, and all other items indicated on the Drawings.

T. STARTUP AND TRAINING

It shall be the Contractor's responsibility to install all system components in accordance with the Manufacturer's recommendations. All equipment shall be lubricated and adjusted as components prior to testing the system as a whole. The Contractor shall arrange with the Engineer to witness a test of the system and equipment after installation is completed. The Contractor shall provide the services of Manufacturers' representatives to assist with the startup of major components and to provide training to the Owner's personnel. These tests shall demonstrate the complete facility operates in accordance with the Drawings and Specifications and the required functions. It is anticipated that minor adjustments may occur after the system has been started up. The Contractor shall make adjustments and correct deficiencies as required so the system can be kept in operation once it is placed into service. These adjustments, etc., shall be completed before final acceptance. The Contractor shall pay all costs associated with Manufacturer's representatives and startup work.

As part of this Work, the Contractor shall provide startup training to the Owner and Engineer in sufficient detail so the Owner and Engineer are fully familiar with the proper operation and maintenance of Project components and systems. The startup training shall occur after the construction Work is complete and properly functioning.

U. RECORD DRAWINGS

1. The Contractor shall maintain on the Job Site an up-to-date, complete, and accurate set of Record Drawings. These Drawings shall include all Work performed by the Contractor and shall note any changes or deviations made from the details shown on the Construction Drawings. Such deviations would include, but not be limited to,

dimensional changes, location, grade changes, elevation changes, material type, configuration, etc. All changes shall be neatly and accurately shown on the Record Drawings. The Record Drawings shall also include all required job photos. The Engineer will provide one full-size set of prints for use by the Contractor in preparing the Record Drawings.

2. The Contractor shall provide ties to all buried service line taps from an above-ground reference point such as a valve, manhole, etc. At least two swing tie references shall be provided for all service line stubouts which will not be connected to an active service. Swing tie measurements shall be from some permanent reference point, i.e., house corner, fire hydrant, power pole, etc. All ties shall be provided in such a way that the buried service line can be accurately located after construction Work is complete. All buried improvements shall be described in detail including location, type, size, depth, brand name, model numbers, etc. Buried improvements shall include valves, fittings, repair clamps, connections to existing lines, etc. All offsets shall be appropriately noted on the Drawings.

3. A clear color digital photo shall be taken of each improvement that will be permanently buried on the Project, such as connections to existing lines, fittings, repairs, valve configurations, etc. These photos shall become a part of the Project Record Drawings. The intent is that the Contractor shall provide good photo documentation of underground improvements that can be used in future years for maintenance or service of the buried improvement. Failure on the part of the Contractor to properly document these improvements will result in deductions described in this section. The Contractor shall provide two typical photos of repetitive type underground work such as manhole connections, cleanouts, water/sewer service connections, water meter installations, etc. Individual photos shall be taken for non-typical installations. A scale, survey rod, or similar reference device shall be included in the photo to provide a size reference when appropriate. Only digital photos will be allowed. Digital photos are to be used so the quality of the photo can be verified prior to the covering of the underground improvement. If an acceptable photo is not obtained with the first photograph, the Contractor shall take additional photos until an acceptable quality photo(s) has been obtained. A system shall be set up linking the photo with a log describing the date the photo was taken, the location of the photo, applicable Drawing sheet references, plus any appropriate information relative to what is being shown. The photo shall clearly document the underground improvement being shown, such as size of pipe fittings, etc. All details shall be clearly observable. The Contractor shall print and clearly index in a three-ring loose-leaf notebook all of the required job photos with all labels and information required for each photo next to the appropriate photo. Two color copies of the notebook shall be provided in addition to the original color photo notebook.

4. The Contractor will be paid for a minimum of 25 job photos as part of demobilization. Payment will be for each acceptable job photo properly printed, identified, and labeled, for each underground improvement for which a photo was required. A deduction of $50

will be made from payments owed the Contractor for each photo that should have been provided as called for above and was not, or for each photo that does not meet the requirements of the Contract as described above.

5. The Contractor shall also note the locations, types, size, depth, etc., of any existing utilities encountered during the performance of the Work. The Record Drawings shall be available for inspection during the Project by the Owner and Engineer. The Contractor shall keep the Record Drawings current each day to avoid loss of critical or important information.

6. Prior to submitting the monthly Application for Payment, the Contractor shall meet with the Project Representative to review, in detail, the Record Drawings and job photos prepared by the Contractor for the Project. The Contractor shall demonstrate to the Project Representative that current, up to date, accurate, and complete Record Drawings have been prepared for the Work performed to date. The Contractor and Project Representative shall compare Record Drawing information being kept by each to be sure there is consistency in the information being collected. Monthly Application for Payment requests will not be approved or processed until this meeting is held and the Contractor demonstrates that acceptable Record Drawings have been prepared by the Contractor. The Contractor shall also certify, by signing the Application for Payment, that their Record Drawings and job photos are up to date, accurate, and complete.

7. Prior to the Contractor submitting the Contractor's Notice of Substantial Completion, the Contractor shall give two sets of Record Drawings and photographs to the Engineer.

8. IT IS INTENDED THAT THE RECORD DRAWINGS BE COMPLETE AND DETAILED. EXAMPLES OF ACCEPTABLE RECORD DRAWINGS ARE AVAILABLE FOR INSPECTION AT THE ENGINEER'S OFFICE. CONSIDERABLE EFFORT SHALL BE EXPENDED IN PREPARING THE RECORD DRAWINGS.

V. OPERATION AND MAINTENANCE MANUAL

1. Four copies of an Operation and Maintenance Manual shall be submitted to the Engineer prior to the Contractor submitting the Contractor's Notice of Substantial Completion. The material shall be bound in a three-ring loose-leaf notebook with the Project name, Owner's name, Engineer's name, and Contractor's name printed on the cover. The material shall also be clearly indexed and grouped by the various systems in the Project. This data shall be supplied for all materials, equipment, and devices and components which will require maintenance, replacement of parts, and knowledge of operation. The information furnished shall pertain specifically to the materials and equipment furnished. Manufacturers' O&M manuals that deal with more than one product line shall have the non-relevant information crossed or blocked out. Also, in addition to the four bound copies due prior to final completion of the Project, the Contractor shall furnish one copy of O&M material to the Engineer for all major equipment when it arrives on the Job Site. The Contractor shall furnish a complete

listing of all equipment supplied and each respective Supplier's name, address, and telephone number. The O&M data furnished shall include detailed Manufacturer's operation and maintenance information on each component, function description of operation, a complete parts list, and a separate parts list for parts not readily available.

2. For all electrical systems, in addition to other requirements listed herein, Record Drawing one-line diagrams and wiring diagrams properly labeled shall be submitted. The Contractor shall also furnish the Engineer with copies of the appropriate plan sheets marked up with "Record Drawing" locations of conduits underground, under or in concrete slabs, locations of installed equipment, and the name, address, and phone number of the electrician who installed the system.

3. For mechanical systems, in addition to other requirements listed herein, where appropriate, lubrication schedules shall be furnished or clearly identified in the Manufacturer's Operation and Maintenance Manual.

4. For painting systems, the Contractor shall provide either fresh labels from paint cans with a list of places used or a written description of the painting systems, locations used and application requirements, and Supplier's name, address, and phone number.

5. IT IS INTENDED THAT THE O&M MANUAL BE COMPLETE AND DETAILED. EXAMPLES OF ACCEPTABLE O&M MANUALS ARE AVAILABLE FOR INSPECTION AT THE ENGINEER'S OFFICE. CONSIDERABLE EFFORT SHALL BE EXPENDED IN PREPARING THE O&M MANUAL.

END OF SECTION

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE				DATE	NO.
SECTION 1 – REQUEST REVIEW OF THE FOLLOWING ITEMS *(This section will be initiated by the Contractor)*					
TO ENGINEER:		FROM CONTRACTOR:		PROJECT	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL
ITEM No.	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)*	MFR. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO.	No. OF COPIES	CONTRACT REFERENCE DOCUMENT SPEC. SECTION NO. / DRAWING SHEET NO.	COMMENTS
REMARKS NOTE: Contractor shall note any variations from requirements of the Contract Documents.				I certify that the above-submitted items have been reviewed in detail as required by the Contract Documents (see General Conditions 7.16) and have been approved by the Contractor. NAME AND SIGNATURE OF CONTRACTOR	

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TECHNICAL SPECIFICATIONS

SECTION 1

CONCRETE STRUCTURES

PART 1 - GENERAL

1.1 Scope

A. This Specification covers furnishing and constructing an Inlet Transition Structure, Outlet Transition Structure, Wasteway Structure, elevated steel pipe foundations, and other required concrete structures. This Work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment, and incidentals required to construct the above-mentioned structures as shown on the Drawings and described in the Technical Specifications.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the work outlined in the Contract Documents.

1.2 Specifications References

The Technical Specifications apply to all Work. Specification sections that have direct reference to concrete structures include, but are not limited to, the following:

- Elevated Steel Pipe
- Lost River Diversion Crossing
- Reinforced Concrete
- General Earthwork and Roadways
- Mechanical Work
- Structural Steel and Metal Work

1.3 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish all materials required to construct the structures as called out on the Drawings and applicable Technical Specifications.

2.2 Safety Cable with Floats

The safety cable with floats shall be provided as shown on the Drawings. The floats shall be 6-inch diameter Neptune non-slip floats spaced at 5 feet apart on center over the length of the safety cable.

PART 3 - EXECUTION

3.1 Earthwork

This Work shall consist of the excavation, embankment, backfill, and disposal of all materials of whatever nature necessary for the construction of structures defined in these Specifications and as shown on the Drawings or as required by the Engineer. See Technical Specifications - "General Earthwork and Roadways."

3.2 Appurtenances

The Contractor shall install trash racks, gates, railings, etc., as shown on the Drawings and as outlined in other Technical Specifications.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 2

SIPHON PIPE

PART 1 - GENERAL

1.1 Scope

A. This Specification covers the furnishing and installation of the siphon pipe, fittings, manhole accesses, pressure relief valves, and related appurtenances. This work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment, and incidentals required to construct a complete pipeline ready for service as outlined and staged on the Drawings and in the Specifications.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of work to be constructed. All applicable sections, as determined by the Engineer, shall control the work outlined in the Contract Documents.

1.2 Design Criteria

A. The siphon pipe, fittings, and appurtenances shall be designed for a minimum working pressure of 15 pounds per square inch (psi) to the centerline of the pipe. The finished, installed pipe shall have a Mannings "N" valve of 0.012, or less. The pipe shall be capable of supporting a minimum H-20 traffic load with 3 feet of cover over the pipe. The modulus of soil reaction (E') to be used in the pipe design shall be 1,000 psi. The siphon pipe shall be sized with a 9-foot, 10-inch inside diameter. The pipe shall be able to withstand the service conditions required for use as shown on the Drawings.

B. The Contractor shall submit documentation verifying the aforementioned design criteria. In addition, the Contractor shall provide a submittal from the material manufacturer for pipe wall calculations.

1.3 Specifications References

A. Specification references made herein for manufactured materials such as pipe, valves, and fittings refer to designations for the American Water Works Association (AWWA), American National Standards Institute, Inc. (ANSI) or to the American Society for Testing and Materials (ASTM) as they are effective on the date of call for bids and proposals.

B. The Technical Specifications apply to all Work. Specification sections that have direct reference to siphon pipe include, but are not limited to, the following:

- Excavation and Backfill of Trenches
- Turnouts
- Highway 39 Crossing

- Railroad Crossing
- Surface Restoration

1.4 Catalog Information

Catalog information on all equipment and materials to be installed shall be submitted to the Engineer for review prior to purchase and installation of the items.

1.5 Delivery, Storage, and Handling

A. Adequate precautions shall be taken to prevent damage to piping and protective coatings. During transporting, pipe and other materials shall be secured individually by use of padded wood spacer blocks, wood crates, or otherwise protected to prevent collision of individual pieces and accompanying damage.

B. All pipe, fittings, valves, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall materials dropped during handling be installed or be used in the Work.

C. Hoisting pipes shall be completed using straps with a minimum two points of contact. Under no circumstance shall pipe be hoisted with chains.

D. All pipes, fittings, and all other materials used in the construction of the siphon pipe system shall be carefully inspected by the Contractor prior to installation. All defective materials shall be rejected.

E. Proper materials, tools, and equipment shall be used by the Contractor to provide safe and convenient prosecution of the work.

1.6 Pipe Installation Plan

The Contractor and siphon pipe manufacturer shall prepare a detailed, written installation plan for installing and constructing the 10-foot siphon pipe and related appurtenances. This plan shall outline all requirements that must be complied with in order to provide full warranty of the pipe and its installation. Any recommended deviation from the Project Technical Specifications shall be noted. The plan shall be submitted to the Engineer for review 20 days prior to beginning pipe installation. As a minimum, the plan shall include the following:

A. An outline of the inspection procedures to be used by the pipe manufacturer and all quality control procedures.

B. The qualifications and experience of the pipe installers and welders.

C. The line layout plans prepared from the Drawings. Plans shall identify each pipe section laying length, piece marks, location of bends, supports, fittings, special sections, taps, or other features.

D. The copies of the proposed welding procedures including sequence and repair procedures. The Contractor shall submit a weld map and the assigned welding procedure specification, the parts being joined, material thickness, and any requirements for post-weld heat treatment.

E. The detailed plans and procedures for bedding and pipe backfill placement.

1.7 Pipe Installation Review

The siphon pipe manufacturer shall provide an on-site representative to review the installation of the siphon pipe and to verify that proper methods and procedures are being utilized by the Contractor. The representative shall be on site at the beginning of pipe installation and a minimum of once a month thereafter during pipe installation. The representative shall verify pipe joints, coatings, bedding, etc. The representative shall make a final inspection of the installed facility. The representative shall provide a written report of his observations and recommendations to the Engineer after each site visit.

1.8 Manufacturer's Certification

The Contractor shall furnish to the Engineer a sworn statement from the product manufacturer of the materials supplied by the Contractor, stating that inspection and all specified tests have been made on the supplied material and that the results thereof comply with all appropriate specifications. The statement shall also state that all materials furnished are in accordance with these Contract Documents and that all materials are new.

1.9 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish and install the siphon pipe, fittings, and appurtenances of the size, type, class, and material called for on the Drawings and as specified. Where no specific type of pipe is called for, the Contractor may select any type listed herein. Once a particular type and manufacturer is selected, the Contractor shall use that type for the entire project unless other types are specifically called for on the Drawings.

TECHNICAL SPECIFICATIONS

SECTION 2

SIPHON PIPE

2.2 Siphon Pipe

A. Reinforced Polyethylene Pipe

1. Reinforced polyethylene pipe shall be steel reinforced high density polyethylene (HDPE) conforming to the requirements of ASTM F 2562. The pipe shall be a nominal 10-foot diameter with an inside diameter (I.D.) of not less than 9 feet, 10 inches, shall be as shown on the Drawings, and shall have a smooth interior. Pipe shall be DuroMaxx, or approved equal.

2. Polyethylene resins shall conform to the minimum requirements of cell classification 345464C as described in the latest version of ASTM D 3350.

3. Pipe joints shall be of the watertight welded type and of the same material as the pipe. Joints shall be capable of handling the design pressure without leakage. Flange connections shall be made using the manufacturer standard solid HDPE flange with ductile iron backer ring and bolt pattern, conforming to ASME B16.1 Class 150 psi requirements.

4. All fabricated fittings and couplings shall be supplied by the manufacturer and constructed to ensure no loss of structural integrity or joint tightness at welded seams and joints occurs. Only those fittings supplied or recommended by the manufacturer shall be used. Pipe taps and connections, with a 36-inch diameter or smaller, shall be welded connections using solid wall HDPE pipe with a minimum DR of 11. All pipe taps, connections, and fittings shall be shop fabricated.

B. Steel Pipe

1. Steel pipe shall conform to AWWA C200. The pipe shall be a nominal 10-foot diameter with an I.D. of not less than 9 feet, 10 inches. The steel for the cylinder shall be designed for a 50,000 psi minimum yield strength conforming to the requirements for ASTM A 672 Grade A50. Pipe shall have a minimum wall thickness of 0.375-inch.

2. Steel pipe joints shall be of the welded bell and spigot type with full penetration welds on the inside of the pipe.

   a. Butt Straps

      Use two-piece rolled steel straps with a minimum thickness of 0.375 inch and a minimum width of 8 inches. Straps shall be fabricated to snugly fit

over the plan pipe ends and shall be centered over the ends of pipe sections to be joined.

b. Field welders shall be certified in accordance with AWWA C206, Section 4.4, or equal. Welders shall present a copy of their certification to the Engineer prior to performing any field welding. Certifications shall be dated within three years of the job to be performed.

c. Each layer of welding shall be smooth and substantially free of slag inclusions, porosity, and excessive undercut. Cracks and lack of fusion are not permitted. Areas requiring welding repairs shall be properly prepared and repaired using an approved welding procedure. Repairs shall be made at no expense to the Owner. The surface to be welded shall be substantially free of scale, rust, grease, paint, dirt, and other foreign matter. The lining and coating system shall be appropriately repaired after the welding repair is complete.

3. Pipe shall be lined and coated using the painting system specified in the Technical Specifications - "Painting." Any lining or coating damaged during installation or welding shall be repaired as required by the coating manufacturer, and approved by the Engineer.

4. Fittings shall be equal in design pressure strength and shall have the same lining and coating as the abutting pipe. All pipe taps, connections, and fittings shall be shop fabricated and painted.

5. Galvanic protection shall be provided for the steel pipe. A 16-ounce sacrificial zinc anode shall be connected to the steel pipe at each manhole access as recommended by the pipe manufacturer, and approved by the Engineer.

C. Profile Wall Polyethylene Pipe

1. Profile wall polyethylene pipe shall be HDPE pipe conforming to the requirements of ASTM F 894. Pipe size shall be a nominal 10-foot diameter with an I.D. of not less than 9 feet, 10 inches and shall have a smooth interior. Pipe shall be Weholite RSC400, or approved equal.

2. Polyethylene resins shall conform to the minimum requirements of cell classification 345464C as described in the latest version of ASTM D 3350.

3. Pipe joints shall be of the watertight welded type and of the same material as the pipe. Joints shall be capable of handling the design pressure without leakage. Flange connections shall be made using the manufacturer standard solid HDPE flange with ductile iron backer ring and bolt pattern conforming to ASME B16.1 Class 150 psi requirements.

4. All fabricated fittings and couplings shall be supplied by the manufacturer and constructed to ensure no loss of structural integrity or joint tightness at welded seams and joints. Only those fittings supplied or recommended by the manufacturer shall be used. Pipe taps and connections, with a 36-inch diameter or smaller, shall be welded connections using solid wall HDPE pipe with a minimum DR of 11. All pipe taps, connections, and fittings shall be shop fabricated.

2.3 Siphon Pipe to Elevated Pipe Transition Coupling

The siphon pipe manufacturer shall provide a suitable transition coupling between the siphon pipe and the elevated steel pipe. The transition coupling must be watertight and conform to the design requirements of these Specifications. The transition coupling does not need to provide for alignment adjustment and can be a welded or flanged connection. Coupling design must be submitted to Engineer for approval prior to fabrication.

2.4 Pressure Relief Valves

Pressure relief valves, to release groundwater into siphon pipe, shall be Clow cast iron F-1493-T floor type valves, or approved equal. They shall be designed to open when groundwater outside of the pipe rises to plus or minus 9 inches above the top of the valve. Valves shall be installed as shown on the Drawings. Valves shall be provided with a resilient seat to stop leakage from the pipe to the ground.

2.5 Air/Vacuum Valves

Air/vacuum valves shall be 2-inch diameter air/vacuum relief valves manufactured by Nelson Irrigation Corporation, Clemons Sales Corporation, or approved equal. All valve materials shall be corrosion resistant with self-cleaning float guides.

2.6 Irrigation Caution Sign

A. Signs shall be heavy gauge aluminum sheet, nominal thickness of 0.050-inch similar to standard highway signs. Signs to be painted with engineering grade reflective sheeting. Lettering to be as shown on the Drawings and approved by the Engineer.

B. Posts shall be galvanized steel with a nominal weight of 2 pounds per linear foot in accordance with Oregon Department of Transportation delineator post Specifications, unless otherwise approved by the Engineer.

PART 3 - EXECUTION

3.1 Installation of Pipe

A. Siphon pipe shall be installed in accordance with best current practices as required by the manufacturer and as specified herein.

B. Each pipe shall be properly bedded so as to be supported for the full length of the pipe. All joints shall be free of dirt and other foreign matter prior to the joining of the next pipe.

C. When sections of pipe are installed and are to remain unconnected to the completed siphon pipe system, an appropriate closure plate shall be placed over the end of the pipe and backfilled to a level that provides for a safe and secure work area. An example closure plate that could be used is shown on the Drawings. It is the Contractor's responsibility to ensure that an appropriate closure plate is provided and that the construction site is safe and secure at all times.

D. No pipe shall be installed in water or when conditions exist that, in the opinion of the Engineer, are unsuitable for the laying of the pipe.

E. All pipe shall be installed true to line and grade, not to exceed a tolerance of ±0.05 feet. Grades and fitting angles are shown on the Drawings for reference, but are rounded up or down. The Contractor shall install the pipe to meet the noted elevations at the noted stations.

F. Appropriate transitions and couplings shall be provided at each work stage connection point.

G. Steel pipe shall be connected together and tested as specified in Technical Specifications - "Elevated Steel Pipe." All joints shall be welded and painted on both the inside and out after welding.

H. During construction, the Contractor shall bed and backfill the siphon pipe according to the Drawings and Technical Specifications at reasonable increments to ensure pipe sections are not left uncovered for extended periods of time. If, at any time, the trench is to be left open and unattended, it shall be secured using temporary fencing and appropriate signing.

3.2 Turnouts, Manhole Access Ports, Drains, and Other Connections

The Contractor shall tap and connect the siphon pipe to new and existing pipe as shown on the Drawings. This work includes the installation of pre-manufactured taps with the required outlet fitting, and making the connection to the turnout assembly/vault, or appurtenance.

3.3 Testing

A. Siphon pipe, except for steel, shall be tested using an interior joint test. The joint test shall be by either a pneumatic machine that spans the entire pipe joint including the coupling and weld, or a vacuum test on the coupling itself. The joint spanning machine shall be appropriately sealed around the interior of the pipe and pressurized with air to 5 psi for a minimum of 2 minutes. A joint test shall be considered to be passing if there is no noticeable drop in pressure after 2 minutes. The vacuum test shall be performed by appropriately tapping the coupling and drawing a vacuum of 5 psi. A joint test shall be considered to be passing if there is no noticeable drop in vacuum after 2 minutes. Any joint that fails shall be required to be extrusion welded and visually inspected by the Engineer. Acceptability of extrusion welding shall be at the sole discretion of the Engineer.

B. Steel siphon pipe shall have the joints non-destructive testing (NDT) tested in accordance with AWWA C206. Any joint that fails shall be field welded, retested, and then appropriately relined and recoated.

3.4 Pipeline Cleaning

At the end of the pipeline installation the entire length of the siphon pipe shall be cleaned to remove all soils, debris, foreign materials, etc.

3.5 Irrigation Caution Sign

A. The Contractor shall furnish and install the irrigation caution signs with posts as detailed on the Drawings. The number of signs and posts required to be furnished shall be the quantity listed on the Drawings.

B. The Contractor shall install the signs at the locations shown on the Drawings and as directed by the Engineer. All remaining signs and posts not required to be installed shall be delivered unassembled to the Owner.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 3

ELEVATED STEEL PIPE

PART 1 - GENERAL

1.1 Scope

A. This Specification covers the furnishing and installation of the elevated steel pipe, fittings, couplings, expansion joints, access ports, bearings, foundations, and related appurtenances. This work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment, and incidentals required to construct a complete pipeline ready for service as outlined on the Drawings and in the Specifications.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of work to be constructed. All applicable sections, as determined by the Engineer, shall control the work outlined in the Contract Documents.

1.2 Design Criteria

The elevated steel pipe, fittings, and appurtenances shall be designed for a minimum working pressure of 5 pounds per square inch (psi) at the centerline of the elevated steel pipe.

1.3 Specifications References

A. Specification references made herein for manufactured materials such as pipe, valves, and fittings refer to designations for the American Water Works Association (AWWA), American National Standards Institute, Inc. (ANSI) or to the American Society for Testing and Materials (ASTM) as they are effective on the date of call for bids and proposals.

B. The Technical Specifications apply to all Work. Specification sections that have direct reference to elevated steel pipe include, but are not limited to, the following:

- Concrete Structures
- Lost River Diversion Crossing
- Reinforced Concrete
- Turnouts
- General Earthwork and Roadways
- Mechanical Work
- Structural Steel and Metal Work
- Painting

1.4 Submittals and Working Drawings

The Contractor shall submit certified copies of mill test reports covering the physical, chemical, and impact tests of the steel for the pipeline and fabricated fittings, along with affidavits of compliance.

The Contractor shall submit qualification records of the Nondestructive Testing (NDT) personnel. Personnel shall be NDT Level II or higher, or NDT Level I working under an NDT Level II as qualified according to American Society for Nondestructive Testing, Recommended Practice No. SNT-TC-1A. Only NDT Level II or NDT Level III personnel will be accepted for interpretation of test results.

Within 45 calendar days after the manufacturing of all pipe and fittings, the Contractor shall submit an affidavit of compliance that materials and work furnished comply with applicable requirements of the referenced standards and these Specifications.

The Contractor shall provide catalog information on all materials including but not limited to couplings, expansion joints, and bearings.

1.5 Pipe Installation Plan

The Contractor and elevated steel pipe manufacturer shall prepare a detailed, written installation plan for installing and constructing the 10-foot elevated steel pipe and related appurtenances. This plan shall outline all requirements that must be complied with in order to provide full warranty of the pipe and its installation. Any recommended deviation from the Project Technical Specifications shall be noted. The plan shall be submitted to the Engineer for review 20 days prior to beginning of installation. As a minimum, the plan shall include the following:

A. An outline of the inspection procedures to be used by the pipe manufacture and all quality control procedures.

B. Proof of certification for all welders. The Contractor shall indicate certification procedures and position each welder is qualified to perform. The Contractor shall verify welders and welding operators certifications are current with the 6-month requirement specified in AWWA C206.

C. The copies of proposed welding procedures including sequence and repair procedures. The Contractor shall submit a weld map and the assigned welding procedure specification, the parts being joined, material thickness, and any requirements for post weld heat treatment.

D. The line layout plans prepared from the Drawings. Plans shall identify each pipe section laying length, piece marks, location of bends, supports, fittings, special sections, taps, or other features.

E. The detailed shop Drawings of supports and ring girders.

F. The marking diagrams showing the proposed location of shop and field weld joints.

1.6 Pipe Installation Review

The elevated steel pipe manufacturer shall provide an on-site representative to review the installation of the elevated steel pipe and to verify that proper methods and procedures are being utilized by the Contractor. The representative shall be on site at the beginning of pipe installation and a minimum of once a month thereafter during pipe installation. The representative shall make a final inspection of the installation. The representative shall verify pipe joints, coatings, alignment, supports, etc. The representative shall provide a written report of his observations and recommendations to the Engineer after each site visit.

1.7 Delivery, Storage, and Handling

A. Adequate precautions shall be taken to prevent damage to piping and protective coatings. During transporting, pipe and other materials shall be secured individually by use of padded wood spacer blocks, wood crates, or otherwise protected to prevent collision of individual pieces and accompanying damage.

B. All pipe, fittings, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall materials dropped during handling be installed or be used in the Work. Any dented or misshapen steel pipe will be rejected.

C. Hoisting of pipe shall be completed using straps with a minimum of two points of contact. Under no circumstance shall pipe be hoisted with chains.

D. All pipe, fittings, and all other materials shall be carefully inspected by the Contractor prior to installation. All defective materials shall be rejected.

E. Proper materials, tools, and equipment shall be used by the Contractor to provide safe and convenient prosecution of the work.

1.8 Testing Requirements

All welded pipe joints greater than 4 feet in diameter shall be radiographically tested in accordance with AWWA C200. Joints 4 feet in diameter or less will be accepted based on a visual examination of the weld.

1.9 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish and install the elevated steel pipe, fittings and appurtenances of the size, type, class, and material called for on the Drawings and as specified.

2.2 Elevated Steel Pipe

A. Aboveground steel pipe shall conform to the requirements of AWWA C200. The steel for the cylinder shall be a nominal 10-foot diameter with a minimum inside diameter of 9 feet, 10 inches and shall have a 50,000 psi minimum yield strength conforming to the requirements for ASTM A 572 Grade 50. Pipe 4 feet in diameter and larger shall have a minimum wall thickness of 0.50 inch.

B. All pipe sections shall be clearly marked with a serial number or other identifying mark that corresponds with the approved line diagram.

C. Steel pipe joints shall be double welded butt joints. Backing rings shall not be used.

D. Fabricated fittings shall comply with AWWA C208. Material for fabricated fittings shall be 0.50-inch thick ASTM A 572 Grade 50 for all fittings greater than 4 feet in diameter. For fittings less than 4 feet in diameter, minimum wall thickness may be reduced to 0.375 inch, but shall not be less than the adjacent pipe.

E. All flanged connections shall comply with AWWA C207 and be fabricated with AWWA Class B flanges.

F. Where pipe is embedded in reinforced concrete, a 12-inch tall by 1/2-inch thick steel ring shall be fillet welded (continuous) around the pipe and centered in the wall section.

G. Pipe and fittings shall be lined and coated with the painting system specified in Technical Specifications - "Painting." Any lining or coating damaged during installation shall be repaired as required by the coating manufacturer and approved by the Engineer.

H. Galvanic protection shall be provided for the steel pipe. A 16-ounce sacrificial zinc anode shall be connected to the steel pipe and ground at each ground-level pier (exclude Pier 8).

2.3 Couplings

Steel couplings shall have center sleeves and end rings made of carbon steel conforming to AWWA C219 with a minimum center sleeve length of 10 inches. Wall thickness of sleeve shall be at least 3/8 inch. Steel end follower rings shall be cast, forged, or hot rolled in one piece. Sleeve bolts shall be type 304 or 316 stainless steel. Gaskets shall be Nitrile rubber (Buna-N). The sleeve and follower rings shall be liquid epoxy coated and lined per AWWA C210.

2.4 Expansion Joints

Expansion joints shall be of the externally guided, slip joint type with packing gland. The expansion joint body shall be made of carbon steel matching the thickness and material properties of the pipeline. The slip pipe shall also match the thickness and material properties of the pipeline, but shall be machined and chrome plated along the sliding surface. The body and slip joint (except sliding surface) shall be liquid epoxy lined and coated per AWWA C210. Bolts shall be type 304 or 316 stainless steel. Packing shall be impregnated fibrous material and Buna-N. The expansion joint shall be designed to allow up to 4 inches of movement and shall be designed to allow replacement of the packing without taking the expansion joint out of service. Ends of the expansion joint shall be welded to the pipeline. Overall length of expansion joint shall not exceed 3 feet, unless otherwise approved by the Engineer.

2.5 Bearings

Bearings shall be 1/4-inch thick polytetrafluoroethylene (PTFE), satisfying the requirements of ASTM D 4894 or ASTM D 4895. Dimensions shall be as shown on the Drawings. The PTFE shall be bonded to the bearing plate per manufacturer's recommendations. Stainless steel base plate mating surface shall receive surface finish as specified on the Drawings.

TECHNICAL SPECIFICATIONS

SECTION 3

ELEVATED STEEL PIPE

PART 3 - EXECUTION

3.1 Installation of Pipe

A. Pipe shall be installed to the lines and grades shown on reviewed line layout diagrams. Joints shall be connected in accordance with the applicable AWWA specifications.

B. All welded joints shall be radiographically tested. Test results shall be reviewed by qualified NDT personnel and the results of the analysis along with the radiographs shall be submitted to the Engineer. Any defective areas shall be repaired and radiographed to verify the quality of the repair.

C. No pipe shall be joined when conditions exist that, in the opinion of the Engineer, are unsuitable for the joining of the pipe.

D. Pipe shall be installed and connected to supports, foundations, and appurtenances as shown on the Drawings and as required for a complete and functioning system.

3.2 Turnouts, Access Ports, and Other Connections

The Contractor shall tap and connect the elevated steel pipe to new and existing pipe as shown on the Drawings. This work includes the installation of pre-manufactured taps with the required outlet fitting, and making the connection to the turnout assembly/vault, or appurtenance.

3.3 Turnout Assembly

Turnouts shall be assembled, located, and installed as shown on the Drawings and Technical Specifications - "Turnouts."

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 4

LOST RIVER DIVERSION CROSSING

PART 1 - GENERAL

1.1 Scope

A. This Specification covers the furnishing of materials and installation of the Lost River Diversion crossing and related appurtenances. The Work includes furnishing all labor, materials, tools, equipment, and incidentals required to construct a complete Lost River Diversion crossing, ready for service, as shown on the Drawings and Specifications. The Work includes piles, foundations, water diversion and management, elevated pipelines, catwalk, wasteway, and all other work that is required.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Specifications References

A. Specification references made herein for manufactured materials such as pipe, valves, and fittings refer to designations for the American Water Works Association (AWWA), American National Standards Institute, Inc. (ANSI) or to the American Society for Testing and Materials (ASTM) as they are effective on the date of call for bids and proposals.

B. The Technical Specifications apply to all Work. Specification sections that have direct reference to Lost River Diversion crossing include, but are not limited to, the following:

- Concrete Structures
- Elevated Steel Pipe
- Turnouts
- Reinforced Concrete
- Mechanical Work
- Structural Steel and Metal Work
- Steel Piling
- Environmental/Water Management
- Painting

1.3 Submittals and Working Drawings

See Technical Specifications - "Elevated Steel Pipe" for requirements.

1.4 Installation Plan

See Technical Specifications - "Elevated Steel Pipe" for requirements.

1.5 Installation Review

See Technical Specifications - "Elevated Steel Pipe" for requirements.

1.6 Delivery, Storage, and Handling

A. Adequate precautions shall be taken to prevent damage to piping and protective coatings. During transporting, pipe and other materials shall be secured individually by use of wood spacer blocks, wood crates, or otherwise protected to prevent collision of individual pieces and accompanying damage.

B. All pipe, fittings, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall materials dropped during handling be installed or be used in the Work. Any dented or misshapen steel pipe will be rejected.

C. All pipe, fittings, and all other materials shall be carefully inspected by the Contractor prior to installation. All defective materials shall be rejected.

D. Proper materials, tools, and equipment shall be used by the Contractor to provide safe and convenient prosecution of the work.

1.7 Testing Requirements

All welded pipe joints greater than 4 feet in diameter shall be radiographically tested in accordance with AWWA C200. Joints 4 feet in diameter or less will be accepted based on a visual examination of the weld.

1.8 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

Materials for this Work are specified in other sections of these Technical Specifications. All materials shall be provided as shown on the Drawings and as specified.

2.2 Temporary Elevated Work Platform

The Contractor shall design and install any temporary work platforms that may be needed to complete the Work for the Lost River Diversion crossing as specified and shown on the Drawings.

PART 3 - EXECUTION

3.1 General

The Work for the Lost River Diversion crossing shall be provided in accordance with the Drawings and other Technical Specifications. Work shall be completed by first preparing the work area, including temporary environmental controls, then constructing the piers and foundations. The elevated steel pipe shall then be installed, as required. The catwalk, stairs, Wasteway, etc., shall then be completed.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 5

HIGHWAY 39 CROSSING

PART 1 - GENERAL

1.1 Scope

A. This Specification covers furnishing and constructing the Highway 39 crossing. This Work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment, traffic control, and incidentals required to construct the above-mentioned crossing as shown on the Drawings and in the Technical Specifications.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Specifications References

The Technical Specifications apply to all Work. Specification sections that have direct reference to Highway 39 crossing include, but are not limited to, the following:

- Siphon Pipe
- Excavation and Backfill of Trenches
- Surface Restoration
- Temporary Protection and Direction of Traffic

1.3 State Highway Crossing Permit

The Contractor is responsible for obtaining a permit to "Perform Operations Upon a State Highway" for construction activities within the Highway 39 right-of-way (R/W).

1.4 Pipe Installation Plan

The Contractor shall prepare a detailed, written installation plan for installing and constructing the Highway 39 crossing and related appurtenances. This plan shall outline all requirements that must be complied with in order to provide full warranty of the pipe and its installation. Any recommended deviation from the Project Technical Specifications shall be noted. The plan shall be submitted to the Engineer for review 30 days prior to beginning the installation. As a minimum, the plan shall include the following:

A. Estimated time of construction for installation and length of time detours will be in place.

B. Detailed plans and procedures for bedding and pipe backfill placement.

C. Details for temporary roadway restoration.

D. Details for existing structure removal and cleanup.

1.5 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish all materials required to construct the crossing as shown on the Drawings and described in the Technical Specifications.

PART 3 - EXECUTION

3.1 Staging and Timing

This Work shall be staged in accordance with the requirements of the Drawings. Prior to completing any Work in this location, the Contractor shall pothole and locate all utilities in the highway R/W. Any utilities that are in conflict with the siphon pipe shall be relocated by the utility companies prior to starting the installation of the siphon pipe. The Contractor shall be responsible for all coordination with the utility companies.

3.2 Water Control and Shoring

See Technical Specifications - "Excavation and Backfill of Trenches."

3.3 Surface Restoration

See Technical Specifications - "Excavation and Backfill of Trenches."

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 6

TURNOUTS

PART 1 - GENERAL

1.1 Scope

A. This Specification covers furnishing and constructing the turnouts. This Work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment, and incidentals required to construct the above-mentioned turnouts as shown on the Drawings and in the Specifications.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Specifications References

The Technical Specifications apply to all Work. Specification sections that have direct reference to turnouts include, but are not limited to, the following:

- Excavation and Backfill of Trenches
- Mechanical Work

1.3 Construction Staking

See the General Requirements.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish all materials required to construct the turnouts as shown on the Drawings and described in the Technical Specifications.

2.2 Vaults and Lids

A. Cast-in-Place Concrete Vaults

Refer to Technical Specifications - "Reinforced Concrete" and basic requirements of precast concrete vaults hereafter.

B. Precast Concrete Vaults

Precast concrete vaults shall conform to ASTM C 858 unless modified herein.

1. Provide precast vaults in accordance with sizes called out on the Drawings.

2. Floor and wall thicknesses shall be a minimum of 6 inches.

3. Reinforcing steel shall have a minimum cover of 2 inches.

4. Floor drains shall be cast in place during manufacturing; core drilling will not be allowed.

5. Interior floor of base section shall slope gently (do not exceed 1 percent slope) toward floor drains so that, with level installation of the vault, water will drain without aid.

6. Provide picks that do not damage reinforcing or expose reinforcement to corrosion.

7. Joints shall be sealed with Kent Seal™ mastic acrylic polymetric sealant, oring rubber gasket, or approved equal.

8. Provide knockouts ±2 inches of the largest pipe diameter that shall be used according to the Drawings. Knockouts shall be located to facilitate piping installation to the dimensions called out on the Drawings. Seal pipe penetrations by packing with non-shrink grout that conforms to ASTM C 1107.

9. Precast bases, sections, and lids shall be free from fractures, cracks, rock pockets, and exposed reinforcing.

10. Hatches shall be two-door, full-access, locking diamond plate, H-20 rated galvanized steel spring-assisted covers. Provide risers as required.

2.3 Pipe and Fittings

See Technical Specifications - "Mechanical Work."

2.4 Riprap

Riprap material shall be hard, durable, and resistant to weathering. Riprap shall be angular in shape with an apparent specific gravity of 2.5 minimum. Neither the width nor the thickness of a single stone shall be less than 1/3 its length. Gradation of riprap material must be approved by the Engineer, and shall conform to the following:

Sieve Size	% Passing
18"	100
16"	80
12"	50
8"	30
4"	10
2"	5

2.5 Hatches

Hatches shall be of the size and type called out in the Drawings. Each hatch shall be signed for "Confined Space" and "Entrance by Authorized Personnel Only." Signs shall conform to Oregon Administrative Rules 437-002-144 and 437-002-145. Hatches shall have hold-open arms.

PART 3 - EXECUTION

3.1 General

The construction of turnouts and the connection between the existing irrigation pipeline and the new siphon pipe or elevated steel pipe shall be completed in a manner that does not interrupt irrigation service during the irrigation season. In some locations, the installation of the new siphon or elevated pipe conflicts with the existing turnout. The Contractor shall complete the Work in a manner that does not interrupt the ability to acquire water during the irrigation season. The Contractor shall be responsible for locating the existing turnout piping and appropriately connecting to the new turnout. After completion of the improvements, the Contractor shall flush the lines and paint all piping that is located in the turnout vault per the requirements of Technical Specifications - "Painting."

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 7

GENERAL EARTHWORK AND ROADWAYS

PART 1 - GENERAL

1.1 Scope

A. This Specification covers the construction of temporary access roadways, permanent access roadways, and general earthwork required for structures and other improvements on the Project. The Work includes site clearing, excavation, stockpiling, embankment, backfilling, grading, subgrade preparation, base rock, etc. Work shall include furnishing all labor, equipment, materials, etc., as required to complete the required improvements.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections herein, as determined by the Engineer, shall control the work outlined in the Contract Documents.

1.2 Specifications References

The Technical Specifications apply to all Work. Specification sections that have direct reference to roadways and general earthwork include, but are not limited to, the following:

- Concrete Structures
- Elevated Steel Pipe
- Lost River Diversion Crossing
- Excavation and Backfill of Trenches

1.3 Submittals

A. Materials Certification and Testing

1. The Contractor shall submit Samples of the imported material to be utilized on the Project to the Engineer for his review. The Contractor shall also submit copies of appropriate test data that demonstrates that the materials meet the suitability requirements of the Specifications.

2. The Contractor will be responsible for performing quality control testing (see the General Requirements) and for providing certification to the Engineer that the materials meet the requirements of the Specifications.

3. Materials found to be outside of the specification limits shall be replaced with suitable material at no expense to the Owner.

B. Shoring and Bracing

The Contractor shall submit a shoring and bracing plan, stamped by a qualified Professional Engineer, to the Engineer for review 20 days prior to the start of any excavation. The design of the shoring and bracing system shall be the sole responsibility of the Contractor and his system designer.

C. Dewatering

Any required dewatering operations shall be the responsibility of the Contractor. A dewatering plan, stamped by a qualified Professional Engineer, shall be submitted to the Engineer for review 10 days prior to any dewatering operations.

1.4 Construction Staking

See the General Requirements.

1.5 Definitions

A. Clearing and Grubbing

Removal and disposal of any unwanted items such as existing curbs, sidewalks, pavement, culverts, fences, etc.; organic materials such as trees, tree stumps, brush, hedges, vegetation, roots, rubbish, posts, fences, sod, and topsoil; and any other obstacles or materials in the construction area which would prevent completing the project and are unsuitable for Site Work construction.

B. Excavation

Excavation, hauling, placement, and/or satisfactory disposal of all materials taken from within the Work area for the construction of structures, foundations, ditches, roadways, entrances, approaches, and incidental work to the lines, grades, and cross sections shown on the Drawings.

C. Backfill/Embankment

Select native earth fill or select granular backfill placed adjacent to structures or in embankment to bring grades to finish grade or to subgrade as required.

D. Subgrade Surface

Surface upon which embankment, base rock, aggregate base material, topsoil, or structures are placed.

E. Structures

Footings, foundations, retaining walls, slabs, or other man-made stationary features constructed above or below the ground surface.

1.6 Existing Utilities

See the General Conditions and General Requirements for Contract requirements for existing utilities and for preservation of survey monumentation.

1.7 Soil and Groundwater Conditions

A. Soils data and groundwater conditions when shown on the Drawings are provided for the Contractor's information. They may not be relied upon, and are a general description only. This information may or may not be shown. The Engineer assumes no responsibility for actual soil conditions.

B. Soils data and groundwater conditions, when shown, shall not relieve the Contractor from the responsibility of making additional investigations. The Contractor shall perform investigations as he deems necessary to acquaint himself with actual conditions to be encountered in performing the Work. Groundwater conditions in particular should be carefully considered and are subject to change.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish all materials required to construct the improvements as shown on the Drawings and described in the Technical Specifications.

2.2 Water for Compaction

The Contractor shall be responsible for obtaining, transporting and the application of the water. The Owner will allow the Contractor to use water from the Owner's headquarters or the Klamath Irrigation District's drain, provided the Contractor follows the requirements set forth by the Owner.

2.3 Geotextile Fabric

Geotextile fabric requirements shall be in accordance with Technical Specifications - "Excavation and Backfill of Trenches."

2.4 Aggregate Base and Base Rock

A. Aggregate Base

The aggregate base shall be a well-graded 4"-0 angular sound rock material with the fraction passing the No. 200 sieve not greater than 8 percent of the total aggregate weight. Aggregate base shall meet the durability requirements for base rock. Other materials may be considered by the Engineer; however, Samples must be submitted for review.

B. Base Rock

Base rock shall conform to the requirements of Section 02630 - Base Aggregate, "2015 Oregon Standard Specifications for Construction," for dense graded aggregate as modified hereafter. Acceptable gradation includes 3/4"-0 as selected by the Contractor.

1. Fracture of Rounded Rock

Fracture of rounded rock will be determined according to AASHTO TP 61. Provide at least two mechanically fractured faces based on 90 percent of particles retained on the 1/4-inch sieve.

C. Recycled Concrete

Concrete from the existing flume may be processed to conform to the requirements of base rock and recycled for that use on the permanent access road.

2.5 Backfill/Embankment Material

Backfill/embankment material, unless otherwise shown on the Drawings, may be obtained from on-site excavations if it is suitable for the intended purposes and approved by the Engineer. Backfill/embankment material shall be free of organic matter or any other objectionable material and shall contain no rocks larger than 3 inches in diameter within 1 foot of the pipe, rocks no larger than 6 inches in diameter may be used elsewhere and shall be at a suitable moisture content for compaction. Highly plastic or expansive clays will not be approved.

2.6 Culverts

Culverts shall be galvanized corrugated steel pipe and shall be 14-gauge with 2-2/3"x1/2" corrugations. Fabrication of pipe shall conform to AASHTO 218 Specifications. Coating shall be minimum 2-ounce zinc per square foot. Joints shall be made with corrugated steel culvert bands over 3/8-inch neoprene gaskets. Culvert bands shall be 12 inches wide.

2.7 Type 3 Catch Basin

The Type 3 catch basin shall be provided with an H-20 traffic rated grate and shall be as required by the Oregon Department of Transportation Qualified Products List (QPL). It shall be provided as a precast concrete box to be installed flush with the finished ground for a complete and operable drainage system.

PART 3 - EXECUTION

3.1 Earthwork

A. General

This Work shall consist of the excavation, embankment, backfill, and disposal of all materials of whatever nature necessary for the construction of structures and roadways defined in these Specifications and as shown on the Drawings or as required by the Engineer.

B. In-situ Moisture Content

1. Contractor should anticipate encountering excessively over-optimum (wet) soil moisture conditions during winter or spring grading or following periods of rain. Wet soils can be mitigated by:

    a. Frequent spreading and mixing during warm, dry weather.

    b. Mixing wet soil with dry soil.

    c. Removing wet soil and replacing with imported materials.

    d. Mixing soil with an approved hydrating agent such as lime or cement.

    e. Stabilizing with aggregate, geotextile stabilization fabric, or both.

2. The Contractor shall consult the Engineer prior to implementing any remedial measures.

C. Clearing and Grubbing

1. Clearing and grubbing shall include the removal and disposal of any obstructions, such as existing curbs, sidewalks, pavement, culverts, fences, etc., and organic material such as trees, tree stumps, brush, hedges, vegetation, roots, rubbish, posts, fences, topsoil, and any other obstacles or materials in the construction area which would prevent completing the Project, and which are unsuitable for road work construction.

2. All vegetation and rubbish shall be removed and disposed of by the Contractor in conformance with the requirements of local authorities controlling air pollution and solid waste disposal.

D. Roadway Excavation

1. Prior to any excavation, the area to be excavated shall be cleared and grubbed.

2. Roadway excavation shall consist of the excavation, haul, and satisfactory disposal of all materials taken from the work area for the construction of embankments, subgrade, shoulders, entrances, approaches (including excavation at private entrances outside the right-of-way), and incidental work, in accordance with the Technical Specifications and the lines, grades, and cross sections shown on the Drawings, and as required by the Engineer.

E. General Excavation (Structures)

1. Excavation for floors, footings, valve pits, and piping, etc., shall be taken to the lines and grades shown on the Drawings. Any soft or undesirable materials discovered during the excavation shall be removed and replaced with suitable fill material as defined hereafter and as reviewed by the Engineer. Over-excavation shall be avoided.

2. Excavation includes the removal of all materials of whatever nature encountered, including all obstructions.

3. Isolated areas of low slope stability, if encountered during excavation, shall be removed and backfilled as required by the Engineer. The extent of the removal shall be determined by the Engineer on a site-by-site basis.

4. All excavation shall be carefully made to avoid disturbance to subgrade soils, natural terrain, or adjacent structures outside the limits of excavation. Shoring and bracing shall be used as required to prevent such disturbance and to provide

appropriate safety protection. Tops of permanent cut slopes shall be rounded. Excavations shall extend to a sufficient distance from the Work to allow for removal of forms, inspection, etc., except where concrete is authorized by the Engineer to be deposited directly against the excavated surface.

5. The Contractor shall furnish, install, and operate all necessary machinery and equipment to keep excavations free of all water which would be detrimental to the Work, and shall dispose of any water so as not to cause damage to property, the environment, or cause a hazard to the public. Dewatering of the work area, if required, shall be performed. All water disposal shall be in accordance with appropriate regulations controlling such work. No additional payment will be made for this work regardless of the amount of water encountered in excavations. All grading around excavated areas shall be done in such a manner so as to provide adequate surface drainage during construction.

6. Excess excavated material not used for backfill or embankment shall be disposed of over the siphon pipe as shown on the Drawings. Material disposed of on the Site shall be uniformly graded and sloped so as to blend into the surrounding terrain.

7. The Contractor shall notify the Engineer at least one working day in advance of completion of any structure excavation to allow inspection of the exposed subgrade before it is covered with any construction materials.

F. Water Control

The Contractor shall control all water entering any excavation and shall provide all dewatering measures required to protect the work areas and provide suitable support for all structures as required by the Engineer.

G. Structural Subgrade

The Contractor shall take extreme care not to disturb the in-place subgrade soils supporting any structural improvements during the excavation operations. If in-place subgrade soils become disturbed, they shall be compacted by approved means to 95 percent maximum density as determined by ASTM D 698.

H. Backfill/Embankment

1. Backfill/embankment as used hereafter shall refer to all backfill and embankment required to bring the Site to the lines and grades as shown on the

Drawings. All organic matter, debris, and other unsuitable materials shall be removed from the work area prior to placing any backfill or embankment. The surface shall then be uniformly graded and compacted as specified hereafter.

2. Backfilling adjacent to concrete structures shall not be performed until the concrete has been in place 14 days or attained one-half its design strength unless approved by the Engineer. Damage to structures, pipes, etc., caused by the backfill and compaction operation will be repaired by the Contractor at his expense.

3. Backfill/embankment and select backfill/embankment material shall be brought to the proper moisture content and spread evenly in successive layers as directed by soil type and compaction equipment being utilized and shall be compacted to 100 percent of ASTM D 698 for all backfill/embankment supporting structures, floor slabs, etc., or as required by the Engineer. Backfill/embankment not supporting structures shall be compacted to 95 percent of ASTM D 698. Compaction equipment shall be suitable for the soil being compacted.

I. Benching and Keyways

Benching and keyways where embankment is to be place against existing subgrade or existing grade, that is sloped at greater than 10 horizontal to 1 vertical, the Contractor shall:

1. Excavate horizontal benches a minimum of 5 feet wide and located at vertical intervals of not more than 5 feet to provide for placement and compaction of the new fill on horizontal surfaces.

2. Excavate keyway along the base of the existing slope:

   a. Extend the keyway at least 3 feet into competent native soil.

   b. Width of keyway shall be a minimum of 15 feet.

   c. Keyway side slopes shall be as determined by the Engineer in the field.

J. Balancing Earthwork

1. It shall be the Contractor's responsibility to make his own determination of quantities required to complete the Work. Any imbalance in the actual earthwork which may occur shall be adjusted by either of the following methods.

a. When sufficient material is not available from the excavation areas to construct the embankments, the Contractor shall arrange for and obtain borrow material to complete the Work. Borrow material shall be equal to or better than the on-site embankment material.

b. When excess material exists beyond that required to complete the embankments, the Contractor shall dispose of the excess material over the siphon pipe as shown on the Drawings.

K. Finishing of Roadway Subgrades

1. The Contractor shall grade the subgrade for the permanent access road to a uniform and smooth grade. The subgrade shall be compacted to 95 percent of ASTM D 698.

2. Upon completion of the subgrade and prior to placement of the geotextile fabric, where required, and base rock, the Contractor shall load test the finished subgrade surface. The load test shall consist of slowly driving a loaded dump truck over the road surface. A load test is not required where the roadway crosses the siphon pipe. The dump truck shall have a minimum capacity of 10 cubic yards. The Engineer and Contractor shall note and mark any soft areas. The Contractor shall excavate out and either replace unsuitable material or properly compact all soft areas in order to provide a firm base that conforms to the Specifications. Any soft areas that occur as part of the Project because of over-watering, improper compaction, weather, etc., shall be replaced at no cost to the Owner. If the soft areas are due to existing condition beyond the Contractor's control, such as existing water lines leaking, swampy areas, springs, etc., then the Contractor will be additionally compensated by approved Change Order.

3. When determined necessary by the Engineer, and after significant effort has been made by the Contractor to process and compact native and subgrade soils, the Contractor shall perform subgrade stabilization work when required by the Engineer. All subgrade stabilization work must be authorized in writing by the Engineer by Change Order.

L. Dust and Mud Control

1. The Contractor shall be responsible for controlling dust and mud caused by his operations. This shall include, but not be limited to, street work, trench work, shoulder work, driveways, connecting streets, etc. The Contractor shall be

responsible for controlling dust on the roadway surface until the time the Work is complete.

2. Dust and mud control performed by the Contractor is considered a normal part of the construction Project. No measurement or payment shall be made for this Work. If the Contractor fails to properly control the dust and mud, the Engineer may request him to do so in writing. If, after 24 hours from this request, the Contractor has not corrected the dust or mud problem, the Owner may elect to have the corrective work performed and deduct the cost of dust and mud control or removal from payments owed the Contractor on the Project.

M. Erosion Control

1. The Contractor shall maintain earthwork surfaces true, smooth, and protected from erosion.

2. The Contractor shall construct erosion control measures identified in the Stormwater Pollution Protection Plan prior to any clearing or grading activity.

3.2 Geotextile Fabric

A. Scope

This Work consists of furnishing and placing geotextile fabrics under embankments, over roadbed subgrade, and at other locations as shown on the Drawings or directed by the Engineer.

B. Fabric

See Technical Specifications - "Excavation and Backfill of Trenches" for fabric requirements. Fabric placed for subgrade stabilization under embankments or over roadbed subgrade shall be placed parallel to the centerline of the roadway, with placement starting at the low side of the super elevation or crown. The fabric shall either be sewn together at all longitudinal and transverse edges or overlapped a minimum of two feet at all edges. Transverse overlaps shall be made in the direction of base material placement.

3.3 Aggregate Base and Base Rock

A. Scope

Aggregate base and base rock shall be placed to the lines, depths, and grades shown on the Drawings. Prior to placement of the materials, each succeeding lift, i.e., subgrade, aggregate base, base, etc., shall be properly constructed and reviewed by the Engineer.

B. Construction

1. The construction procedure here described shall be understood to apply to each of the courses and/or layers of which the road base is to be constructed. The construction of the road base shall include the construction of base on approach roads, driveways, connecting roads and connecting streets as shown on the Drawings.

2. After the subgrade is brought to the proper line, cross section and compaction, the aggregate materials, where required, shall be spread and shaped as required. The spreading and shaping of the aggregate materials shall be so performed as to prevent separation of the coarser material from the finer materials including the use of adequate water.

3. The aggregate materials shall be brought to proper moisture content as required for compaction and compacted to 95 percent of maximum density as determined by ASTM D 698.

4. The finished surface when tested with a 10-foot straightedge shall not vary from the testing edge by more than 0.05 foot at any point.

5. Following construction of each lift in roadways, the Contractor shall do such blading, brooming, watering, and other work as necessary to prevent raveling and rutting. These operations are to be continued as required until the lift is covered by a following lift or until all Work to be done under the Contract is completed. If the required compacted depth of the base rock exceeds 6 inches, it shall be constructed in two or more lifts, each lift not exceeding 6 inches in depth.

6. Upon completion of the aggregate materials in roadways, the Contractor shall load test the finished base surface. The load test shall consist of slowly driving a loaded minimum 10 yard dump truck over the road surface. All soft areas shall be noted. The Contractor shall excavate and/or compact all soft areas in order to

provide a firm base that conforms to the requirements of the Technical Specifications. This Work shall be done at the Contractor's expense.

3.4 Culverts

A. General

Culverts shall be installed in the location and on the grade shown on the Drawings and as specified herein.

B. Installation

Culverts shall be bedded and backfilled uniformly on both sides of the pipe at the same time to prevent displacement or buckling of the pipe. Bedding material shall be worked carefully under the pipe haunches and then compacted. See Technical Specifications - "Excavation and Backfill of Trenches."

3.5 Drainage Ditches

Drainage ditches shall be constructed in the locations shown on the Drawings in accordance with the details and as specified herein.

3.6 Inlet Structure Dike Raising

The dike at and upstream of the inlet structure shall be raised as shown on the Drawings, using compacted select backfill and/or base rock as specified in Technical Specifications - "Excavations and Backfill of Trenches." Base rock must be used where shown and may also be used where select backfill is shown. The Work shall be completed by grubbing off all vegetation on the surface, placing the fill material on the dike surface, and compacting it to the finished lines and grades shown on the Drawings. In sloped areas where compaction equipment will not effectively work, the Contractor shall bench the area as needed to properly operate the compaction equipment. The fill shall be compacted to 95 percent of the maximum laboratory density as determined by ASTM D 698.

3.7 Temporary Access Road

The Contractor shall provide temporary access roads where shown on the Drawings and as required to complete the Work. The temporary access roads shall be constructed, as required, for the traffic to be placed on them and in a manner as to prevent rutting and other damage to the existing soils. At the completion of the Project, the Contractor shall restore all temporary access roads to a condition equal to or better than the pre-construction condition, as determined by the Engineer and landowner. To verify pre-construction conditions, the

Contractor shall video all temporary access roads prior to construction; the video shall have a date and time stamp.

3.8 Restoration, Finishing, and Cleanup

A. Prior to the final inspection of the Work, the Contractor shall restore or replace all paved surfaces, graveled surfaces, curbing, sidewalks, trees and shrubbery, lawns, pastures and fences, or other existing facilities disturbed or damaged by his Work.

B. The Contractor shall clean up and leave in a neat, orderly condition the right of way, and other property occupied in connection with the Work.

C. The Contractor shall reshape, clean out ditches, retrieve shoulders and slopes, and do all other work required to bring the Project to the final lines, grades, and condition called for. The finished Project shall be clean and neat in its final appearance.

D. See Technical Specifications - "Surface Restoration" for additional requirements.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

4.2 Earthwork Quantities - General

The intent is for earthwork to be performed incidental to other Work items, unless otherwise noted in the Technical Specifications - "Measurement and Payment." No field measurement of earthwork quantities shall be made. The Contractor shall make his own determination of the actual quantity of earthwork required to complete the Work as specified and as shown on the Drawings.

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TECHNICAL SPECIFICATIONS

SECTION 8

DEMOLITION

PART 1 - GENERAL

1.1 Scope

A. This Specification covers the demolition and removal of all existing flume structures and equipment proposed for removal at the proper times during the project construction.

B. All Work required is not described in detail in this section. The purpose of this section is to provide an overview of the Work required. Refer to the General Requirements for specific construction sequencing and its relationship with demolition.

1.2 Specifications References

The Technical Specifications apply to all Work. The specific Technical Specifications references related to demolition are as follows:

- Temporary Protection and Direction of Traffic
- Surface Restoration

1.3 Demolition Plan

The Contractor shall prepare a written demolition plan for review by the Engineer 30 days prior to undertaking any demolition work. As a minimum, the plan shall include the following:

A. Timing and staging of the Work

B. Crushing and metal removal operations

C. Protection of all adjacent improvements

D. Bridge removal

E. Safety

F. Restoration

PART 2 - MATERIALS - NOT USED

PART 3 - EXECUTION

3.1 Elevated Concrete Flume

A. General

The existing elevated concrete flume to be removed consists of precast reinforced concrete "tubs," reinforced concrete beams, precast reinforced concrete beams, precast reinforced concrete bents, and concrete pedestal footings. For typical dimensions, see original as-built drawings included with demo plan, Drawing Sheets D6 through D8. Note that bents vary in height from 1 foot to 15 feet. See Demo Plan Sheets D1 through D4.

B. Disposal

Unless noted otherwise, all pieces of elevated concrete flume to be removed shall be recycled by means of crushing to be reused on site for permanent access road base or other uses as approved in writing by the Engineer. Reused crushed concrete shall be crushed to 4"-0 and have steel removed by magnetic means.

C. Variances

The structure has undergone various repairs including, but not limited to, bent members encased in 4 to 6 inches of concrete, the addition of steel-encased concrete columns, and steel plate bolted gussets or laps. Demolition of all repairs encountered is considered incidental to elevated concrete flume demolition.

D. The Contractor is responsible for protecting adjacent structures, roadways, equipment, etc., from damage during demolition activities. Any damage shall be repaired or replaced at no cost to the Owner.

3.2 Temporary Shoring

A. All temporary steel shoring on the existing flume shall be disassembled and returned to the Owner in an undamaged condition. Temporary steel shoring consists of clamps, fittings, nuts and bolts, structural steel members ("W"-sections, angle pieces, and plates), and adjustable steel jack posts.

B. Concrete pedestal footings for temporary shoring shall be crushed and reused in the same manner as the elevated flume unless noted otherwise or approved of in writing by the Engineer.

3.3 Other Items

A. Turnouts

Remove and dispose of existing turnout gates and concrete structures. Remove and dispose of existing pipe to the extent necessary to construct and connect new turnouts.

B. Canal Lining and Transitions

Remove and dispose of existing concrete canal lining and flume-to-canal concrete transitions to the extent necessary to construct a new structure.

C. Highway 39 Bridge

Demolition of the single span, 85-foot reinforced concrete structure crossing OR39 is considered incidental to elevated concrete flume demolition. The bridge abutments shall be demolished to a minimum depth of 3 feet below existing invert elevation of the ditch lines. The area shall be restored and compacted to provide a neat and clean surface that has no remaining evidence of the bridge in the area.

D. Lost River Diversion Channel Bridge

Demolition of the bridge over the diversion channel is considered a part of the demolition work. The Contractor shall design and provide an appropriate debris containment platform under the bridge. The design shall be submitted to the Engineer for review and approval. The Contractor shall be solely responsible for the safety and adequacy of the debris platform.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

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TECHNICAL SPECIFICATIONS

SECTION 9

EXCAVATION AND BACKFILL OF TRENCHES

PART 1 - GENERAL

1.1 Summary

This Specification covers the excavation and backfill of trenches for the installation of the siphon pipe, turnouts, drain lines, and other underground utilities.

1.2 Definitions

A. Foundation material or stabilization fabric will only be required when standard bedding requirements will not adequately support the pipe as required by the Engineer.

B. Backfill is the filling of the trench to the existing ground level or the finish grade line shown on the Drawings.

C. General trench excavation shall include whatever materials that are encountered (except solid rock) to the depths shown on the Drawings or as required to properly install the pipe.

D. Solid Rock

1. Solid rock is defined as being rock formations other than cemented gravels that require hard ripping, jackhammering, blasting, or other extra work beyond the capability of heavy-duty trench excavating equipment such as a Caterpillar 235 or 345B Excavator.

2. Cemented gravel excavation may be included as "Rock Excavation" when said excavation requires hard ripping, jackhammering, or blasting and ONLY when, in the opinion of the Engineer, such conditions were unforeseen and are beyond the capability of heavy duty trench excavating equipment such as a Caterpillar 235 or 345B Excavator.

1.3 Submittals

A. Materials Certification and Testing

1. The Contractor shall submit Samples of the imported material to be utilized for backfill of trenches on the Project to the Engineer for his review. The Contractor shall also submit copies of appropriate test data that demonstrates that the materials meet the suitability requirements of the Specifications.

2. The Contractor will be responsible for performing quality control testing (see the General Requirements) and for providing certification to the Engineer that the materials meet the requirements of the Specifications.

3. Materials found to be outside of the specification limits shall be replaced with suitable material at no expense to the Owner.

B. Shoring and Bracing

The Contractor shall submit a shoring and bracing plan, stamped by a qualified Professional Engineer, to the Engineer for review 20 days prior to the start of any excavation. The design of the shoring and bracing system shall be the sole responsibility of the Contractor and his system designer.

C. Dewatering

Any required dewatering operations shall be the responsibility of the Contractor. A dewatering plan, stamped by a qualified Professional Engineer, shall be submitted to the Engineer for review 10 days prior to any dewatering operations.

1.4 Safety

A. See requirements for Project safety in the General Conditions and General Requirements.

B. The determination of the safe trench width is the sole responsibility of the Contractor.

1.5 Existing Utilities

See the General Conditions and General Requirements for Contract requirements for existing utilities and for preservation of survey monumentation.

1.6 Soil and Groundwater Conditions

A. Soils data and groundwater conditions when shown on the Drawings are provided for the Contractor's information they may not be relied upon, and are a general description only. This information may or may not be shown. The Engineer assumes no responsibility for actual soil conditions.

B. Soils data and groundwater conditions, when shown, shall not relieve the Contractor from the responsibility of making additional investigations. The Contractor shall perform investigations as he deems necessary to acquaint himself with actual conditions to be

encountered in performing the Work. Groundwater conditions in particular should be carefully considered and are subject to change.

PART 2 - MATERIALS

2.1 Foundation Material

Foundation material shall be well-graded 2-1/2"-0 or 1-1/2"-0 crushed rock.

2.2 Pipe Bedding

Pipe bedding shall be well-graded 3/4"-0 crushed rock, base rock, or approved equal.

2.3 Select Backfill

A. Select backfill shall consist of material excavated from the trench. Select backfill material shall be free of vegetative matter, boulders (10-inch plus), frozen material, saturated material, and any other unsuitable material, and shall have a moisture content that will allow for the required compaction of the select backfill material. Use of backfill material containing consolidated masses 10-inch in diameter or greater is prohibited.

B. When necessary, the Contractor shall selectively separate suitable select backfill material from unsuitable excavated material.

C. The Contractor shall process, as required, any material that is excavated and is being used as select backfill so it meets the requirements of the select backfill.

2.4 Drain Rock

Drain rock shall be 3/4-inch to 1/2-inch uniformly sized crushed rock. The rock shall be sound and durable.

2.5 Controlled Density Fill (CDF)

A. Controlled density fill material shall consist of cement, sand or pea gravel, Fly Ash Pozzolanic, and Type II cement.

B. The sand and other aggregates shall generally conform to the requirements of ASTM C 33.

C. Air-entraining agent shall be added at the rate of 3 to 5 oz. per cubic yard.

D. The material shall have a 28-day compressive strength of 400 to 500 psi and have a slump of 7 inches plus or minus 1-1/2 inches at the time of placement. The Contractor shall provide a mix design and data on the controlled density fill material he proposes to use along with typical compression test results.

E. Set accelerator may be used in the CDF only, shall be a non-chloride type, and shall conform to ASTM C 494.

2.6 Flowable Controlled Density Fill

Flowable controlled density fill material shall be CDF material as described above with appropriate additives to be sufficiently flowable for placement, without voids, under the 10-foot piping as shown on the Drawings. The Contractor shall provide a mix design and data on the flowable controlled density fill material he proposes to use along with typical compression test results. Modifications to the mix design may be required in order to best meet field conditions for the pipe bedding.

2.7 Geotextile Filter Fabric and Woven Geotextile Fabric

A. Woven geotextile fabric shall be Mirafi 500X or approved equal.

B. Geotextile filter fabric shall be Mirafi 140N Fabric or approved equal.

PART 3 - EXECUTION

3.1 Clearing and Grubbing

A. Contractor shall do all clearing and grubbing and removal of structures, etc. necessary to permit proper installation of the pipeline and to eliminate the possibility of stumps, logs, brush, or rubbish being mixed with the backfill material. A sufficient amount of all stumps and stump roots shall be removed so that any future removal of any remaining parts of the stumps and/or roots will not damage the pipeline. All stumps, roots, logs, brush and rubbish shall be removed and disposed of in conformance with the requirements of local authorities controlling air pollution, and solid waste disposal.

B. Should the area in which construction takes place be served by rural mail carrier service, the Contractor shall cooperate with the mail service and re-install, in a convenient location, any rural mail boxes which will have to be removed or be blocked by construction operations. As soon as the Work is completed, all mail boxes removed shall be replaced undamaged in their original location.

C. As soon as the Work is completed, all signs, guardrails, utility poles, fences, etc., that were moved for the construction operation shall be replaced undamaged in their original location or as shown on the Drawings. Damaged items shall be replaced by the Contractor with new items of equal quality.

3.2 Cutting of Asphalt Pavement

A. Where the excavation is made in a paved street, the asphalt surface shall be cut on each side of the trench prior to excavation, to provide a vertical joint in the surface. Cutting of the asphalt will be made with a saw designed for the cutting of asphalt.

B. The use of a jackhammer, wheel cutter, or other similar tool may be allowed by the Engineer only where the Contractor can demonstrate that the alternate method provides a neat straight edge.

C. Following proper backfill and compaction of his excavation, as specified herein, the Contractor shall repair streets or replace driveways in conformance with the Drawings, or, if no Drawing is provided, equal to the condition prior to removal.

3.3 Trench Excavation

A. General

The Contractor shall perform trench excavation work in such a manner to prevent disturbance to the existing soils below the excavation limits. When solid rock is encountered in trench excavation, the Engineer shall be notified.

B. In-situ Moisture Content

1. The Contractor should anticipate encountering excessively over-optimum (wet) soil moisture conditions during winter or spring grading or following periods of rain. Wet soils can be mitigated by:

   a. Frequent spreading and mixing during warm, dry weather.

   b. Mixing wet soil with dry soil.

   c. Removing wet soil and replacing with imported materials.

   d. Mixing soil with an approved hydrating agent such as lime or cement.

   e. Stabilizing with aggregate, geotextile stabilization fabric, or both.

2. The Contractor shall consult the Engineer prior to implementing any remedial measures.

C. Trench Width

1. The trench width in the pipe zone shall be as shown on the Drawings.

2. The maximum clear width above the top of the pipe will not be limited except in cases where excess width of excavation would cause damage to adjacent structures or utilities.

D. Unsuitable Material

When in-place soil conditions exist in the bottom of the trench that are unsuitable for proper pipe installation, the Contractor shall immediately notify the Engineer. The Engineer shall evaluate the on-site conditions and shall develop a plan to address the unsuitable conditions. A Change Order, if necessary, will be prepared to address any additional Work required by the Contractor.

E. Erosion Control

1. The Contractor shall protect all work areas from erosion.

2. The Contractor shall construct erosion control measures identified in the Stormwater Pollution Protection Plan prior to any clearing or grading activity.

F. Exploratory Work

Contractor shall perform appropriate exploratory work to locate existing utilities or other existing improvements prior to proceeding with Project improvements.

3.4 Shoring and Bracing of Trenches

A. The Contractor shall adequately shore and brace the trench during excavation whenever necessary to satisfy trench safety standards, prevent cave-ins, or to protect adjacent structures or property. Where shoring and bracing are used, the Contractor shall adjust trench widths for the bracing material accordingly.

B. The shoring must be kept in place until the pipe has been placed, backfilled at the pipe zone, tested for defects, and repaired if necessary. All shoring, and bracing of trenches shall conform to the requirements of the public agency having jurisdiction.

3.5 Dewatering Excavated Areas

A. All groundwater, seepage, or stormwater that may occur or accumulate in the excavation during the progress of the Work shall be removed. In areas where the nature of soil and hydrostatic pressures are of such a character as to develop a quick condition in the earth mass of the trench, a dewatering operation shall be conducted so that the hydrostatic pressure will be reduced to or near zero in the immediate vicinity of the trench.

B. Any required dewatering operations shall be the responsibility of the Contractor.

C. All excavations shall be kept free of water during the construction or until otherwise requested by the Engineer.

D. Contractor shall dispose of all waste and water removed from the trench. Disposal shall be in accordance with all state and local regulations.

3.6 Location of Excavated Materials

A. During trench excavation, the excavated material shall be located within the construction easement or right-of-way so that the excavated material will not obstruct any private or public traveled roadways or cause undue damage to the roadways.

B. Contractor shall provide means of containing overly saturated soils, i.e., muck, or remove the muck from the Work area as it is excavated, if such soils are encountered in the excavation. The intent is to prevent excessive damage or disruption to street rights-of-way or easement beyond what would normally occur during such Work. Pile and maintain material from trenches so that the toe of the slope of the material excavated is at least two feet from the edge of the trench. It shall be the Contractor's responsibility, however, to determine the safe loading of all trenches.

3.7 Disposal of Excavated Materials

The Contractor shall dispose of all excavated material, which is not required for, or is unsuitable for, trench backfill over the siphon pipe as shown on the Drawings.

3.8 Trench Backfill

A. All backfill material shall be placed into the trench so that free fall of the materials on the pipe is prevented. Under no circumstances shall sharp or heavy pieces of material be allowed to drop directly onto the pipe. Methods of backfilling, other than as specified herein, shall be used only upon the approval of the Engineer.

B. Bedding, Select Backfill, and Drain Rock - Siphon Pipe

1. The siphon pipe shall be installed by excavating the trench while taking care not to disturb the trench bottom soils. The drain rock and drain pipe shall be installed in the trench bottom and shaped to facilitate installation of the siphon pipe as shown on the Drawings. Drain rock shall be tamped and/or compacted in place using a static compactor. A vibratory compactor should not be used on the drain rock as it may cause the native soils to "quicken" and infiltrate into the drain rock.

2. Once the drain rock is in place and compacted, the geotextile filter fabric shall be laid on top of the rock and pulled tight. Seams in the fabric shall be made by overlapping adjoining edges a minimum of 12 inches.

3. Small piles of bedding material shall be placed on the fabric under the pipe to support the pipe and facilitate the installation of the flowable controlled density fill (CDF) to the proper thickness. The spacing of the small piles of bedding material shall be as required by the pipe manufacturer to ensure the pipe is installed to the correct lines and grades.

4. Flowable CDF shall be placed underneath the pipe as shown on the Drawings. It shall be placed on one side until it flows under the pipe to ensure complete contact with the pipe wall in order to provide adequate pipe support. The flowable CDF shall be placed in lifts as required to ensure the pipe does not float from the design lines and grades. The final installation of the flowable CDF shall provide complete support of the pipe to the depths as shown on the Drawings.

5. Bedding material shall be placed on both sides of the pipe to a completed, compacted depth of 12 inches above the spring line of the pipe. Bedding shall be installed and compacted in maximum 12-inch deep lifts placed equally on each side of the pipe. Bedding material shall be compacted to 88 percent of the maximum density as determined by ASTM D 698.

6. Once the bedding material is properly installed, the pipe shall be covered with compacted select backfill to the minimum depths and lines as shown on the Drawings. Select backfill shall be placed in 12-inch lifts placed equally on each side of the pipe and compacted to 88 percent of the maximum density as determined by ASTM D 698 using appropriate compaction equipment that will not displace or damage the pipe. A written plan for placing backfill material around the pipe shall be submitted by the Contractor for review by the Engineer 20 days prior to the start of any trench backfilling operations.

7. Excess excavated material may be wasted on site by adding additional cover over and around the siphon pipe, as approved by the Engineer.

C. Bedding and Select Backfill - Other than 10-foot Diameter Pipe

1. A minimum 4-inch depth of bedding material shall be placed on the trench bottom, compacted to 90 percent of the maximum density as determined by ASTM D 698 and smoothed to provide uniform bedding so the pipe is supported along its full length and not by the bells. Bell holes at each joint shall be provided to ensure support along the entire pipe length.

2. It shall be understood that the 4-inch depth is a minimum depth only, not an average depth and does not preclude the Contractor at his option from placing additional depth of bedding to facilitate his Work. Once the pipe is properly installed, the bedding material shall be brought up to the spring line of the pipe in lifts and compacted to 90 percent density. Care shall be used to ensure that the bedding material is properly worked under the haunch of the pipe for its full length. No additional payment will be made to the Contractor should he elect to use additional bedding material for his convenience. Payment for any additional bedding material used as foundation material must be approved by the Owner prior to any Work being performed.

3. Bedding material shall then be brought up from the spring line to the minimum distance above the top of the pipe shown on the Drawings, leveled and compacted to 90 percent of ASTM D 698 density. Select backfill shall be placed on top of the bedding material to finish grade. Appropriate compaction equipment that will not displace or damage the pipe shall be used. Compaction of the bedding and select backfill by hand tamping will be allowed if the 90 percent density is achieved; otherwise, mechanical tamping will be required.

4. When an open-graded material is used for bedding or foundation material to facilitate trench dewatering, the open graded material shall be placed to the spring line of the pipe. The Contractor shall make provisions to ensure that fines from the select backfill do not migrate into the open graded bedding or foundation material. To prevent soil migration the Contractor may use any of the following:

   a. Provide a properly graded select backfill approved by the Engineer;

   b. Provide an approved fiber/fabric between the open graded bedding material and select backfill;

c. Hydraulically jet select backfill fines into open graded bedding material after dewatering is complete and before general backfill is placed; or

d. Provide an alternative approved by the Engineer.

5. All select backfill material shall be pushed first onto the slope of the backfill previously placed and allowed to roll down into the trench. The Contractor shall not push the backfill material directly into the trench until at least two feet of cover is provided over the pipe.

6. Compaction of Select Backfill

a. In roadways, driveways, under curbs and sidewalks, as shown on the Drawings, or as required by the Engineer, select backfill shall be placed in horizontal lifts not to exceed 12 inches in depth and compacted to 93 percent of the laboratory density as determined by ASTM D 698. In state highway rights-of-way, trench backfill shall be placed and compacted as specified by the Department of Transportation. The method of compaction shall be selected by the Contractor.

b. The Contractor shall exercise extreme care to avoid damage to the pipe during compaction of the trench.

c. In sections where specific compaction requirements are not specified or required by the Engineer, select backfill shall be compacted, as a minimum, to a density equal to that of the natural ground adjacent to the trench. All trenches shall be maintained for a period of one year after final acceptance of the Project. Any settlement of the trenches during the one-year guarantee period shall be remedied promptly at the request of the Engineer and at no additional cost to the Owner.

d. CDF Placement (Highway Crossing)

1) When called for on the Drawings, Contractor shall backfill trenches with CDF.

2) CDF shall be placed in the trench at equal depths on each side of the pipe in such a manner that will prevent floatation or displacement of the pipe. CDF shall be placed in layers and allowed to set up prior to placing the next lift. Place CDF to ensure

the trench is completely filled to the lines and grades called for on the Drawings.

3) CDF shall be protected from traffic loads for a 24-hour period, after which required surface restoration work may be performed.

D. Canal or Irrigation Ditch Crossing

1. Where the trench crosses a canal, irrigation ditch or culvert, the backfill shall be compacted the entire trench depth with mechanical tampers to 95 percent of the laboratory density as determined by ASTM D 698.

2. All backfill material in the canal or ditch liner shall be imported clay or a soil/bentonite mixture as approved by the Engineer. Unless required otherwise, the soil/bentonite mixture shall be 1 part bentonite to 10 parts soil by weight. A high grade bentonite material shall be used.

3. The ditch lining, conduit or pipe shall be restored to its original condition. The crossing shall be water tight and free of any leakage or seepage. The Contractor shall be fully responsible for repairing canal or ditch banks at no cost to the Owner should leakage occur at the crossing.

E. Bentonite Cutoff Wall

The bentonite cutoff wall shall be constructed as shown on the Drawings. It shall be constructed of a soil/bentonite mixture at a ratio of 1 part bentonite to 10 parts soil. The soil shall be made up of native soils that are within 2 percent of optimum moisture content prior to mixing with the bentonite. The soil and bentonite mixture shall be placed and compacted within one hour of mixing, to 90 percent of the soil maximum laboratory density as determined by ASTM D 698.

3.9 Dust and Mud Control

1. The Contractor shall be responsible for controlling dust and mud caused by his operations. This shall include, but not be limited to, street work, trench work, shoulder work, driveways, connecting streets, etc. The Contractor shall be responsible for controlling dust on the roadway surface until the time the Work is complete.

2. Dust and mud control performed by the Contractor is considered a normal part of the construction Project. No measurement or payment shall be made for this

Work. If the Contractor fails to properly control the dust and mud, the Engineer may request him to do so in writing. If, after 24 hours from this request, the Contractor has not corrected the dust or mud problem, the Owner may elect to have the corrective work performed and deduct the cost of dust and mud control or removal from payments owed the Contractor on the Project.

3.10 Highway 39 Surface Restoration

See Technical Specifications - "Surface Restoration" for both temporary and permanent restoration requirements.

3.11 Restoration, Finishing, and Cleanup

A. The Contractor shall restore or replace all paved surfaces, graveled surfaces, trees and shrubbery, lawns, pastures and fences, or other existing facilities disturbed by his Work unless otherwise specified. Restoration and cleanup shall be a continuing operation and shall be diligently pursued until completed.

B. All surplus material and temporary structures as well as excess excavation shall be removed by the Contractor and the entire Site of Contractor operations shall be left in a neat and clean condition.

C. Surface restoration shall be performed in accordance with Technical Specifications - "Surface Restoration." All other existing facilities shall be replaced or restored equal to their original condition.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis of Measurement and Payment

A. Unless specifically listed in the Bid Schedule, there will be no measurement or payment made for general trench excavation, shoring, and backfill of trenches, including bedding and select backfill. All costs shall be included in other appropriate bid items listed in the Bid Schedule. See Technical Specifications - "Measurement and Payment" for a description of the bid items for this Project.

B. Unless specifically listed in the Bid Schedule, there will be no measurement or payment made for general trench excavation, backfill of trenches, including drain rock, CDF, bedding, and select backfill. All costs shall be included in other appropriate bid items listed in the Bid Schedule.

4.2 Shoring and Bracing

Unless provided for in the Bid Schedule, no additional payment will be made for shoring or bracing of trenches.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 10

REINFORCED CONCRETE

PART 1 - GENERAL

1.1 Scope

This section covers the mixing, placing, finishing, curing, and repairing of reinforced concrete. Portland cement concrete shall be composed of cement, aggregates, water, admixtures, etc., as specified or approved. The required proportions shall be assembled, well mixed, transported, placed, consolidated, finished, and cured as hereinafter specified. Concrete shall be uniformly dense and sound, free from faults, cracks, voids, honeycomb, and other imperfections.

A. Concrete shall conform to the requirements of these Specifications and to the latest issue of the "Building Code Requirements for Reinforced Concrete" (ACI 318), "Specifications for Structural Concrete for Buildings" (ACI 301), and "Standard Specification for Ready Mixed Concrete" (ASTM C 94) except as modified below.

B. The Specifications in this section are general in nature and, therefore, some of the items outlined may not apply to the Work required. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Specifications References

The Technical Specifications apply to all Work. The specific Technical Specifications references related to reinforced concrete are as follows:

- Concrete Structures
- Elevated Steel Pipe
- Lost River Diversion Crossing

Specification references for manufactured materials refer to designations for ASNI, ASTM, and ACI as they are effective on the Bid Date.

1.3 Delivery, Handling, and Storage

A. All cement shall be stored in a suitable, weather-tight building in such a manner as to protect the cement from dampness and to permit easy access for proper inspection. Storage bins for bulk cement shall be weather-tight and constructed so that there will be no dead storage. If there is reason to believe that dead storage exists, the bins shall be emptied completely at least every four months.

B. Fine and coarse aggregates shall be stored and measured separately. Aggregates shall be protected from contamination with dust, dirt or other foreign materials.

C. Steel reinforcement not placed in the Work shall be stored under cover to prevent rusting, and shall be placed on blocking such that no steel touches any ground surface.

1.4 Submittals

A. Reinforcing Steel

1. Before ordering reinforcing steel, the Contractor shall submit all order lists and bending diagrams for review by the Engineer.

2. Review of order lists and bending diagrams by the Engineer shall in no way relieve the Contractor of the responsibility for correctness of such lists and diagrams.

3. Any expense incidental to the revision of materials furnished according to such lists and diagrams to make the material comply with the Drawings shall be borne by the Contractor.

B. Concrete Mix Design

Sixty days prior to placing any concrete on the Project, the Contractor shall submit the concrete mix design(s) he proposes to use for review by the Engineer.

C. Additives and Curing Compounds

Sixty days prior to placing concrete on the Project, the Contractor shall submit information on all additives, curing compounds, etc., he proposes to use for review by the Engineer

PART 2 - MATERIALS

2.1 Portland Cement

Portland cement shall conform to the requirements of ASTM C 150, for Type I - II cement. The Engineer may direct the use of Portland cement of a type other than that specified in the Contract Documents, in which case the Owner will pay the additional cost, if any, for the cement required over the cost of that specified, or shall receive appropriate credit for any cement required of a lesser cost than that specified.

2.2 Aggregates

A. General

1. All aggregates for concrete shall conform to the Specification for "Concrete Aggregates" (ASTM C 33). No aggregate shall be incorporated into the Work until and unless the aggregates are approved by the Engineer.

2. The decision to perform any or all tests on aggregates shall be left to the Engineer. Should testing of the aggregates be deemed necessary, Samples shall be selected at random from the stockpile and tested for conformance with the Specifications.

3. When the aggregates have been approved by the Engineer, the source shall not be changed without the written approval of the Engineer.

B. Fine Aggregate

Fine aggregate shall consist of natural sand, having hard, strong, and durable particles and which does not contain more than 2 percent by weight of such deleterious substances as clay lumps, shale, schist, alkali, mica coated grains, or soft and flaky particles. The grading of fine aggregate shall range uniformly from coarse to fine within the limits specified in ASTM C 33.

C. Coarse Aggregate

1. Coarse aggregate shall consist of clean, hard, fine grained, sound crushed rock, or washed gravel which does not contain in excess of 5 percent by weight of flat, chip-like, thin, elongated, friable or laminated pieces, or more than 2 percent by weight of shale or cherty material.

2. Any piece having a major dimension in excess of 2-1/2 times the average thickness shall be considered to be flat and/or elongated.

3. The maximum size of coarse aggregate shall not exceed 1-1/2 inches, nor 1/5 of the narrowest dimension between the forms, nor 3/4 of the clear spacing between reinforcing bars.

4. The minimum size of coarse aggregate shall be 3/4-inch unless approved otherwise.

5. Coarse aggregate shall be uniformly graded from coarse to fine within the limits specified in ASTM C 33.

2.3 Water

Water for mixing shall be clean, fresh, and free from injurious amounts of oil, acid, chlorides, sulfates, alkali, organic matter, or other deleterious substances.

2.4 Concrete Admixtures

A. General

1. The use of admixtures will be allowed only when included in the mix design or as specified.

2. Admixtures used will be considered as a means of improving workability and/or placement of the concrete.

3. Admixtures shall conform to the following:

Table 1	
Parameter	**Reference**
Air-entraining	ASTM C 260
Water Reducer	ASTM C 494, Type A
Set Retarding	ASTM C 494, Type B
Water Reducing/Set Retarding	ASTM C 494, Type D
High Range Water Reducing (Super Plasticizer)	ASTM C 494, Type F and G
Pozzolanic	ASTM C 618, Type F

4. Admixtures shall be non-toxic after 30 days and shall contain no chlorides. Calcium chloride will not be permitted to be used in concrete.

B. Air-Entraining Admixtures

Provide air-entraining admixture in all concrete. Furnish manufacturer's compliance statement for these requirements.

C. Water Reducing Admixture

1. When water-reducing and/or super plasticizer admixtures are used, with the agreement of the Engineer, it shall be compatible with the air-entraining admixtures.

2. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations.

3. Furnish a compliance statement that the admixture used satisfies all requirements of this Specification.

2.5 Concrete Mix

A. General

The exact proportions of all materials entering into the concrete shall be as established by an approved laboratory mix design and shall be changed only as directed by the Engineer or Laboratory, when necessary, to obtain specified strength or desired density, uniformity, and workability. This requirement may be waived when adequate test data is available on mixes currently being used to verify the suitability of a given mix for the job, or as approved by the Engineer.

B. Mix Design

1. The mix shall meet the following requirements in Table 2 unless otherwise specified or approved:

Table 2

Parameter	Class A
Minimum compressive strength (at 28-day test)	4,000 psi
Maximum water-cement ratio (by weight)	0.45
Minimum cement content (per cubic yard of concrete)	630 lbs
Air Content Range	4-7%

2. All classes of concrete shall have a maximum water soluble chloride ion content of 0.06 percent of mix design cement weight.

3. A super plasticizer shall be used in all concrete which is pumped or introduced into forms over six feet in height.

4. If the class of mix for the Work is not specified in the Contract Documents, then the mix shall meet the requirements of Class A.

5. Cement content specified above may be waived if sufficient evidence can be shown to the Engineer, such as previous test results, experience with water reducing admixtures, etc., to show that a lower cement content will give the desired 28-day strength.

6. Water Content and Slump Test

   a. In calculating the total water content in any mix, the amount of free moisture (excess of saturated surface dry) carried on the surface of the aggregate particles shall be included. The amount of water to be used shall be the minimum amount necessary to produce a plastic mixture of the strength specified and of the desired density, uniformity, and workability.

   b. For the type of construction indicated, the slump shall be within the range indicated below unless approved otherwise:

Table 3
Allowable Slump

Location/Type of Construction	Slump in Inches[(1)]	
	Maximum	Minimum
Reinforced foundation walls and footings	4	2
Unreinforced footings and substructure walls	3	1
Reinforced slabs, beams and walls	4	2
Sidewalks, driveways, and slabs on ground	4	2
Heavy mass construction	2	1

[(1)]Slump listed in the table is the maximum slump allowed prior to the addition of water reducing or high range water reducing admixtures. Maximum allowable slump after the addition of admixtures is 8 inches.

2.6 Reinforcing Steel

A. Steel Bars

Steel reinforcing bars shall be grade 60 billet steel, unless otherwise specified and shall conform to ASTM A 615. Bars shall be deformed in accordance with ASTM A 305. When called for on the Drawings, epoxy coated reinforcing bars shall conform to ASTM A 775.

B. Welded Wire Fabric

Welded wire fabric, when called for on the Drawings, shall conform to ASTM A 185.

2.7 Grout

A. Nonshrink Grout

1. Grout shall be fluid grout capable of satisfactorily meeting the baseplate test and shall be non-metallic, unless specified for special use hereinafter. The grout shall be a non-gas-liberating type, cement base product, premixed, requiring only the addition of water for the required consistency. All components shall be inorganic.

2. The grout product shall satisfy all of the above requirements even though the Project use calls for a dry pack consistency and use.

3. The following listed grouts meet these requirements and are acceptable for use: UPCON High Flow, the UPCO Company, Cleveland, Ohio; Master Flow 713, The Master Builders Co., Cleveland, Ohio; or approved equal. Grout type and procedure shall be as recommended by the manufacturer for the specific application.

4. The grout used shall be cured with a curing compound sprayed on, or as recommended by the grout manufacturer.

2.8 Concrete Bonding Agent/Admixture

For bonding new concrete to old and as an admixture for concrete finish work, use Burke Acrylic Bond-Crete or equal.

2.9 Curing Compounds

A. Curing compounds shall conform to the requirements of ACI 308 and ASTM C 309 and shall be compatible with required finishes and/or coatings.

B. The compound shall be approved Type 2, Class B white or gray pigmented or Type 1-D clear compound with fugitive dye.

C. Manufacturer's literature shall state quantity or coverage required to meet or exceed tests and method of application.

D. The manufacturer shall submit certification that the product meets ACI 308 and ASTM C 309.

2.10 Bond Breaker

Bond breaker shall be Burke Super Bond Breaker or equal.

2.11 Construction, Contraction, and Expansion Joints

Construction, contraction, and expansion joints are as follows or as approved by the Engineer:

A. PVC Waterstop

1. Center bulb type, as shown on Drawings, extruded from an elastomeric plastic compound, the basic resin of which shall be polyvinyl chloride (PVC). The size shall be as shown. Specific gravity shall be approximately 1.37 and the shore durometer Type A hardness, approximately 80. No reclaimed PVC shall be used in the compound.

2. Waterstop shall have a constant thickness from the edge of the bulb to the outside edge. All waterstops shall have a number of parallel ribs or protrusion on each side of the center of the strip. Corrugated type waterstops are not acceptable.

3. The minimum weight per foot for waterstop shall be 0.90 pound for 3/16-inch x 6-inch, 1.62 pounds for 3/8-inch x 6-inch, and 2.30 pounds for 3/8-inch x 9-inch.

4. Certain approved manufacturers and Suppliers are listed below. Other products shall not be used without prior agreement by the Engineer.

a. Greenstreak Plastic Products
b. Vinylex Corporation
c. Vulcan Metal Products, Inc.

B. Hydrophilic Caulk

Hydrophilic caulk shall be Adeka P-201 caulking, or approved equal.

C. Surface Applied Waterstop

Surface applied waterstop shall be ADEKA ULTRASEAL® MC-2010MN, or approved equal.

2.12 Sealants

A. Synthetic Rubber Sealant

1. Sealant for concrete structures shall be synthetic rubber sealing compound (polyurethane) as manufactured by Polymeric Systems, Inc., PSI 270 or PSI 270 SL; Pacific Polymers, Garden Grove, CA, Elastothane 227R, or equal.

2. The material shall be multi-part polyurethane designed for continuous submerged condition in water or sewage and exposed to direct sunlight in dry condition. A compound shall be provided to cure at room temperature to firm, highly resilient rubber, and shall comply with FS TT-S-00227e, Type I, pourable grade, and Type II, non-sag, Class A, having the following properties determined at 75°F and 50 percent humidity:

Property	Test Method	Value
Solids	---	> 97 percent
Application Time	---	> 2 hours
Cure Time	---	< 3 days
Tack Free	---	24 hours
Ultimate Hardness	Shore A	35 ± 5
Tensile Strength	ASTM D 412	300 psi min.
Ultimate Elongation	ASTM D 412	> 550 percent
Tear Resistance	ASTM D 624 Die C	> 85 lbs/in.

3. Color and temperature service range: Gray to match concrete, unless otherwise indicated on the Drawings. Temperature service range: 50 to 200°F. Color gray to match concrete, unless indicated on the Drawings.

PART 3 - EXECUTION

3.1 General

All manufactured articles, materials, and equipment specified in this section shall be applied, installed, connected, erected, used, cleaned, and conditioned as recommended by the manufacturer and approved by the Engineer.

3.2 Forming

A. General

1. The Contractor shall be responsible for the design, engineering and construction of formwork. Formwork shall conform to applicable requirements of "Recommended Practices for Concrete Formwork" (ACI 347).

2. Forms shall be used, whenever necessary, to confine the concrete to the required lines and grades, and to obtain a thoroughly compacted dense concrete through proper vibrating. Forms may be of wood, metal or other material, and shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping and vibration, without deflection from the prescribed lines.

3. The surface of all forms in contact with the concrete shall be smoothly finished and free from defects that might adversely affect the appearance of concrete formed against it.

4. All forms, whether prefabricated or custom made, shall be assembled and connected in such a manner that only minor mortar seepage through the joints will occur during vibration of the concrete.

B. Form Surface Preparation

1. All dirt, chips, sawdust, mud, water, and other foreign matter shall be removed from within the forms or within the excavated areas, before any concrete is deposited therein. Forms previously used shall be thoroughly cleaned of all dirt, mortar and foreign matter before being reused.

2. All wood surfaces in contact with the concrete shall be coated with an effective release agent prior to form installation. The release agent shall be non-staining and non-toxic after 30 days.

3. Mill scale, rust, and other ferrous deposits shall be sandblasted or otherwise removed from the contact surface of steel forms. All steel forms shall have the contact surfaces coated with a release agent. The release agent shall be effective in preventing discoloration of the concrete from rust, and shall be non-toxic after 30 days.

4. Proprietary panels shall be free of surface cracks, spalls, gouging, splitting or other surface damage. Patching of forms is not acceptable. Any repairs must include complete surface recondition.

C. Beveled Edges and Corners (Chamfers and Fillets)

1. Exposed sharp edges shall be eliminated from finished concrete work by means of 3/4-inch triangular fillets or chamfer strips placed in the forms.

2. Where called for on the Drawings, horizontal corners shall be tooled with a 1/2-inch radius tool.

D. Form Removal

1. All forms shall be removed before backfilling is begun.

2. Forms shall be so constructed that they can be removed without hammering on or prying against the concrete and shall be removed in such a manner as to prevent damage to the concrete and to ensure the complete safety of all parts of the structure.

3. The Contractor shall determine the time of removal of forms and shall be responsible for any damages due to early or improper form removal. In general the following periods, exclusive of days when the temperature is below 40°F, for removal of forms may be used as a guide.

4.

Table 4 Time Period for Removal of Forms	
Location	**Time Period**
Support Under Beams	14 days
Supported Floor Slabs	14 days
Walls	24 hours
Columns	7 days
Side of Beams and Other Parts	24 hours

3.3 Placement of Reinforcement Steel

A. General

1. Mild steel reinforcing bars shall be furnished, cut, cold bent, tagged, marked, shipped, and placed as indicated on Drawings and in accordance with the current edition of the "Manual of Standard Practice" by the Concrete Reinforcing Steel Institute. Field bending or straightening shall be accomplished so that the steel will not be damaged. Kinked bars shall not be used.

2. Reinforcing bars shall be in position before concrete placement is begun. All reinforcing bars shall be tied together and supported in such a manner that displacement during placing of concrete will not occur. Conform to the requirements of "Placing Reinforcing Bars" published by the Concrete Reinforcing Steel Institute.

B. Minimum Bar Spacing

The clear distance between parallel bars shall not be less than 1.5 times the nominal diameter for round bars, but in no case shall the clear distance be less than 1-1/2 inches nor less than 1.33 times the maximum size aggregate.

C. Concrete Cover

1. At the time of placing concrete, all reinforcement shall be free from dirt, loose mill scale, detrimental rust, grease, oil, paint, or other foreign substances which might destroy or reduce its bond with concrete.

2. Unless stated otherwise on the Drawings, the following minimum concrete cover over reinforcement steel shall apply.

   a. All formed surfaces exposed to water, ground, or weather shall have a minimum cover over the reinforcement steel of 2 inches.

   b. All formed surfaces not exposed to water, ground, or weather shall have a minimum cover over the reinforcement steel of 1-1/2 inches.

   c. All surfaces cast against and permanently exposed to earth shall have a minimum cover over the steel of 3 inches.

D. Splicing

1. Splices at the points of maximum stress shall be avoided.

2. Bars in horizontal members shall have a minimum lap at splices sufficient to develop the strength of the bars. Whenever possible, splices of adjacent bars shall be staggered.

3. Deformed bars shall be lapped the minimum splice length as listed in Table 3, or as shown on the Drawings, whichever is greater.

4. Furnish full length reinforcing bars the specified length or the calculated length, and for those designated "full length."

5. Splice bars with designated splice locations at those locations or fabricate bars full length.

6. In absence of other directions, including bars designated "continuous," furnish reinforcing bars to provide the minimum practical number of bars and splices. In lapped splices, place bars in contact and fastened together with at least three ties.

Table 5

REINFORCING BAR SPLICE LENGTH TABLE

For 4,000 psi Concrete and Grade 60 Non-Coated[1] Reinforcing Bars

Bar Size (No.)		3	4	5	6	7	8	9	10	11
Bar Orientation	Vertical and Horizontal	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
	Horizontal Top Bars	2'-1"	2'-9"	3'-5"	4'-1"	5'-11"	6'-9"	7'-7"	8'-6"	9'-6"

[1]For epoxy coated bars, increase the listed splice lengths by 50 percent.

E. Supports and Ties

1. All reinforcement shall be retained in place, true to indicated lines and grades, by the use of approved galvanized metal or concrete supports, spacers, or ties. They must be completely concealed in the concrete and shall not discolor or otherwise mar the surface of the concrete.

2. Concrete blocks used to support reinforcement shall have a compressive strength of not less than the specified 28-day compressive strength of the concrete being placed. Rocks, clay bricks, masonry blocks, etc., or parts thereof, shall not be used to support reinforcement.

3. Tie bars in the top mats of footings and slabs at all intersections. Tie all other bars at all intersections except where spacing of the bars is less than 12 inches in each direction, then alternate intersections shall be tied.

4. Tie coated reinforcement with nonmetallic coated ties. Precast concrete blocks that support coated reinforcement shall have nonmetallic ties.

F. Reinforcement Around Opening

Where reinforcing steel has to be cut to permit passage of pipe or openings and should no detail be shown for extra reinforcing in such areas, at least an equivalent area of steel cut must be placed around all four sides of pipe or opening. This steel shall be extended at least 2'-0" beyond opening.

G. Inspection

The Engineer shall be notified when the reinforcing is ready for review with sufficient time for this review to occur prior to placement of the concrete.

3.4 Mixing

A. Batch Plant

1. Adequate equipment and facilities shall be provided for accurate control and measurement of all materials within specified proportions and tolerances, and for readily changing the proportions of materials as may be necessary to meet varying conditions of the Work in order to produce concrete of the required strength, durability and workability.

2. Batch plant equipment shall be in complete working order and equipment shall conform to the requirements of Section 00540.20 of Oregon Standard Specifications for Construction, current edition.

B. Mixers

1. General

a. Concrete shall be mixed in batch plant mixers or in a revolving drum type truck mixer.

b. Concrete mixed in a batch plant mixer shall be hauled to the Project Site in a truck mixer.

c. Mixers shall be equipped with a metal plate on which the manufacturer has marked the mixing and agitation speeds of the drum and the maximum mixing capacity.

2. Batch Plant Mixing

Refer to Specifications for truck mixing.

3. Truck Mixing

a. Truck mixers shall be the revolving drum type, watertight, and constructed and maintained within tolerances of the manufacturer's specifications. Truck mixers shall be equipped and operated with a tank

for carrying mixing water, a device to measure mixing water added to the mix and a device to indicate the number of drum revolutions.

b. Before placing materials for the concrete into the mixer, empty the drum of water and reset the drum revolution counter to zero or record the counter number on the batch ticket. The total revolution on any load shall not exceed 300. The concrete in the truck mixer shall not exceed the manufacturer's maximum rated capacity. All materials of a batch shall be simultaneously and continuously fed into the mixer.

c. Mixing shall commence as soon as the cement is added to the aggregate. Continue mixing before leaving the plant for not less than 70 nor more than 100 revolutions of the drum at the manufacturer's rated mixing speed. If water or additives are added to the batch at the Project Site, the concrete shall be mixed an additional 40 revolutions or more at the manufacturer's mixing speed, but the total revolution shall not exceed 300.

d. All mixers, when fully loaded, shall mix the ingredients into a uniform mass within the required time. Only truck mixers that properly mix the concrete and are capable of discharging the concrete at a steady rate shall be used on the Project Site.

e. During transport of the concrete, the truck mixer shall turn continuously at the rated agitation speed.

3.5 Placing Concrete

A. Conveyance

1. Concrete shall be conveyed from mixer to forms as rapidly as practicable by methods which will prevent segregation or loss of ingredients. It shall be deposited as nearly as practicable in its final position.

2. There shall be no free vertical drop greater than 6 feet, except when starting a vertical pour in which case the free vertical drop of concrete shall not be more than 2 feet.

3. In dropping concrete through reinforcement, care shall be taken that no segregation of the coarse aggregate occurs.

B. Placement

1. Concrete shall be placed before initial set has occurred and unless otherwise authorized by the Engineer, before it has contained its water content for more than 1-1/2 hours at 85°F. This time period may be extended provided Contractor can satisfy the Engineer that admixtures in sufficient quantity can extend the setting time of the concrete without adverse effects to the strength and quality of the concrete.

2. Unless otherwise specified, all concrete shall be placed upon clean, damp surfaces free from running water, and never upon soft mud, dry porous earth, or upon fills that have not been subjected to approved tamping or other compaction so that ultimate settlement has occurred.

3. Concrete shall not be placed in water nor shall water be allowed to rise over freshly placed concrete until the concrete has set sufficiently to prevent damage unless otherwise approved by the Engineer.

4. Concrete shall not be placed until all reinforcement is securely and properly fastened in its correct position, and until the form ties at construction joints have been retightened, all sleeves, hangers, pipe, bolts, waterstop, and any other items required to be embedded in the concrete have been placed and anchored.

5. Concrete shall be placed generally in horizontal layers not more than 12 inches thick except as otherwise specified. When a monolithic layer cannot be completed in one operation, it shall be terminated with a vertical bulkhead. Feathering out to less than 6 inches will not be permitted.

6. All top surfaces not covered by forms, and which are to be covered by additional concrete or backfill, shall be carried slightly above grade, struck off and given specified finish.

C. Vibration

1. Concrete shall be placed with the aid of approved mechanical vibrating equipment. Vibration shall be transmitted directly to the concrete; in no case shall it be transmitted through the forms. Vibrators shall be applied at uniformly spaced points not farther apart than the visible effectiveness of the machine.

2. The vibrator shall at all times be inserted through the newly placed layer into the next lower course, to ensure a proper integration of one course to another, and

shall then be pulled up slowly, the speed of which is dependent upon mix design and type of vibrator. The vibrator operator shall vibrate the concrete systematically from one point to another without skipping any areas or without having to move backwards and forwards in any one single pass. Particular care to vibrating concrete shall be given at horizontal and vertical construction joints to eliminate any possibility of honeycomb. Extreme care shall be exercised in using vibrators around waterstops to avoid damage to the waterstop. Every effort shall be made to avoid any contact of vibrator to reinforcing steel. At all times, the intensity and duration of vibration shall be sufficient to accomplish thorough and uniform compaction.

3. Vibrators shall not be used to flow or transport concrete inside of forms. Where necessary, vibration shall be supplemented by forking or spading by hand adjacent to the forms on exposed faces in order to secure smooth, dense, even surfaces. The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures.

4. Only high frequency internal vibrators with operating speeds of preferably 21,000 vpm but not less than 14,000 vpm shall be used unless otherwise approved in writing by the Engineer. The number of vibrators employed shall be ample to consolidate the incoming concrete to the proper degree within 5 minutes after it is deposited. The number of vibrators will be predicated by the nature of the job and the ability to sufficiently consolidate the concrete within the specified time.

3.6 Restrictions Due to Weather

A. Cold Weather

1. Concrete placement in cold weather, i.e., 40°F or less, will be permitted only under conditions which shall meet the approval of the Engineer.

2. In general, cold weather placing shall conform to "Recommended Practice for Cold Weather Concreting" (ACI 306).

3. Salts, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing, unless such use is authorized by the Engineer in writing.

4. All concrete shall be effectively protected from frost action for a period of 5 days after placing, during which the temperature of the concrete does not fall below

40°F. Upon written notice from the Engineer, all concrete which may have become damaged by frost action shall be replaced by the Contractor at his own expense.

B. Hot Weather

1. For concrete placed during extremely hot weather (air temperature exceeding 95°F), the aggregate shall be cooled by frequent spraying in such a manner as to utilize the cooling effect of evaporation. During such periods, the placement schedule shall be arranged, as approved, in such a manner as to provide time for the temperature of the previously placed concrete to begin to recede.

2. The mixing water shall be the coolest available at the Site insofar as is practicable. At no time shall the temperature of the concrete mix exceed 90°F prior to placement.

C. Low Humidity

1. Placing of concrete during periods of low humidity (below 50 percent) should be avoided when feasible and economically possible, particularly when large surface areas need to be finished.

2. In any event, finished surfaces exposed to the drying wind shall be covered up immediately with polyethylene sheets and be water cured continuously as soon as the concrete has set up.

3. Curing compounds, in lieu of water, may not be used.

3.7 Bonding Concrete

A. Bonding to New Concrete

1. Roughen the surface of the hardened concrete. Thoroughly clean and saturate with water and apply a concrete bonding agent.

2. Cover the horizontal surfaces with at least a 12-inch lift of superplasticized concrete (6-inch to 8-inch slump) and thoroughly vibrate the mix.

3. New concrete is defined as less than 60 days old.

B. Bonding to Old Concrete

1. Mechanically roughen the existing concrete surfaces to 1/4-inch amplitude using chipping guns or bushhammers, thoroughly clean, and then coat the contact surfaces with a concrete bonding agent.

2. The method of preparation and application of the bonding agent shall conform to the manufacturer's printed instructions and recommendations for specific application for this Project.

3. Obtain this recommendation in writing from the manufacturer's representative.

4. Cover horizontal surfaces with a lift of superplasticized concrete (6-inch to 8-inch slump) and thoroughly vibrate the mix.

3.8 Finishing

A. Slabs

1. Screeding

a. Concrete shall be deposited in the slab from a wheelbarrow, buggy, bucket, chute, conveyor, or pump hose without segregation of coarse and fine aggregates.

b. Spreading of the concrete shall be performed with a square end shovel.

c. The concrete shall then be screeded or struck off before any excess moisture or bleed water is present on the surface.

d. If a vibrating screed is used, it shall be moved forward as rapidly as possible to avoid excess mortar being brought to the surface.

2. Bull Floating

a. The purpose of bull floating is to smooth the surface and to eliminate high and low spots.

b. Bull floating shall occur immediately after screeding or strike off and before bleed water accumulates on the surface, and shall be done in a such a manner that the surface is not sealed.

c. Bull floating shall be done with a wood or magnesium float.

d. Do not overwork the surface.

3. Waiting Period

Upon completion of the bull floating, the concrete shall be allowed to sit until the bleeding has stopped and the water sheen disappears, and after the concrete is firm enough to permit a person to walk on the surface leaving a foot print no greater than 1/4 inch in depth.

4. Edging and Jointing

After the bleeding has stopped, sidewalks, driveways, steps, and other slabs as directed shall be edged and jointed.

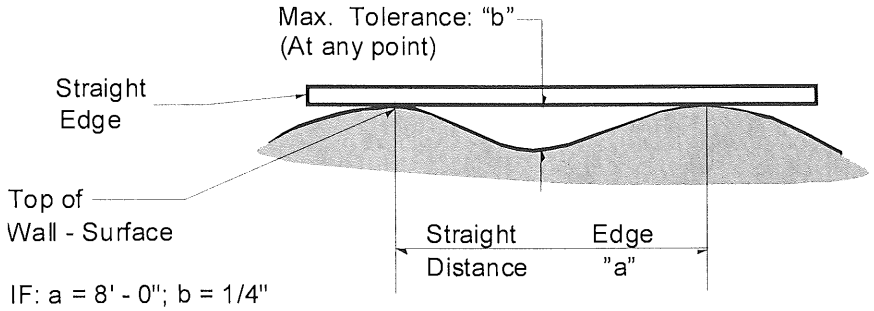
5. Floating

a. The purpose of floating is to embed the large aggregate just beneath the surface of the mortar; to remove slight imperfections, bumps and voids; and to compact the concrete and consolidate mortar at the surface in preparation for final finishing.

b. After the waiting period defined above, the Contractor shall float the concrete surface using wood or magnesium hand floats or a troweling machine equipped with float shoes. Surface Tolerance. The surface of all slabs shall conform to the following surface tolerance:

6. Surface Tolerance

The surface of all slabs shall conform to the following surface tolerance:



IF: a = 8' - 0"; b = 1/4"

IF: a = 2' - 0"; b = 1/8"

IF: a = 1' - 0"; b = 1/16"

7. Broom Finish

a. After completion of floating and after the concrete has hardened sufficiently, all stair treads, interior and exterior, and all exterior slabs including sidewalks, driveways, etc., shall receive a broom finish unless otherwise specified.

b. The broom shall be a stiff fiber or steel tined broom that will mark the finished concrete to a depth not to exceed 1/8th of an inch. Markings or corrugations shall be transverse to the direction of travel.

B. Unformed Surfaces

Unformed surfaces that will not be exposed in the complete Work shall be brought to required finished elevations and left smooth and regular. Sufficient screeds shall be installed to ensure an even concrete surface, true to grade and elevation, without unacceptable local depressions.

C. Formed Surfaces

1. Class C Finish

a. Forms shall be removed as soon as permissible and immediately thereafter, snap tie holes, rock pockets, air pockets over 1/2-inch depth, and other defects shall be chipped, sandblasted, or wire brushed to expose sound aggregate and mortar and then shall be pointed and thoroughly tamped with dry pack grout.

b. Surfaces that have been pointed shall be kept moist for a period of not less than 24 hours. If after the pointing sets and is rubbed, dusting occurs, the surface shall be refinished.

c. Finished surfaces shall be free from sand streaks or other voids.

d. All formed concrete surfaces that will not be exposed to view shall receive a Class C surface finish unless otherwise indicated.

2. Class B Finish

a. Class B finish shall consist of a smooth finish such as can be achieved by means of plywood forms, steel forms, or form liners.

b. After the forms are removed, the concrete surface shall first receive a Class C finish. The surface shall then be additionally finished as necessary to produce a smooth and even surface with uniform texture, lines, and appearance, free of bulges, fins, lips, undulations, depressions, or other imperfections. Chipping, grinding, or other methods may be necessary to achieve a smooth surface.

c. All exposed formed concrete surfaces shall receive a Class B Finish unless otherwise indicated. Surfaces below water shall be considered exposed.

3.9 Protection

Every reasonable precaution shall be taken to protect finished surfaces from abrasions or other damage. Concrete surfaces or edges likely to be injured during the construction period shall be protected by leaving the forms in place or by erecting satisfactory covers. No fire shall be permitted in direct contact with concrete at any time. Concrete shall be adequately protected from drying action by sun and wind.

3.10 Curing

A. General

1. All Portland cement concrete shall be cured by maintenance of proper moisture content and temperature for the development of desired concrete strength and durability. Curing shall be commenced immediately after placement of the concrete and initial finishing has been completed.

2. There are two systems of maintaining satisfactory moisture content:

a. Water curing by the continuous or frequent application of water through ponding or immersion, fog spraying or sprinkling or a saturated cover of heavy quilted cotton mats or rugs, or multiple layers of burlap.

b. Surface sealing for the prevention of excessive loss of water from concrete slabs by use of 4-mil polyethylene sheet or reinforced bituminous kraft paper (ASTM C 171); and for exterior slabs only by the application of a liquid membrane-forming curing compound to the freshly placed concrete, and for walls by leaving water proof forms in place with periodic soaking.

B. Cure Time

All concrete shall be cured for a period of not less than 7 days after placement. If during the cure time the surrounding temperature falls below 45°F, the cure time shall be extended for the number of hours the temperature is below 45°F.

C. Walls

The acceptable methods of curing concrete walls are:

1. Concrete forms for walls shall be left in place and kept damp at all times during the required cure time; the wall forms may be loosened after 24 hours following the concrete placement, but water shall be flowed periodically into the space between the concrete and the form to add moisture. During the cure time, the tops of walls shall be covered with a continuously water saturated covering such as burlap or cotton mats.

2. The Contractor may remove the wall forms not less than 24 hours following the concrete placement. Curing shall then be accomplished by draping continuously water saturated heavy quilted cotton mats or rugs over the concrete walls. The water saturated coverings shall be secured to the wall to prevent air from circulating between the covering and the concrete surface.

3. After 24 hours of water cure, except as specified below, concrete curing of formed surfaces may be completed using a curing compound. However, a curing compound shall not be used on concrete surfaces that will be Class A or Class B finished, painted, waterproofed, or where other coatings or coverings are to be bonded to the surface, unless the curing compound is compatible with the final finish or the curing compound is removed by sandblasting.

D. Slabs

The entire surface of a newly placed concrete slab shall receive one of the water curing or sealing methods described above, or a combination thereof, beginning after finishing operations have been completed and as soon as marring of the concrete will not occur.

E. Curing Compounds

1. Curing Compound shall not be used on concrete surfaces to be painted, waterproofed, moisture-proofed, Class A sack rubbed surface finished, or where other coverings are to be bonded, unless the curing compound is compatible

with the final finish covering or it is to be removed by sandblasting prior to covering.

2. Generally, use of curing compounds is limited to use on concrete sidewalks, curbs, landings, driveways, catch basins, and other minor structures. Curing compound shall not be used on interior floor slabs.

3. Liquid membrane curing compounds shall be applied after finishing and as soon as the free water on the surface has disappeared and no water sheen is visible but the surface is still moist. The compound shall be applied at a uniform rate, not greater than 200 square feet per gallon using two applications (100 square feet per gallon each) at right angles to each other.

F. Curing and Protection in Cold Weather

Curing and protection in cold weather shall conform to ACI 306. Repair or replace concrete changed by cold weather.

3.11 Construction, Contraction, and Expansion Joints

A. General

Joints in concrete shall be horizontal level or vertical and shall be of the type and location as shown on the Drawings, or as approved by the Engineer. Joints shall be accurately located and constructed to produce straight joints. The concrete pour shall not commence until after the joint preparation has been reviewed by the Engineer.

B. Installation of Waterstops

1. Prior to use of the waterstop material in the field, a Sample of a fabricated cross constructed of each size or shape of material to be used shall be submitted to the Engineer for review. These Samples shall be fabricated so that the material and workmanship represent in all respects the fittings to be furnished under this Specification. Field splices and joints shall be made in accordance with the waterstop manufacturer's instructions using a thermostatically controlled heating iron.

2. Join waterstops at all intersections so that a continuous seal is provided. Center the waterstop on the joint. Secure waterstop in the correct position. In the event of damage to the waterstop or improper installation of waterstop, repair the waterstop in an acceptable manner to provide a water tight seal.

3. Vibrate concrete to obtain impervious concrete in the vicinity of all joints. Make a visual inspection of the entire waterstop area during concrete placement. Limit concrete placement to top of waterstop in first pass, vibrate the concrete under the waterstop, lift the waterstop to confirm full consolidation without voids, then place remaining concrete to full height.

4. Hydrophilic waterstop shall be installed in accordance with the manufacturer's recommendations.

C. Construction Joints

1. Construction joints, including keyways when required, shall be made as shown on the Drawings or as approved by the Engineer.

2. For construction joints without keyways, prior to placing the abutting concrete for all construction joints, the contact surface shall be cleaned by sandblasting or other approved means to remove all laitance, expose the aggregate, and roughen surface to a minimum of 1/4-inch amplitude.

3. For all joints, the exposed portion of the reinforcing steel shall be cleaned and surface roughening of all concrete. The cleaning and surface roughening method shall be conducted so as not to damage the waterstop, if one is present.

4. The surface of the hardened concrete may be roughened by one of the following methods:

   a. Sandblasting the foundation and reinforcing dowels after the concrete has fully cured to remove all laitance and spillage, and to expose sound aggregate.

   b. Water blasting the foundation and reinforcing dowels after the concrete has partially cured to remove all laitance and spillage, and to expose sound aggregate.

5. Horizontal Construction Joints

   a. For all horizontal construction joints with waterstop, prior to placement of the abutting concrete, thoroughly clean the concrete, exposed waterstop, and reinforcing steel, etc., and saturate with water; cover the horizontal surfaces with at least 2 inches of grout and immediately place concrete.

b. Limit the concrete lift immediately on top of the grout to 12 inches and thoroughly vibrate to mix and consolidate the grout and concrete together.

c. Provide positive measuring devices such as bucket or other device that will contain only enough grout for depositing in one place in the wall to ensure that a portion of the form does not receive too much grout.

d. The depositing of grout from pump hoses or large concrete buckets will not be permitted, unless inspection windows close to the joint are available to allow visual measurement of grout thickness and means are available for removal of excess grout.

e. For all horizontal construction joints without waterstops and all vertical construction joints, thoroughly clean and saturate the hardened concrete surface with water prior to placement of the new abutting concrete.

D. Formed Contraction Joint

When called for on the Drawings, the Contractor shall make contraction joints as detailed including keyways, waterstop, dowels, reinforcement, sealants, etc. Prior to placement of the new concrete, a bond breaker shall be applied to the existing hardened concrete. Bond breakers shall not be applied to waterstop material.

3.12 Pumped Concrete

A. General

Pumping of concrete will be permitted only with the Engineer's agreement. If, in the Engineer's opinion, the pumped concrete does not produce satisfactory end results, the Contractor shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

B. Pumping Equipment

1. The Contractor shall have a standby pump, conveyor system, crane and concrete bucket, or other system acceptable to the Engineer, on the Site during pumping, in order to provide adequate redundancy to assure completion of the concrete placement without cold joints in the event of breakdown of the primary placing equipment.

2. The minimum diameter of the hose (conduit) shall be 4 inches. Pumping equipment and hoses (conduits) that, in the opinion of the Engineer, are not functioning properly, shall be replaced.

3. Aluminum conduits for conveying the concrete shall not be used.

4. A cement-water slurry shall be pumped through the lines and hoses before starting the concrete mix through the pump. The pump shall be operated in a manner that produces a continuous stream of concrete without air pockets or segregation.

C. Concrete Samples

Concrete samples for slump and test cylinders will be taken at the placement (discharge) end of the line.

3.13 Tolerances

A. General

Tolerance is the specified permissible variation from lines, grades, or dimensions shown. Where tolerances are not stated in these Specifications, permissible deviations will be in accordance with ACI 347. Notations on the Drawings of specific maximum and minimum tolerances shall govern if in conflict with these Specifications.

B. Permissible Tolerance

Unless otherwise indicated, all columns, beams, slabs, openings, reinforcing bars, waterstops, etc., shall be accurately located to within 1/4 inch. The permissible tolerance of the inside and outside wall surface shall be 3/16-inch plus or minus for linear walls and 3/8-inch plus or minus for circular walls. The tolerance of alignment as to the actual position of inside and outside surface is 3/8-inch plus or minus. All transitions from plus to minus shall be gradual, even and smooth, and without abrupt changes in the surfaces.

C. Failed Tolerances

Should the completed Work fail to meet the tolerances specified herein, the Contractor shall bear the expense of any remedial work required to repair or replace the defected, as directed by the Engineer. Surface defects and irregularities are defined as finished and are to be distinguished from tolerances.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 11

MECHANICAL WORK

PART 1 - GENERAL

1.1 Scope

A. This Specification covers general piping, mechanical requirements for aboveground and/or vaulted pipe, valves, and associated fittings for turnout piping, cleanout assemblies, sluice gates, radial gate, drains, etc. For additional requirements and related work, refer to other Technical Specifications and the Drawings.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

C. Upon completion of lockable items or items requiring locks, the Contractor shall deliver six copies of keys for each item to the Owner.

1.2 Specifications References

A. Specification references made herein for manufactured materials such as pipe, valves, and fittings refer to designations for the American Water Works Association (AWWA), American National Standards Institute, Inc. (ANSI) or to the American Society for Testing and Materials (ASTM) as they are effective on the date of call for bids and proposals.

B. The Technical Specifications apply to all Work. Specification sections that have direct reference to mechanical work include, but are not limited to, the following:

- Concrete Structures
- Turnouts
- Siphon Pipe
- Elevated Steel Pipe
- Lost River Diversion Crossing

1.3 Catalog Information

Catalog information on all equipment and materials to be installed shall be submitted to the Engineer for review prior to purchase and installation of the items.

1.4 Delivery, Storage, and Handling

Adequate precautions shall be taken to prevent damage to all materials. During transporting, materials shall be secured individually by use of wood spacer blocks, wood crates, or otherwise protected to prevent collision of individual pieces and accompanying damage. All pipes, valves,

fittings, and all other materials shall be carefully inspected by the Contractor prior to installation. All defective materials shall be rejected.

1.5 Manufacturer's Certification

The Contractor shall furnish to the Engineer a sworn statement from the product manufacturer, stating that inspection and all specified tests have been made on the supplied material and that the results thereof comply with all appropriate Specifications. The statement shall also state that all materials furnished are in accordance with these Contract Documents and that all materials are new.

PART 2 - MATERIALS

2.1 Pipe

A. General

Pipe shall be of the type called for on the Drawings and shall conform to the following Specifications. Pipe substitutions may be made only with prior approval of the Engineer.

B. Steel Pipe and Fittings

1. Steel pipe shall conform to the provisions of AWWA Standards C201 and C202. Pipe 10-inch and smaller shall be Schedule 40; pipe 10-inch to 24-inch shall have 0.375inch wall thickness.

2. Fittings for steel pipe less than 3-inch diameter shall be threaded malleable iron. Fittings for pipe 3-inch diameter and larger shall be seamless steel welding fittings with wall thickness equal to the pipe with which they are joined.

3. Flanges shall conform to AWWA Standard C207 and shall be the flat face type. Flanges shall have ANSI B16.1, Class 125 bolt hole template. Gaskets shall be either ring or full face, 1/8-inch thick conforming to AWWA C111, Appendix B.

4. Unless other linings are required by the Drawings or General Requirements, pipe 3 inch diameter and smaller shall be hot dipped galvanized and pipe 4-inch and larger shall be painted in accordance with Technical Specifications - "Painting."

C. Ductile Iron Pipe

1. Ductile iron pipe and fittings shall conform to AWWA C150, AWWA C115, AWWA C151, and AWWA C110 and shall be minimum special Class 350, unless specified

otherwise. All ductile iron pipe shall have a bituminous sealed cement mortar lining conforming to AWWA C104. All joints for buried service, unless otherwise specified, shall be push-on rubber gasket joints conforming to AWWA C111. When required for fittings, mechanical joints shall conform to AWWA C111.

2. When flanged pipe is required, the Contractor shall provide the ductile iron pipe class required by the flange manufacturer to ensure the pipe and flange units are compatible. These data shall be provided to the Engineer for his review prior to ordering these materials. Flanges for couplings and fittings shall conform to ANSI B16.1, 125-pound bolt hole template.

D. Miscellaneous Pipe

Miscellaneous small pipe, not otherwise specified, shall be of first class material and suitable for the intended service.

2.2 Fittings

A. Fittings for Iron and PVC Pipe

1. Unless specified otherwise, all fittings such as elbows, tees, crosses, etc., for buried pipe shall be mechanical joint short-bodied compact ductile iron fittings conforming to AWWA C153, Class 350.

2. When called for, flanged cast iron fittings shall conform to AWWA C110 with ANSI B16.1, 125-pound bolt hole template.

3. All fittings shall be cement mortar lined in accordance with AWWA C104.

4. Gaskets shall be either ring or full faced, 1/8-inch thick conforming to AWWA C111, Appendix B.

B. Restrained Joint Pipe and Fittings

1. Where called for on the Drawings, restrained joint pipe and fittings shall be:

a. Mechanical joint ductile iron with "MEGALUG" field installed restraint devices as manufactured by EBAA Iron, Inc., or approved equal.

b. "Flanged coupling adaptor" as manufactured by Ford Meter Box Company, or equal. The use of anchor studs is required.

C. Pipe Taps

1. Pipe taps for accessories such as pressure gauges, flow switches, pressure switches, air release valves, hose bibs shall be made as follows:

a. Steel Pipe -Welded fittings or tapping saddles. If welded fittings are used, pipe must be properly coated inside and outside.

b. Ductile Iron Pipe - Drilled and tapped or saddle tap.

2. All taps for accessories shall be provided with an isolation valve between the tap and accessory.

2.3 Pipe Couplings

A. Pipe couplings shall be fabricated steel "Dresser" style couplings, or approved equal, conforming to AWWA C219.

B. The Contractor shall provide the appropriate coupling and gaskets as required to match the water line types and sizes being utilized.

C. Couplings shall be rated for the working pressure of the pipe main for which they will be utilized.

D. Where called for on the Drawings, the Contractor shall provide a standard camlock coupling pressure rated for 0 to 30 psi. The coupling shall be watertight.

2.4 Valves

A. General

Valves shall be of the type called for on the Drawings and shall conform to the following Specifications:

B. Gate Valves

1. Gate Valves, 2 inches and smaller

Valves shall be all bronze, non-rising stem, conforming to Federal Specification MSS-SP-80, rated for a minimum working pressure of 125 psi.

2. Gate Valves, 2-1/2-inch to 12-inch

   a. Valves shall conform to AWWA C509 or C515. Valves shall be designed for 200 psi minimum working pressure and shall be of iron body, resilient seat, non-rising stem construction. Valves shall be equipped with O-ring type packing.

   b. Unless shown otherwise on the Drawings, aboveground valves shall have a handwheel operator and shall have position indicators.

   c. Buried valves shall have a 2-inch AWWA operating nut, or as called for on the Drawings.

   d. The valve ends shall be of the type required to match the pipe to which they will be connected, or as shown on the Drawings.

   e. Valves shall be resilient seated Kennedy KSRW or KSFW, M&H Style 4067 or 7000, Clow, or equal.

3. Gate Valves, 14-inch and 16-inch

   a. Valves shall meet or exceed the requirements of AWWA C509 and shall also conform to the applicable requirements of AWWA C500. Valves shall be designed for 200 psi minimum working pressure and shall be of iron body, resilient seat, non-rising stem construction. Valves shall be equipped with O-ring stem seal.

   b. Unless shown otherwise on the Drawings, aboveground valves shall have a handwheel operator and shall have position indicators.

   c. Buried valves shall have a 2-inch AWWA operating nut, or as called for on the Drawings.

   d. The valve ends shall be of the type required to match the pipe to which they will be connected, or as shown on the Drawings.

   e. Valves shall be Metroseal 250 as manufactured by U.S. Pipe or equal.

4. Gate Valves, 18 inches and larger

   a. Valves shall conform to AWWA C500. Valves shall be designed for 150 psi minimum working pressure and shall be of iron body, double disk,

parallel seat, bronze mounted, non-rising stem construction. Valves shall be equipped with O-ring type packing.

b. Unless shown otherwise on the Drawings, aboveground valves shall have a handwheel operator and shall have position indicators.

c. Buried valves shall have a 2-inch AWWA operating nut, or as called for on the Drawings.

d. The valve ends shall be of the type required to match the pipe to which they will be connected, or as shown on the Drawings.

e. Valve shall be M&H NRS Style 67 or equal.

C. Miscellaneous Valves

Miscellaneous valves not specified herein or in the General Requirements or on the Drawings shall be of first class construction and shall be suitable for the intended purpose.

D. Cast Iron Valve Box

1. Each valve shall be equipped with an adjustable cast iron box of the sliding type with a base large enough to cover the top casting of the valve with a lockable cover.

2. The diameter of the valve box shall be not less than 5 inches, and shall be of such length so as to provide the depth of cover over the pipe without full extension.

2.5 Gates

A. Sluice Gates

1. The Contractor shall supply all parts and accessories required for a complete and functional installation as defined by the manufacturer. Gates shall be of size and type shown on the Drawings and be capable of withstanding seating and unseating pressures as noted (within allowable tolerances for leakage). All sluice gates shall conform to applicable AWWA standards unless modified herein and shall be supplied by a single manufacturer.

2. Submittals

The Contractor shall submit manufacturer's data and drawings for approval in accordance with Project Drawings and Specifications. Submittals shall include, but not be limited to, gate material specifications sheets, gate data sheet summary, and calculation sheets containing operator forces and tensile and buckling strength of stem.

3. Materials

Frame, Leaf (Disc), Side Guides, Wall Thimbles	ASTM A 126 Class B Cast Iron, Ductile Cast Iron, ASTM A 536 Class B Cast Iron, ASTM A 126 Class B with 2 percent Nickel, NiResist, ASTM A 436 Type 1 (15 percent Nickel) or NiResist, ASTM A 436 Type 2 (22 percent Nickel)
Stem	ASTM A 276 Type 304(L) or 316(L) Stainless Steel
Wedges	ASTM B 584 CA 873 Bronze
Seat	ASTM B 98 CA 655 Bronze
Flushbottom Seal	ASTM D 2000 50-60 Durometer Neoprene
Flushbottom Retainer	ASTM A 276 Type 304(L) or 316(L) Stainless Steel
Thrust Nut	ASTM B 584 CA 954 Bronze
Stop Collars	ASTM B 584 CA 954 Bronze or ASTM A 276 Type 304 or 316 Stainless Steel
Stem Coupling	ASTM B 584 CA 954 Bronze or ASTM A 276 Type 304 or 316 Stainless Steel
Fasteners	ASTM A 276 Type 304 or 316 Stainless Steel
Stem Guide Bearing	ASTM B 584 CA 932/CA 864 Bronze or UHMW
Stem Guide Bracket	Ductile Iron, 304(L) or 316(L) Stainless Steel, or A 36 Steel
Floorstands, Wall Brackets	ASTM A 126 Class B Cast Iron or A 36 Steel
Stem Cover	Butyrate, Clear
Handwheel	ASTM A 126 Class B Cast Iron
Handcrank	A 36 Steel
Yoke	A 36 Steel

4. Gates shall have operating mechanisms as shown on the Drawings.

a. T-Handle Wrench

T-handle style wrenches shall engage a 2-inch square nut. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. T-handle operator shall be located in cast iron floor boxes mounted flush to the surface.

b. Mounted Handcrank with Gearbox

A handcrank or handwheel operated gearbox shall be provided with a gear ratio as needed to ensure 40 pounds or less rim pull at the handcrank or handwheel under the specified operating heads approximately 36 inches above the operating floor. An ACME threaded manganese bronze lift nut shall be provided to engage the operating stem. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. All components shall be totally enclosed in a cast iron weatherproof housing. Gearbox shall be bench stand (yoke) mounted or floor stand mounted with or without a cast iron or A 36 steel fabricated wall bracket.

5. Frames

Gate frame and guides shall be cast in one piece, and the back of the frame shall be machined to a plane. Guides shall be cast as an integral part of the frame or bolted and pinned to the frame and shall be sufficiently long to retain at least one-half of the vertical height of the disc when in the fully opened position. Guides shall be capable of safely withstanding the full thrust due to water pressure and wedging action. Guide grooves shall be accurately machined to provide free movement of the disc tongues and to ensure proper engagement of the wedging devices.

6. Wedges

Wedges shall be solid cast bronze and keyed to the cast iron pads to maintain adjustment by preventing undesirable rotation or lateral motion. They shall be attached to the disc with 304 or 316 stainless steel studs, nuts, washers, and adjusting screws with locking nuts. Silicon bronze studs, nuts, and adjusting screws with locking nuts shall be used when specified.

7. Seat Faces

All seat facings shall be malleable extruded bronze of a composition that will resist dezincification and will increase in wearing ability with cold working. Attaching pins and screws shall not be allowed.

8. Stem

Stem shall be designed to transmit in compression at least 2-1/2 times the rated output of the operating mechanism with a 40-pound maximum effort on the crank or handwheel. Stems shall have a slenderness ratio (L/R) of 200 or less. Stainless steel or manganese bronze couplings threaded and keyed or bored and pinned to the stems shall join stems of more than one section. All threaded and keyed couplings of the same size shall be interchangeable. Stems shall be provided with adjustable stop collars to prevent over-travel on manually operated gates. Stems shall be provided as rising stems and shall have a permanent position indicator with the stem that can be viewed by the operator.

9. Painting

All painting shall conform with Technical Specifications - "Painting."

B. Slide Gates

1. The gates shall be either self-contained with yoke and bench stand operators or non-self-contained with separate stem guides and operator, as shown on the Drawings and specified herein.

2. The gates shall comply with the latest version of AWWA C561.

3. Materials, or approved equal:

PART	MATERIAL
Components	Materials
Frame, Cover Slides, Yokes	Stainless Steel - Type 304, 316, or 2205
Stems	Stainless Steel - Type 304, 316, or 2205
Fasteners and Anchor Bolts	Stainless Steel - Type 304 CW or 316 CW
Flushbottom Seals	Rubber - ASTM D 2000 BC 615/625 Grade BE 625
Seat/Seals	Ultra High Molecular Weight Polyethylene (UHMW)
Finish	Mill finish on stainless steel. Paint non-stainless surfaces per Technical Specifications - "Painting."

4. Frame and Guides

The gate frame shall be composed of stainless steel guide rails with UHMW seat/seals up- and downstream. The seat/seals shall form a tight seal between the frame and the slide (disc).

a. The UHMW seats will impinge on the slide by way of a continuous loop neoprene seal.

b. The neoprene seal will perform the function of a seal between the frame and the UHMW as well as a spring force to maintain contact between the UHMW and the slide.

c. This tight seal shall provide an allowable leakage rate of no more than 0.07 gallons per minute per peripheral foot of perimeter opening for seating head.

5. Stainless steel retainer bars, cross bars, and head rails (for self-contained gates) shall be provided.

a. The clear opening shall be the same size as the waterway.

b. The guides shall be of sufficient length to support one-half of the height of the slide when in the full open position.

6. Slide cover (disc) shall be stainless steel plate reinforced with structural shapes welded to the plate.

a. The slide cover shall not deflect more than 1/16-inch at the sealing surface of the gate under maximum specified head.

b. The stem connection shall be either the clevis type, with structural members welded to the slide and a bolt or bolts to act as a pivot pin, or a threaded and bolted thrust nut supported in a welded nut pocket.

c. The clevis or pocket and yoke of the gate shall be capable of taking, without damage, at least twice the rated thrust output of the operator at 40 pounds of pull on a handwheel or handcrank.

7. Flushbottom Closure

Gates shall be furnished with a flush seal arrangement. A resilient seal with a minimum width of exposed face shall be securely attached to the frame along the invert and shall extend to the depth of the guide groove. The resilient seal extrusion shall be constructed to be ribbed and self-retaining.

8. Anchor bolts shall be provided by the slide gate manufacturer.

9. Operating mechanisms shall either be frame-mounted for self-contained units or pedestal-mounted for units that are not self-contained. A handcrank or handwheel operated gearbox shall be provided with a gear ratio as needed to ensure 40 pounds or less rim pull at the handcrank or handwheel under the specified operating heads. The operators shall be located at about 36 inches above the operating floor. For gates that open above the operating floor, the operator shall be equipped with a chain for overhead operation. The operators shall be provided with a mechanism that allows the gate operator to be locked with a pad lock in any position. An ACME threaded manganese bronze lift nut shall be provided to engage the operating stem. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. All components shall be totally enclosed in a cast iron weatherproof housing. All seals shall be protected from blowing dust with appropriate covers.

2.6 Thrust and Anchor Blocks and Concrete Collars

Concrete used for thrust and anchor blocks, and concrete collars shall be Portland Cement concrete with a 28-day compressive strength of 2,500 psi. Concrete thrust blocks shall cure for 3 to 5 days before hydrostatic or leakage testing of pipelines unless otherwise approved by the Engineer.

2.7 Tools

The Contractor shall supply to the Owner two valve wrenches of proper length.

2.8 Manual Chain Hoist

The manual chain hoist for the exit gate shall have a 2-ton capacity, suitable for continuous outdoor use, have corrosion resistant chain and components, have a minimum of 12-foot lift height, and shall be Tuffy Chain Hoists Model No. TUF-CF20-15, or approved equal. The Contractor shall provide a 3/8-inch diameter shackle padlock with two keys, suitable for outdoor use. The lock shall be capable of chaining together the hoist pull chain and exit gate frame. The lock shall be Master Lock Model No. 6125, or approved equal.

PART 3 - EXECUTION

3.1 Pipe Installation

A. General

Pipe shall be installed in accordance with good trade practice with respect to handling, joining, supporting, and testing. A calibrated torque wrench shall be provided and used where specific torque requirements are specified by the manufacturer.

B. Pipe Supports and Couplings

All pipe shall be rigidly secured in place by means of blocking, hangers, brackets, clamps, or by other approved methods, in such a manner to adequately support the pipe under all operating conditions, whether or not such supports are shown on the Drawings. Sufficient unions and couplings shall be provided to facilitate the installation of any section of piping.

3.2 Valves and Valve Boxes

A. Valves and valve boxes, where required, shall be installed as shown on the Drawings. All valves and valve boxes shall be set plumb. The valve box shall be centered over the valve operator and free of any obstruction which would prevent operation of the valve nut.

B. If the bury depth of the valve is greater than 4-1/2 feet, a valve operator extension shall be provided to within 1 foot of finish grade. The extension shall be permanently attached to the valve operator and a self-centering device shall be provided near the top of the valve operator extension. The box cover shall be flush with the finished grade. A concrete collar, where required, shall be installed.

3.3 Connections to Existing Lines

A. It shall be the responsibility of the Contractor to excavate and inspect existing pipe lines requiring a connection in order to determine the exact fittings needed.

B. In connecting to existing lines, the Contractor may select the combination of fittings they wish to use, subject to approval of the Engineer. Approved fabricated steel couplings, repair bands, transition couplings, or tapping sleeves are among the options available to the Contractor. The Contractor shall submit to the Engineer information on the type of couplings they proposes to use.

3.4 Other Installations

Installations of materials and equipment shall be in accordance with the manufacturer requirements and the Drawings.

3.5 Painting

All pipes, valves, and fittings shall be painted in accordance with Technical Specifications - "Painting" and the Drawings.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 12

STRUCTURAL STEEL AND METAL WORK

PART 1 - GENERAL

1.1 Scope

A. This Technical Specification covers the construction of all metal structures shown on the Drawings. All construction shall be in accordance with the following Specifications or as shown on the Drawings.

B. The Contractor shall be responsible for obtaining all permits and licenses as required by local, state and federal codes, including all associated costs.

C. All structures constructed under these Technical Specifications shall conform to the most recent edition of the International Building Code as amended by the Oregon Structural Specialty Code (OSSC). Anything not specifically outlined in these Technical Specifications shall be as required in the International Building Code.

D. All manufactured articles, materials, and equipment specified in this section shall be applied, installed, connected, erected, used, cleaned, and conditioned as recommended by the manufacturer.

E. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.1 Specifications References

Specification references made herein for manufactured materials refer to designations for the American National Standards Institute, Inc. (ANSI), American Welding Society (AWS), or to the American Society for Testing and Materials (ASTM) as they are effective on the date of call for bids and proposals.

The Technical Specifications apply to all Work. Specification sections that have direct reference to structural steel and metal work include, but are not limited to, the following:

- Concrete Structures
- Elevated Steel Pipe
- Lost River Diversion Crossing
- Painting
- Steel Piling

1.2 Submittals and Working Drawings

A. The Contractor shall submit certified copies of mill test reports covering the physical, chemical, and impact tests of steel for fabricated components along with affidavits of compliance.

B. The Contractor shall submit affidavits of compliance for all bolts, nuts, and washers.

C. The Contractor shall submit inspection procedures to be used by the manufacturer and for quality control.

D. The Contractor shall submit proof of certification for welders. The Contractor shall indicate certification procedures and position each welder is qualified to perform. The Contractor shall submit shop detail plans for fabricating the various metal components as detailed on the Drawings. No components shall be fabricated until the shop plans have been reviewed by the Engineer and the materials source has been accepted.

E. The Contractor shall prepare appropriate fabrication drawings for all structural steel that supports the elevated steel pipe. These shall be reviewed for approval by the Engineer. All other metal work may be submitted to the Engineer for review prior to fabrication. Final review and approval of all structural steel and metal work will be completed by the Engineer after fabrication.

1.3 Handling and Storage of Materials

Before fabrication, all material stored at the fabricating plant shall be protected from rust, dirt, oil, and other foreign matter. The Owner will accept no rust-pitted material. All material shall be stored so as to prevent rust and loss of small parts. Piled material shall not rest on the ground or in water, but on skids or platforms. The loading, transporting, unloading, and piling of the steel material shall be so conducted that the metal will be kept clean and free from injury from rough handling. In field assembly of structural parts, the Contractor shall use methods and equipment not likely to twist, bend, deform, or otherwise injure the metal. Any member slightly bent or twisted shall be corrected before it is placed. The Owner shall reject any member with serious handling damage.

1.4 Workmanship and Finish

Workmanship and finish shall be first-class, equaling the best practice in modern fabrication shops. Welding, shearing, burning, chipping, and grinding shall be done neatly and accurately. All parts of the Work exposed to view shall be neatly finished. Wherever the Drawings show a surface finish symbol, the surface shall be machined.

PART 2 - MATERIALS

2.1 Structural Steel and Metal Work

A. General

Unless otherwise noted on the Drawings, all rolled shapes, plates, and bars shall be carbon steel conforming to ASTM A 36.

B. Pipe and Tube Columns

Pipe and tube columns shall be hot-formed welded or seamless carbon steel structural tubing conforming to ASTM A 501.

C. Standard Railing, Stair Railing, and Toeboard

1. Standard railing shall consist of a top rail, intermediate rails, and posts. Rail height, post spacing, and pipe diameter shall be as shown on the Drawings, or as required by applicable Safety or Building Codes. Railing assembly shall be able to withstand a load of 200 lb. applied in any direction at any point on the top rail.

2. Railing shall be fabricated from Schedule 40 steel pipe, and shall be either a mechanical joint or a welded joint system, unless otherwise specified.

3. Toeboard shall be fabricated of 4"x1/4" steel plate, unless otherwise specified.

D. Grating

1. Steel grating shall be Grating Pacific, Inc., type 19-4 or an approved equal, unless otherwise specified. Grating shall be sized as shown on the Drawings.

2. Grating shall have at least 1"x3/16" bearing bars, or an equally strong I-bar, spaced one inch apart and cross bars four inches on center. Bearing bars shall span in the direction shown on the Drawings. Grating shall be designed for a 300 psf concentrated load and a 100 psf uniform load minimum.

3. Walking surface shall be knurled or fluted to form a non-skid surface. Grating shall have a mill finish and all open edges shall be banded.

E. Treads

1. Stair Treads

Stair treads shall be Grating Pacific, Inc., type W-19-4, 1"x3/16" galvanized steel with nosing, or approved equal, unless otherwise specified. Surface shall be knurled or fluted. Stair treads shall not have dipped galvanized finish and shall be bolted to stair stringers with at least four 3/8" diameter bolts. Grating shall be designed for a 300 psf concentrated load and a 100 psf uniform load minimum.

F. Welding Electrodes

1. Welding electrodes shall conform to the requirements of the "Code for Welding in Building Construction" of the American Welding Society. All welds shall be completed using filler material with a minimum tensile strength of 70 ksi.

2. Filler metal for aluminum welding shall be the filler material recommended in the Welding Handbook, latest edition, published by the American Welding Society. For welded areas that are to be anodized after fabrication, the filler metal selected shall be the one which yields the best color match after anodizing, otherwise the more ductile filler metal shall be selected.

G. Bolts

1. Bolts shall be low carbon steel conforming to ASTM A 325, unless otherwise noted. Bolts shall be furnished with nuts and washers meeting compatible specifications. Bolts shall be unfinished hex head machine bolts, unless otherwise noted. All bolts, units, and washers shall be marked and identified as required in the pertinent specification.

2. Stainless steel bolts shall be formed from Type 303 or 304 stainless steel.

H. Anchor Bolts

Anchor bolts shall meet the requirements of ASTM F 1554, Grade 105, unless otherwise noted, and shall conform to the supplemental requirements S2, S3, and S4. Nuts for black anchor bolts shall conform to ASTM A 563, Grade D or DH. Nuts for galvanized bolts shall conform to ASTM A 563, Grade DH, and shall conform to overtapping and lubrication requirements. Washers shall conform to ASTM F 436. All bolts, nuts, and washers shall be marked and identified as required in the pertinent specification.

I. Expansion Anchor Bolts

Expansion anchor bolts shall be wedge-expanding type anchors being wholly made of the type of material specified (zinc-plated steel if no other material specified), such as Wej-It, manufactured by Wej-It Expansion Projects, Inc., Red Head Wedge Anchors, manufactured by Phillips Drill Company, or an approved equal.

PART 3 - EXECUTION

3.1 Structural Steel and Metal Work

A. Fabrication and Erection

1. All rolled, sheared, and thermal cut edges shall be true to line and free of rough corners and projections. Corners along exposed sheared or cut edges shall be broken by light grinding or another method acceptable to the Engineer, to achieve an approximate 1/16-inch chamfer or rounding.

2. Ends of columns that bear on base and cap plates shall be milled to true surfaces and accurate bevels. When assembled, base plates shall have a fit tolerance within 1/32-inch for 75 percent of the contact area. If warped or deformed, the plates shall be heat straightened, planed, or corrected in some other way to produce accurate, even contact. If necessary for proper contact or required on the Drawings, bearing surfaces shall be planed or milled. Surfaces of warped or deformed base and sole plates that will contact masonry shall be rough finished. On the surface of bearings, the cut of the planer shall be in the direction of expansion. Before leaving the fabrication shop, all machined finished surfaces shall be covered with a protective membrane (wood, plastic, etc.) to prevent accidental damage to the milled surface.

3. Welding and repair welding for all steel fabrication shall comply with the AWS D1.1/D1.1M, latest edition, Structural Welding Code. The Contractor shall weld structural steel only to the extent shown in the approved Shop Drawings. No welding, including tack and temporary welds, shall be done in the shop or field on any structural component unless the location of the welds is shown on the approved Shop Drawings or approved, reviewed, and accepted by the Engineer in writing. All welding shall be completed using filler material with a minimum tensile strength of 70 ksi.

4. Unless otherwise specified, all bolt holes shall be punched or drilled 1/16-inch larger than the nominal diameter of the bolt. All holes shall be clean with no torn

or ragged edges. Burrs on the outside surfaces shall be removed. Flame cutting of holes is not allowed.

5. All bolted connections shall be considered slip critical and shall be tightened using Turn of Nut Tightening Method.

6. All ferrous, non-galvanized structural steel and miscellaneous metal work shall be painted in accordance with Technical Specifications - "Painting."

B. Aluminum Welding

Aluminum shall be welded with gas metal arc (MIG) or gas tungsten arc (TIG) processes in accordance with the recommendations of the American Welding Society contained in the Welding Handbook, as last revised.

C. Standard Railing, Stair Railing, and Toeboard

1. Pipes shall have square and accurate pipe cuts for minimum joint gap. Joints with gaps in excess of 1/32 inch and all loose connections will be subject to rejection. All holes shall be drilled and countersunk the proper size, as required for a tight flush fit of rivets.

2. Welded joint system shall consist of shop-welded sections field connected with a mechanical joint system as specified above. Welded joint system shall have accurate joint makeup and first quality welded joints. If welding is uniform and reasonably smooth, grinding of joints will not be required. Shop-welded sections shall receive hot dip galvanized coating after fabrication.

3. Stair railing shall meet all the requirements of a standard railing. Rail height, post spacing, and pipe diameter shall be as shown on the Drawings, or as required by applicable Safety or Building Codes. Clearance between handrail and any object shall be a minimum of 3 inches.

4. Toeboard shall be securely fastened to railing posts, allowing for slippage due to expansion and contraction.

D. Minimum Embedment for Anchor Bolts

Unless otherwise shown on the Drawings, the minimum embedment for anchor bolts in concrete is as follows:

Bolt Size	Embedment Length
1/2"	4"
5/8"	5"
3/4"	5"
7/8"	6"
1"	7"

E. Trash Rack, Exit Gate, Safety Chain, and Miscellaneous Fabrications

Trash rack, exit gate, safety chain, and other miscellaneous fabrications shall be completed as shown on the Drawings and as required for a complete and functioning system. All hot-dipped galvanizing shall be completed after fabrication. The trash rack fabrication shall be completed in sections as required to facilitate handling and shall be field assembled. Any damaged galvanizing shall be repaired as recommended by the Contractor and approved by the Engineer. A single coat of cold galvanizing spray will not be considered adequate.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for the description of the basis of measurement and payment for the Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 13

STEEL PILING

PART 1 - GENERAL

1.1 Scope

A. These Specifications cover the furnishing and driving of steel piles of the sizes and types specified. This Work also includes cutting off, splicing, or building up piles when required.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Specifications References

Specification references made herein for manufactured materials refer to designations for the American National Standards Institute, Inc. (ANSI) or to the American Society for Testing and Materials (ASTM) as they are effective on the Bid date.

1.3 Submittals

A. The Contractor shall submit certified copies of mill test reports covering the physical and chemical tests of the steel piling along with affidavits of compliance.

B. The Contractor shall submit certification for welders, Welding Procedure Specification (WPS), and weld inspection reports. See the "Pile Splicing and Welding" section of this Specification for details.

C. Pile Driving Equipment

Prior to driving any piles, the Contractor shall submit to the Engineer for approval the details of each proposed pile driving system. The pile driving system shall meet the minimum requirements for the various combinations of hammer type and pile type specified in this section. These requirements are minimums and may need to be increased in order to ensure that the required ultimate bearing capacity can be achieved, that minimum tip elevations can be reached, and to prevent pile damage.

The Contractor shall submit a wave equation analysis for all pile driving systems used with required ultimate bearing capacities of greater than 300 tons. The wave equation analysis shall be performed by, and bear the stamp of, a civil engineer licensed in the State of Oregon. The wave equation analysis shall be performed in accordance with the requirements of this section and the user's manual for the computer program. The wave equation analysis shall verify the pile driving system proposed does not produce stresses

greater than 50,000 pounds per square inch (psi) or 90 percent of the yield stress, whichever is less, for steel piles or steel casings. The wave equation analysis shall also verify that the pile driving system does not exceed the refusal criteria at the depth of penetration anticipated to achieve the required ultimate bearing capacity and minimum tip elevation. Furthermore, the wave equation analysis shall verify that, at the maximum driving resistance specified, the driving resistance is 100 blows per foot or less. Unless otherwise specified or directed by the Engineer, the following default values shall be used as input to the wave equation analysis program:

Output option (IOUT)	0
Factor of safety applied to R_{ult} (ultimate resistance)	1.0
Type of damping	Smith
Residual stress option	No

R_{ult} is the resistance of the pile used in the wave equation analysis. If the ultimate bearing capacity equals the maximum driving resistance, a setup factor of 1.3 may be used in the wave equation analysis to account for pile setup. To use a setup factor in the wave equation analysis, R_{ult} in the analysis is the ultimate bearing capacity divided by 1.3. If the maximum driving resistance exceeds the ultimate bearing capacity, no setup factor should be used, and R_{ult} is equal to the maximum driving resistance of the pile.

Hammer Types	For Analysis of Driving Resistance	For Analysis of Driving Stresses
Single acting diesel hammers	0.72	0.84
Closed-ended diesel hammers	0.72	0.84
Single acting air/steam hammers	0.60	0.70
Double acting air/steam hammers	0.45	0.53
Hydraulic hammers or other external combustion hammers having ram velocity monitors that may be used to assign an equivalent stroke	0.85	1.00

Within 15 working days after the Engineer receives the submittal, the Contractor shall be notified of the Engineer's acceptance or rejection. If the Contractor wishes to change the pile driving system after the Contractor's proposed system has been approved, the system must be submitted for approval to the Engineer, and up to an additional 10 working days for approval will be required.

D. Pile Driving Equipment Minimum Requirements

For each drop hammer used, the Contractor shall weigh it in the Engineer's presence or provide the Engineer with a certificate of its weight. The exact weight shall be stamped on the hammer. Drop hammers shall weigh not less than:

1. 3,000 pounds for piles under 50 feet long that have an ultimate bearing capacity of not more than 60 tons, and

2. 4,000 pounds for piles 50 feet and longer or that have an ultimate bearing capacity of 60 to 90 tons.

For each diesel, hydraulic, steam, or air-driven hammer used, the Contractor shall provide the Engineer with the manufacturer's specifications and catalog. These shall show all data needed to calculate the developed energy of the hammer used.

Steel casings for cast-in-place concrete, steel pipe, and steel H-piles shall be driven with diesel, hydraulic, steam, or air hammers. These hammers shall provide at least the following developed energy per blow:

Maximum Driving Resistance (Tons)	Air or Steam Hammers	Open-Ended Diesel Hammers	Closed-Ended Diesel Hammers	Hydraulic Hammers
Up to 165	21,500	23,000	30,000	18,500
166 to 210	27,500	29,500	38,000	23,500
211 to 300	39,000	41,500	54,000	33,500
301 to 450	59,000	63,000	81,000	50,500

In addition, the ram of any diesel or hydraulic hammer shall have the following minimum weights:

Maximum Driving Resistance (Tons)	Minimum Ram Weight (lbs)
Up to 165	2,700
166 to 210	4,000
211 to 300	5,000
301 to 450	6,500

These requirements for minimum hammer size may be waived if, to the satisfaction of the Engineer, a wave equation analysis is performed that demonstrates the ability of the hammer to obtain the required bearing capacity and minimum tip elevation without damage to the pile.

Vibratory hammers may be used to drive piles provided the location and plumbness requirements of this section are met. The required bearing capacity for all piles driven with vibratory hammers will be determined according to the Ultimate Bearing Resistance Equation specified in this Specification by driving the pile at least an additional 2 feet using an impact hammer. This method of determining bearing capacity will be accepted provided the blows per inch are either constant or increasing. If the pile is driven to refusal and cannot be driven 2 feet, the pile will be considered acceptable for bearing.

PART 2 - MATERIALS

2.1 General

The Contractor shall furnish and install piling of the size, type, and material called for on the Drawings.

2.2 Steel Piling

The material for steel piling and pile splices shall conform to ASTM A 36 or ASTM A 992. The material for steel pipe piling and splices shall conform to the requirements of ASTM A 252, Grade 2. Steel soldier piles and associated steel bars and plates shall conform to ASTM A 36 or ASTM A 992, except as otherwise noted on the Drawings. All steel piling may be accepted by the Engineer based on the manufacturer's certification of compliance.

Steel piles shall be made of rolled steel H-pile sections, steel pipe piles, or of other structural steel sections described on the Drawings. Spiral welded steel pile casings are not allowed for steel pipe piles greater than 24 inches in diameter. A full penetration groove weld with a maximum 1⁄16-inch offset between welded edges is required.

The Engineer shall reject bent, deformed, or kinked piles that cannot be straightened without damaging the metal.

2.3 Steel Pile Tips and Shoes

Steel pile tips and shoes shall be fabricated of cast steel conforming to ASTM A 148, Grade 90-60 [620-415] or ASTM A 27, Grade 65-35 [450-240], and be free from any obvious defects. Pile tips shall be accompanied by a mill test report stating the chemical and physical properties (tensile and yield) of the steel.

PART 3 - EXECUTION

3.1 Pile Driving Leads

A. All piles shall be driven with fixed-lead drivers. The leads shall be fixed on the top and bottom during the pile driving operation. Leads shall be long enough to eliminate the need for any follower. A helmet of the correct size for the hammer shall distribute the blow and protect the top of steel piling or casings from driving damage. The helmet shall be positioned symmetrically below the hammer's striking parts, so that the impact forces are applied concentric to the pile top.

B. Pile driving leads other than those fixed at the top and bottom may be used to complete driving, if approved by the Engineer, when both following criteria are met:

1. Each plumb and battered pile is located and initially driven at least 20 feet in true alignment using fixed leads or other approved means.

2. The pile driving system (hammer, cushion, and pile) will be analyzed by Pile Driving Analyzer (PDA) to verify driving stresses in the pile are not increased due to eccentric loading during driving, and transferred hammer energy is not reduced due to eccentric loading during driving, for at least one production pile. Unless otherwise specified, the cost of PDA testing shall be incidental to the various unit Contract prices for driving piles.

3.2 Tolerances

For elevated pier caps, the tops of piles at cut-off elevation shall be within 2 inches of the horizontal locations indicated on the Drawings. For piles capped below final grade, the tops of the piles at cut-off elevation shall be within 6 inches of the horizontal locations indicated on the Drawings. No pile edge shall be any closer than 4 inches from the edge of any footing or cap. Piles shall be installed such that the axial alignment of the top 10 feet of the pile is within 4 percent of the specified alignment. No misaligned steel or concrete piles shall be pulled laterally. A properly aligned section shall not be spliced onto a misaligned section for any type of pile. Unless the Drawings show otherwise, all piles shall be driven vertically.

3.3 Foundation Pit Preparation

The Contractor shall completely dig all foundation pits and build any required cofferdams or cribs before driving foundation piles. The Contractor shall adjust pit depths to allow for upheaval caused by pile driving, judging the amount of adjustment by the nature of the soil.

Before constructing the footing or pile cap, the Contractor shall restore the pit bottom to the correct elevation by removing material or by backfilling with granular material.

3.4 Preparation for Driving

When driven, pile faces shall be turned as shown on the Drawings or as direct by the Engineer. Steel casing, steel pipe, or H-piles shall have square-cut ends.

3.5 Achieving Minimum Tip Elevation and Bearing

A. Once pile driving has started, each pile shall be driven continuously until the required ultimate bearing capacity shown on the Drawings has been achieved. Pauses during pile driving, except for splicing, mechanical breakdown, or other unforeseen events, shall not be allowed.

B. If the Drawings specify a minimum tip elevation, the pile shall be driven to at least the minimum tip elevation, even if the ultimate bearing capacity has been achieved, unless the Engineer directs otherwise. If a pile does not develop the required ultimate bearing capacity at the minimum tip elevation, the Contractor shall continue driving the pile until the required bearing capacity is achieved.

C. If overdriving is required in order to reach a specified minimum tip elevation, the Contractor shall provide a pile driving system that will not result in damage to the pile or refusal before the minimum tip elevation is reached. The cost of overdriving shall be incidental to the various unit Contract prices for furnishing and driving piles.

D. So long as the pile is not damaged and the embankment or foundation material being driven through is not permanently damaged, the Contractor shall use "normal means" necessary to:

1. Secure the minimum depth specified,

2. Penetrate hard material that lies under a soft upper layer,

3. Penetrate through hard material to obtain the specified minimum tip elevation, or

4. Penetrate through a previously placed embankment.

"Normal means" refers to methods such as preboring, spudding, or water jetting piles. Blasting or drilling through obstructions is not considered normal means.

Prebored holes and pile spuds shall have a diameter no larger than the least outside dimension of the pile. After the pile is driven, the Contractor shall fill all open spaces between the pile and the soil with dry sand, pea gravel, or controlled density fill as approved by the Engineer.

If water jets are used, the jets shall be withdrawn before the pile reaches its final penetration. The pile shall be driven a minimum of 2 feet to obtain the ultimate bearing capacity after the jets are withdrawn or to refusal, whichever occurs first. If the water jets loosen a pile previously driven, the pile shall be redriven in place or pulled and replaced by a new pile. To check on pile loosening, the Contractor shall attempt to redrive at least one in every five piles, but no less than one pile per bent or pier.

The various unit Contract prices for driving piles shall cover all costs related to the use of water jets, preboring, or spudding. The Owner will not pay any costs the Contractor incurs in redriving piles loosened as a result of using water jets, preboring, or spudding.

E. If the Engineer requires, the Contractor shall overdrive the pile beyond the ultimate bearing capacity and minimum tip elevation shown on the Drawings. In this case, the Contractor will not be required to:

1. Use other than normal means to achieve the additional penetration,

2. Bear the expense of removing or replacing any pile damaged by overdriving, or

3. Bear the expense of overdriving the pile more than 3 feet.

In driving piles for footings with seals, the Contractor shall use no method (such as jetting or preboring) that might reduce friction capacity.

3.6 Pile Damage

A. The Contractor shall remove and replace, at no cost to the Owner, any pile that is damaged as determined by the Engineer.

B. After driving a steel casing for a cast-in-place concrete pile, the Contractor shall leave it empty until the Engineer has inspected and approved it. The Contractor shall make available to the Engineer a light suitable for inspecting the entire length of its interior. The Engineer shall reject any casing that is improperly driven, shows partial collapse that would reduce its ultimate bearing capacity, has been reduced in diameter, or will not keep out water. The Contractor shall replace, at no cost to the Owner, any rejected casing. Pile heads that have been broomed, rolled, or otherwise significantly damaged,

as determined by the Engineer, shall be cut back to undamaged material before proceeding with driving as well as final acceptance of the pile.

3.7 Pile Cut-off

The Contractor shall trim the tops of all piles to the true plane as shown on the Drawings and to the elevation the Engineer requires. If a pile is driven below cut-off elevation, without the Engineer's approval, the Contractor shall remove and replace it, at no cost to the Owner, even if this requires a longer pile. Any pile that rises as nearby piles are driven shall be driven down again if the Engineer requires.

3.8 Pile Splicing and Welding

A. All welding of pile splices, tips, anchors, and other welded attachments shall comply with American Welding Society (AWS) D1.1. Welding of temporary supports for access platforms, scaffolding, or other temporary appurtenances will be allowed provided the welds do not reduce the structural capacity of the pile. All temporary attachments shall be removed and ground smooth. Drilling of holes into pile will not be permitted.

B. Splicing of steel piling will be permitted. But in each case, the Contractor must obtain approval on the need and the method for splicing. Welded splices shall be spaced at a minimum distance of 10 feet. Only welded splices will be permitted. Pile splices shall comply with the following:

1. Pipe Piles

   Splice joints for pipe piles shall conform with Joint B-U4a or B-U4a-GF (Single-Bevel Groove Weld) in D1.1, Figure 3.4. Weld backup rings with a full penetration groove weld. Pipe pile splices that include a steel plate for soil plug formation shall conform to Joint TC-U4a or TC-U4a-GF.

2. H-piles

   Splices for H-piles shall conform to Joint B-U3b or B-U3-GF (Double V-Groove Weld) in AWS D1.1, Figure 3.4, for both the web and flange sections. Joint B-U4a or B-U4a-GF may be substituted on the flange weld. Access holes shall be provided at the ends of the web according to AWS D1.1, Section 5.17.

C. Prior to welding, the Contractor shall submit the following for approval:

1. A WPS for all pile welds conforming to the limitations of AWS D1.1, Table 4.5. Both ASTM A 36 and ASTM A 252, Grade 1 and 2, may be treated as prequalified

base metals under Group 1. ASTM A 252, Grade 3, shall not be considered a prequalified base metal unless the steel has a carbon equivalent (CE) of 0.30 percent or less. Contractor shall also develop a Procedure Qualification Record for all welding using Grade 3 steel or present proof that the chemistry of the steel meets the CE requirements.

2. Qualification documents for each welder. Use welders qualified according to AWS D1.1, Section 4, for the position, process, and pile diameter used on the job.

D. Do not begin welding without approval.

E. Following completion of all welding, submit the following:

An inspection report stating that the welding under the Contract was performed according to AWS D1.1. The report shall include a review of the WPS, a review of welder qualifications, and a report on visual inspection of the welds on the job site. The inspection shall be signed by a Certified Welding Inspector holding QC1 certification as defined in AWS D1.1, Section 6.

If the Drawings or Specifications call for additional inspection other than visual, include reports in the submittal.

F. The Engineer may request additional nondestructive testing (NDT), such as radiography or ultrasonic testing, of any or all welds. If the additional testing identifies defects warranting rejection, the Contractor shall perform repair and additional inspection at no additional cost to the Owner. If the additional NDT does not identify defects warranting rejection, the Owner shall pay the cost of the additional testing. Radiographic and ultrasonic defect indications shall be evaluated according to the statically loaded criteria of AWS D1.1.

3.9 Determination of Bearing Values

The following formula shall be used to determine ultimate bearing capacities:

$$P = F \times E \times \mathrm{Ln}(10N)$$

Where:

P = ultimate bearing resistance, in tons

F = 1.8 for air/steam hammers; = 1.2 for open-ended diesel hammers and precast concrete or timber piles; = 1.6 for open-ended diesel hammers and steel piles; = 1.2 for closed-ended diesel hammers; = 1.9 for hydraulic hammers; = 0.9 for drop hammers

E = developed energy, equal to W times H[1], in ft-kips

W = weight of ram, in kips

H = vertical drop of hammer or stroke of ram, in feet

Ln = the natural logarithm, in base "e"

N = average penetration resistance in blows per inch for the last 4 inches of driving

[1]*For closed-ended diesel hammers (double-acting), the developed hammer energy (E) is to be determined from the bounce chamber reading. Hammer manufacturer calibration data may be used to correlate bounce chamber pressure to developed hammer energy. For double acting hammer hydraulic and air/steam hammers, the developed hammer energy shall be calculated from ram impact velocity measurements or other means approved by the Engineer. For open-ended diesel hammers (single-acting), use the blows per minute to determine the developed energy (E).*

The above formula applies only when:

1. The hammer is in good condition and operating in a satisfactory manner.
2. A follower is not used.
3. The pile top is not damaged.
4. The pile head is free from broomed or crushed wood fiber.
5. The penetration occurs at a reasonably quick, uniform rate, and the pile has been driven at least 2 feet after any interruption in driving greater than 1 hour in length.
6. There is no perceptible bounce after the blow. If a significant bounce cannot be avoided, twice the height of the bounce shall be deducted from "H" to determine its true value in the formula.
7. If "N" is greater than or equal to 1 blow per inch.

If "N" required to achieve the required ultimate bearing capacity using the above formula is less than 1 blow per inch, the pile shall be driven until the penetration resistance is a minimum of 1 blow per inch for the last 2 feet of driving.

The Engineer may require the Contractor to install a pressure gauge on the inboard end of the hose to check pressure at the hammer.

If water jets are used in driving, bearing capacities shall be determined either (1) by calculating them with the driving data and the formula above after the jets have been withdrawn and the pile is driven at least 2 feet, or (2) by applying a test load.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 14

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 Description

This section describes temporary measures and monitoring to control water pollution, soil erosion, and siltation. Erosion, sediment, and pollutant control (ESPC) devices or methods include the use of berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, sediment (filter) fences, grasses, slope drains, and other techniques. Additional Work consists of designing, constructing, maintaining, and removing an Engineer approved work isolation barrier system necessary to construct the elevated pipeline and wasteway in and adjacent to the Lost River Diversion Channel system.

1.2 Permits

The United States Bureau of Reclamation (BOR) is the administrator of the National Pollutant Discharge Elimination System General Permit 1200-CA for the Discharge of Construction Site Runoff to Public Waters on projects performed by or for the BOR and Klamath Irrigation District on irrigation facilities through the Project. Additional permits have been obtained through the U.S. Army Corps of Engineers for this Project. The Contractor shall comply with the requirements of the permits as noted in these Specifications and indicated on the Drawings. See the Supplementary Conditions SC-19.02 for additional environmental requirements.

1.3 Submittals

A. At the pre-construction meeting, the Contractor shall submit the following supplemental ESPC information:

1. The construction start and completion dates.

2. The dates when ESPC measures will be in place.

3. The projected date of removal of erosion control structures (after soil is stabilized by vegetation or pavement).

4. A description of control procedures to prevent the discharge of all wash water from concrete trucks into the existing ditches, stormwater system, etc.

5. A description of procedures for prompt maintenance or repair of ESPC measures utilized on site.

6. A description of clearing and grading practices, including a schedule of implementation, that shall minimize the area of exposed soil throughout the

duration of the Project. (Whenever practicable, clearing and grading shall be phased to prevent exposed inactive areas from becoming a source of erosion.)

7. A description of best management practices (BMPs) that shall be used to prevent or minimize stormwater from being exposed to pollutants from spills, cleaning and maintenance activities, and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery as well as debris, leftover paints, solvents, and glues from construction operations.

8. Dust and mud control measures.

9. A name, title, and telephone number of the designated employee to perform the Contractor's inspection and monitoring of ESPC measures.

    a. Any requested changes or modifications to the ESPC measures shown on the Drawings shall be submitted to the Engineer for approval prior to implementation. Upon request by the Engineer, the Contractor shall submit updated ESPC drawings that include the latest modifications.

    b. ESPC inspection records shall be submitted with the Contractor's monthly Application for Payment.

B. In accordance with General Conditions, the following temporary Work isolation measures for the Lost River Diversion Channel shall be provided to the Engineer for review and acceptance prior to construction.

1. Drawings and details depicting how the Work area will be isolated from the active stream flow upstream, through, and downstream of the Work area using temporary water management facilities (for example, inflatable bags, sandbags, sheet pilings, or similar materials).

2. The Temporary Work Isolation Plan shall include the following:

    a. The seal of a Professional Engineer licensed in the State of Oregon.

    b. A description of the measures used to comply with these Specifications.

    c. The sequencing and schedule of dewatering and re-watering activities.

    d. A plan view of all isolation elements.

e. A list of materials to adequately provide appropriate redundancy of key plan functions (for example, an operational, properly sized backup generator).

f. Calculations showing that water withdraw pumps are of adequate capacity if they will be used.

3. Work area isolation shall be completed as required to facilitate fish salvage.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 ESPC

A. General

1. The implementation of the ESPC measures and the construction, performance monitoring, maintenance, replacement, and upgrading of the ESPC measures are the responsibility of the Contractor until all construction is completed, accepted, and vegetation/landscaping is established.

2. The ESPC measures shown on the Drawings shall be constructed in conjunction with all clearing, grading, trenching, and earthwork activities and in a manner that ensures that sediment and sediment-laden water do not enter the drainage system or roadways or violate applicable water quality standards.

3. The ESPC measures shown on the Drawings are the minimum requirements for anticipated site conditions and Contractor methods and sequences. During the construction period, the ESPC measures shall be upgraded as needed for unexpected conditions, storm events, or Contractor methods or sequences and to ensure that sediment and sediment-laden water do not leave the Site.

4. The Contractor shall be responsible for implementing temporary erosion control measures during construction to correct unforeseen conditions. The Contractor shall be responsible for additional erosion control due to the Contractor's negligence, carelessness, or failure to install planned controls as a part of the Work.

B. Construction Details

1. No visible or measurable erosion material or pollutant shall exit the construction Site. Visible or measurable is defined as:

   a. Deposits of mud, dirt, sediment, or similar material exceeding 1/2 cubic foot in volume in any area of 100 square feet or less on public or private streets, adjacent property, or into the storm and surface water systems, either by direct deposit, dripping, discharge, or as a result of the action of erosion.

   b. Evidence of concentrated flows of water over bare soils, turbid or sediment-laden flows, or evidence of on-site erosion such as rivulets on bare soil slopes, where the flow of water is not filtered or captured on the Site.

   c. Earth slides, mud flows, earth sloughing, or other earth movement that leaves the property.

2. The Contractor shall employ all reasonable means and methods to control or divert upslope stormwater runoff away from cleared and grubbed areas, stockpiled materials, and other disturbed areas that will be open or stockpiled for periods longer than two weeks.

3. Construction entrances, exits, and parking areas shall be graveled or paved to reduce the tracking of sediment onto public or private roads. The Contractor shall maintain these for the duration of the Project.

4. Unpaved roads on the Site shall be graveled or under other effective erosion and sediment control measures, either on the road or down gradient, to prevent sediment and sediment-laden water from leaving the Site.

5. The Contractor shall preserve existing vegetation where practicable and revegetate open areas after grading or construction.

6. The Contractor shall continuously secure or protect soil stockpiles from runoff and erosion throughout the Project with temporary soil stabilization measures or protective cover.

7. The Contractor shall provide ongoing maintenance, repair, and restoration of ESPC measures to keep them continually functional. The following maintenance activities shall be included:

a. Visual or measurable amounts of sediment and pollutants that leave the Site shall be cleaned up immediately and placed back on the Site or properly disposed. Under no conditions shall sediment be intentionally washed into storm sewers or drainage ways.

b. Clean catch basin protection when design capacity has been reduced by 50 percent.

c. Remove sediment trapped by sediment fences before it reaches one-third of the aboveground fence height.

d. Remove trapped sediments from sediment basins when design capacity has been reduced by 50 percent.

8. If fertilizers are used to establish vegetation, the application rates shall follow manufacturer's guidelines and the application shall be done in a way that minimizes nutrient-laden runoff to receiving waters.

9. If construction activities cease for 30 days or more, the entire site shall be stabilized using vegetation or a heavy mulch layer, temporary seeding, or another method that does not require germination to control erosion.

10. Any use of toxic or other hazardous materials shall include proper storage, application, and disposal.

11. Clean all catch basins and inlets protected from sediment prior to paving and final acceptance. The cleaning operation shall not flush sediment-laden water into the downstream system.

C. Monitoring and Reporting Requirements

1. The Contractor shall designate an employee to perform inspections of ESPC measures. The employee shall have knowledge and experience in construction stormwater controls and management practices.

2. The Contractor shall inspect erosion control measures daily and maintain as necessary to ensure their continued functioning.

3. For inactive periods of work, the Contractor shall inspect ESPC measures at least once every 14 days and within 24 hours after any storm with precipitation greater than 0.5 inch per 24-hour period.

4. The Contractor shall visibly monitor stormwater runoff to evaluate the effectiveness of the erosion control measures or practices. If visible quantities of sediment are leaving the property, the Contractor shall take corrective action immediately. The Contractor shall notify the Engineer of all corrections and violations.

5. The Contractor shall keep a record of inspections. This record shall be made available to the Engineer upon request and shall be submitted with each Application for Payment.

6. Visual inspections shall document the following information:

   a. Inspection date, inspector's name, weather conditions, and rainfall amount for past 24 hours (inches). (Rainfall information can be obtained from the nearest weather recording station.)

   b. List observations of all BMPs including erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the Site, status of areas that employ temporary or final stabilization control, soil stockpile area, and non-stormwater controls.

   c. At representative discharge location(s) from the construction Site, the Contractor shall conduct observations and document the quality of the discharge for any turbidity, color, sheen, or floating materials. If possible, in the receiving stream, observe and record color and turbidity or clarity upstream and downstream within 30 feet of the discharge from the Site. For example, a sheen or floating material shall be noted as present/ absent. If present, it may indicate possible spill and/or leakage from vehicles or materials storage. Observation for turbidity and color shall describe any apparent color, the clarity of the discharge, and apparent differences compared with the receiving stream.

   d. If visual or measurable amounts of sediment are leaving the property, the Contractor shall briefly explain the corrective measures taken to reduce the discharge and/or clean it up. The Contractor shall describe efforts to prevent future releases. The ESPC shall be amended accordingly.

   e. If a site is inaccessible due to inclement weather, the inspection shall include observations at a relevant discharge point or downstream location, if practical.

3.2 Temporary Water Isolation

A. The Contractor shall install, operate, and remove temporary water management equipment and materials within the regulated work area only during the allowable work period unless prior approval is given by the Engineer and the Work conforms to applicable permit conditions and regulations. Work shall be timed with the shutdown of water flow in Lost River Diversion Channel at the end of the 2016 irrigation season. Shutdown length shall be 10 days.

B. The Contractor shall perform the following prior to and during installation:

1. Notify the Engineer at least 30 calendar days prior to beginning temporary water management or other Work within the regulated work area. The Contractor shall receive Engineer approval prior to Work beginning within the regulated work area.

2. Coordinate the fish and aquatic life removal with BOR biologists prior to and after installing temporary water management facilities or conducting Work within the regulated work area. Provide BOR, Oregon Department of Fish and Wildlife, and qualified and permitted consultant personnel access to the regulated work area to remove fish or aquatic life trapped within the isolated work area, as directed.

C. The Contractor shall provide safe passage around or through the isolated work area for adult and juvenile migratory fish.

D. The Contractor shall provide the proper size and number of pumping units necessary to maintain the isolated work area free from any water intrusion through the isolation barrier system.

E. All pump inlets shall be screened with 3/32-inch mesh material to avoid entraining juvenile fish. When pumping to dewater area, U.S. Bureau of Reclamation furnished fishery biologist shall be present on Site to attempt to capture fish from the isolated area and release them downstream, using dip nets, seine, electrofishing, or other methods to minimize risk of injury to fish.

F. No water pumped from the area shall be discharged back into the stream unless it has been treated by filter trucks, Baker Corporation, or other approved technology to remove debris, sediment, and other pollutants likely to be present. Technology shall be approved by the Engineer.

TECHNICAL SPECIFICATIONS

SECTION 14

TEMPORARY ENVIRONMENTAL CONTROLS

PART 4 - BASIS MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for the description of the basis of measurement and payment for the Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 15

TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC

PART 1 - GENERAL

1.1 Scope

A. General

These Technical Specifications cover temporary protection and direction of traffic, including accommodations for public traffic and work zone traffic control. The Work includes, but is not limited to, preparing and following a traffic control plan; providing temporary traffic control measures; and furnishing, installing, and maintaining temporary traffic control devices.

B. Work Zone Traffic Control

1. This Work consists of providing temporary traffic control measures (TCM) and furnishing, installing, moving, operating, maintaining, inspecting, and removing traffic control devices (TCD) throughout the project area according to the project Drawings and Specifications, the Oregon Standard Drawings, the traffic control plan (TCP) for the Project, or as described.

2. All traffic control devices such as temporary signing, barricades, barriers, guardrail, attenuators, pedestrian fencing, lights, cones, temporary pavement striping, etc., required to warn, protect, or direct the public during the life of the Contract shall be furnished, installed, moved, and removed by the Contractor. When conditions warrant their use, flaggers and/or pilot cars shall also be provided by the Contractor. The determination of what measures are required, in addition to those specifically called for by the Drawings, Specifications, and applicable regulatory jurisdictions, shall be solely the responsibility of the Contractor.

3. The Engineer and Owner are not responsible for determining whether proper traffic control devices are being utilized. Should the Contractor fail to furnish, maintain, and replace the necessary traffic control devices, the Owner or Engineer may, but shall not be required to, bring to the Contractor's attention, by written notice, such failure, and the Contractor shall undertake such corrective measures as is proper.

TECHNICAL SPECIFICATIONS

SECTION 15

TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC

1.2 Abbreviations

ADT	Average Daily Traffic
ODOT	Oregon Department of Transportation
QPL	Qualified Products List (ODOT)
TCD	Traffic Control Devices
TCM	Traffic Control Measures
TCP	Traffic Control Plan
TCS	Traffic Control Supervisor
TSS	Temporary Sign Support
PCMS	Portable Changeable Message Sign

1.3 Definitions

A. Oregon Standard Specifications for Construction 2015

Oregon Department of Transportation - Oregon Standard Specifications for Construction - 2015.

B. Traffic Control Devices (TCD)

Signs, signals, markings, and other devices placed on or adjacent to a road to regulate, warn, or guide traffic.

C. Traffic Control Measures (TCM)

Elements of the TCP including, but not limited to, TCD, personnel, materials, and equipment used to control traffic through a work zone.

D. Traffic Control Plan (TCP)

A written and drawn plan for handling traffic on a specified roadway through a work zone.

E. Work Zone

An area within roadway construction, maintenance, or utility work activities.

1.4 Standards

Use and follow the current edition of the ODOT "Sign Policy and Guidelines for the State Highway System," the current edition of the "Manual on Uniform Traffic Control Devices

(MUTCD)," these Specifications, and the Oregon Standard Drawings listed below in designing, applying, installing, maintaining, inspecting, and removing traffic control devices. Copies of Oregon Standard Drawings TM800, TM810, TM820, TM831, TM840, TM841, and TM850 are included at the end of this Section of the Technical Specifications.

1.5 Applicability

Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.6 Traffic Control Description

A. Traffic Control Plan

The Contractor shall prepare a written TCP and submit it to the Engineer a minimum of 15 calendar days before the pre-construction conference for review by the Engineer and all applicable agencies. The TCP shall show all TCM and all TCD. The Contractor shall describe the order and duration of TCM for all phases of the construction Work.

B. Stage Requirements

1. General

Provide advance warning on Highway 39 for work zone.

2. Stage I - Temporary Shoring for Existing Highway 39 Structure

Provide advance warning signs, work zone signs, flaggers, and work area/buffer zone control devices, etc., for one-way traffic to install temporary shoring.

3. Stage I - Highway 39 Siphon Pipe Installation

Provide advance warning signs, work zone signs, flaggers, and work area/buffer zone control devices, etc., to detour traffic around work area to install siphon pipe across Highway 39. TCD and signs to be installed to fully delineate truck detour route and local traffic access.

4. Stage II - Highway 39 Structure Removal

Provide advance warning signs, work zone signs, flaggers, and work area/buffer zone control devices, etc., to detour traffic around work area to remove the

existing flume structure over Highway 39. TCD and signs to be installed to fully delineate truck detour route and local traffic access.

5. Stage III - Highway 39 Surface Restoration

   Provide advance warning signs, work zone signs, flaggers, and work area/buffer zone control devices, etc., for one-way traffic for earthwork and paving operations to restore the Highway 39 roadway surface.

C. Additional Requirements

1. The Contractor shall coordinate all Work with the Engineer and have the Work reviewed and approved by the Owner, Klamath County Public Works, ODOT, Klamath County School District, and affected emergency services agencies.

2. Flagging operations shall be 24 hours per day.

3. The Contractor shall notify and coordinate with property owners to provide access to commercial, business, farms, and private driveways/residences within the work zone at all times during construction.

4. Stage I - Highway 39 pipe Installation shall be completed in the summer of 2016 at least one week after the school year has ended and four weeks before the start of the new school year. Maximum allowable detour time is 10 days.

5. Stage II - Highway 39 structure removal to be completed in the fall of 2016 after irrigation season and with approval of the Klamath Irrigation District. Maximum allowable detour time is 3 days and shall be completed with weekend work.

6. Provide for adjustments to the TCM and TCD for the various stages of the Contractor's work.

7. The Contractor shall notify the Engineer, ODOT, and other affected agencies and public services no later than 2 weeks prior to any road closures.

8. The Contractor shall provide 35-day advance notification to the Motor Carrier Department for any restrictions (16-foot minimum horizontal clearance) and for closing highway when under detour.

PART 2 - MATERIALS

2.1 Traffic Control Devices

A. General

1. The Contractor shall use new or like-new TCD for all installations unless otherwise specified. All TCD shall conform to Section 00225 of the Oregon Standard Specifications for Construction - 2015. The Contractor shall provide test results and quality compliance certificates, equipment lists, and drawings when specified.

2. Acceptance will be based on the ODOT QPL, test results, quality compliance certificates, equipment lists, Drawings, and testing as necessary to ensure compliance with the Specifications.

B. The Contractor shall use Category I, Category II, and Category III TCD conforming to the National Cooperative Highway Research Program (NCHRP) Report 350. Category I devices are low-mass devices including, but not limited to, conical markers, tubular markers, plastic drums, and delineators. Category II devices include, but are not limited to, barricades and sign supports. Category III devices include, but are not limited to, impact attenuators, end treatments, and concrete barriers.

C. Temporary Signing

1. The Contractor shall use new temporary signs and accessories. The Contractor shall use materials and fabricate signs conforming to Oregon Standard Specifications - Section 00940.

2. The Contractor shall use standard size and shape signs conforming to the current edition of the MUTCD and "Sign Policy and Guidelines for the State Highway System" unless otherwise specified or ordered.

3. Double-face signs will not be allowed except for flagger "STOP/SLOW" sign paddles.

4. The Contractor shall use Type "00" signs unless otherwise indicated in this Section or in the TCP.

D. Other TCD. The Contractor shall provide TCD as specified or as required for the work zone traffic control that may include:

1. Temporary Sign Supports (TSS)
2. Amber Flashers
3. Sign Flag Boards
4. Temporary Barricades
5. Guardrail Barrier
6. Concrete Barrier
7. Impact Attenuators
8. Barrier and Guardrail Mounted Reflectors
9. Glare Shields
10. Temporary Pedestrian Fencing
11. Temporary Traffic Delineation
12. Tubular Markers
13. Conical Markers
14. Surface Mounted Tubular Markers
15. Plastic Drums
16. Delineators
17. Pavement Markers
18. Reflective Pavement Markers
19. Flexible Oiling Pavement Markers
20. Flexible Overlay Pavement Markers
21. Temporary Tape
22. Striping
23. Temporary Illumination
24. Temporary Traffic Signals
25. Sequential Arrow Signs
26. Portable Changeable Message Signs
27. Temporary Illumination for Nighttime Flaggers
28. Pilot Cars

PART 3 - EXECUTION

3.1 Accommodations for Public Traffic

A. Scope

This Work consists of maintaining facilities to accommodate public traffic through and within the project area. Public traffic includes motor vehicles, bicycles, and pedestrians. The Contractor's responsibilities for accommodating public traffic begin on the day any on-site work begins within the project limits. The Contractor shall provide for the safety and convenience of the public and:

TECHNICAL SPECIFICATIONS

SECTION 15

TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC

1. Be responsible for damages to property, injury to persons, loss, expense, inconvenience, and delay caused by or resulting from any act, omission, or neglect of the Contractor, the Contractor's subcontractors and suppliers, or their employees while performing the Work.

2. Conduct Work at all times for the least possible interference with or hazard to the traveling public and residents affected by the Project.

3. Do not perform Work that would restrict or interrupt traffic movement on opposite sides of the traveled way at the same time.

4. Keep the existing lanes of traffic open and in operation through the Project at all times, except one lane may be closed to traffic in the immediate work area, but only during hours work is actually being performed. All lanes may be closed to traffic on a limited basis when approved by the Owner.

5. Do not stop or hold vehicles or block driveways, intersections, or connections for more than 20 minutes unless otherwise authorized in writing.

6. Submit proposed methods and lane closure times in each instance to the Engineer for approval with a minimum of two weeks' advance notice to allow the traveling public to be notified through the news media.

7. Obtain the Engineer's and ODOT approval before closing any lanes.

8. Do not close any lane until the area is signed according to the requirements of this Section.

9. Park construction equipment, vehicles, and stockpiled material at least 30 feet from the traveled way. If this is not possible, protect the equipment, vehicles, and stockpiled material with barriers or other satisfactory means.

10. Provide and maintain in a safe condition temporary access to business and residence driveways, temporary intersections, and temporary connections with roads, streets, bikeways, sidewalks, and footpaths.

11. Provide public protection from work areas.

12. Allow emergency vehicles immediate passage at all times.

B. General Requirements

The Contractor shall provide the following for public traffic in all construction areas:

1. Traffic Nuisance Abatement

If loose rock or dust exists on roadway surfaces and shoulders, the Contractor shall do one or more of the following:

a. Use pilot cars and/or flaggers.

b. Apply a fine spray of water to the surface.

c. Use dust control applications.

d. Broom paved surfaces with power brooms.

2. Detours and Stage Construction

The Contractor shall construct and remove, if required, detours, stage construction roadways, shoulders, and temporary bridges, including accessory features shown on the Drawings.

3. Driveways

The Contractor shall while working on subgrade and other construction, provide adequate access to businesses, residences, intersections, and connections as follows:

a. Construct and maintain temporary aggregate driveways, approaches, crossings, and intersections as needed.

b. Use reasonably well-graded aggregate material.

c. Before placing the permanent base, do one of the following:

1) Uniformly spread the temporary aggregate material over the subgrade.

2) Remove and place the temporary aggregate material in the shoulder slope area if it meets quality requirements.

3) Dispose of the temporary aggregate material in a satisfactory manner.

4. Adjacent to Excavations

Where paved shoulders adjacent to excavations are less than 4 feet wide, the Contractor shall protect the traffic as follows:

a. At the end of each working day, backfill pavement edge excavations to the elevation of the existing pavement with permanent base material or with a temporary wedge of aggregate as shown on the Drawings.

b. Do not excavate along both edges of the pavement adjacent to traffic at the same time. Before excavating at the edge of the pavement on the opposite side of the roadway, the Contractor shall complete the construction to existing pavement elevation on the side that was excavated first.

c. Remove the temporary wedge of aggregate material, if used, before placing permanent base material, and place it in the shoulder slope area or spread it uniformly over the subgrade.

C. Surface Maintenance Responsibilities

The Contractor shall maintain roadway surfaces at all times for public traffic through and within the project.

1. The Contractor shall be responsible for maintaining surfacings during construction at the Contractor's expense including the following:

a. Keeping surfaces that are being used by public traffic free of dirt, mud, or other harmful materials.

b. Repairing damage to surfaces caused by the Contractor's operations.

c. Maintaining any detour or stage construction surfacing not constructed as specified or directed.

2. The Owner shall be responsible for the following during construction at Owner's expense:

   a. Maintaining surfaces and shoulders in existence at the start of the Project that have not been damaged by Contractor operations.

   b. Maintaining surfaces of detours and intermediate stage construction during the time they are being used by public traffic, but only if constructed according to the Drawings or as directed.

   c. Sanding icy pavements and removing the sand residue.

   d. Removing snow from traveled ways as required to accommodate public traffic.

3. Work Suspensions

   During work suspensions, the Contractor shall maintain surfacings for which the Contractor is responsible and shall maintain work zone traffic control.

   a. Suspensions Due to Fault of the Contractor

      If the suspension is due to any cause within the control or responsibility of the Contractor, including failure to perform any provisions of the Contract or correct conditions unsafe for the general public, workers, or Owner's employees, then the Contractor shall do the following:

      1) Assume sole responsibility for making provisions for traffic acceptable to the Engineer.

      2) Be solely responsible for the costs of maintaining surfaces under traffic, the Work, and work zone traffic control during the suspension.

   b. Suspensions Due to Other Causes

      If the Work is suspended due to winter seasonal conditions or any cause not related to any fault or negligence of the Contractor; the Contractor shall:

1) Place uncompleted traveled ways, shoulders, driveways, approaches, connections, and detours necessary for traffic in a maintainable, acceptable condition.

2) Be responsible for the work (i.e., safety, security, damage, etc.).

3) Be responsible for work zone traffic control.

The Owner shall then assume responsibility for maintenance of the roadway surfaces during "Suspensions Due to Other Causes."

D. Opening Sections to Traffic

1. When approved by the Engineer and ODOT, the Contractor shall open the closed work area to traffic. Until the Project has final acceptance, the Contractor shall maintain the work area as required for safe traffic flow.

2. When it is in the public interest, the Owner may request any portion of the Work be opened to traffic. If the portion opened to traffic has been finished in an acceptable manner, it will be designated as "accepted for traffic," and the Contractor shall be relieved of maintaining it for legal public traffic. If the portion of the Work to be opened to traffic has not been finished in an acceptable manner, it shall be maintained by the Contractor in a condition serviceable and adequate for traffic until it is finished in an acceptable manner except when the Work is suspended due to winter seasonal conditions or any cause not related to any fault or negligence of the Contractor.

3.2 Work Zone Traffic Control

A. General Requirements

The Contractor shall be responsible to provide and maintain all TCM. The Engineer may verbally or in writing require immediate changes to the TCM being used on the Project. The Contractor shall immediately make these changes. The Contractor shall submit all proposed TCM revisions to the Engineer for review.

1. The Contractor shall not start work on any stage of construction until the TCP has been reviewed and approved by ODOT, all TCM are in place, and the TCP is operating satisfactorily. During construction, the Contractor shall determine if additional TCD are required in addition to those in-place and immediately notify the Engineer. The Contractor shall immediately make changes as required, but shall not place or remove devices without prior notice to the Engineer.

2. After TCD have been accepted in-place on the Project, the Contractor shall inspect and maintain the condition of the devices throughout the duration of the affected work.

3. The Contractor shall immediately correct any unsafe conditions. TCM may be performed by the Owner if the Contractor fails to correct an unsafe condition. Costs for work performed by the Owner shall be deducted from monies due the Contractor. In any case, the Contractor has sole responsibility for public safety.

4. The Contractor shall provide TCM outside the Contract limits when required.

5. All electrical equipment, materials, and work shall conform to National Electric Code requirements and any other laws that apply.

B. Routing Traffic Over Surfacings

When allowed by the TCP, the Contractor shall control traffic being routed over newly constructed surfacings as follows:

1. Aggregates

Control traffic over aggregate surfacings using flaggers, or flaggers and pilot car(s).

2. Asphalt Concrete

Control traffic over asphalt concrete shall be in accordance with Technical Specifications - "Surface Restoration."

C. Flaggers

1. The Contractor shall use flaggers, a Traffic Control Supervisor (TCS), signal operators, and pilot car operators who have:

a. The mental and physical ability to provide timely, clear, and positive guidance.

b. A sense of responsibility for safety of public and work crew.

c. A neat appearance.

d. A courteous but firm manner.

e. Completed an approved work zone traffic control and flagging course within the past three years and have in their possession a current, valid certificate verifying their training.

2. The Contractor shall equip flaggers as follows:

a. Clothing to cover the complete body except head, neck, and arms below the point of the shoulders.

b. A retroreflective vest colored orange, yellow, strong yellow-green, or a fluorescent version of these colors. The retroreflective material shall be orange, yellow, white, silver, strong yellow-green, or a fluorescent version of one of these colors, and shall be visible at a minimum distance of 1,000 feet. The vest shall be designed to identify the wearer as a person and be visible through the full range of body motions.

c. A fluorescent yellow-green, orange, yellow, or bright white hard hat or baseball-style cap.

d. Hard hats shall be worn when there is danger of failing or flying objects or electrical shock or burns.

e. Highly visible "STOP/SLOW" sign paddles conforming to the MUTCD and fabricated using encapsulated lens reflective sheeting or brighter.

f. Portable, self-contained two-way radio with a range suitable for the project.

g. Illuminated stand area of high visibility at night.

D. Traffic Control Supervisor

1. The Contractor shall appoint a trained person on the job site during working hours and on-call at all other times who:

a. Is responsible to maintain all TCD in proper position and condition.

b. Is equipped with a two-way radio with a range suitable for the project.

c. Has the authority to assign and control flagging operations.

d. Files his/her name and telephone number with the Engineer and local emergency services.

2. The TCS shall personally perform all duties of the TCS.

3. The TCS shall have completed an approved work zone traffic control supervisor and flagging course within the past three years and have in their possession a current, valid certificate verifying their training as a TCS by an Oregon State TCS Certification Class approved training course.

4. The Contractor shall equip the TCS as follows:

a. Clothing, vest, hard hat, or cap equivalent to that of flaggers.

b. A portable, self-contained two-way radio with a range suitable for the project.

c. A cellular telephone that is active 24 hours a day.

d. A vehicle that is equipped with a roof or post mounted rotating amber light.

E. Construction

The Contractor shall install, inspect, move, operate, maintain, and remove temporary TCD according to the Drawings, these Specifications, and Sections 00225.40 through 00225.67 of the Oregon Standard Specifications for Construction.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

END OF SECTION

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TAPER TYPES & FORMULAS

TAPER	FORMULA
Merging (Lane Closure)	"L"
Shifting	"L"/2 or ½"L"
Shoulder Closure	"L"/3 or ⅓"L"
Flagging (See Drg. TM850)	50' - 100'
Downstream (Termination)	Varies (See Drawings)

★ Use Pre-Construction Posted Speed to select the Speed from the Tables below:

CONCRETE BARRIER FLARE RATE TABLE

★ SPEED (mph)	MINIMUM FLARE RATE
≤ 30	8:1
35	9:1
40	10:1
45	12:1
50	14:1
55	16:1
60	18:1
65	19:1

MINIMUM LENGTHS TABLE

★ SPEED (mph)	"L" VALUE FOR TAPERS (ft) W = Lane or Shoulder Width being closed or shifted				BUFFER "B" (ft)
	W ≤ 10	W = 12	W = 14	W = 16	
25	105	125	145	165	75
30	150	180	210	240	100
35	205	245	285	325	125
40	265	320	375	430	150
45	450	540	630	720	180
50	500	600	700	800	210
55	550	660	770	880	250
FREEWAYS					
55	1000	1000	1000	1000	250
60	1000	1000	1000	1000	285
65	1000	1000	1000	1000	325

NOTES:
- For Lane closures where W < 10', use "L" value for W = 10'.
- For Shoulder closures where W < 10', use "L" value for W = 10' or calculate "L" using formula, for Speeds ≥ 45: L = WS, Speeds < 45: L = S²W/60, S = Speed, W=Width

TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE

★ SPEED (mph)	Sign Spacing (ft) A	B	C	Max. Channelizing Device Spacing (ft)
20 - 30	100	100	100	20
35 - 40	350	350	350	20
45 - 55	500	500	500	40
Freeway	1000	1500	2640	40

NOTES:
- Place traffic control devices on 10 ft. spacing for intersection and access radii.
- When necessary, sign spacing may be adjusted to fit site conditions. Limit spacing adjustments to 20% of the "A" dimension for speeds < 45 mph. Limit spacing adjustments to 10% of the "A" dimension for speeds ≥ 45 mph.

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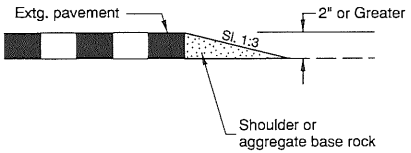
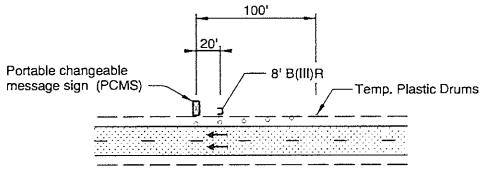
NOTES:
- When paved shoulders adjacent to excavations are less than four feet wide protect longitudinal abrupt edge as shown.
- Use aggregate wedge when abrupt edge is 2 inches or greater.



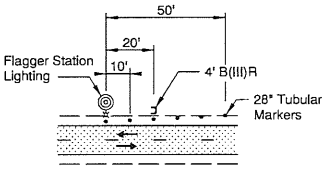
EXCAVATION ABRUPT EDGE

NOTES:
- Install PCMS beyond the outside shoulder, when possible.
- Use the appropriate type of barricade panels for PCMS location. Right shoulder, use Type B(III)R Left shoulder, use Type B(III)L
- Use six drums in shoulder taper on 20' spacing.
- Detail as shown is also used for Portable Traffic Signal installation and Portable Traffic Management System.



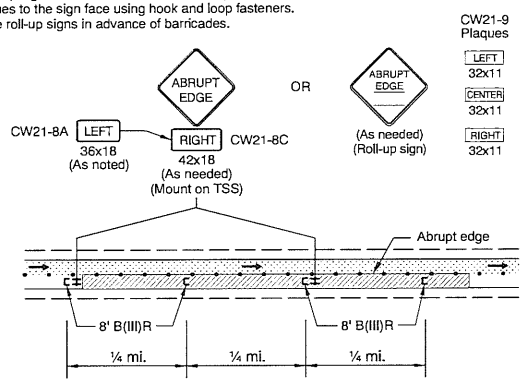
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) INSTALLATION

NOTES:
- Install Flagger Station Lighting beyond the outside shoulder, where practical.
- Use six tubular markers in shoulder taper on 10' spacing.
- Place cart / generator / power supply off of the shoulder, as far as practical.



FLAGGER STATION LIGHTING DELINEATION

NOTES:
- Abrupt edges may be created by paving, operations, excavations or other roadway work. Use abrupt edge signing for longitudinal abrupt edges of 1 inch or greater.
- If the excavation is located on left side of traffic, replace the 8' B(III)R barricades with 8' B(III)L barricades and replace the "RIGHT" (CW21-8C) riders with "LEFT" (CW21-8A) riders.
- Continue signing and other traffic control devices throughout excavation area at spacings shown.
- If roll-up signs are used, attach the correct (CW21-9) plaques to the sign face using hook and loop fasteners. Place roll-up signs in advance of barricades.



TYPICAL ABRUPT EDGE DELINEATION

GENERAL NOTES FOR ALL TCP DRAWINGS:
- Signs and other Traffic Control Devices (TCD) shown are the minimum required.
- Place a barricade approx. 10' ahead of all Temporary Sign Supports (TSS).
- Place a barricade approx. 20' ahead of all sequential arrow boards.
- Arrows shown in roadway are directional arrows to indicate traffic movements.
- All signs are 48" x 48", type "O4" flourescent orange, unless otherwise shown.
- Low speed highways have a pre-construction posted speed of 40 mph or less. High speed highways have a pre-construction posted speed of > 40 mph.
- Do not locate sign supports in locations designated for bicycle or pedestrian traffic.

Temp. Plastic Drums See TCD Spacing Table for max. spacing.

28" Tubular Markers See TCD Spacing Table for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

CALC. BOOK NO. TM09-01

BASELINE REPORT DATE 01-JUL-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

TABLES, ABRUPT EDGE AND PCMS DETAILS

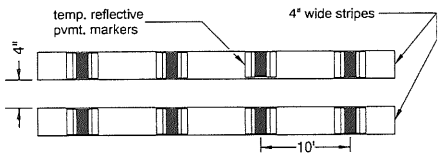
2015

DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING AND NOTES
07-01-2015	REVISED DRAWING AND NOTES

Effective Date: December 1, 2015 - May 31, 2016

TM800

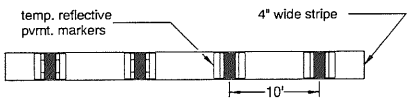
tm810.dgn 01-JAN-2015



LAYOUT "A"
(Supplemented double solid lines)

TYPICAL APPLICATIONS:

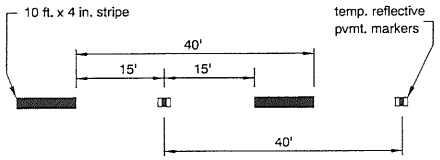
- To prohibit lane changes or passing (include appropriate regulatory signs).
- Freeway or multilane shifts and crossovers.
- For projects in place through winter months.
- Two-lane, two-way centerlines.



LAYOUT "B"
(Supplemented solid line)

TYPICAL APPLICATIONS:

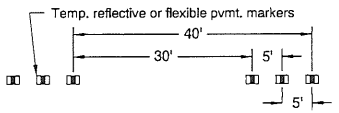
- Alignment shifts or crossovers.
- To discourage lane changes in multilane sections.
- For projects in place through winter months.



LAYOUT "C"
(Supplemented broken lines)

TYPICAL APPLICATIONS:

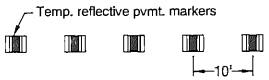
- Freeway and multilane broken lines.
- High ADT 2 lane roads (greater than 10,000).
- For projects in place through winter months.



LAYOUT "D"
(Simulated broken lines)

TYPICAL APPLICATIONS:

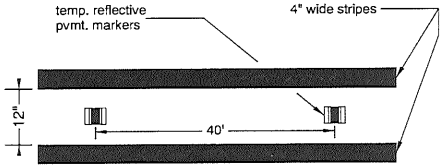
- During staging on finished/existing surfaces.
- HMAC intermediate surfaces.
- Emulsified asphalt surface treatments (chip seals) where permanent pavement markings cannot be placed within two weeks.



LAYOUT "E"
(Simulated solid lines)

TYPICAL APPLICATIONS:

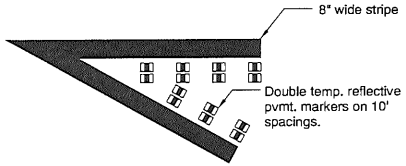
- Alignment shifts or crossovers.
- To discourage lane changes in multilane sections.
- Edge lines for short durations, less than 14 days.



LAYOUT "F"
(Supplemented wide double solid lines)

TYPICAL APPLICATIONS:

- To prohibit lane changes or passing (include appropriate regulatory signs).
- 2 lane, 2 way centerlines.
- 2 lane, 1 way alignments on freeways or multi-lane highways.



LAYOUT "G"
(Supplemented solid 8" line)

TYPICAL APPLICATIONS:

- Gore areas
- Alignment splits (bifurcations)

GENERAL NOTES FOR ALL DETAILS:

- When using Supplemented or Simulated lines:
  1. Yellow Bi-Directional Pavement Markers are required for Two-Way Traffic.
  2. White Mono-Directional Pavement Markers are required for one-way traffic or edge lines.
- Supplemented lines are painted lines enhanced with Reflective Pavement Markers.
- Simulated lines are Reflective Pavement Markers placed in a pattern to substitute for a painted line.
- Pavement marking colors shall conform to the MUTCD.

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS

TEMPORARY PAVEMENT MARKINGS

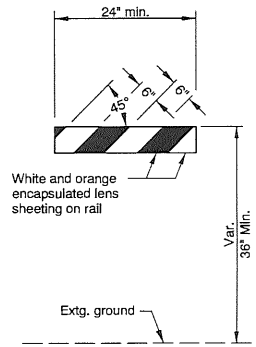
2015

DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING AND NOTES

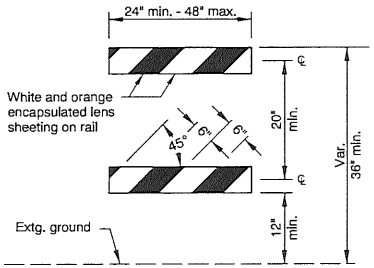
TM810

Effective Date: December 1, 2015 - May 31, 2016

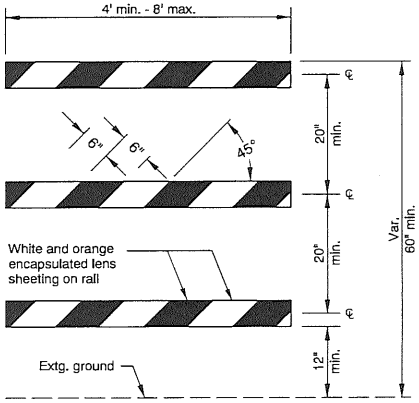
TM810



TYPE I



TYPE II



TYPE III

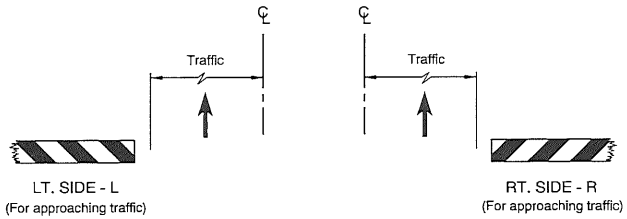
BARRICADE RAIL LAYOUT

GENERAL NOTES FOR ALL DETAILS:

- All non-reflectorized surfaces shall be white.
- Sandbags (approximately 25 lb sack filled with sand) may be placed on lower frame to provide additional ballast.
- Ballast shall not extend above bottom rail or be suspended from barricade.
- For rails less than 36" long, 4" wide stripes shall be used.
- Rails must be 8" min. to 12" max. in height.
- Use barricades from ODOT Qualified Products List (QPL).
- Use 4' Type III barricades where horizontal space is limited.
- Do not block bike lanes or shoulders unless the facility is properly closed and signed.
- Do not place barricades in sidewalks unless sidewalk is closed and signed according to the TCP. See Dwg. No. TM 844

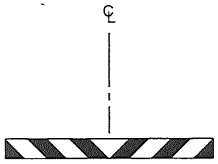
NOTES:

- Markings for barricade rails shall slope downward at an angle of 45° in the direction traffic is to pass.
- Where a barricade extends entirely across a roadway, it is desirable that the stripes slope downward in the direction toward which traffic must turn in detouring.
- Where both right and left turns are provided for, slope the chevron striping downward in both directions from the center of the barricade.
- For full roadway closures, the C or LR barricade may be used. Extend barricades completely across roadway unless access is required for local road users.

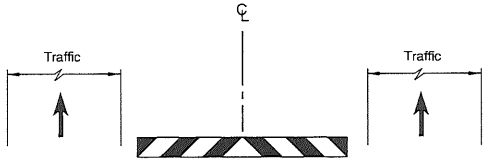


LT. SIDE - L
(For approaching traffic)

RT. SIDE - R
(For approaching traffic)

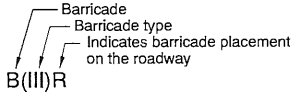


CLOSED - C
(For approaching traffic)



LT. / RT. - LR
(For approaching traffic)

DIAGRAM FOR BARRICADE PLACEMENT AND SLOPE MARKING



BARRICADE NOTATION

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JAN-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS

TEMPORARY BARRICADES

2015

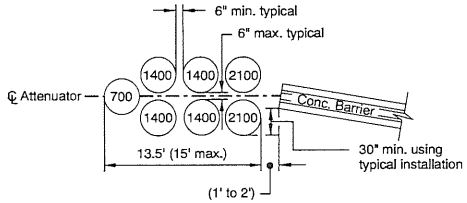
DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING AND NOTES

Effective Date: December 1, 2015 - May 31, 2016

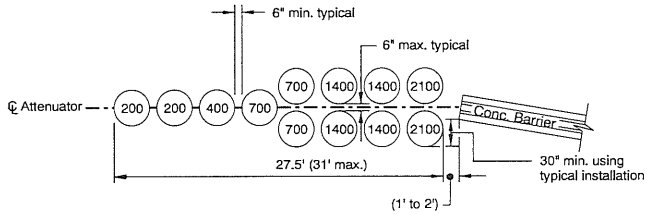
TM820

tm820.dgn 01-JAN-2015

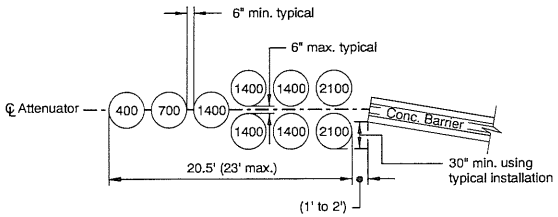
TM820



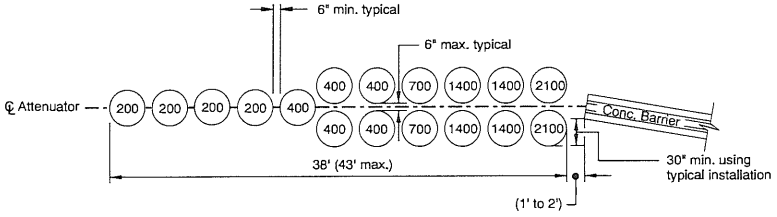
35 mph LAYOUT



55 mph LAYOUT



45 mph LAYOUT



65 mph LAYOUT


Rt. Shldr. Placement


Gore Placement


Lt. Shldr. Placement

OBJECT MARKERS

GENERAL NOTES FOR ALL DETAILS:

- Use the appropriate layout configuration based on the pre-construction posted speed, as approved by the Engineer.
- Use Temporary Impact Attenuator from the QPL. Typical outside diameter of each module is 36".
- Attenuator layout shown is a typical layout. Layouts may vary by both speed and manufacturer.
- Number shown within each module is mass of dry sand in pounds.
- Final alignment of attenuator will be established in the field, as directed. At locations where vibrations and surface slopes may cause modules to shift, modules shall be anchored to prevent movement according to manufacturer's instructions and as approved by the engineer.
- The leading module of each attenuator shall be delineated with the appropriate object marker, as shown above.
- The object marker shall be ⅛" thick aluminum sheeting approx. 24" wide, 30" deep, and covered with yellow encapsulated lens sheeting. Black stripes 5" wide shall be silk-screened on the sheeting at a 45° slope and with 4" space between stripes.
- In cold climates, mix sand with 5% rock salt by weight to prevent freezing.
- To be accompanied by Drg. No. TM833

(Single Barrier)
TEMPORARY IMPACT ATTENUATOR LAYOUTS

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2014

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

TEMPORARY IMPACT ATTENUATORS

2015

DATE	REVISION DESCRIPTION

Effective Date: December 1, 2015 - May 31, 2016

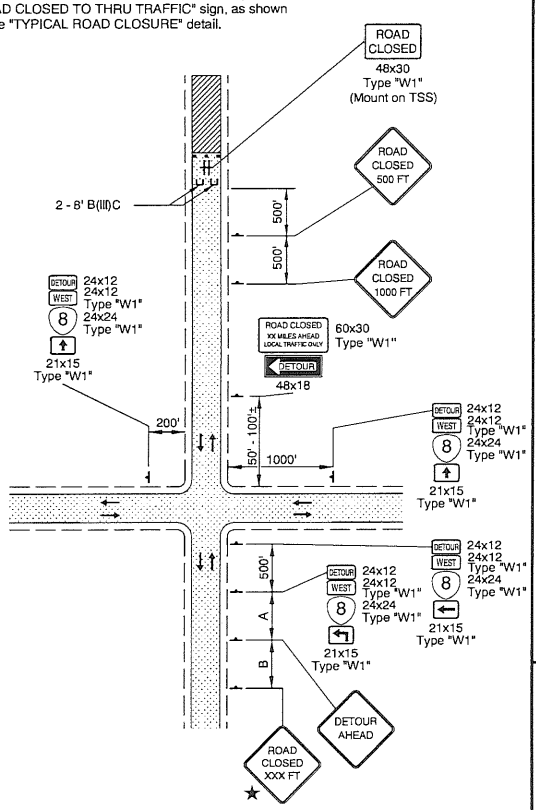
TM831

tm831.dgn 01-JUL-2014

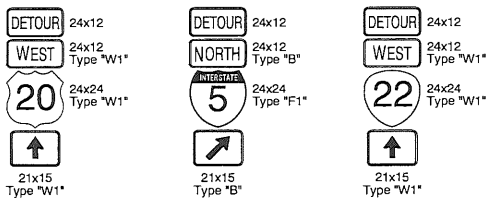
TM831

tm840.dgn 01-JUL-2015

NOTE:
If closure is less than 1500 ft. from intersection, install "ROAD CLOSED TO THRU TRAFFIC" sign, as shown on the "TYPICAL ROAD CLOSURE" detail.

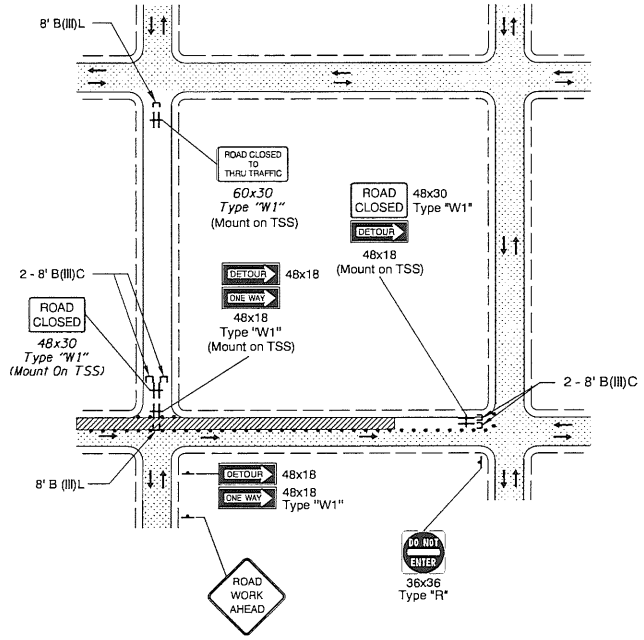


TYPICAL ROAD CLOSURE WITH DETOUR



TYPICAL TRAILBLAZER ASSEMBLY

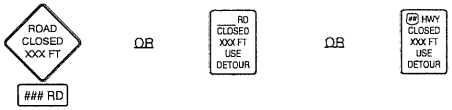
NOTE:
When detour routes overlap, each Route Shield will include a seperate cardinal direction, detour, and directional arrow auxiliary sign assembly.



TYPICAL PARTIAL ROAD CLOSURE

GENERAL NOTES FOR ALL DETAILS:

★ A "Street Name" rider may be used to enhance Road Closure signing; or provide a project specific design; or, as shown in the traffic control plan.



##x18 Rider
Rider width to be determined by width of street name.

48 x 60 (nom.)
Project Specific Design

48 x 60 (nom.)
Project Specific Design

- Use a minimum of two Type III barricades for a road closure. For roads ≥ 36' wide between curbs or edge of pavement, use a minimum of three Type III barricades for the closure point.
- For full road closures, the C or LR barricade may be used.
- Place additional signing as directed.
- To determine sign spacing A, B, & C, use the "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800.

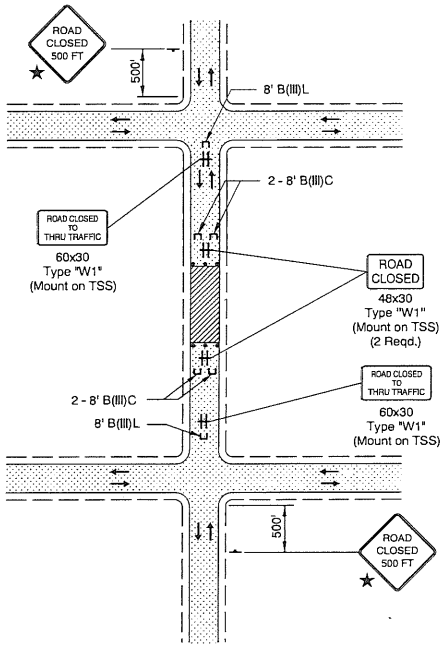
• • • • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820 & TM821

NOTE:
If accesses exist between intersection and point of closure, install "ROAD CLOSED TO THRU TRAFFIC" sign as shown.



TYPICAL ROAD CLOSURE

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2015

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OREGON STANDARD DRAWINGS

CLOSURE DETAILS

2015

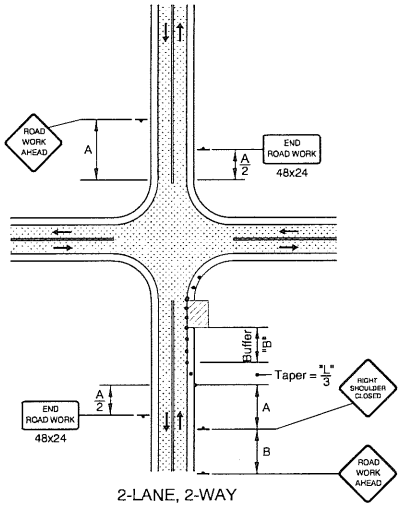
DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING AND NOTES
07-01-2015	REVISED DRAWING

TM840

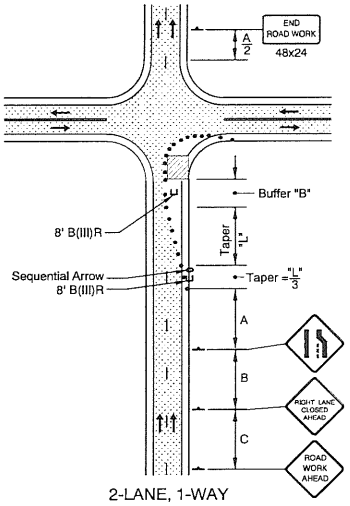
Effective Date: December 1, 2015 - May 31, 2016

TM840

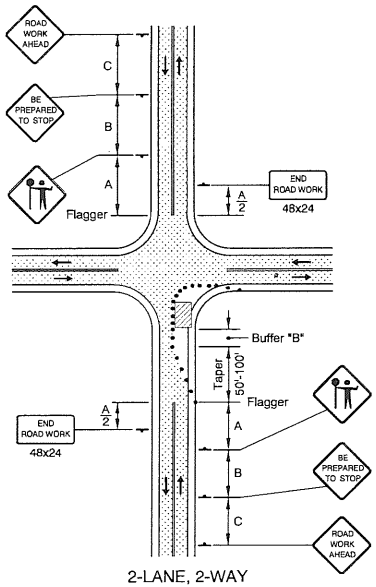
tm841.dgn 01-JUL-2015



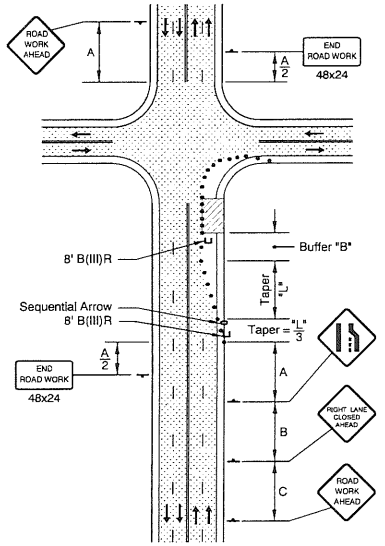
2-LANE, 2-WAY
SHOULDER CLOSURE



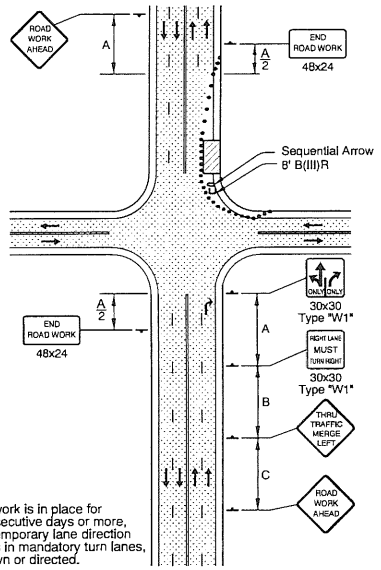
2-LANE, 1-WAY
RIGHT LANE CLOSURE



2-LANE, 2-WAY
ONE LANE CLOSURE

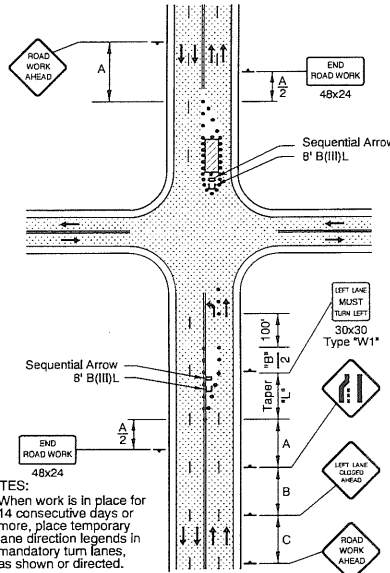


4-LANE, 2-WAY
RIGHT LANE CLOSURE, NEAR SIDE



NOTES:
- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

4-LANE, 2-WAY
RIGHT LANE CLOSURE, FAR SIDE



NOTES:
- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

4-LANE, 2-WAY
LEFT LANE CLOSURE, FAR SIDE

GENERAL NOTES FOR ALL DETAILS:

- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection.
- The "BE PREPARED TO STOP" sign shall be used only in conjunction with the FLAGGER symbol sign.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" on Drg. TM800.
- For left lane or shoulder work, place TCD to close left lane or shoulder. Use "LEFT LANE CLOSED AHEAD" sign, "LEFT LANE ENDS" (W4-2L) symbol sign, or "LEFT SHOULDER CLOSED" sign, where applicable.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800.
- When a through road intersects within the work zone, place a "ROAD WORK AHEAD" sign in advance of the intersection at sign spacing A.
- Use plastic drums in lane closure tapers when the posted speed is 45 mph or greater.
- Where shoulder width is limited, Sequential Arrow may be placed within the lane closure taper.
- Place channelizing devices around intersection radii and construction areas at 10' spacing.

• • • • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacings.

• • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacings.

UNDER TRAFFIC

UNDER CONSTRUCTION

To be accompanied by Drg. Nos. TM820, TM821 & TM840

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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OREGON STANDARD DRAWINGS

INTERSECTION WORK ZONE DETAILS

2015

DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING
07-01-2015	REVISED DRAWING AND NOTES

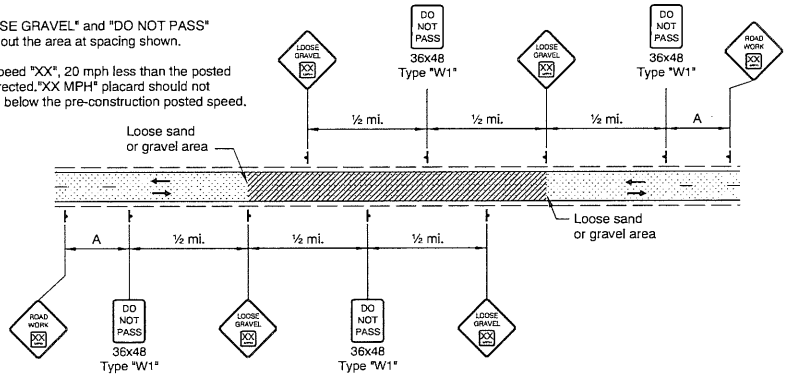
Effective Date: December 1, 2015 - May 31, 2016

TM841

TM841

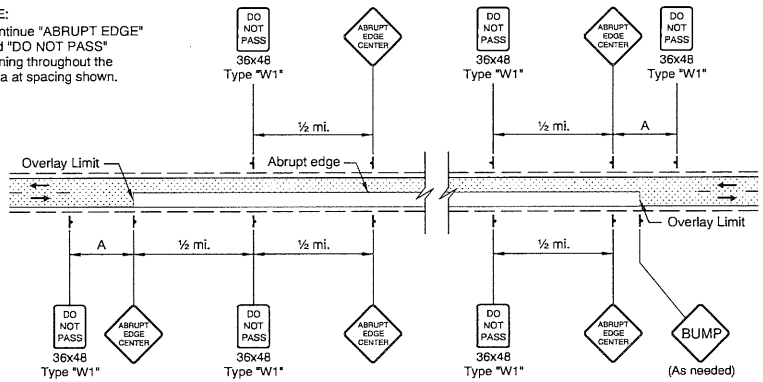
tm850.dgn 01-JUL-2015

NOTE:
- Continue "LOOSE GRAVEL" and "DO NOT PASS" signing throughout the area at spacing shown.
- Use advisory speed "XX", 20 mph less than the posted speed, or as directed."XX MPH" placard should not exceed 20 mph below the pre-construction posted speed.



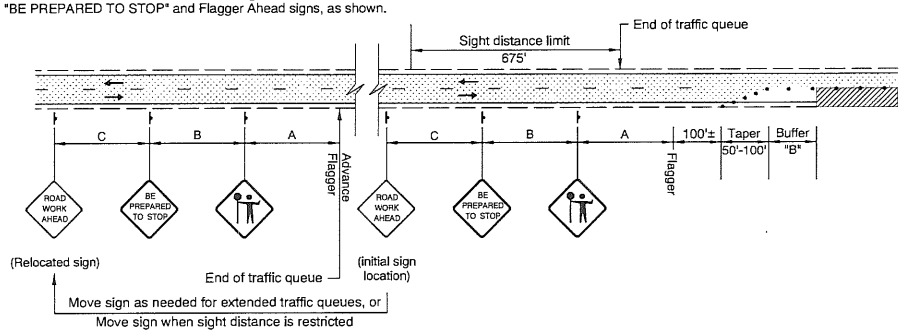
2-LANE, 2-WAY ROADWAY
LOOSE GRAVEL IN ROADWAY SIGNING

NOTE:
- Continue "ABRUPT EDGE" and "DO NOT PASS" signing throughout the area at spacing shown.



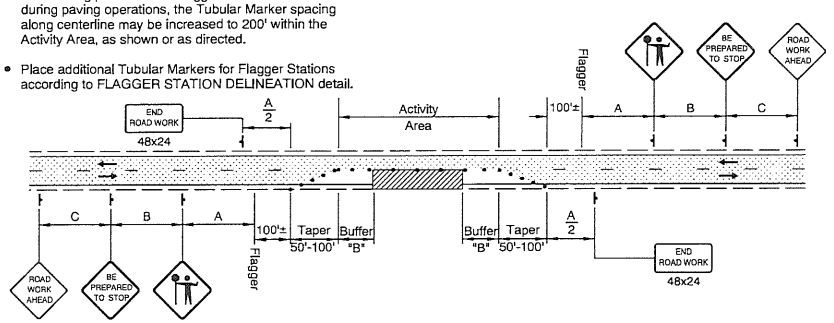
2-LANE, 2-WAY ROADWAY
OVERLAY AREA SIGNING

NOTES:
- Place Advance Flagger and additional signing when traffic queues extend beyond initial warning signing OR when sight distance is restricted.
- Relocate initial "ROAD WORK AHEAD" sign in advance of additional "BE PREPARED TO STOP" and Flagger Ahead signs, as shown.
- Place additional Tubular Markers for Flagger and Advance Flagger Stations according to FLAGGER STATION DELINEATION detail.



ADVANCE FLAGGER FOR EXTENDED TRAFFIC QUEUES

NOTE:
- When using pilot cars with flaggers to control traffic during paving operations, the Tubular Marker spacing along centerline may be increased to 200' within the Activity Area, as shown or as directed.
- Place additional Tubular Markers for Flagger Stations according to FLAGGER STATION DELINEATION detail.



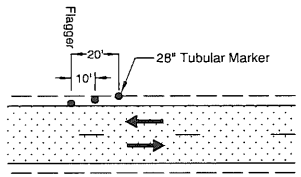
2-LANE, 2-WAY ROADWAY
ONE LANE CLOSURE

GENERAL NOTES FOR ALL DETAILS:
- The "FLAGGER" symbol sign shall be used only in conjunction with the "BE PREPARED TO STOP" sign.
- Cover existing passing zone signing, as directed.
- Install temporary striping as required.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" shown on Drg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. No. TM800.

- • • • • 28" Tubular Markers on 20' max. spacing for flagger tapers and stations
- • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.
- UNDER TRAFFIC
- UNDER CONSTRUCTION
- CONSTRUCTION UNDER TRAFFIC

To be accompanied by Drg. Nos. TM821

NOTE:
- Use a minimum of 3 tubular markers in shoulder taper on 10' spacing for flagger station delineation.



FLAGGER STATION DELINEATION

CALC. BOOK NO. N/A

BASELINE REPORT DATE 01-JUL-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

2-LANE, 2-WAY ROADWAYS

2015

DATE	REVISION DESCRIPTION
01-01-2015	REVISED DRAWING AND NOTES
07-01-2015	REVISED DRAWING AND NOTES

Effective Date: December 1, 2015 - May 31, 2016

TM850

TM850

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TECHNICAL SPECIFICATIONS

SECTION 16

PAINTING

PART 1 - GENERAL

1.1 Scope

A. This Technical Specification covers the furnishing of labor, materials, and equipment necessary to provide surface preparation, coating application, and inspection for a complete coating system as specified.

B. As a general guideline, all steel structures, piping, sluice gates, and appurtenances shall be painted. Fabricated steel items and piping shall be painted in the shop. Any items that cannot be painted in the shop shall be painted in the field. For piping systems above ground and in vaults, all pipe, valves, flowmeters, etc., shall be painted.

C. In general, painting finishes are not required on the following, unless specifically noted otherwise on the Drawings or in the Specifications:

1. Stainless steel items of equipment and materials having a factory finish, if the factory finish is in good condition.

2. Aluminum not in contact with concrete or masonry.

3. Galvanized materials.

4. Hot-dipped galvanized steel.

5. Concrete structures.

D. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to every item of Work to be constructed. All applicable sections, as determined by the Engineer, shall control the Work outlined in the Contract Documents.

1.2 Reference Standards

A. Without limiting the general aspects of other requirements of these Specifications, all surface preparation, coating, and painting of interior and exterior surfaces shall conform to the applicable requirements of the National Association of Corrosion Engineers, the Steel Structures Painting Council, and the paint system manufacturer's printed instructions.

B. The below listed standards in Table 1 are part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail. Where standards of surface

preparation are described by citing SSPC specification, numbered reference is made to the "Steel Structures Painting Manual," Volume 2, published by the Steel Structures Painting Council.

Table 1 - Reference Standards	
Reference	**Title**
ANSI-NSF 61	Drinking Water System Components – Health Effects
SSPC-SP1	Specification for Solvent Cleaning
SSPC-SP2	Specification for Hand Tool Cleaning
SSPC-SP3	Specification for Power Tool Cleaning
SSPC-SP5	Specification for White Metal Blast Cleaning
SSPC-SP6	Specification for Commercial Blast Cleaning
SSPC-SP10	Specification for Near-White Metal Blast Cleaning
SSPC-PA2	Measurement of Dry Film Thickness with Magnetic Gages
ASTM D 4060	Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D 2794	Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 4541	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM F 1249	Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
ASTM 117	Test Method of Salt Spray (Fog) Testing
ASTM D 741	Method for Evaluating Degree of Blistering of Paints
ASTM D 870	Practice for Testing Water Resistance of Coatings Using Water Immersion
ASTM D 1014	Method of Conducting Exterior Exposure Tests of Paints on Steel
ASTM D 1653	Test Method for Water Vapor Permeability of Organic Coating Films
ASTM D 1654	Method of Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D 4585	Practice for Testing the Water Resistance of Coatings Using Controlled Condensation
ASTM D 5894	Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal (Alternating Exposure in a Fog/Dry Cabinet and a UV/Condensation Cabinet)

1.3 Storage and Handling

A. Materials shall be brought to the Project Site in original sealed containers. The containers shall bear a legible product designation, batch number, and date of manufacture on the side of each container. They shall not be used until the Engineer has inspected contents and obtained data from information on containers or labels. Materials exceeding storage life recommended by the manufacturer shall be rejected. Submit paint receipts/invoices, upon request, to the Engineer.

B. Coating materials shall be handled and stored according to the manufacturer's latest published instructions, and shall be protected from damage, moisture, direct sunlight, and temperatures below 40°F or above 100°F. Flammable coatings and paints must be stored to conform with city, county, and state safety codes for flammable coating or paint materials. Water base coatings or paints shall be protected from freezing.

1.4 Submittals

A. Submit in accordance with the General Requirements in one complete package.

B. Prior to ordering material, submit a complete schedule of materials to be used. Include manufacturer's brand name, product name, and designation number for each coat of each system to be used. Include information indicating percent solids by volume, minimum recommended dry film thickness per coat, recommended surface preparation, recommended thinners, application instructions, and a statement indicating that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.

C. Prior to commencing Work, submit a detailed list of all surfaces and equipment items upon which the Contractor intends to apply protective coatings.

D. Provide the following information on each paint product:

1. Abrasion resistance, ASTM D 4060, 1 kg load at 1,000 cycles, CS-1 7 wheel

2. Impact resistance, ASTM D 2794, direct and reverse

3. Moisture vapor transmission, ASTM F l249

4. Adhesion, ASTM D 4541

5. Salt fog, ASTM B 117

6. QUV, ASTM G 53 (exterior finish coat only)

7. Fresh water immersion, ASTM D 870 (immersed coatings only)

8. Humidity, ASTM D 4585

E. If materials other than those listed are submitted, submit additional information to fully define the proposed substitution. The Engineer may further require the Contractor to furnish additional test results from an independent paint laboratory comparing the proposed substitution with one of the named products, at no additional cost to the Owner. For substituted materials, provide a list of references, including contact person and phone number, where proposed substitute paint system has been used in similar exposures. Provide a minimum of five references (no duplicate owners or agencies).

F. Provide Material Safety Data Sheets (MSDSs) for all products.

G. Manufacturer's Certification: That products furnished meet applicable air quality regulations as to allowable VOC content for the place of application and use intended.

H. Submit to the Engineer a full range of the manufacturer's standard and let down finish colors for review and selection by the Owner. Color chips 3/4-inch by 1-1/2-inch may be used for pipe color codes.

1.5 Quality Assurance

A. The Contractor shall submit to the Engineer a written detailed description of the painting Subcontractor's qualifications and experience relative to the application of the specified coating systems. Such description shall include the following minimum information:

1. Name of the company that will be performing the painting work.

2. Experience of the company on similar projects, including experience with sandblasting, preparation of steel structures, concrete, piping, buildings, equipment, etc., and use of the paint systems specified herein.

3. List of similar projects that the company has completed (five minimum).

4. List of contact persons and telephone numbers for each job reference.

5. Names of personnel who will be performing the Work on this Project and their experience.

6. Name of the on-the-job painting supervisor and his/her experience.

B. Coating Manufacturer's Qualifications

1. Protective coatings furnished under this section shall:

a. Be of a manufacturer who has been regularly engaged in the manufacture of protective coatings with a minimum of 10 years of successful experience.

b. Demonstrate to the satisfaction of the Engineer successful performance on comparable projects.

C. Applicator's Qualifications

Applicator shall be experienced in application of specified protective coatings for a minimum of 5 years, practical experience in application of the specified coatings, and successful completion of a minimum of five projects of similar size and complexity within the last 3 years.

D. Coating manufacturer's authorized representative shall provide a written statement attesting that the applicator has been instructed on proper preparation, mixing, and application procedures for coatings specified as well as the applicator's qualifications.

E. The coating system manufacturer shall provide a qualified representative to visit the Site a minimum of one time during the coating operations. The manufacturer's representative shall provide a written report at the conclusion of the site visit.

PART 2 - MATERIALS

2.1 General

A. TNEMEC products are listed as the basis of design and quality in terms of performance and characteristics. Other manufacturers' products will be considered subject to meeting the listed quality, performance, and characteristics of the standard/product(s) for the particular application and compliance with the Specifications. Substantiating Technical Data are required. Submit requests for substitution in accordance with the General and Supplementary Conditions. Substitutions that decrease the film thickness, solids by volume, or number of coats will not be considered. Requests for substitutions shall include test reports that demonstrate the product(s) meets or exceeds the performance and characteristics of the listed standard/product(s).

B. The Contractor shall submit any proposed substitutions on Table 2 "Protective Coating - Substitution List" at the end of this section. Colors where not specified shall be approved by the Owner.

PART 3 - EXECUTION

3.1 Surface Preparation

A. General

Surfaces to be painted shall be prepared in accordance with the manufacturer's instructions in a professional manner with the objective of obtaining a smooth, clean, and dry surface. No painting shall be done before the prepared surfaces are approved by the Engineer.

B. Metal

1. Metal surfaces, including piping, not shop primed or painted shall be thoroughly cleaned by sandblasting, in accordance with the paint manufacturer's instructions, and as specified herein prior to painting. Any metal items with a paint incompatible with the specified finish shall be primed as recommended by the paint manufacturer.

2. Previously painted surfaces such as piping which are pitted, scaling, rusty, etc., or in otherwise poor condition or damaged shall have existing paint removed to bare metal or as approved by the Engineer. Oils, dirt, and other surface contaminants, shall be removed so that surfaces are properly prepared for painting. Priming and painting shall then be applied in accordance with these Specifications.

3. Shop-primed/coated pipe with field-welded joints shall have coating/primer held back to accommodate welding or shall be field prepped via sandblasting in accordance with the paint manufacturer's instructions. Upon acceptance of field welds, the joints shall be coated or painted according to these Specifications.

3.2 Application

A. Paint shall be applied in a neat, professional manner. Finished surfaces shall be uniform and pleasing in appearance, free of runs, drips, sags, or variable texture. Defective painting shall be removed and replaced.

B. The painter shall apply each coating at the rate specified for application by the manufacturer. If material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material.

C. Drying time shall be construed to mean "under normal conditions." Where conditions are other than normal because of the weather or because painting must be done in confined spaces, longer drying time will be necessary. Additional coats of paint shall not be applied nor shall units be put into service until paints are thoroughly dry.

D. Where thinning is necessary, only the products of the manufacturer furnishing the paint, and for the particular purpose, shall be allowed, and all such thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and approval of the Engineer.

E. No paint shall be applied in fog, snow, rain, or to wet or damp surfaces, or when air temperatures are below 40°F and surface temperatures are below 35°F or when the relative humidity exceeds 85 percent. The Contractor shall provide heaters, fans, etc., when necessary to keep moisture off of piping to be painted.

F. Coating materials shall not be applied when the ambient air temperature, surface temperature, or humidity is outside the boundaries as stated on the product data sheets.

G. Materials shall be evenly applied to form a smooth, continuous, unbroken film.

H. Dirt, grease, oil, paint chalk, or any other contamination will not be permitted between coats.

I. Welds, bolt heads, nuts, rivets, and connections shall be stripe coated by brush with primer prior to applying full coat of primer.

J. Each application of protective coatings, with the exception of coal tars, shall be a different shade in color than the specified finish.

3.3 Painting Schedule

Painting schedule for the Work is given in Table 3 (end of section).

3.4 Inspection

A. Dry Film Thickness

After application of each coating in the specified system, the total dry film thickness shall be taken as follows:

1. Make 5 separate spot measurements spaced evenly over each section of 100 square feet in area per SSPC-PA 2. Measurements, as much as possible, should be taken at surfaces with dissimilar exposures, that is, at different angles, faces, bolts, etc., to ensure uniformity of the coatings.

2. No single spot measurement (average of 3 readings) in any section shall be less than 80 percent of the specified thicknesses.

B. Documentation

Applicator is to keep a log of ambient and surface temperature, humidity, dew point, and dry film thicknesses (paragraph 3.4.A.). These are to be logged every day at the beginning, middle, and end of each shift. This log is to be current and available at all times for the Owner, Engineer, and coatings manufacturer to verify.

3.5 Colors

Colors shall be as approved by the Owner and directed by the Engineer. The Contractor shall provide color charts to the Engineer when required.

3.6 Extra Paint

The Contractor shall provide a minimum of one gallon of extra paint for each major color and system used. The Contractor shall provide either fresh labels from paint cans with a list of places used, or a written description of painting systems, locations used, and applications requirements.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for a description of the basis of measurement and payment for Work performed under this Contract.

Table 2 Protective Coatings – Substitution List			
	Specified Coating		Substitute Coating
System No.	Generic	Coating Name[1]	Manufacturer's Name, Generic, Performance, Percent Solids, Surface Preparation, No. Coats, Industrial Use, Standards
1	Aromatic Urethane, Zine Rich (Primer) Polyamide epoxy (Intermediate) Aliphatic Acrylic Polyurethane (Finish)	Series 94-H20 Series 27 Series 1095	
4	Modified Polyamine Epoxy (Primer and Finish)	Series 142	
4	Solvent-less Aromatic Polyurethane Chemical Cure (Primer and Finish)		LifeLast DuraShield 210 (35 mils DFT)

[1] All listed coating names are TNEMEC products.

TECHNICAL SPECIFICATIONS

SECTION 16

PAINTING

Table 3 - Painting Schedule			
Paint System No., Type, and Location	**Surface Preparation**	**Prime Coat ([1,2])**	**Intermediate/Finish Coat ([1,2])**
Ferrous Surfaces			
No. 1 - Aliphatic Acrylic Polyurethane Protective Coating System - Exterior non-immersed ferrous surfaces such as outside of elevated pipe, exterior pipes, valves, exposed steel systems, structural supports, fabrications, etc.	**New** - Blast clean per SSPC-SP 6. Dry abrasive blasting performed with media that provides 1 to 2 mil anchor profile. **Touchup** - SSPC 1, 2, or 3	TNEMEC Series 94-H2O Hydrol-Zinc, 2.5 to 3.5 mils DFT.	**Intermediate** - TNEMEC Series 27 F.C. Typoxy, 4 to 6 mils DFT. **Finish** - TNEMEC Series 1095 Endura-shield, 4 to 5 mils DFT.
No. 4 - Modified Polyamine Epoxy Coating System - Inside of siphon and elevated pipes, outside of buried siphon pipe, immersed or below grade ferrous surfaces.	**New** - Blast clean per SSPC-SP 5. Dry abrasive blasting performed with media that provides 2 to 3 mil anchor profile. **Touchup** - same as New.	TNEMEC Series 142 Epoxoline, 12 to 15 mils DFT.	**Finish** - TNEMEC Series 142 Epoxoline, 12 to 15 mils DFT.

[1] – Prime and finish coats for touch-up or spot work shall be of the same system and dry film thickness (DFT) as the specified coating system.
[2] – DFT = dry film thickness

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 17

SURFACE RESTORATION

PART 1 - GENERAL

1.1 Scope

A. The Contractor shall perform all work and furnish all materials to restore the Work area including any gravel, asphalt, concrete, lawn, fences, or any other surfaces or items damaged or disturbed by his construction operation. Surface restoration shall follow as closely as possible the backfill and compaction of excavations.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of work to be constructed. All applicable sections, as determined by the Engineer, shall control the work outlined in the Contract Documents.

1.2 Cleanup

A. Cleaning up shall be a continuing process from the start of the work to final acceptance of the project. The Contractor shall, at all times, keep the area on which work is in progress free from accumulations of waste material or rubbish.

B. Spillage from the Contractor's hauling vehicles on traveled public or private roads shall be promptly cleaned up. Upon completion of the Work the Contractor shall remove all temporary structures, rubbish, and waste material, equipment and supplies, resulting from the Contractor's operations. The Contractor shall leave such lands in a neat and orderly condition which is at least as good as the condition in which the Contractor found them prior to the Contractor's operations. See specific conditions in the General Requirements.

C. In roadways and traffic areas, the Contractor shall be responsible for maintaining a road surface suitable for travel by the public from the time of excavation until the road surface has been restored. Such work includes dust control, temporary patching, signing, grading, and filling of potholes on temporary street surfaces, etc. The Contractor shall be responsible for all claims and damages resulting from his failure to maintain a suitable surface.

1.3 Environmental

Surface restoration shall comply with the Technical Specifications - "Temporary Environmental Controls."

PART 2 - MATERIALS

2.1 Base Rock

Base rock shall conform to the requirements of Technical Specifications - "General Earthwork and Roadways."

2.2 Asphalt Concrete

Asphalt concrete shall be Level 3 wearing surface, 1/2-inch dense HMAC, PG 70-22 asphalt, or as indicated on the Drawings. All materials shall comply with the 2015 Oregon Standard Specifications for Construction for asphalt concrete pavement, or as specified on the Drawings, or in other portions of the Specifications. The Contractor shall submit for review by the Engineer data on the asphalt concrete mix to be used. Data shall include aggregates, gradation and tolerances, aggregate suitability, asphalt concrete, mix proportions and tolerances, etc.

2.3 Portland Cement Concrete

The Portland Cement concrete shall comply with the Technical Specifications - "Reinforced Concrete."

2.4 Agricultural Seed

Agricultural seed shall be provided to match the existing field and shall be approved by the landowner prior to use.

2.5 Native Seed

Provide the following native see mix for all disturbed areas outside agricultural fields, and gravel and asphalt roads.

Species	# Pure Live Seeds/m^2	Seeding Rate Lbs./ac
Idaho fescue (*Festuca idahoensis*)	125	1.50 (59.3 oz.)
Bluebunch wheatgrass (*Agropyron spicatum*)	100	3.62 (143 oz.)
Sandberg bluegrass (*Poa sandbergii*)	75	0.48 (18.8 oz.)
Mountain brome (*Bromus marginatus*)	75	5.43 (214 oz.)
Squirrel-tail grass (*Sitanion hystrix*)	75	2.11 (83.6 oz.)
Needle and thread grass (*Stipa thurberiana*)	25	0.93 (36.7 oz.)
Dropseed (*Calamagrostis rubescens*)	25	0.06 (2.5 oz.)
	500 Seeds/m^2 Coverage	**14.1 Lbs. PLS/ac.**

2.6 Fertilizer

Except for hydroseeding, inorganic fertilizer shall be commercially available 22-16-8 with 22 percent nitrogen, 16 percent available phosphoric acid, 8 percent soluble potash, and a minimum of 2 percent sulfur.

2.7 Topsoil

Topsoil shall be native to the area and shall be approved by the Engineer prior to use.

Furnish topsoil containing no substance detrimental to the growth of plants, that is free of plants designated by the Oregon Department of Agriculture as Type "A" or Type "B" weeds, and that is free of quack grass or crabgrass species.

Furnish topsoil that is from the fertile part of a soil profile, commonly referred to as the "A" horizon, typically ranging in depth from 3 inches to 12 inches below original ground surface. Do not take material for topsoil from a depth greater than 12 inches below original ground surface.

2.8 Mulch

All mulch shall be straw that has been air dried and seasoned before baling or loading. It shall be free of noxious weeds and other materials detrimental to grass growth.

PART 3 - EXECUTION

3.1 Existing Roadways Used for Project Access

The Contractor shall restore all roadways used to access the Project work area to equal to or better than their condition prior to the start of construction. The Contractor shall video all roadways he plans to use during construction of the Project to document their existing condition prior to the start of construction. The Project Owner will be the final decision-maker as to the suitability of restoration work.

3.2 Temporary Access Road

The Contractor shall provide temporary access roads where shown on the Drawings and as required to complete the Work. The temporary access roads shall be constructed as required for the traffic to be placed on them and in a manner as to prevent rutting and other damage to the existing soils. At the completion of the Project, the Contractor shall restore all temporary access roads to a condition equal to or better than the pre-construction condition, as determined by the Engineer and landowner. To verify pre-construction conditions, the

Contractor shall video all temporary access roads prior to construction; the video shall have a date and time stamp.

3.3 Gravel Surface Restoration

A. During trench and general excavation, the Contractor shall minimize the disturbance of adjacent gravel surfaces.

B. In gravel streets, shoulders, parking strips and driveways, a 4-inch minimum compacted depth shall be required or a compacted depth equal to the existing depth of gravel plus the depth of granular subbase, if any, whichever is greater, unless otherwise specified on the Drawings or in these Specifications.

C. The resurfacing aggregate shall be compacted to 95 percent of laboratory density as determined by ASTM D 698.

3.4 Highway 39 Asphalt Restoration

A. Existing asphalt surfaces shall be cut on each side of the trench prior to excavation to provide a vertical, neat, straight-line joint in the surface. Should any asphalt surface be undermined or damaged during construction, the undermined or damaged asphalt shall be similarly cut and removed prior to backfill. This work shall be performed along neat, continuously straight lines to provide a pleasing finished appearance. Irregular lines will not be allowed.

B. Backfill shall be made in accordance with Technical Specifications - "Excavation and Backfill of Trenches."

C. Base rock under the asphalt pavement shall be replaced to a minimum compacted depth of 8 inches over the CDF backfill. The base rock shall be compacted to 98 percent of the laboratory density as determined by ASTM D 698.

D. Placement of Asphalt Concrete

1. Asphalt pavement shall have a minimum depth of 6 inches after compaction or a depth equal to the existing pavement, whichever is greater.

2. Asphalt concrete shall be compacted with an 8-ton minimum steel-wheeled roller and compacted to a minimum of 91 percent of the maximum density as determined by ASTM D 2041.

3. Prior to placing the asphalt concrete, an asphalt tack coat shall be applied to the edges of the existing asphalt. An asphalt tack coat shall also be used between pavement lifts. The Contractor shall utilize a paving machine to place the asphalt concrete material. No lift of asphalt placed shall have a compacted thickness of less than 1/2 inch or greater than 3 inches. The finished asphalt surface shall be flush with the existing surface, uniform in appearance, and shall provide a smooth ride.

3.5 General Surface Restoration

A. General

1. The Contractor shall replace or restore, equivalent to their original condition, all surfaces, agricultural areas, pastures and fences, or other existing facilities disturbed by his work unless otherwise specified. Restoration and cleanup shall be a continuing operation and shall be diligently pursued until completed. Surface restoration shall be completed as soon as possible after the underground work is complete.

2. All surplus material, rock and debris, and temporary structures, as well as excess excavation, shall be removed by the Contractor and the entire site of Contractor's operations shall be left in a neat and clean condition.

B. Agricultural and Native Areas

1. Where called for on the Drawings, the existing top soils in the excavation area shall be removed and stockpiled at a separate location from the general trench excavation material. This topsoil shall not be mixed or contaminated with any other materials.

2. Upon completion of the trench backfill and after all rocks and unsuitable material have been removed from the work area, the stockpiled topsoil shall be replaced and graded to match the existing ground. The depth of topsoil restoration shall be as shown on the Drawings.

C. Seeding

1. All areas to be seeded shall have a minimum of 6 inches of topsoil.

2. After the backfilling and compaction have been completed, the top 2 inches of the topsoil shall be scarified to provide a good seed bed and the area seeded

with applicable mix, fertilized, a section of chain link fence dragged over the surface, and the initial watering completed.

3. All additional watering of the seed shall be the responsibility of the property owners.

4. Unless required otherwise, the seed shall be applied at a minimum rate of 4 pounds per 1,000 square feet, the fertilizer at 1 pound per 100 square feet, and the mulch at a rate needed to provide a minimum mulch thickness of 1 inch.

3.6 Mulch

A. Place mulch approximately 1-1/2 inches deep in a loose condition at a rate of 2 to 2.5 tons/acre. Place grass straw mulch so that it is loose enough for sunlight to penetrate and air to circulate; but dense enough to shade the ground, reduce water evaporation, and materially reduce soil erosion.

B. Anchor using a crimping disc, an approved tackifier, or approved modified sheepsfoot roller, or another method approved by the Engineer.

PART 4 - BASIS MEASUREMENT AND PAYMENT

4.1 Basis

See Technical Specifications - "Measurement and Payment" for the description of the basis of measurement and payment for the Work performed under this Contract.

END OF SECTION

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TECHNICAL SPECIFICATIONS

SECTION 18

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 Scope

The basis for measurement and payment for all Work performed under this Contract shall be as listed in the "Bid Schedule." Unless the Work to be performed is specifically called out to be measured and paid for in the Bid Schedule, payment for such Work shall be included in other applicable items of the Bid Schedule. There shall be no separate measurement and payment for any such Work not specifically listed in the Bid Schedule.

1.2 Method of Payment

Items listed in the Bid Schedule as lump sum shall be on a lump sum all required basis. No direct measurement will be made for lump sum bid items. Bid items calling for unit prices show estimated quantities of Work to be performed. These quantities, although shown with as much accuracy as possible, are approximate only and are for bidding purposes only. The Owner reserves the right to increase or decrease the amount of these quantities as may be deemed necessary. Payment to the Contractor shall be made on the quantity of Work actually performed by the Contractor.

The summation of all bid items under the Bid Schedule shall equal all Work required by the Drawings and Specifications regardless of whether individual items of Work are described under bid item descriptions or not. Payment shall be made at the Contract unit or lump sum prices listed in the Bid Schedule. The prices listed therein shall be payment in full for all labor, tools, equipment, materials, etc., which are required to construct respective bid items according to the Contract Documents, including all Work and materials incidental thereto.

1.3 Payment for Partially Completed Work

Payment for unit price bid items and lump sum bid items only partially completed at the end of monthly pay periods shall be based on a percentage of Work completed as determined by the Engineer, based upon agreed schedule of values for the Project.

1.4 Payment Items

A. Numbering

The numbering of the payment items listed below may not be the same as the numbering for bid items in the Bid Schedule.

TECHNICAL SPECIFICATIONS

SECTION 18

MEASUREMENT AND PAYMENT

B. Method of Payment

1. Mobilization/Demobilization

Measurement for payment for mobilization/demobilization shall be on a lump sum all required basis. The amount of the bid for mobilization/demobilization shall not exceed 5 percent of the total project base bid amount. Payment shall be made at the lump sum price stated in the Bid Schedule for "Mobilization/ Demobilization." Seventy-five percent of the bid amount for mobilization/ demobilization will be made on the first payment request and the remaining 25 percent of the bid amount will be paid on the final payment request.

2. Temporary Protection and Direction of Traffic

Measurement for payment for temporary protection and direction of traffic shall be on a lump sum all required basis. Payment shall include all supervision, planning, materials, signs, flagmen, and training as may be required during execution of the Work. Payment shall be made on in-progress payment request in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Temporary Protection and Direction of Traffic."

3. Project Safety

Measurement for payment for project safety shall be on a lump sum all required basis. Payment shall include all supervision, planning, and training as may be required during execution of the Work. It shall also include all trench dewatering and shoring. Payment shall be made on in-progress payment request in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Project Safety."

4. Temporary Environmental Controls

Measurement for payment for temporary environmental controls shall be on a lump sum all required basis. Payment shall include all supervision, planning, design, monitoring and reporting, erosion control devices, work isolation measures, etc., as may be required during execution of the Work. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date with 15 percent retained until request for final payment. Payment shall be made at the lump sum price stated in the Bid Schedule for "Temporary Environmental Controls."

5. Temporary Access Roads

Measurement for payment for temporary access roads shall be on a lump sum all required basis. Payment shall include all labor, equipment, and materials necessary to construct temporary roadways and maintain acceptable access through the Project and to and from approved staging/storage areas as indicated on the Drawings. Temporary access for bridge construction operations in the Lost River Diversion crossing is incidental to this bid item. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date with 15 percent retained until request for final payment. Payment shall be made at the lump sum price stated in the Bid Schedule for "Temporary Access Roads."

6. Siphon Pipe

Measurement for payment for siphon pipe shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to install the pipe to the limits and at the locations and inverts shown on the Drawings. Trench excavation, bedding, backfill, drain pipe, pipe access parts, pressure relief valves, etc., are considered incidental to this bid item. All fittings along a run of pipe shall be included in the pipe length and no additional payment will be made for such fittings unless called for specifically in the Bid Schedule. Potholing of existing utilities and providing depths to the Engineer prior to construction as indicated on the Drawings is considered incidental to this bid item. Pipe depth varies and no separate measurement or payment will be made based on pipe depth. Payment shall be made at the lump sum price stated in the Bid Schedule for "Siphon Pipe."

7. Elevated Steel Pipe

Measurement for payment for elevated steel pipe shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to install and test the pipe to the limits and at the locations and inverts shown on the Drawings. All fittings along a run of pipe and connecting to the Wasteway, footings, steel support piers, pipe bearings, etc., shall be included in this item and no additional payment will be made for such items. Payment shall be made at the lump sum price stated in the Bid Schedule for "Elevated Steel Pipe."

8. Lost River Diversion Crossing

Measurement for payment for the Lost River Diversion crossing shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to construct the crossing not otherwise paid for with other items. Work shall include, but not be limited to, catwalk, Wasteway, restoration, etc. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Lost River Diversion Crossing."

9. Inlet Transition Structure

Measurement for payment for inlet transition structure shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to construct the transition within the pay limits shown on the Drawings. Work shall include, but not be limited to, demolition, excavation, embankment, canal dike raising, concrete canal lining, reinforced concrete headwall/retaining walls, miscellaneous fabricated steel structures, slide gate, and steel trash rack. Payment shall also include dike improvement Station -2+00 to 1+00. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Inlet Transition Structure."

10. Outlet Transition Structure

Measurement for payment for outlet transition structure shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to construct the transition within the pay limits shown on the Drawings. Work shall include, but not be limited to, demolition, excavation, embankment, concrete canal lining, reinforced concrete headwall/retaining walls, and miscellaneous fabricated steel structures. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Outlet Transition Structure."

11. Highway 39 Crossing

Measurement for payment for Highway 39 crossing shall be on a lump sum all required basis. Payment shall include all Work required to construct the crossing within the pay limits shown on the Drawings. Work shall include all labor, equipment, and materials to construct the crossing not otherwise paid for with

other pay items. This includes CDF, base rock, pavement restoration, compliance with ODOT crossing permit requirements, etc. Roadway restoration is specified under the "Surface Restoration" pay item, but shall be paid under this item. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Highway 39 Crossing."

12. Steel Piles

Measurement for payment for steel piles shall be on a lineal foot basis (installed). The minimum payment shall be the distance measured from the estimated pile tip elevation to the pile cutoff. Payment shall include all labor, equipment, and material to install piles for elevated steel pipe foundations and the Lost River Diversion crossing foundations, both above and below grade. Work shall include, but not be limited to, furnishing pile driving equipment, pile material, splicing, pile tips, and driving to required tip elevation as shown on the Drawings. Any additional pile length that may be required to reach capacity beyond the estimated pile tip elevation shall be paid at the Contract unit price. Payment shall be made at the unit price stated in the Bid Schedule for "Steel Piles."

13. Turnouts

Measurement for payment for turnouts shall be on a lump sum all required basis. Payment shall include all labor, equipment, and material to transition from the proposed buried siphon pipe or elevated steel pipe to the existing irrigation service. Work shall include, but not be limited to, excavation, backfill, precast concrete structures, valves, fittings, pipe, pre-fabricated metal structures, etc., and all other miscellaneous features as required for construction. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Turnouts."

14. Demolition

Measurement for payment for demolition shall be on a lump sum all required basis. No measurement will be made. Work shall include all materials and labor required to salvage, remove, and abandon the existing flume, canal, highway improvements, and all other miscellaneous items noted on the Drawings. Payment shall be made at the lump sum price stated in the Bid Schedule for "Demolition."

15. Permanent Access Road

Measurement for payment for permanent access road shall be on a lump sum all required basis. Payment shall include all labor, equipment, and materials necessary to construct the final wearing surface along the road over the constructed pipeline. Work shall include, but not be limited to, excavation, embankment, base rock, and grading. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Permanent Access Road."

16. Surface Restoration

Measurement for payment for surface restoration shall be on a lump sum all required basis. Payment shall include all labor, equipment, and materials to complete all surface restoration on the Project, excluding Highway 39 restoration work, and temporary access road restoration work. Payment shall be made on in-progress payment requests in proportion to the percentage of Work completed to date. Payment shall be made at the lump sum price stated in the Bid Schedule for "Surface Restoration."

PART 2 - MATERIALS - NOT USED

PART 3 - EXECUTION - NOT USED

PART 4 - MEASUREMENT AND PAYMENT - NOT USED

END OF SECTION

DRAWINGS

Bound Separately

APPENDICES

APPENDIX A
Reclamation Finding of No Significant Impact/ Environmental Assessment

RECLAMATION

Managing Water in the West

Finding of No Significant Impact

C Canal Flume Replacement

Klamath County, Oregon

2015-EA-008

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Therese O'Rourke Bradford
Area Manager
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Background

In accordance with Section 102(2)(c) of the *National Environmental Policy Act of 1969* (NEPA), as amended, the Bureau of Reclamation (Reclamation) has prepared an Environmental Assessment (EA) to evaluate Reclamation's proposal to authorize Klamath Irrigation District (KID) to construct a replacement structure for the C Canal Flume (C Flume) and advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. The replacement is needed to satisfy a Category 1 recommendation under Reclamation's Review of Operation and Maintenance inspections. Reclamation may also elect to advance funds to KID to cover a portion of costs in connection with the repair and/or replacement of the C Flume, and enter into a repayment contract with KID for the corresponding construction costs and repayment of such funds. After thorough review and analysis, the environmental assessment resulted in a Finding of No Significant Impact.

The C Flume, an elevated (approximately) 4,300 foot concrete segment of the C Canal, facilitates delivery of water from Upper Klamath Lake to approximately 22,000 acres of agricultural land within the Klamath Reclamation Project (Project) located in Klamath County, Oregon. Originally constructed in 1909 as a wood structure, the C Flume was replaced in 1922 with precast concrete U-shaped sections using simple push-together joints placed on the original foundations. Numerous repairs have been made to the C Flume since 1922, including repairing cracks and columns, reinforcing portions of the longitudinal beams with steel members, and temporary wood and steel shoring for some of the beam sections. Recent inspections under Reclamation's Review of Operation and Maintenance Program identified unacceptable deficiencies associated with the C Flume resulting in a Category 1 recommendation which requires repair and/or replacement of deteriorated beams, columns, and other structural members of the C Flume.

Reclamation would inspect all ongoing and completed work performed by KID to determine it is consistent with authorized designs and specifications pursuant to 7(b) of Contract 14-06-200-3784 between Reclamation and KID (dated November 29, 1954). Reclamation's prior approval is required for all work to be performed by KID under the proposed action. In determining whether or not to approve the work, Reclamation may require, review and approve engineering designs and specifications, potentially pursuant to Mid-Pacific Regional Office form MP-620 and upon completion of all necessary environmental compliance.

Alternatives Including the Proposed Action

No Action Alternative:
Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to the existing structure; however, annual operation and maintenance activities for the C Flume would continue to occur as in the past. Reclamation considers the No Action Alternative to be unacceptable for the long-term due to human, health, and safety risks. Additionally,

the No Action Alternative does not meet the purpose and need for the proposal.

Proposed Action Alternative:
Under the Preferred Alternative, Reclamation would review and approve the engineering designs and specifications submitted by KID and authorize KID to modify or alter the facility by undertaking construction actions to correct the C Flume Category 1 recommendation. Additionally, Reclamation would advance KID federal funds for a portion of the cost of the work and enter into a contract with KID for repayment of such funds. KID would replace the existing C Flume facility with a buried pipeline.

The new facility would include approximately 3,600 feet of a 10-foot diameter buried pipe, 200 feet of an elevated steel pipe structure spanning over the Lost River Diversion Channel (LRDC), and 500 feet of elevated 10-foot diameter pipe south of the LRDC crossing. The elevated portion would be constructed of steel (AWWA C200) and the underground pipe would be made of either steel (AWWA C200), steel reinforced polyethylene (SRPE), or high density polyethylene pipe (HDPE). Construction of the new facility is proposed on both sides of the existing structure to allow the existing C Flume to remain in service until the end of the irrigation season in October 2016.

Public Comment

Reclamation prepared the attached EA to evaluate the effects of the Proposed Action. The EA was available for public review on November 12, 2015, to November 30, 2015. One comment was received from the Klamath Tribes on November 24, 2015, regarding a concern over the need for Reclamation to develop an Inadvertent Discovery Plan. This comment is addressed in item 10 below.

Findings

Based on the attached EA (including the environmental commitments listed in item 14 below), Reclamation finds that the Proposed Action is not a major Federal action that will significantly affect the quality of the human environment. The attached EA describes the existing environmental resources in the Proposed Action area and evaluates the effects of the No Action and Proposed Action alternatives on the resources. Effects on several environmental resources were examined and found to be absent or minor. That analysis is provided in the attached EA, and the analysis in the EA is hereby incorporated by reference.

This FONSI is based on the following:

1. **Indian Trust Assets**
   There are no Indian reservations, Rancherias or allotments in the project area.
   The proposed action does not have a potential to affect ITAs. The nearest ITA is a Public Domain Allotment approximately 14.86 miles northwest of the Proposed Action area (*see* Appendix E).

2. **Indian Sacred Sites**
   There are no identified Indian Sacred Sites within the action area of the proposed project and therefore this project will not inhibit use or access to any Indian Sacred Sites.

3. **Environmental Justice**
No significant changes in agricultural communities or practices will result from the Proposed Action, other than potential changes to individual irrigation systems. These changes are not likely to affect agricultural employment, which employs a higher proportion of low-income and minority workers than are employed in the general workforce. Accordingly, the Proposed Action will not have any significant or disproportionately negative impacts on low-income or minority individuals within the project area.

4. **Climate Change and Green House Gases**
Implementation of the Proposed Action will result in insignificant impacts to climate change or increases in greenhouse gases due to the size and scope of the project, small change from current conditions, and duration of use that is limited to the project construction period.

5. **Recreation**
Recreation is not allowed within or adjacent to the C Flume. There will be no change from existing conditions with implementation of either alternative.

6. **Noise**
Implementation of the Proposed Action will result in construction activities that will temporarily dominate the noise environment in the project area. Construction noise will be temporary and will be minimized by limiting the construction work hours between 7:00 am and 7:00 pm Monday through Saturday. Noise impacts resulting from the Proposed Action will be temporary and insignificant.

7. **Socioeconomics**
Implementation of the Proposed Action will create a short-term demand for construction related products and services, creating short-term jobs and supporting local vendors. These impacts will be temporary and thus result in an insignificant impact on socioeconomic conditions in the project region.

8. **Biological Resources**
On October 23, 2015, a species list of federally listed, proposed and candidate species potentially occurring within the Proposed Action area and surrounding areas was obtained from the U.S. Fish and Wildlife Service's (USFWS) website. The only listed fisheries species that may be affected by the proposed action, specifically related to dewatering of the LRDC, are the Lost River and the shortnose suckers. Therefore, the following avoidance and minimization measures will be followed to avoid any potential adverse effects.

- During dewatering of the LRDC, a sufficient water depth will be maintained to ensure the survival of stranded fish during the dewatering and construction phases of this effort.

- Reclamation staff, in coordination with the USFWS and Oregon Department of Fish and Wildlife (ODFW), will salvage fish that are stranded in small and shallow pools within the LRDC. All salvaged fish of species other than suckers and trout will be relocated to larger pools within the LRDC that have sufficient depth to provide survival for several weeks while the work is conducted.

- Block nets and electro-fishers will be used to isolate and remove all fish from the immediate construction area (i.e., 100 feet to the east and west of the existing C Flume Crossing) until a temporary coffer dam is installed.

- Pools with remaining fish will reconnect to the Klamath River and the Lost River once the LRDC is re-watered following construction.

- Biological monitoring will be incorporated throughout the dewatering and construction phases to ensure water conditions are adequate for fish protection.

- If Lost River and shortnose suckers are encountered during the salvage of disconnected pools, Reclamation will coordinate with the USFWS and on where to relocate the salvaged individuals. The relocation of salvaged trout from the LRDC will be coordinated with ODFW.

The proposed dewatering and salvage activity, (summarized above and detailed in Appendix C of the attached EA) has been previously analyzed for its potential impacts to endangered suckers in the May 31, 2013, *Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013, through March 31, 2018, on Five Federally Listed Threatened and Endangered Species* (BiOp) issued jointly by the USFWS and the National Marine Fisheries Service. As a result, Reclamation has determined the potential impacts of the Proposed Action and associated salvage are within the scope of analysis of the BiOp and has requested USFWS concurrence. Informal consultation with the USFWS was conducted with concurrence from the USFWS received on December 15, 2015 (Appendix H).

Reclamation concluded there are no endangered plant species present within the C Flume project area. From the shapefiles used, the closest instance of a listed endangered species (Applegate's milk-vetch) is approximately 1.5 miles from the project area and no effect is likely to occur with implementation of this project (*see* Figure 1-2 of the EA).

Overall, the proposed activities are not expected to result in negative effects on terrestrial species including eagles and or migratory birds protected under the *MBTA* or the *Bald and Golden Eagle Protection Act*.

9. Surface and Groundwater

Dewatering of the surface waters within the LRDC (described in section 2.2.1 of the attached EA) will occur as part of the Proposed Action. Temporary and isolated turbidity from executing fish salvage activities and installing temporary coffer dams, crane pads and permanent steel piles will result in insignificant impacts as the effects will be minimal, localized, and temporary in nature. On May 9, 2014, Reclamation obtained authorization under the U.S. Army Corps of Engineers Nationwide Permit #3 (maintenance) for work in the LRDC therefore complying with the Clean Water Act (CWA) Section 404. Reclamation additionally obtained confirmation on October 22, 2015, from the Oregon Department of Environmental Quality that the Proposed Action is authorized under the CWA National Pollutant Discharge Elimination System 1200-CA permit.

10. Cultural Resources

Reclamation's proposed action constitutes an undertaking requiring compliance with 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA). Reclamation, in consultation with the State Historic Preservation Officer (SHPO), determined the C Canal Flume is a historic property eligible for inclusion in the National Register of Historic Places.

The removal of the C Canal Flume was found to constitute an adverse effect on the historic property. Through the NHPA Section 106 process, Reclamation and the SHPO negotiated a memorandum of agreement (MOA) to resolve the adverse effect to the C Canal Flume. The MOA, which was executed on December 10, 2015, stipulates that Reclamation will complete the following mitigation measures to resolve the adverse effect:

- C Canal Flume Documentation. Reclamation will document the C Canal Flume in accordance with the Oregon SHPO Documentation Standards for the Mitigation for Adverse Effects under Section 106 of the NPHA.

- Klamath Project Public Interpretation. Reclamation will develop and install a minimum of two interpretative panels along the A Canal Recreation Trail to relay information about the history and significance of the Klamath Project to members of the general public in Klamath Falls.

Through correspondence dated November 24, 2015, The Klamath Tribes provided comments on the C Canal Project specifically related to the potential for encountering buried cultural resources in the project area. Reclamation will work with The Klamath Tribes to address their concerns in accordance with 36 CFR Part 800. Any discovery of buried cultural resources during project implementation will require compliance with 36 CFR § 800.13(b)(3), to include consultation with The Klamath Tribes and the further consultation with the SHPO. The inadvertent discovery of Native American human remains during construction will be subject to the Native American Graves Protection and Repatriation Act and handled in close consultation with The Klamath Tribes.

11. Hazardous and Toxic Materials

Activities associated with the Proposed Action will utilize potentially hazardous materials associated with the operation of vehicles and construction equipment during implementation. Implementation of best management practices will minimize the potential for any hazardous materials to be a public hazard. These practices will ensure that the impacts with respect to hazardous materials will be less than significant.

12. Air Quality

Under the Proposed Action, construction activities will generate short-term and localized fugitive dust, gas, and diesel emissions, which could affect air quality. KID or its contractor will implement fugitive dust mitigation measures, including provisions in construction contract documents that require minimization of the construction-related impacts on air quality in order to minimize impacts to air quality which are expected to be insignificant.

13. Traffic and Transportation

Implementation of the proposed action will result in insignificant impacts to traffic and transportation as construction near and on the highway will be temporary in nature. To further reduce impacts, KID or its contractor will implement a traffic control plan as approved by the Oregon Department of Transportation.

14. Environmental Commitments

The following environmental commitments and permitting conditions will be implemented before, during, and after construction to assure no significant impacts will occur as a result of the Proposed Action.

General

- KID and its contractors shall be responsible for complying with all environmental requirements identified in this EA, as well as all federal, state, and local laws and or permits that have already been obtained or are yet to be obtained (*see* Section 1.7).

- Reclamation's Safety and Health Standards and all applicable Reclamation standards and directives will be applied during construction activities to minimize environmental impacts.

- KID or its contractor will be responsible for developing and implementing following mitigation and control plans to reduce and or eliminate potential environmental impacts as a result of implementation of the Proposed Action:
    - Erosion and Sediment Control Plan
    - Hazardous and Toxic Materials Control Plan
    - Spill Prevention Control and Countermeasure Plan
    - Traffic Control Plan
    - Fugitive Dust Control Plan

  In addition to those plans listed above, Reclamation will be responsible for administering the LRDC Dewater Fisheries Salvage Plan.

Access:

- Construction access will be established to define the points of entrance and/or exit to the construction site to stabilize and reduce the tracking of mud and dirt onto the public highway by construction vehicles. The stabilized construction entrances will be inspected to remove sediments that may have built up on a regular basis, or within 24 hours after storm events, and repaired as necessary.

- Existing roads and staging areas will be used whenever possible for project activities. Use of privately-owned land for access will only occur under and consistent with executed temporary construction easements (acquired by Reclamation prior to construction beginning).

- Designation of areas with fencing or other barriers demarking construction areas, staging areas, and access points will be installed prior to and during all construction activities.

- All construction activities will be confined to Reclamation's ROW or on land in which Reclamation has acquired a temporary construction easement.

Air Quality

- If a rock crusher is required for demolition activities, the contractor will obtain an Air Quality Discharge Permit from ODEQ (pursuant to its website accessed at: http://www.deq.state.or.us/regulations/rules.htm) prior to bringing the rock crusher on-site. Additionally, the contractor may need to submit a notice of construction, if applicable, through the ODEQ office in Bend, Oregon prior to crushing activities occurring.

- KID and its contractor will develop and comply with all conditions imposed by OWRD under the limited license for use of water for fugitive dust abatement.

- KID and its contractor would implement an approved fugitive dust control plan. This plan would include measures for minimizing fugitive dust such as applying dust suppressants and/or water sprays, minimizing the extent of disturbed surface areas, and restricting activities during periods of high wind.

Biological-Fisheries

- Reclamation will obtain a Scientific Taking Permit from ODFW prior to dewatering of the LRDC. Reclamation will conduct fish salvage and comply with the conditions of the permit and USFWS recommendations. KID or its contractor will provide Reclamation a minimum notice of two weeks prior to wanting to initiate dewatering of the LRDC. Reclamation will then notify and coordinate with ODFW and USFWS.

Cultural and Paleontological Resources

- In the event that any cultural resources, either surface or subsurface, are inadvertently discovered during construction, Reclamation's Mid-Pacific Regional archaeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist. Consultation with the SHPO and The Klamath Tribes regarding the discovery will be required pursuant to 36 CFR § 800.13. Any person who knows or has reason to believe that he/she has inadvertently discovered possible Native American human remains on Reclamation land must immediately provide telephone notification of the discovery to Reclamation's Mid-Pacific Regional archaeologist. Work will stop until the proper authorities are able to assess the situation on-site. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) (43 C.F.R. Part 10) and the Archaeological Resources Protection Act of 1979 (16 U.S.C. §470). Reclamation will consult with The Klamath Tribes and/or other appropriate culturally affiliated Indian tribe(s) regarding the disposition of any inadvertently discovered human remains and associated funerary object pursuant to the requirements of NAGPRA.

- The terms of the Memorandum of Agreement (MOA) between Reclamation and the SHPO to mitigate the adverse effects of the Proposed Action will be implemented as outlined in the MOA (Appendix A).

- In the case that any paleontological resources, either surface or subsurface, are encountered during construction, Reclamation's Mid-Pacific Regional archaeologist shall be notified immediately and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by Reclamation's Mid-Pacific Region.

Hazardous Fuels and Materials

- A visual environmental site survey as part of the pre-construction meeting with Reclamation will be conducted prior to initiating construction. Any materials or hazardous substances in the ROW area that could be exposed will be removed or other appropriate remedial action taken prior to start of construction.

- The contractor will prepare a project-specific Spill Prevention Control and Countermeasure Plan (or similar) to be approved by Reclamation to address secondary containment, prevention of spills, spill containment and cleanup procedures, and materials on hand to accomplish the

containment and cleanup of petroleum and other hazardous products that may be brought on site. The plan shall be approved by Reclamation prior to moving any of these products on site and prior to any construction activity.

- If on-site storage occurs, lubricants and fuels will be placed in temporary, clearly marked, above-ground containers and provided with secondary containment. Construction equipment will be maintained and inspected regularly. Any soil contaminated by fuel or oil will be removed and disposed of by KID (or its contractor) to an approved disposal site.

- Any hazardous materials and other hazardous substances that are used in construction will be disposed of in accordance with applicable laws and regulations. Excess or unused quantities of hazardous materials will be removed upon project completion. Although hazardous waste generation is not anticipated, any such wastes produced during construction will be properly containerized, labeled, and transported to an approved hazardous waste disposal facility. All nonhazardous waste materials including construction refuse, garbage, and sanitary waste, will be disposed of by removal from the work area to an approved disposal facility. Disposal of any and all materials by burning will not occur. All elements of the Hazardous and Toxic Control Plan to be developed by KID or its contractor, will be implemented and followed throughout the duration of the Proposed Action work timeframe.

Land

- After construction is complete, the contractor shall seed Reclamation's ROW with a suitable seed mix, approved by Reclamation, for the soil and landscape of the area. The purpose of this seeding will be to reduce erosion and sedimentation. If the soil has been compacted, the top layer of the soil should be tilled to allow for proper establishment of the plants' root systems. The seeded area shall be covered with certified weed-free mulch after the seed is applied.

Noise

- BMP's will be implemented to control temporary noise impacts during construction including mufflers on heavy equipment. The contractor will follow all state and local noise ordinances. To reduce disruptive noise emissions, the contractor will restrict construction activities to the following timeframes: 7:00 A.M. to 7:00 P.M., Monday through Sunday. Work outside this time period requires advance approval from Reclamation or KID. Upon approval, KID will be required to contact adjacent landowners prior to work commencing to inform them of the potential change in work hours and the anticipated level of temporary noise increases during specific construction activities. There will be no long-term increases to the ambient noise levels after construction is completed.

Records

- KID and its contractors will keep all environmental permits, conditions, guidelines, Reclamation's Safety and Health Standards and all plans and BMPs on the job site and readily available for reference by Reclamation, ODEQ, USACE, USFWS, ODFW, and other appropriate state and local government inspectors.

Utilities

- KID and its contractors will be responsible for locating, marking, and protecting all utilities within the work area prior to commencing ground disturbing activities.

Water Quality

- Silt fencing along the embankment of the LRDC and work areas along the 1A drain (parallel to the C Flume) will be established prior to commencing the Proposed Action. Ponding will not be permitted behind the silt fences as the fences will collapse under high pressure. The design of the silt fences will provide sufficient outlets to prevent overtopping. The maximum height of the silt fence should range between 18 and 36 inches above the ground surface (depending on the amount of upslope ponding expected). Silt fences will be inspected daily during periods of prolonged rainfall, immediately after each rainfall event and weekly during periods of no rainfall. Any required repairs will be made immediately. Sediment must be removed when it reaches one-third to one-half the height of the silt fence. Fences will not be removed until the upslope area has been permanently stabilized with reseeded vegetation. Any sediment deposits remaining in place after the silt fence has been removed will be dispersed to conform to the existing grade.

- Erosion control BMPs will be implemented during all ground disturbing activities to reduce runoff and allow for infiltration, provide sediment trapping and support the establishment of permanent ground covers (e.g., vegetative cover). KID and its contractors shall also comply with the Erosion and Sediment Control Plan as shown in Appendix B of the EA and as detailed by KID or its contractor. This plan will serve to provide detailed information about the construction site, and serves as a blueprint for the location, installation, and maintenance of the erosion and sediment control measures to minimize erosion and reduce sediment entering the LRDC. Erosion prevention BMPs may include, but are not limited to surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

- Temporary fills must be removed from the LRDC entirety and the affected areas returned to pre-construction conditions. The affected areas must be stabilized and revegetated, as appropriate.

- KID and its contractors will implement all reasonably available controls and practices to minimize turbidity during in-water work.

- KID and its contractors will comply with all conditions imposed by OWRD under the limited license for use of water for dust abatement.

- All materials (e.g., coffer dams, crane pad, and or fish salvage tools) anticipated to be placed in the LRDC will be inspected by Reclamation prior to installation to ensure they do not contain or are not coated with chemicals or like substances that could leach and effect present surface waters.

Coffer dams will be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a coffer dam by pushing material from LRDC bed or banks will not occur. The coffer dams will include sand and gravel bag dams which will be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the channel.

Appendix A. Memorandum of Agreement between Reclamation and the Oregon State Historic Preservation Officer.

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. BUREAU OF RECLAMATION
AND
THE OREGON STATE HISTORIC PRESERVATION OFFICER
REGARDING THE REMOVAL OF THE C-CANAL FLUME,
KLAMATH FALLS, OREGON

WHEREAS, the Bureau of Reclamation (Reclamation) plans to authorize Klamath Irrigation District (KID) to remove and replace the C-Canal Flume, an approximately 4,200-foot-long elevated concrete section of a larger conveyance known as the C-Canal, which is a principle water conveyance within Reclamation's Klamath Project; and

WHEREAS, Reclamation retains underlying ownership of the C-Canal Flume, while KID, under Reclamation Contract 14-06-200-3784, dated November 29, 1954, is responsible for its operation, maintenance, and repair; and

WHEREAS, Reclamation's authorization of the C-Canal Flume removal and replacement constitutes an undertaking requiring compliance with 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA); and

WHEREAS, Reclamation defined the undertaking's area of potential effects (APE) to include the entirety of the C-Canal Flume structure that will be removed; and

WHEREAS, Reclamation determined, with consensus from the Oregon State Historic Preservation Officer (SHPO), that the C-Canal Flume is eligible for listing in the National Register of Historic Places (National Register); and

WHEREAS, Reclamation finds, and SHPO concurs, that the undertaking will result in an adverse effect on the C-Canal Flume; and

WHEREAS, Reclamation consulted with KID regarding the effects of the undertaking on historic properties and invited them to sign this MOA as a Concurring Party; and

WHEREAS, pursuant to 36 CFR § 800.3(f)(2), Reclamation identified and invited The Klamath Tribes to participate in the Section 106 process and the tribe did not request to be a consulting party for the undertaking; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), Reclamation notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation, and as conveyed through correspondence dated September 25, 2014, the ACHP chose not to participate in the consultation related to this MOA pursuant to 36 CFR § 800.6(a)(1)(iii); and

WHEREAS, the definitions given in 36 CFR § 800.16 are applicable throughout this MOA; and

NOW, THEREFORE, Reclamation and the SHPO agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

I. MITIGATION MEASURES

A. Documentation of C-Canal Flume

i. Reclamation will document the C-Canal Flume in accordance with State Level Documentation standards as outlined in the Oregon SHPO Documentation Standards for the Mitigation for Adverse Effects under Section 106 of the National Historic Preservation Act or ORS 358.653 (Appendix A).

a. State Level Documentation minimally will include photo documentation of the existing C-Canal Flume structure, including the existing transition points with adjacent C-Canal segments (i.e., Upper C-Canal and C-Canal Aqueduct) and a representative sample of C-Canal Flume components (e.g., check structures, gates, turnouts, etc.). A high resolution digital single lens reflex (SLR) camera will be used for the photo documentation.

b. Reclamation will submit a draft photo documentation package to the SHPO for review and comment.

1. The SHPO will have 30 days to review and provide comments to Reclamation on the draft documentation package. Upon receipt, Reclamation will address SHPO comments and submit a final documentation package within 45 days.

2. If the SHPO does not provide comments within 30 days of receipt of the draft documentation package, Reclamation may proceed to finalize the documentation package. The final documentation package will be submitted to the Oregon Historical Society, University of Oregon Architecture and Allied Arts Library, and Klamath County Museum in the format preferred by those repositories. One digital copy, burned to compact disc, will be provided to the SHPO within 45 days following the close of the review and comment period.

ii. Stipulation I(A) will be completed within 1 year of the final signature on this document.

B. Klamath Project Public Interpretation

i. Reclamation will develop and install a minimum of two interpretative panels no less than 2x4 feet, and made of a sturdy, weatherproof construction suitable for long-term exterior display to relay information about the history and significance of the Klamath Project to members of the general public in Klamath Falls. The panels will be installed along the A Canal Recreation Trail, a paved pedestrian and bicycle path constructed as a community project in 1978 that serves as an alternative route of travel through both urban and suburban areas of Klamath Falls. The approximately 4-mile-long trail runs adjacent to Reclamation's A Canal and connects with city parks, school playgrounds, a community pool, the YMCA, and the Klamath County Fairgrounds. The A Canal, which was constructed beginning in 1906, was the first canal built as part of the Klamath Project.

a. Reclamation will utilize existing historical context, maps, photographs, and any materials collected in completion of Stipulation A related to the origin and development of the Klamath Project to create the interpretive panels.

b. Reclamation will provide the proposed narrative and visual elements of the panels to the SHPO for review and comment prior to installation.

1. The SHPO will have 30 days to review and provide comments to Reclamation on the proposed content for the interpretative panels.

2. If the SHPO does not provide comments within 30 days of receipt of the proposed content, Reclamation may proceed with finalizing and installing the interpretative panels.

ii. Stipulation I(B) will be completed within two years of the final signature on this document.

C. The terms of this MOA will be fulfilled upon Reclamation's submission and confirmed by SHPO upon receipt of the final C-Canal Flume documentation package and installation of the Klamath Project interpretive panels on the A Canal Recreation Trail.

II. STANDARDS AND QUALIFICATIONS

All stipulations in this MOA will be carried out by or under the direct supervision of a person or persons meeting, at minimum, the Secretary of the Interior's Professional Qualification Standards in the appropriate discipline as outlined at 48 FR 44738- 44739.

III. EFFECTIVE DATE

This MOA will take effect on the date that it has been fully executed by the Signatories. Upon execution of this MOA, all parties agree that Reclamation may proceed with the approval of subsurface construction activities required to complete the undertaking. Demolition of the C-Canal Flume will not occur until the terms of Stipulation I(A) of the MOA are fulfilled.

IV. DURATION

This MOA will expire if its terms are not carried out within three (3) years from the date of its execution. Prior to such time, Reclamation may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII below.

V. POST-REVIEW DISCOVERIES

If properties are discovered that may be historically significant or unanticipated effects on historic properties are found during implementation of the undertaking, Reclamation will follow the procedures outlined at 36 CFR § 800.13(b)(3).

VI. MONITORING AND REPORTING

Following the execution of this MOA until it expires or is terminated, Reclamation will prepare an annual report in brief memo format for the SHPO documenting the progress made or actions undertaken for the prior Federal fiscal year of October 1 through September 30. The report, which Reclamation will submit to the SHPO by January 30 of the subsequent fiscal year, will provide a summary report of the work undertaken pursuant to the terms of the MOA, including any proposed scheduling changes, problems encountered, and disputes or objections encountered by Reclamation in carrying out the terms of this MOA.

VII. DISPUTE RESOLUTION

A. Should any Signatory or Concurring Party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, Reclamation will consult with such party to resolve the objection. If Reclamation determines that such objection cannot be resolved, Reclamation will:

    i. Forward all documentation relevant to the dispute, including Reclamation's proposed resolution, to the ACHP. The ACHP will provide Reclamation with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Reclamation will prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. Reclamation will then proceed according to its final decision.

ii. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, Reclamation may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Reclamation will prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

iii. Reclamation's responsibilities to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

VIII. AMENDMENTS

Any party wishing to amend this MOA must submit the text of the proposed amendment in writing to all signatories. Signatories shall have 30 days to either agree to the amendment in writing or provide written comments describing their objections to the amendment. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

IX. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party will immediately consult with the other signatories to attempt to develop an amendment per Stipulation VIII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, Reclamation must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Reclamation will notify the signatories and concurring parties to this MOA as to the course of action it will pursue.

Execution of this MOA by Reclamation and the SHPO and implementation of its terms evidence that Reclamation has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORY:

BUREAU OF RECLAMATION

FOR BY: _____ DATE: 12-10-15

David G. Murillo
Regional Director, Mid-Pacific Region

SIGNATORY:

OREGON STATE HISTORIC PRESERVATION OFFICE

BY Christine Curran DATE: 11.16.15

Christine Curran
Deputy State Historic Preservation Officer

CONCURRING PARTY:

KLAMATH IRRIGATION DISTRICT

BY _____ DATE: 11/20/15

APPENDIX A

Oregon SHPO Documentation Standards

Mitigation for Adverse Effects under Section 106 of the National Historic Preservation Act or ORS 358.653

In cases where an action by a local, state or federal agency will adversely affect a listed or potentially-eligible National Register property, documentation may be required as part of the mitigation for the undertaking. Documentation is not necessarily adequate in all cases. Agencies should contact the Oregon State Historic Preservation Office (SHPO) before planning or completing any mitigation measures, including documentation.

State Level Documentation

The following items are required for all state level documentation.

1. **Architectural description of the building** - *Description should be surface-by-surface, covering the entire exterior of the building, noting all important character-defining elements, fenestration types and patterns. Include descriptions of key interior areas, if accessible. Include discussion of all observed alterations, and provide dates for them. Descriptions should be not less than 500 words and use appropriate architectural terms.*
2. **Building history** - *History of not less than 500 words discussing at least when the building was constructed and by whom, the building or structure's use over time, and any important persons or events associated with the resource. Be as accurate as possible. If the documentation is being conducted for mitigation purposes, give extra detail to those elements being impacted. Contact the Oregon SHPO for research suggestions.*
3. **Bibliography** - *Include a bibliography of all resources used in the preparation of the document, including sources for appended archival materials described in item 8.*
4. **Map** - *Digital image of the appropriate United States Geological Survey (USGS) Map with the location of the property marked. A portion of the entire map may be printed for free from a website such as topoquest.com and marked by hand.*
5. **Scale site plan** – *Include subject building or structure and adjacent buildings and structures on the same tax lot. Drawing may be done by hand as long as it reasonably to scale. Include the name of the person completing the map, date the map was completed, map scale, and north arrow on the map. The name and/or use of each building, structure, object, and adjacent streets on the map should be labeled.*
6. **Scale Floor plans** - *Include each floor of the subject building or structure. Drawing may be done by hand as long as it reasonable to scale. Include the name of the person completing the map, date the map was completed, map scale, and north arrow on the map. The name and/or use or each space should be labeled.*
7. **Photographs** – *Include photos of the building or structure interior and exterior. Photos may be taken as 35mm black-and-white 4x6 images or as color digital images. Digital and print images and prints must meet all aspects of the Oregon SHPO Digital Photo Checklist available at the SHPO website: http://www.oregonheritage.org/OPRD/HCD/NATREG/nrhp_documents.shtml .*
8. **Archival materials** - *If available, include original architectural drawings or maps, brochures, photos, newspaper clippings, or other archival items of interest relating to the history of the building or structure.*

Provide three complete hard-copy sets of documentation including printed photos, and one CD containing a digital copy of the complete submission to the Oregon SHPO. A fourth full set may be required in cases where there is a local repository that is interested in receiving the materials.

Historic American Building Survey (HABS) and Historic American Engineering Record (HAER) Documentation

In cases where HABS / HAER documentation is required, the provided materials must meet all standards set by the National Heritage Documentation Programs Office, including archiving at the Library of Congress. The level of documentation is negotiated on a case-by-case basis between the agency managing the project and the Oregon SHPO. Documentation standards may be found at: http://www.nps.gov/hdp/.

RECLAMATION

Managing Water in the West

Environmental Assessment

C Canal Flume Replacement

Klamath County, Oregon

2015-EA-008

U.S Department of the Interior
Bureau of Reclamation
Klamath Basin Area Office

December 2015

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Chapter 1: Introduction and Background Information

1.1 Introduction

The Bureau of Reclamation (Reclamation) has identified unacceptable structural deficiencies associated with the C Canal Flume (C Flume) within the Klamath Reclamation Project (Klamath Project). A 2013 inspection under Reclamation's special inspection program for urban canals resulted in a Category 1 recommendation, which requires the Klamath Irrigation District (KID) to repair and/or replacement of the deteriorated beams, columns, and other structural members of the C Flume.

This Environmental Assessment (EA) analyzes the potential environmental impacts of correcting the deficiencies of the C Flume. The EA has been prepared in accordance with the *National Environmental Policy Act* (NEPA) (42 U.S.C. §4321 et seq.), the Council on Environmental Quality Regulations for implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), and the Department of the Interior regulations for the Implementation of the NEPA (43 CFR Part 46). If there are no significant environmental impacts identified as a result of the analyses, a Finding of No Significant Impacts (FONSI) can be signed to complete the NEPA compliance process. This EA will also be used to inform Reclamation's decision-making within the contracting process associated with repayment costs of replacing the C Flume.

1.2 Background

The C Flume, a 4,200 foot long elevated concrete segment of the C Canal, facilitates delivery of water from Upper Klamath Lake (UKL) to approximately 22,000 acres of farmland within the Klamath Project located in Klamath County, Oregon (*see* Figure 1-1 for maps and Appendix A for pictures). The C Flume was originally constructed in 1909 as a wood structure, and then replaced in 1922 with the existing concrete structure. The existing C Flume is comprised of precast concrete U-shaped sections that have been joined by simple push-together joints. The superstructure and precast substructure were placed on the original foundations. Numerous repairs have been made to the C Flume since 1922, including sealing cracks, reinforcing portions of the longitudinal beams with steel members, and most recently in 2013 and 2014, installing temporary wood and steel shoring for some of the beam sections.

The C Flume crosses beneath the Burlington Northern Santa Fe Railway (BNSF) railroad line, crosses over Oregon State Highway 39, and spans the Lost River Diversion Channel (LRDC). BNSF constructed the railway overpass in 1930, pursuant to an agreement with Reclamation. The portion of the C Flume crossing the highway was modified after the original construction date.

Although a Federal Reclamation facility, the C Flume is operated and maintained by KID. Since 1955, KID has been responsible for the operation and maintenance (O&M) of the C Flume, pursuant to Reclamation Contract 14-06-200-3784, dated November 29, 1954. In early 2013, KID retained Adkins Engineering, LLP (Adkins) to perform an engineering assessment on the structure. Adkins had just completed the inspection, identifying more than 1,200 locations along the structure that

needed to be addressed, when Reclamation initiated a special inspection of the facility in February 2013. Reclamation's special inspection likewise identified deficiencies in the facility, including concrete degradation, cracking, and flaking; metal loss and loss of strength; and sagging beams leading to load carrying capacity concerns and facility leakage. Based on these findings, in July 2013, Reclamation issued a Category 1 recommendation, requiring KID to perform engineering analysis and complete permanent repairs and/or a replacement to the structure.

In order to stabilize the structure until completion of permanent repairs and/or a replacement, KID, Adkins, and Reclamation developed and implemented a plan for temporary wood shoring for the C Flume prior to the 2013 irrigation season. This temporary wood shoring was replaced with steel shoring prior to the 2014 irrigation season. KID also developed, and Reclamation approved, an emergency response plan for operation of the C Flume, which included regular inspections and modified operation of the facility at reduced water levels. These interim measures do not, however, eliminate the freeze-thaw action that continues to degrade the structure and create a potential risk of failure.

1.3 Location

The upstream end of the existing C Flume is located approximately 370 feet southwest of the C-G Canal, one-third of a mile east of Highway 39, and one-half mile north of the LRDC (*see* Figure 1-1). The downstream end of the flume is approximately 925 feet west of Highway 39 and 380 feet south of the LRDC.

The proposed replacement pipe (combination of a siphon and elevated pipe) would be approximately 4,200 feet long. The end of the project will remain approximately in the same location as the existing configuration.

The proposed replacement pipe would be located within the existing C Flume right-of-way (ROW), which is owned by Reclamation in fee title. The width of the ROW varies from 150 feet wide at the northeast end, to 300 feet wide at the southwest end. The replacement structure will be entirely located within the ROW. Temporary construction access, staging areas, and material storage yards will be located either within or adjacent to the ROW.

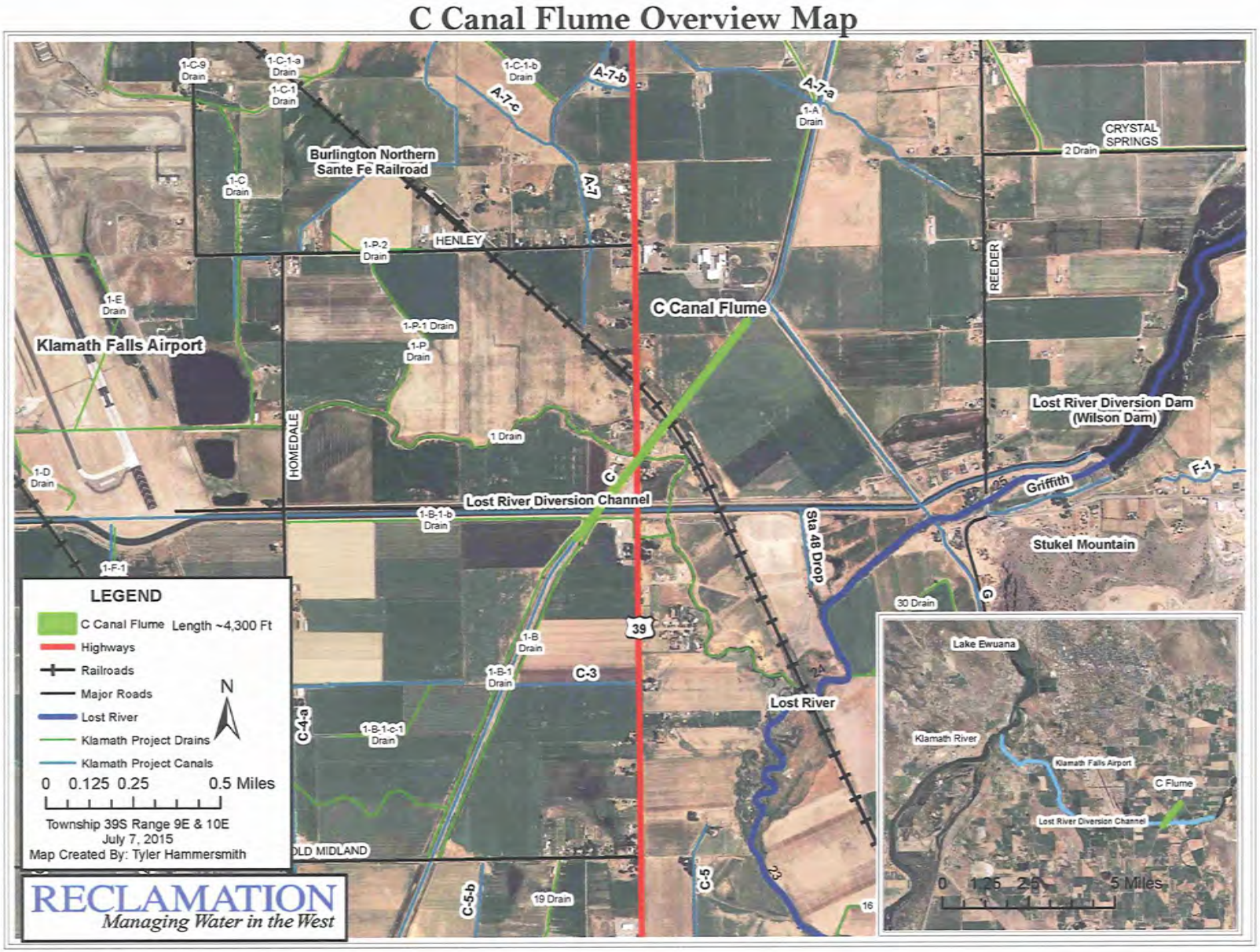
The replacement pipe would be located within the boundaries of existing lands owned in fee by Reclamation and in connection with the original structure way for the C Flume. Below is the description of the general location:

- Southeast Quarter of the Northwest Quarter, the Northeast Quarter of the Southwest Quarter, the Northwest Quarter of the Southwest Quarter, and the Southwest Quarter of the Southwest Quarter of Section 30, all in Township 39 South, Range 10 East, Willamette Meridian;

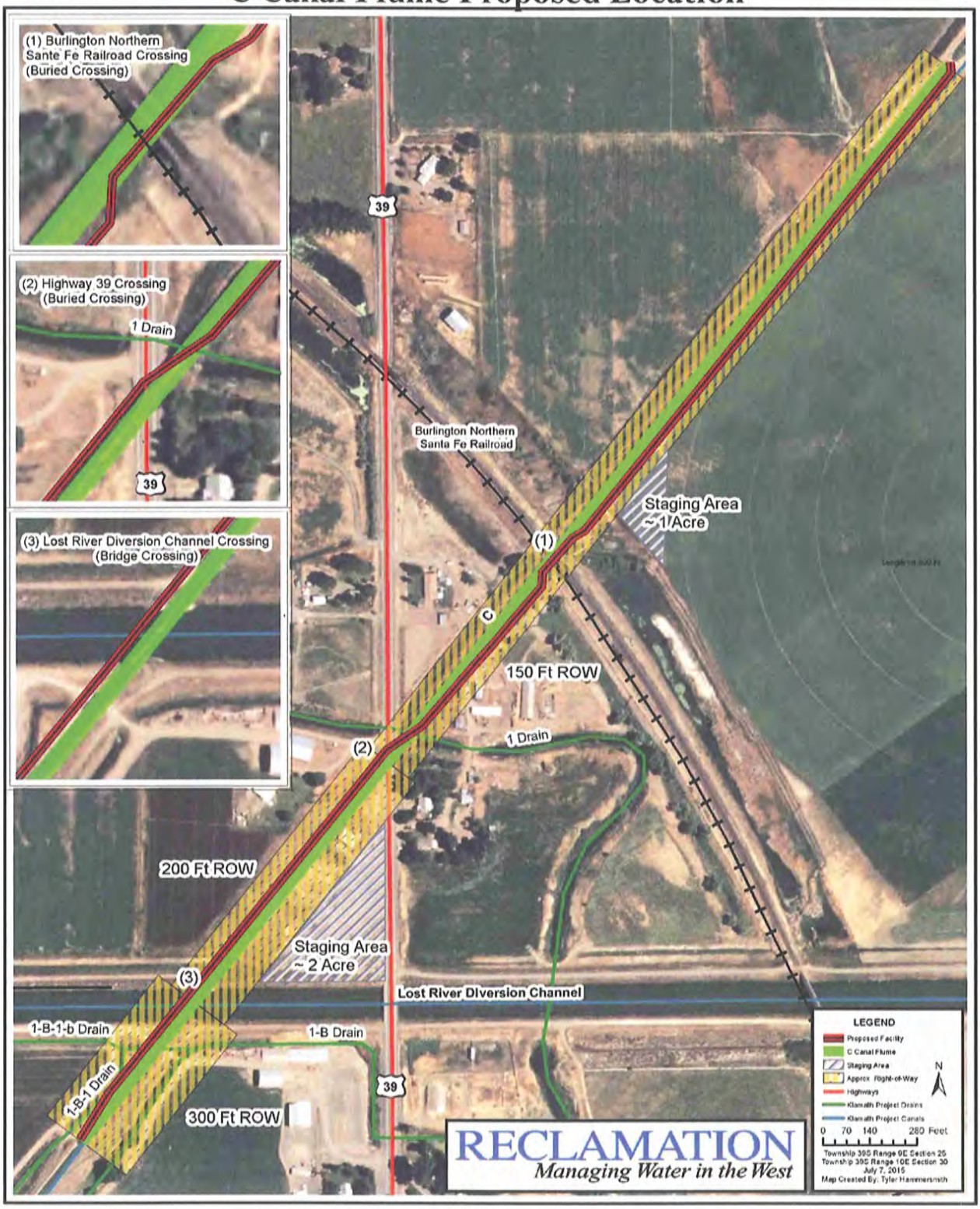
- Southeast Quarter of the Southeast Quarter of Section 25, Township 39 South, Range 9 East, Willamette Meridian; and

- Northeast Quarter of the Northeast Quarter of Section 36, Township 39 South, Range 9 East, Willamette Meridian

Figure 1-1 General Maps; Current and Proposed Locations



C Canal Flume Proposed Location



1.4 Need for the Proposal

The purpose of the Proposed Action is to address the 2013 Category 1 recommendation for the repair and/or replacement of the C Flume. Action is needed to protect human health, safety, and property from the deteriorating structure and allow Reclamation to continue to satisfy its contractual obligations to Klamath Project water users by delivering water to approximately 22,000 acres of irrigated land within the Klamath Project.

1.5 Decision to be Made

Reclamation will decide whether to authorize KID to construct a proposed replacement structure to the existing C Flume, in satisfaction of the Category 1 recommendation. This decision will be made based on this EA, and the engineering designs and specifications submitted by KID under an MP-620 form, which is required for additions or alterations to Reclamation-owned facilities. Reclamation may also elect to advance funds to KID to cover a portion of costs in connection with the repair and/or replacement of the C Flume, and enter into a repayment contract with KID for the corresponding construction costs and repayment of such funds.

1.6 Authority

The Klamath Project was authorized by the Secretary of the Interior on May 15, 1905, under the *Reclamation Act of 1902* (32 Stat. 388).

KID is obligated under article 7(b) of Contract 14-06-200-3784 to promptly make any and all repairs to the transferred works, including the C Flume, which in the opinion of the Secretary of the Interior, are necessary for the proper preservation of the facility.

Reclamation would review and approve engineering designs and specifications submitted by KID for the replacement structure, pursuant to a MP-620 form (a form used by transferred works operating entities in obtaining Reclamation's approval for additions or alterations to Reclamation-owned facilities in the Mid-Pacific Region). Reclamation's prior approval is required for all work to be performed by KID under the proposed activities. Reclamation would inspect all ongoing and completed work to determine it is consistent with authorized designs and specifications.

Title IX, Subtitle G, Section 9603 of the *Omnibus Public Land Management Act of March 30, 2009* (Pub. L. 111-11; 43 U.S.C. §510b) authorizes the Secretary of the Interior to advance federal funds to a non-federal operating entity for performing extraordinary maintenance on Federal Reclamation facilities, and to enter into a contract for the repayment of such funds.

1.7 Regulatory Compliance Laws

Compliance with the following laws and regulations would be required prior to and during implementation of the Proposed Action. Permits and approvals would be required from a number

of agencies and are summarized in Table 1-1.

***National Environmental Policy Act* (42 U.S.C. § 4321 et seq.)**

Under the *National Environmental Policy Action* (NEPA), federal agencies must consider and disclose the environmental consequences of proposed major actions. The spirit and intent of NEPA is to protect and enhance the environment through well-informed federal decisions, based on sound science. NEPA is premised on the assumption that providing timely information to the decision-maker about the potential environmental consequences of proposed actions would improve the quality of federal decisions. Thus, the NEPA process includes the systematic interdisciplinary evaluation of potential environmental consequences expected to result from implementing a proposed action.

***Endangered Species Act* (16 USC. 1531 et seq.; 50 CFR Parts 17 and 222)**

The *Endangered Species Act* (ESA) requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species (according to the lists maintained by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS)) or result in the destruction or adverse modification of habitat critical to such species' survival. To ensure against jeopardy, each Federal agency must consult with the USFWS and/or NMFS.

***Clean Air Act* (42 U.S.C. §7401 et seq.)**

The principal federal law protecting air quality is the *Clean Air Act* (CAA), which is enforced by the Environmental Protection Agency (EPA) but administered by the Oregon Department of Environmental Quality (ODEQ). Section 176(c) of the CAA (42 U.S.C. §7506(c)) requires any entity of the Federal Government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 U.S.C. §7401(a)) before the action is otherwise approved.

***Clean Water Act* (33 U.S.C. §1251 et seq.)**

The *Clean Water Act* (CWA) strives to "restore and maintain the chemical, physical, and biological integrity of the Nation's water." If water quality is potentially affected by a proposed action, a National Pollutant Discharge Elimination System (NPDES) permit (administered by the states) under Section 402 of the CWA is required. If a project has the potential to result in placement of materials into waters of the United States, a Dredge-and-Fill permit under Section 404 of the CWA would be required from the U.S. Army Corps of Engineers (USACE). Prior to issuances of either a NPDES or Dredge-and-Fill permit, certification under Section 401 of the CWA (as it relates to States and Tribes review and approval of the proposed action) would be also required.

***Federal Migratory Bird Treaty Act of 1918* (16 U.S.C. §§ 703-712)**

The *Federal Migratory Bird Treaty Act* (MBTA) prohibits the take, harm, or trade of any migratory bird species, including owls, hawks, and other birds of prey, and requires that a federal agency must have a policy in place to prevent harm to such species as a result of that agency's

actions. The U.S. Fish and Wildlife Service (USFWS) is the agency charged with administering and enforcing the MBTA. A 1972 amendment to the act included owls, hawks, and other birds of prey.

***National Historic Preservation Act* (P.L. 89-665), as amended (Public Law 95-515) (54 USC § 300101 *et seq.*)**

The *National Historic Preservation Act of 1966* (NHPA) requires federal agencies to consider historic preservation values when planning their activities. Each federal agency must establish a preservation program for identifying, evaluating, and protecting properties under its ownership or control that are eligible for listing on the National Register of Historic Places. 54 USC § 306108, commonly known as Section 106 of the NHPA, requires federal agencies to take into account the effects of their undertakings on historic properties. Through the Section 106 process, outlined at 36 CFR Part 800, federal agencies identify historic properties potentially affected by an undertaking, assess the effect of the undertaking on historic properties, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

State of Oregon Limited License (O.R.S. § 537.143)

A limited license provides temporary authorization from the Oregon Water Resources Department (OWRD) to divert and use water in the State of Oregon for a short-term or fixed duration for certain beneficial uses such as general construction.

State of Oregon Scientific Taking Permit (O.A.R. 635-007-0900)

A scientific taking permit is required by the State of Oregon Department of Fish and Wildlife (ODFW) to capture or handle marine and freshwater fish and shellfish and other marine invertebrates for scientific or educational purposes from the waters of Oregon. All Scientific Taking Permits are issued on an annual basis and expire on or before December 31 of the year issued.

Table 1-1 Required Permits/Approvals

Agency	Permit/Approval
BNSF	Potential temporary access/railroad control plan; anticipated to be obtained by Reclamation by February 2016
USACE	CWA Section 404 permit (Non-Reporting Nationwide Permit (NWP) No. 3 (Maintenance)); acquired by Reclamation on May 9, 2014, and pre-certified under CWA Section 401.
USFWS	Endangered Species Act Section 7 consultation on Lost River and shortnose suckers; Reclamation has determined the potential impacts of the Proposed Action is within the scope of analysis of the 2013 Biological Opinion for operation of the Klamath Project and has requested USFWS concurrence. USFWS provided concurrence on December 15, 2015.
ODEQ	CAA Air Quality Discharge permit; contractor potentially required to obtain permit from DEQ prior to construction.
ODEQ	CWA Section 402 NPDES permit; acquired confirmation of coverage on October 22, 2015.
ODFW	Scientific Take Permit (OAR 635-007-0910); Reclamation acquired concurrence on proposed application plan and eligible to apply for the permit no earlier than January 2016.
ODOT	ODOT permit to occupy or perform operations upon a state highway for temporary access and staging area use; acquired by Reclamation on February 14, 2015. Traffic control plan approval to be obtained by KID or its contractor prior to work commencing.
OWRD	Limited license for use of water for fugitive dust control mitigation measures; anticipated to be acquired by Reclamation in December 2015.
SHPO	Cultural resources and historic properties related to NHPA Section 106 compliance; a Memorandum of Agreement (MOA) to resolve the adverse effect to the C Flume was executed between Reclamation and the Oregon State Historic Preservation Officer on December 10, 2015.

Chapter 2: Alternatives

This EA analyzes two alternatives including the No Action Alternative and the Proposed Action. The No Action Alternative reflects conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment as a result of implementing the Proposed Action.

2.1 Alternative 1 – No Action

Under the No Action Alternative, Reclamation would: not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to the existing structure; however, annual O&M activities for the C Flume would continue to occur as in the past. Reclamation considers the No Action Alternative to be unacceptable for the long-term due to human, health, and safety risks.

2.2 Alternative 2 – Proposed Action (Preferred Alternative)

Under the Preferred Alternative, Reclamation would: review and approve the engineering designs and specifications submitted by KID and authorize KID to modify or alter the facility by undertaking construction actions to correct the C Flume Category 1 recommendation. Additionally, Reclamation would advance KID federal funds for a portion of the cost of the work and enter into a contract with KID for repayment of such funds. KID would replace the existing C Flume facility with a buried pipeline. The new facility would include approximately 3,600 feet of a 10-foot diameter buried pipe, 200 feet of an elevated steel pipe structure spanning over the Lost River Diversion Channel (LRDC), and 500 feet of elevated pipe south of the LRDC with a total length of approximately 4,300 feet. The elevated portion would be constructed of steel (AWWA C200) and the underground pipe would be made of either steel (AWWA C200), steel reinforced polyethylene (SRPE), or high density polyethylene (HDPE).

Construction of the new facility is proposed to occur on both sides of the existing structure and construction activities would allow the existing C Flume to remain in service until the end of the 2017 irrigation season (October 2017). Construction activities would be conducted using standard heavy machinery including, but not limited to:

- bulldozers
- trackhoes
- backhoes
- compaction equipment
- dump trucks
- cranes

Equipment would access the construction site from Highway 39 and either Reclamation's existing access roads or temporary construction easements obtained from adjacent landowners.

In the case of temporary construction easements with the adjacent landowners, equipment would access the construction site via existing driveways and farm roads, with one exception. A temporary access road, 16-feet wide, is proposed to be constructed with a gravel base on the east side of the BNSF railway ROW, running approximately 1,600 feet in length. This proposed road would connect Reclamation's existing access road on the north side of the LRDC to Reclamation's fee title land for the existing flume. The footprint of this road would cover approximately one acre of land. This access road would be removed upon completion of construction and the land would be converted as close to pre-construction conditions as practicable.

Staging areas for material, vehicles, and equipment would be established within Reclamation's fee title land for the existing flume, with two exceptions as described below and shown on the maps in Figure 1-1.

1. A staging area, covering approximately 1.1 acres, would be located within the northern portion of ODOT's existing gravel stockpiling area to the west of Highway 39 and immediately south of the LRDC. A permit has been obtained from ODOT to utilize this area.
2. At the northern end of the proposed temporary access road to be constructed as described above, a staging area covering approximately one acre, would be located within the agricultural field, adjacent to Reclamation's fee title land for the existing C Flume.

If the construction contractor deems it necessary to establish additional staging areas outside Reclamation's fee title land for the existing C Flume, such additional staging areas would be established to avoid mature shrub and tree vegetation. All staging areas would be a minimum of 150 feet from the LRDC, and/or containment measures would be provided for to protect against accidental fuel spills, erosion, etc. An Erosion and Sediment Control Plan (as shown in Appendix B) would be included in the KID Contracting Documents and would be carried out by KID or its contractor. KID or its contractor would also develop a Hazardous Materials Control Plan which would follow Reclamation's Safety and Health Standards.

Where the pipe is proposed to cross the LRDC, a wasteway structure would be constructed to release water from a siphon in the event of an emergency or high flow event. This type of configuration already exists on the existing LRDC crossing. Additional drains would also be installed at the low point and in various locations to allow the siphon pipe to be flushed, cleaned, and inspected at the beginning and the end of the irrigation season.

Access ports would be installed along the entire length of the siphon at intervals of approximately 500 feet. These ports would be provided with flanged watertight seals to ensure adequate pressure is maintained within the pipe system. The ports would also be fitted with security locks to prevent unauthorized entry. In addition, pressure relief valves would be provided throughout the pipe and in the bottom of the pipe, to relieve pressure from high groundwater (that may arise from under the buried pipe) when pressure differentials exceed designated thresholds during the off irrigation season when the pipe is empty.

Under the construction schedule proposed by KID, work on the replacement structure would be complete by the end of April 2018, in time for operation during that year's irrigation season. All remaining work would take place from April 2018 to October 2018.

Replacement of the Flume would occur in three phases:

Phase 1 – Construction and on-season work including installation of the replacement pipe, LRDC crossing, and associated components (turnouts, drains and tie-ins, including all parallel work and the LRDC crossing) would occur January 2016 to November 2016.

Phase 2 – Installation of the proposed pipe would continue from November 2016 to April 2018 (including all work crossing the existing flume, tie-ins at each end, and connection of all turnouts).

Phase 3 – Demolition and removal would take place from April 2018 to October 2018 (including site restoration).

Control Plans

In addition to meeting all Reclamation Safety and Health Standards, KID or its contractor would be responsible for developing and implementing the following mitigation and control (or similar) plans to reduce and or eliminate potential environmental impacts as a result of implementation of the Proposed Action:

- Erosion and Sediment Control Plan
- Hazardous and Toxic Materials Control Plan
- Traffic Control Plan
- Spill Prevention Control and Countermeasure Plan
- Fugitive Dust Control Plan

In addition to those plans listed above, Reclamation would be responsible for administering the LRDC Dewater Fisheries Salvage Plan.

2.2.1 Phase 1 and Phase 2 - Installation

- Excavate a trapezoidal trench parallel to the existing C Flume, approximately 22 feet wide at the top, 10 feet wide at the bottom, and approximately six (6) feet deep. This trench would be approximately 2,600 feet and on the north-side approximately 1,700 feet on the south-side of the existing C Flume. The new 10-foot diameter pipe would be installed along the entire length of the excavated trench and would require three (3) feet of cover to meet frost depth requirements and to be capable of a minimum of H-20 traffic loads at identified crossing locations as identified by the American Association of State and Highway Transportation Officials (*note:* H-20 is a calculation of pounds per square inch depending on number of axles or by a formula resulting in load over area).

    - Total excavation for the proposed pipe is expected to be approximately 15,000 cubic yards (CY). Material from the excavation may be used to backfill and cap over the pipe. It is anticipated that all excavated material would be used on site or disposed of at authorized disposal facilities as approved by Reclamation.

- At the upstream end, the existing concrete canal would be saw cut at the transition to the existing facility. This existing concrete canal material would be removed and recycled into

construction as outlined in the demolition plans, which are to be developed by the engineer at a later date, but prior to construction.

- A new 100-foot long concrete canal would be constructed from the existing C Canal to a transition structure, connecting this new canal to the replacement pipe structure. The transition structure connecting the canal to the pipe would be similar in size and nature to the existing transition from C Canal to the C Flume, except that the new transition would be from canal to a pipe, rather than canal to a flume. Construction of this canal-to-pipe transition structure would occur after the replacement pipe is ready for operation and during the off-irrigation season (generally from October through March), so that the connection can be completed without interrupting irrigation service.

- To assist with the transitions to and from the various crossings (e.g., railroad, highway, and LRDC) and transition of elevations fittings would be installed under the pipe to assist in aligning the pipe to be parallel to and offset approximately 20 feet south from the south edge of the existing facility.

    - The canal-to-pipe transition structure would be provided with a control radial gate and will have trash rack openings of approximately eight (8) to ten (10) inches. KID would periodically clean debris off of the rack. Safety measures such as a ladder, warning signage, fencing, and a floating cable anticipated to be installed at the canal-to-siphon structure.

- The 10-foot diameter pipe would be buried approximately six (6) feet deep (in most areas except the highway crossing), allowing the crest of the pipe to be backfilled and capped with approximately three (3) feet of material resulting in a berm approximately 7-feet tall. The capping material may be recycled concrete from the demolition of the existing C Flume.

- Due to the types of crossings (e.g., railroad, highway, and the LRDC) the proposed pipe trench depth and the estimated amount of backfill may vary. This condition is also true for the various transition points along the proposed pipe route.

- **Railroad Crossing:**

    - At the intersection with the BNSF railway line, approximately 2,000 feet southwest of the initial starting point of replacement structure; pipe will be installed under the existing trestle bridge.

    - The pipe alignment under the BNSF trestle would follow the existing alignment of the C Flume and would be located in order to fit between the existing trestle abutments after the demolition of the existing C Flume structure.

    - The pipe would be a minimum of 10 feet from the existing trestle abutments, and excavation for the pipe would not expose the trestle abutment footings.

- Excavation in this area would consist of approximately 400 CY of excavation and possible installation of temporary shoring for the purpose of supporting railroad trestles. Following installation, the pipe would be covered with fill material resulting in a berm.

- **Highway 39 Crossing:**

  - The C Flume currently crosses over Highway 39, which is maintained by ODOT. KID's proposed replacement structure would cross under Highway 39. The pipe at this location would be fully buried, and covered with a concrete fill mixture.

  - At the highway crossing, excavation would entail a square trench approximately 13 feet deep and 13 feet wide.

  - The pipe would be fully buried in order to provide a minimum of three (3) feet of cover between the pipe and the highway roadbed.

  - This section of pipe would be buried and encased in controlled-density fill (CDF) slurry. The CDF will be reinforced with #4 rebar and concrete.

- **LRDC Crossing:**

  - At the junction of the LRDC, the new facility would cross the LRDC on the north-side of the existing C Flume structure.

  - A 200-foot long elevated pipe would span the LRDC with one center supporting pier (consisting of six (6) piles) installed within the existing concrete liner in the prism of LRDC. The six (6) pipe piles will be driven to capacity in the bottom of the channel and capped with a cast in place concrete pile cap. The concrete pile cap will be approximately 17' 3" x 14' 8" x 5' 0" thick. The bottom of the cap will reside a few inches into the normal water level.

  - The six (6) steel piles in the center of the LRDC would be installed by cutting the existing concrete liner, installing the piles, and then backfilling the liner with concrete that would be hauled in from off-site. These steel piles may be covered with approved protective coating to ensure durability.

  - A supporting pier (consisting of three (3) piles each) for this spanned section of pipe would be installed, on each side of the LRDC.

  - A temporary crane pad (twenty [20] feet by ninety [90] feet) with approximately 200 CY of approved aggregate material (crushed rock) would be placed in the prism of the LRDC to enable the contractor to maneuver a crane that would be used to install the permanent piles in both the embankments and center of the LRDC.

- Two coffer dams would be installed in a "U" shape within the prism of the LRDC to further isolate water from the work area. The work area would include the area around the crane pad, all or a large portion of the existing concrete liner, and the areas along the embankment where new piles would be driven. The coffer dams may be constructed using heavy plastic bladder dams and or through the use of a plastic tarp-like material anchored in place with a total of 90 CY of crushed rock (45 CY per coffer dam). The 90 CY of crushed rock would originate from a Reclamation-approved site and would not contain recycled asphalt or concrete materials due to potential contamination concerns. The coffer dams would be placed in the LRDC prism and then removed within three weeks of completion of the pipe structure spanning the LRDC. Coffer dams would be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a coffer dam by pushing material from LRDC bed or banks would not occur. The coffer dams would include sand and gravel bag dams which would be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the channel.

  Construction activities within the LRDC would commence in November 2016. Prior to beginning construction work, the LRDC would be dewatered for approximately two weeks through a coordinated effort by Reclamation, KID, ODFW, USFWS and Tulelake Irrigation District

- Temporary Fill Materials: Crane pad aggregate and all materials associated with the water isolation barriers would be removed within three weeks of completion of construction of the replacement pipe across the LRDC. Sediment barriers along the embankments of the LRDC would be removed within 24 months to allow for bank stabilization and to reduce sediment transport into the LRDC during winter and spring months.

- Permanent Materials: Six steel piles and new concrete placed in the existing concrete liner would be the only permanent fill associated with the proposed project.

- Prior to construction, but after dewatering of the LRDC on or around November 2016, Reclamation fisheries biologists would enter the LRDC to conduct fish salvage activities as outlined in Appendix C and as coordinated with ODFW and USFWS.

- Temporary water isolation barriers (anticipated to be sandbags and sediment fences) would be placed along the perimeter of the work area within the LRDC prism (see Appendix D indicating the location of the coffer dams/water isolation features).

- Additional temporary sediment control barriers would be installed along the embankments of the LRDC and within the LRDC prism to further assist with dewatering the work area and to reduce turbidity in the remaining 0.5-1 feet of water anticipated to be present in the channel.

2.2.2 Phase 3 – Demolition and Removal

- After all of the siphon pipe, LRDC crossing, and transition structures are installed and completed, the existing C Flume structure would be demolished and the concrete crushed and used as fill over the siphon pipe.

- During the demolition phase (April 2018 through October 2018), removal of the existing C Flume structure across the LRDC would consist of constructing a temporary debris containment structure which would be constructed under the existing flume bridge to catch all small and large diameter debris from demolition of the existing superstructure (concrete tubs, steel beams, etc.). During the demolition phase, the LRDC would not be dewatered. The existing piers and foundations for the existing bridge would not be removed.

- It is anticipated that all excavated material would be used on site.

- No excavation or debris spoils would be placed outside the project vicinity or in any wetlands that may neighbor the project vicinity.

- All other demolition material (e.g., rebar, steel beams from bridge, etc.) would be hauled off site for disposal at an authorized commercial facility or recycled.

- Following construction, all disturbed areas of the site would be treated with soil stabilization measures and seeded with native species.

2.3 Alternatives Considered and Eliminated from Further Study

As part of the feasibility study prepared by Adkins (Adkins 2014) for KID, alternatives were developed according to considerations established for the study. These alternatives were evaluated on technical merit and eliminated from further evaluation in the feasibility study.

- Alternate I: Pipe Siphon Option (350 cubic feet per second (cfs))
- Alternate II: Pipe Siphon Option with Canal Extensions (350 cfs)
- Alternate Ill: Elevated Concrete Flume Option (350 cfs)
- Alternate IV: Elevated Concrete Flume Option with Canal Extensions (350 cfs)
- Alternate V: Pipe Siphon Option with Canal Extension and Highway 39 Re-construction (350 cfs)
- Alternate I-a: Pipe Siphon Option (450 cfs)
- Alternate II-a: Pipe Siphon Option with Canal Extensions (450 cfs)
- Alternate Ill-a: Pipe Siphon Option with Canal Extensions (450 cfs)
- Alternate IV-a: Elevated Concrete Flume Option with Canal Extensions (450 cfs)
  Alternate V-a: Pipe Siphon Option with Canal Extension and Highway 39 Re-construction (450 cfs)

The KID board of directors voted during project development to pursue Alternative V as the primary replacement option. However, Alternative II was designated as a backup alternative. During design development and review, the current Alternative is a combination and hybrid of

these options. KID opted for the hybrid alternative to assist in reducing overall project costs.

Chapter 3: Affected Environment & Environmental Consequences

This chapter describes the affected environment and evaluates the environmental consequences of the Proposed Action and implementation of the Proposed Action (Alternative 2). The No Action alternative (Alternative 1) describes the conditions most likely to occur if the Proposed Action were not implemented and provides the basis for comparison to describe the environmental consequences of implementing the action alternative.

Cumulative impacts are described for each resource. Cumulative impacts result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.1 Resources Not Analyzed in Detail

Effects on several environmental resources were examined and found to be minor. For the reasons noted below, the following resources were eliminated from further review in this EA.

3.1.1 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are no Indian reservations, Rancherias or allotments in the project area. As shown in Appendix E, the nearest ITA is a public domain allotment approximately 14.86 miles northwest of the project site and on October 22, 2015, the ITA coordinator stated: "The nature of the planned work does not appear to be in an area that will impact Indian hunting or fishing resources or water rights, nor are the proposed activities on actual Indian lands. [Therefore,] it is reasonable to assume that the Proposed Action will not have any impact on ITAs."

3.1.2 Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." No Indian sacred sites have been identified in the project area. The Proposed Action would not affect and/or prohibit access to and ceremonial use of Indian sacred sites.

3.1.3 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately

high and adverse human health or environmental effects, including social and economic effects of its programs, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects on any population as a result of implementing the Proposed Action. Since there would be no permanent impact to any populations, there would be no adverse human health or environmental effects to minority or low-income populations as a result of the Proposed Action.

3.1.4 Climate Change and Greenhouse Gases

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (e.g., changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels) (EPA 2015). Climate change implies a significant change having important economic, environmental, and social effects in a climatic condition such as temperature or precipitation. Climate change is generally attributed directly or indirectly to human activity that alters the composition of the global atmosphere, additive to natural climate variability observed over comparable time periods.

There would be no impacts contributing to climate change or greenhouse gases (GHG) under the No Action Alternative. Under the Proposed Action Alternative, Reclamation would approve KID to replace the C Flume. Potential impacts to climate change or GHG could result from the use of excavators, portable generators (not used or left on site for more than 12 months), backhoes, dozers, cranes, dump and water trucks, etc. for an intermediate period over the course of January 2016 to October 2018. Any impacts to climate change or increases in GHG would be expected to be insignificant due to the size and scope of the project, small change from current conditions, duration of use that is limited to the project construction, and compliance with pollution related laws and regulations. Furthermore, KID would comply with applicable Federal, state, or local air pollution laws and regulations.

3.1.5 Recreation

Recreation is not allowed within or adjacent to the canals of the Klamath Project. There would be no change from existing conditions with implementation of either alternative.

3.1.6 Noise

The area where the C Flume would be replaced is typically impacted by the noise of large farming machinery, railroad and highway traffic, thus the additional temporary noise associated with construction is not expected to be a significant impact. Noise impacts would be minimized by reducing construction activities to 7:00 A.M. to 7:00 P.M., Monday through Sunday. Work hours outside this period (like those hours that may be needed during crossing of Highway 39) would need to be approved in advance by Reclamation or KID. Upon approval, KID would be required to contact adjacent landowners prior to work commencing to inform them of the potential change in work hours and the anticipated level of temporary noise increases during specific construction activities. There would be no long-term increases to the ambient noise levels from the implementation of the Proposed Action.

3.1.7 Socioeconomics

The Proposed Action would create a short-term demand for construction related products and services, creating short-term jobs and supporting local vendors. Overall, the project would have

an insignificant impact on socioeconomic conditions in the project region.

3.2 Resources Analyzed in Detail

3.2.1 Biological Resources

3.2.1.1 Affected Environment

Federally Listed Threatened and Endangered Species

Federally listed threatened and endangered species that occur within or near lands served by Project canals are shown in Table 1-2. The following species lists were obtained October 23, 2015, by accessing the U.S. Fish and Wildlife Service database for species that may occur within Klamath County, Oregon: http://www.fws.gov/klamathfallsfwo/es/es.html (USFWS 2015).

ESA listed Fish Species

Sampling in the LRDC indicates that juvenile suckers (both the Lost River sucker (*Deltistes luxatus*) and the shortnose sucker (*Chasmistes brevirostris*)) are present in low numbers during the summer and that young and old juvenile suckers are present in the LRDC year-round (Phillips et al. 2011). The best evidence indicating the numbers of suckers in the LRDC is available from a monitoring effort in 2005. During this effort trapnets were set at numerous locations in the LRDC to determine the presence and abundance of fish species. In 64 net sets totaling 1253 hours of netting time, only eight juvenile suckers were captured between May and October of that year (Foster and Bennetts 2006). In addition to trapnets within the LRDC, a screwtrap was operated July through September downstream of Station 48 (outlet of the LRDC) in 2005. This screwtrap captured two suckers (Foster and Bennetts 2006).

The low catch data for suckers from the 2005 effort corroborate Reclamation's experience of salvaging fish in the LRDC. In November 2014, when the LRDC was dewatered to permit gate and bridge inspections, Reclamation did not observe any suckers among the several thousand stranded fish that were relocated within the LRDC. Much of this salvage effort focused just to the east of the C Flume crossing as this area had several disconnected pools of water on the channel floor.

Evidence from the nearby Klamath River (Phillips et al. 2011) and Lost River (Shively et al. 2000) also indicate that juvenile suckers are present but not necessarily abundant in these adjacent bodies of water.

ESA listed Vegetative Species:

Two plant species have been known to exist in Klamath County – Applegate's milk-vetch (*Astragalus applegatei*) and Green's tuctoria (*Tuctoria greenei*). A digital survey was conducted using Klamath County Endangered Species shapefiles provided by the USFWS in 2015 and after review, Reclamation concluded there are no endangered plant species present within the C Flume project area. From the shapefiles used, the closest instance of a listed endangered species (Applegate's milk-vetch) is approximately 1.5 miles from the project area and no effect is likely to occur with implementation of this project (*see* Figure 1-2). Thus, ESA listed plant species are not discussed further in this EA.

Table 1-2 Listed, Endangered, Threatened, Proposed, and Candidate Species that May Occur in Klamath County, Oregon.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
1936 California Avenue, Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541)885-7837
kfalls@fws.gov

LISTED, PROPOSED, AND CANDIDATE SPECIES THAT MAY OCCUR IN KLAMATH COUNTY, OREGON

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Lost River sucker	*Deltistes luxatus*	Designated
Fish	Shortnose sucker	*Chasmistes brevirostris*	Designated
Mammal	Gray wolf	*Canis lupus*	
Plant	Applegate's milk-vetch	*Astragalus applegatei*	
Plant	Green's tuctoria	*Tuctoria greenei*	Designated

Status: **Threatened**

Phylum	Common Name	Scientific Name	Critical Habitat
Bird	Northern spotted owl	*Strix occidentalis caurina*	Designated
Bird	Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus occidentalis*	Proposed
Fish	Bull trout (Klamath River DPS)	*Salvelinus confluentus*	Designated
Amphibian	Oregon spotted frog	*Rana pretiosa*	Proposed
Mammal	Canada lynx	*Lynx canadensis*	
Plant	Slender Orcutt grass	*Orcuttia tenuis*	Designated

Status: **Proposed**

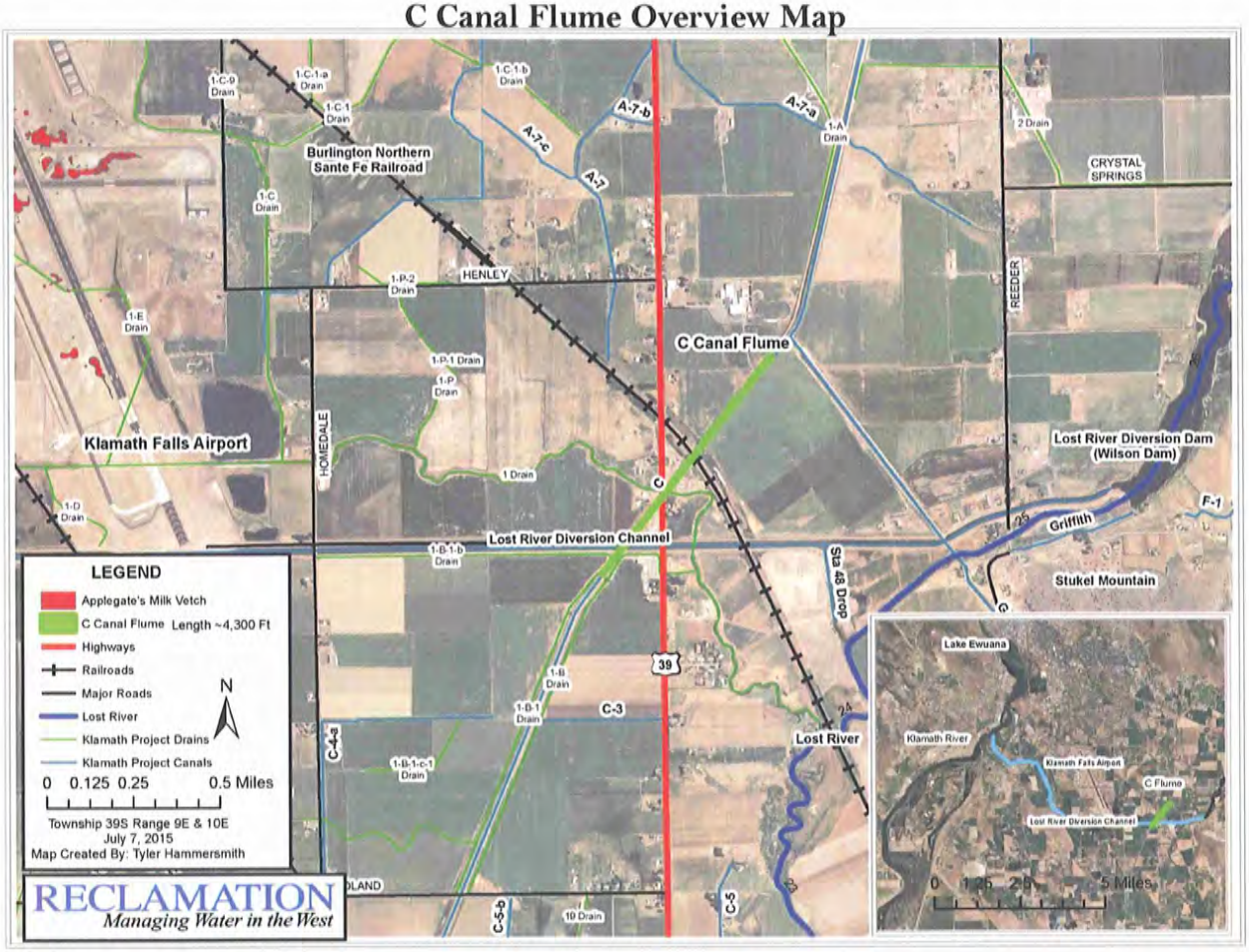
Phylum	Common Name	Scientific Name	Critical Habitat
Mammal	Fisher (West Coast DPS)	*Pekania pennanti*	

Status: **Candidate**

Phylum	Common Name	Scientific Name
Plant	Whitebark Pine	*Pinus albicaulis*

Updated October 8, 2015

Figure 1-2 Proposed Location Overlaid with ESA listed Species



Non-Federally Listed Species

Fish Species:

Non-ESA listed fish species that may be present in the proposed project vicinity include: goldfish (*Carassius auratus*), blue chub (*Gila Coerulea*), fathead minnows (*Pimephales promelas*), yellow perch (*Perca flavecens*), tui chub (Gila bicolor), dace (*Leuciscus leuciscus*), Sacramento perch (*Archplites interruptus*), pumpkinseed sunfish (*Lepomis gibbosus*), and crappie (*Pomoxis*).

Vegetative Species:

Klamath Basin Area Office (KBAO) staff conducted a site visit on October 14, 2015, to identify native and/or non-native vegetation near the C Flume. Using vegetation taxonomy and wetland indicator status provided online through the Natural Resource Conservation Service (http://plants.usda.gov/java/) a list of present species was created and is as follows:

- Climbing Nightshade (*Solanum dulcamara*) – Facultative (Occur in wetlands and non-wetlands)
- Common Mallow (*Malva neglecta*) – Upland (Almost never occur in wetlands)
- Yellow Sweetclover (*Melilotus officinalis*) – Facultative Upland (Usually occur in non-wetlands, but may occur in wetlands)
- Russian Thistle (*Salsola tragus*) – Facultative Upland (Usually occur in non-wetlands, but may occur in wetlands)
- Common Mullein (*Verbascum Thapsus*) - Facultative Upland (Usually occur in non-wetlands, but may occur in wetlands)
- Broad-Leaved Cattail (*Typha latifolia*) – Obligated Wetland (Almost always occur in wetlands)
- Wild Asparagus (*Asparagus officinalis*) – Facultative Upland (Usually occur in non-wetlands, but may occur in wetlands)
- Rubber Rabbitbrush (*Ericameria nauseosus*) – Upland (Almost never occur in wetlands)

Non-ESA Terrestrial Species:

Non-ESA listed species that may be present in the proposed project vicinity include: Jack Rabbit (*Lepus californicus*); Black Tail Deer (*Odocoileus hemionus columbianus*); Mule Deer (*Odocoileus hemionus)*; Striped skunk (*Mephitis mephitis*); Red-tailed hawk (*Buteo jamaicensis*); American Crow (*Corvus brachyrhynchos*); Western Scrub-Jays (*Aphelocoma californica*); Steller's jay (*Cyanocitta stelleri*); American robin (*Turdus migratorius*); Northwestern garter snake (*Thamnophis ordinoides*); Coyote (*Canis latrans*); North American raccoon (*Procyon lotor);* and the Mourning Dove (*Zenaida macroura*).

3.2.1.2 Environmental Consequences

Alternative 1 – No Action:

Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to any of the existing facilities; however, annual O&M activities for the C Flume would continue to occur as in the past. Minimal impacts to ESA and non-ESA listed fish, terrestrial, and vegetative species associated with the continued historic

O&M activities would occur.

Alternative 2 – Proposed Action:

Fisheries Resources (ESA listed and Non-listed)
Under the Proposed Action, specifically those actions involving in-water work such as the construction of an elevated pipe structure across the LRDC and dewatering the LRDC could temporarily strand ESA listed and non-ESA listed fish in various pools causing intermittent, non-lethal impacts to fishes that may be present within the LRDC.

To reduce these potential impacts to all fish species that may be present, Reclamation would conduct fish salvage activities during the LRDC dewatering. These activities were developed in coordination with ODFW and the USFWS in fall of 2015, and are fully described in Appendix C and summarized as follows:

- Sufficient depth of water in the LRDC would be maintained to ensure the survival of stranded fish during the dewatering and construction phases of this effort.
- Reclamation staff would salvage fish that are stranded in small and shallow pools within the LRDC.
- All salvaged fish of species other than suckers and trout would be relocated to larger pools within the LRDC that have sufficient depth to provide survival for several weeks while the work is conducted.
- Block nets and electro-fishers would be used to isolate and remove all fish from the immediate construction area (i.e., 100 feet to the east and west of the existing C Flume Crossing) until a coffer dam is installed.
- Pools with remaining fish would reconnect to the Klamath River and the Lost River once the LRDC is re-watered following construction.
- Biological monitoring would be incorporated throughout the dewatering and construction phases to ensure water conditions are adequate for fish protection.
- If Lost River and shortnose suckers are encountered during the salvage of disconnected pools, Reclamation would coordinate with the USFWS and on where to relocate the salvaged individuals. The relocation of salvaged trout from the LRDC would be coordinated with ODFW.

Under the Proposed action, Reclamation anticipates handling between ten (10) and twenty (20) ESA-listed suckers of all life history stages in the LRDC during the November 2016 dewatering effort to replace the C Flume crossing. Many of these fish will be young-of-the-year juveniles, but we may encounter the adult life history stage. Larval suckers are not anticipated to be present during the fall season.
The proposed dewatering and salvage activity, summarized above, has been previously analyzed for its potential impacts to endangered suckers in the *May 31, 2013, Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013, through March 31, 2018, on Five Federally Listed Threatened and Endangered Species* (BiOp) issued jointly by the USFWS and the National Marine Fisheries Service. In review of the BiOp, (Section 4.3.1.5, page 43), Reclamation has determined the potential impacts of the Proposed Action and associated salvage are within the scope of analysis of the BiOp and has requested USFWS concurrence.

USFWS provided concurrence on December 15, 2015 (Appendix H).

Discussions with the ODFW related to all other potentially present fish species was initiated in August 2015. On October 19, 2015, ODFW provided agreement (*see* Appendix G) that the activities described in the Proposed Action LRDC salvage plan would be sufficient for Reclamation's renewal application for ODFW's Scientific Taking Permit. In its correspondence, ODFW committed to cooperating with Reclamation in 2016 to assist with issuing a renewal application for a Scientific Take Permit for which Reclamation will be eligible to apply for in calendar year 2016 for activities that would occur in 2016 (e.g., LRDC dewatering).

Vegetation:
The spread of invasive and noxious weeds can be a significant issue in construction projects that involve land disturbance. KID (or its contractor) would regularly monitor all areas disturbed by construction activities for weeds and apply appropriate treatment as needed until project completion.

When construction is completed, areas of temporary disturbance would be replanted with a certified weed free native or adapted plant seed mix. The mix of native or adapted plants would be determined in consultation with Reclamation. Adjacent undisturbed sites would also provide seed sources for recolonizing the disturbed areas. KID would monitor and treat weeds within the C Flume ROW as part of its O&M responsibilities following construction.

Terrestrial Species:
Under the Proposed Action, it is anticipated that intermittent, non-lethal, and temporary noise and vibration disturbances in the project location may result in potential insignificant impacts to local ESA and non-ESA-listed terrestrial species.

No tree removal (potential roosting/nesting locations), would occur as a result of implementation of the Proposed Action. During a site visit conducted by Reclamation Natural Resource staff in June 2014 and September 2015, no avian roosting/nesting areas of species covered under the MBTA were found. Additionally, no Golden or Bald Eagles (*Aquila chrysaetos* and *Haliaeetus leucocephalus*; respectively) nor their roosts/nests were sited at the proposed project location.

Overall, the proposed activities are not expected to result in negative effects on terrestrial species including eagles and or migratory birds protected under the *MBTA* or the *Bald and Golden Eagle Protection Act.*

Potential impacts to all species listed in Section 3.2.1 were considered and would be insignificant as a result of KID or its contractor erecting construction fence barriers as deterrents to excavated work and staging areas. Overall impacts would be localized to pre-disturbed lands within Reclamation's ROW and all work would be temporary in nature and limited to the construction period as described in Section 2.2.

3.2.1.3 Cumulative Impacts
As the Proposed Action is not expected to result in any significant direct or indirect impacts to

ESA listed and non-listed biological resources (i.e., fish, terrestrial, and vegetative species) there would be no significant cumulative impacts.

3.2.2 Surface and Groundwater Resources

3.2.2.1 Affected Environment

Surface Water:

The major surface water resources in the vicinity of the Proposed Action include UKL, Klamath River, Lost River, and other various conveyance features associated with the Klamath Project. UKL is a large, shallow lake fed by the Williamson River, Wood River and several smaller streams. UKL provides water for several competing resources including irrigation deliveries, regulation for power generation, and downstream flows and lake level requirements for the benefit of endangered species.

Currently, KID's primary water supply is delivered from UKL via the A Canal. The A Canal is 8.7 miles long, has a capacity of 1,150 cfs, passes through a 3,300 foot long tunnel beneath the City of Klamath Falls, and conveys irrigation water to serve approximately 63,000 acres of agricultural land. At the downstream terminus of the A Canal water is conveyed into either the B Canal or C Canal. Water entering the C Canal travels through the earthen canal, and then enters the C Flume for approximately 4,300 feet.

The C Flume intersects the LRDC. The LRDC is an earthen-lined channel that extends nearly eight (8) miles from the Lost River to the Klamath River in Klamath County, Oregon. The LRDC carries excess water from the Lost River to the Klamath River and supplies supplemental irrigation water for the reclaimed lake bed of Tule Lake by reverse flow from the Klamath River. Due to the nature of the facility, it can convey water in either direction, east or west, as operated by Reclamation. A radial gate at the confluence of the LRDC and the Lost River is controlled by Reclamation and controls flows within the LRDC to and from the Klamath River.

On average the surface water in the LRDC flows year round. Typical flow rates are 500 cfs during the irrigation season (April through September) and 3,000 cfs during high run-off events.

Groundwater:

Groundwater data collected on March 20, 2015, indicated groundwater along the alignment is approximately eight (8) to ten (10) feet below the ground surface. In general, the groundwater elevation is expected to be similar to nearby surface water elevations in the adjacent drain ditches. Following periods of heavy rain, shallower levels of perched groundwater may be encountered (Foundation 2015).

3.2.2.2 Environmental Consequences

Alternative 1 – No Action:

Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to any of the existing facilities; however, annual O&M activities for the C Flume would continue to occur as in the past. Minimal to no impacts to surface water or groundwater are likely to occur as a result of the continued historic O&M

activities.

Alternative 2 – Proposed Action:
Authorized irrigation deliveries from the C Canal and existing C Flume would continue throughout the construction period and no impoundments of water would be created.

Dewatering of the surface waters within the LRDC (described in Section 2.2.1) would occur as part of the Proposed Action. Temporary and isolated turbidity from executing fish salvage activities and installing temporary coffer dams, crane pads and steel piles would be minimal, localized, and temporary in nature with the exception of the installation of permanent steel pilings. It is anticipated that in the 0.5 to 1 feet of water is expected to be remain in the LRDC after dewatering. All materials (e.g., coffer dams, crane pad, and or fish salvage tools, etc.) placed in the LRDC would be inspected and approved by Reclamation to ensure they do not contain or are not coated with chemicals or like substances that could leach and effect present surface waters. All materials would be removed within three weeks of completing construction activities associated with crossing the LRDC. The permanent steel piles and associated footings would be coated and cured prior to water reentering the LRDC. The Proposed Action would have no effect on water temperature, nutrients, pH or any other water quality parameters outside background levels.

As the LRDC crossing construction plans may have the potential for activities that would result in dredge and fill of waters of the United States, Reclamation obtained concurrence from the USACE regarding compliance with Section 404 of the CWA. On May 9, 2014, USACE provided correspondence that Reclamation's Proposed Action is authorized under USACE's Non-Reporting Nationwide No. 3 (Maintenance) permit (Appendix F) which is recognized as pre-certified by ODEQ under Section 401 of the CWA.

To ensure compliance with Section 402 of the CWA, Reclamation obtained concurrence from ODEQ that Reclamation's, Klamath Basin Area Office's coverage is active under the 1200-CA NPDES permit. The 1200-CA permit covers all construction projects within the Klamath Project that disturb one (1) acre or more of land and have the potential to discharge stormwater into waters of the State of Oregon (Appendix I).

The Erosion and Sediment Control Plan (as shown in Appendix B) would be included in the KID contracting documents and would be implemented by KID or its contractor to reduce overall surface water sedimentation.

Groundwater
Groundwater could be encountered during trenching activities. Dewatering of the trenches would be required and disposal of groundwater would have to be made in accordance with Reclamation's CWA Section 402 NPDES permit conditions, and as specifically identified in the Erosion and Sediment Control Plan (Appendix B). If contaminated water is encountered, the groundwater would be pumped into a water truck and disposed of at an appropriate facility (e.g., wastewater treatment facility) approved by Reclamation.

3.2.2.3 Cumulative Impacts
Since the Project would have negligible effects on surface and groundwater resources and any

impacts would be temporary and localized, the Proposed Action would have no significant cumulative impacts on surface or groundwater resources.

3.2.3 Cultural Resources

3.2.3.1 Affected Environment

"Cultural resources" is a broad term that applies to prehistoric and historic-era archaeological sites and structures, components of the built environment, and traditional cultural properties, all of which provide evidence of human behaviors, economic activities, and cultural traditions, both past and present. Cultural resources that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) are known as "historic properties." 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA), requires Federal agencies to take into account the effects of their undertakings on historic properties. This is accomplished through the Section 106 process as outlined at 36 CFR Part 800.

As part of the Section 106 process, efforts to identify historic properties in the proposed project area of potential effects (APE) were conducted by Reclamation and by Native X, Inc. Archaeological Services (Native X), the latter working on behalf of KID. Reclamation's identification efforts included a pedestrian survey of the APE and recordation of the C Flume structure, which was determined, in consultation with the Oregon State Historic Preservation Officer (SHPO), to be a historic property. Native X also conducted a pedestrian survey of the APE, during which a surface scatter of historic-era debris was identified and recorded. Following a methodology agreed to by Reclamation and the SHPO, Native X completed subsurface archaeological testing within the APE as well. No historic properties were identified through the survey and testing conducted by Native X.

In accordance with the requirements of 36 Code of FR § 800.3(f)(2), Reclamation identified The Klamath Tribes as an Indian tribe that might attach religious and cultural significance to historic properties in the APE. Reclamation contacted the Klamath Tribes via written correspondence dated April 17, 2014, seeking information on potential historic properties pursuant to 36 CFR §800.4(a)(4), and inviting the tribes' participation in the Section 106 process. No formal response from the tribe was received regarding participation in the Section 106 process.

In consultation with the SHPO, Reclamation determined that the C Flume, which is eligible for NRHP inclusion, both individually and as a contributing element to the Klamath Project, is the only historic property in the APE. Reclamation further determined, with SHPO concurrence, that the demolition of the C Flume would constitute an adverse effect pursuant to36 CFR §800.5(d)(2). A memorandum of agreement (MOA) to govern the implementation of the undertaking and the resolution of adverse effects resulting from C Flume removal was negotiated between Reclamation and the SHPO and fully executed on December 10, 2015. The fulfillment of the stipulations of the MOA will evidence that Reclamation has taken into account the effects of this undertaking on historic properties in compliance with Section 106 of the NHPA.

3.2.3.2 Environmental Consequences

Alternative 1 – No Action:

Under the No Action Alternative, Reclamation would not authorize the removal and replacement of the C Flume and there would be no federal undertaking or action requiring

Section 106 or NEPA compliance. The No Action Alternative would result in no significant impacts to cultural resources.

Alternative 2 – Proposed Action:
The Proposed Action would result in the removal of the C Flume, a component of the larger C Canal and the Klamath Project that has been determined eligible for the NRHP. The physical destruction of the C Flume constitutes an adverse effect on historic properties pursuant to36 CFR § 800.5(d)(2). Mitigation of this adverse effect will be accomplished through implementation of the MOA executed by Reclamation and the SHPO. Completion of the terms of the MOA will fulfill Reclamation's Section 106 compliance responsibilities and result in less than significant impacts to cultural resources from the Proposed Action.

3.2.4 Hazardous and Toxic Materials

3.2.4.1 Affected Environment
Use, storage, and disposal of hazardous materials and solid waste associated with construction have the potential to adversely affect the environment if these materials are improperly managed. In general, the most potential impacts are associated with the release of these materials to the environment. Direct impacts of such releases would include contamination of soil, water, and vegetation, which could result in indirect impacts to wildlife, aquatic life, and humans.

3.2.4.2 Environmental Consequences
Alternative 1 – No Action:
Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to any of the existing facilities; however, annual O&M activities for the C Flume would continue to occur as in the past. There would be no increase in the potential exposure to hazardous and toxic materials nor would it cause an unauthorized release of a hazardous or toxic material into the environment.

Alternative 2 – Proposed Action:
Construction would require the short-term use of fuels, lubricants, and other fluids that create a potential contamination hazard. As a result, KID or its contractor, would develop and implement (with review by Reclamation) a Hazardous and Toxic Materials Control Plan which would specify that all potentially toxic and hazardous substances would be stored and handled in accordance with industry standards as wells as federal and state regulations. This plan would also identify the procedure for corrective action and cleanup of any spills or leaks of hazardous materials to minimize the impact on sensitive resources. KID and its contractor would comply with Reclamation Safety and Health Standards (http://www.usbr.gov/ssle/safety/rshs/rshs.html) or as outlined by Reclamation.

3.2.4.3 Cumulative Impacts
The Proposed Action incorporates KID or its contractor developing and implementing

Hazardous and Toxic Control Plans to control potential contamination hazards, such that they would not result in any significant direct or indirect impacts, there would be no significant cumulative impacts.

3.2.5 Air Quality

3.2.5.1 Affected Environment

Air quality in the State of Oregon is regulated by the EPA and ODEQ. The National Ambient Air Quality Standards (NAAQS), established by the EPA under the CAA, specify limits of air pollutants levels for seven criteria pollutants: carbon monoxide, particulate matter (PM) 10, PM 2.5, ozone, sulfur dioxide, lead, and nitrogen.

Primarily because of topography, weather, and a large number of non-certified woodstoves, Klamath Falls has been identified as area of nonattainment for PM 2.5. With increased understanding of the health effects of particulates, EPA has made the standards more protective over time, addressing smaller sized particles that are the most hazardous but more difficult to control. Since 1994, the Klamath Falls area has attained the larger or coarse (PM10) particulate matter standard. In 2009, with the adoption of a fine particulate (PM2.5) matter standard, EPA changed the legal status of the Klamath Falls Area from attainment (meeting air quality standards) to nonattainment (not meeting air quality standards) for fine particulate matter (PM2.5). ODEQ has adopted an attainment plan with associated regulations to ensure that the Klamath Falls area meets the current PM2.5 standard. A portion of the C Flume is located in the Klamath Falls area of nonattainment for PM 2.5.

3.2.5.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to any of the existing facilities; however, annual O&M activities for the C Flume would continue to occur as in the past. Implementation of this alternative does not require any construction and would result in no impacts to air quality other than what has historically occurred.

Alternative 2 – Proposed Action

The replacement of the C Flume would not result in any long-term impacts to air quality. Impacts from the use of heavy equipment during construction activities, such as pollution and fugitive dust, may have a temporary negative effect on air quality. Those effects would be localized and temporary in nature and would cease once construction activities were completed.

Short-term construction activities associated with the Proposed Action facilities would include materials deliveries, vegetation removal, grading and other land preparation activities, pipeline trenching, and land restoration. Light emissions from construction during evening hours may occur along ODOT road-side flaggers and construction entrances/exists. These light emissions are anticipated to be approximately 300 feet away from adjacent homes. Emissions of particulate matter (PM2.5 and PM10) would occur during earth disturbing activities.

Construction emissions would vary from day to day and activity to activity depending on the timing and intensity of construction, with each activity having its own potential to release emissions.

As the existing C Flume concrete structure may be utilized for backfill and coverage of the new buried facility, use of a rock crusher may be needed to facilitate breaking the pieces into manageable size to haul and place. If used, the contractor would be required to secure Air Contaminant Discharge Permits (ACDP) from ODEQ for on-site generators and rock crushers. In addition, regardless if a rock crusher is used, the contractor would be required to implement an approved fugitive dust control plan. This plan would include measures for minimizing fugitive dust such as applying dust suppressants and/or water sprays, minimizing the extent of disturbed surface areas, and restricting activities during periods of high wind. Water from adjacent irrigation canals and drains may be used by KID or its contractor for dust suppression measures after they obtain a limited license from the OWRD, anticipated to occur in December 2015.

A 100-percent level of control for fugitive emissions is not attainable as some particulate matter in the form of dust and exhaust emissions is unavoidable during construction. Implementation of mitigation measures are expected to result in no violations of air quality standards by reducing this impact to non-significance.

3.2.5.3 Cumulative Impacts

Compliance with all applicable emission standards and Best Management Practices (BMPs) would reduce potential impacts to less than significant levels. Air quality impacts associated with construction of this alternative would be temporary and less than significant. These impacts are localized in nature and decrease substantially with distance. No other construction projects are currently located or expected in the immediate vicinity of the C Flume. Therefore, construction of this alternative would not contribute to cumulative construction air quality impacts.

3.2.6 Traffic and Transportation

3.2.6.1 Affected Environment

The existing C Flume crosses beneath the BNSF railroad line, crosses over Highway 39, and spans the LRDC (*see* Figure 1-1 and Appendix A). Highway 39 runs southeast out of Klamath Falls through Merrill, and then continues south to California. It generally has one lane in each direction, and posted speeds are 55 mph in the immediate vicinity of the crossing. This section of the highway is designated as a State Freight Route with truck traffic typically accounting for 10 to 25 percent of the traffic.

3.2.6.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action Alternative, Reclamation would not authorize KID to construct the proposed replacement structure; or for modification or alterations to the C Flume nor advance federal funds to KID for a portion of the work and execute a contract with KID for repayment of such funds. No improvements would be made to any of the existing facilities; however, annual O&M activities for the C Flume would continue to occur as in the past. Under this

alternative, no construction would occur. Current traffic volumes and patterns would continue.

Alternative 2 – Proposed Action

Under this alternative the C Flume siphon pipe would be installed under Highway 39 using open trench methods. It is anticipated traffic would be detoured by KID or its contractor (in coordination with ODOT) for approximately three days during the November to March timeframe. The approved traffic control plan for the entire construction period would be implemented to facilitate the movement of traffic through the area in a safe and expedient manner. Since the siphon pipe would be installed below the existing railroad trestle, no impacts to rail traffic or existing railroad trestle footings is expected.

Reclamation obtained approval on February 14, 2015, from ODOT for temporary access and staging area through the issuance of a Permit To Occupy or Perform Operations Upon A State Highway. Approval of a traffic control plan from Reclamation and ODOT must be obtained by KID or its contractor prior to work commencing.

3.2.6.3 Cumulative Impacts

Because the approved traffic control plan for the entire construction period would be implemented to facilitate the movement of traffic through the area in a safe and expedient manner, and because the new siphon pipe would be installed below the existing railroad trestle, no impacts to highway or rail traffic are expected. Therefore, construction activities of this alternative would not contribute to cumulative impacts to traffic and transportation.

Chapter 4 Environmental Commitments

The following environmental commitments and permitting conditions would be implemented before, during, and after construction to assure no significant impacts would occur as a result of the Proposed Action.

General

- KID and its contractors shall be responsible for complying with all environmental requirements identified in this EA, as well as all federal, state, and local laws and or permits that have already been obtained or are yet to be obtained (*see* Section 1.7).

- Reclamation's Safety and Health Standards and all applicable Reclamation standards and directives would be applied during construction activities to minimize environmental impacts.

- KID or its contractor would be responsible for developing and implementing following mitigation and control plans to reduce and or eliminate potential environmental impacts as a result of implementation of the Proposed Action:
  - Erosion and Sediment Control Plan
  - Hazardous and Toxic Materials Control Plan
  - Spill Prevention Control and Countermeasure Plan
  - Traffic Control Plan
  - Fugitive Dust Control Plan

In addition to those plans listed above, Reclamation would be responsible for administering the LRDC Dewater Fisheries Salvage Plan.

Access:

- Construction access would be established to define the points of entrance and/or exit to the construction site to stabilize and reduce the tracking of mud and dirt onto the public highway by construction vehicles. The stabilized construction entrances would be inspected to remove sediments that may have built up on a regular basis, or within 24 hours after storm events, and repaired as necessary.

- Existing roads and staging areas will be used whenever possible for project activities. Use of privately-owned land for access will only occur under and consistent with executed temporary construction easements (acquired by Reclamation prior to construction beginning).

- Designation of areas with fencing or other barriers demarking construction areas, staging areas, and access points would be installed prior to and during all construction activities.

- All construction activities would be confined to Reclamation's ROW or on land in which Reclamation has acquired a temporary construction easement.

Air Quality

- If a rock crusher is required for demolition activities, the contractor will obtain an Air Quality Discharge Permit from ODEQ (pursuant to its website accessed at: http://www.deq.state.or.us/regulations/rules.htm) prior to bringing the rock crusher on-site. Additionally, the contractor may need to submit a notice of construction, if applicable, through the ODEQ office in Bend, Oregon prior to crushing activities occurring.

- KID and its contractor will develop and comply with all conditions imposed by OWRD under the limited license for use of water for fugitive dust abatement.

Biological-Fisheries

- Reclamation will obtain a Scientific Taking Permit from ODFW prior to dewatering of the LRDC. Reclamation will conduct fish salvage and comply with the conditions of the permit and USFWS recommendations. KID or its contractor will provide Reclamation a minimum notice of two weeks prior to wanting to initiate dewatering of the LRDC. Reclamation will then notify and coordinate with ODFW and USFWS.

Cultural and Paleontological Resources

- In the event that any cultural resources, either surface or subsurface, are inadvertently discovered during construction, Reclamation's Mid-Pacific Regional archaeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist. Consultation with the SHPO and The Klamath Tribes regarding the discovery will be required pursuant to 36 CFR § 800.13. Any person who knows or has reason to believe that he/she has inadvertently discovered possible Native American human remains on Reclamation land must immediately provide telephone notification of the discovery to Reclamation's Mid-Pacific Regional archaeologist. Work will stop until the proper authorities are able to assess the situation on-site. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) (43 C.F.R. Part 10) and the Archaeological Resources Protection Act of 1979 (16 U.S.C. §470). Reclamation will consult with The Klamath Tribes and/or other appropriate culturally affiliated Indian tribe(s) regarding the disposition of any inadvertently discovered human remains and associated funerary object pursuant to the requirements of NAGPRA.

- The terms of the Memorandum of Agreement (MOA) between Reclamation and the SHPO to mitigate the adverse effects of the Proposed Action will be implemented as outlined in the MOA.

- In the case that any paleontological resources, either surface or subsurface, are encountered during construction, Reclamation's Mid-Pacific Regional archaeologist shall be notified immediately and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by Reclamation's Mid-Pacific Region.

Hazardous Fuels and Materials

- A visual environmental site survey as part of the pre-construction meeting with Reclamation would be conducted prior to initiating construction. Any materials or hazardous substances in the ROW area that could be exposed would be removed or other appropriate remedial action taken prior to start of construction.

- The contractor would prepare a project-specific Spill Prevention Control and Countermeasure Plan (or similar) to be approved by Reclamation to address secondary containment, prevention of spills, spill containment and cleanup procedures, and materials on hand to accomplish the containment and cleanup of petroleum and other hazardous products that may be brought on site. The plan shall be approved by Reclamation prior to moving any of these products on site and prior to any construction activity.

- If on-site storage occurs, lubricants and fuels would be placed in temporary, clearly marked, above-ground containers and provided with secondary containment. Construction equipment would be maintained and inspected regularly. Any soil contaminated by fuel or oil would be removed and disposed of by KID (or its contractor) to an approved disposal site.

- Any hazardous materials and other hazardous substances that are used in construction would be disposed of in accordance with applicable laws and regulations. Excess or unused quantities of hazardous materials would be removed upon project completion. Although hazardous waste generation is not anticipated, any such wastes produced during construction would be properly containerized, labeled, and transported to an approved hazardous waste disposal facility. All nonhazardous waste materials including construction refuse, garbage, and sanitary waste, would be disposed of by removal from the work area to an approved disposal facility. Disposal of any and all materials by burning would not occur. All elements of the Hazardous and Toxic Control Plan to be developed by KID or its contractor, would be implemented and followed throughout the duration of the Proposed Action work timeframe.

Land

- After construction is complete, the contractor shall seed Reclamation's ROW with a suitable seed mix, approved by Reclamation, for the soil and landscape of the area. The purpose of this seeding would be to reduce erosion and sedimentation. If the soil has been compacted, the top layer of the soil should be tilled to allow for proper establishment of the plants' root systems. The seeded area shall be covered with certified weed-free mulch after the seed is applied.

Noise

- BMP's would be implemented to control temporary noise impacts during construction including mufflers on heavy equipment. The contractor would follow all state and local noise ordinances. To reduce disruptive noise emissions, the contractor would restrict construction activities to the following timeframes: 7:00 A.M. to 7:00 P.M., Monday through Sunday. Work outside this time period requires advance approval from Reclamation or KID. Upon approval, KID would be required to contact adjacent landowners prior to work commencing to inform them of the potential change in work hours and the anticipated

level of temporary noise increases during specific construction activities. There would be no long-term increases to the ambient noise levels after construction is completed.

Records

- KID and its contractors would keep all environmental permits, conditions, guidelines, Reclamation's Safety and Health Standards and all plans and BMPs on the job site and readily available for reference by Reclamation, ODEQ, USACE, USFWS, ODFW, and other appropriate state and local government inspectors.

Utilities

- KID and its contractors would be responsible for locating, marking, and protecting all utilities within the work area prior to commencing ground disturbing activities.

Water Quality

- Silt fencing along the embankment of the LRDC and work areas along the 1A drain (parallel to the C Flume) would be established prior to commencing the Proposed Action. Ponding would not be permitted behind the silt fences as the fences would collapse under high pressure. The design of the silt fences would provide sufficient outlets to prevent overtopping. The maximum height of the silt fence should range between 18 and 36 inches above the ground surface (depending on the amount of upslope ponding expected). Silt fences would be inspected daily during periods of prolonged rainfall, immediately after each rainfall event and weekly during periods of no rainfall. Any required repairs would be made immediately. Sediment must be removed when it reaches one-third to one-half the height of the silt fence. Fences would not be removed until the upslope area has been permanently stabilized with reseeded vegetation. Any sediment deposits remaining in place after the silt fence has been removed would be dispersed to conform to the existing grade.

- Erosion control BMPs would be implemented during all ground disturbing activities to reduce runoff and allow for infiltration, provide sediment trapping and support the establishment of permanent ground covers (e.g., vegetative cover). KID and its contractors shall also comply with the Erosion and Sediment Control Plan as shown in Appendix B and as detailed by KID or its contractor. This plan would serve to provide detailed information about the construction site, and serves as a blueprint for the location, installation, and maintenance of the erosion and sediment control measures to minimize erosion and reduce sediment entering the LRDC. Erosion prevention BMPs may include, but are not limited to surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

- Temporary fills must be removed from the LRDC entirety and the affected areas returned to pre-construction conditions. The affected areas must be stabilized and revegetated, as appropriate.

- KID and its contractors would implement all reasonably available controls and practices to minimize turbidity during in-water work.

- KID and its contractors would comply with all conditions imposed by OWRD under the limited license for use of water for dust abatement.

- All materials (e.g., coffer dams, crane pad, and or fish salvage tools) anticipated to be placed in the LRDC would be inspected by Reclamation prior to installation to ensure they do not contain or are not coated with chemicals or like substances that could leach and effect present surface waters.

- Coffer dams would be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a coffer dam by pushing material from LRDC bed or banks would not occur. The coffer dams would include sand and gravel bag dams which would be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the channel.

Chapter 5 Consultation and Coordination

This section presents the agencies and parties that were coordinated or consulted with during development of the document.

5.1 ESA Consultation and State Species Coordination

Pursuant to Section 7(a)(2) of the ESA (43 U.S.C. § 1521 et seq.), Reclamation initiated informal consultation with USFWS in August 2015 to discuss the appropriate level of consultation that would be required for the Proposed Action. USFWS provided biological concurrence on December 15, 2015 (Appendix H).

Reclamation initiated coordination with ODFW in August 2015 on the permit application for the State of Oregon's Scientific Taking Permit, which would be acquired prior to project actions being implemented. Appendix G indicates that ODFW believes the draft proposal (Appendix C) will provide sufficient information for the permit application that can be submitted in application form by Reclamation no sooner than January 2016.

5.2 NHPA Section 106 Consultation

Reclamation initiated consultation with SHPO for this undertaking on August 11, 2014, with a finding of an adverse effect to historic properties (i.e., the C Flume). SHPO concurred with the finding on September 3, 2014. Reclamation also notified the Advisory Council on Historic Preservation (Advisory Council) of the adverse effect and, on September 25, 2014, the Advisory Council elected to not participate in the resolution of the adverse effect. A Memorandum of Agreement (MOA) to resolve the adverse effect, negotiated between Reclamation and the SHPO, was executed on December 10, 2015. Implementation of the terms of the MOA evidence that Reclamation has taken into account the effects of this undertaking on historic properties, as required under the NHPA.

5.3 CWA Consultation

Reclamation consulted with the Corps on Section 404 of the Clean Water Act and received concurrence from the Corps on the Proposed Action on May 9, 2014, (Appendix F). As a result, the proposed activities are authorized by the Corps' Non-Reporting Nationwide No. 3 (Maintenance) permit which does not require a pre-construction notice and includes CWA Section 401 water quality certification.

To ensure compliance with the Section 402 of the CWA, Reclamation coordinated with ODEQ's Eastern Regional Office and was provided with email correspondence on October 22, 2015,(Appendix I) stating that Reclamation is authorized to conduct the proposed activities under its NPDES Stormwater Discharge Permit number 1200-CA.

5.4 CAA Coordination

Reclamation coordinated with ODEQ's Eastern Regional Office regarding the Proposed Action activities, including fugitive dust control plans. This coordination included discussion and direction from ODEQ on what permits or licenses may be required if KID or its contractor implements the use of various equipment such as sizable generators and or rock crusher.

5.5 Oregon Water Law Coordination

Pursuant to Oregon Revised Statutes Sections 537.143 and 537.144, Reclamation has applied to OWRD for a limited license to use water for dust abatement purposes in connection with construction of a structure to replace the C Flume. Reclamation limited license would allow the use of Project water for dust control measures during hours of construction. Anticipated to be issued in December 2015, the limited license would remain in effect for one year and would be renewed on an annual basis if necessary.

5.6 Public Involvement

The review period for the C Flume Replacement Project EA was held from November 12 through November 30, 2015. One comment letter was received by the Klamath Tribes on November 24, 2015, stating concerns about the lack of an Inadvertent Discover Plan (Appendix J). Reclamation will work with The Klamath Tribes to address their concerns in accordance with 36 CFR Part 800. Any discovery of buried cultural resources during project implementation will require compliance with 36 CFR § 800.13(b)(3), to include consultation with The Klamath Tribes and the further consultation with the SHPO. The inadvertent discovery of Native American human remains during construction will be subject to the Native American Graves Protection and Repatriation Act and handled in close consultation with The Klamath Tribes.

This EA is available online at: http://www.usbr.gov/mp/nepa/nepa_base.cfm?location=kbao, and in hardcopy at the following locations:

- Bureau of Reclamation, Klamath Basin Area Office
  6600 Washburn Way
  Klamath Falls, Oregon 97603

- Klamath County Government Building
  305 Main Street
  Klamath Falls, Oregon 97601

- Klamath Community College (Library)
  7390 S 6th Street
  Klamath Falls, OR 97601

- Oregon Institute of Technology (Library)
  3201 Campus Drive
  Klamath Falls, OR 97601

- Klamath County Library
  126 S. 3rd Street
  Klamath Falls, Oregon 97601

- Klamath Irrigation District
  6640 K.I.D. Lane
  Klamath Falls, Oregon 97603

Chapter 6 References

Adkins 2014	Adkins Engineering, LLP. Klamath Irrigation District "C" Flume Replacement Feasibility Study (Revised Draft). June 2014.
Adkins 2015	Adkins Consulting Engineering, LLP, Anderson Perry & Associates, Inc., Foundation Engineering, Inc. C-Flume Replacement For Klamath Irrigation District Klamath Falls, Oregon. Project: 462-00. Ninety Percent Design. July 30, 2015.
Adkins May 2015	Adkins Engineering, LLP. C-Flume Replacement For Klamath Irrigation District, Klamath Falls, Oregon. Erosion Control Details. May 8, 2015.
EPA 2015	Environmental Protection Agency. Climate Change – Basic Information. 2015. Website: http://www.epa.gov/climatechange/basicinfo.html
Foster and Bennetts 2006	Foster, K., and D. Bennetts. Entrainment monitoring report for the Lost River Diversion Channel in 2005. 12p. 2006.
Foundation 2015	Foundation Engineering, Inc. C-Flume Replacement Project Geotechnical Investigation Report – Draft. Klamath Falls, Oregon. Project 2142023. Prepared for: Adkins Consulting Engineering, LLP, Klamath Falls, Oregon. July 16, 2015.
Phillips et al. 2011	Phillips, b., J. Ross, and A. Wilkens. Klamath Project: Endangered sucker distribution and relative abundance in reconnected wetlands and open water areas adjacent to the Klamath River, Oregon. 22p. 2010.
Shively, et al. 2000	Shively, R.S., A.E. Kohler, B.J., Peck, M.A., Coen, and B.S. Hayes. Water Quality, Benthic Macroinvertebrate, and Fish Community Monitoring in the Lost River Sub-Basin, Oregon and California, 1999 Annual Report. U.S. Geological Survey, Biological Resources Division, Klamath Falls, Oregon and Bureau of Reclamation Klamath Falls, Oregon. 2000
USFWS 2015	U.S. Fish and Wildlife Service. Information Resources: Listed, proposed, and Candidate Species Lists (Klamath County, Oregon). (2015) Website: http://www.fws.gov/klamathfallsfwo/es/es.html

Chapter 7 List of Acronyms and Abbreviations

ACDP	Air Contaminant Discharge Permits
Adkins	Adkins Engineering, LLP
APE	area of potential effects
AWWA	American Water Works Association
BMPs	best management practices
BNSF	Burlington Northern Santa Fe Railway
C Flume	C Canal Flume
CAA	Clean Air Act
CDF	controlled density fill
CFR	Code of Federal Regulations
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impacts
GHG	greenhouse gases
HDPE	High Density Polyethylene
ITA	Indian Trust Asset
ITAs	Indian Trust Assets
KBAO	Klamath Basin Area Office
KID	Klamath Irrigation District
LRDC	Lost River Diversion Channel
MBTA	Migratory Bird Treaty Act

MOA	memorandum of agreement
NAAQS	National Ambient Air Quality Standards
Native X	Native X, Inc. Archaeological Services
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
O&M	Operations and Maintenance
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ORS	Oregon Revised Statute
OWRD	Oregon Water Resources Department
PM	particulate matter
Klamath Project	Klamath Reclamation Project
Reclamation	Bureau of Reclamation
ROW	right-of-way
SHPO	Oregon State Historic Preservation Officer
SIP	State Implementation Plan
SRPE	Steel Reinforced polyethylene
U.S.C.	United States Code
UKL	Upper Klamath Lake
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Appendices

Appendix A: Pictures of the Existing C Flume Structure

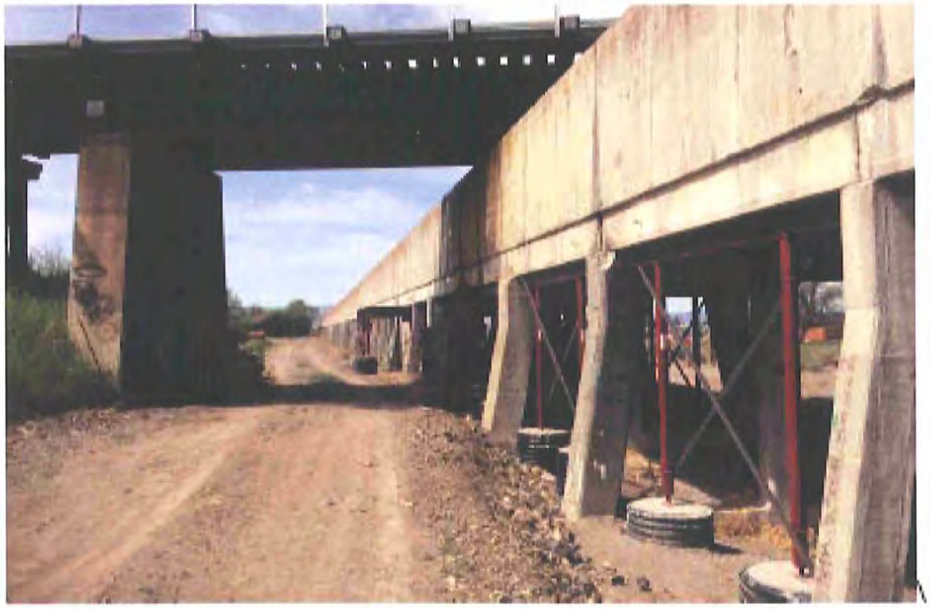
(Photo 1) View southwest of the C Canal Flume

(Near the upstream end)

(Photo 2) View from the southwest end of the proposed project

(Near the LRDC crossing)

(Photo 3) C Flume Crosing the LRDC looking northeast



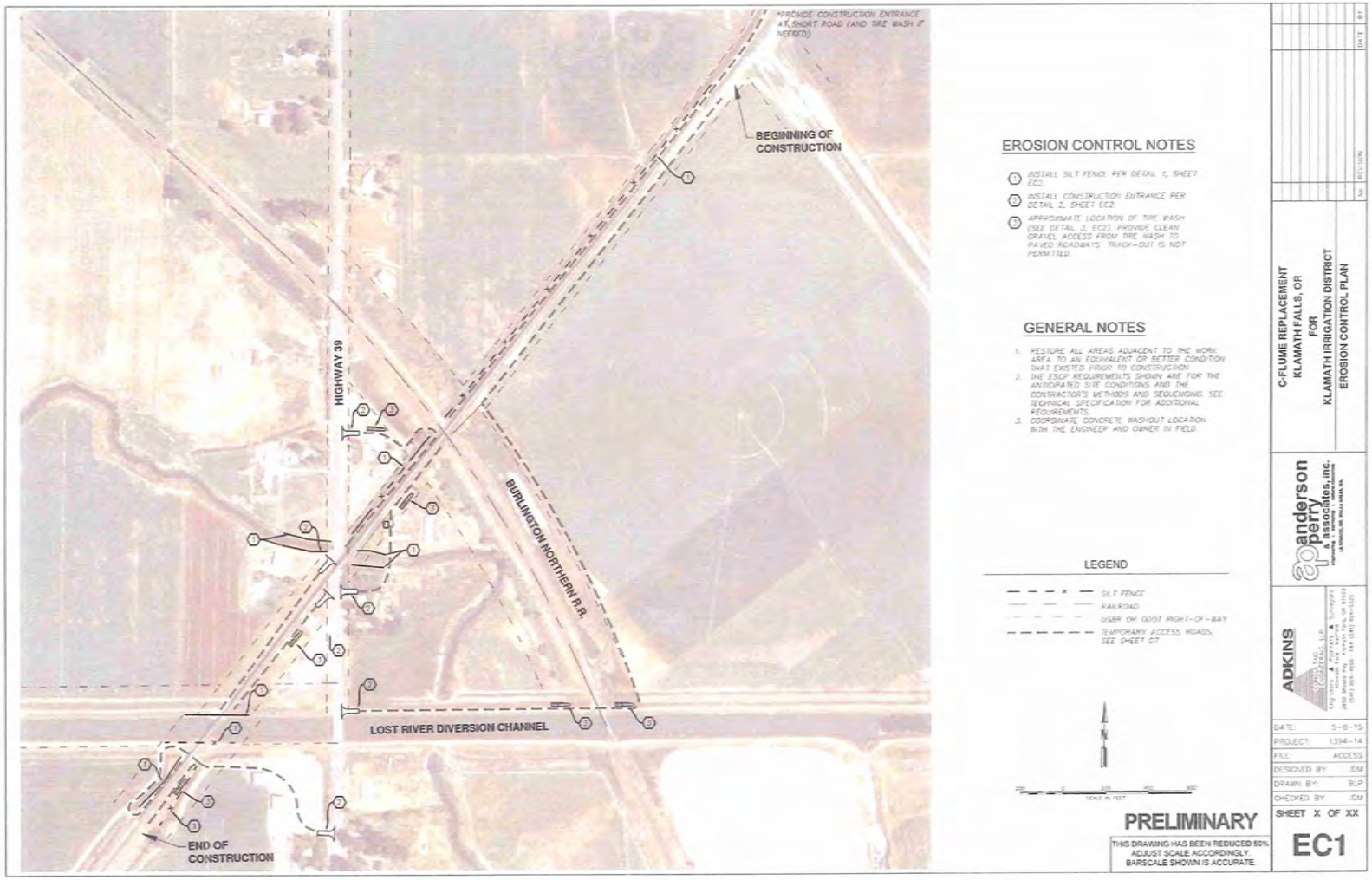
(Photo 4) C Flume crossing under the BNSF railroad

(Photo 5) C Flume crossing over Highway 39

(Photo 6) Beginning of the north end of the C Flume looking south

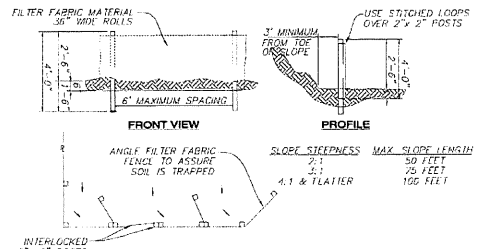
(Photo 7) Termination of the C Flume on the south end of the looking north
(LRDC crossing is in the distance)

Appendix B: Sediment and Erosion Control Plan (Adkins May 2015)



EROSION CONTROL NOTES

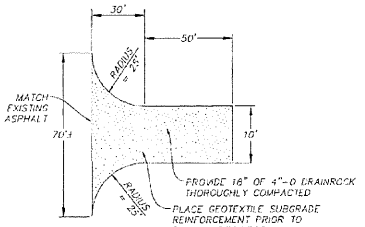
1. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE 1200c PERMIT ISSUED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY (SEE PROJECT SPECIFICATIONS).
2. THE ESCP MUST BE KEPT ON-SITE AND ALL EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED IN SUCH A MANNER TO ENSURE THAT SEDIMENT OR SEDIMENT LADEN WATER THAT ENTERS OR IS LIKELY TO ENTER SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATER, ROADWAY, OR OTHER PROPERTIES DOES NOT OCCUR. (SCHEDULE A.2.A.) AND (SCHEDULE B.3.B.)
3. THE IMPLEMENTATION OF THE ESCP AND CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE EROSION AND SEDIMENT CONTROL MEASURES IS THE RESPONSIBILITY OF THE PERMIT REGISTRANT UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED BY THE LOCAL DEVELOPMENT AGENCY AND VEGETATION/LANDSCAPING IS ESTABLISHED. THE PERMIT REGISTRANT SHALL BE RESPONSIBLE FOR MAINTENANCE UNTIL THE LOTS ARE THE PERMIT IS REMOVED. (SCHEDULE A.4.A.) AND (SCHEDULE D.2.)
4. THE PERMIT REGISTRANT MUST BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, OR FEDERAL REGULATIONS. (SCHEDULE A.5.A.) AND (SCHEDULE A. 6.A.)
5. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS. (SCHEDULE A.5.B.1.(2)), (SCHEDULE A.5.B.6.(7)), (SCHEDULE A.7.D.1.(2)) & (SCHEDULE A.7.F.)
6. BEGIN LAND CLEARING, EXCAVATION, TRENCHING, CUTTING OR GRADING AND EARTHWORK SURFACE ROUGHING AFTER INSTALLING APPLICABLE SEDIMENT, EROSION PREVENTION AND RUNOFF CONTROL MEASURES BUT IN THE DIRECT PATH OF WORK. (SCHEDULE A.5.B.6.(5)(A)), (SCHEDULE A.7.C.1.(1)) AND (SCHEDULE A.7.C.4.(3))
7. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS. (SCHEDULE A.5.B.6.(5)(B)), (SCHEDULE A.5.B.6.(5)(C) & SCHEDULE A.5.B.6.(6).)
8. WET WEATHER BMPS: CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND ON SLOPES GREATER THAN FIVE (5) PERCENT FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR. (SCHEDULE A.7.A.1.)
9. WET WEATHER BMPS: TEMPORARY STABILIZATION OF THE SITE MUST BE INSTALLED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND OR AT THE END OF EACH WORKDAY IF RAINFALL IS FORECAST IN THE NEXT 24 HOURS AND EACH WEEKEND AND HOLIDAY. (SCHEDULE A.7.A.1.)
10. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES AND VEGETATION AREAS TO BE PRESERVED. (CLEARLY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, LOCALLY IN FERNDALE AREAS PRESERVE EXISTING VEGETATION AND RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. (SCHEDULE A.5.B.1.(1) & (2)) AND (SCHEDULE A.7.C.4.(1));
11. PROVIDE PERMANENT EROSION PREVENTION MEASURES ON ALL EXPOSED AREAS TO PREVENT FROM BECOMING A SOURCE OF EROSION AND REMOVE ALL TEMPORARY CONTROL MEASURES, UNLESS LOCAL ORDINANCES REQUIRE OTHERWISE, AS AREAS ARE STABILIZED. (SCHEDULE A.5.B.1.(4)) AND (SCHEDULE A.7.C.4.(2))
12. ALL TEMPORARY SEDIMENT CONTROLS MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED. CONSIDER THE TYPE OF VEGETATION TO BE USED. (SCHEDULE A.7.C.4.(3)) & (SCHEDULE A.7.C.4.(4))
13. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ALONG THE SITE PERIMETER ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AND AT ALL ACTIVE AND OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION. (SCHEDULE A.7.D.1.(1) - (2))
14. PRIOR TO ANY LAND DISTURBING ACTIVITIES EACH SITE MUST HAVE GRAVELED, PAVED, OR CONSTRUCTED ENTRANCES, EXITS AND PARKING AREAS WITH EXIT TIRE WASH TO REDUCE THE TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS. (SCHEDULE A.7.D.1.(1))
15. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER WATERTIGHT TRUCKS MUST BE USED OR LOADS MUST BE DRAINED ON-SITE UNTIL DRIPPING HAS BEEN REDUCED TO MINIMIZE SPILLAGE ON ROADS. (SCHEDULE A.7.D.1.(3))
16. TEMPORARY STABILIZATION OR COVERING OF SOIL STOCKPILES AND PROTECTION OF STOCKPILE LOCATED AWAY FROM CONSTRUCTION ACTIVITY MUST OCCUR AT THE END OF EACH WORKDAY OR OTHER BMPS, SUCH AS DIVERSION OF UNCONTAMINATED FLOWS AND INSTALLATION OF SEDIMENT FENCES AROUND STOCKPILES, MUST BE IMPLEMENTED TO PREVENT TURBID DISCHARGES TO SURFACE WATERS. (SCHEDULE A.7.E.1.(1)) & (SCHEDULE A.7.E.2.(1) - (2))
17. BMPS THAT WILL BE USED TO PREVENT OR MINIMIZE STORMWATER FROM BEING EXPOSED TO POLLUTANTS FROM SPILLS, NO DISCHARGE OF CONCRETE TRUCK WASH WATER, VEHICLE AND EQUIPMENT CLEANING, VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE, OTHER CLEANING AND MAINTENANCE ACTIVITIES, AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.F.1.(2))
18. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL. (SCHEDULE A.7.F.1.(2))
19. SOLID WASTE AND HAZARDOUS MATERIALS MANAGEMENT. FOLLOW PROJECT WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, AND MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, MATERIAL USE, COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A.7.F.1.(3))
20. THE PERMITTEE MUST PROPERLY MANAGE HAZARDOUS WASTES, USED OIL, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION, AND MEET ALL STATE AND FEDERAL REGULATIONS AND APPROVALS. (SCHEDULE A.7.E.1.(4))
21. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE MEASURES MUST BE UPGRADED AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS. CHANGES TO THE ESCP MUST ALSO BE SUBMITTED IN THE FORM OF AN ACTION PLAN TO DEQ OR ITS AGENT FOR APPROVAL. (SCHEDULE A.7.B.)
22. SIGNIFICANT AMOUNTS OF SEDIMENT, WHICH LEAVES THE SITE, MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FIXED AND PREVENTED FROM CAUSING A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED 'WIL PERMIT'. (SCHEDULE A.7.F.1.(1))
23. VACUUMING OR DRY SWEEPING MUST BE USED TO CLEAN-UP RELEASED SEDIMENT AND DUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES. (SCHEDULE A.7.F.1.(2))
24. THE APPLICATION RATE OF FERTILIZERS USED TO ESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. TIME-RELEASE FERTILIZERS SHOULD BE USED WITH CARE WHEN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.7.F.1.(3))
25. SEDIMENT MUST BE REMOVED FROM BEHIND A SEDIMENT FENCE WHEN IT HAS REACHED A HEIGHT OF 1/3 THE HEIGHT OF THE FENCE ABOVEGROUND AND BEFORE FENCE REMOVAL. (SCHEDULE A.7.F.2.(1))
26. SEDIMENT MUST BE REMOVED FROM BEHIND BIO BAGS AND OTHER BARRIERS IT HAS REACHED A HEIGHT OF TWO (2) INCHES AND BEFORE BMP REMOVAL. (SCHEDULE A.7.F.2.(2))
27. REMOVAL OF TRAPPED SEDIMENT IN A SEDIMENT BASIN OR SEDIMENT TRAP OR CATCH BASINS MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY (50)% AND AT COMPLETION OF PROJECT. (SCHEDULE A.7.F.2.(1) & (4))
28. BIO MUST AFFIRM IF ANY TREATING SYSTEM AND OPERATIONAL PLAN THAT MAY BE NECESSARY TO TREAT CONTAMINATED CONSTRUCTION DEWATERING OR SEDIMENT AND TURBIDITY IN STORMWATER RUNOFF. (SCHEDULE A.7.F.2.h.)
29. SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR THIRTY DAYS OR MORE, THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD. (SCHEDULE A.8.A.)
30. SHOULD CONSTRUCTION ACTIVITIES CEASE FOR FIFTEEN (15) DAYS OR MORE ON ANY SIGNIFICANT PORTION OF A CONSTRUCTION SITE TEMPORARY STABILIZATION IS REQUIRED FOR THAT PORTION OF THE SITE WITH STRAW, COMPOST, OR OTHER TARGETED COVERING THAT PREVENT SOIL OR WIND EROSION UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.8.B.)
31. DAILY INSPECTIONS WHEN RAINFALL AND RUNOFF OCCURS OF THE BMPS AND DISCHARGE OUTFALLS MUST BE THE PROJECT ESCP INSPECTOR. THESE INSPECTIONS AND OBSERVATIONS MUST BE RECORDED IN A LOG THAT IS AVAILABLE ON SITE. (SCHEDULE A.8.B.1.) & (SCHEDULE B.1.B.(1))
32. BMPS MUST BE INSPECTED BEFORE, DURING, AND AFTER SIGNIFICANT STORM EVENTS. (SCHEDULE A.7.F.)
33. ALL ESCP CONTROLS AND PRACTICES MUST BE INSPECTED VISUALLY ONCE TO ENSURE THAT BMPS ARE IN WORKING ORDER PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY AND MUST BE INSPECTED VISUALLY ONCE EVERY TWO (2) WEEKS DURING INACTIVE PERIODS GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS. (SCHEDULE B.1.B.(3)-(3))
34. IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT ON DOWNSTREAM LOCATION DURING PERIODS THAT THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER. (SCHEDULE B.1.B.(4))



NOTES

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.

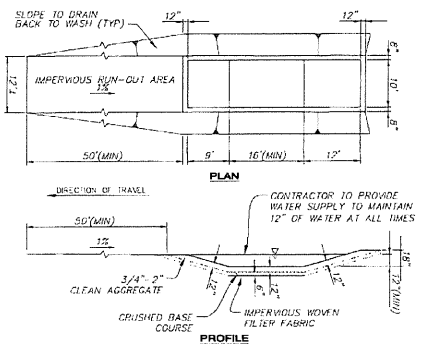
1 / EC2 **SILT FENCE DETAIL** N.T.S.



NOTE

1. TIRE WASH MAY BE REQUIRED IF CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.

2 / EC2 **CONSTRUCTION ENTRANCE DETAIL** N.T.S.



NOTES

1. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH AS REQUIRED.
2. USE WOVEN IMPERMEABLE GEOTEXTILE FABRIC BETWEEN 6" BASE COURSE AND 12" TOP COURSE.
3. TIRE WASH REQUIRED IF STABILIZED CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.
4. IF UTILIZED, CONTRACTOR MUST MAINTAIN A CLEAN GRAVEL ROAD FROM THE TIRE WASH TO THE CONSTRUCTION ENTRANCE.

3 / EC2 **TIRE WASH DETAIL** N.T.S.

PRELIMINARY

THIS DRAWING HAS BEEN REDUCED 50%. ADJUST SCALE ACCORDINGLY. BARSCALE SHOWN IS ACCURATE.

NO	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
EROSION CONTROL DETAILS

anderson perry & associates, inc.
ENGINEERS • SURVEYORS • PLANNERS

ADKINS CONSULTING ENGINEERING, LLP
Engineers • Planners • Surveyors
3205 State Rd. • Medford, OR 97504
(541) 664-6345 • FAX (541) 664-7336

DATE:	5-8-15
PROJECT:	1394-14
FILE:	ACCESS
DESIGNED BY:	JDM
DRAWN BY:	BLP
CHECKED BY:	JDV

SHEET X OF XX

EC2

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Appendix C: C Flume Fish Salvage Plan for the LRDC Dewatering

Fish salvage in the Lost River Diversion Channel for C Flume Replacement: Attachment to 2016 STP #196761 application renewal

Background

The C Flume replacement project consists of the replacing 4200 feet of elevated concrete flume constructed in the early 1920's with an equivalent inverted siphon pipe system which will be buried alongside the exist elevated flume within the right-of-way. The new system will include extension of the existing canal 600 feet on the west end and 365 feet on the east end, a new 200 feet clear-span bridge structure over the Lost River Diversion Channel (LRDC), and 3,035 feet of 108" diameter steel siphon pipe. Time constraints due to requirements for irrigation delivery require the majority of the project to be constructed alongside of the existing flume. The flume itself is approximately 12 feet wide centered inside a 150 feet BOR right of way, allowing room to construct and bury the siphon system adjacent to the existing flume.

Access to the flume is provided by existing maintenance roads accessible from Short Road near the Klamath Irrigation District office and from Highway 39 north of the Henley School Campus. Construction and installation of the siphon system is anticipated to be "cut and cover", where a trench is excavated, pipe is installed and connected to adjacent pipe in the trench, and the trench and pipe are backfilled concurrent with progress. In an attempt to balance the amount of excavation and backfill, the depth of excavation is anticipated to be 7 feet. Excess excavation beyond pipe backfill will be used at either end of the open canal extensions. It is anticipated that no off-site disposal of excavated soil will be necessary.

In November 2016, water levels in the Lost River Diversion Channel will be lowered for a two week period to allow for the placement of new footings/pilings across the channel that will support the pipe crossing the channel. The following is a description of fish salvage activities that will occur during the drawdown and throughout the duration that the water level will be held low. As discussed with the local Oregon Department of Fish and Wildlife (ODFW) fish biologist, Reclamation proposes that fish salvage activities of the Lost River Diversion Channel be included in the renewal of our Canal Salvage permit with ODFW for 2016 (STP #196761). Drawdown of the water level in the Lost River Diversion Channel and the efforts to replace the C Flume will create unique conditions for fish and fish salvage that warrant the following detail that will be included when we apply for renewal early 2016.

Isolated Pools

Drawdown of the LRDC will occur gradually over 5 to 7 days. From past experience, locations where fish may become isolated in small pools do not become visible until late in the process. During the LRDC drawdown in November 2014, it was noted that the west end of the channel remained watered with a gradual slope from near the C Flume crossing (nearly dewatered) toward the river (approximately 3-4 feet of water depth). Thus, previously observed isolation pools occurred on the east end of the LRDC between the Lost River Diversion Dam and the area

of the C Flume as much of the remaining channel was a continuous pool of water. Reclamation fisheries staff will be present in the field with Reclamation Operational and Maintenance (O&M) staff during the latter part of the drawdown process to identify and salvage isolated pools.

Removing fish from isolated pools during the initial drawdown is a balance between personnel safety, a quick response time before oxygen is depleted from the water or predators locate isolated fish, and an effective method to capture isolated fish. We propose to act urgently but carefully during the fish salvage of isolated pools. Our initial focus will be to salvage fish from pools that have become isolated near C Flume Crossing, C/G Crossing, and the east end of LRDC (Figure 1).

Figure 1. The C Flume Crossing is located on the east end of the Lost River Diversion Channel near C/G Crossing and the Lost River Diversion Dam.

Fish will be captured from isolated pools in this area using capture methods that are judged to be most suitable for each pool. As with the annual fish salvage of Klamath Irrigation Project canals, Reclamation staff propose to utilize several techniques in order to remove fish from isolated pools of water remaining in the canals or LRDC. These methods include using backpack electrofishing units, seines, dipnets, blocknets, or a combination of the aforementioned gear types.

Reclamation will use Smith-Root model LR-24 backpack electrofishing units set to emit pulsed, direct currents. The automated "Quick Setup" feature on the LR-24 unit will be used to optimize electrical current at each fish salvage location. The Quick Setup" uses conductivity to evaluate the correct electrical current. Should staff observe adverse impacts to fish, such as contusions or "branding", the "Quick Setup" feature will be disabled and we will set the voltage manually starting at a low volt setting of about 150 V and raising voltage setting in 50 V increments until fish exhibit involuntary taxis. We will not use voltage in excess of 400 V.

Initial fish salvage efforts will occur in smaller pools that appear to have large numbers of fish. Fish in pools that appear sufficiently large in volume or appear to have very few fish will be salvaged after the salvage of fish in more dire situations, such as large numbers confined in small pools, is finished. Some pools at the bottom of the LRDC may remain sufficiently large and deep to ensure fish survival during the two week period that water levels are low. These pools are a lower priority to electrofish than the flume construction area. Some pools may not be salvaged if they are determined to be sufficiently large. These situations will likely need to be determined in a case by case scenario. Based on 2014 observations, two large and deep pools will remaining within the LRDC where Reclamation proposes that no fish salvage is necessary: one at the east end of the channel between the C/G Crossing and Lost River Diversion Dam, and one at the west end of the channel between C Flume Crossing and the Klamath River.

Fish Isolation from C Flume Crossing

We anticipate that some water may remain near the C Flume crossing (photograph 1). To isolate any fish that may be present in this area, we propose to use two blocking seines to create a fish-free area 100 feet in each direction of the site where a coffer dam is to be constructed. The coffer dam will encompass the entire footprint of the work area around the C Flume Crossing. All construction activity in the bottom of the LRDC at the C Flume Crossing will occur within the coffer dam. Once the blocking seines are placed and anchored across the channel, we will conduct multiple passes with the electrofishing units in place in the area between the seines. We will conclude the fish removal of this area when a pass with the electrofishing unit produces fewer than 10 fish.

If the bottom material of the LRDC prevents adequate footing for entry into the area to safely electrofish through the area blocked by the seines, Reclamation biologist will use another seine to remove as many fish from the isolated area as possible.

Blocking nets (seines) will remain anchored in place until a coffer dam is constructed for the crane pad. After the coffer dam has been constructed, we propose to remove the blocking nets.

Photograph 1. During drawdown of the Lost River Diversion Channel in November 2014, shallow water remained in the channel near the C Flume Crossing.

Fish Handling and Relocation

In 2014, the concrete apron at the C/G Crossing created a pool of water 1 to 3 feet in depth between the C/G Crossing and the Lost River Diversion Dam on the east end of the channel (Figure 1). Another large pool of water several miles long and 1-3 feet in depth remained in the LRDC to the west of the C Flume. During fish salvage of isolated pools in the LRDC and isolation of fish from the C Flume Crossing in November 2016, Reclamation proposes to relocate all captured fish, except trout and suckers, to these pools. All captured fish will be released on the same date captured.

While conducting fish salvage in the LRDC, we will collect fish in five gallon buckets containing water obtained from the LRDC. As soon as possible to avoid crowding in the buckets, fish will be transferred to a larger container (either 50 to100 quart insulated coolers or a 160 gallon a transport tank) containing well water that is treated with Novaqua® water and fish conditioner and a 0.5% solution of saline water. Water in the larger transport containers will be aerated by bubbling atmospheric air into the water. The bubbled air and saline solution assists stressed fish with respiration. Larger holding and transport containers will not have access to the bottom of the LRDC.

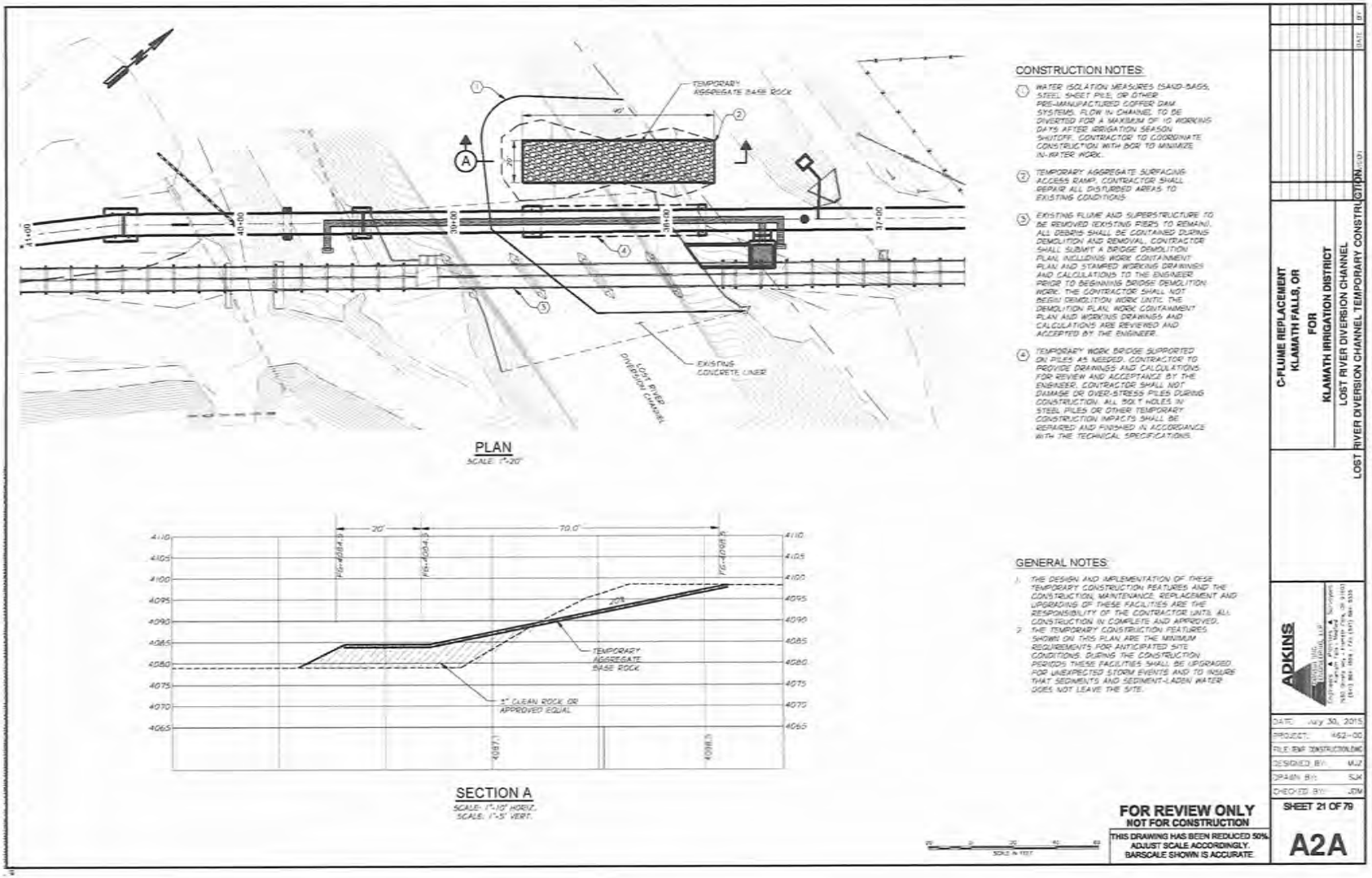
Prior to relocation of fish, we will segregate any trout or suckers we observe. We propose to release any trout in Lake Ewauna near the Link River at Veteran's Park. Reclamation does not

anticipate encountering many trout in the LRDC during drawdown. We have only encountered one trout during canal salvage activities in the last decade (prior permit reports can be provided).

Reclamation proposes to measure, identify, and PIT-tag suckers (PIT-tagging only if sucker standard length < 80 mm) we capture prior to release. Reclamation will coordinate with USFWS on the appropriate location for release of salvaged suckers. In 2015, Reclamation released suckers from the canal salvage in Oregon to USFWS's care for rearing in private ponds on Lower Klamath Lake Road (i.e., Gone Fishing facility). At this point, we anticipate a similar release for 2016 suckers from canal salvage, including suckers captured during LRDC. Prior releases have also been made to Upper Klamath Lake.

All other fish species will be relocated to the remaining large pools within the LRDC. After the two-week work period, the LRDC will be re-watered. Reclamation proposes to periodically monitor the large pools for dissolved oxygen concentrations during low water levels in November 2016. We do not anticipate low dissolved oxygen during this period.

Appendix D: C Flume 90% Engineering Drawings (LRDC Crossing) (Adkins, 2015)



Appendix E: Indian Trust Asset Coordination and Consultation

Indian Trust Assets
Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Deputy Regional Resources Manager.

Date: 10/22/2015

Requested by (office/program)	Tyler Hammersmith, KBAO
Fund	XXXR0680R1
WBS	RR.17529652.2500057
Fund Cost Center	
Region # (if other than MP)	
Project Name	C Canal Flume Replacement Project
CEC or EA Number	2015_EA_008
Project Description (attach additional sheets if needed and include photos if appropriate)	The proposed federal action entails the authorization by Reclamation for approving the removal and replacement of the existing Flume. Replacement of Flume, as required by the Category 1 recommendation, would consist of KID replacing the existing Flume with a new facility. The new facility would include approximately 4,100 feet of a 10-foot diameter buried pipe and 200 feet of an elevated structure over the LRDC. The pipe would be made of either Steel (AWWA C200), Steel Reinforced polyethylene (SRPE), or High Density Polyethylene pipe (HDPE). Replacement of the Flume would occur in three phases: 1. Installation during off-season and on-season work in first year through December 2015 to October 2016 (including all parallel work and LRDC crossing) 2. Installation during off-season work from October 2016 to April 2017 (including all work crossing the existing flume, tie-ins at each end, connect all turnouts) 3. Demolition and removal during on-season work from April 2017 to Sept 2017 (including site restoration, demolition.

***Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)**	Southeast quarter of the northwest quarter, the northwest quarter of the southwest quarter and the southwest quarter of the southwest quarter, Section 30, of Township 39 South, Range 10 East Southeast quarter of the southeast quarter of Section 25, Township 39 South, Range 09 East, of the Willamette Meridian Klamath County, Oregon Northeast quarter of the northeast quarter, Section 36, Township 36, Township 39 South, Range 09 East, of the Willamette Meridian, Klamath County, Oregon

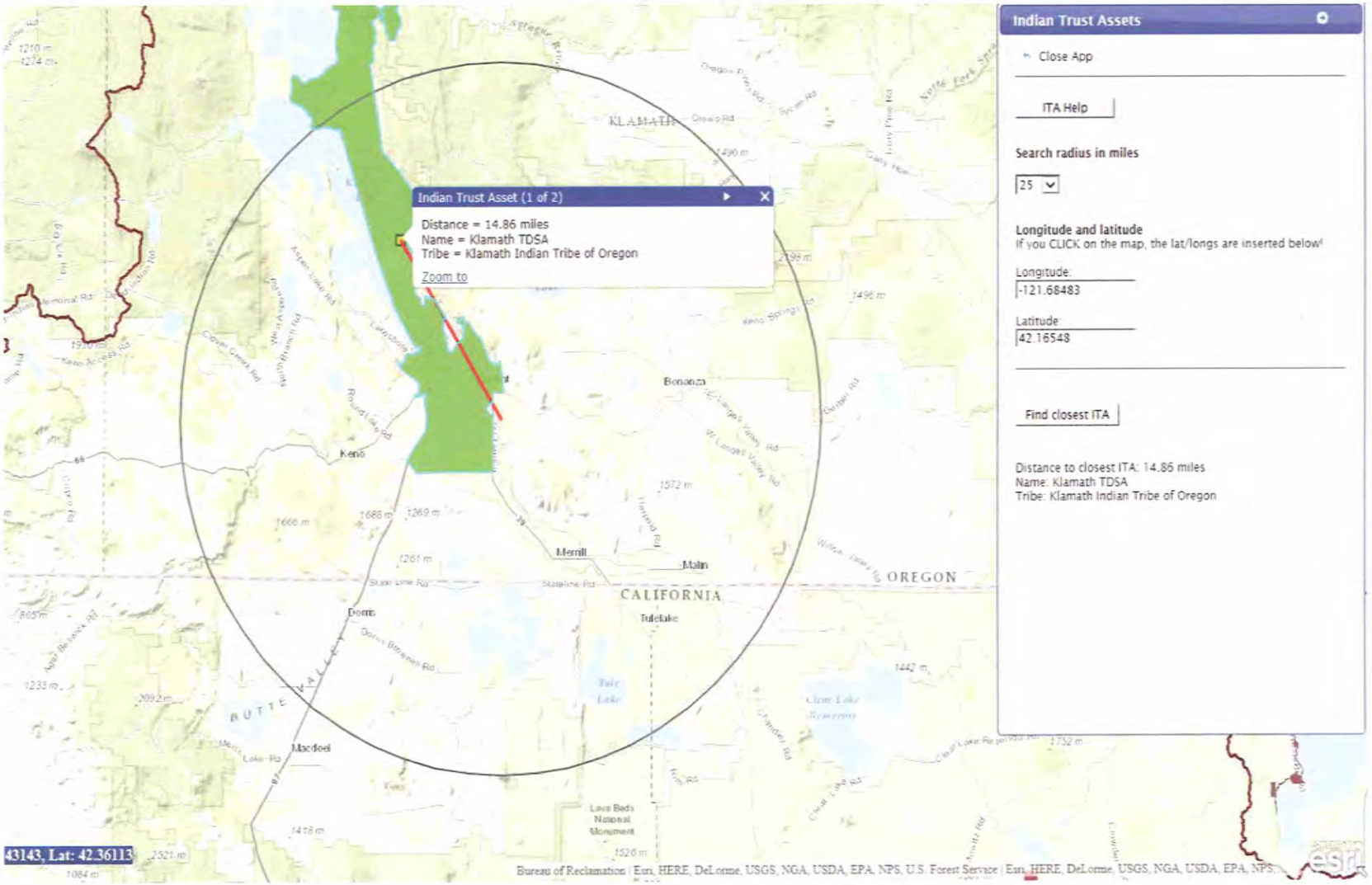
Signature | Tyler Hammersmith Jr | 10-22-15
Signature | Printed name of preparer | Date

ITA Determination:

The closest ITA to the proposed **C Canal Flume Replacement** activity is the **Klamath TDSA** about 14.86 miles to the Northwest.

Based on the nature of the planned work it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action will not have any impacts on ITAs.

Kristen L. Hiatt | Kristen L. Hiatt | 10/22/2015
Signature | Printed name of approver | Date


Indian Trust Asset (1 of 2)
Distance = 14.86 miles
Name = Klamath TDSA
Tribe = Klamath Indian Tribe of Oregon
Zoom to
Indian Trust Assets
Close App
ITA Help
Search radius in miles
25
Longitude and latitude
If you CLICK on the map, the lat/longs are inserted below!
Longitude:
-121.68483
Latitude:
42.16548
Find closest ITA
Distance to closest ITA: 14.86 miles
Name: Klamath TDSA
Tribe: Klamath Indian Tribe of Oregon
KLAMATH
Bonanza
Keno
Merrill
Malin
OREGON
CALIFORNIA
Tulelake
Dorris
Macdoel
Lava Beds National Monument
43143, Lat: 42.36113
Bureau of Reclamation | Esri, HERE, DeLorme, USGS, NGA, USDA, EPA, NPS, U.S. Forest Service | Esri, HERE, DeLorme, USGS, NGA, USDA, EPA, NPS

Appendix F: CWA Section 404 Compliance

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
EUGENE FIELD OFFICE
211 EAST 7TH AVENUE, SUITE 105
EUGENE, OREGON 97401-2722

REPLY TO
ATTENTION OF:

May 9, 2014

Operations Division
Regulatory Branch
Corps No. NWP-2014-189

Ms. Elizabeth Nielsen
Bureau of Reclamation
6600 Washburn Way
Klamath Falls, Oregon 97603-9336

Dear Ms. Nielsen:

The U.S. Army Corps of Engineers (Corps) has evaluated the Bureau of Reclamation's (Reclamation) request for Department of the Army authorization to maintain a canal flume in the Lost River Diversion Channel, as shown on the enclosed drawings (Enclosure). The project is located near Klamath Falls, in Klamath County, Oregon (Section 30, Township 39 South, Range 10 East). The Corps has determined that Reclamation has met the requirements for a Non-Reporting Nationwide Permit from the Department of the Army.

Based upon information provided in the permit application, the Corps has determined that Reclamation's proposed activities authorized by the Corps' Non-Reporting Nationwide No. 3 (Maintenance). The discharge of dredged or fill material into waters of the United States associated with this particular activity does not require a pre-construction notification to the Corps. Your activities must be conducted in accordance with the conditions found in the Portland District NWP Regional Conditions (Enclosure 2) and the NWP General Conditions (Enclosure 3). You must also comply with the Oregon Department of Environmental Quality (DEQ) Water Quality Certification Conditions (Enclosure 4).

As the lead federal agency, Reclamation is responsible for evaluating the project for potential impacts to the Endangered Species Act, Wild and Scenic Rivers Act, and the National Historic Preservation Act. Reclamation may also need to obtain a removal/fill permit from the Oregon Department of State Lands.

If you have any questions regarding our regulatory authority, please contact Mr. Omar Ortiz at the letterhead address, by telephone at (541) 465-6768, or email omar.m.ortiz@usace.army.mil.

Sincerely,

for Shawn H. Zinszer
Chief, Regulatory Branch

Appendix G: ODFW Scientific Taking Permit Correspondence

Campbell Miranda, Tara Jane <tcampbellmiranda@usbr.gov>

RE: Draft fish salvage for Lost River Diversion Channel 2016

1 message

Elizabeth A OsierMoats <elizabeth.a.osiermoats@state.or.us> Mon, Oct 19, 2015 at 12:05 PM
To: "TYLER, TORREY" <ttyler@usbr.gov>, Elizabeth A OsierMoats <elizabeth.a.osiermoats@state.or.us>, Jared Bottcher <jbottcher@usbr.gov>
Cc: Darrick Weissenfluh <darrick_weissenfluh@fws.gov>, Darin Taylor <detaylor@usbr.gov>, Tara Jane Campbell Miranda <tcampbellmiranda@usbr.gov>

Torrey,

This email is to confirm that the Oregon Department of Fish and Wildlife (ODFW) Klamath District Fish Biologist has reviewed and discussed with Bureau of Reclamation (Reclamation) staff Reclamation's plans for the C-Flume replacement project including the activities proposed at the Lost River Diversion Canal (LRDC). ODFW has reviewed Reclamation's general plans for the dewatering and fish salvage at the LRDC. ODFW concurs that the fish salvage activities at the LRDC should be included in Reclamation's 2016 Oregon Scientific Take Permit (STP) renewal. Reclamation anticipates applying for the STP in early 2016. The 2016 STP cannot be issued until the 2016 calendar year. Please note that the activities covered under the 2015 STP must be completed and reported in the APPS online system before the 2016 STP can be issued.

ODFW does not anticipate any problems reaching agreement on specific details regarding LRDC fish salvage operations and methods. ODFW has committed to cooperating with Reclamation staff over the next few months to finalize LRDC fish salvage operation plans and fish handling methods.

We look forward to continuing to work with you on this and future projects. Please let me know if you have any questions or concerns.

Sincerely,

Elizabeth

Elizabeth A.O. Moats

Acting District Fish Biologist

Klamath Watershed District

ODFW

(O) 541-883-5732

(C) 541-805-4559

Appendix H: Compliance with ESA; Consultation with USFWS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
1936 California Avenue
Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541)885-7837

In Reply Refer To:
08EKLA00-2016-TA-0043
08EKLA00-2013-B-0001

DEC 15 2015

Memorandum

To: Bureau of Reclamation Area Office Manager
Klamath Falls, Oregon

From: Field Supervisor, Klamath Falls Fish & Wildlife Office
Klamath Falls, Oregon (FOR)

Subject: Endangered Species Act Compliance for the C Canal Flume Project

This replies to your December 10, 2015, e-mail requesting U.S. Fish and Wildlife Service (Service) concurrence on your determination for the proposed C Canal Flume (C Flume) Project. Your e-mail indicates that dewatering of the Lost River Diversion Channel (LRDC) is a necessary component of the C Flume Project and is the only activity likely to affect endangered Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*). During the Bureau of Reclamation's (Reclamation) review of the proposed action, you determined that effects to suckers as a result of dewatering the LRDC and associated fish salvage activities were analyzed previously in the *Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013, through March 31, 2023, on Five Federally Listed Threatened and Endangered Species* (BiOp) issued jointly by the Service and the National Marine Fisheries Service on May 31, 2013.

The Service appreciates coordination on the proposed C Canal Project. We agree the dewatering of the LRDC and associated fish salvage activities were analyzed in the 2013 Klamath Project Joint BiOp (Section 4.3.1.5), and thus Reclamation has completed consultation under section 7 of the Endangered Species Act for the C Flume Project.

We appreciate that Reclamation plans to leave a sufficient depth of water in the LRDC during implementation of the C Flume Project to prevent the stranding of suckers and other fish. If suckers are present and salvage is required, your e-mail indicates Reclamation will notify the Service and coordinate where to relocate suckers. If salvage is necessary, we request suckers be relocated consistent with the fish handling and relocation details outlined in the 2015 Klamath Project Lost River and Shortnose Sucker Salvage Plan. When the project is complete, please provide us with a short written summary documenting the dates and completion of the activity and the associated sucker salvage and relocation effort, if implemented.

Appendix I: Compliance with CWA Section 402; Coordination with ODEQ

Campbell Miranda, Tara Jane <tcampbellmiranda@usbr.gov>

RE: Bureau of Reclamation- NPDES Permit

1 message

RATLIFF Krista <RATLIFF.Krista@deq.state.or.us> Thu, Oct 22, 2015 at 12:15 PM
To: "Campbell Miranda, Tara Jane" <tcampbellmiranda@usbr.gov>

Hi Tara Jane,

I have highlighted the important language in the 3 documents that indicate all projects 1 acre of more preformed in association with the Bureau of Reclamation's water delivery system. Projects under an acre currently are not regulated under the NPDES permitting program, Section 402. The first permit document we refer to as our permit coverage cover page. This is the actual legal document that states you have been assigned to our General Permit 1200-CA. When you look at the General Permit 1200-CA, the issued to section reads:

"All public agencies responsible for construction activities with storm water discharges that are covered by this permit. The submittal of an approved application and payment of applicable fees are required."

The Bureau of Reclamation has provided DEQ with all required applications and applicable fees since the permit was assigned on 5/23/2002. Likely the reason the site location has changed on the documents from A Canal Fish Screen Project to Klamath Basin Area Office was simply a database input. Because the 1200-CA is assign to a public agencies but coverage spans to all their projects as defined in the highlighted areas of permit coverage cover page signed on 2/20/2001, the site location had to be filled out with the best descriptor at the time. The renewal letter dated May 9, 2005, changed the site location to the Klamath Basin Area Office likely in an attempt to clarify the 1200-CA covers all projects to the BOR water delivery system out of this specific Regional Office.

2/20/2001 was the date the DEQ Water Quality Division Administrator issued the General Permit. The second letter I scanned to you is what DEQ refers to as "the assignment letter." This is the provides the permittee with the date they were assigned to the 1200-CA and the File No. 111792, as well as, the EPA No. ORR10-8008. To be consistent with our terminology the highlighted section of the May 23, 2002, assignment letter, should have said "We are assigning the requested permit." General permit are issued for a 5-year term and applicants are assigned to the General Permit as long as they meet the conditions of coverage. The coverage continues as long as applicable fees are paid and a renewal application is received before the expiration date, which in the 1200-CA was 12/31/2005.

Now the 3rd notice is an acknowledgement that DEQ has received the BORs required renewal application prior to the deadline. Federal rule requires the renewal applications to be received 180 days prior to the

expiration of the General Permit. The last highlighted sentence was DEQ stating if we do not re-issue the 1200-CA by the expiration date of 12/31/2005, BOR, permit File #111793, coverage will remain in effect until final action is taken on your application.

In the screen shot of our database under Last Action, it shows the coverage has been administratively extended under the 1200-CA. So, although new applicants cannot apply for or be assigned to an expired permit, all Permittees remain covered under the expired permit until DEQ takes further action, which we have not.

The BOR coverage is active under the 1200-CA and this assignment covers all projects that disturb an acre or more of land and have the potential to discharge stormwater into waters of state as long as the projects follow the conditions of the expired 1200-CA permit. No individual application are required on a site specific basis. The BOR Klamath Basin Area Office is up to date on all annual fees and permit is administratively extended at this time.

Hopefully this is as clear as mud. Take Care.

Krista Ratliff, Stormwater Specialist

Bend Office; 541-633-2033

From: Campbell Miranda, Tara Jane [mailto:tcampbellmiranda@usbr.gov]
Sent: Wednesday, October 21, 2015 2:20 PM
To: RATLIFF Krista <RATLIFF.Krista@deq.state.or.us>
Cc: Tyler Hammersmith <thammersmith@usbr.gov>
Subject: Re: Bureau of Recalmation- NPDES Permit

re-attaching the document you previously sent....

On Wed, Oct 21, 2015 at 2:19 PM, Campbell Miranda, Tara Jane <tcampbellmiranda@usbr.gov> wrote:

> Hi Krista,
>
> Taking a closer look at the document you sent regarding our permit (re-attached), it seems this document is just documenting that DEQ received our renewal application in 2005, but not that our 1200-CA permit was actually renewed for *site location: klamath Basin Area Office.* I am pulling together our environmental assessment which has to be completed by COB tomorrow and wondered if DEQ had any further correspondence to Reclamation regarding approval of our request for renewal for all our agricultural related actions under File No. 111792; EPA NO. ORR10-8008; Site location: Klamath Basin Area Office Klamath County.

Ultimately, I want to be sure we are in compliance and document it in our EA.

Thanks for all your help,

Tara Jane

On Tue, Sep 22, 2015 at 8:50 AM, RATLIFF Krista <RATLIFF.Krista@deq.state.or.us> wrote:

From: Campbell Miranda, Tara Jane [mailto:tcampbellmiranda@usbr.gov]
Sent: Monday, September 21, 2015 2:01 PM
To: RATLIFF Krista <RATLIFF.Krista@deq.state.or.us>
Cc: Tyler Hammersmith <thammersmith@usbr.gov>; Susan Black <sblack@usbr.gov>
Subject: Bureau of Recalmation- NPDES Permit

Krista,

The Bureau of Reclamation is in need of a copy of our NPDES permit that we have renewed each year since 2005 or 2008.

Could you send us a copy please?

Thanks,

Tara Jane

–

Tara Jane Campbell Miranda, MNR

Natural Resource Specialist

Acting Public Affairs Specialist

Klamath Basin Area Office

Bureau of Reclamation

Office: (541) 880.2540

Appendix J: Public Comments and Reclamation Response to Comments on EA during Public Comment Period (November 12-30, 2015).

11-24-2015

The Klamath Tribes
Culture & Heritage Department

Tara Jane Campbell Miranda
Bureau of Reclamation
Washburn Way, Klamath Falls OR
97603

Official File
Received
Date Received 11/24/2015
Date of Letter 11/24/2015
Control Number
File Code 11 5 15.00 Notice f
Folder ID
Project: 12

Code	Initial	Date	Action
300 JL			
300 TKM	TKM	12/11	
300 KH	KH	12/10	
300 TH			

note: hand delivered

Re: Proposed C Canal

The purpose of this letter is to make official comment on the C Canal Project. With the flume being first constructed in 1909 it is very unlikely that any protection of cultural resources was ever attempted, with this project cultural resource surveys will need to be conducted and Cultural Monitors will need to be present while all ground disturbances are taking place.

There will be a need for an Inadvertent Discovery plan to be formulated to assure that the remains of our people are respectfully attended to and close consultation with the Klamath Tribes will be necessary as the area in question is high in probability for buried cultural deposits including human remains. If there are any questions or concerns please feel free to contact me at 541-783 2219 x 178 or my cell is 541-891-5450. Thank you.

Sincerely,

Perry Chocktoot Jr

Perry Chocktoot Jr, Director
Culture and Heritage Department

501 Chiloquin Blvd. - P.O. Box 436 - Chiloquin, Oregon 97624
(541) 783-2219 - Fax (541) 783-2029

APPENDIX B
National Pollutant Discharge Elimination System
1200-CA Permit

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STORM WATER DISCHARGE PERMIT

Oregon Department of Environmental Quality
811 SW Sixth Avenue, Portland, OR 97204, (503) 229-5279
Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:

All public agencies responsible for construction activities with storm water discharges that are covered by this permit. The submittal of an approved application and payment of applicable fees are required.

SOURCES COVERED BY THIS PERMIT:

All Construction activities including clearing, grading, excavation, and stockpiling activities under the authority or jurisdiction of a public agency that will result in the disturbance of five or more acres. Also included are activities that disturb a total of five or more acres if part of a larger common plan of development.

Effective December 1, 2002 the previously described construction activities will include land disturbance of one acre or more, and will also include activities that disturb a total of one or more acres if part of a larger common plan of development.

This permit does not authorize in-water or riparian work. These activities are regulated by the Oregon Division of State Lands, US Army Corp of Engineers, and/or the DEQ Section 401 certification program.

Michael T. Llewelyn, Administrator
Water Quality Division

Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate erosion and sediment control measures, and storm water treatment and control facilities, and to discharge storm water to public waters in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

		Page
Schedule A	- Limitations and Controls for Storm Water Discharges	2
Schedule B	- Minimum Monitoring Requirements	7
Schedule C	- Compliance Schedule	9
Schedule D	- Special Conditions	10
Schedule F	- General Conditions	11

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharges to an underground injection control system.

SCHEDULE A
LIMITATIONS AND CONTROLS FOR STORM WATER DISCHARGES

1. **Performance Limitations** An Erosion and Sediment Control Plan (ESCP) shall be developed and implemented to prevent the discharge of significant amounts of sediment to surface waters. The following conditions describe significant amounts of sediment and shall be prevented from occurring.

   a. Earth slides or mud flows that leave the construction site and are likely to discharge to surface waters.

   b. Evidence of concentrated flows* of water causing erosion when such flows are not filtered or settled to remove sediment prior to leaving the construction site and are likely to discharge to surface waters. Evidence includes the presence of rills, rivulets or channels.

   c. Turbid flows* of water that are not filtered or settled to remove turbidity prior to leaving the construction site and are likely to discharge to surface waters.

   d. Deposits of sediment at the construction site in areas that drain to unprotected storm water inlets or catch basins that discharge to surface waters. Inlets and catch basins with failing sediment controls due to lack of maintenance or inadequate design will be considered unprotected.

   e. Deposits of sediment from the construction site on public or private streets outside of the permitted construction activity that are likely to discharge to surface waters.

   f. Deposits of sediment from the construction site on any adjacent property outside of the permitted construction activity that are likely to discharge to surface waters.

   * Flow to storm water inlets or catch basins located on the site will be considered "leaving the site" if there are no sediment control structures designed for expected construction flows downstream of the inlets or catch basins that are under the permittee's control.

2. **Erosion and Sediment Control Plan Preparation and Submittal** The permittee shall ensure that a comprehensive ESCP is prepared and implemented for the construction activity regulated by this permit.

   a. A copy of the ESCP shall be retained on-site and made available to the Department upon request. During inactive periods of greater than seven (7) consecutive calendar days, the ESCP shall be retained by the permittee.

   b. The Department may request modifications to the ESCP at any time if the ESCP is ineffective at preventing the discharge of significant amounts of sediment and turbidity to surface waters.

   c. The ESCP shall include any procedures necessary to meet local erosion and sediment control requirements or storm water management requirements.

   d. If possible, during the period of October through May, construction activities should avoid or minimize excavation and bare ground activities. If the operator chooses to continue land disturbance activities within this period, additional wet weather requirements (refer to A.3.d) are required in the ESCP. Specifically, if construction activity occurs during the winter season where slopes are greater than five (5) percent and the soils have medium to high erosion potential additional erosion controls will be required.

e. The following non-storm water discharges are allowed as long as they are identified in the ESCP and all necessary controls are implemented to minimize sediment transport. These include: firefighting activity, hydrant flushing and potable waterline flushing (DEQ guidance must be followed), air conditioning condensate, dewatering activities of uncontaminated groundwater or spring water, and uncontaminated foundation or footer drain water.

3. **Erosion and Sediment Control Plan Requirements** The ESCP shall, at a minimum, include the following elements.

a. Site Description A description of the following:
   i. Nature of the construction activity, including a proposed timetable for major activities.
   ii. Estimates of the total area of the permitted site and the area of the site that is expected to undergo clearing, grading and/or excavation.
   iii. Nature of the fill material to be used, the insitu soils, and the erosion potential of such soils.
   iv. Names of the receiving water(s) for storm water runoff.

b. Site Map Indicating the following: (Note: In order to provide all the required information, a general location map in addition to the site map is required.)
   i. Areas of total development
   ii. Drainage patterns
   iii. Areas of total soil disturbance (including, but not limited to, showing cut and fill areas and pre and post development elevation contours)
   iv. Areas used for the storage of soils or wastes
   v. Areas where vegetative practices are to be implemented. Include type of vegetation seed mix.
   vi. Location of all erosion and sediment control measures or structures
   vii. Location of impervious structures after construction is completed. Include buildings, roads, parking lots, outdoor storage areas, etc., if any.
   viii. Springs, wetlands and other surface waters located on-site
   ix. Boundaries of the 100-year flood plain if determined
   x. Location of storm drainage outfalls to receiving water(s) if applicable
   xi. Location of drinking water wells and underground injection controls
   xii. Details of sediment and erosion controls
   xiii. Details of detention ponds, storm drain piping, inflow and outflow details

c. Required Controls and Practices The following controls and practices are required:
   i. Each site shall have graveled, paved, or constructed entrances, exits and parking areas, prior to beginning any other work, to reduce the tracking of sediment onto public or private roads.
   ii. All unpaved roads located on-site shall be graveled. Other effective erosion and sediment control measures either on the road or down gradient may be used in place of graveling.
   iii. When trucking saturated soils from the site, either water-tight trucks shall be used or loads shall be drained on-site until dripping has been reduced to minimize spillage on roads.
   iv. A description of procedures that describe controls to prevent the discharge of all wash water from concrete trucks.
   v. A description of procedures for correct installation or use of all erosion and sediment control measures.
   vi. A description of procedures for prompt maintenance or repair of erosion and sediment control measures utilized on-site (refer to A.4).

d. Additional Controls and Practices Additional controls and practices shall be developed that are appropriate for the site. At a minimum the following shall be considered:

i. A description of clearing and grading practices, including a schedule of implementation, that will minimize the area of exposed soil throughout the life of the project. Whenever practicable, clearing and grading shall be done in a phased manner to prevent exposed inactive areas from becoming a source of erosion.

ii. A description of vegetative erosion control practices, including a schedule of implementation, designed to preserve existing vegetation where practicable and re-vegetate open areas when practicable after grading or construction.

In developing vegetative erosion control practices, at a minimum the following shall be considered: temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, and protection of trees with protective construction fences.

iii. A description of additional erosion control practices, including a schedule of implementation, designed to protect exposed areas and prevent soil from being eroded by storm water.

In developing additional erosion control practices, at a minimum the following shall be considered: mulching with straw or other vegetation, use of erosion control blankets, and application of soil tackifiers.

iv. A description of sediment control practices, including a schedule of implementation, that will be used to divert flows from exposed soil, store flows to allow for sedimentation, filter flows, or otherwise reduce soil laden runoff. All temporary sediment control practices shall not be removed until permanent vegetation or other cover of exposed areas is established.

In developing sediment control practices, at a minimum the following shall be considered: use of silt fences, earth dikes, brush barriers, drainage swales, check dams, subsurface drains, pipe slope drains, rock outlet protection, sediment traps, and temporary or permanent sedimentation basins.

v. A description of erosion and sediment control practices that will be used to prevent stockpiles from becoming a source of erosion. Stockpiles located away from the construction activity but still under the control of the permittee shall also be protected to prevent significant amounts of sediment from discharging to surface waters. At the end of each workday the soil stockpiles must be stabilized or covered.

In developing these practices, at a minimum the following shall be considered: diversion of uncontaminated flows around stockpiles, use of cover over stockpiles, and installation of silt fences around stockpiles.

vi. A description of the best management practices that will be used to prevent or minimize storm water from being exposed to pollutants from spills, cleaning and maintenance activities, and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. The reuse and recycling of construction wastes should be promoted.

In developing these practices, at a minimum the following shall be considered: written spill prevention and response procedures; employee training on spill prevention and proper disposal procedures; regular maintenance schedule for vehicles and machinery; and covered storage areas for waste and supplies.

4. **Maintenance Requirements** The following maintenance activities shall be implemented.

   a. Significant amounts of sediment that leave the site shall be cleaned up within 24 hours and placed back on the site or properly disposed. Any in-stream clean up of sediment shall be performed according to Oregon Division of State Lands' required timeframe.

   b. Under no conditions shall sediment be intentionally washed into storm sewers or drainageways unless it is captured by a BMP before entering receiving waters.

   c. For a filter fence, the trapped sediment shall be removed before it reaches one third of the above ground fence height.

   d. For catch basin protection, cleaning must occur when design capacity has been reduced by fifty percent.

   e. For a sediment basin, removal of trapped sediments shall occur when design capacity has been reduced by fifty percent.

   f. All erosion and sediment controls not in the direct path of work shall be installed before any land disturbance.

   g. If fertilizers are used to establish vegetation, the application rates shall follow manufacture's guidelines and the application shall be done in such a way to minimize nutrient-laden runoff to receiving waters.

   h. If construction activities cease for thirty (30) days or more, the entire site must be stabilized, using vegetation or a heavy mulch layer, temporary seeding, or another method that does not require germination to control erosion.

   i. Any use of toxic or other hazardous materials shall include proper storage, application, and disposal.

   j. The permittee shall manage abandoned hazardous wastes, used oils, contaminated soils or other toxic substances discovered during construction activities in a manner approved by the Department.

   k. If a storm water treatment system for construction activities is employed, the operation and maintenance plan shall be submitted to the Department for approval.

5. **Additional Requirements**
   a. Water Quality Standards:
   The ultimate goal for permittees is to comply with water quality standards in OAR 340-41. In instances where a storm water discharge adversely impacts water quality, the Department may require the facility to implement additional management practices, apply for an individual permit, or take other appropriate action.

   b. Turbidity (Nephelometric Turbidity Units, NTU) Water Quality Standard:
   No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be

exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

[see OAR 340-041-(basin)(2)(c)]

c. Water Quality Limited Streams:
The Department may establish additional controls on construction activities that discharge storm water runoff to water quality limited streams if Total Maximum Daily Loads are established and construction activities are determined to be a significant contributor to these loads. The Department may also require application for individual permit or develop a watershed-based general permit for the activity.

SCHEDULE B
MINIMUM MONITORING REQUIREMENTS

All Sites

1. A person with knowledge and experience in construction storm water controls and management practices shall conduct the inspections. The ESCP shall identify the person(s) and/or title of the personnel that will conduct the inspections and provide a contact phone number for such person(s).

Active Sites

2. Frequency of inspections shall be daily during storm water runoff or snowmelt runoff and at least once every seven (7) calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain per 24-hour period.

Inactive Sites

3. During inactive periods of greater than seven (7) consecutive calendar days, inspections shall only be required once every two (2) weeks.

4. Prior to discontinuing activities at the site, any exposed area shall be stabilized to prevent erosion. Stabilization may occur by applying appropriate cover (mulch, erosion control blanket, soil tackifier, etc.) or establishing adequate vegetative cover.

5. When a site is inaccessible due to adverse weather conditions, inspections shall not be required. Adverse weather condition shall be recorded on the inspection sheet.

6. Prior to leaving an inactive site or in anticipation of site inaccessibility, existing erosion and sediment control measures shall be inspected to ensure that they are in working order. Any necessary maintenance or repair shall be made prior to leaving the site.

Written Records

7. All visual inspections must document the following information:

    a. Inspection date, inspector's name, weather conditions, and rainfall amount for past 24 hours (inches). (Rainfall information can be obtained from the nearest weather recording station.)

    b. List observations of all BMPs: erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that employ temporary or final stabilization control, soil stockpile area, and nonstormwater controls.

    c. At representative discharge location(s) from the construction site conduct observation and document the quality of the discharge for any turbidity, color, sheen, or floating materials. If possible, in the receiving stream, observe and record color and turbidity or clarity upstream and downstream within 30 feet of the discharge from the site. For example, a sheen or floating material could be noted as present/absent, if observation is yes, it could indicate concern about a possible spill and/or leakage from vehicles or materials storage. For turbidity and color an observation would describe any apparent color and the clarity of the discharge, and any apparent difference in comparison with the receiving stream.

d. If significant amounts of sediment are leaving the property, briefly explain the corrective measures taken to reduce the discharge and/or clean it up and describe efforts to prevent future releases. The ESCP shall be amended accordingly.

e. If a site is inaccessible due to inclement weather the inspection shall include observations at a relevant discharge point or downstream location, if practical.

8. All inspection records for an active site shall be kept on-site or be maintained with the permittee, and shall made available to the Department, its Agent, or local municipality upon request.

9. A written record of inspections for an inactive site shall be maintained with the permittee and made available to the Department, its Agent, or local municipality upon request.

10. Retention of all inspection records shall be for a period of one year from project completion.

SCHEDULE C
COMPLIANCE SCHEDULE

1. Registration of Underground Injection Systems (40 CFR 144 and OAR 340-044). The permittee shall submit to DEQ a registration form if construction activities include disposal of storm water or other wastewater discharges to an injection system. These types of disposal systems are classified under the Underground Injection Control Program as a Class V well, require registration, and must meet Division 44 standards.

   a. A new permittee shall register any applicable underground treatment systems **prior to** the construction of a new facility.

   b. For facilities covered by the previous 1200-CA permit the registration form is due within **thirty (30) days** after receipt of this new 1200-CA permit.

SCHEDULE D
SPECIAL CONDITIONS

1. Issuance of this permit does not relieve the permittee from all other permitting and licensing requirements. Prior to beginning construction activities, all other necessary approvals shall be obtained.

2. The permit will remain in effect after the expiration date or until another permit is issued if the permittee has paid all fees and has filed a renewal application.

3. Any permittee that does not want to be covered or limited by this general permit may make application for an individual NPDES permit in accordance with the procedures in OAR 340-45-030.

4. Permit Specific Definitions:

Best Management Practices (BMPs) Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, erosion and sediment control, source control, and operating procedures and practices to control: site runoff, spillage or leaks, and waste disposal.

Dewatering The removal and disposal of surface water or groundwater for purposes of preparing a site for construction.

Erosion The movement of soil particles resulting from the tracking, flow or pressure from storm water or wind.

Grade Construction activity that causes the disturbance of the earth. This shall include but not be limited to any excavating, filling, stockpiling of earth materials, grubbing, root mat or topsoil disturbance, or any combination of them.

Hazardous Materials As defined in 40 CFR 302 Designation, Reportable Quantities, and Notification. Available on the web at http://www.epa.gov.

Phasing Clearing a parcel of land in distinct phases, with the stabilization of each phase before clearing of the next phase; including soil stockpiling.

Stabilization The completion of all soil disturbance activities at the site and the establishment of a permanent vegetative cover, or equivalent permanent stabilization measures (such as riprap, gabions, geotextiles, or bioengineering methods) that will prevent erosion.

Start of Construction The first land-disturbing activity associated with a development, including land preparation such as clearing, grading, excavation, and filling; installation of streets and walkways; erection of temporary forms; and installation of accessory buildings such as garages.

Storm Water Storm water runoff, snow melt runoff, and surface runoff associated with a storm event.

Turbidity An expression of the optical property of a sample which causes light to be scattered and absorbed rather than transmitted in a straight line through the sample. It is caused by the presence of suspended matter in a liquid.

SCHEDULE F
NPDES GENERAL CONDITIONS

SECTION A. STANDARD CONDITIONS

1. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468B.025 and is grounds for enforcement action; for permit termination, suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Water Pollution and Permit Condition Violations
Oregon Law (ORS 468.140) allows the Director to impose civil penalties up to $10,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution, if committed by a person with criminal negligence, is punishable by a fine of up to $25,000 or by imprisonment for not more than one year, or by both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, a person who knowingly discharges, places or causes to be placed any waste into the waters of the state or in a location where the waste is likely to escape into the waters of the state, is subject to a Class B felony punishable by a fine not to exceed $200,000 and up to 10 years in prison.

3. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Duty to Reapply
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application shall be submitted at least 180 days before the expiration date of this permit.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions
This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute;
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts; or
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants
The permittee shall comply with any applicable effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

7. Property Rights
The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

8. Permit References
Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance
The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary

facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity
For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities
   a. Definitions
      (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is insignificant to the quality and/or quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.
      (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

   b. Prohibition of bypass.
      (1) Bypass is prohibited unless:
         (a) Bypass was necessary to prevent loss of life, personal injury, or severe property damage;
         (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
         (c) The permittee submitted notices and requests as required under General Condition B.3.c.
      (2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

   c. Notice and request for bypass.
      (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if possible at least ten days before the date of the bypass.
      (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in General Condition D.5.

4. Upset
   a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

   b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

   c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
      (2) The permitted facility was at the time being properly operated;
      (3) The permittee submitted notice of the upset as required in General Condition D.5, hereof (24-hour notice); and
      (4) The permittee complied with any remedial measures required under General Condition A.3 hereof.

   d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Treatment of Single Operational Event
For purposes of this permit, A Single Operational Event which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission),

temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations
   a. Definitions
      (1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.
      (2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.
      (3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

   b. Prohibition of overflows. Overflows are prohibited unless:
      (1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage;
      (2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and
      (3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

   c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.

   d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

7. Public Notification of Effluent Violation or Overflow
   If effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

8. Removed Substances
   Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

1. Inspection and Entry
   The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

   a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
   d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes
   The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers
This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

4. Compliance Schedule
Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

5. Twenty-Four Hour Reporting
The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within 24 hours, unless otherwise specified in this permit, from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Emergency Response System).

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. If the permittee is establishing an affirmative defense of upset or bypass to any offense under ORS 468.922 to 468.946, and in which case if the original reporting notice was oral, delivered written notice must be made to the Department or other agency with regulatory jurisdiction within 4 (four) calendar days. The written submission shall contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected;
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
e. Public notification steps taken, pursuant to General Condition B.7.

The following shall be included as information which must be reported within 24 hours under this paragraph:
a. Any unanticipated bypass which exceeds any effluent limitation in this permit.
b. Any upset which exceeds any effluent limitation in this permit.
c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in this permit.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

6. Other Noncompliance
The permittee shall report all instances of noncompliance not reported under General Condition D.4 or D.5, at the time monitoring reports are submitted. The reports shall contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

7. Duty to Provide Information
The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

8. Signatory Requirements
All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Reports
Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed $100,000 per violation and up to 5 years in prison.

10. Changes to Indirect Dischargers - **[Applicable to Publicly Owned Treatment Works (POTW) only]**

The permittee must provide adequate notice to the Department of the following:
a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;
b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

11. Changes to Discharges of Toxic Pollutant - **[Applicable to existing manufacturing, commercial, mining, and silvicultural dischargers only]**
The permittee must notify the Department as soon as they know or have reason to believe of the following:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:
(1) One hundred micrograms per liter (100 g/l);
(2) Two hundred micrograms per liter (200 g/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 g/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
(4) The level established by the Department in accordance with 40 CFR 122.44(f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
(1) Five hundred micrograms per liter (500 g/l);
(2) One milligram per liter (1 mg/l) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
(4) The level established by the Department in accordance with 40 CFR 122.44(f).

SECTION E. DEFINITIONS

1. BOD means five-day biochemical oxygen demand.
2. TSS means total suspended solids.
3. mg/l means milligrams per liter.
4. kg means kilograms.
5. m^3/d means cubic meters per day.
6. MGD means million gallons per day.
7. Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
8. FC means fecal coliform bacteria.
9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.
10. CBOD means five day carbonaceous biochemical oxygen demand.
11. Grab sample means an individual discrete sample collected over a period of time not to exceed 15 minutes.
12. Quarter means January through March, April through June, July through September, or October through December.
13. Month means calendar month.
14. Week means a calendar week of Sunday through Saturday.
15. Total residual chlorine means combined chlorine forms plus free residual chlorine.
16. The term "bacteria" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.
17. POTW means a publicly owned treatment works.

SWM-JEC-00101.doc

APPENDIX C
Oregon Department of Transportation Permit to Occupy or Perform Operations Upon a State Highway

APPLICATION AND PERMIT TO OCCUPY OR PERFORM OPERATIONS UPON A STATE HIGHWAY
See Oregon Administrative Rule, Chapter 734, Division 55

PERMIT NUMBER: 11M36741

Temporary | **Miscellaneous**

GENERAL LOCATION

HIGHWAY NAME AND ROUTE NUMBER: **Klamath Falls – Malin Hwy. 39**

HIGHWAY NUMBER: **050**

COUNTY: **Klamath**

BETWEEN OR NEAR LANDMARKS:

HWY REFERENCE MAP: **6B-27-9**

DESIGNATED FREEWAY? ☐ YES ☒ NO

IN U.S. FOREST? ☐ YES ☒ NO

APPLICANT NAME AND ADDRESS
US Dept. of the Interior
Bureau of Reclamation
6600 Washburn Way
Klamath Falls, OR 97603
Contact: James Gale, PE - (541) 887-7580

PURPOSE OF APPLICATION

	TYPE	MIN VERT. CLEARANCE
☐ POLE LINE		
☐ BURIED CABLE		
☐ PIPE LINE		

☐ NON-COMMERCIAL SIGN — FEE AMOUNT: -0-

☒ MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW

BOND REQUIRED ☐ YES ☒ NO — OAR 734-55-035(2) — AMOUNT OF BOND:

INSURANCE REQUIRED ☒ YES ☐ NO — OAR 734-55-035(2) — COMPLETION DATE: See comments

DETAIL LOCATION OF FACILITY (For more space use back of application or additional sheets)

MILE POINT	TO MILE POINT	ENGINEER'S STATION	TO ENGINEER'S STATION	SIDE OF HWY OR ANGLE OF CROSSING	DISTANCE FROM CENTER OF PVMT	DISTANCE FROM R/W LINE	BURIED CABLE OR PIPE DEPTH/VERT.	BURIED CABLE OR PIPE SIZE AND KIND	SPAN LENGTH
3.75		394+43		R	NA		NA	NA	NA

TRAFFIC CONTROL REQUIRED?
♦ ☐ YES [OAR 734-55-0025(6)] ☒ NO

OPEN CUTTING OF PAVED OR SURFACE AREA ALLOWED?
♦ ☐ YES [OAR 734-55-100(2)] ☒ NO [OAR 734-55-100(1)]

COMMENTS – ODOT USE ONLY

This permit authorizes the US Bureau of Reclamation to store construction material on ODOT's tax lot R-3909-02500-01700-000. This permit shall remain in effect until such time that either party cancels the authorization. Upon termination of this permit, USBR shall have a period of 60 days to remove any material remaining on the site. The "removal period" may be extended an additional 60 days by authorization from the ODOT District Manager. USBR agrees to provide insurance coverage per OAR 734-055-0025 and 0035 (copies attached) until the material is removed.

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.

COMMISSIONER SIGNATURE (if required)		TITLE	DATE
X			
APPLICANT SIGNATURE X [signature]	APPLICATION DATE Feb 4, 2015	TITLE Area Manager	TELEPHONE NO. 541-880-2561
When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached; and the terms of Oregon Administrative Rules, Chapter 734, Division 55, which is by this reference made a part of this permit.		DISTRICT MANAGER OR REPRESENTATIVE X	APPROVAL DATE

OREGON ADMINISTRATIVE RULES, DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION

DIVISION 55

POLE LINES, BURIED CABLES, PIPE LINES, SIGNS, MISCELLANEOUS FACILITIES AND MISCELLANEOUS OPERATION

734-055-0025 Liability and Control

(1) Applicant shall be responsible and liable for all damage or injury to any person or property resulting from the physical location, installation, construction, maintenance, operation or use of the facility or operation for which applicant has been granted a permit. Applicant shall indemnify and hold harmless the State of Oregon, the Commission, the Department against any and all damages, claims, demands, actions, causes of action, costs and expenses of whatsoever nature which they or any of them may sustain by reasons of the acts, conduct, or operation of applicant, its agents or employees in connection with the physical location, installation, construction, maintenance, repair, operation or use of said facility or in conducting an operation.

(2) Applicant shall be responsible for relocating or adjusting any other facilities located on highway right-of-way as required to accommodate the facility or operation applied for. Construction of the facility or conducting of an operation by applicant, its agent or contractor, will be permitted only after applicant has furnished the DM evidence that satisfactory arrangements for said relocation or adjustment have been made with the owner of the affected other facility.

(3) The Department, the Engineer, or employees shall not be responsible or liable for injury or damage that may occur to the facility covered by the permit by reason of Department maintenance and construction operations or resulting from motorist or road user operations, or Department contractor or permittee operations, except as to injury or damage caused by the negligence of the Engineer or employees of the Department.

(4) Applicant shall employ any and all methods in performing the operations authorized by the permit which the Engineer may require in order to properly protect the public from injury and the highway from damage.

(5) If the highway surface or highway facilities are damaged by applicant, applicant shall replace or restore the highway or highway facilities to a condition satisfactory to the DM, whether discovered at the time of installation or at a later date. The DM at his option may have applicant replace or restore the highway or highway facilities to a condition satisfactory to him or the DM may replace or restore the highway or highway facilities by contractor or state forces and the costs incurred to be paid by applicant under the terms outlined in OAR 734-055-0020(2).

(6) The work area during any construction or maintenance performed under the permit provisions shall be protected in accordance with the current **"Manual on Uniform Traffic Control Devices for Streets and Highways"** as amended or supplemented by the Commission. Necessary signs shall be furnished by applicant unless otherwise specified in the permit. Applicant's traffic control plan shall be reviewed and approved by the DM before work begins.

(7) The stopping or parking of vehicles upon the state highway right-of-way for the servicing of such vehicles or the conducting of any business transaction or commercial activity upon state highway right-of-way is strictly prohibited.

(8) Applicant shall be solely responsible for providing correct and complete information as may be required by the permit or the DM. If the DM should determine that any fact required of applicant which is material to the assessment of the facility or operation's impact upon traffic safety, convenience and/or the legal or property rights of any person (including the State of Oregon) is false, incorrect or omitted, the DM may deny or revoke the permit and may require applicant to remove the facility or terminate the operation and restore the facility area to a condition acceptable to the DM at applicant's expense. In such cases the DM, in his judgment, may also require applicant to provide, at applicant's expense, any additional safeguards and/or facilities required to protect the safety, convenience and rights of the traveling public and persons (including the state), if such additional requirements are adequate to achieve those purposes, as a condition of the continued validity of the permit.

(9) To ensure compliance with the terms and conditions of the permit, the Department reserves the right to inspect the work during such periods as the DM deems necessary, to check compliance with the terms of the permit by applicant and to require applicant to correct all deviations from those terms and conditions. The cost of such inspection shall be paid by applicant under the terms outlined in OAR 734-055-0020(2).

(10) Any supervision and/or control exercised by the Department personnel shall in no way relieve applicant of any duty or responsibility to the general public nor shall such supervision and/or control relieve applicant from any liability for loss, damage or injury to persons or property as provided in section (1) of this rule.

(11) Facilities shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations on sharp curves, steep grades, areas of restricted sight distance or at points which interfere with the placement and proper functioning of traffic control signs, signals, lighting or other devices that affect traffic operation will not be permitted. Any revisions to the facility location shall be approved by the DM prior to construction. Applicant shall furnish the DM two sets of "as constructed" drawings that show the facility location revisions.

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the agency.]

Stat. Auth.: ORS 184 & ORS 374
Stats. Implemented: ORS 374.310
Hist.: HC 1176, f. 9-24-68; 2HD 2-1981, f. & ef. 2-25-81; HWY 6-1989, f. & cert. ef. 10-25-89

734-055-0035 Insurance and Bond

(1) When requested in writing by the DM, applicant or its contractor shall obtain and carry, for the period that the facility is being located, installed or constructed or any operation conducted, in order to assume responsibility under OAR 734-055-0025(1) including the repair and restoration of the highway facilities, and also during such future period of time when activities are performed involving the repair, relocation or removal of said facilities or operations conducted which have been authorized by the permit, a certificate of self-insurance or liability and property damage insurance policy or policies providing the coverage against any claim, demand, suit or action for property damage, personal injury, or death resulting from any activities of applicant, its officers, employees, agents or contractors in connection with the location, installation, construction, repair, removal or use of the said facilities or operations being conducted as authorized by the permit and the repair and restoration of the highway facilities, and the said certificate of self-insurance or policy or policies, in addition, shall include as named insureds the State of Oregon, the Commission, the Department, and members thereof, its officers, agents and employees, except as to claims against applicant, for personal injury to any members of the Commission, the Department, or its officers, agents, and employees, or damage to any of its or their property. The said self-insurance certificate or policy shall provide proof of coverage of a combined single unit of $500,000. The said insurance policy or policies shall be in an insurance company duly authorized and licensed to do business in the State of Oregon. A copy of the certificate of self-insurance or policy or policies, or a certificate evidencing the same, shall be submitted to the Access and Utility Permit Unit, 800 Airport Road, Salem, OR 97310 and approved by this office before any work is commenced under the permit.

(2) When requested in writing by the DM, applicant or its contractor shall furnish for the period of time necessary to construct or install a facility or conduct an operation authorized by the permit, including the repair and restoration of the highway facilities, or the conducting of any operations and also during such future periods of time when activities are performed involving the repair, relocation or removal of said facilities authorized by the permit, a bond or cash deposit in the amount specified in the Special Provisions of the permit. If a bond is furnished, it must be written by a surety company duly qualified and licensed to do business in the State of Oregon and in a form satisfactory to the Engineer. No work shall be commenced under the permit until the said bond has been submitted to and approved by, or the said cash deposit has been received by the Access and Utility Permit Unit, 800 Airport Road, Salem, OR 97310.

Stat. Auth.: ORS 184 & ORS 374
Stats. Implemented: ORS 374.310
Hist.: HC 1176, f. 9-24-68; 2HD 2-1981, f. & ef. 2-25-81; HWY 6-1989, f. & cert. ef. 10-25-89

APPENDIX D
U.S. Army Corps of Engineers Removal-Fill Permit

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
EUGENE FIELD OFFICE
211 EAST 7TH AVENUE, SUITE 105
EUGENE, OREGON 97401-2722

REPLY TO
ATTENTION OF:

May 9, 2014

Operations Division
Regulatory Branch
Corps No. NWP-2014-189

Ms. Elizabeth Nielsen
Bureau of Reclamation
6600 Washburn Way
Klamath Falls, Oregon 97603-9336

Dear Ms. Nielsen:

The U.S. Army Corps of Engineers (Corps) has evaluated the Bureau of Reclamation's (Reclamation) request for Department of the Army authorization to maintain a canal flume in the Lost River Diversion Channel, as shown on the enclosed drawings (Enclosure). The project is located near Klamath Falls, in Klamath County, Oregon (Section 30, Township 39 South, Range 10 East). The Corps has determined that Reclamation has met the requirements for a Non-Reporting Nationwide Permit from the Department of the Army.

Based upon information provided in the permit application, the Corps has determined that Reclamation's proposed activities authorized by the Corps' Non-Reporting Nationwide No. 3 (Maintenance). The discharge of dredged or fill material into waters of the United States associated with this particular activity does not require a pre-construction notification to the Corps. Your activities must be conducted in accordance with the conditions found in the Portland District NWP Regional Conditions (Enclosure 2) and the NWP General Conditions (Enclosure 3). You must also comply with the Oregon Department of Environmental Quality (DEQ) Water Quality Certification Conditions (Enclosure 4).

As the lead federal agency, Reclamation is responsible for evaluating the project for potential impacts to the Endangered Species Act, Wild and Scenic Rivers Act, and the National Historic Preservation Act. Reclamation may also need to obtain a removal/fill permit from the Oregon Department of State Lands.

If you have any questions regarding our regulatory authority, please contact Mr. Omar Ortiz at the letterhead address, by telephone at (541) 465-6768, or email omar.m.ortiz@usace.army.mil.

Sincerely,

for Shawn H. Zinszer
Chief, Regulatory Branch

Enclosures

Copy Furnished:

Oregon Department of State Lands (Harrington)
Oregon Department of Environmental Quality (Simpson)
Environmental Protection Agency (Vallette)

US Army Corps of Engineers
Portland District

2012 Nationwide (NWP) Regional Permit Conditions Portland District

The following Nationwide Permit (NWP) regional conditions are for the Portland District Regulatory Branch boundary. Regional conditions are placed on NWPs to ensure projects result in less than minimal adverse impacts to the aquatic environment and to address local resource concerns.

ALL NWPs –

1. **High Value Aquatic Resources:** Except for NWPs 3, 20, 27, 32, 38, and 48, any activity that would result in a loss of waters of the United States (U.S.) in a high value aquatic resource is not authorized by NWP. High value aquatic resources in Oregon include bogs, fens, wetlands in dunal systems along the Oregon coast, native eel grass (*Zostera marina)* beds, kelp beds, rocky substrate in tidal waters, marine reserves, marine gardens, vernal pools, alkali wetlands, and Willamette Valley wet prairie wetlands.

   NOTE: There are other types of wetlands in Oregon, such as mature wooded wetlands and tidal swamps, which are also considered as providing high value and functions to the State's aquatic ecosystems. Impacts to these waters will be evaluated on a case-by-case basis for potential authorization under a Nationwide Permit. For more information about the State's Wetlands of Conservation Concern" please visit http://www.oregon.gov/dsl/PERMITS/docs/wetland_cons_concern.pdf.

2. **Cultural Resources and Human Burials-Inadvertent Discovery Plan**: In addition to the requirements in NWP General Conditions 20 and 21 permittee shall immediately notify the Portland District Engineer if at any time during the course of the work authorized, human burials, cultural items, or historic properties, as identified by the National Historic Preservation Act and Native American Graves and Repatriation Act, are discovered. The permittee shall implement the following procedures:

   a. Immediately cease all ground disturbing activities.

   b. Project Located in Oregon: Notify the Oregon State Historic Preservation Office (503-986-0674).

   c. Project Located in Washington: Notify the Washington Department of Archaeology and Historic Preservation (360-586-3077).

   d. Notify the Portland District Engineer. Notification shall be made by fax (503-808-4375) as soon as possible following discovery but in no case later than 24 hours. The fax shall clearly specify the purpose is to report a cultural resource discovery. Follow up the fax notification by contacting the Portland District Engineer representative (by email and telephone) identified in the verification letter.

   e. Failure to stop work immediately and until such time as the Portland District Engineer has coordinated with all appropriate agencies and Native American tribes, and complied with the provisions of 33 CFR 325 (Appendix C), the National Historic Preservation Act, Native American Graves and Repatriation Act, and other pertinent regulations could result in violation of state and federal laws. Violators are subject to civil and criminal penalties.

3. **In-water Work:** In order to minimize potential impacts to water quality, aquatic species and habitat, in-water work will be limited by the following timing considerations:

   a. Permittee shall complete all in-water work within the preferred work window specified in Oregon Department of Fish and Wildlife's (ODFW) "Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources," June 2008, or most current version, available at: http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf.

b. If work cannot be completed within the preferred timing window, despite every attempt to do so, permittee shall submit a request to work out side of the preferred window to the Portland District Engineer in writing. Permittee shall not begin any in-water work outside of the preferred window until they have received written approval from the District Engineer. The District Engineer will coordinate with the appropriate agencies prior to finalizing a decision.

4. **Fish and Aquatic Life passage:** In addition to the requirements of NWP General Conditions 2 and 9, all activities authorized by a NWP shall not restrict passage of aquatic life beyond the necessary construction period. Aquatic life shall be interpreted to include amphibians, reptiles, and mammals whose natural habitat includes waters of the U.S. and which are generally present in and/or around waters of the U.S.

a. Activities such as the installation of culvert, intake structures, diversion structures, or other modifications to stream channel morphology must conform to fish passage standards developed by the ODFW and the National Marine Fisheries Service (NMFS). ODFW's standards can be found at OAR 635-412-0035; ODFW provides an overview at http://www.dfw.state.or.us/fish/passage/ and NMFS provides an overview at http://www.nwr.noaa.gov/hydropower/hydropower_northwest/hydropower_in_the_nw.html.

5. **Fish Screening:** The permittee shall ensure that all intake pipes utilize fish screening that complies with standards developed by NMFS and ODFW ("Anadromous Salmonid Passage Facility Design", July 2011). http://www.nwr.noaa.gov/hydropower/hydropower_northwest/hydropower_in_the_nw.html or the most current version.

6. **Work Area Isolation and Dewatering**: Appropriate best management practices shall be implemented to prevent erosion and sediments from entering wetlands or waterways.

a. All in-water work shall be isolated from the active channel or conducted during low seasonal stream flows.

b. Permittee shall provide for fish passage upstream and downstream of the worksite.

c. Cofferdams shall be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a cofferdam by pushing material from the streambed or sloughing material from the streambanks is not authorized.

d. Sand and gravel bag dams shall be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the active stream channel.

e. Upstream and downstream flows shall be maintained by routing flows around the construction site with a pump, bypass pipe, or diversion channel.

f. A sediment basin shall be used to settle sediments in return water prior to release back into the waterbody. Settled water shall be returned to the waterbody in such a manner as to avoid erosion of the streambank. Settlement basins shall be placed in uplands.

g. Fish and other aquatic species must be salvaged prior to dewatering. The State of Oregon requires a Scientific Take Permit be obtained to salvage fish and wildlife. Permittee is advised to contact the nearest ODFW office. For further information contact ODFW at http://www.dfw.state.or.us.

7. **Dredging:** For any NWP-authorized activities, including but not limited to NWP 3, 12, 13, 19, 27, 35, 36, 40, and 41 that involve removal of sediment from waters of the U.S. permittee shall ensure that:

a. Any necessary sediment characterization regarding size, composition, and potential contaminants is conducted prior to dredging and the material is suitable for in-water disposal per the Sediment Evaluation Framework for the Pacific Northwest, 2009 (available at: http://www.nwp.usace.army.mil/Missions/Environment/DMM.aspx) or the most current version.

b. The least impactful methodology and activity sequencing is used to ensure impacts to the aquatic system are minimized to the maximum extent practicable. Examples include using a hydraulic, closed-lipped clamshell bucket, toothed clamshell bucket, dragline and/or excavator.

c. Dredged or excavated material is placed where sediment-laden water cannot enter waterways or wetlands in an uncontrolled manner. The discharge associated with the return of sediment-laden water into a water of the U.S. from an upland disposal site requires separate authorization from the District Engineer under NWP 16.

8. **Chemically Treated Wood:** Permittee shall not allow wood products treated with biologically harmful leachable chemical components (e.g. copper, arsenic, zinc, creosote, chromium, chloride, fluoride, and pentachlorophenol) to be placed over or come in contact with waters or wetlands.

a. **New structures:** Wood may be permanently or temporarily sealed with non-toxic products such as water-based silica or soy-based water repellants or sealers to prevent or limit leaching. Acceptable alternatives to chemically treated wood include untreated wood, steel (painted, unpainted or coated with epoxy-petroleum compound or plastic), concrete and plastic lumber.

b. **Removal of existing chemically treated wood:** Permittee shall prevent chemically treated wood debris from entering any waters or wetlands. In the event chemically treated wood debris inadvertently enters a water or wetland, permittee shall remove the material as soon as practicable and dispose of the material at an approved upland facility.

1) Permittee shall make every practicable effort to remove chemically treated wood piles in their entirety using a vibratory hammer.

i) In uncontaminated sediment, piling that breaks off during extraction shall be cut off at least three (3) feet below the surface of the sediment.

ii) In contaminated sediment, piling that breaks off above the surface shall be cut off at the sediment line. If the break occurs within contaminated sediment, no further effort shall be made to remove the pile. Any resulting hole shall be filled with clean, native substrate.

9. **Mechanized Equipment:** In addition to the requirements in NWP General Condition 11, permittee shall implement the following to prevent or limit aquatic impacts from mechanized equipment:

a. In all events use the type of equipment that minimizes aquatic impacts spatially and temporally.

b. Use existing roads, paths, and drilling pads where available. Temporarily place mats or pads onto wetlands or tidal flats to provide site access. Temporary mats or pads shall be removed upon completion of the authorized work.

c. Operate equipment from the top of a streambank and conduct work outside of the active stream channel, unless specifically authorized by the District Engineer.

d. Isolate storage, staging, and fueling areas, and operate and maintain equipment in isolation from waters, wetlands, and riparian areas.

e. Maintain spill prevention and containment materials with ready access at vehicle staging areas. Permittee and staff shall be trained to effectively deploy the measures. Spill response materials include straw matting/bales, geotextiles, booms, diapers, and other absorbent materials, shovels, brooms, and containment bags. In the event of a spill of petroleum products or other chemicals with potential to affect waters or wetlands, permittee shall immediately report the spill to the Oregon Emergency Response Service (OERS) at 1-800-452-0311 and shall implement containment and cleanup measures, as directed.

10. **Deleterious Waste:** In addition to the requirements in NWP General Condition 6, permittee shall not dispose of biologically harmful or waste materials into waters or wetlands. These materials include but are not limited to the following:

    a. Petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials, chipped paint, tires, wire, steel posts, asphalt and waste concrete.

    b. Discharge water created during construction activities (such as but not limited to concrete wash out, pumping for work area isolation, vehicle wash water, drilling fluids, dredging return flows, and sediment laden runoff) shall be treated to remove debris, sediment, petroleum products, metals, and other pollutants and discharged in a controlled fashion to avoid erosion. A separate Department of the Army permit and/or a National Pollutant Discharge Elimination System (NPDES) permit from Oregon Department of Environmental Quality's (DEQ) may be required prior to discharge. Permittee is directed to contact the nearest DEQ office (http://www.deq.state.or.us/about/locations.htm) for more information about the NPDES program.

11. **Stormwater Discharge Pollution Prevention:** Activities that result in stormwater runoff passing over disturbed areas and impervious surfaces must include reduction measures, controls, treatment techniques and management practices to avoid discharge of soil, debris, toxics and other pollutants to waterways and wetlands.

    a. **Erosion Control:** During construction and until the site is stabilized, the permittee shall ensure all practicable measures are implemented and maintained to prevent erosion and runoff. For proper erosion control measure selection and implementation, the permittee is referred to DEQ "Oregon Sediment and Erosion Control Manual," April 2005, available at: http://www.deq.state.or.us/wq/stormwater/escmanual.htm. Appropriate control measures and maintenance include, but are not limited to the following:

        1) Permittee shall inspect and maintain control measures in good condition throughout construction and until permanent measures are well established. Permittee shall repair or replace any damages such as rips, broken stakes that result in loss of intended function. Permittee shall install additional control measures and reseed or replant with native and/or non-competitive species as necessary to achieve stabilization of the site. Spray-on mulches imbedded with benign sterile species may be used to temporarily stabilize the area until permanent controls are in place.

        2) Once soils or slopes have been stabilized, permittee shall completely remove and properly dispose of or re-use all components of installed control measures.

    b. **Post-Construction Stormwater Management:** If the activity will result in creation of new impervious surfaces and federally listed aquatic species or their habitat may be affected by the proposed activity permittee shall forward a copy of the post-construction stormwater management plan (SWMP) to the Portland District Engineer for our consultation under the Endangered Species Act. A copy of the SWMP must be submitted to the DEQ for their review and approval prior to initiating construction.

        1) Submittal of the post-construction stormwater management plan to DEQ at the same time the application is submitted to the Corps will streamline the project review. DEQ's Stormwater Management Plan Submission Guidelines for Removal/Fill Permit Applications which involve impervious surfaces can be found at http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf. This document provides information to determine the level of detail required for the plan based on project type, scope, location, and other factors, as well as

references to assist in designing the plan and a checklist for a complete submission.

12. **Upland Disposal:** Material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Portland District Engineer.

    a. Final disposition of materials removed from waters and wetlands to uplands may require separate approvals under Oregon State Solid Waste Rules. For more information please visit DEQ's Solid Waste program at http://www.deq.state.or.us/lq/sw/index.htm.

    b. Temporary upland stockpiles of excavated or dredged materials shall be isolated from waterways, wetlands, and floodwaters; stabilized prior to wet weather; and maintained using best management practices unless specifically authorized by the District Engineer.

13. **Restoration of Temporary Impacts:** To minimize temporal losses of waters of the U.S. construction activities within areas identified as temporary impacts shall not exceed two construction seasons or 24 months, whichever is less. For all temporary impacts, permittee shall provide the Portland District Engineer a description, photos, and any other documentation which demonstrates pre-project conditions with the Preconstruction Notification.

    b. Site restoration of temporarily disturbed areas shall include returning the area to pre-project ground surface contours. Permittee shall revegetate temporarily disturbed areas with native, noninvasive herbs, shrubs, and tree species sufficient in number, spacing, and diversity to replace affected aquatic functions.

    c. Site restoration shall be completed within 24 months of the initiation of impacts (unless otherwise required by the specific NWP). However, if the temporary impact requires only one construction season, site restoration shall be completed within that same construction season before the onset of seasonal rains.

14. **Permittee-responsible Compensatory Mitigation:** When permittee-responsible compensatory mitigation is required by the Portland District Engineer to replace lost or adversely affected aquatic functions, the permittee shall provide long-term protection for the mitigation site through real estate instruments (e.g., deed restriction or conservation easement) or other available mechanisms. The appropriate long-term protection mechanism will be determined by the Portland District Engineer based on project-specific review and must be in place prior to initiating the permitted activity.

15. **Inspection of the Project Site:** The permittee shall allow representatives of the Portland District Engineer and/or DEQ to inspect the authorized activity to confirm compliance with nationwide permit terms and conditions. A request for access to the site will normally be made sufficiently in advance to allow a property owner or representative to be on site with the agency representative making the inspection.

16. **Sale of Property/Transfer of Permit:** Permittee shall obtain the signature(s) of the new owner(s) and transfer this permit in the event the permittee sells the property associated with this permit. To validate the transfer of this permit authorization, a copy of this permit with the new owner(s) signature shall be sent to the Portland District Engineer at the letterhead address on the verification letter.

NATIONWIDE SPECIFIC CONDITIONS:

NWP 3 – Maintenance

1. Permittee shall implement measures necessary to prevent streambed gradient alterations and streambank erosion.

US Army Corps of Engineers
Portland District

Nationwide (NWP) Permit Conditions

33 CFR Part 330; Issuance of Nationwide Permits – March 19, 2012

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation
(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species.
(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-

construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.
(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to

jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement

of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

State of Oregon
Department of Environmental Quality

Oregon Department of Environmental Quality (DEQ) 401 Water Quality (WQC) General Conditions

In addition to all USACE permit conditions and regional permit conditions, the following 401 Water Quality Certification conditions apply to all Nationwide Permit (NWP) categories certified or partially certified Additional 401 Water Quality Certification category specific conditions follow, which must also be complied with as applicable.

1) Turbidity: All Permittees must implement all reasonably availably technological controls and management practices to meet the standard rule of no more than a 10 percent increase in project caused turbidity above background levels. However, if all reasonably available controls and practices are implemented by a permittee, turbidity exceedances of more than 10 percent above background are allowed for limited times depending on the severity of the increase, as specified in this condition.

a. **Monitoring and Compliance Requirements:** Permittee must monitor and record in a daily log stream turbidity levels during work below ordinary high water, compare turbidity caused by authorization actions to background levels, and adapt activities to minimize project-caused turbidity. Required monitoring steps include:

i. Identify two monitoring locations:

A. Background location: A relatively undisturbed location, approximately 100 feet upcurrent from the disturbing activity; and,

B. Compliance location: A location downcurrent from the disturbing activity, at approximately mid-depth, within any visible plume, at the distance that corresponds to the size of the waterbody where work is taking place as listed on the table below:

WETTED STREAM WIDTH	COMPLIANCE DISTANCE
Up to 30 feet	50 feet
>30 feet to 100 feet	100 feet
>100 feet to 200 feet	200 feet
>200 feet	300 feet
LAKE, POND RESERVOIR	Lesser of 100 feet or Maximum surface dimension

ii. Determine Compliance:

A. At the start of work, measure turbidity at both locations and record in the daily log date, time, location, tidal stage (if waterbody is tidally influenced), and turbidity levels at each point and comparison. Permittee must also record in the daily log all controls and practices implemented at the start of the work.

B. During work, measure turbidity at both locations at the frequency directed in the tables below and record in the daily log date, time, location, tidal stage (if waterbody is tidally influenced), and turbidity measurements.

C. Turbidity measurements must be representative of stream turbidity when the activity is being conducted. Measurements cannot be taken during a cessation of activity.

D. If project caused turbidity is elevated above background, Permittee must implement additional controls and practices and monitor both points again as described below for either monitoring method. A description of the additional controls and the date, time, and location where they are implemented must be recorded in the daily log:

MONITORING WITH A TURBIDIMETER*		
ALLOWABLE EXCEEDANCE TURBIDITY LEVEL	ACTION REQUIRED AT 1ST MONITORING INERNAL	ACTION REQUIRED AT 2ND MONITORING INTERNAL
0 to 5 NTU above background	Continue to monitor every 4 hours	Continue to monitor every 4 hours
5 to 29 NTU above background	Modify controls & continue to Monitor every 4 hours	Stop work after 8 hours at 5-29 NTU above background
30 to 49 NTU above Background	Modify controls & continue to Monitor every 2 hours	Stop work after 2 confirmed hours At 30-49 NTU above background
50 NTU or more above Background	Stop work	Stop work

VISUAL MONITORING*		
No plume observed	Continue to monitor every 4 hours	Continue to monitor every 4 hours
Plume observed within compliance distance	Modify controls & continue to Monitor every 4 hours	Stop work after 8 hours with an observed plume within compliance distance
Plume observed beyond compliance distance	Stop work	Stop work
**Note: Monitoring visually may require stopping work as soon as the visual plume exceeds the waterbody specific compliance distance. However, using a turbidimeter can allow work to continue based on more precise determination of the severity of the turbidity increase over time.*		

iii. Work must **stop immediately for the remainder of the 24-hour period** if:

A. A visible turbidity plume extends beyond the compliance distance; or,

B. Turbidity is measured at the compliance point at:

I. 50 NTU or more over background at any time;
II. 30 NTU over background for 2 hours; or
III. 5-29 NTU over background for 8 hours.

iv. Work may continue if no visible plume is observed, turbidity measured at the compliance point is no more than 0-5 NTU above background, or additional control measures can be applied to keep the visible plume within the compliance distance, measured turbidity ranges, and durations listed in the tables above.

b. Turbidity Control Measures - The permittee must implement all reasonably available controls and practices to minimize turbidity during in-water work, which may include, but are not limited to:

i. Schedule, sequence or phase work activities so as to minimize in-water disturbance and duration of activities below ordinary high water;

ii. Install and maintain containment measures to prevent erosion of upland material to waterways and wetlands, isolate work areas from flowing waters, and prevent suspension of in-stream sediments to the maximum extent practicable;

iii. Apply control measures for all in-stream digging, including but not limited to: employing an experienced equipment operator; not dumping partial or full buckets of material back into the wetted stream; adjusting the volume, speed, or both of loads or hydraulic suction equipment; or by using a closed-lipped environmental bucket;

iv. Limit the number and location of stream crossing events. If equipment must cross a waterway, establish temporary crossing sites at an area with stable banks, where the least vegetation disturbance will occur, shortest distance across water, oriented perpendicular to the stream, and supplement with clean gravel or other temporary methods as appropriate;

v. Place excavated, disturbed, and stockpiled material so that it is isolated from the edge of waterways and wetlands and not allowed to enter waters of the state uncontrolled; and

vi. Apply other effective turbidity control techniques, such as those in Appendix D and throughout DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005, http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxd.pdf.

c. Reporting: Copies of daily logs for turbidity monitoring must be made available to DEQ and other regulatory agencies upon request. The log must include:

i. Background NTUs or observation, compliance point NTUs or observation, comparison of the points in NTUs or narrative, and location, time, date, and tidal stage (if applicable) for each reading or observation.

ii. A narrative discussing all exceedances, controls applied and their effectiveness, subsequent monitoring, work stoppages, and any other actions taken.

2) Stormwater Discharge Pollution Prevention: All projects that involve land disturbance or impervious surfaces must implement prevention or control measures to avoid discharge of pollutants in stormwater runoff to waters of the state.

a. For land disturbances during construction, the permittee must obtain and implement permits where required (see: http://www.deq.state.or.us/wq/stormwater/construction.htm) and follow DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005 (or most current version), http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxd.pdf.

b. Following construction, prevention or treatment of on-going stormwater runoff from impervious surfaces must be provided (including but not limited to NWP categories 3, 12, 14, 15, 28, 29, 31, 32, 36, 39, 42, 43, and 51). DEQ encourages prevention of discharge by managing stormwater on site through Low Impact Development principles and other prevention techniques. Assistance in developing an approvable stormwater management plan is available in DEQ's *Stormwater Management Plan Submission Guidelines for Removal/Fill Permit Applications Which Involve Impervious Surfaces*, January 2012 (or most current version), available at: http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf.

c. In lieu of a complete stormwater management plan, the applicant may submit:

i. Documentation of acceptance of the stormwater into a DEQ permitted National Pollutant Discharge Elimination Strategy (NPDES) Phase I or II Municipal Separate Storm Sewer System (MS4); or

ii. Reference to implementation of a programmatic process developed to achieve these expectations, and acknowledged by DEQ as adequately addressing pollution control or reduction through basin-wide post-construction stormwater management practices.

3) Vegetation Protection and Restoration: Riparian, wetland, and in-water vegetation in the authorized project area must be protected from unnecessary disturbance to the maximum extent practicable through methods including:

a. Minimization of project and impact footprint;

b. Designation of staging areas and access points in open, upland areas;

c. Fencing or other barriers demarking construction areas;

d. Use of alternative equipment (e.g., spider hoe or crane); and,

e. Replacement - If authorized work results in unavoidable vegetative disturbance that has not been accounted for in planned mitigation actions; riparian, wetland and in-water vegetation must be successfully reestablished to a degree that it functions (for water quality purposes) at least as well as it did before the disturbance. The vegetation must be reestablished by the completion of authorized work.

4) Land Use Compatibility Statement: In accordance with OAR 340-048-0020(2) (i), each permittee must submit findings prepared by the local land use jurisdiction that demonstrates the activity's compliance with the local comprehensive plan. Such findings can be submitted using Block 7 of the USACE & DSL Joint Permit Application, signed by the appropriate local official and indicating:

a. "This project is consistent with the comprehensive plan and land use regulations;" or,

b. "This project will be consistent with the comprehensive plan and land use regulations when the following local approvals are obtained," accompanied by the obtained local approvals.

c. Rarely, such as for federal projects on federal land, "this project is not regulated by the comprehensive plan" will be acceptable.

5) A copy of all applicable 401 WQC conditions must be kept on the job site and readily available for reference by the permittee, their contractors, DEQ, USACE, NMFS, USFWS, DSL, ODFW, and other appropriate state and local government inspectors.

6) DEQ may modify or revoke these 401 WQC conditions, in accordance with OAR 340-048-0050, in the event that project activities are having a significant adverse impact on state water quality or beneficial uses.

APPENDIX E
Oregon Water Resources Department
Final Order Limited License

Oregon Water Resources Department

Date Received:	2/24/2016		
Date of Letter:	2/17/2016		
Control Number:			
File Code:	WTR-4.10		
Folder I.D.:			
Project:	12		
Code	Initial	Date	Action
300 SL		2/24	
300 MD			
300 PS			
300 JG			
100 TR			
100 TOB			

Final Order
Limited License Application LL-1624

Appeal Rights

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date, the petition was filed, the petition shall be deemed denied.

Requested Water Use

On January 11, 2016, the Water Resources Department received completed application **LL-1624** from U.S. Bureau of Reclamation for the use of 32.22 acre-feet of return flows from Upper Klamath Lake, located in the SE ¼, SE ¼, Section 25, and the NE ¼, NE ¼, Section 36, both in Township 39 South, Range 9 East W.M. and the SW ¼, SW ¼, Section 30, Township 39 South, Range 10 East, W.M., for dust control and construction, for the period April 1, 2016 through June 30, 2018.

Authorities

The Department may approve a limited license pursuant to its authority under ORS 537.143, 537.144 and OAR 690-340-0030.

ORS 537.143(2) authorizes the Director to revoke the right to use water under a limited license if it causes injury to any water right or a minimum perennial streamflow.

A license will not be issued for more than five consecutive years for the same use, as directed by ORS 537.143(8).

Findings of Fact

1. The forms, fees, and map have been submitted, as required by OAR 690-340-0030(1).

2. The Department provided public notice of the application, on January 26, 2016, as required by OAR 690-340-0030(2).

3. This license request is limited to an area within a single drainage basin as required by OAR 690-340-0030(3).

4. The Department has determined that there is water available for the requested use.

5. The proposed source is water stored under the Bureau of Reclamation Klamath Lake Project.

6. The Department can allow issue a license for only one year (ORS 537.143).

7. Because this use is from surface water and has the potential to impact fish, the Department finds that fish screening is required to protect the public interest.

8. Because the use requested is longer than 120 days and because the use is in an area that has sensitive, threatened or endangered fish species, the use is subject to the Department's rules under OAR 690-33. These rules aid the Department in determining whether a proposed use will impair or be detrimental to the public interest with regard to sensitive, threatened, or endangered fish species. No comments were received that would cause the Department to require additional conditions or limitations.

9. The Department has not received comments related to the possible issuance of the license.

10. Pursuant to OAR 690-340-0030(4)(5), conditions have been added with regard to notice and water-use measurement.

11. Land-use compatibility is not required as the applicant has indicated that the proposed diversion, transportation and use of water is on federal lands.

Conclusions of Law

The proposed water use will not impair or be detrimental to the public interest pursuant to OAR 690-340-0030(2), as limited in the order below.

Order

Therefore, pursuant to ORS 537.143, ORS 537.144, and OAR 690-340-0030, application LL-1624 is approved as conditioned below.

1. The period and volume of use for LL-1624 shall be from April 1, 2016, through March 31, 2017, for the use of up to 16.11 acre-feet of return flows from Upper Klamath Lake, for the purpose of dust control and construction.

2. The licensee shall give notice to the Watermaster in the district where use is to occur not less than 15 days or more than 60 days in advance of using the water under the license. The notice shall include the location of the diversion, the quantity of water to be diverted and the intended use and place of use.

3. The licensee shall maintain a record of all water use, including the total number of hours of pumping, the total quantity pumped, and the categories of beneficial use to which the water is applied. During the period of the license, the record of use shall be submitted to the Department annually, and shall be submitted to the Watermaster upon request.

4. The Director may revoke the right to use water for any reason described in ORS 537.143(2), and OAR 690-340-0030(6). Such revocation may be prompted by field regulatory activities or by any other information.

5. Use of water under a limited license shall not have priority over any water right exercised according to a permit or certificate, and shall be subordinate to all other authorized uses that rely upon the same source.

6. The licensee shall install, use, and maintain fish screening and by-pass devices as required by the Oregon Department of Fish and Wildlife to prevent fish from entering the proposed diversion. See copy of enclosed fish screening criteria for information.

7. A copy of this license shall be kept at the place of use, and be available for inspection by the Watermaster or other state authority.

NOTE: This water-use authorization is temporary. Applicants are advised that issuance of this final order does not guarantee that any permit for the authorized use will be issued in the future; any investments should be made with that in mind.

Issued February 17, 2016

E. Timothy Wallin, Water Rights Program Manager
for Director, Oregon Water Resources Department

Enclosures - limited license, fish screen criteria

cc: District 17 Watermaster
Mike Harrington, ODFW
Eric Nigg, DEQ
Hydrographics
File

If you need further assistance, please contact the Water Rights Section at the address, phone number, or fax number below. When contacting the Department, be sure to reference your limited license number for fastest service.

Remember, this limited license does not provide a secure source of water. Water use can be revoked at any time. Such revocation may be prompted by field regulatory activities or many other reasons.

Water Rights Section
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem OR 97301-1271
Phone: (503) 986-0817 Fax: (503) 986-0901

FISH SCREENING CRITERIA FOR WATER DIVERSIONS

This summary describes ODFW fish screening criteria for all fish species.

Screen material openings for ditch (gravity) and pump screens must provide a minimum of 27% open area:

Perforated plate: Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).
Mesh/Woven wire screen: Square openings shall not exceed 3/32 or 0.0938 inches (2.38 mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.
Profile bar screen/Wedge wire: Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

Screen area must be large enough to prevent fish impact. Wetted screen area depends on the water flow rate and the approach velocity.

Approach velocity: The water velocity perpendicular to and approximately three inches in front of the screen face.
Sweeping velocity: The water velocity parallel to the screen face.
Bypass system: Any pipe, flume, open channel or other means of conveyance that transports fish back to the body of water from which the fish were diverted.
Active pump screen: Self cleaning screen that has a proven cleaning system.
Passive pump screen: Screen that has no cleaning system other than periodic manual cleaning.

Screen approach velocity for ditch and active pump screens shall not exceed 0.4 fps (feet per second) or 0.12 mps (meters per second). The wetted screen area in square feet is calculated by dividing the maximum water flow rate in cubic feet per second (1 cfs = 449 gpm) by 0.4 fps.

Screen sweeping velocity for ditch screens shall exceed the approach velocity. Screens greater than 4 feet in length must be angled at 45 degrees or less relative to flow. An adequate bypass system must be provided for ditch screens to safely and rapidly collect and transport fish back to the stream.

Screen approach velocity for passive pump screens shall not exceed 0.2 fps or 0.06 mps. The wetted screen area in square feet is calculated by dividing the maximum water flow rate by 0.2 fps. Pump rate should be less than 1 cfs.

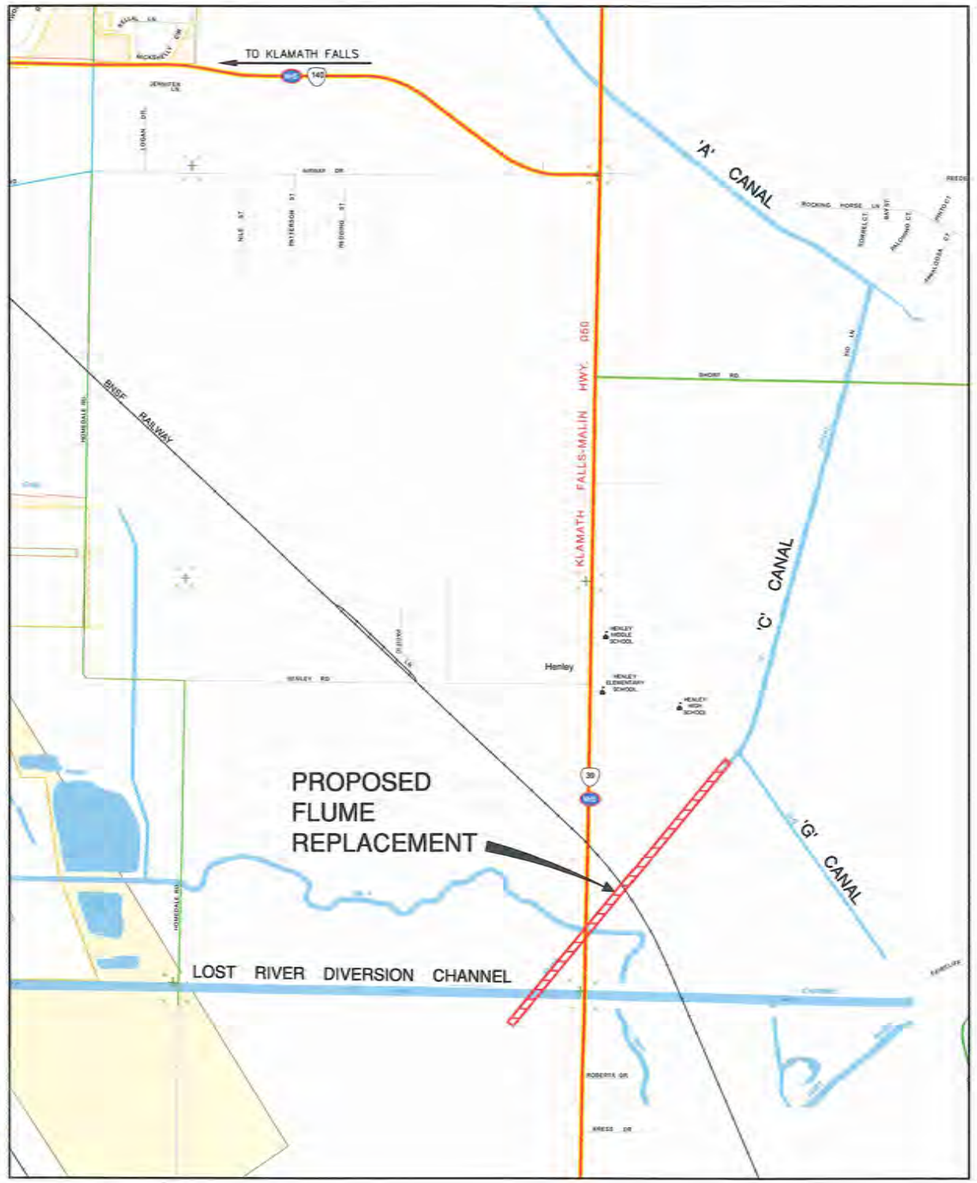
For further information please contact:

Statewide Fish Screening Coordinator
Oregon Dept. Fish and Wildlife
3406 Cherry Avenue NE
Salem, OR 97303
(503) 947-6229

C-FLUME REPLACEMENT
FOR
KLAMATH IRRIGATION DISTRICT
KLAMATH FALLS, OREGON

☆ PROJECT SITE

VICINITY MAP
N.T.S.



N

PROJECT SITE MAP
(NTS)

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OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

REGISTERED PROFESSIONAL ENGINEER
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OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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A6 PLAN AND PROFILE – STA. 17+50 TO STA. 22+00
A6A RAILROAD CROSSING SECTION
A7 PLAN AND PROFILE – STA. 13+00 TO STA. 17+50
A8 PLAN AND PROFILE – STA. 8+50 TO STA. 13+00
A9 PLAN AND PROFILE – STA. 4+00 TO STA. 8+50
A10 PLAN AND PROFILE – STA. 0+50 TO STA. 4+00
A11 PLAN AND PROFILE – STA. -3+80 TO STA. 0+50
A11A CANAL SECTION AND TYPICAL SECTIONS
A12 INLET TRANSITION STRUCTURE
A13 INLET TRANSITION STRUCTURE SECTIONS
A14 TRASH RACK AND SLIDE GATE DETAILS
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A16 OUTLET TRANSITION STRUCTURE
A17 OUTLET TRANSITION STRUCTURE SECTIONS
A18 EXIT GATE DETAILS I
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A21 MISCELLANEOUS DETAILS I
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A23 STRUCTURAL DETAILS I
A24 STRUCTURAL DETAILS II
A25 RETAINING WALL DETAILS
A26 CONCRETE SLAB DETAILS
A27 ACCESS PORT WITH PRESSURE RELIEF DETAILS
A28 TURNOUT DETAILS
A29 TURNOUT 'E' DETAILS
A30 PIPING DETAILS
A31 TRENCH RESTORATION DETAILS

ELEVATED PIPE
EP1 PIER TYPE I AND II
EP2 PIER TYPE III
EP3 FOUNDATION NOTES AND BAR LIST
EP4 SLIDING BEARING SUPPORT
EP5 FIXED BEARING SUPPORT
EP6 CATWALK I
EP7 CATWALK II
EP8 CATWALK III
EP9 WASTEWAY I
EP10 WASTEWAY II

TRAFFIC CONTROL
H1 HIGHWAY 39 ONE-WAY TRAFFIC CONTROL PLAN
H2 OVERALL DETOUR PLAN
H3 LIGHT DUTY LOCAL TRAFFIC

DEMOLITION PLANS
D1 STA. 31+00 TO STA. 44+50
D1A LOST RIVER DIVERSION CHANNEL
D2 STA. 17+00 TO STA. 31+00
D3 STA. 3+00 TO STA. 17+00
D4 STA. 0+00 TO STA. 3+00

DEMOLITION DETAILS
D5 CATEGORY I REPAIR DEMOLITION
D6 FLUME AND BENT FRAMES
D7 FLUME-BENT-FOUNDATION
D8 LOST RIVER DIVERSION CHANNEL CROSSING
D9 TURNOUT AND LINED CANAL

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

COVER SHEET

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LA GRANDE, OR ▲ WALLA WALLA, WA

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls ▲ Medford
2950 Shasta Way ▲ Klamath Falls, OR 97603
(541) 884-4666 ▲ FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: COVER.DWG
DESIGNED BY:
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 1 OF 79

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PLAN
SCALE: 1"=200'

200 0 200 400 600
SCALE IN FEET

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GENERAL NOTES:

1. MAINTAIN FLUME AND TURNOUTS OPERATIONAL THROUGH 2017 IRRIGATION SEASON.
2. CONTRACTOR SHALL ENSURE THAT IRRIGATION SERVICE IS NOT INTERRUPTED DURING CONSTRUCTION.
3. ALL EXCAVATION MUST BE KEPT A MINIMUM OF 5 FEET FROM EXISTING FLUME FOUNDATION UNTIL FLUME IS SCHEDULED FOR DEMOLITION.
4. CONTRACTOR SHALL WASTE ANY EXCESS MATERIAL FROM EXCAVATION ON TOP OF SIPHON PIPE, AS APPROVED BY THE ENGINEER.
5. CONTRACTOR SHALL REMOVE AND REPLACE FENCING TO EQUAL OR BETTER CONDITION, AS REQUIRED. CONTRACTOR SHALL ALSO PROVIDE TEMPORARY FENCING AS REQUIRED FOR CONTROL OF LIVESTOCK AND PETS.

DESIGN CRITERIA:

1. DESIGN FLOW	350 CFS
2. WATER SURFACE ELEVATION AT STA. 1+00	4107.79
3. WATER SURFACE ELEVATION AT STA. 44+25	4104.40

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

INDEX AND GENERAL NOTES

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DATE:	March 25, 2016
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FILE:	SHEETINDEX.DWG
DESIGNED BY:	HMM
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CHECKED BY:	BMM

SHEET 2 OF 79

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PLAN LEGEND

WATER

	EXISTING	PROPOSED
IRRIGATION		6"W
VALVE		
FIRE HYDRANT		
WATER METER		
AIR RELEASE VALVE		

STORM DRAIN

	EXISTING	PROPOSED
STORM DRAIN	SD SD	6"SD
CULVERT		
ACCESS PORT		
CATCH BASIN		
CLEANOUT		

MISCELLANEOUS UTILITIES

	EXISTING	PROPOSED
BURIED POWER	P P P	P P P
OVERHEAD POWER	OHP OHP	OHP OHP
BURIED TELEPHONE	T T T	T T T
GAS SERVICE	G G	G G
FIBER OPTIC CABLE	FO	FO
UTILITY POLE		
GUY WIRE		
POWER VAULT	P	P
TELEPHONE RISER		
TELEPHONE VAULT	T	T

SITE SURVEY

	EXISTING	PROPOSED
INDEX CONTOUR	750	750
INTERMEDIATE CONTOUR	749	749
PROPERTY LINE/ RIGHT-OF-WAY		
CENTERLINE		
EASEMENT		
SECTION LINE		
BENCH MARK		
MONUMENT		
CONTROL POINT		
TEST PIT		

GENERAL

	EXISTING	PROPOSED
FENCE LINE/GATE	x x x	x x x
CREEK/DITCH CENTERLINE		
MAILBOX		
SIGN		
TREE		
BUILDING		

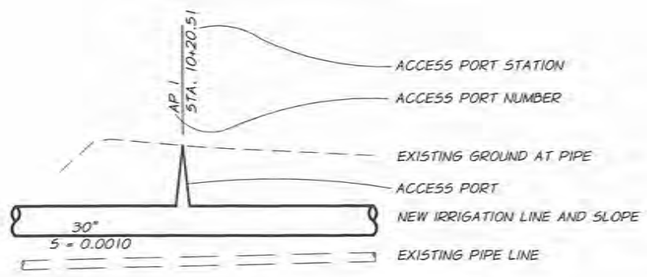
STREET AND CURB

	EXISTING	PROPOSED
PAVED STREET	1ST ST.	1ST ST.
GRAVEL DRIVEWAY/STREET		

DRAFTING

- SECTION DESIGNATION (A / 2) — SHEET WHERE SECTION WAS TAKEN OR WHERE SECTION IS SHOWN.
- WATER SURFACE ELEVATION
- 3 3 — SHEET CONTINUATION REFERENCE
- 1 — DRAWING REVISION NUMBER
- N — NORTH ARROW

PROFILE LEGEND



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FOR
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LEGEND AND DESIGN CRITERIA

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REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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SHEET 3 OF 79

G2

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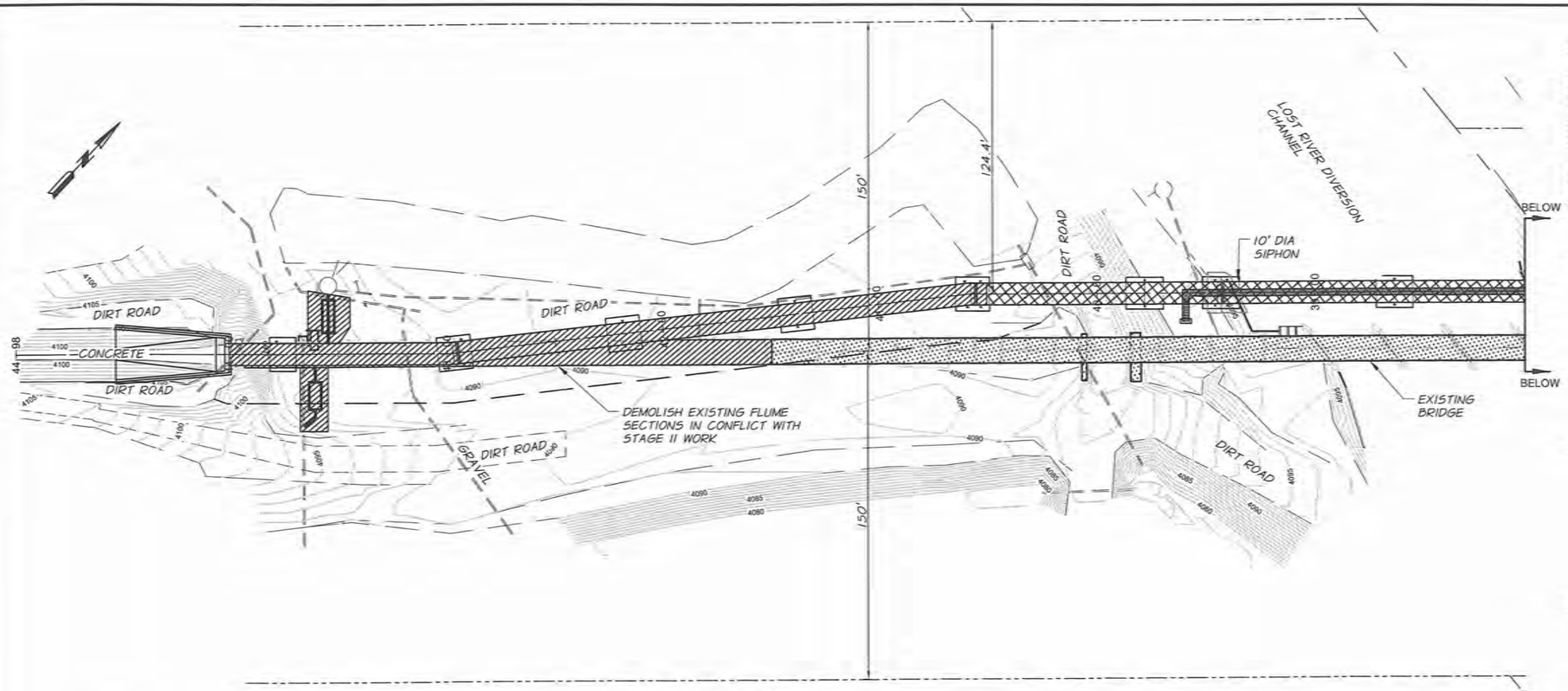

PLAN

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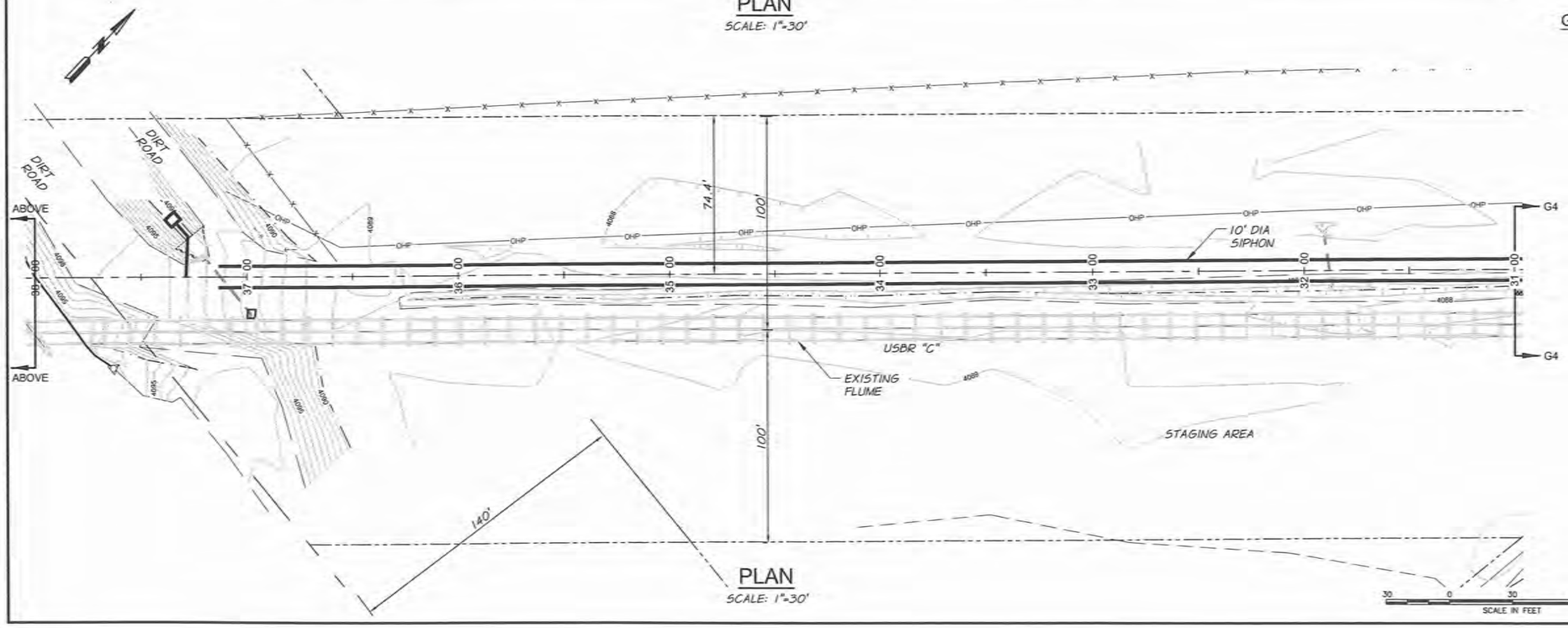

PLAN

SCALE: 1"=30'

LEGEND

STAGE I - 6/16 - 6/17

STAGE II - 10/17 - 3/18

STAGE III - 3/18 - 6/18

STAGE I NOTES:

1. STAGE I WORK TO OCCUR FROM JUNE 2016 TO JUNE 2017.
2. CONSTRUCT PIER AND ABUTMENTS PRIOR TO MARCH 2017. INTERIOR PIER CONSTRUCTION TO BE COORDINATED WITH CHANNEL SHUTDOWN BY BOR IN SEPTEMBER/OCTOBER 2016.
3. WORK INCLUDES: LOST RIVER DIVERSION CHANNEL CROSSING, UNDERGROUND PIPE CROSSING, TURNOUTS (PART).

STAGE II NOTES:

1. STAGE II WORK TO OCCUR FROM OCTOBER 2017 TO MARCH 2018.
2. WORK INCLUDES: UNDERGROUND PIPE CONSTRUCTION, ELEVATED PIPE CONSTRUCTION, PIPE/CANAL TRANSITION AND TIE-IN, TURNOUT TIE-IN, WASTEWAY CONSTRUCTION TO LOST RIVER DIVERSION CHANNEL.

STAGE III NOTES:

1. STAGE III WORK TO OCCUR MARCH 2018 TO JUNE 2018.
2. WORK INCLUDES: FLUME DEMOLITION, ACCESS ROAD CONSTRUCTION AND FINAL CLEAN-UP.

GENERAL STAGING NOTES:

1. STAGING PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES.
2. CONTRACTOR SHALL DEVELOP THEIR OWN STAGING PLAN FOR THE WORK SEQUENCING AND SUBMIT IT FOR REVIEW MIN. OF ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
3. CONTRACTOR RESPONSIBLE FOR NOTIFYING LAND OWNERS OF ROAD CLOSURES OR POTENTIAL DELAYS.
4. SEE DEMOLITION AND CONSTRUCTION PLANS FOR ADDITIONAL INFORMATION.
5. PROVIDE TRAFFIC CONTROL AS APPROPRIATE FOR STAGE OF WORK. SEE TRAFFIC CONTROL DRAWINGS. COORDINATE WITH ODOT AND ENGINEER.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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FOR
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STAGING PLAN
STA. 31+00 TO STA. 44+50

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(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: STAGING PLAN.DWG
DESIGNED BY: SJK
DRAWN BY: SJM
CHECKED BY: JDM

SHEET 4 OF 79

G3

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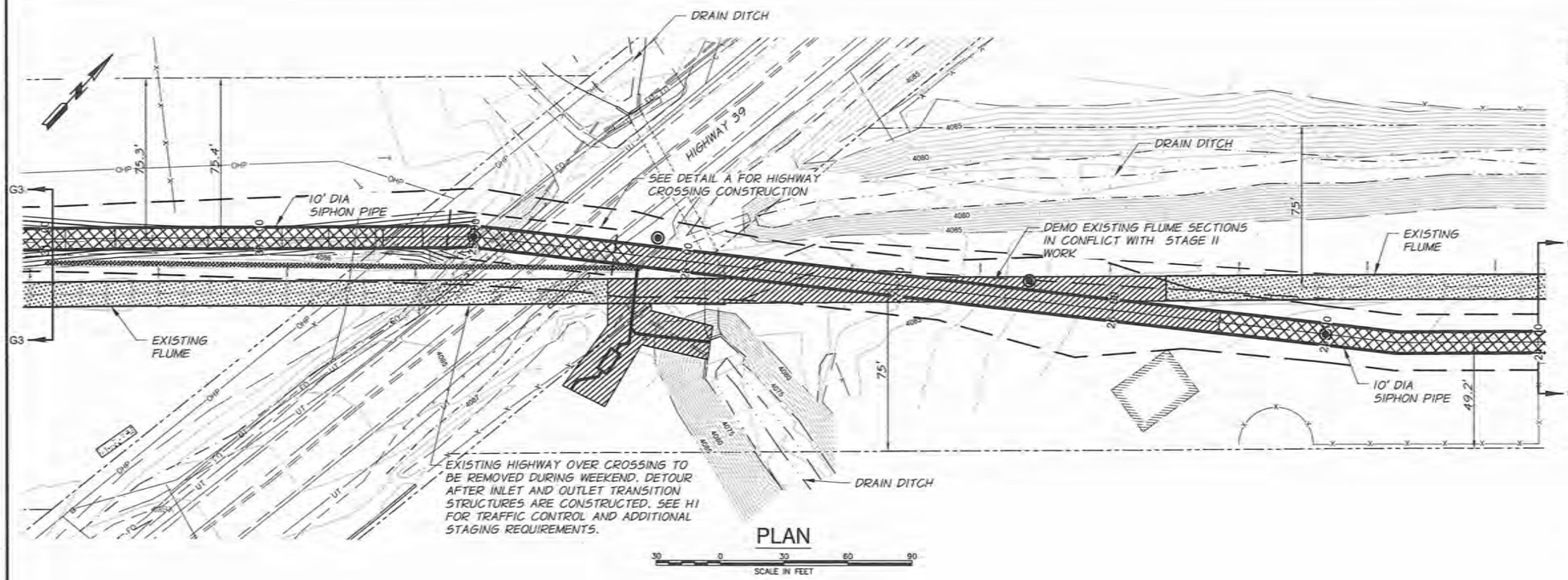


PLAN

SCALE IN FEET

STAGE I - 6/2016 - 6/2017

STAGE II - 10/2017 - 3/2018

STAGE III - 3/2018 - 6/2018

STAGE I NOTES:

1. STAGE I WORK TO OCCUR FROM MARCH 2016 TO SEPTEMBER 2016.
2. CONSTRUCT PIER AND ABUTMENTS PRIOR TO MARCH 2016. INTERIOR PIER CONSTRUCTION TO BE COORDINATED WITH CHANNEL SHUTDOWN BY BOR IN SEPTEMBER/OCTOBER 2016.
3. WORK INCLUDES: LOST RIVER DIVERSION CHANNEL CROSSING, UNDERGROUND PIPE CROSSING, TURNOUTS (PART).

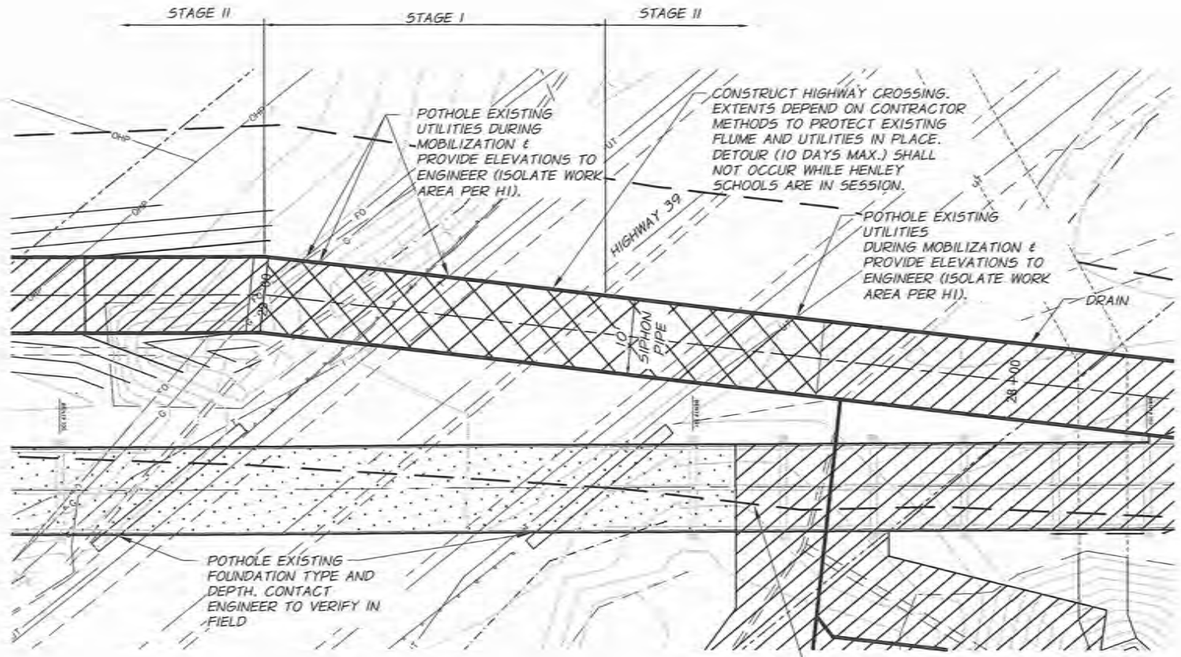
NOTE: SEE GENERAL REQUIREMENTS FOR UTILITY RELOCATION COORDINATION CONTACT INFORMATION.

STAGE II NOTES:

1. STAGE II WORK TO OCCUR FROM SEPTEMBER 16 TO MARCH 2017.
2. WORK INCLUDES: UNDERGROUND PIPE CONSTRUCTION, ELEVATED PIPE CONSTRUCTION, PIPE/CANAL TRANSITION & TIE-IN, TURNOUT TIE-IN, WASTEWAY CONSTRUCTION TO LOST RIVER DIVERSION CHANNEL.

STAGE III NOTES:

1. STAGE III WORK TO OCCUR MARCH 2017 TO JUNE 2017.
2. WORK INCLUDES: FLUME DEMOLITION, ACCESS ROAD CONSTRUCTION AND FINAL CLEAN-UP.



DETAIL A - HIGHWAY 39 STAGING

SCALE IN FEET

GENERAL STAGING NOTES:

1. STAGING PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES.
2. CONTRACTOR SHALL DEVELOP THEIR OWN STAGING PLAN FOR THE WORK SEQUENCING AND SUBMIT IT FOR REVIEW MIN. OF WEEKS PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
3. CONTRACTOR RESPONSIBLE FOR NOTIFYING LAND OWNERS OF ROAD CLOSURES OR POTENTIAL DELAYS.
4. SEE DEMOLITION AND CONSTRUCTION PLANS FOR ADDITIONAL INFORMATION.
5. PROVIDE TRAFFIC CONTROL AS APPROPRIATE FOR STAGE OF WORK. SEE TRAFFIC CONTROL DRAWINGS. COORDINATE WITH ODOT & ENGINEER.

HIGHWAY 39 DETOUR CONSTRAINTS:

1. STAGE I: SUMMER 2016 MAXIMUM 10 DAY DETOUR. .
2. STAGE II: FALL 2016 MAXIMUM 3 DAY DETOUR OVER WEEKEND.

SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

STAGING PLAN
STA. 24+00 TO STA. 31+00

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DATE: March 25, 2016
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DESIGNED BY: SJK
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SHEET 5 OF 79

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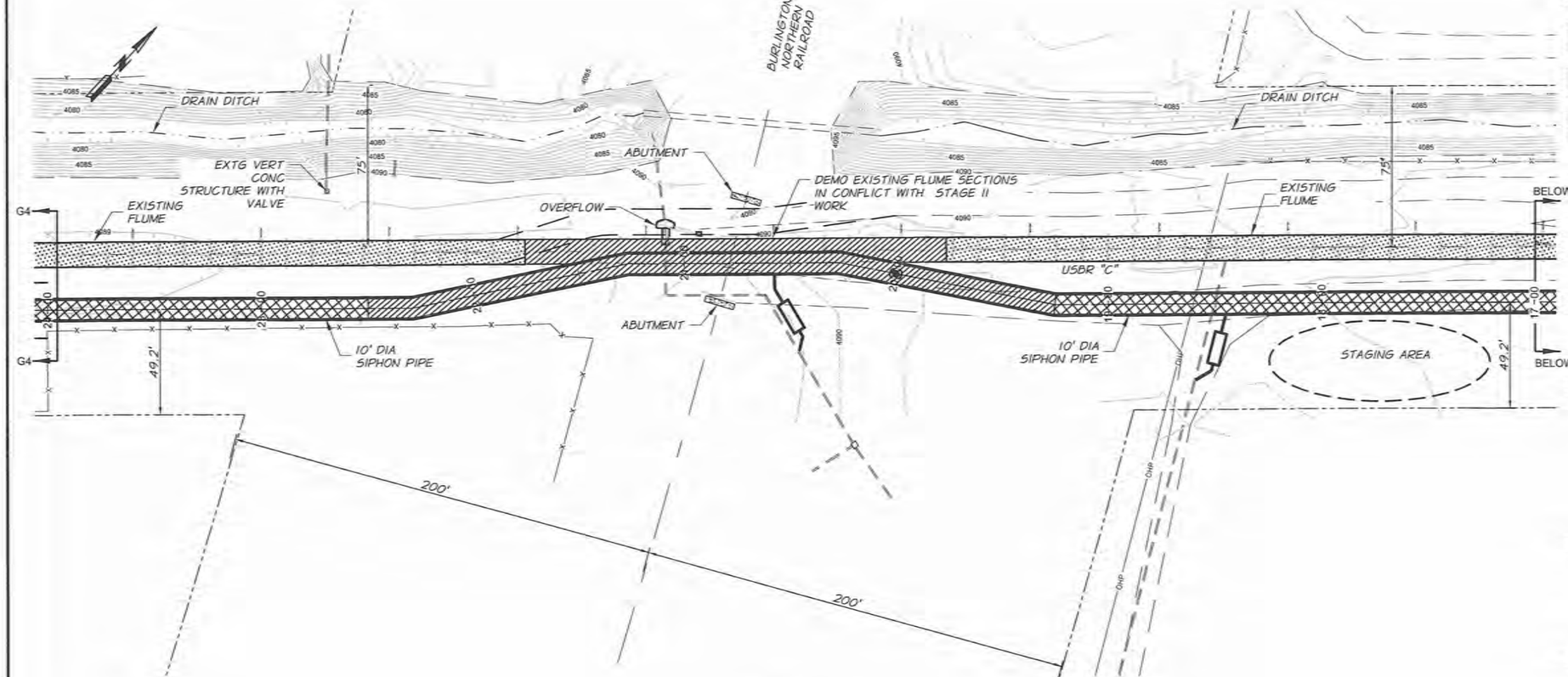

PLAN

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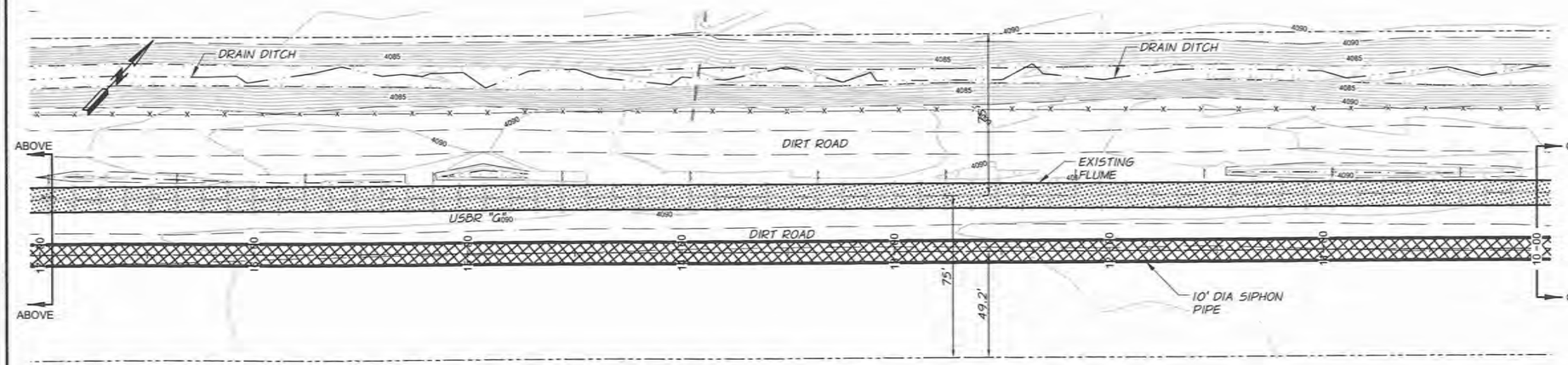

PLAN

SCALE: 1"=30'

LEGEND

- STAGE I - 6/2016 - 6/2017
- STAGE II - 10/2017 - 3/2018
- STAGE III - 3/2018 - 6/2018

STAGE I NOTES:

1. STAGE I WORK TO OCCUR FROM JUNE 2016 TO JUNE 2017.
2. CONSTRUCT PIER AND ABUTMENTS PRIOR TO MARCH 2017. INTERIOR PIER CONSTRUCTION TO BE COORDINATED WITH CHANNEL SHUTDOWN BY BOR IN SEPTEMBER/OCTOBER 2016.
3. WORK INCLUDES: LOST RIVER DIVERSION CHANNEL CROSSING, UNDERGROUND PIPE CROSSING, TURNOUTS (PART).

STAGE II NOTES:

1. STAGE II WORK TO OCCUR FROM OCTOBER 2017 TO MARCH 2018.
2. WORK INCLUDES: UNDERGROUND PIPE CONSTRUCTION, ELEVATED PIPE CONSTRUCTION, PIPE/CANAL TRANSITION AND TIE-IN, TURNOUT TIE-IN, WASTEWAY CONSTRUCTION TO LOST RIVER DIVERSION CHANNEL.

STAGE III NOTES:

1. STAGE III WORK TO OCCUR MARCH 2018 TO JUNE 2018.
2. WORK INCLUDES: FLUME DEMOLITION, ACCESS ROAD CONSTRUCTION AND FINAL CLEAN-UP.

GENERAL STAGING NOTES:

1. STAGING PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES.
2. CONTRACTOR SHALL DEVELOP THEIR OWN STAGING PLAN FOR THE WORK SEQUENCING AND SUBMIT IT FOR REVIEW MIN. OF WEEKS PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
3. CONTRACTOR RESPONSIBLE FOR NOTIFYING LAND OWNERS OF ROAD CLOSURES OR POTENTIAL DELAYS.
4. SEE DEMOLITION AND CONSTRUCTION PLANS FOR ADDITIONAL INFORMATION.
5. PROVIDE TRAFFIC CONTROL AS APPROPRIATE FOR STAGE OF WORK. SEE TRAFFIC CONTROL DRAWINGS. COORDINATE WITH ODOT AND ENGINEER.
6. CONTRACTOR MAY PROPOSE TO REALIGN SIPHON PIPE BETWEEN STA. 21+26 AND 27+00+/- AND INSTALL IN GENERAL LOCATION OF EXISTING FLUME AS APPROVED BY THE ENGINEER. WORK WOULD BE PERFORMED DURING STAGE II.

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS

RENEWS 12-31-16

30 0 30 60 90
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FOR
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STAGING PLAN
STA. 10+00 TO STA. 24+00

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ACCESS NOTES

1. STAGING AREA. SEE ODOT PERMIT #11M36741 TO OCCUPY OR PERFORM OPERATIONS UPON A STATE HIGHWAY.
2. AT GRADE RAILROAD X-ING. CONSULT BURLINGTON NORTHERN FOR ACCESSIBILITY AND POSSIBLE LOAD RESTRICTIONS.
3. CONSTRUCT TEMPORARY CONSTRUCTION ACCESS.
4. FLUME UNDER CROSSING (LIMITED CLEARANCE, MINIMIZE USE).
5. SMALL BRIDGE, LIGHT VEHICLE TRAFFIC ONLY. ACCESS FROM SHORT ROAD (1 MILE NORTH). **CAN BE UPGRADED BY CONTRACTOR TEMPORARY OR PERMANENT.**
6. WIDTH RESTRICTED UNDERNEATH RAILROAD CROSSING.
7. USE EXISTING ROADWAY, MAINTAIN AS REQUIRED, **GRAVEL TO REMAIN.**
8. TEMPORARY CONSTRUCTION **STAGING**:
   - REMOVE TOPSOIL MATERIAL
   - CONSTRUCT TEMPORARY ROAD/**STAGING**
   - RESTORE TO EXISTING CONDITIONS

   (IE - FARMABLE - MAY REQUIRE TILL/DISKING)
9. **TEMPORARY CONSTRUCTION STAGING (± 1/2 ACRE) GRAVEL TO REMAIN AFTER CONSTRUCTION**

1. IF IMPROVEMENTS ARE REQUIRED OUTSIDE OF USBR RIGHT-OF-WAY OR OTHER PRE-APPROVED AREAS NOTIFY THE PROJECT ENGINEER IMMEDIATELY.
2. OVERHEAD AND UNDERGROUND UTILITIES NOT SHOW HERE. VERIFY CLEARANCES ONSITE PRIOR TO MOBILIZATION AND CONSTRUCTION.

LEGEND

- TEMPORARY ACCESS ROUTE
- RAILROAD
- USBR OR ODOT RIGHT-OF-WAY
- STAGING AREA

200 0 200 400 600
SCALE IN FEET

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REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16
5/5/16

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1	ADDENDUM 3		

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
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ACCESS PLAN

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PROJECT:	462-00
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DESIGNED BY:	ACE
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G7

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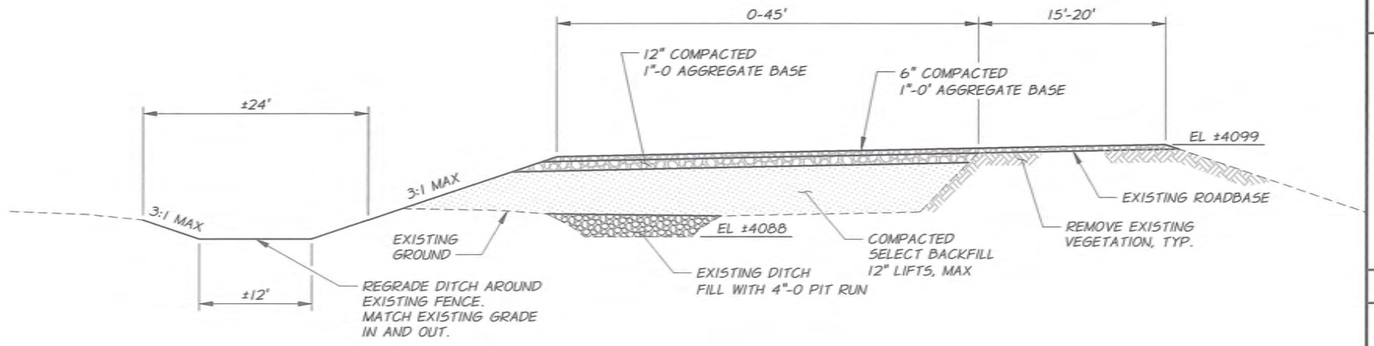

SECTION A
CORNER WIDENING
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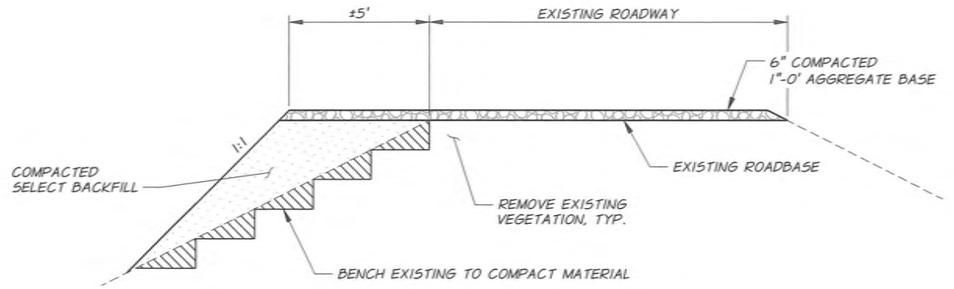
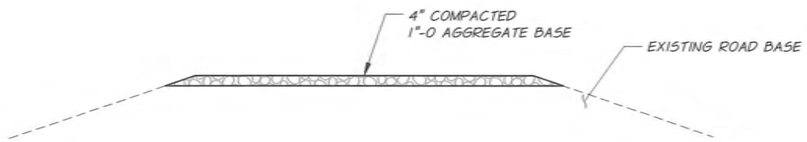


SECTION B
ACCESS ROAD WIDENING
SCALE: 3/8"=1'-0"



SECTION C
ACCESS ROAD SURFACING
SCALE: 3/8"=1'-0"

100 0 100 200 300
SCALE IN FEET

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OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16
5/5/16

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A	ADDENDUM 3		

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FOR
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ACCESS PLAN

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(541) 884-4666 - FAX (541) 884-5335

DATE: May 5, 2016
PROJECT: 462-00
FILE: ACCESS PLAN.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 8 OF 79

G7A

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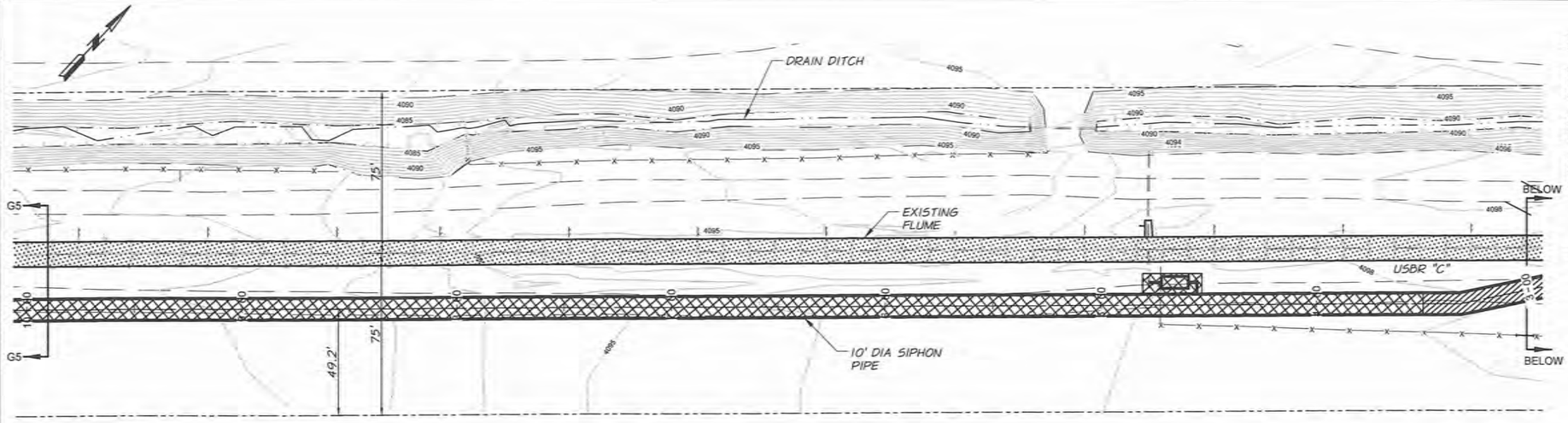
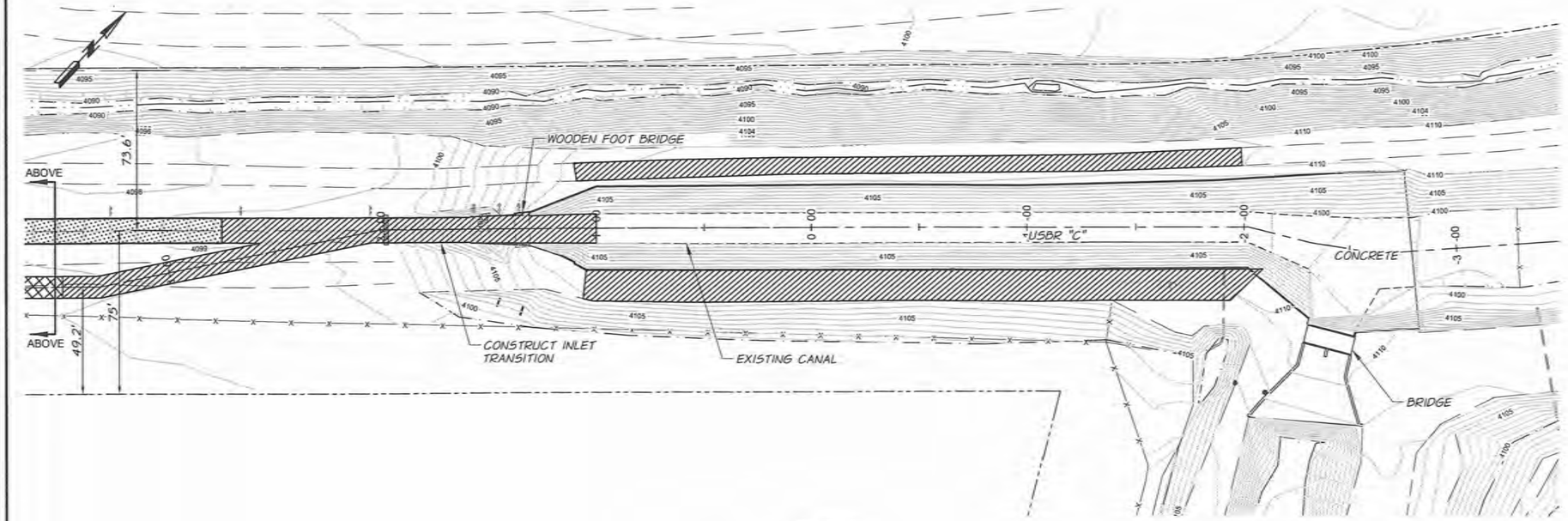


PLAN

SCALE: 1"=30'



PLAN

SCALE: 1"=30'

LEGEND

STAGE I - 6/2016 - 6/2017

STAGE II - 10/2017 - 3/2018

STAGE III - 3/2018 - 6/2018

STAGE I NOTES:

1. STAGE I WORK TO OCCUR FROM JUNE 2016 TO JUNE 2017.
2. CONSTRUCT PIER AND ABUTMENTS PRIOR TO MARCH 2017. INTERIOR PIER CONSTRUCTION TO BE COORDINATED WITH CHANNEL SHUTDOWN BY BOR IN SEPTEMBER/OCTOBER 2016.
3. WORK INCLUDES: LOST RIVER DIVERSION CHANNEL CROSSING, UNDERGROUND PIPE CROSSING, TURNOUTS (PART).

STAGE II NOTES:

1. STAGE II WORK TO OCCUR FROM OCTOBER 2017 TO MARCH 2018.
2. WORK INCLUDES: UNDERGROUND PIPE CONSTRUCTION, ELEVATED PIPE CONSTRUCTION, PIPE/CANAL TRANSITION AND TIE-IN, TURNOUT TIE-IN, WASTEWAY CONSTRUCTION TO LOST RIVER DIVERSION CHANNEL.

STAGE III NOTES:

1. STAGE III WORK TO OCCUR MARCH 2018 TO JUNE 2018.
2. WORK INCLUDES: FLUME DEMOLITION, ACCESS ROAD CONSTRUCTION AND FINAL CLEAN-UP.

GENERAL STAGING NOTES:

1. STAGING PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES.
2. CONTRACTOR SHALL DEVELOP THEIR OWN STAGING PLAN FOR THE WORK SEQUENCING AND SUBMIT IT FOR REVIEW MIN. WEEKS PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
3. CONTRACTOR RESPONSIBLE FOR NOTIFYING LAND OWNERS OF ROAD CLOSURES OR POTENTIAL DELAYS.
4. SEE DEMOLITION AND CONSTRUCTION PLANS FOR ADDITIONAL INFORMATION.
5. PROVIDE TRAFFIC CONTROL AS APPROPRIATE FOR STAGE OF WORK. SEE TRAFFIC CONTROL DRAWINGS, COORDINATE WITH ODOT AND ENGINEER.

30 0 30 60 90

SCALE IN FEET

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REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS

RENEWS 12-31-16

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

STAGING PLAN
STA. 1+00 TO STA. 10+00

anderson perry & associates, inc.
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LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	STAGING PLAN.DWG
DESIGNED BY:	SJK
DRAWN BY:	SJK
CHECKED BY:	JDM

SHEET 7 OF 79

G6

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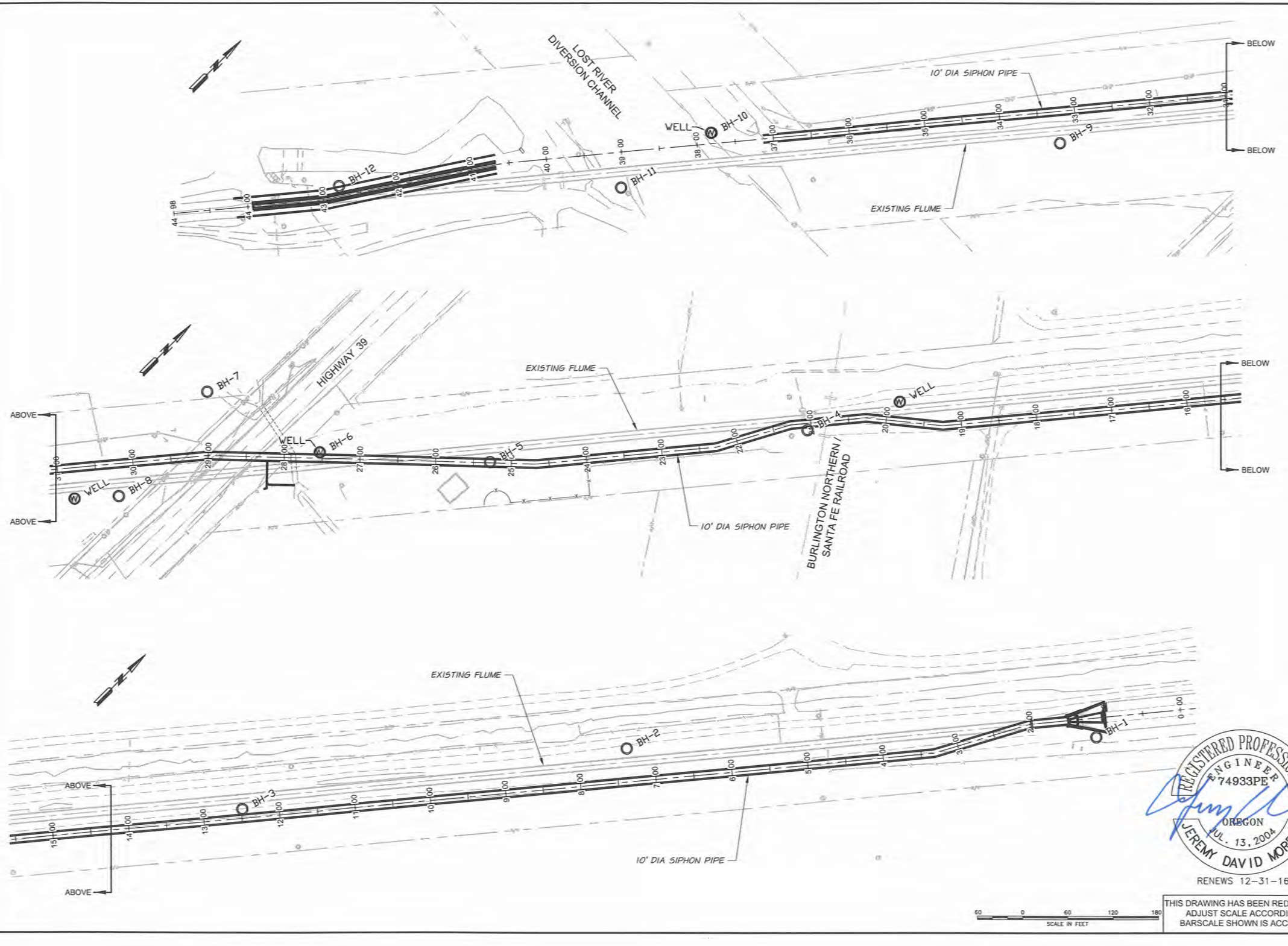

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOG PLAN

No.	REVISION	DATE	BY

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engineering ▲ surveying ▲ planning ▲ construction
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS
CONSULTING ENGINEERING, LLP
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REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	SOIL LOGS.DWG
DESIGNED BY:	SJK
DRAWN BY:	SJM
CHECKED BY:	JDM

SHEET 9 OF 79

G8

60 0 60 120 180
SCALE IN FEET

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4108	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
1	Medium dense silty SAND (SM); damp, brown, non-plastic silt, fine to medium sand, no reaction with HCl, (fill).		0.0				Backfilled with bentonite chips
2							
3				SS-1-1	16		
4							
5	Loose, moist below ±5 feet.			SS-1-2	6		
6							
7							
8				SS-1-3	5		
9							
10				SH-1-4			
11			4096.5				
12	Dense SAND, some silt, scattered silt clasts (SP-SM); light brown, moist, fine to medium sand, weak cementation, weak reaction with HCl, clasts consist of diatomaceous silt, (lacustrine deposits).		11.5	SS-1-5	38		
13			4094.5				
14	Very stiff clayey SILT, scattered organics (MH); yellow-white, wet, high plasticity, blocky structure, diatomaceous, no reaction with HCl, organics consist of black plant fiber, (lacustrine deposits).		13.5				
15				SS-1-6	19		
16							
17							
18							
19							
20	Blue-grey below ±20 feet. Intermediate dispersion Crumb Test on SS-1-7.			SS-1-7	24		
21							
22							
23							
24							
25	Hard with trace sand below ±25 feet.			SS-1-8	38		
26			4081.5				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4108.0 feet (Approx.)

Date of Boring: December 1, 2014

Foundation Engineering, Inc.

Boring Log: BH- 1

±Sta. 01+15; ±Offset 25 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Page 1 of 1

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4095.6	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
1	Medium dense silty SAND, scattered organics (SM); brown, wet, non-plastic silt, fine sand, organics consist of roots, no reaction with HCl, (fill).		0.0				Backfilled with bentonite chips
2	Very stiff SILT (ML); brown with white veining, damp, low plasticity, strong reaction with HCl, caliche veining, (lacustrine deposits).		4094.4 1.2	SS-2-1	16		
3			4092.3	SS-2-2	24	>>	
4	Stiff to very stiff clayey SILT (MH); yellow mottled white and iron-stained, moist to wet, medium to high plasticity, blocky structure, diatomaceous, no reaction with HCl, (lacustrine deposits).		3.3				
5				SS-2-3	15	>>	
6							
7							
8	Light grey below ±7.5 feet. Intermediate dispersion Crumb Test on SS-2-4.			SS-2-4	25	>>	
9							
10	Light brown with scattered organics below ±10 feet.			SS-2-5	18	>>	
11							
12							
13	Hard olive-grey below ±12.5 feet.			SS-2-6	36	>>	
14							
15				SS-2-7	41		
16							
17							
18							
19							
20				SS-2-8	32		
21							
22							
23							
24							
25				SS-2-9	31		
26			4069.1				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4095.6 feet (Approx.)

Date of Boring: December 2, 2014

Foundation Engineering, Inc.

Boring Log: BH- 2

±Sta. 07+34; ±Offset 8 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Page 1 of 1

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS I

anderson perry & associates, inc.
engineering • surveying • natural resources
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
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Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: SOIL LOGS.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 10OF 79

G9

THIS DRAWING HAS BEEN REDUCED 50%.
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BARSCALE SHOWN IS ACCURATE.

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\SOIL LOGS.dwg, G10, 3/23/2016 11:18:24 AM, lwillhite

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4089.8		0 50 100		
1	Very stiff sandy SILT, trace gravel (ML); brown, moist, low plasticity, fine to coarse sand, fine gravel, angular gravel, (fill).		0.0				Backfilled with bentonite chips
			4088.8				
2	Very stiff SILT, some sand (ML); light brown mottled white, damp to moist, low plasticity, diatomaceous, no reaction with HCl, (lacustrine deposits).		1.0				
3				SS-3-1	21		
4							
5	Dispersive Crumb Test on SH-3-2.			SH-3-2			
6			4083.8				
7	Medium dense SAND, trace silt (SP) to SAND, some silt (SP-SM); grey mottled brown and iron-stained, wet, medium sand, no reaction with HCl, (lacustrine deposits).		6.0	SS-3-3	17		
8	Coarse sand, trace fine angular gravel and diatomaceous silt clasts below ±8 feet.						
9							
10			4079.8				
11	Dense SAND, some silt, scattered clasts of silt (SP-SM); grey and iron-stained, wet, medium to coarse sand, weak cementation, no reaction with HCl, clasts consist of diatomaceous silt, (lacustrine deposits).		10.0	SS-3-4	33		
12							
13	Very dense, trace to some silt and fine to medium sand below ±12.5 feet.			SS-3-5		59	
14							
15			4074.8				
16	Very dense SAND, some gravel, trace silt, scattered clasts of silt (SP); grey and iron-stained, wet, medium to coarse sand, fine gravel, angular to subangular gravel, clasts consist of light brown low plasticity silt,		15.0	SS-3-6		51	
17	no reaction with HCl, (lacustrine deposits).						
18							
19							
20			4069.8				
21	Very dense SAND, trace silt, trace gravel, scattered clasts of silt (SP); black, wet, fine to coarse sand, fine gravel, angular to subangular gravel, clasts consist of blue-grey low plasticity silt, no reaction with HCl, (lacustrine deposits).		20.0	SS-3-7		64	
22							
23							
24							
25				SS-3-8		50	
26			4063.3				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4089.8 feet (Approx.)

Date of Boring: December 1, 2014

Boring Log: BH- 3

±Sta. 12+46; ±Offset 38 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4091.1		0 50 100		
1	Medium stiff sandy SILT, trace gravel (ML); brown, moist, low plasticity, fine to medium sand, fine gravel, subangular gravel, (fill).		0.0				Backfilled with bentonite chips
			4089.1				
2	Loose silty SAND, trace gravel, scattered organics (SM); brown, moist, low plasticity silt, fine to medium sand, fine gravel, angular gravel, no reaction with HCl, (alluvium).		2.0				
3				SS-4-1	7		
4							
5			4086.1				
6	Medium stiff SILT (ML); light brown and iron-stained, moist, low plasticity, no reaction with HCl, (alluvium).		5.0	SS-4-2	8		
7	Dense SAND, some silt (SP-SM); light brown and iron-stained, moist, non-plastic silt, fine sand, no reaction with HCl, (lacustrine deposits).		4085.1 6.0				
8				SS-4-3	31		
9							
10			4081.1				
11	Dense SAND, trace silt and gravel (SP); brown and iron-stained, wet, fine to medium sand, fine gravel, angular and subangular gravel, no reaction with HCl, (lacustrine deposits).		10.0	SS-4-4	46		
12							
13	Dense SAND, trace silt (SP); grey, wet, medium sand, no reaction with HCl, (lacustrine deposits).		4078.6 12.5	SS-4-5	37		
14	Silty sand with scattered clasts of diatomaceous silt from ±13.5 feet to ±15.0 feet.						
15			4076.1				
16	Very dense SAND, trace silt and gravel (SP); grey and iron-stained, medium to coarse sand, fine gravel, angular gravel, no reaction with HCl, (lacustrine deposits).		15.0	SS-4-6		72	
17	Thin (±4-inch thick) weak to moderately cemented sand lens at ±16.2 feet.						
18							
19							
20			4071.1				
21	Dense SAND, some gravel, trace silt, scattered silt clasts (SP); black, wet, fine to coarse sand, fine gravel, angular to subangular gravel, no reaction with HCl, clasts consist of olive-grey low plasticity silt, (lacustrine deposits).		20.0	SS-4-7	36		
22							
23							
24							
25				SS-4-8	49		
26	Thin (±2-inch thick) fine sand lens at ±25.5 feet.		4064.6				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4091.1 feet (Approx.)

Date of Boring: December 1, 2014

Boring Log: BH- 4

±Sta. 21+05; ±Offset 20 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS II

anderson perry & associates, inc.
engineering • surveying • natural resources
LA GRANDE, OR. WALLA WALLA, WA.

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(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: SOIL LOGS.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 11 OF 79

G10

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4089.3		0 50 100		
1	Medium dense silty SAND, some gravel and cobbles (SM); brown, wet, non-plastic silt, fine to medium sand, fine to coarse gravel, subangular gravel, cobbles up to ±8 inches in diameter, (fill).		0.0				Backfilled with bentonite chips
2			4087.3				
3	Very stiff SILT (ML); brown with white veining, damp, low plasticity, strong reaction with HCl, caliche veining, (lacustrine deposits). Dispersive Crumb Test on SS-5-1.		2.0	SS-5-1	30		
4							
5			4084.3				
6	Medium dense SAND, some silt (SP-SM); light brown and iron-stained, moist, fine to medium sand, no reaction with HCl, (lacustrine deposits). Medium to coarse sand below ±6 feet.		5.0	SS-5-2	20		
7			4081.8				
8	Very dense SAND, some silt and gravel (SP-SM); light brown and iron-stained, damp, fine to coarse sand, fine gravel, angular gravel, weak to moderate cementation, no reaction with HCl, (lacustrine deposits).		7.5	SS-5-3	56		
9							
10	Dense, moist to wet and fine to medium sand below ±10 feet.			SS-5-4	40		
11							
12			4076.8				
13	Very dense silty SAND, trace gravel (SM); light brown, wet, non-plastic silt, fine to coarse sand, fine gravel, angular and subangular gravel, moderate to strong cementation, no reaction with HCl, (lacustrine deposits).		12.5	SS-5-5	61		
14							
15	Dense with no cementation below ±15 feet.			SS-5-6	48		
16	Grey below ±16 feet.						
17							
18							
19							
20			4069.3				
21	Very dense SAND, trace gravel (SP); black, wet, fine to medium sand, fine gravel, angular and subangular gravel, no reaction with HCl, (lacustrine deposits).		20.0	SS-5-7	73		
22							
23							
24							
25	Thin (±2-inch thick) silty sand lenses below ±25 feet.			SS-5-8	56		
26			4062.8				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4089.3 feet (Approx.)

Date of Boring: December 2, 2014

Foundation Engineering, Inc.

Boring Log: BH- 5

±Sta. 25+05; ±Offset 40 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Page 1 of 1

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4083.5		0 50 100		
1	Medium dense silty SAND, some gravel and cobbles (SM); brown, wet, low plasticity silt, fine to medium sand, fine to coarse gravel, subangular gravel, cobbles up to ±6 inches in diameter, (fill).		0.0				Morris monument set in concrete
2			4082.0				
3	Soft silty CLAY, some sand (CL); dark brown, wet, low plasticity, fine to medium sand, no reaction with HCl, (alluvium). Non-dispersive Crumb Test on SS-6-1.		1.5	SS-6-1	4		
4	Medium dense silty SAND (SM); brown, wet, low plasticity silt, fine to medium sand, no reaction with HCl, (alluvium).		4080.5 3.0				
5	Medium dense with scattered very thin (±1-inch thick) lenses of light brown, low plasticity silt from ±5 feet to ±6.5 feet.			SS-6-2	11		Backfilled with bentonite-cement grout
6							
7			4076.0				
8	Very stiff SILT, trace sand (ML); light brown and iron-stained, wet, low plasticity, diatomaceous, no reaction with HCl, (lacustrine deposits). Dispersive Crumb Test SS-6-3.		7.5	SS-6-3	19		
9							
10			4073.0	SS-6-4	44		
11	Dense SAND, some silt (SP-SM); light brown, wet, fine sand, no reaction with HCl, (lacustrine deposits).		10.5				
12			4071.0				
13	Very dense SAND, trace silt, (SP); black to dark grey, wet, fine to medium sand, no reaction with HCl, (lacustrine deposits).		12.5	SS-6-5	58		
14							
15	Medium to coarse sand and trace fine subangular gravel below ±15 feet.						
16							
17							
18							
19							
20	Thin (±6-inch thick) stiff, moist to wet, olive-grey mottled blue-grey, low plasticity, silt layer at ±20 feet.		4063.5 20.0	SS-6-7	50		Vibrating wire piezometer (SN 1431518) set at ±19 feet
21	Dense, fine to coarse sand and fine angular gravel below ±20.5 feet.		4063.0 20.5				
22							
23							
24							
25	Fine to medium sand and scattered very thin (±1-inch thick) silty sand lenses below ±25 feet.			SS-6-8	46		
26							
27							

Project No.: 2142023

Surface Elevation: 4083.5 feet (Approx.)

Date of Boring: December 2, 2014

Foundation Engineering, Inc.

Boring Log: BH- 6

±Sta. 27+50; ±Offset 10 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Page 1 of 2

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS III

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(541) 884-4868 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: SOIL LOGS.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 12 OF 79

G11

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4055.5	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
29							
30				SS-6-9	▲ 43		
31			4052.0				
	BOTTOM OF BORING		31.5				

Project No.: 2142023

Surface Elevation: 4083.5 feet (Approx.)

Date of Boring: December 2, 2014

Boring Log: BH- 6

±Sta. 27+50; ±Offset 10 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4087	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
1	Medium dense silty SAND (SM); brown, wet, low plasticity, fine sand, (fill).		0.0				Backfilled with bentonite chips
2	Loose silty SAND (SM); brown, wet, low plasticity, fine to medium sand, no reaction with HCl, (alluvium).		4085.5 1.5				
3				SS-7-1	▲ 10	●	
4							
5			4082.0				
6	Medium dense silty SAND, some gravel (SM); light brown, damp, non-plastic, fine to medium sand, fine gravel, subangular gravel, no reaction with HCl, (alluvium).		5.0	SS-7-2	▲ 12	●	
7	No gravel below ±6.1 feet.		4079.5				
8	Medium stiff silty CLAY (CL-ML); dark brown, wet, low plasticity, no reaction with HCl, (alluvium). Dispersive Crumb Test on SS-7-3.		7.5 4079.0	SS-7-3	▲ 8	●	
9	Loose SAND, some silt (SP-SM); wet, light brown and iron-stained, non-plastic silt, fine to medium sand, no reaction with HCl, (alluvium).		8.0				
10			4077.0				
11	Medium dense SAND, trace silt (SP) to silty SAND, scattered silt clasts (SM); light brown, wet, fine to coarse sand, no reaction with HCl, clasts consist of low plasticity silt, (alluvium).		10.0	SS-7-4	▲ 14	●	
12			4074.5				
13	Stiff SILT, scattered organics (ML); light brown, wet, low plasticity, no reaction with HCl, (alluvium).		12.5 4073.2	SS-7-5	▲ 18	●	
14	Medium dense silty SAND (SM); brown, wet, non-plastic silt, fine sand, no reaction with HCl, (alluvium).		13.8				
15			4072.0				
16	Very dense SAND, trace silt (SP); black, wet, fine sand, no reaction with HCl, (lacustrine deposits).		15.0	SS-7-6		● ▲ 75	
17							
18							
19							
20	Dense, medium sand with scattered clasts of clayey, silty gravel below ±20 feet.			SS-7-7	▲ 41		
21							
22							
23							
24							
25	Very dense SAND, trace silt and gravel, scattered silt clasts (SP); black, wet, fine to coarse sand, fine gravel, angular and subangular gravel, no reaction with HCl, clasts consist of grey medium plasticity silt, (lacustrine deposits).		4062.0 25.0	SS-7-8	▲ 58		
26	BOTTOM OF BORING		4060.2 26.8				

Project No.: 2142023

Surface Elevation: 4087.0 feet (Approx.)

Date of Boring: December 3, 2014

Boring Log: BH- 7

±Sta. 28+85; ±Offset 80 ft. Rt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

SOILS
BORING LOGS IV

anderson perry & associates, inc.
engineering • surveying • natural resources
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-3335

DATE: March 25, 2016
PROJECT: 462-00
SOILLEOGS_RECOVER.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 13 OF 79

G12

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4088.1		0 50 100		
1	Medium dense silty SAND (SM); brown, wet, low plasticity silt, fine sand, (fill).		0.0				Backfilled with bentonite chips
			4086.6				
2	Medium dense silty SAND (SM); light brown with white veining, damp, fine sand, caliche veining, strong reaction with HCl, (alluvium).		1.5				
3				SS-8-1	12		
4							
5	Light brown sand with some silt and no reaction with HCl at ±5 feet.			SS-8-2	16		
6							
7							
			4080.6				
8	Very dense SAND, some silt, trace gravel (SP-SM); light brown and iron-stained, moist, fine to coarse sand, fine gravel, subangular gravel, moderate cementation, no reaction with HCl, (lacustrine deposits).		7.5	SS-8-3		68	
9							
10	Dense, grey-brown and wet below ±10 feet.			SS-8-4		48	
11							
12							
13	Brown and iron-stained, subangular and angular gravel from ±12.5 to ±15 feet.			SS-8-5	32		
14							
15	Silty, light brown, fine sand below ±15 feet.			SS-8-6	28		
			4072.6				
16	Very stiff SILT, some sand (ML); olive-grey to light brown, moist, medium plasticity, blocky structure, no reaction with HCl, (lacustrine deposits).		15.5				
17							
18							
19							
			4068.1				
20	Very dense SAND, trace silt and gravel (SP); black, wet, fine to coarse sand, fine gravel, subangular gravel, no reaction with HCl, (lacustrine deposits).		20.0	SS-8-7		72	
21							
22							
23							
24							
25	Subangular and subrounded gravel below ±25 feet.			SS-8-8	20		
			4062.6				
26	Very stiff SILT (ML); grey, moist, low plasticity, blocky structure, no reaction with HCl, (lacustrine deposits).		25.5				
			4061.6				
	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4088.1 feet (Approx.)

Date of Boring: December 4, 2014

Boring Log: BH- 8

±Sta. 30+16; ±Offset 40 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

Page 1 of 1

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4089		0 50 100		
1	Medium stiff SILT, some sand, trace gravel, scattered organics (ML); brown, moist to wet, fine to coarse sand, fine gravel, angular gravel, (fill).		0.0				Backfilled with bentonite chips
			4088.0				
2	Very stiff SILT (ML); light brown, moist, non-plastic to low plasticity, no reaction with HCl, (lacustrian deposits).		1.0				
3				SS-9-1	18		
4							
5	Hard below ±5 feet. Dispersive Crumb Test on SS-9-2.			SS-9-2		55	
6	Thin (±2-inch thick) brown, wet, fine to medium sand lens at ±6 feet.						
7							
			4081.5				
8	Very dense SAND, some silt, scattered silty sand lenses (SP-SM); brown and iron-stained, wet, fine to medium sand, no reaction with HCl, lenses consist of very thin (±1-inch thick) light brown silty sand, (lacustrine deposits).		7.5	SS-9-3		52	
9							
			4079.0				
10	Dense SAND, some silt, trace gravel (SP-SM); light brown and iron-stained, wet, fine to coarse sand, fine gravel, angular and subangular gravel, no reaction with HCl, (lacustrine deposits).		10.0	SS-9-4		40	
11							
12							
13	Scattered clasts of light brown, low plasticity silt ±13 feet.			SS-9-5		44	
14							
15	Fine to medium sand below ±15 feet.			SS-9-6	31		
16							
17							
18							
19							
			4069.0				
20	Very dense SAND, trace silt, scattered lenses of sand and gravel (SP); dark grey to black, wet, fine sand, no reaction with HCl, lenses consist of thin (±1-1.5-inch thick) coarse sand and fine subrounded gravel, (lacustrine deposits).		20.0	SS-9-7		78	
21							
22							
23							
24							
25	Dense and fine to medium sand below ±25 feet.			SS-9-8	48		
			4062.5				
26	BOTTOM OF BORING		26.5				

Project No.: 2142023

Surface Elevation: 4089.0 feet (Approx.)

Date of Boring: December 4, 2014

Boring Log: BH- 9

±Sta. 33+50; ±Offset 40 ft. L.t

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

Page 1 of 1

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS V

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
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Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5355

DATE: March 25, 2016
PROJECT: 462-00
SOILLOGS_RECOVER.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 14 OF 79

G13

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4099	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
1	Loose silty SAND, scattered organics (SM); brown, moist, low plasticity silt, fine to medium sand, no reaction with HCl, organics consist of roots, (embankment fill).		0.0				Morris monument set in concrete
2							
3	Light brown below ±2.5 feet.			SS-10-1	7		
4							
5	White caliche veining and scattered clasts of low plasticity sandy clay, strong reaction with HCl at ±5 feet.			SS-10-2	6		Backfilled with bentonite-cement grout
6							
7	Drill action and cutting indicate wood debris from ±7 to ±8 feet.						
8	Brown and wet below ±7.5 feet.		4091.0	SS-10-3	16		
9	Medium dense silty SAND, trace to some gravel (SM); grey to brown, wet, fine to coarse sand, fine gravel, angular gravel, moderate cementation, strong reaction with HCl, (embankment fill).		8.0				
10	Thin (±6-inch thick) layer of sandy silt with some organics (ML), dark brown, wet, low plasticity at ±10 feet.			SS-10-4	8		
11							
12	Loose, fine to coarse, subangular gravel and organics consisting of wood debris below ±10 feet.						
13	Stiff SILT, some sand (ML); light brown, low plasticity, fine sand, no reaction with HCl, (alluvium).		4086.5 12.5	SS-10-5	11		
14	Thin (±2-inch thick) dark brown low to medium plasticity clay lens at ±13.5 feet.						
15			4084.0				
16	Hard SILT, trace sand (ML); light brown with white spots, moist, low plasticity, fine sand, strong reaction with HCl, (lacustrine deposits).		15.0	SS-10-6	32		
17							
18							
19							
20			4079.0				
21	Medium dense Sand, some silt, scattered laminations of silt (SP-SM); light brown, wet, fine sand, no reaction with HCl, laminations consist of thin to very thin (+0.5 to ±1-inch thick) low plasticity silt, (lacustrine deposits).		20.0	SS-10-7	29		
22							
23							
24							
25	Dense below ±25 feet.			SS-10-8	46		Vibrating wire piezometer
26	Blue-grey with scattered strong cemented zones below ±25.3 feet.						
27							

Project No.: 2142023
Surface Elevation: 4099.0 feet (Approx.)
Date of Boring: December 3, 2014

Boring Log: BH-10
±Sta. 37+75; ±Offset 15 ft. Rt.
C-Flume Replacement Project
Klamath Falls, Oregon

Foundation Engineering, Inc.

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth 4071	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
29							(SN 1433371)set at ±25 feet
30	Very dense SAND, some gravel, scattered clasts of silt (SP); black, wet, fine to coarse sand, fine gravel, angular to subangular gravel, clasts consit of blue-grey low plasticity silt, (lacustrine deposits).		4069.0 30.0	SS-10-9	50/5"		
31							
32							
33							
34							
35				SS-10-10	61		
36							
37							
38							
39							
40				SS-10-11	81		
41							
42							
43							
44							
45				SS-10-12	89		
46							
47							
48							
49							
50	Hard sandy SILT, trace to some gravel (ML); grey, wet, low plasticity, fine to coarse sand, fine gravel, subangular gravel, (lacustrine deposits).		4049.0 50.0	SS-10-13	61		
51	BOTTOM OF BORING		4047.5 51.5				

Project No.: 2142023
Surface Elevation: 4099.0 feet (Approx.)
Date of Boring: December 3, 2014

Boring Log: BH-10
±Sta. 37+75; ±Offset 15 ft. Rt.
C-Flume Replacement Project
Klamath Falls, Oregon

Foundation Engineering, Inc.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS VI

anderson perry & associates, inc.
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LA GRANDE, OR · WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
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Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
SOILSLOGS_RECOVER.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM
SHEET 15 OF 79

G14

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
			4097.3		0 50 100		
1	Loose silty SAND, scattered organics (SM); brown to light brown, moist, fine sand, no reaction with HCl, organics consist of roots, (embankment fill).		0.0				Backfilled with bentonite chips
2							
3				SS-11-1	9		
4							
5	Light brown with white caliche veining, strong reaction with HCl at ±5 feet. No organics below ±5 feet.			SS-11-2	8		
6							
7							
8	Medium dense, scattered coarse sand, and fine gravel, subangular gravel at ±7.5 feet.			SS-11-3	13		
9							
10				SS-11-4	7		
11							
12							
13				SH-11-5			
			4083.8				
14	Dense to medium dense SAND, trace silt (SP); light brown, moist, fine to medium sand, no reaction with HCl, (lacustrine deposits).		13.5				
			4083.3	SS-11-6	40		
15	Dense silty SAND, scattered organics (SM); light brown with white veining, moist, non-plastic to low plasticity silt, fine sand, strong reaction with HCl, organics consist of black plant fiber, caliche veining, (lacustrine deposits).		14.0				
16							
17							
18							
19							
20			4077.3				
	Very dense SAND, some gravel, trace silt (SP); light brown and iron-stained, wet, fine to coarse sand, fine gravel, subangular and subrounded gravel, no reaction with HCl, (lacustrine deposits).		20.0	SS-11-7	73		
21							
22							
23							
24							
25			4072.3				
	Hard SILT, lenses of sandy silt (ML); grey, moist, low plasticity, no reaction with HCl, thin (±1-inch thick) lenses consist of grey sandy silt, (lacustrine deposits).		25.0	SS-11-8	47		
26							
27							

Project No.: 2142023

Surface Elevation: 4097.3 feet (Approx.)

Date of Boring: December 5, 2014

Boring Log: BH-11

±Sta. 39+00; ±Offset 45 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD, %	Installations/ Water Table
			4069.3		0 50 100		
29							
30	Blue-grey with trace fine sand and scattered clasts of grey, low to medium plasticity clay below ±30 feet.		4066.8	SS-11-9	48		
31			30.5				
32	Dense SAND, trace silt, scattered laminations of sandy silt (SP); black, wet, fine to medium sand, laminations consist of very thin (±0.5 to ±1-inch thick) sandy silt, (lacustrine deposits).						
33							
34							
35	Very dense, fine sand below ±35 feet.			SS-11-10	69		
36							
37	Thin (±2 inches thick) medium to coarse sand lens at ±36 feet; thin (±2 inches thick) lens of sandy gravelly silt, medium to coarse sand, fine gravel, subangular gravel at ±36.2 feet.						
38							
39							
40			4057.3				
	Very dense SAND, trace silt and gravel, scattered lenses of silt (SP); black, wet, fine to coarse sand, fine gravel, angular and subangular gravel, lenses consist of blue-grey low plasticity silt, (lacustrine deposits).		40.0	SS-11-11	64		
41							
42							
43							
44							
45	Dark grey, fine sand with trace silt below ±45 feet. Medium to coarse sand between 45.5 and 46 feet.			SS-11-12	69		
46							
47							
48							
49							
50				SS-11-13		97/11"	
51			4045.9				
	BOTTOM OF BORING		51.4				

Project No.: 2142023

Surface Elevation: 4097.3 feet (Approx.)

Date of Boring: December 5, 2014

Boring Log: BH-11

±Sta. 39+00; ±Offset 45 ft. Lt.

C-Flume Replacement Project

Klamath Falls, Oregon

Foundation Engineering, Inc.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
SOILS
BORING LOGS VII

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LA GRANDE, OR WALLA WALLA, WA

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way, Klamath Falls, OR 97603
(541) 884-4666 FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
SOILSLOGS_RECOVER.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 16 OF 79

G15

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Depth Feet	Soil and Rock Description and Comments	Log	Elev. Depth	Samples	SPT, N-Value / Recovery	Moisture, % / RQD., %	Installations/ Water Table
			4090.2		0 50 100		
1	Medium dense silty SAND (SM); brown, wet, low plasticity silt, fine sand, (fill).		0.0				Backfilled with bentonite chips
			4089.2				
2	Loose silty SAND (SM); brown, damp, low plasticity silt, fine sand, no reaction with HCl, (alluvium).		1.0				
3				SS-12-1	5		
4							
5	Medium dense below ±7.5 feet.			SS-12-2	20		
6							
7			4082.7				
8	Dense to very dense silty SAND, scattered silt lenses (SM); light brown, moist to wet, fine to medium sand, no reaction with HCl, thin (±1-inch thick) lenses of light brown low plasticity silt, (lacustrian deposits).		7.5	SS-12-3	48		
9							
10	Iron-stained and fine, subangular gravel below ±10 feet.			SS-12-4	51		
11							
12							
13	Fine to coarse sand below ±12.5 feet.			SS-12-5	49		
14							
15					51		
16			4074.2	SS-12-6			
	Very dense silty SAND, scattered silt clasts (SM); light brown to grey, moist, low plasticity silt, fine sand, no reaction with HCl, clasts consist of low to medium plasticity silt, (lacustrian deposits).		16.0				
17							
18							
19							
20			4070.2				
	Very dense SAND, trace silt (SP); grey, wet, fine to medium sand, no reaction with HCl, (lacustrian deposits).		20.0	SS-12-7	69		
21							
22							
23							
24							
25	Black and scattered with angular and subangular gravel to ±26.5 feet.			SS-12-8		90	
26							
	BOTTOM OF BORING		4063.7 26.5				

Project No.: 2142023

Surface Elevation: 4090.2 feet (Approx.)

Date of Boring: December 5, 2014

Foundation Engineering, Inc.

Boring Log: BH-12

±Sta. 42+70; ±Offset 12 ft. Rt.

C-Flume Replacement Project

Klamath Falls, Oregon

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

SOILS
BORING LOGS VIII

No.	REVISION	DATE	BY

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engineering • surveying • natural resources
LA GRANDE, OR. WALLA WALLA, WA.

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way, Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
SOILLEOGS_RECOVER.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 17 OF 79

G16

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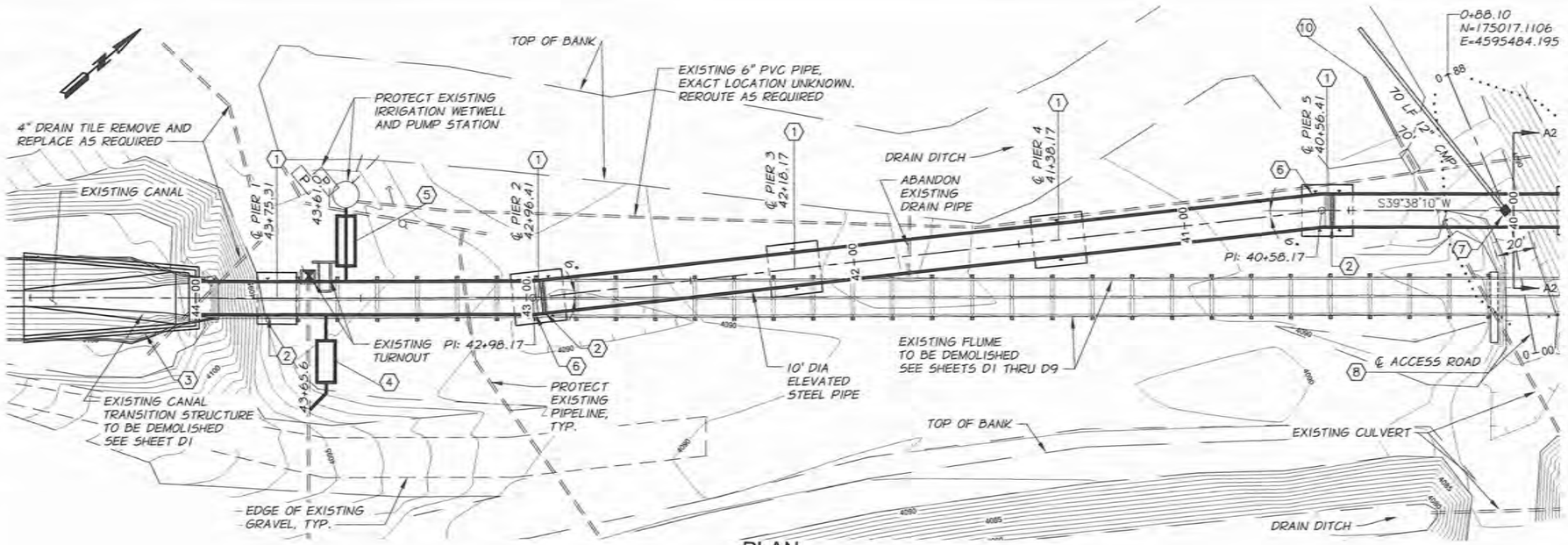
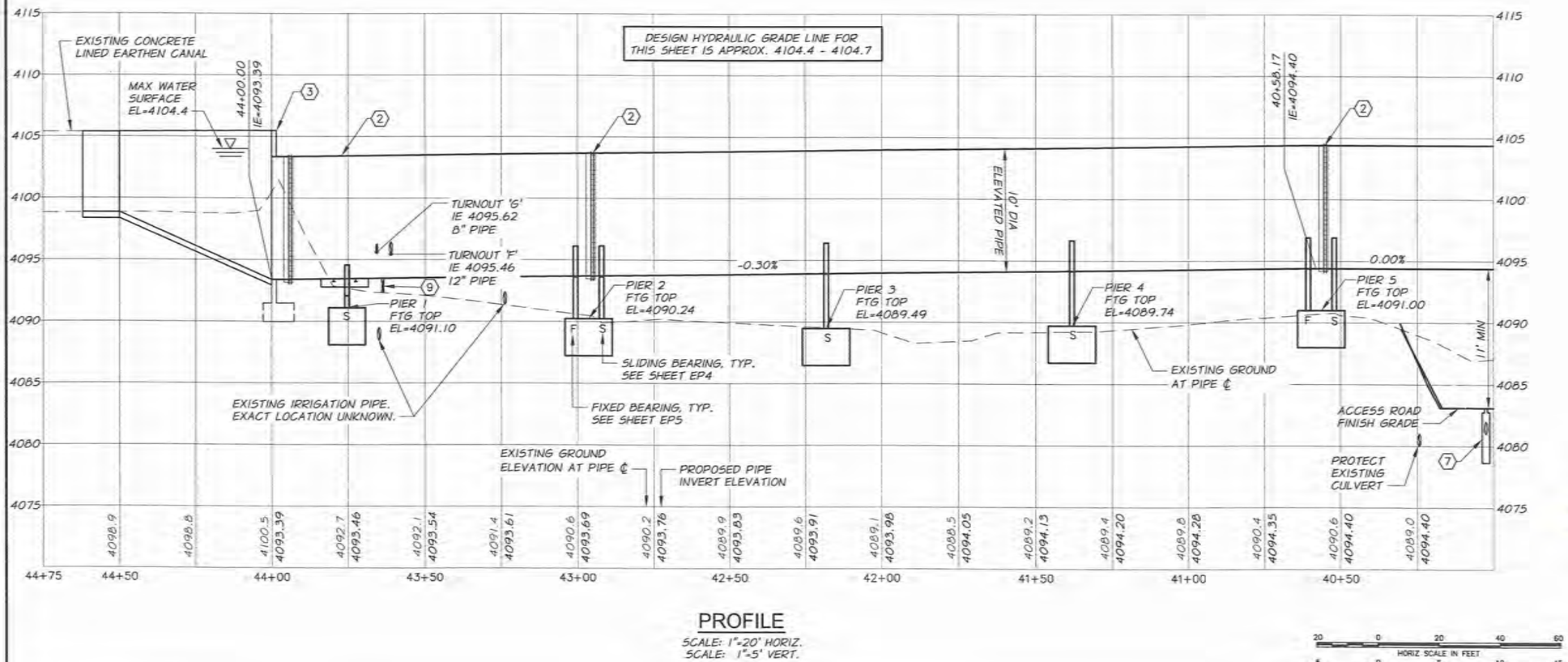


PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES

1. SEE SHEET EP1 AND EP2 FOR PIER FOUNDATION DETAILS
2. 10' DIA MECHANICAL EXPANSION JOINT
3. OUTLET TRANSITION STRUCTURE SEE SHEET A16
4. TURNOUT "G" SEE TURNOUT SCHEDULE, TYPICAL VAULTED CLEANOUT AND SIPHON TAP DETAILS, SHEET A28.
5. TURNOUT "F" SEE TURNOUT SCHEDULE, TYPICAL VAULTED CLEANOUT AND SIPHON TAP DETAILS, SHEET A28.
6. 10' DIA STEEL PIPE BEND
7. TYPE 3 CATCH BASIN AND GRATE WITH 12" DIA CMP OUTLET PIPE. FIELD LOCATE AT LOW POINT AND DAYLIGHT TO DRAIN AT IE 4081.00.
8. FARM ACCESS ROAD SEE PROFILE, SHEET A21
9. TAP INVERT OF ELEVATED PIPE FOR A 3/4" WELDED x NIPT NIPPLE WITH A 3/4" TAMPER PROOF BALL VALVE TO DRAIN THE PIPE. PLACE A CONCRETE SPLASH BLOCK UNDER DRAIN. SEE DRAIN DETAIL, SHEET A15
10. EXTEND 36" CMP 20 FEET AND FILL IN LAST 20 FEET OF DRAIN DITCH WITH COMPACTED NATIVE SOILS.



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT.

HORIZ SCALE IN FEET: 20 0 20 40 60

VERT SCALE IN FEET: 5 0 5 10 15

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 40+00 TO STA. 44+50

anderson perry & associates, inc.
ENGINEERING, SURVEYING, PLANNING
LA GRANDE, OR. WALLA WALLA, WA.

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DATE:	March 25, 2016
PROJECT:	462-00
FILE:	462-00-060C-00A1.DWG
DESIGNED BY:	EDZ
DRAWN BY:	EDZ
CHECKED BY:	BMM

SHEET 18 OF 79

A1

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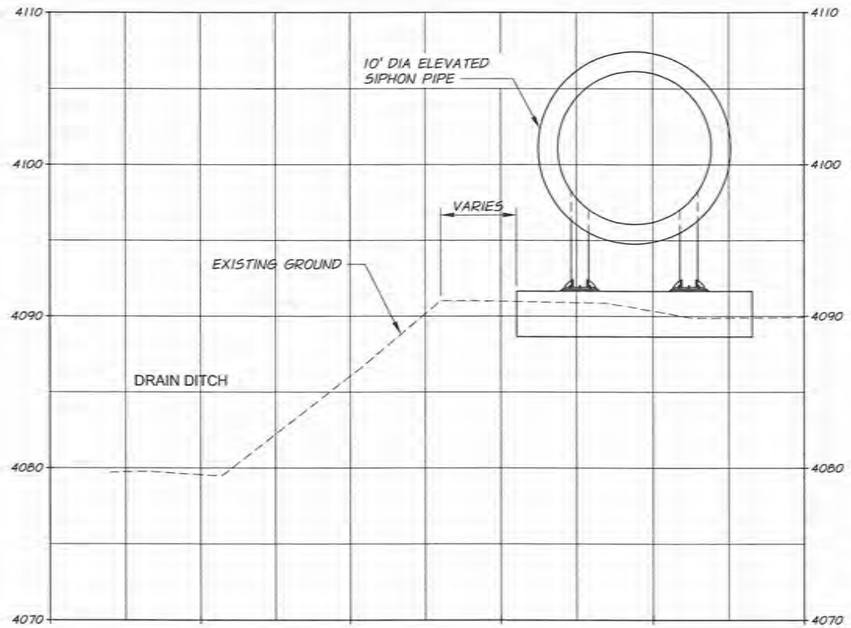

ELEVATED PIPE SECTION (TYP)

43+75 TO 40+25

SCALE: 1"=5'

NOTE:
REFER TO ELEVATED PIPE DRAWINGS (EP1 - EP10) FOR PIPE CONSTRUCTION

SCALE IN FEET: 5 0 5 10 15

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REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ELEVATED PIPELINE
ELEVATED PIPE SECTION AT PIER

No.	REVISION	DATE	BY

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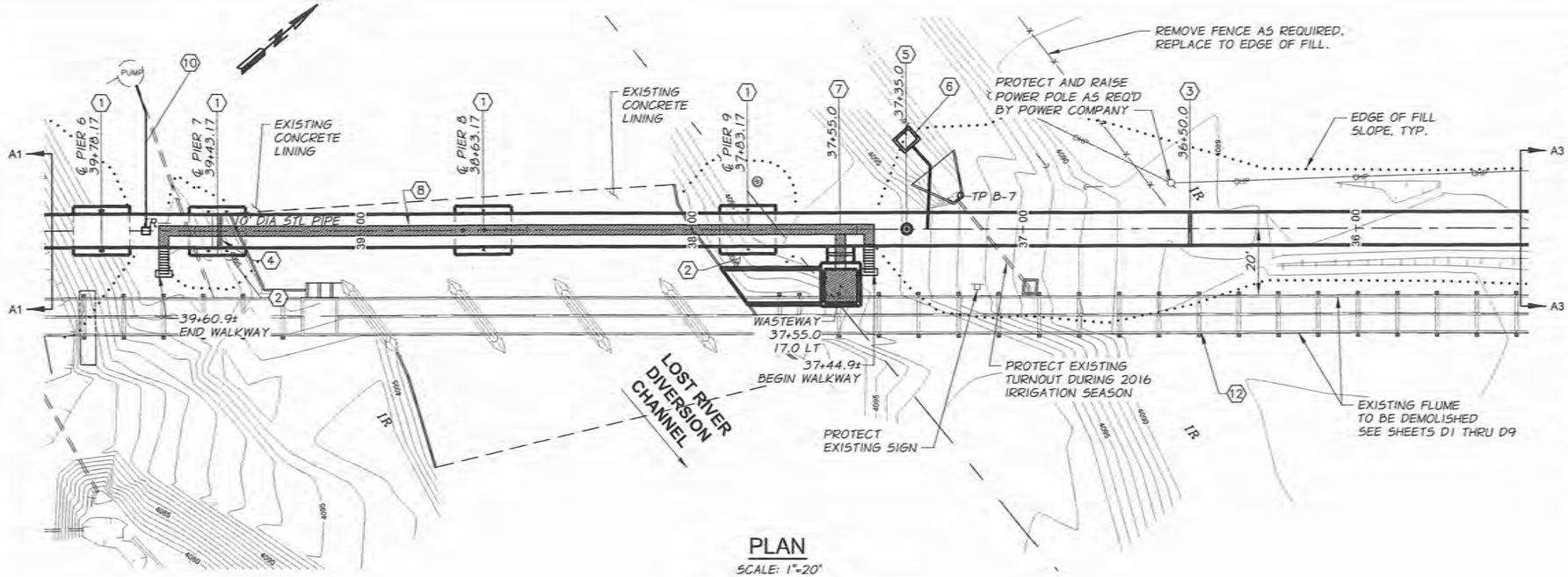
DATE: March 25, 2016
PROJECT: 462-00
FILE: 462-00-060C-00A1.DWG
DESIGNED BY: EDZ
DRAWN BY: EDZ
CHECKED BY: BMM

SHEET 19 OF 79

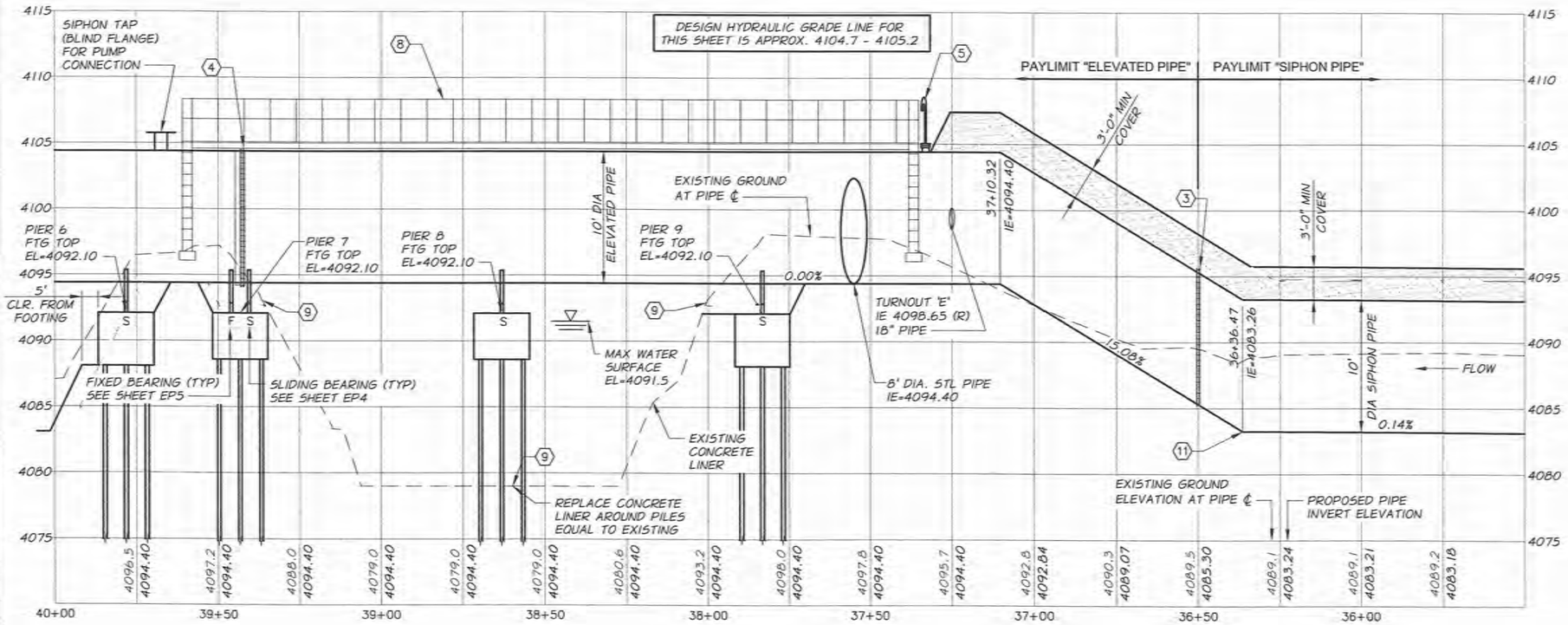
A1A

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\462-00-060C-00A1.dwg, A1 (2), 3/23/2016 12:31:01 PM, lwillhite



PLAN

SCALE: 1"=20'



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT.

HORIZ SCALE IN FEET: 20 0 20 40 60
VERT SCALE IN FEET: 5 0 5 10 15

SHEET CONSTRUCTION NOTES

1. SEE SHEET EP1 THROUGH EP3 FOR PIPE FOUNDATION DETAILS
2. GRADE AREA AROUND PIER TO 1 FOOT BELOW TOP OF FOOTING AND CATCH SIDE SLOPES AT 2H:1V. MINIMUM CLEAR DISTANCE AROUND FOOTING IS 2 FEET. SLOPE AREA TO DRAIN TOWARD CANAL.
3. 10' DIA TRANSITION COUPLING TO CONNECT SIPHON PIPE TO ELEVATED PIPE.
4. 10' DIA MECHANICAL EXPANSION JOINT
5. 24" DIA ACCESS PORT WITH 6" DIA VENT PIPE. SEE SHEET A27
6. TURNOUT 'E' SEE TURNOUT SCHEDULE SHEET A28 AND TURNOUT 'E' OUTLET STRUCTURE DETAIL, SHEET A29, AND SIPHON TAP DETAIL SHEET A28
7. 8' TEE AND WASTEWAY. SEE SHEET EP9 AND EP10
8. PIPE CATWALK. SEE SHEET EP6 THROUGH EP8
9. SAWCUT AND REMOVE CONCRETE LINING AS REQUIRED
10. RECONNECT PUMP TO SIPHON PIPE USING SIPHON TAP LOCATED AT T.D.C. OF SIPHON PIPE. SEE DETAIL, SHEET A20
11. SIPHON PIPE ELBOW. SEE PLAN AND PROFILE FOR DEFLECTION.
12. PROVIDE 12 FT WIDE PERMANENT GRAVEL ACCESS ROAD CENTERED ON EXISTING FLUME ALIGNMENT AT STA. 36+50. SEE DETAIL, SHEET A21

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 35+50 TO STA. 40+00

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	462-00-060C-00A2.DWG
DESIGNED BY:	EDZ
DRAWN BY:	EDZ
CHECKED BY:	BMM

SHEET 20 OF 79

A2

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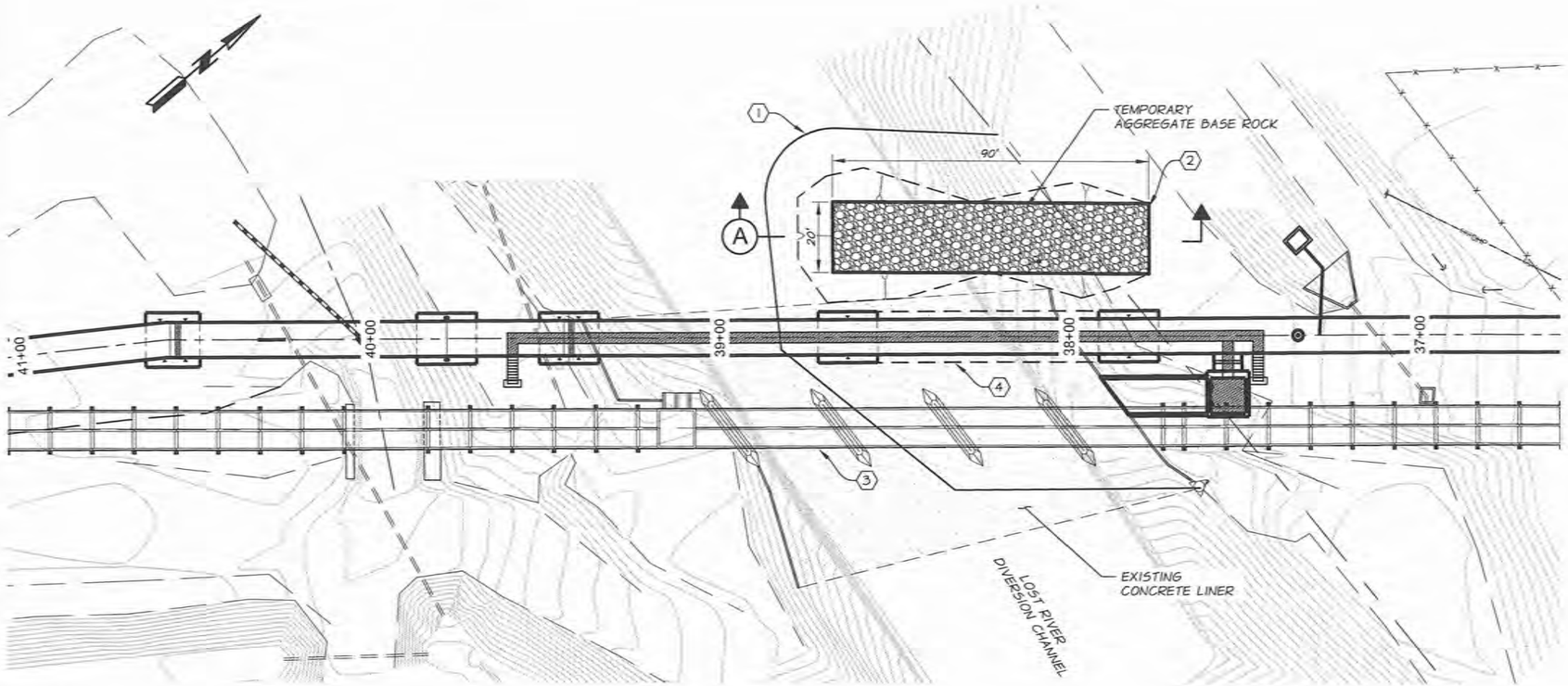
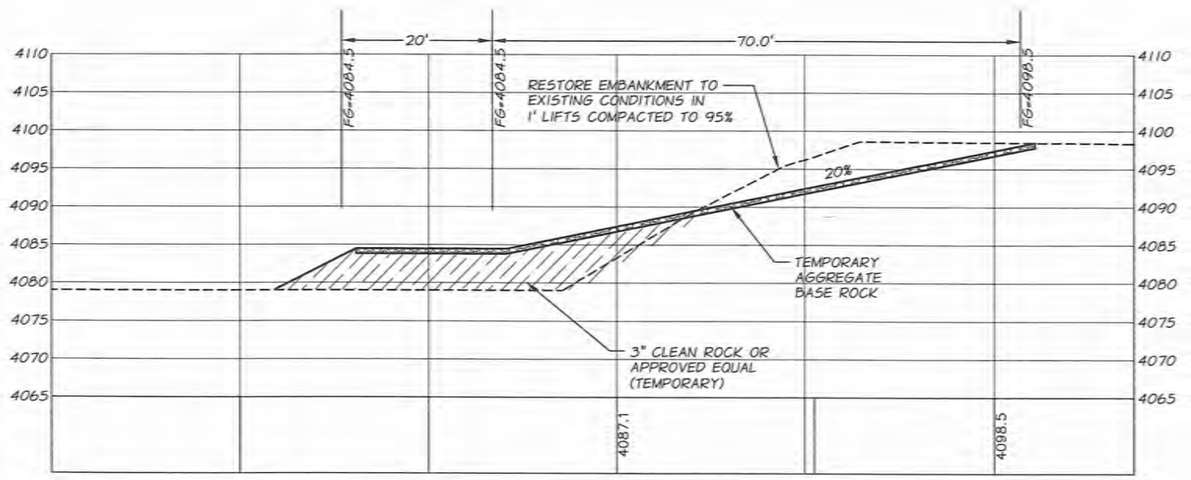


PLAN
SCALE: 1"=20'



SECTION A
SCALE: 1"=10' HORIZ.
SCALE: 1"=5' VERT.

CONSTRUCTION NOTES:

1. WATER ISOLATION MEASURES (SAND-BAGS, STEEL SHEET PILE, OR OTHER PRE-MANUFACTURED COFFER DAM SYSTEMS. FLOW IN CHANNEL TO BE DIVERTED FOR A MAXIMUM OF 10 WORKING DAYS AFTER IRRIGATION SEASON SHUTOFF. CONTRACTOR TO COORDINATE CONSTRUCTION WITH BOR TO MINIMIZE IN-WATER WORK.
2. TEMPORARY AGGREGATE SURFACING ACCESS RAMP. CONTRACTOR SHALL REPAIR ALL DISTURBED AREAS TO EXISTING CONDITIONS.
3. EXISTING FLUME AND SUPERSTRUCTURE TO BE REMOVED (EXISTING PIERS TO REMAIN). ALL DEBRIS SHALL BE CONTAINED DURING DEMOLITION AND REMOVAL. CONTRACTOR SHALL SUBMIT A BRIDGE DEMOLITION PLAN, INCLUDING WORK CONTAINMENT PLAN AND STAMPED WORKING DRAWINGS AND CALCULATIONS TO THE ENGINEER PRIOR TO BEGINNING BRIDGE DEMOLITION WORK. THE CONTRACTOR SHALL NOT BEGIN DEMOLITION WORK UNTIL THE DEMOLITION PLAN, WORK CONTAINMENT PLAN AND WORKING DRAWINGS AND CALCULATIONS ARE REVIEWED AND ACCEPTED BY THE ENGINEER.
4. TEMPORARY WORK BRIDGE SUPPORTED ON PILES AS NEEDED. CONTRACTOR TO PROVIDE DRAWINGS AND CALCULATIONS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. CONTRACTOR SHALL NOT DAMAGE OR OVER-STRESS PILES DURING CONSTRUCTION. ALL BOLT HOLES IN STEEL PILES OR OTHER TEMPORARY CONSTRUCTION IMPACTS SHALL BE REPAIRED AND FINISHED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.

GENERAL NOTES:

1. THE DESIGN AND IMPLEMENTATION OF THESE TEMPORARY CONSTRUCTION FEATURES AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT AND UPGRADING OF THESE FACILITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IN COMPLETE AND APPROVED.
2. THE TEMPORARY CONSTRUCTION FEATURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIODS THESE FACILITIES SHALL BE UPGRADED FOR UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENTS AND SEDIMENT-LADEN WATER DOES NOT LEAVE THE SITE.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

20 0 20 40 60
SCALE IN FEET

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
LOST RIVER DIVERSION CHANNEL
TEMPORARY CONSTRUCTION

anderson perry & associates, inc.
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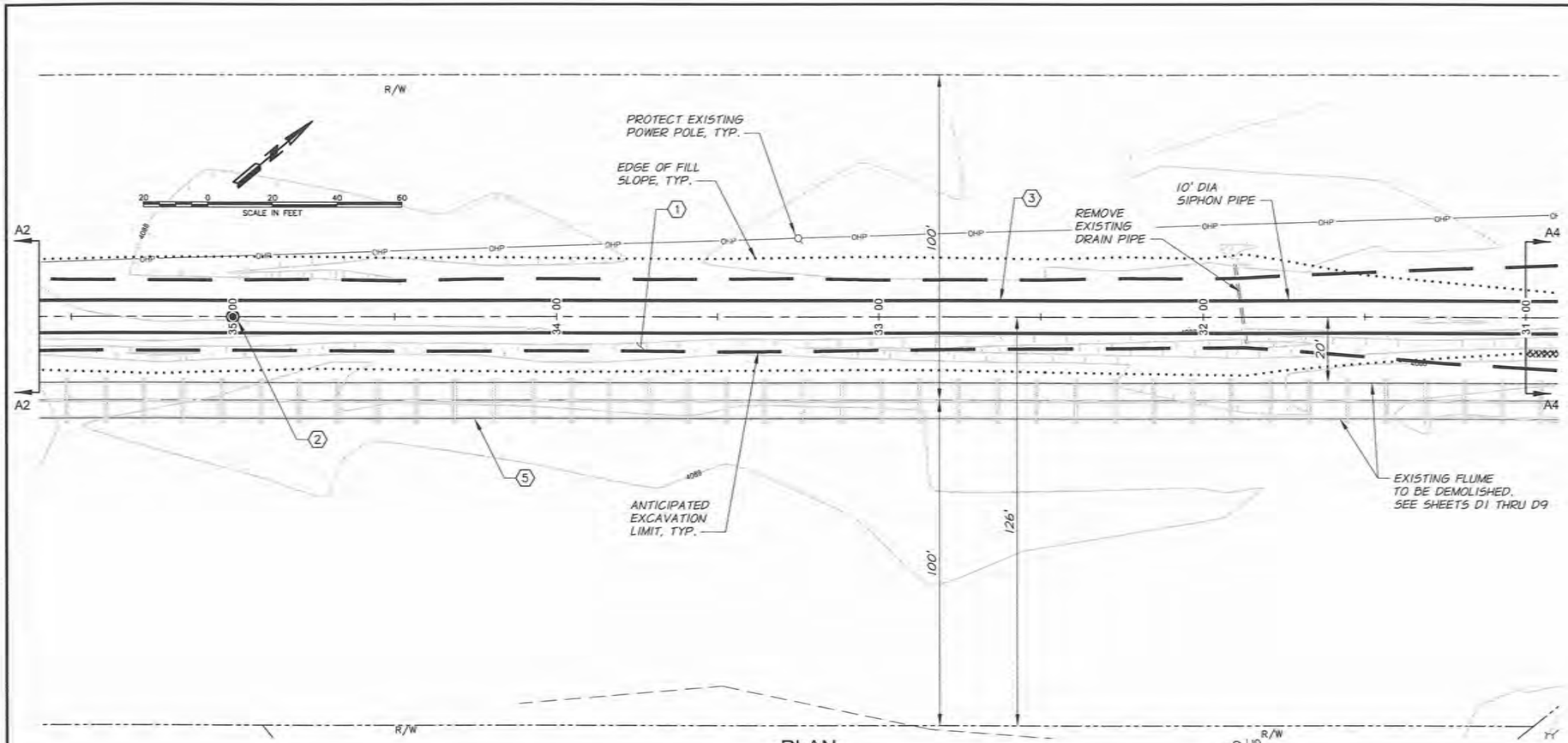
ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: TEMP CONSTRUCTION.DWG
DESIGNED BY: MJZ
DRAWN BY: SJK
CHECKED BY: BMM

SHEET 21 OF 79

A2A

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\TEMP CONSTRUCTION.dwg, WATER MANAGEMENT, 3/23/2016 12:39:49 PM, lwilhite

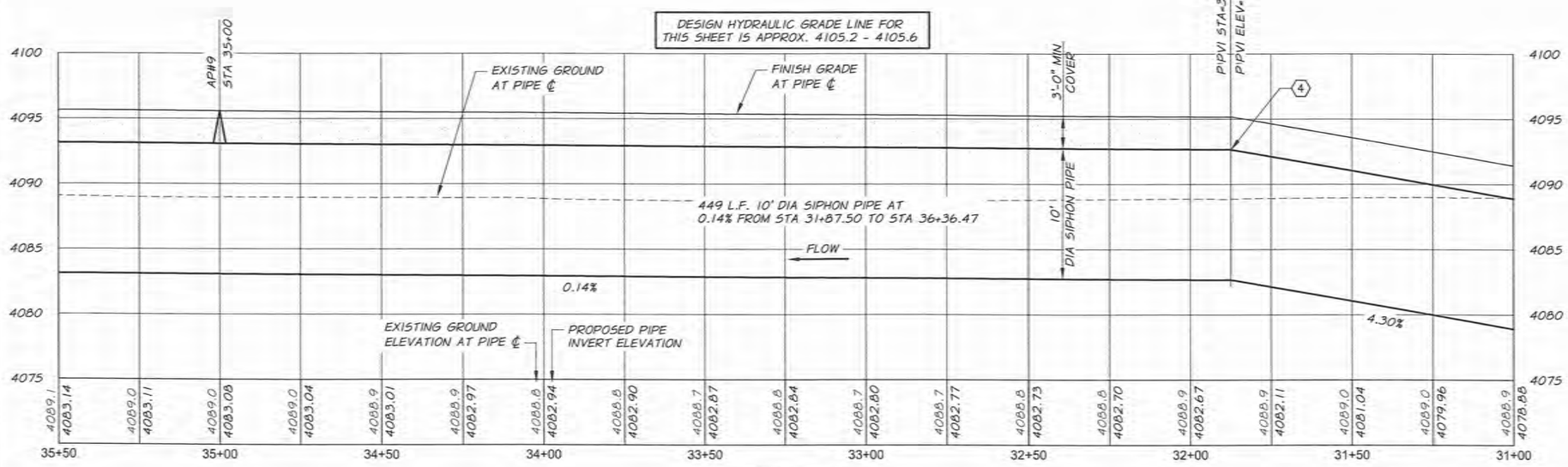


SHEET CONSTRUCTION NOTES:

1. ABANDON EXISTING DRAIN DITCH
2. ACCESS PORT #7 WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
3. SIPHON PIPE SEE SECTION, SHEET A20
4. SIPHON PIPE ELBOW SEE PLAN AND PROFILE FOR BEND REQUIREMENTS
5. PROVIDE 12 FT WIDE PERMANENT ACCESS ROAD CENTERED ON EXISTING FLUME ALIGNMENT. SEE DETAIL, SHEET A21

PLAN

SCALE: 1"=20'



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

20 0 20 40 60
HORIZ SCALE IN FEET
5 0 5 10 15
VERT SCALE IN FEET

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.

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59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 31+00 TO STA. 35+50

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Klamath Falls - Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 22 OF 79

A3

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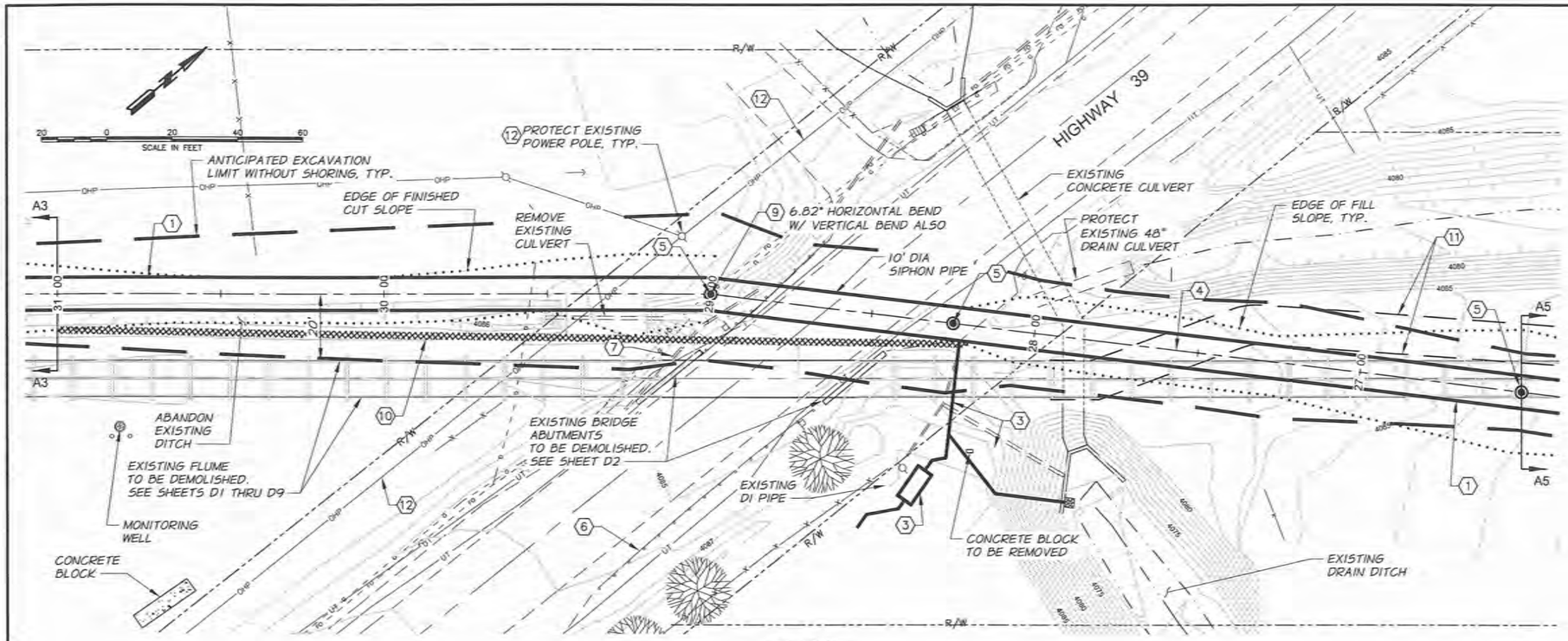
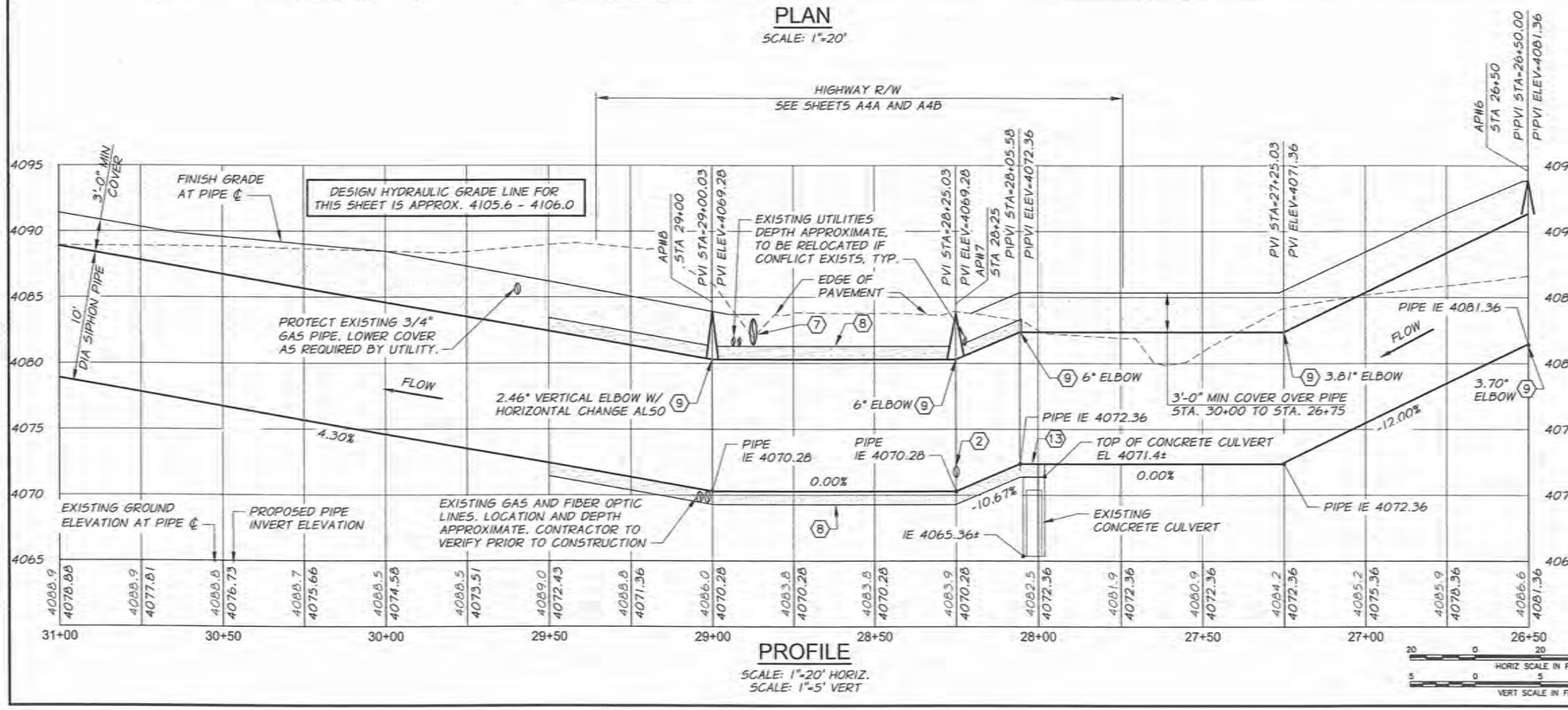


PLAN

SCALE: 1"=20'



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

HORIZ SCALE IN FEET

VERT SCALE IN FEET

SHEET CONSTRUCTION NOTES:

1. SIPHON PIPE SEE SECTION, SHEET A2D
2. SIPHON DRAIN SEE DETAIL, SHEET A4D
3. TURN OUT 'D' SEE TURNOUT SCHEDULE AND TYP. VAULT CLEANOUT ASSEMBLY AND SIPHON TAP DETAILS, SHEET A2B
4. ROADWAY CROSSING OVER SIPHON PIPE SEE DETAIL, SHEET A4C
5. ACCESS PORT WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
6. EXISTING GUARDRAIL TO BE DEMOLISHED SEE SHEET D2
7. REMOVED EXISTING CULVERT AND REPLACE WITH 24" DIA CULVERT. EXTEND OVER SIPHON PIPE. MATCH EXISTING DITCH INVERT ELEVATIONS.
8. INSTALL SIPHON PIPE BETWEEN STA. 28+05 TO STA. 29+50 PER 10' DIA SIPHON SECTION WITH SHORING DETAIL, SHEET A4B
9. SIPHON PIPE ELBOW SEE PLAN AND PROFILE FOR DEFLECTION
10. PROVIDE TRENCH SHORING SYSTEM BETWEEN STA. 28+25± AND STA. 31+00± MIN., A5 REQUIRED.
11. PROVIDE 12' WIDE PERMANENT ACCESS ROAD CENTERED ON EXISTING FLUME ALIGNMENT UNLESS OTHERWISE SHOWN. SEE DETAIL, SHEET A21
12. PACIFICORP HAS BEEN COORDINATED WITH DURING THE DESIGN PROCESS. CONTRACTOR MAY COORDINATE WITH PACIFICORP TO HAVE THE POWER ISOLATION AND/OR TEMPORARILY RELOCATE TO FACILITATE CONSTRUCTION.
13. PLACE CDF BETWEEN CONCRETE CULVERT AND SIPHON PIPE.

NOTES:

1. CONTRACTOR SHALL SUPPORT ALL EXISTING UTILITIES AS REQUIRED FOR COMPLETING THE WORK.
2. CONTRACTOR SHALL PROVIDE A TEMPORARY PIPE CLOSURE PLATE BETWEEN STAGE I AND STAGE II CONSTRUCTION. SEE DETAIL, SHEET A21.
3. CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.
4. FOR UTILITIES AT HIGHWAY CROSSING, SEE SHEET A4A.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 26+50 TO STA. 31+00

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2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5330

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 23 OF 79

A4

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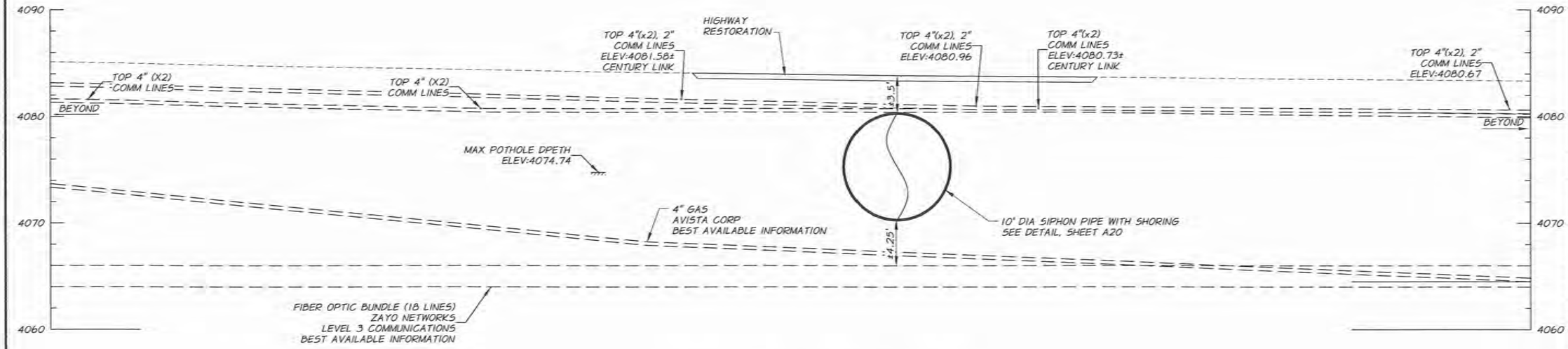
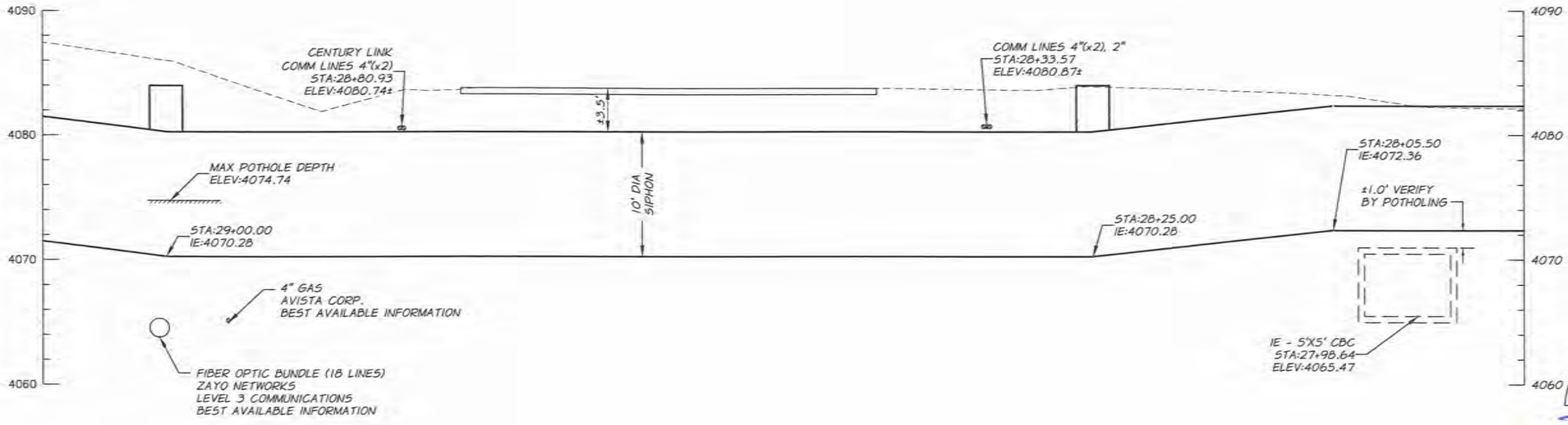


UTILITY LOCATIONS ALONG HWY 39

SCALE: 1"=5'

NOTE:
THIS SHEET SHOWS UTILITY LOCATION INFORMATION OBTAINED PRIOR TO CONSTRUCTION. CONTRACTOR TO FIELD VERIFY.



UTILTIY LOCATIONS ALONG SIPHON PIPE

SCALE: 1"=5'

5 0 5 10 15
VERT SCALE IN FEET

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59,632PE
OREGON
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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
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FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
HIGHWAY 39 EXISTING UTILITY LOCATIONS

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2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	ACE-HWY39-BASE.DWG
DESIGNED BY:	MJZ
DRAWN BY:	BLP
CHECKED BY:	BMM

SHEET 24 OF 79

A4A

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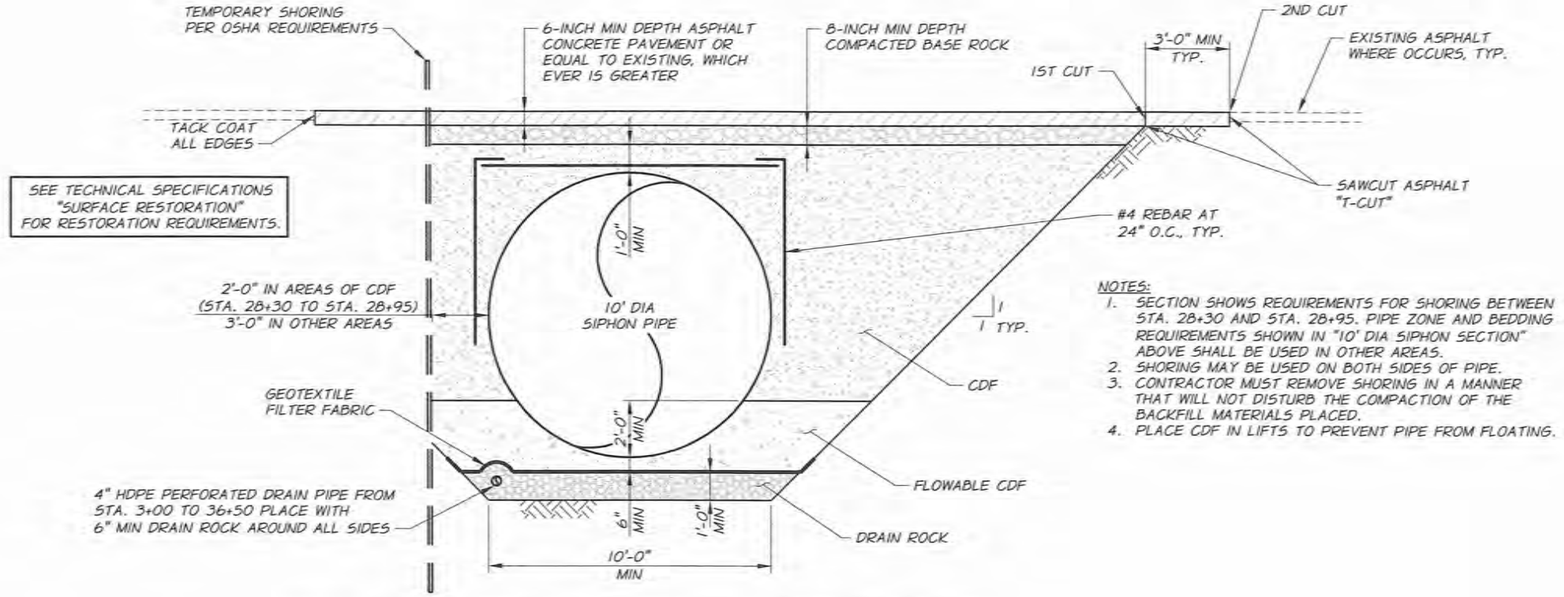
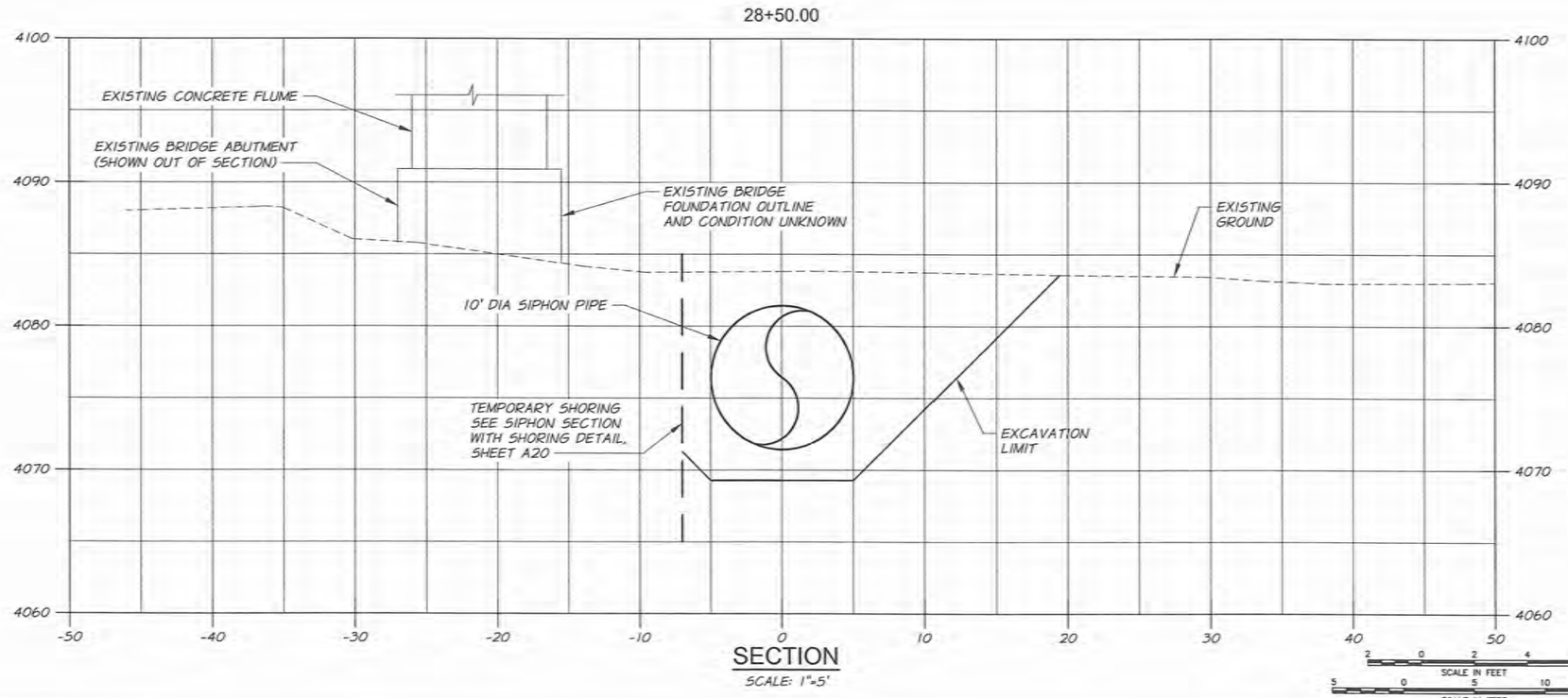


NOTES:
1. SECTION SHOWS REQUIREMENTS FOR SHORING BETWEEN STA. 28+30 AND STA. 28+95. PIPE ZONE AND BEDDING REQUIREMENTS SHOWN IN "10' DIA SIPHON SECTION" ABOVE SHALL BE USED IN OTHER AREAS.
2. SHORING MAY BE USED ON BOTH SIDES OF PIPE.
3. CONTRACTOR MUST REMOVE SHORING IN A MANNER THAT WILL NOT DISTURB THE COMPACTION OF THE BACKFILL MATERIALS PLACED.
4. PLACE CDF IN LIFTS TO PREVENT PIPE FROM FLOATING.

10' DIA SIPHON SECTION WITH SHORING AT HIGHWAY

SCALE: 3/8"=1'-0"



SECTION

SCALE: 1"=5'

SCALE IN FEET

SCALE IN FEET

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OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
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ALIGNMENT IMPROVEMENTS
HIGHWAY 39 CROSSING SECTION

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(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	SIPHON-SECT.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 25 OF 79

A4B

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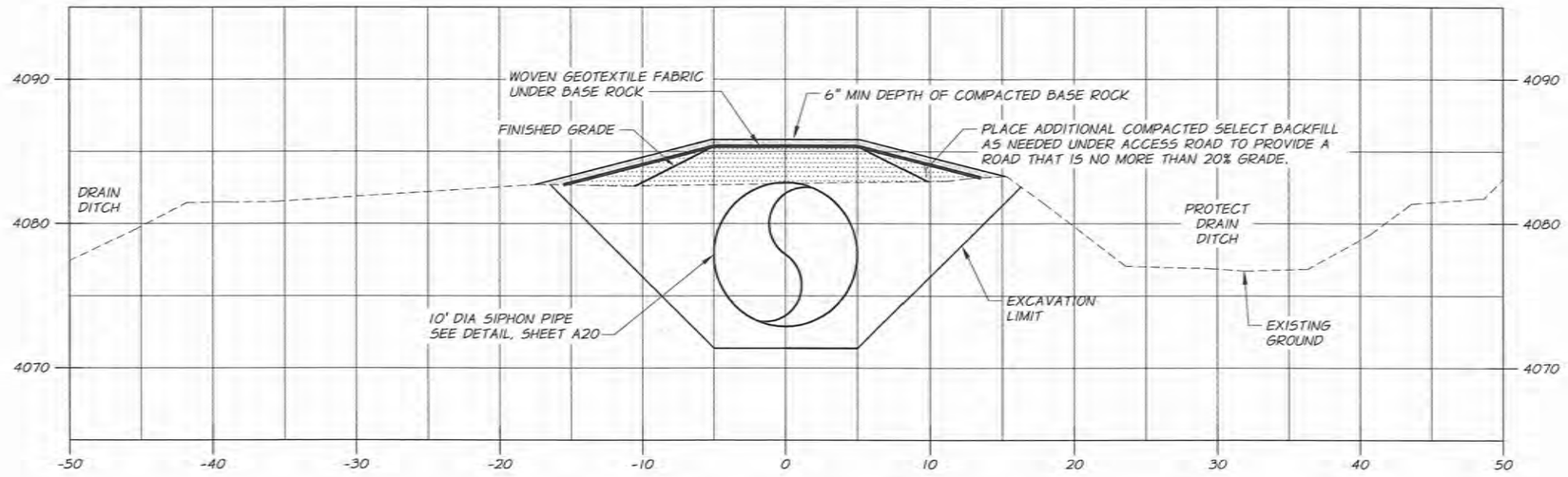
27+50.00, 18+60 (SIMILAR)



PERMANENT ACCESS ROADWAY OVER SIPHON PIPE

SCALE: 1"=5'

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS

PERMANENT ACCESS ROADWAY OVER SIPHON PIPE AT STA. 27+50

No.	REVISION	DATE	BY

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2950 Shasta Way · Klamath Falls, OR 97603
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REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	SIPHON-SECT.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 26 OF 79

A4C

5 0 5 10 15
SCALE IN FEET

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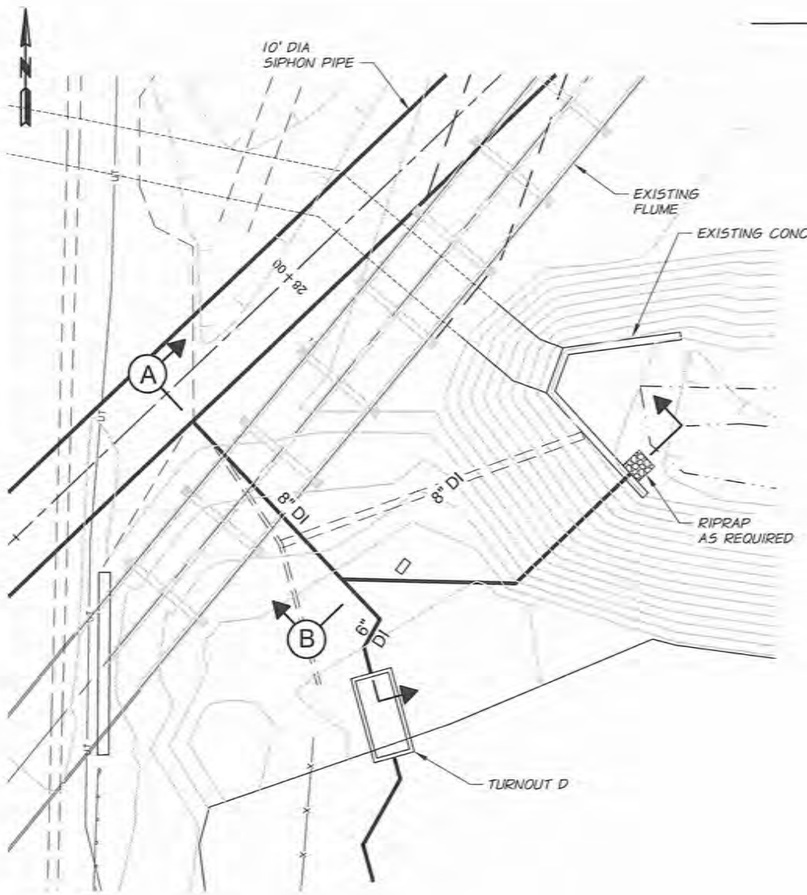
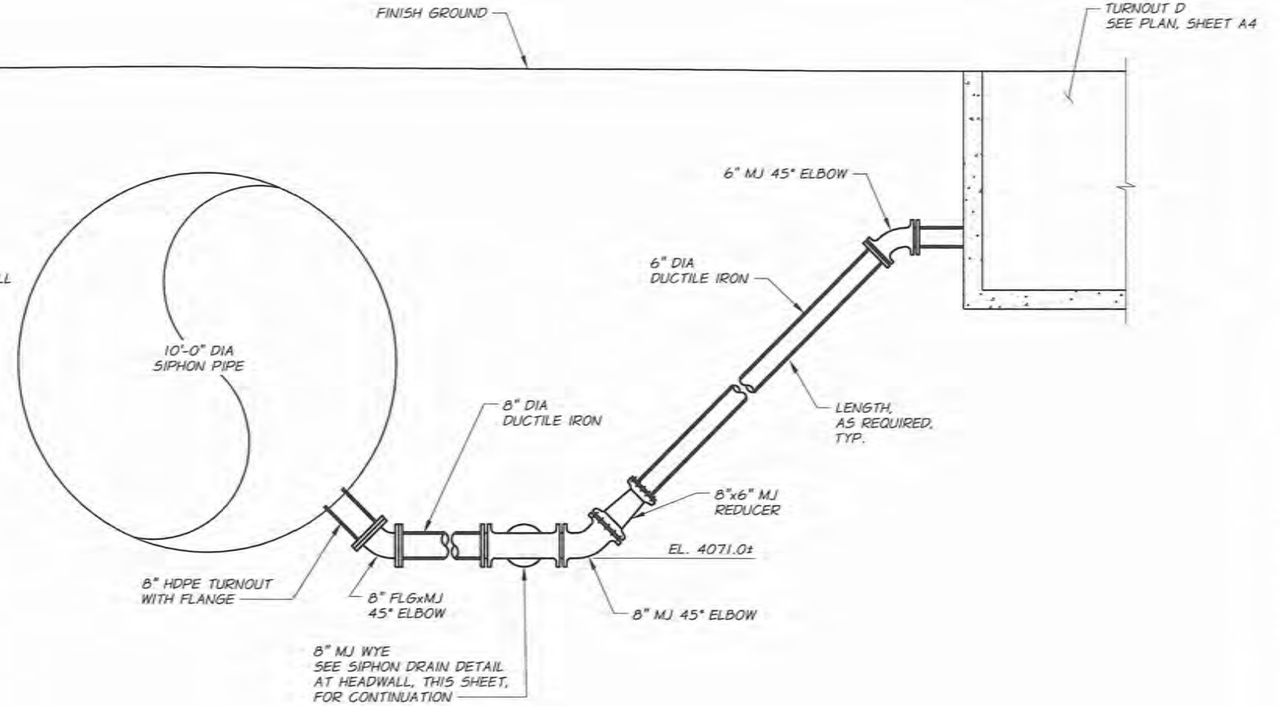
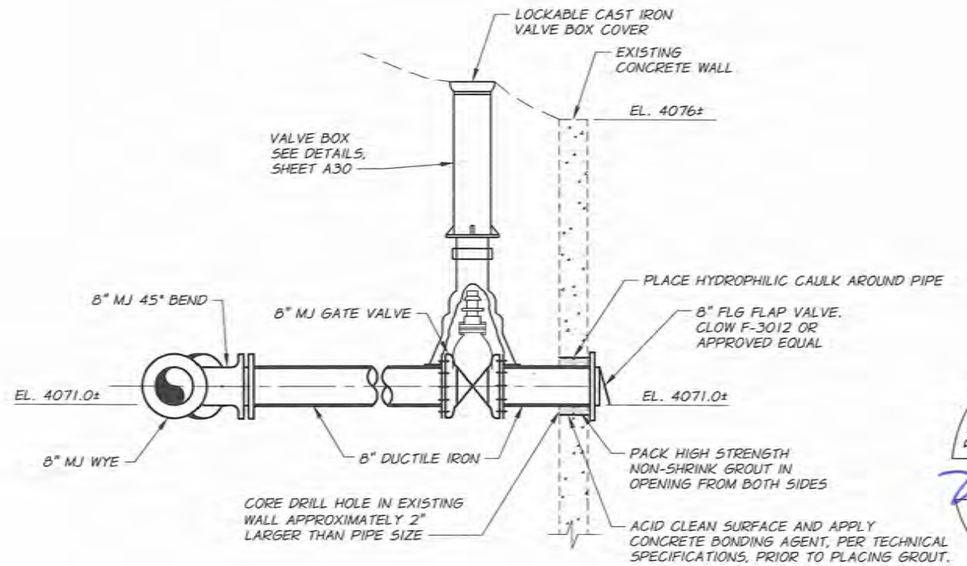


PLAN
(SEE SHEET A4)
SCALE: 1"=10'



SECTION A
SCALE: 1/2"=1'-0"



SECTION B
SIPHON DRAIN DETAIL
SCALE: 3/4"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
SIPHON DRAIN DETAILS

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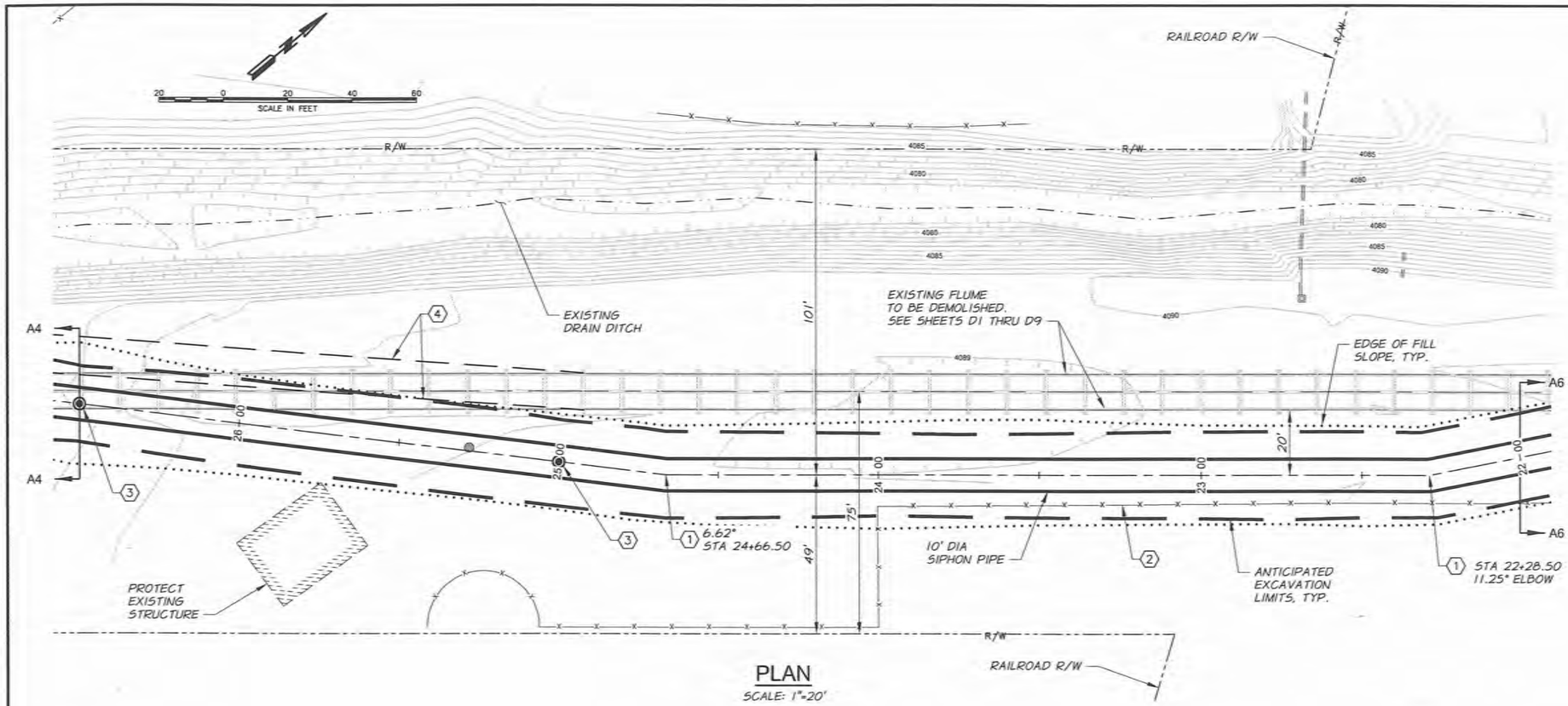
(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_SIPHON.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 27 OF 79

A4D

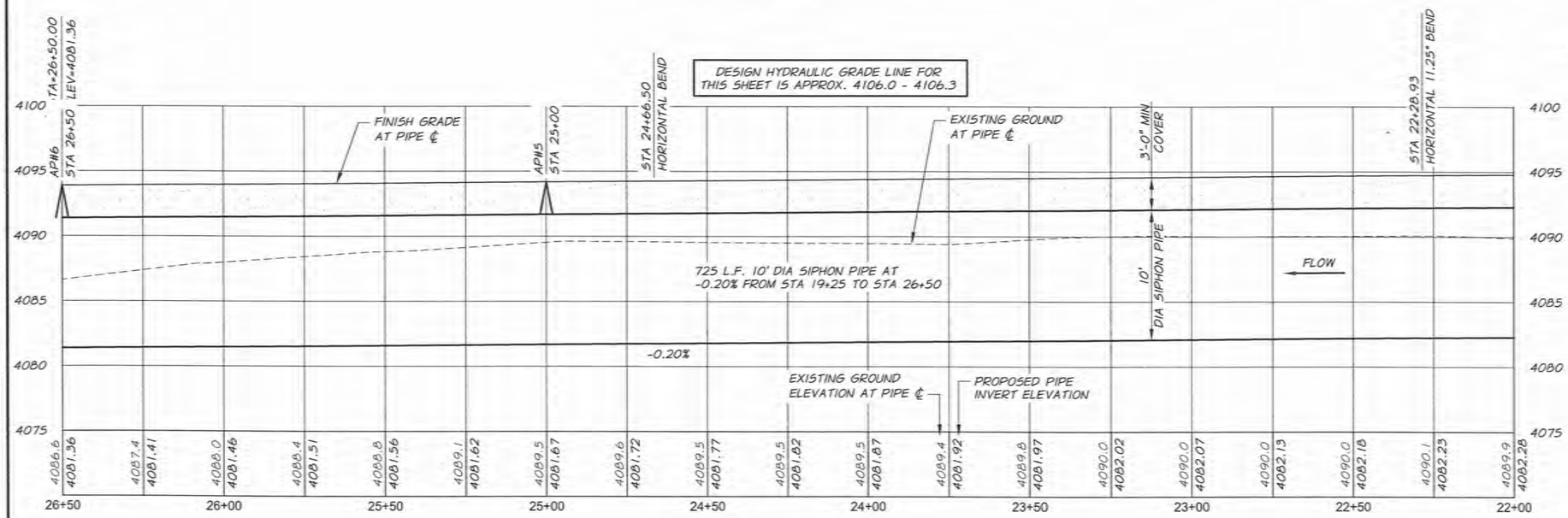


PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES:

1. SIPHON PIPE ELBOW SEE PLAN AND PROFILE FOR DEFLECTION
2. REMOVE AND REPLACE FENCE AS REQUIRED WITH NEW EQUAL OR BETTER FENCE, AS APPROVED BY ENGINEER. PLACE NEW FENCE ON TOE OF FILL OVER SIPHON PIPE.
3. ACCESS PORT WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
4. PROVIDE 12' WIDE PERMANENT ACCESS ROAD CENTERED ON EXISTING FLUME ALIGNMENT UNLESS OTHERWISE SHOWN. SEE DETAIL, SHEET A21



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

NOTES:

1. CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.
2. CONTRACTOR MAY PROPOSE TO REALIGN SIPHON PIPE STA 21+26 TO STA 27+00± AND INSTALL IN GENERAL VICINITY OF EXISTING FLUME AS APPROVED BY THE ENGINEER. WORK WOULD BE DONE IN STAGE II.

20 0 20 40 60
HORIZ SCALE IN FEET
5 0 5 10 15
VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 22+00 TO STA. 26+50

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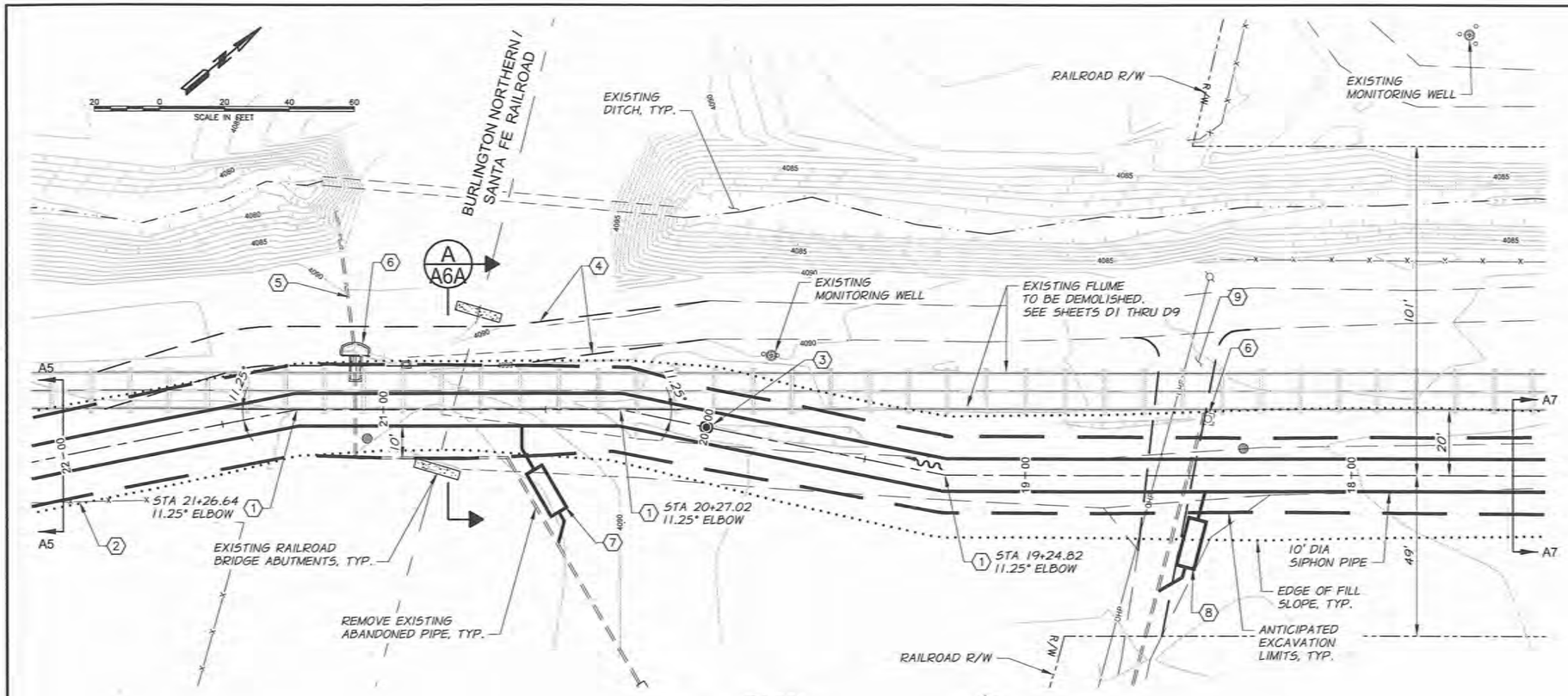
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 28 OF 79

A5

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\Pipe_PP.DWG, PIPE-PP (5), 3/23/2016 1:45:49 PM, lwillhite



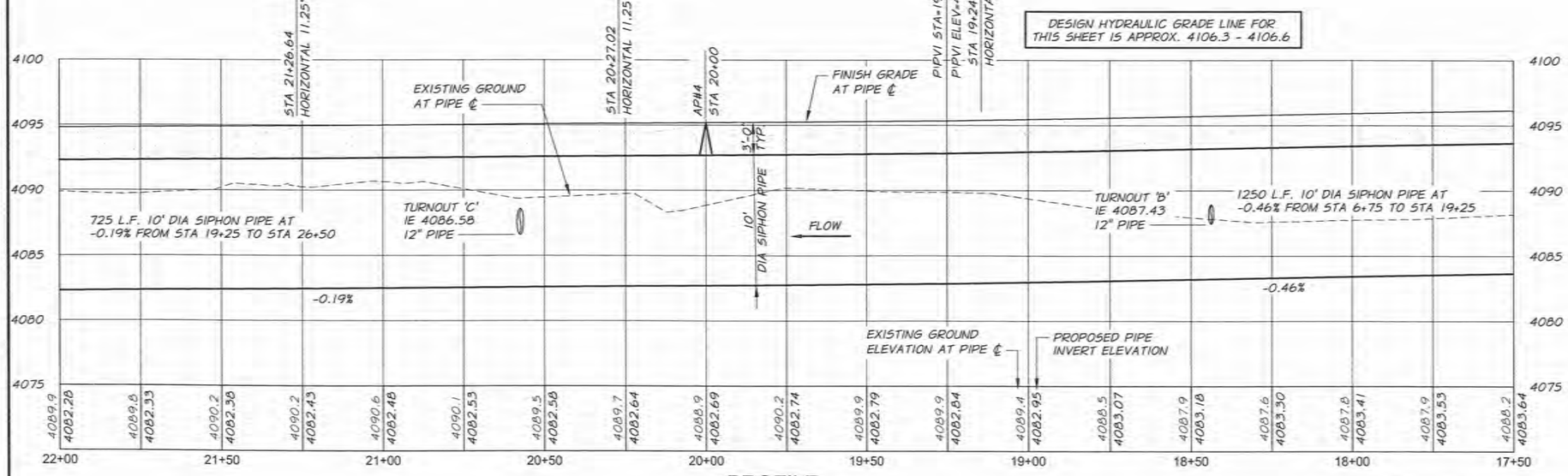
PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES:

1. SIPHON PIPE ELBOW SEE PLAN AND PROFILE
2. REMOVE AND REPLACE FENCE A5 REQUIRED
3. ACCESS PORT #4 WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
4. PROVIDE 12' WIDE PERMANENT ACCESS ROAD CENTERED ON EXISTING FLUME ALIGNMENT UNLESS OTHERWISE SHOWN. SEE DETAIL, SHEET A21
5. REMOVE EXISTING 12" DIAMETER CMP
6. REMOVE EXISTING TURNOUT (STAGE II)
7. TURNOUT 'C' SEE TURNOUT SCHEDULE AND TYP. VAULTED CLEANOUT AND SIPHON TAP DETAILS, SHEET A28.
8. TURNOUT 'B' SEE TURNOUT SCHEDULE AND TYP. VAULTED CLEANOUT AND SIPHON TAP DETAILS, SHEET A28.
9. PERMANENT ACCESS ROAD OVER SIPHON PIPE. SEE DETAIL, SHEET A4C

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.



4089.9	4089.8	4090.2	4090.2	4090.6	4090.1	4089.5	4089.7	4088.9	4090.2	4089.9	4089.9	4089.4	4088.5	4087.9	4087.6	4087.8	4087.9	4088.2
4082.28	4082.33	4082.38	4082.43	4082.48	4082.53	4082.58	4082.64	4082.69	4082.74	4082.79	4082.84	4082.95	4083.07	4083.18	4083.30	4083.41	4083.53	4083.64

PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

HORIZ SCALE IN FEET

VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 29 OF 79

A6

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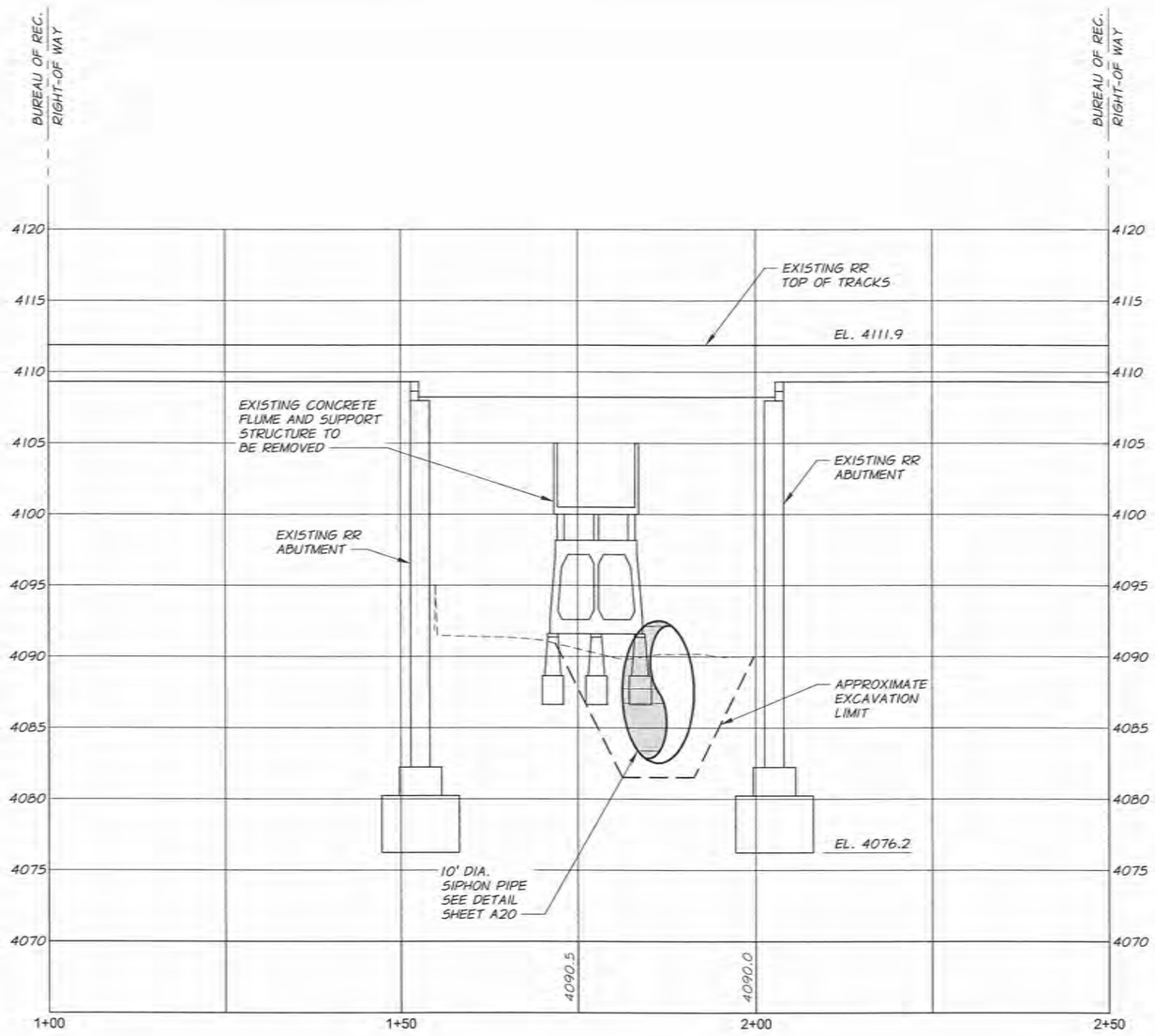

SECTION A/A6

SCALE: 1"=20' HORIZ.
SCALE: 1"=10' VERT.

NOTES:
1. SIPHON PIPE CROSSES RAILROAD BRIDGE ON A SKEW. SEE SHEET A6
2. ELEVATION DATA TAKEN FROM SITE SURVEY AND AS-BUILT INFORMATION. CONTRACTOR TO VERIFY.

C-FLUME REPLACEMENT
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ALIGNMENT IMPROVEMENTS
RAILROAD CROSSING SECTION

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SEPT. 2, 1998
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FILE: DETL_MISC.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 30 OF 79

A6A

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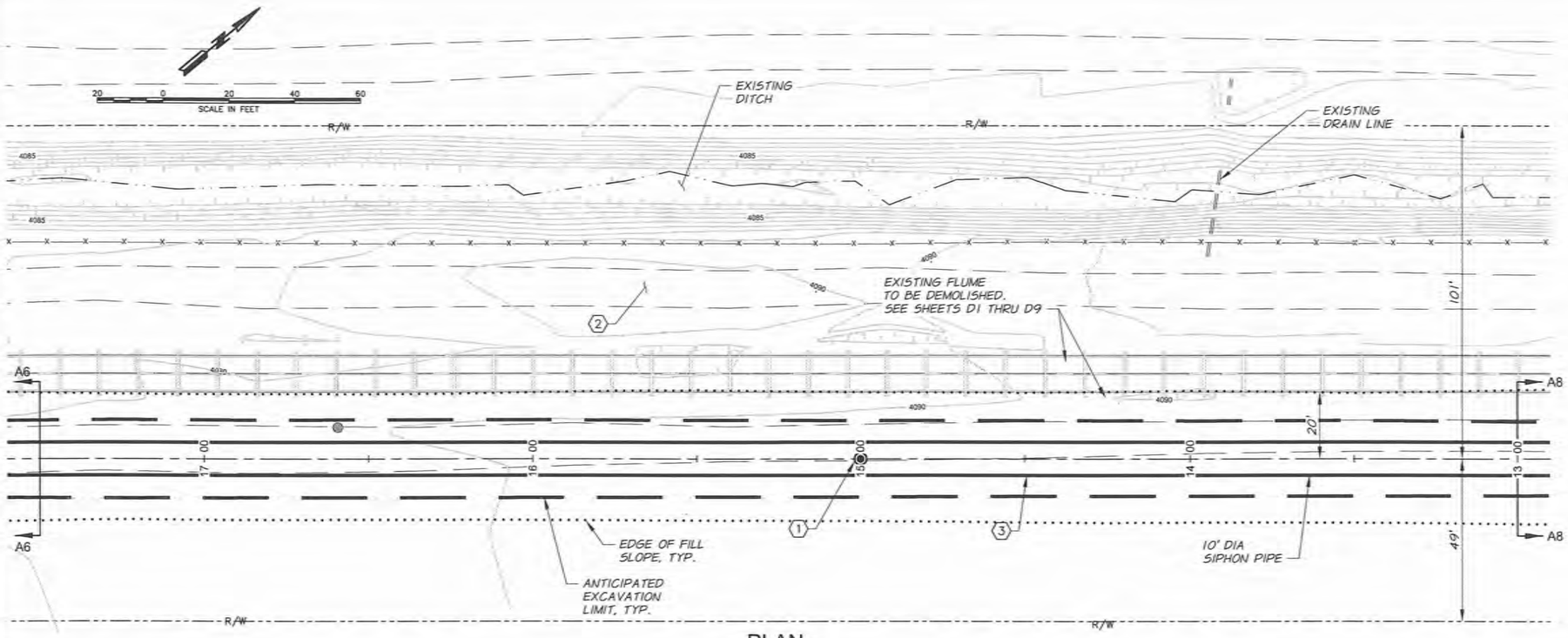
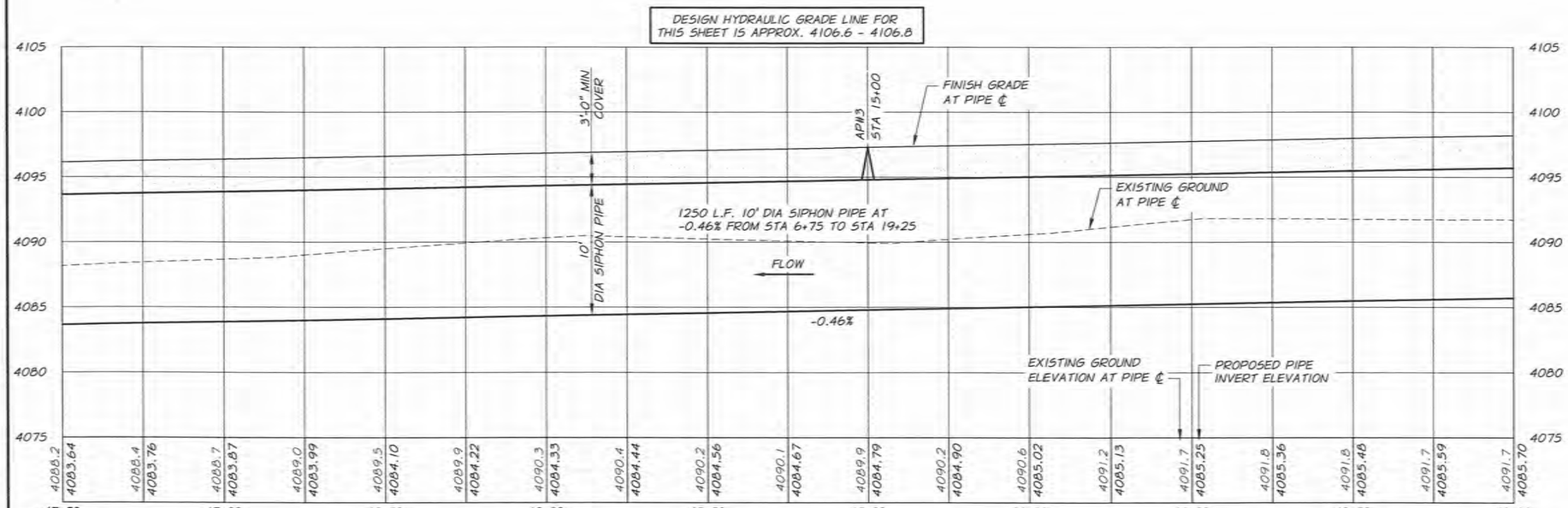


PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES:

1. ACCESS PORT #3 WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
2. PROVIDE 12' WIDE PERMANENT ACCESS ROAD. SEE DETAIL, SHEET A21
3. SIPHON PIPE SEE SECTION, SHEET A20



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.

20 0 20 40 60
HORIZ SCALE IN FEET
5 0 5 10 15
VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 13+00 TO STA. 17+50

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2050 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 31 OF 79

A7

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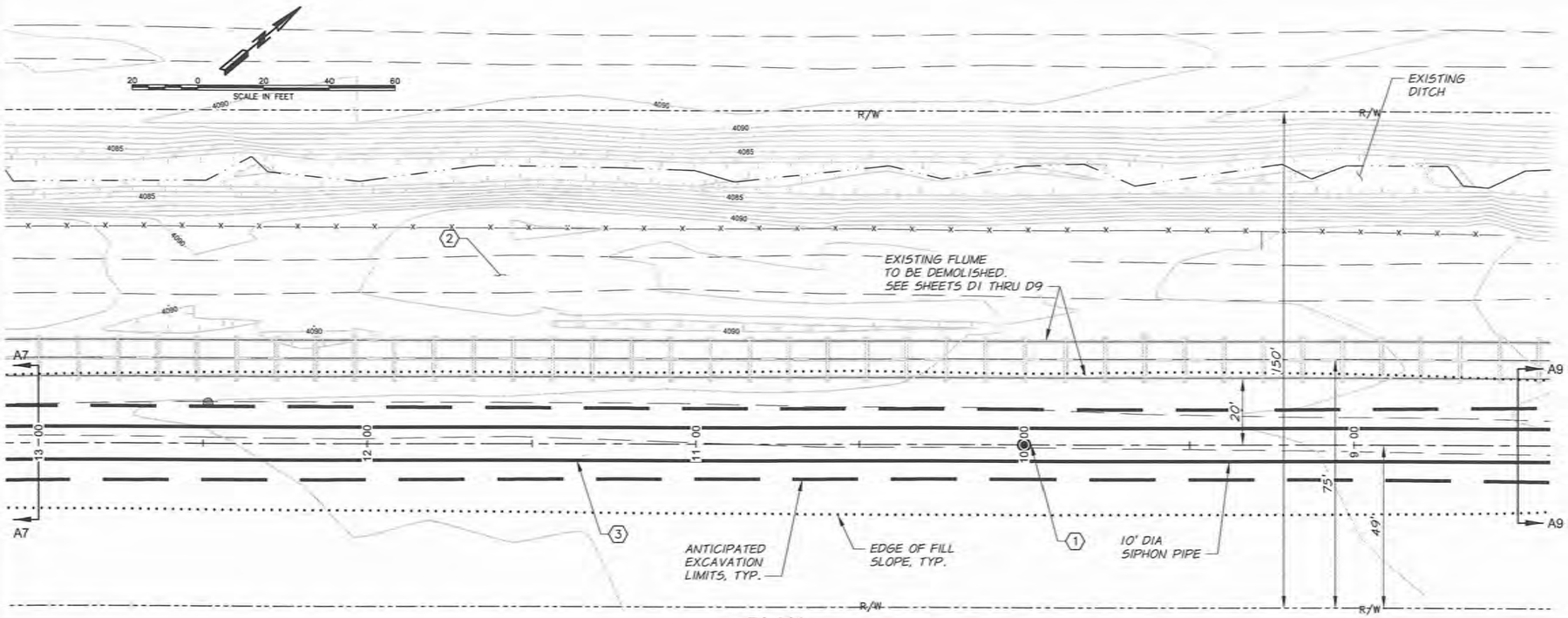


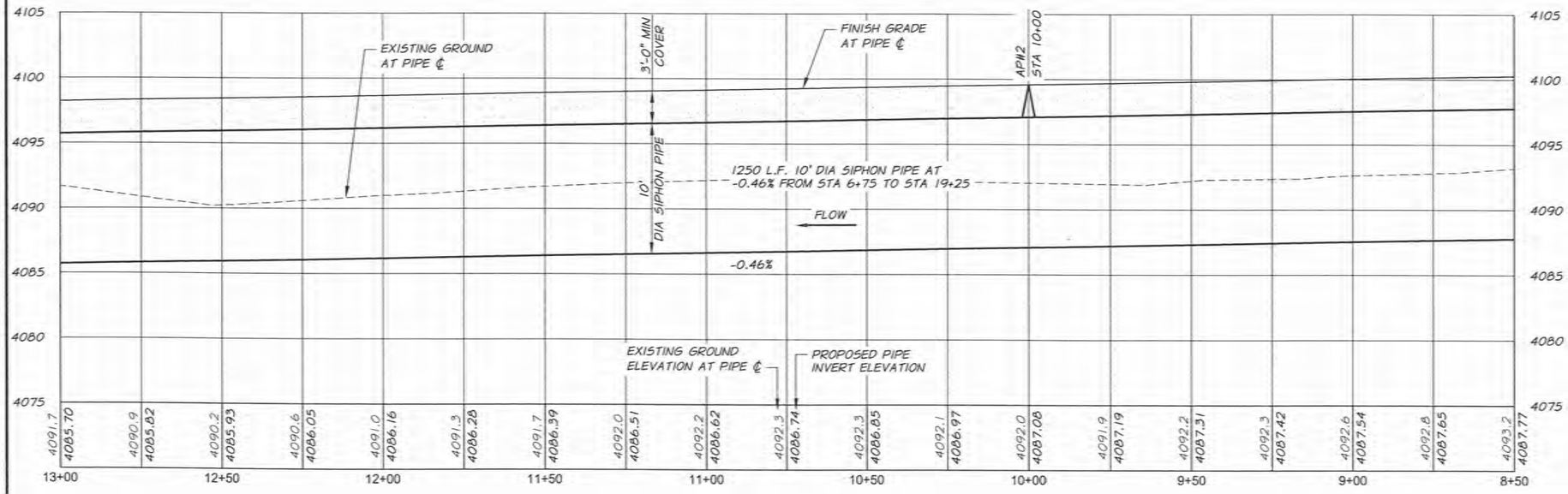
PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES:

1. ACCESS PORT #2 WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
2. PROVIDE 12' WIDE PERMANENT ACCESS ROAD SEE DETAIL, SHEET A21
3. SIPHON PIPE SEE SECTION, SHEET A20

DESIGN HYDRAULIC GRADE LINE FOR THIS SHEET IS APPROX. 4106.8 - 4107.1



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.

20 0 20 40 60
HORIZ SCALE IN FEET
5 0 5 10 15
VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 32 OF 79

A8

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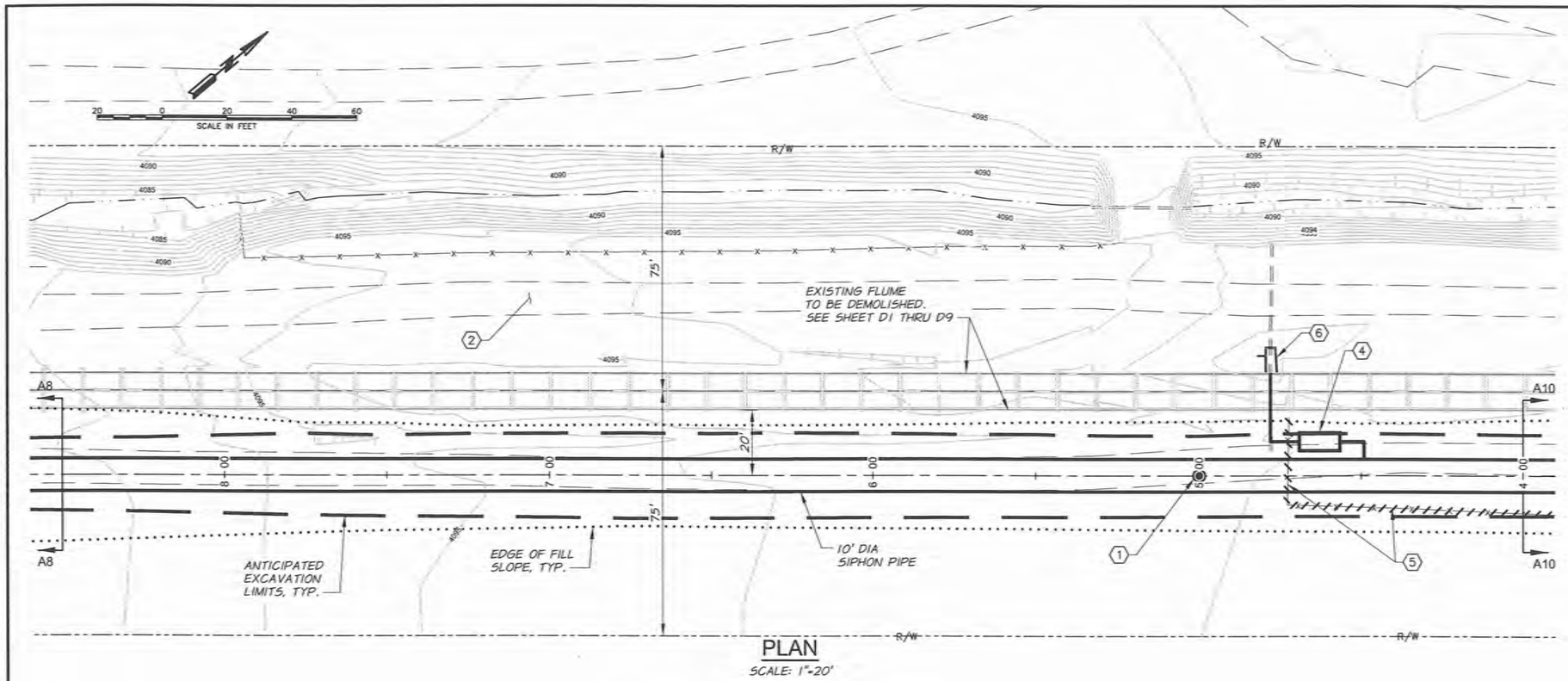


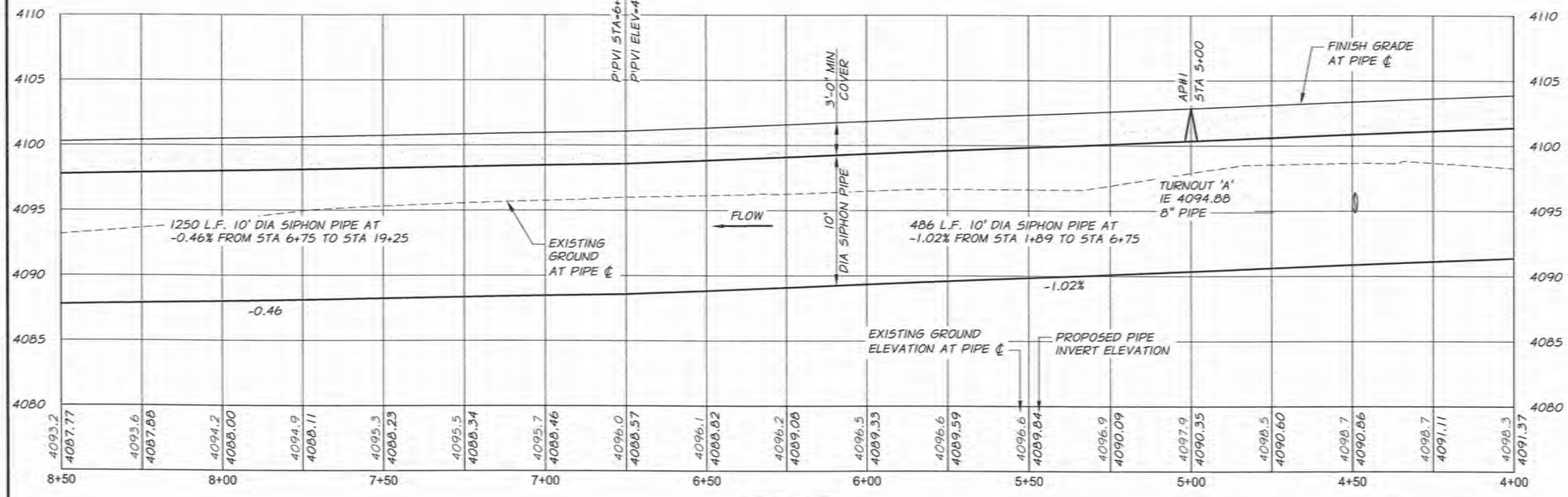
PLAN

SCALE: 1"=20'

SHEET CONSTRUCTION NOTES:

1. ACCESS PORT #1 WITH PRESSURE RELIEF SEE DETAIL, SHEET A27
2. PROVIDE 12' WIDE PERMANENT ACCESS ROAD SEE DETAIL, SHEET A21
3. SIPHON PIPE SEE SECTION, SHEET A20
4. TURNOUT 'A' SEE TURNOUT SCHEDULE AND TYP. VAULTED CLEANOUT AND SIPHON TAP DETAIL, SHEET A28.
5. REMOVE FENCE AS REQUIRED
6. REMOVE EXISTING TURNOUT STRUCTURE

DESIGN HYDRAULIC GRADE LINE FOR THIS SHEET IS APPROX. 4107.1 - 4107.4



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.

20 0 20 40 60
HORIZ SCALE IN FEET
5 0 5 10 15
VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 4+00 TO STA. 8+50

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2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 33 OF 79

A9

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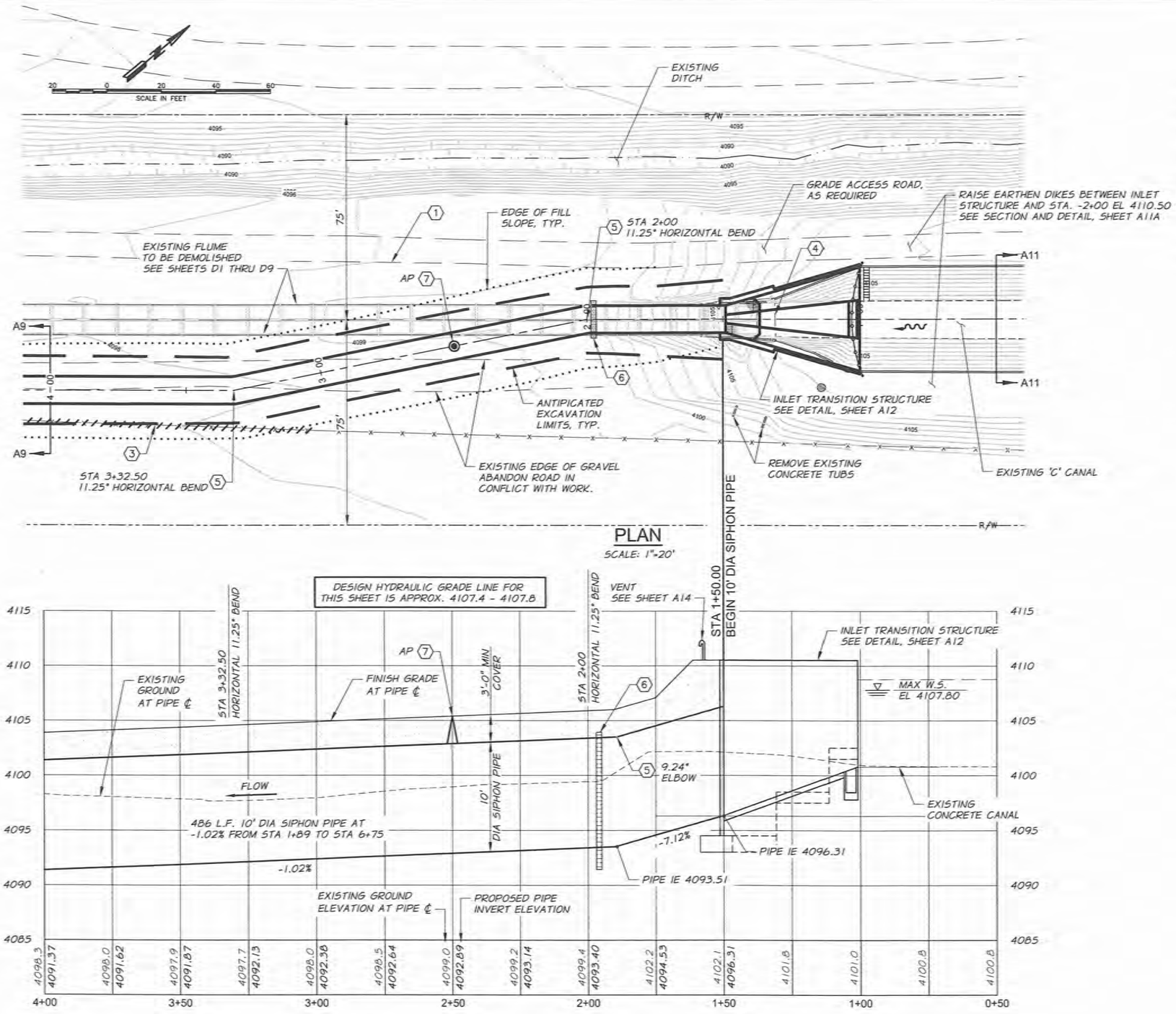

SHEET CONSTRUCTION NOTES:

1. PROVIDE 12' WIDE PERMANENT ACCESS ROAD SEE DETAIL, SHEET A21
2. SIPHON PIPE SEE SECTION, SHEET A20
3. REMOVE FENCE AS REQUIRED
4. REMOVE AND DISPOSE OF EXISTING BRIDGE
5. SIPHON PIPE ELBOW SEE PLAN AND PROFILE FOR DEFLECTION
6. BENTONITE CUT-OFF WALL SEE DETAIL, SHEET A22
7. ACCESS PORT WITH PRESSURE RELIEF SEE DETAIL, SHEET A27

NOTE:
CONSTRUCT PERMANENT ACCESS ROAD AFTER FLUME DEMOLITION.

HORIZ SCALE IN FEET
VERT SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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KLAMATH FALLS, OR
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ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. 0+50 TO STA. 4+00

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2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4660 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 34 OF 79

A10

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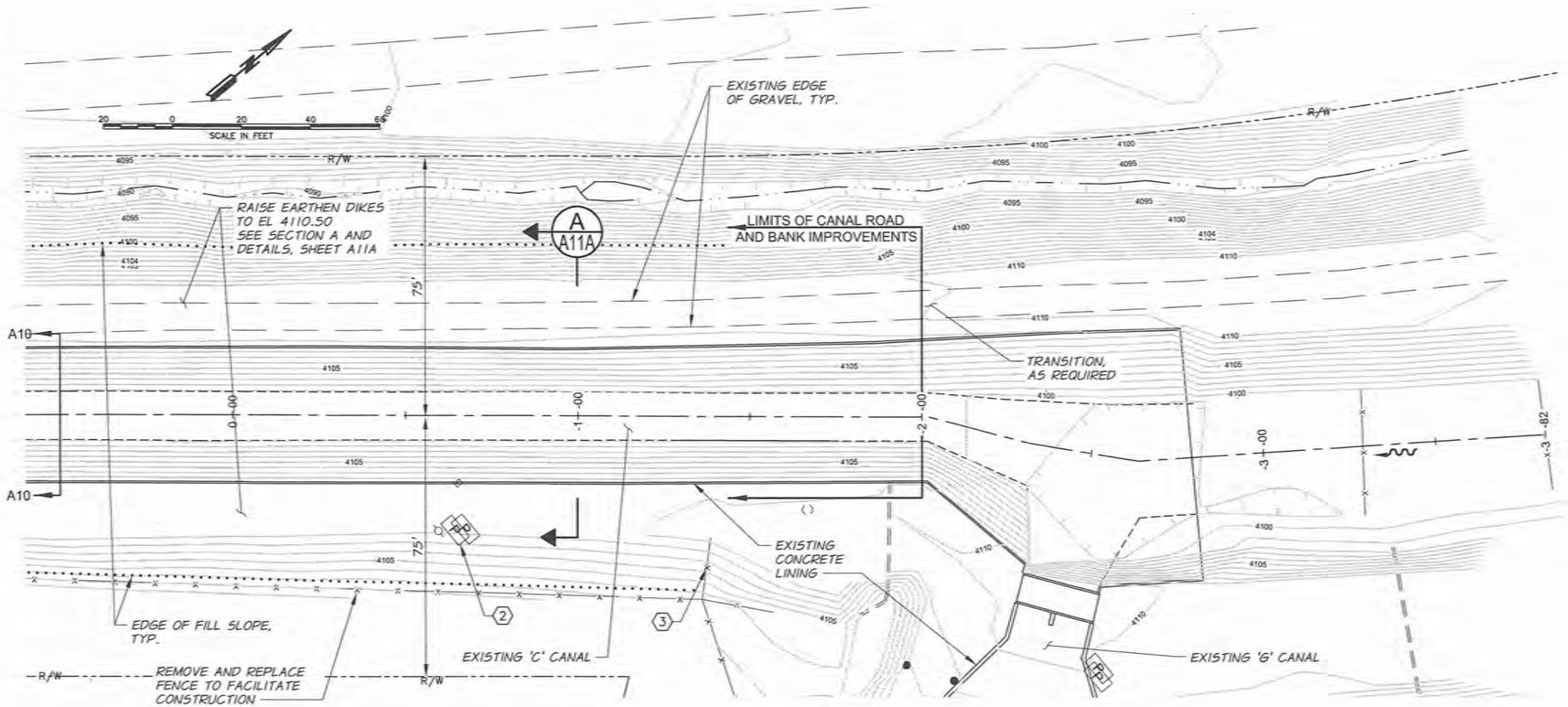
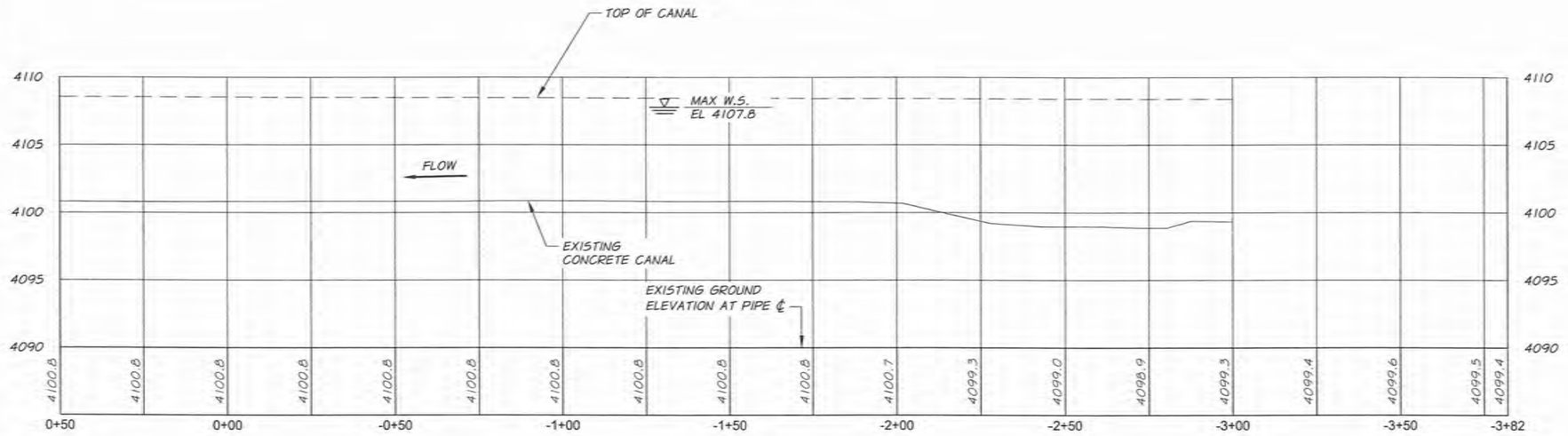


PLAN

SCALE: 1"=20'



PROFILE

SCALE: 1"=20' HORIZ.
SCALE: 1"=10' VERT

SHEET CONSTRUCTION NOTES:

1. PROVIDE 12' WIDE PERMANENT ACCESS ROAD SEE DETAIL, SHEET A21
2. PROTECT EXISTING PUMPS AND POWER.
3. REMOVE FENCE AS REQUIRED

SCALE IN FEET

SCALE IN FEET

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59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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FOR
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ALIGNMENT IMPROVEMENTS
PLAN AND PROFILE - STA. -3+80 TO STA. 0+50

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(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	PIPE_PP.DWG
DESIGNED BY:	HMM
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CHECKED BY:	BMM

SHEET 35 OF 79

A11

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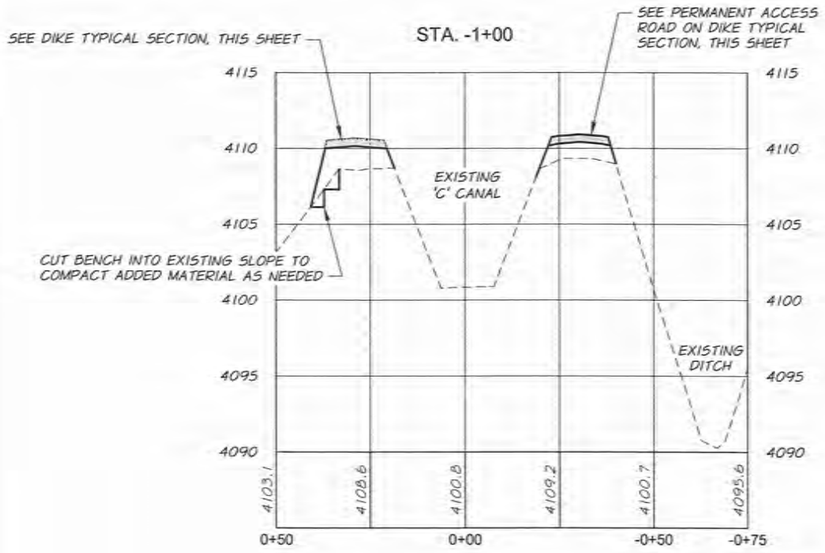
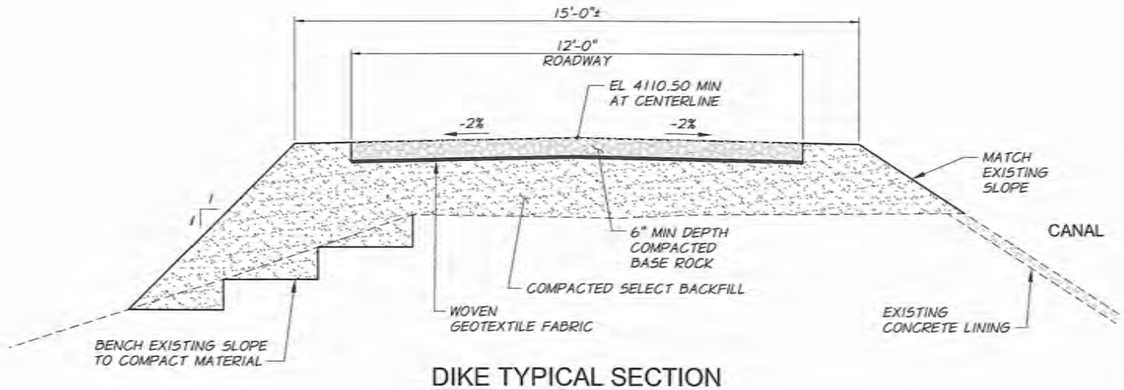


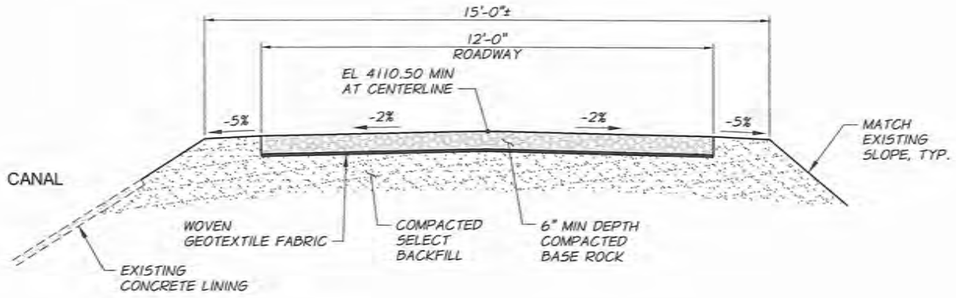
CROSS SECTION

SCALE: 1"=20' HORIZ.
SCALE: 1"=5' VERT.



DIKE TYPICAL SECTION

SCALE: 1/2"=1'-0"



PERMANENT ACCESS ROAD ON DIKE TYPICAL SECTION

SCALE: 1/2"=1'-0"

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SEPT. 2, 1998
BRETT MOORE
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ALIGNMENT IMPROVEMENTS
CANAL SECTION AND TYPICAL SECTIONS

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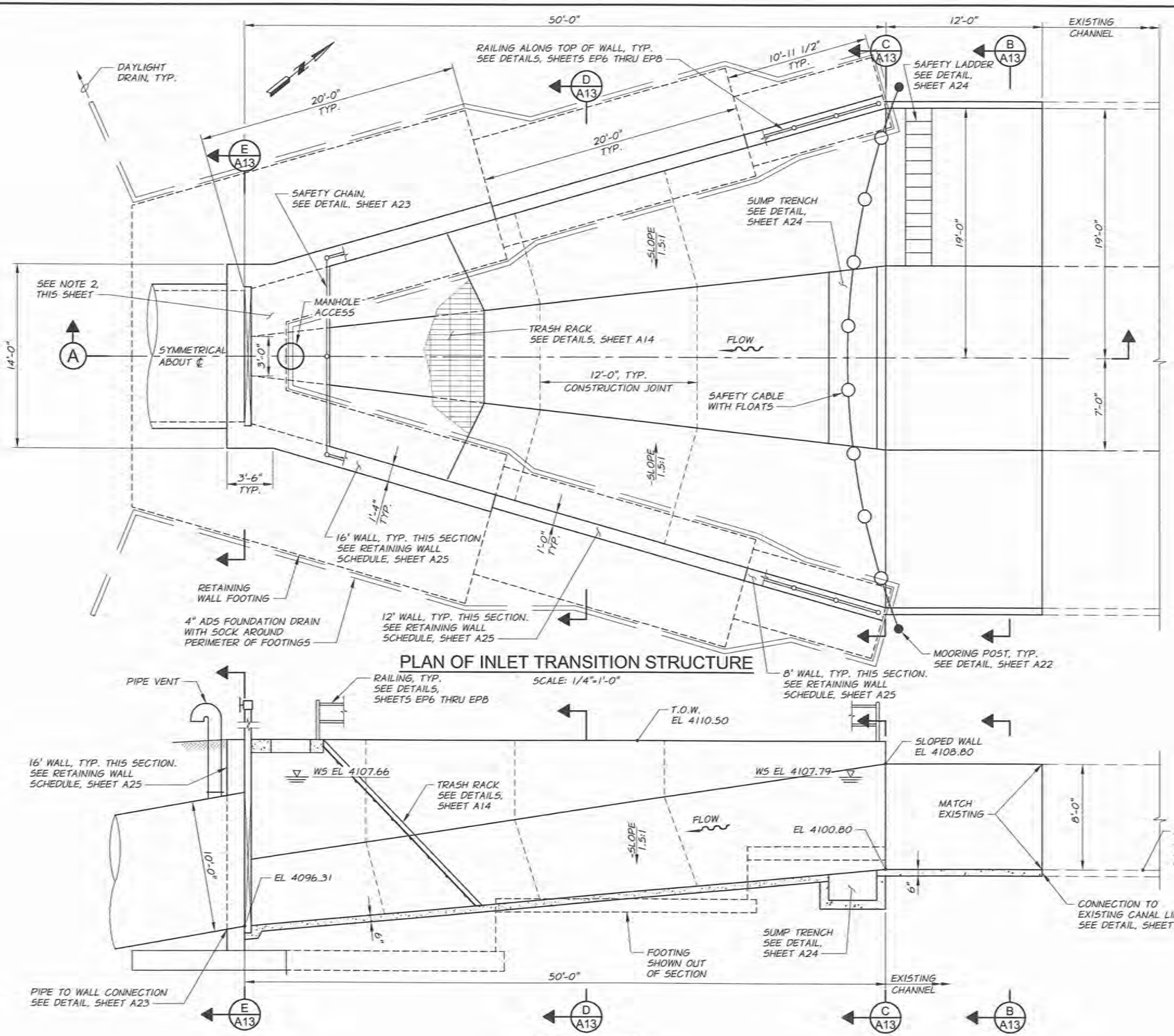
2050 South Hwy - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_MISC.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 36 OF 79

A11A



PLAN OF INLET TRANSITION STRUCTURE

SCALE: 1/4"=1'-0"

SECTION 'A'

SCALE: 1/4"=1'-0"

NOTES
1. ALL 6" SLABS SHALL HAVE #4 REBAR AT 12" O.C., EACH WAY.
2. TRANSITION SIDES OF FLOOR FROM 1/2:1 SIDE SLOPE TO CIRCULAR TO MATCH BOTTOM HALF OF PIPE WITHIN 6 FEET OF PIPE OPENING.

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59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
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FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
INLET TRANSITION STRUCTURE

No.	REVISION	DATE	BY

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: TRANSITION_PLN-ELEV.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 37 OF 79

A12

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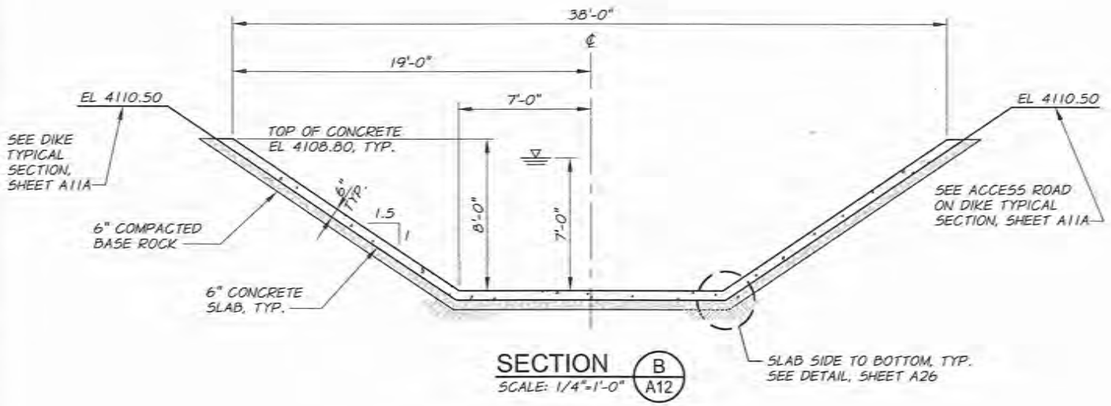
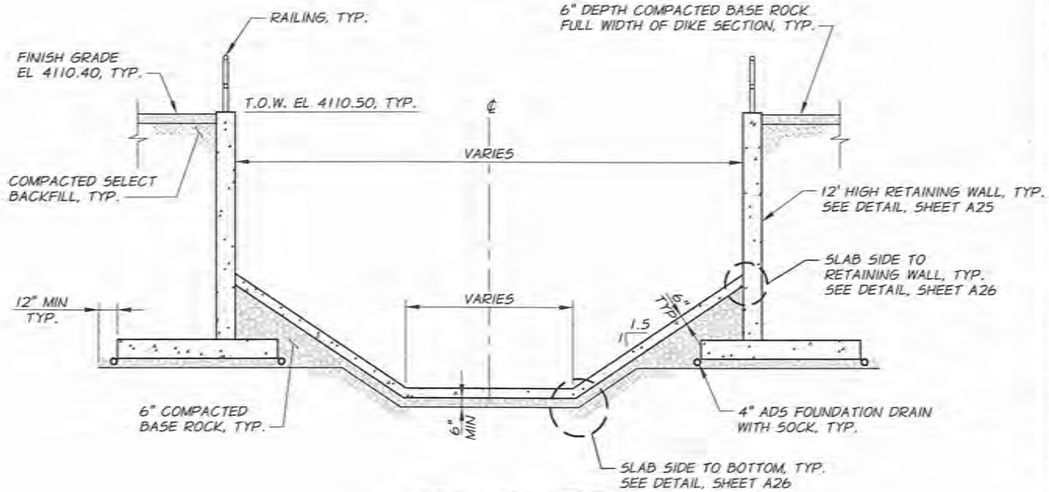
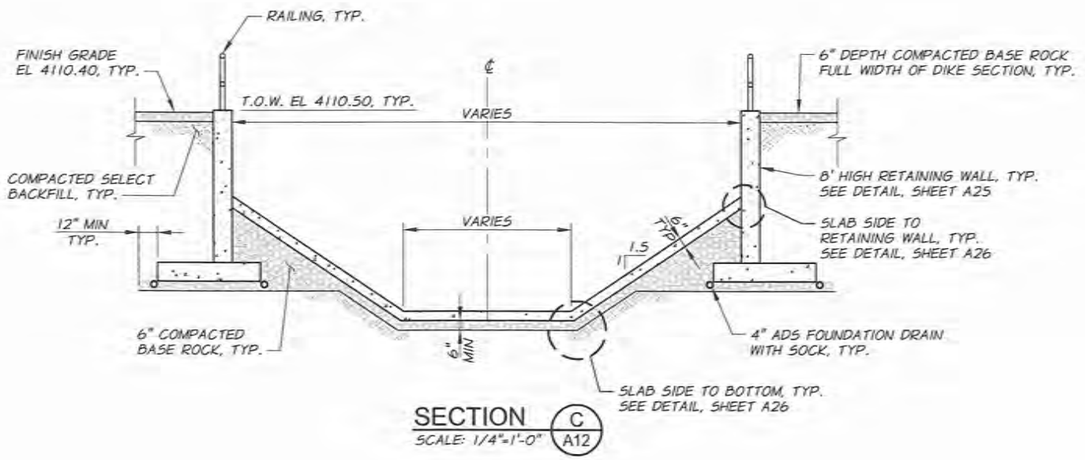


SECTION B / A12
SCALE: 1/4"=1'-0"

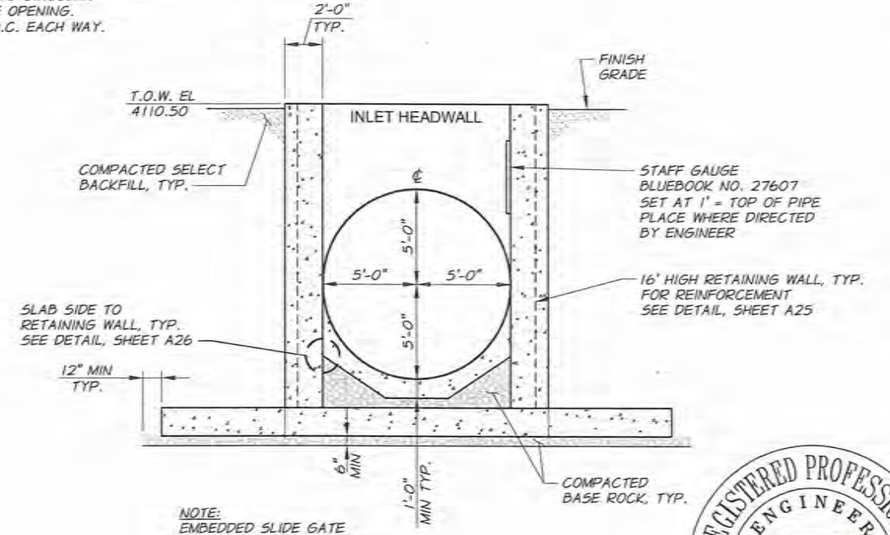


SECTION D / A12
SCALE: 1/4"=1'-0"

NOTES
1. TRANSITION SIDES OF FLOOR FROM 1 1/2 :1 SIDE SLOPE TO CIRCULAR TO MATCH BOTTOM HALF OF PIPE WITHIN 6 FEET OF PIPE OPENING.
2. ALL 6" CONCRETE SLAB SHALL HAVE #4 REBAR AT 12" O.C. EACH WAY.



SECTION C / A12
SCALE: 1/4"=1'-0"



NOTE:
EMBEDDED SLIDE GATE NOT SHOWN FOR CLARITY.

SECTION E / A12
SCALE: 1/4"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
INLET TRANSITION STRUCTURE SECTIONS

anderson perry & associates, inc.
engineering · surveying · infrastructure
LA GRANDE, OR WALLA WALLA, WA

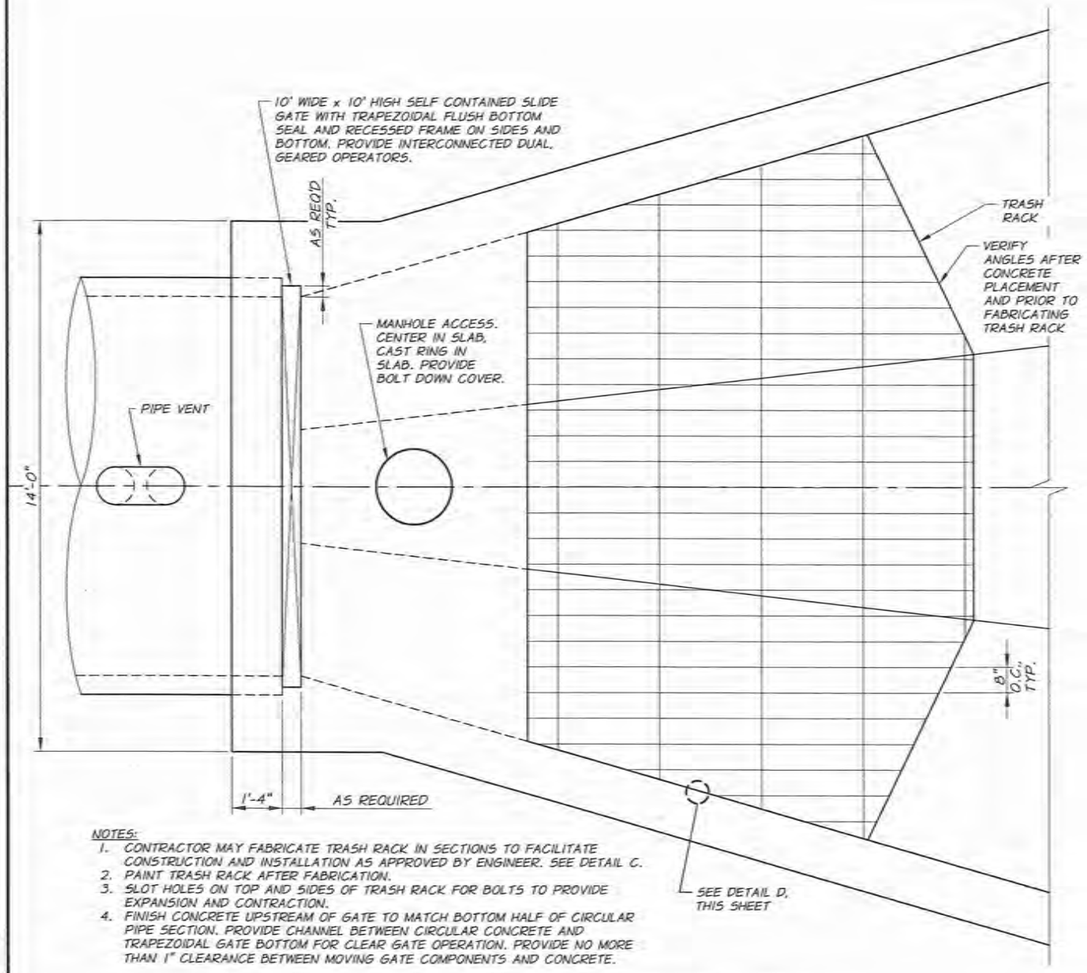
ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2550 Shasta Way Klamath Falls, OR 97603
(541) 884-4666 / FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TRANSITION_PLN-ELEV.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 38 OF 79

A13

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, Canal To Sipon Add-on, 3/24/2016 6:58:02 AM, lwillhite

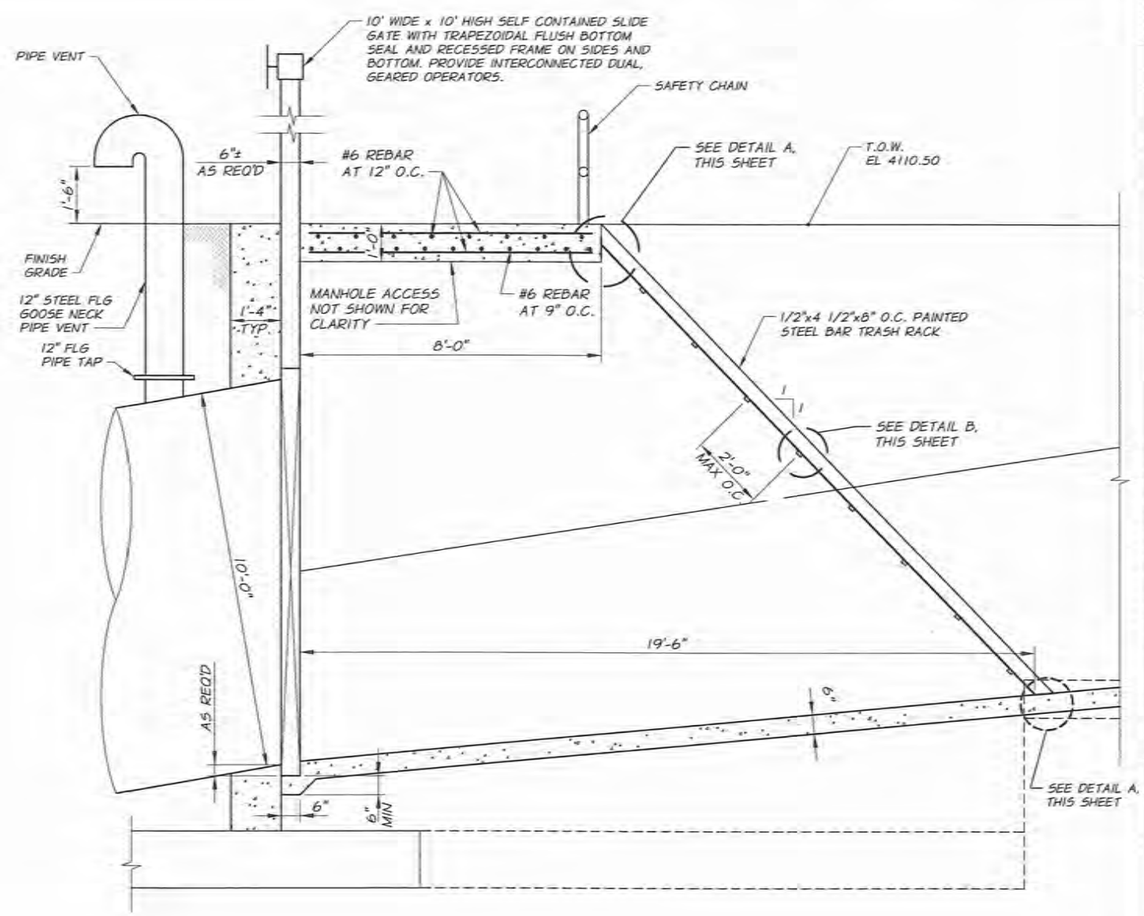


NOTES:

1. CONTRACTOR MAY FABRICATE TRASH RACK IN SECTIONS TO FACILITATE CONSTRUCTION AND INSTALLATION AS APPROVED BY ENGINEER. SEE DETAIL C.
2. PAINT TRASH RACK AFTER FABRICATION.
3. SLOT HOLES ON TOP AND SIDES OF TRASH RACK FOR BOLTS TO PROVIDE EXPANSION AND CONTRACTION.
4. FINISH CONCRETE UPSTREAM OF GATE TO MATCH BOTTOM HALF OF CIRCULAR PIPE SECTION. PROVIDE CHANNEL BETWEEN CIRCULAR CONCRETE AND TRAPEZOIDAL GATE BOTTOM FOR CLEAR GATE OPERATION. PROVIDE NO MORE THAN 1" CLEARANCE BETWEEN MOVING GATE COMPONENTS AND CONCRETE.

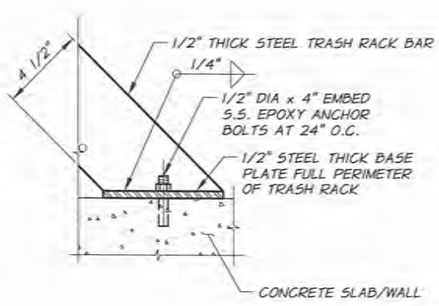
TRASH RACK AND SLIDE GATE PLAN

SCALE: 1/2"=1'-0"



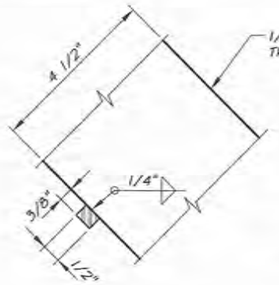
TRASH RACK AND SLIDE GATE ELEVATION

SCALE: 1/2"=1'-0"



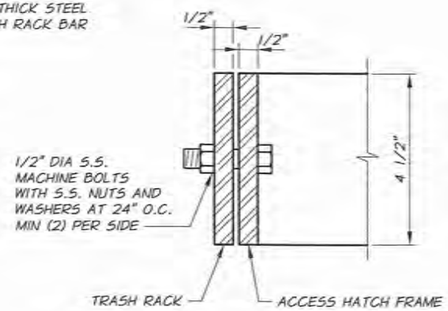
DETAIL A

N.T.S.



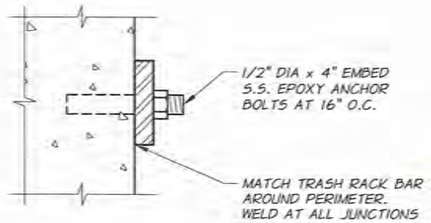
DETAIL B

N.T.S.



DETAIL C

N.T.S.



DETAIL D

N.T.S.

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
TRASH RACK AND SLIDE GATE DETAILS

No.	REVISION	DATE	BY

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LA GRANDE, OR · WALLA WALLA, WA

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2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4668 · FAX (541) 884-5535

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TRANSITION_PLN-ELEV.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 39 OF 79

A14

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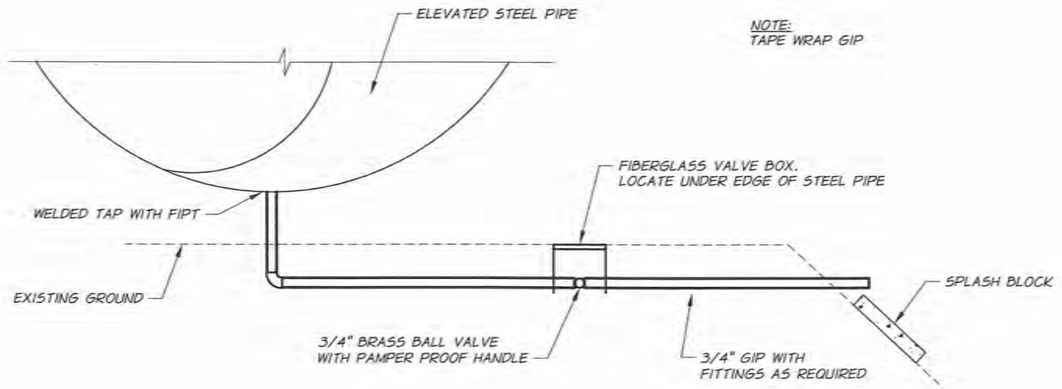
R:\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, TRASH RACK DETL, 3/25/2016 8:46:22 AM, prichardson



DRAIN DETAIL

N.T.S.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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BARSCALE SHOWN IS ACCURATE.

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
DRAIN DETAIL

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engineering ▲ surveying ▲ planning
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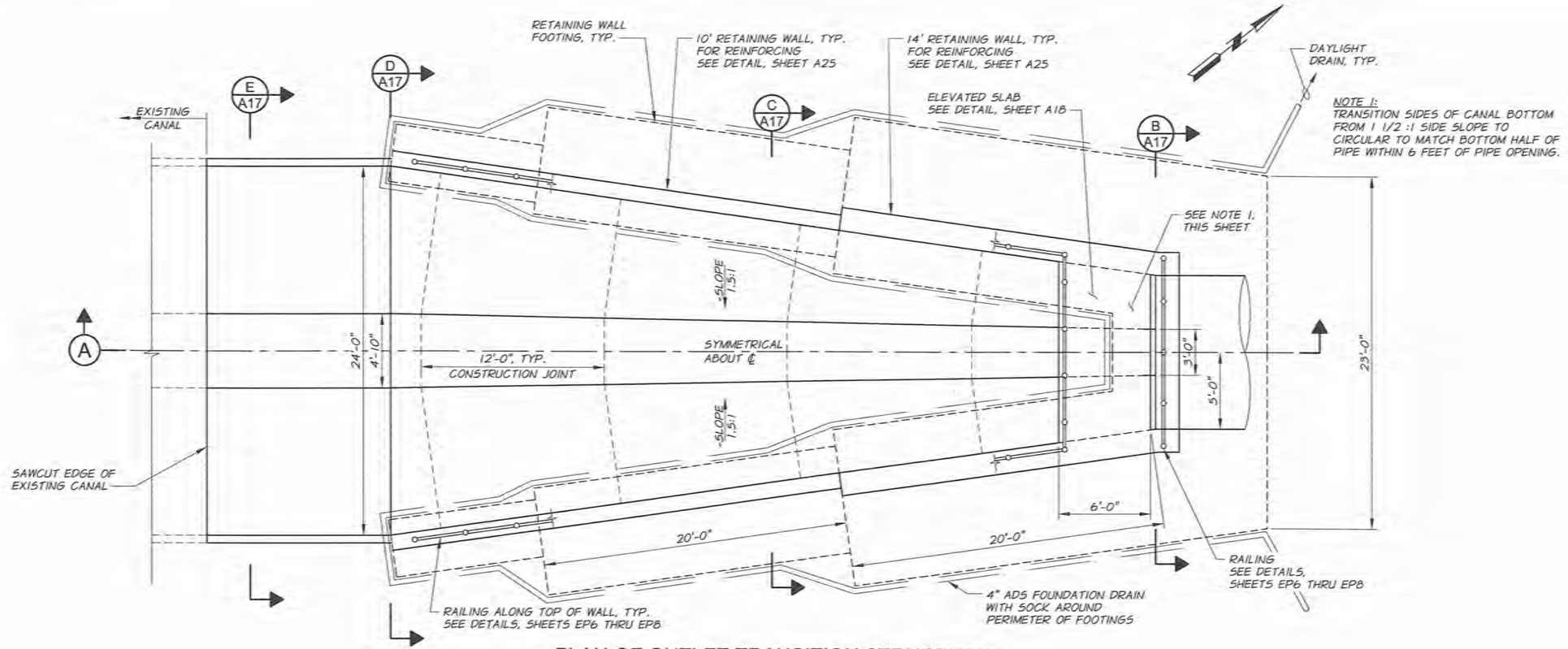
Klamath Falls · Medford
2650 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: TRANSITION_PLN-ELEV.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 40 OF 79

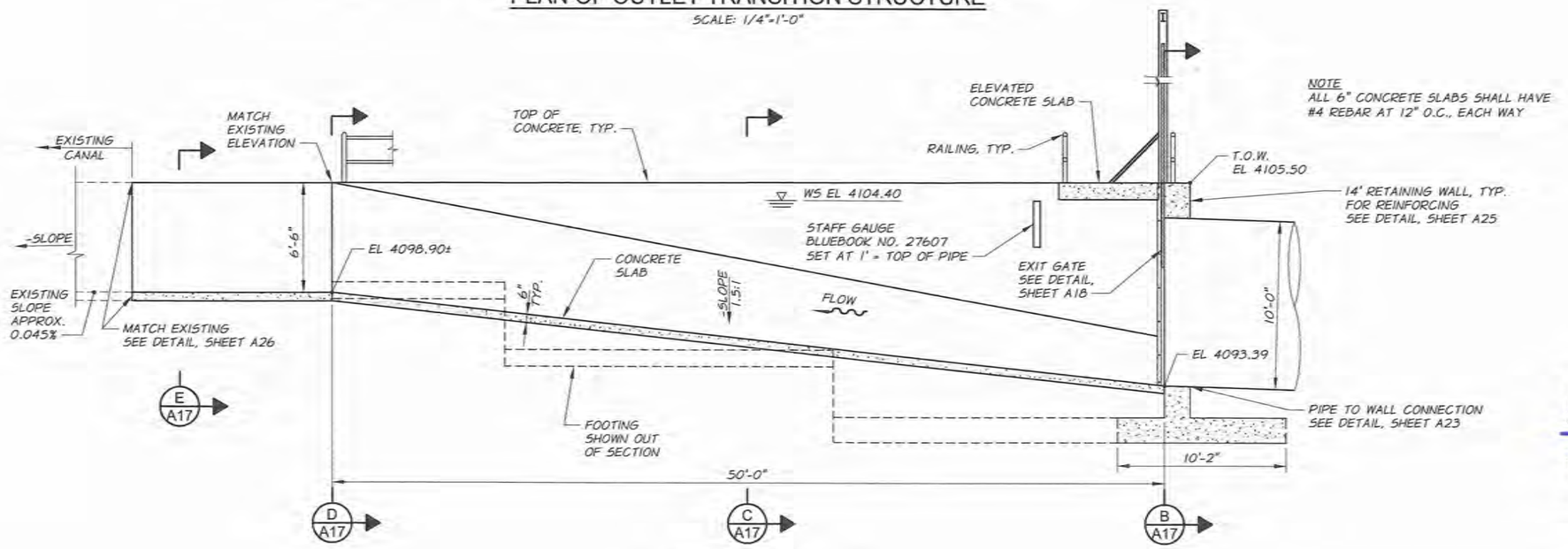
A15

R:\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, TRASH RACK DETL (2), 3/25/2016 9:12:46 AM, prichardson



PLAN OF OUTLET TRANSITION STRUCTURE

SCALE: 1/4"=1'-0"



SECTION 'A'

SCALE: 1/4"=1'-0"

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
OUTLET TRANSITION STRUCTURE

No.	REVISION	DATE	BY

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REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TRANSITION_PLN-ELEV.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 41 OF 79

A16

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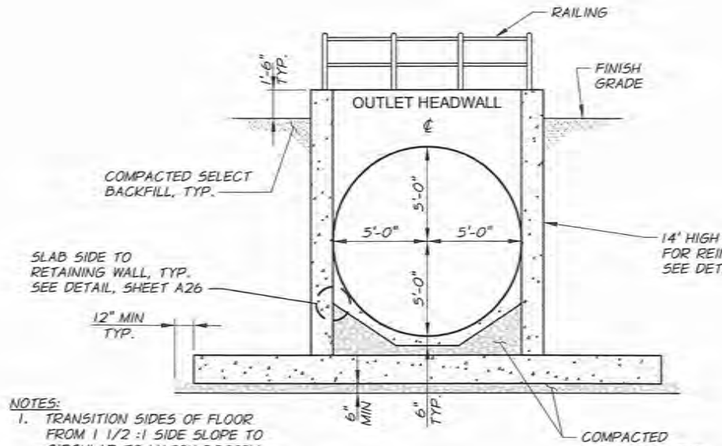
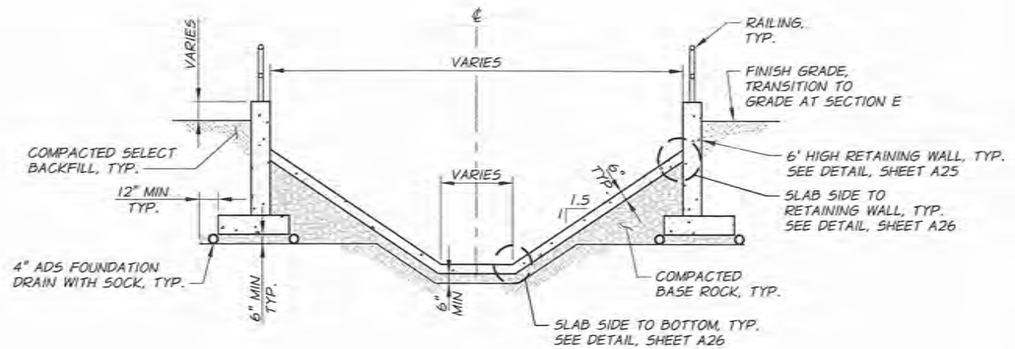
R:\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, Siphon To Flume, 3/25/2016 9:13:48 AM, prichardson

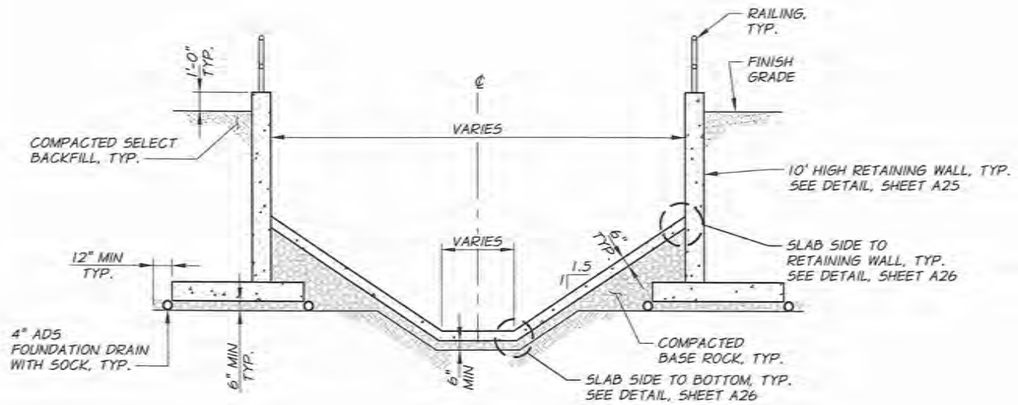


NOTES:
1. TRANSITION SIDES OF FLOOR FROM 1 1/2 :1 SIDE SLOPE TO CIRCULAR TO MATCH BOTTOM HALF OF PIPE WITHIN 6 FEET OF PIPE OPENING.
2. EXIT GATE NOT SHOWN FOR CLARITY. SEE DETAIL, SHEET A17.
3. SEE SHEET A1 FOR EXISTING DRAIN TILES.

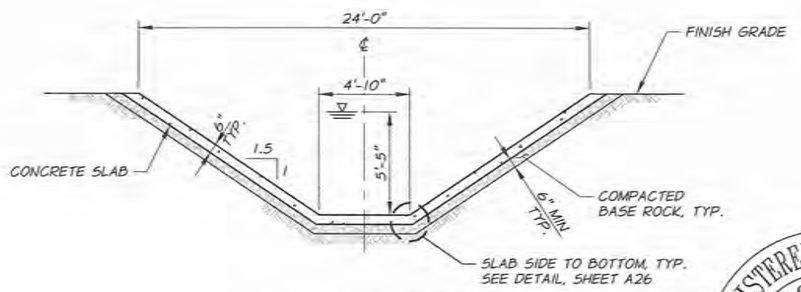
SECTION B / A16
SCALE: 1/4"=1'-0"



SECTION D / A16
SCALE: 1/4"=1'-0"



SECTION C / A16
SCALE: 1/4"=1'-0"



SECTION E / A16
SCALE: 1/4"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
OUTLET TRANSITION STRUCTURE SECTIONS

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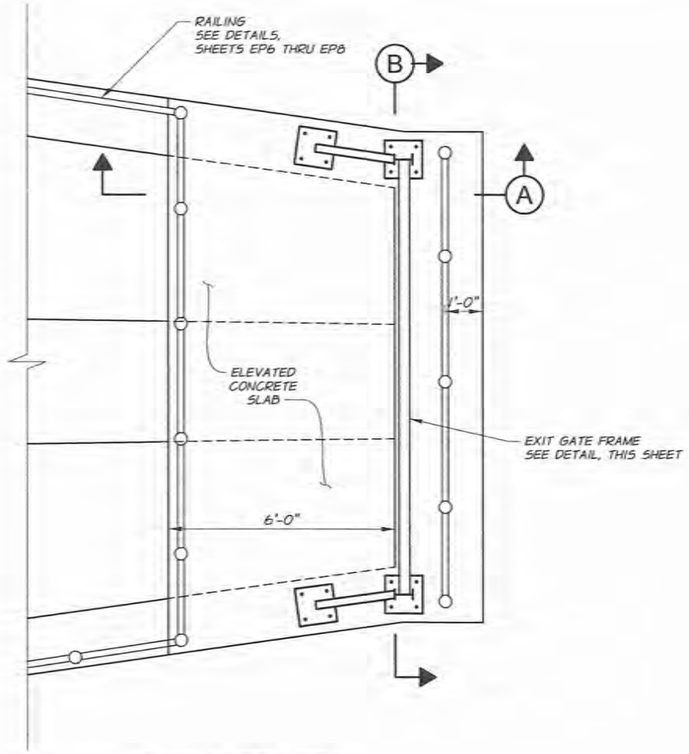
(541) 884-4666 FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TRANSITION_PLN-ELEV.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

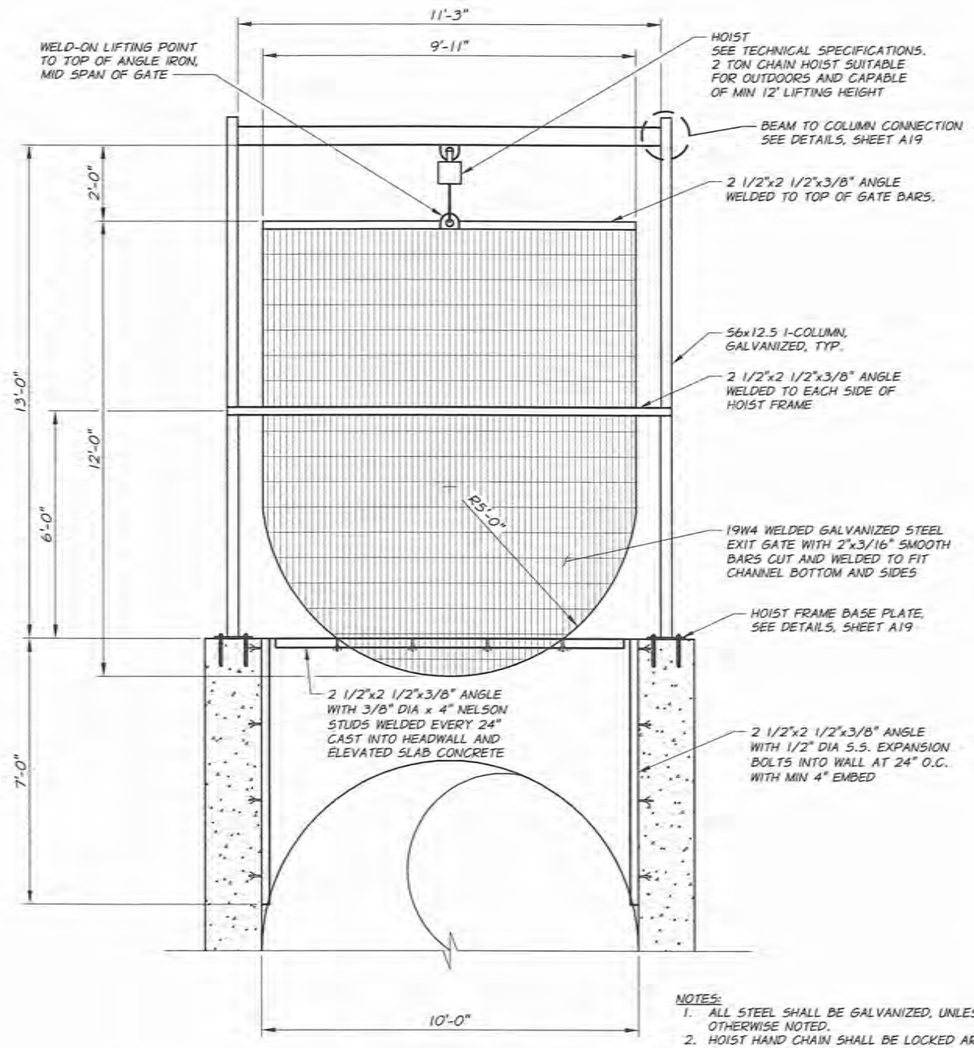
SHEET 42 OF 79

A17



EXIT GATE DETAIL

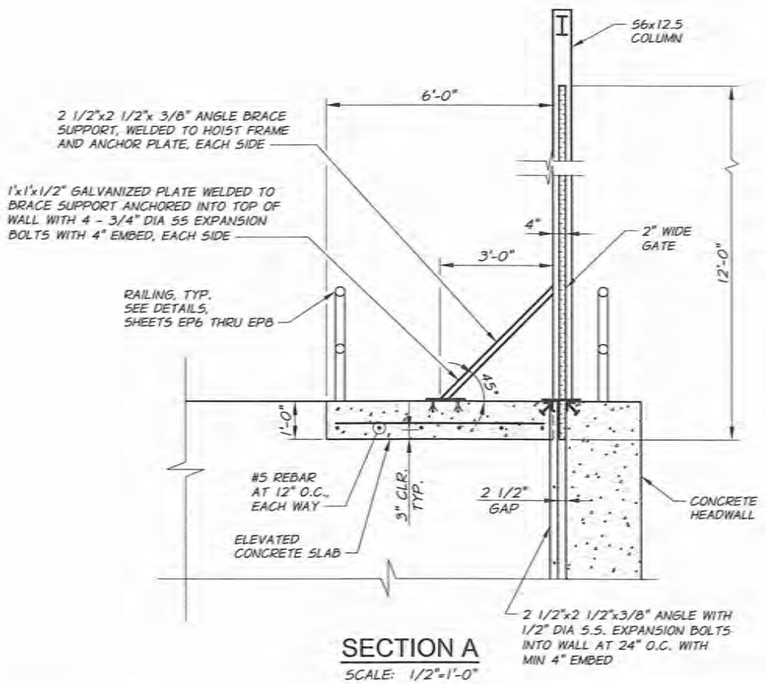
SCALE: 1/2"=1'-0"



SECTION B

SCALE: 1/2"=1'-0"

NOTES:
1. ALL STEEL SHALL BE GALVANIZED, UNLESS OTHERWISE NOTED.
2. HOIST HAND CHAIN SHALL BE LOCKED AROUND GATE FRAME WITH PADLOCK TO SECURE POSITION OF GATE.
3. PROVIDE LOCKS AND KEYS PER SPECIFICATIONS.



SECTION A

SCALE: 1/2"=1'-0"

RENEWS 12-31-16

2 0 2 4 6
SCALE IN FEET

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
EXIT GATE DETAILS I

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2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TRANSITION_PLN-ELEV.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 43 OF 79

A18

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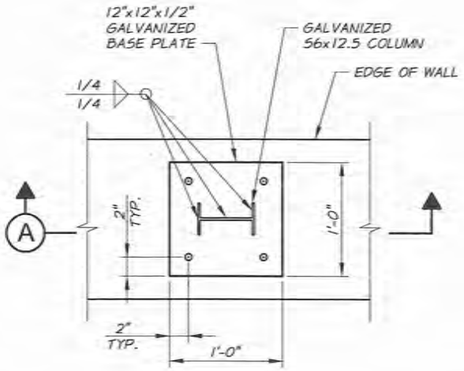
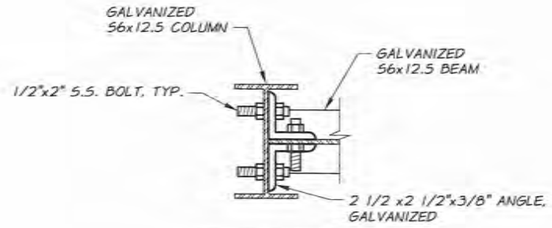


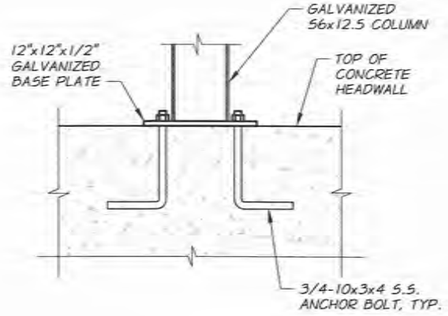
HOIST FRAME BASE PLATE DETAILS

SCALE: 1 1/2"=1'-0"



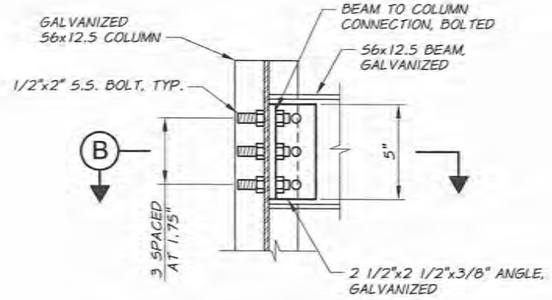
SECTION B

SCALE: 3"=1'-0"



SECTION A

SCALE: 1 1/2"=1'-0"



S6x12.5 BOLTED WEB
BEAM TO COLUMN CONNECTION

SCALE: 3"=1'-0"

3" 0 3" 6" 9"
SCALE IN INCHES

6" 0 6" 12" 18"
SCALE IN INCHES

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
EXIT GATE DETAILS II

No.	REVISION	DATE	BY

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LA GRANDE, OR · WALLA WALLA, WA

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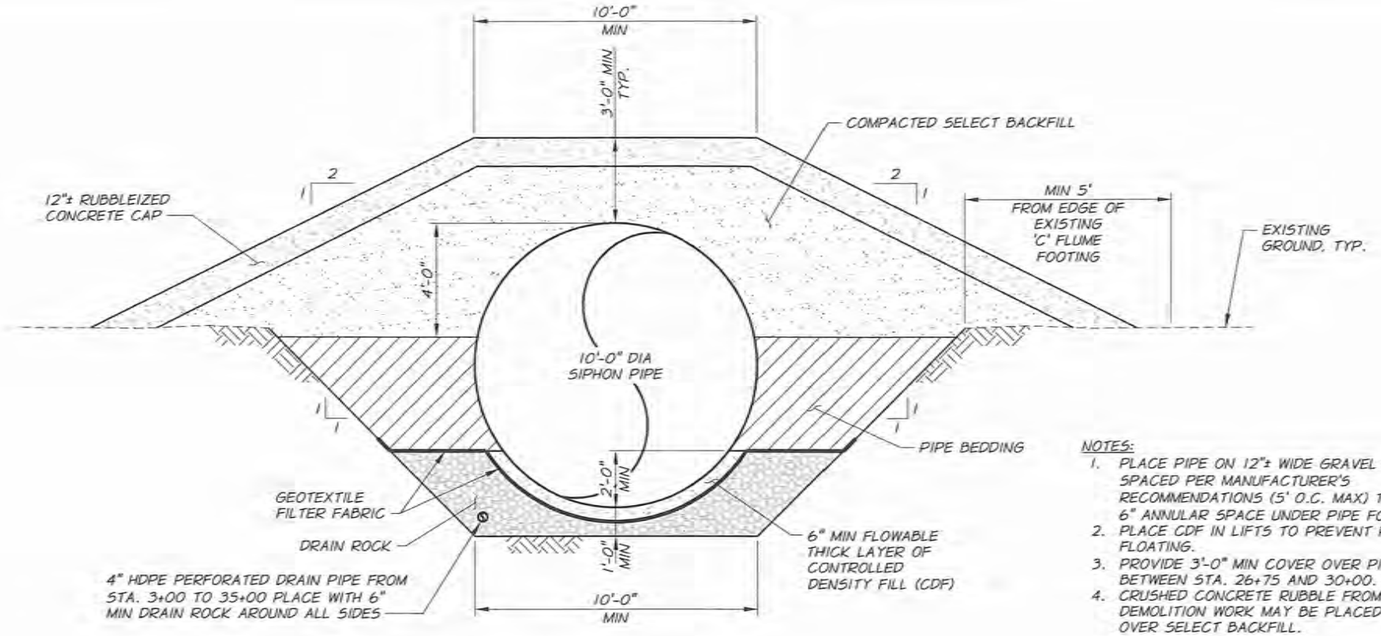
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2990 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: TRANSITION_PLN-ELEV.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 44 OF 79

A19

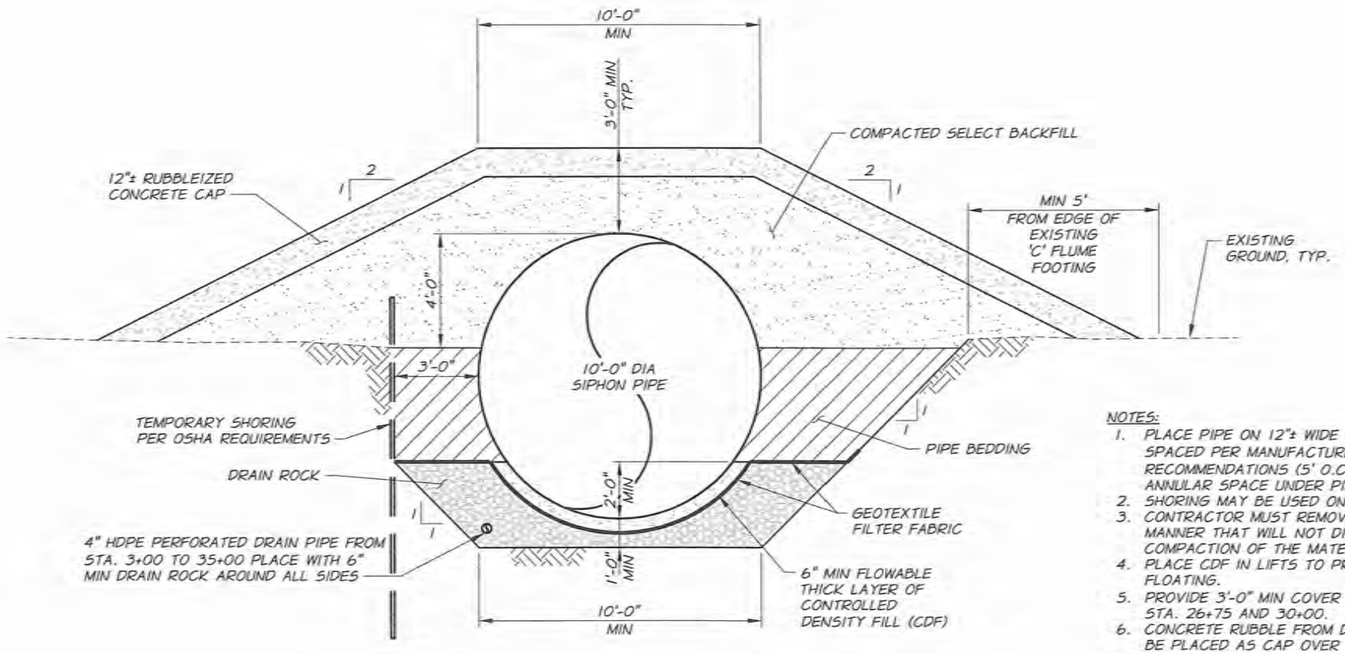
C:\AP WORK\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, GateDetl (2), 3/23/2016 3:56:16 PM, lwillhite



10' DIA SIPHON SECTION

SCALE: 3/8"=1'-0"

NOTES:
1. PLACE PIPE ON 12"± WIDE GRAVEL SUPPORT SPACED PER MANUFACTURER'S RECOMMENDATIONS (5' O.C. MAX) TO PROVIDE 6" ANNULAR SPACE UNDER PIPE FOR CDF.
2. PLACE CDF IN LIFTS TO PREVENT PIPE FROM FLOATING.
3. PROVIDE 3'-0" MIN COVER OVER PIPE BETWEEN STA. 26+75 AND 30+00.
4. CRUSHED CONCRETE RUBBLE FROM DEMOLITION WORK MAY BE PLACED AS CAP OVER SELECT BACKFILL.



10' DIA SIPHON SECTION WITH SHORING

SCALE: 3/8"=1'-0"

NOTES:
1. PLACE PIPE ON 12"± WIDE GRAVEL SUPPORT SPACED PER MANUFACTURER'S RECOMMENDATIONS (5' O.C. MAX) TO PROVIDE 6" ANNULAR SPACE UNDER PIPE FOR CDF.
2. SHORING MAY BE USED ON BOTH SIDES OF PIPE.
3. CONTRACTOR MUST REMOVE SHORING IN A MANNER THAT WILL NOT DISTURB THE COMPACTION OF THE MATERIALS PLACED.
4. PLACE CDF IN LIFTS TO PREVENT PIPE FROM FLOATING.
5. PROVIDE 3'-0" MIN COVER OVER PIPE BETWEEN STA. 26+75 AND 30+00.
6. CONCRETE RUBBLE FROM DEMOLITION WORK MAY BE PLACED AS CAP OVER SELECT BACKFILL.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
TYPICAL SIPHON PIPE SECTIONS

No.	REVISION	DATE	BY

anderson perry & associates, inc.
engineering surveying natural resources
LA GRANDE, OR WALLA WALLA, WA

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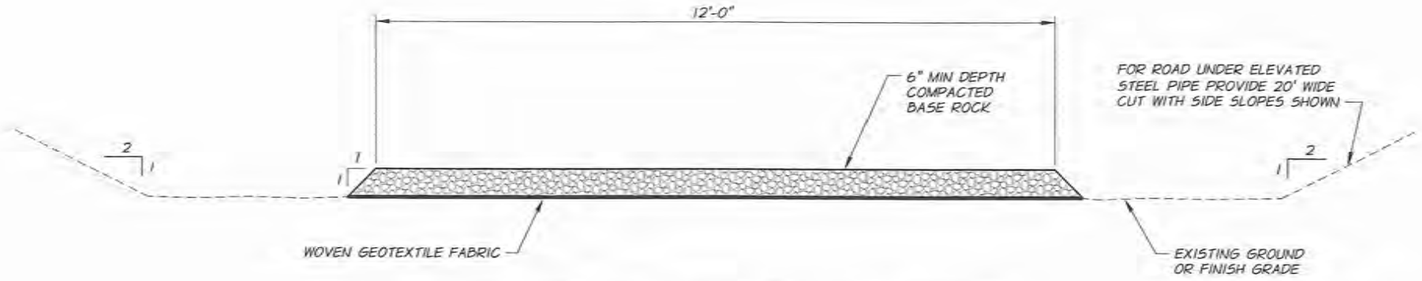
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: SIPHON-SECT.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 45 OF 79

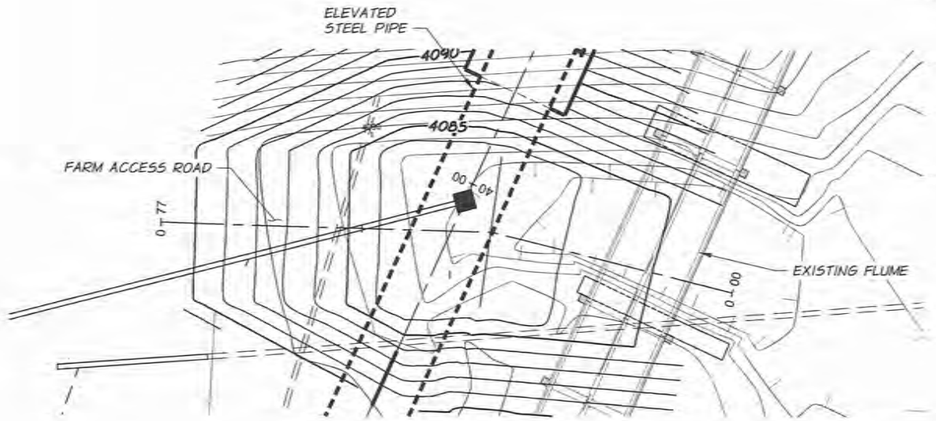
A20

C:\AP WORK\KID\462.00_C Flume Replacement\dwg\Siphon-SECT.dwg, Layout1, 3/24/2016 8:51:54 AM, lwillhite



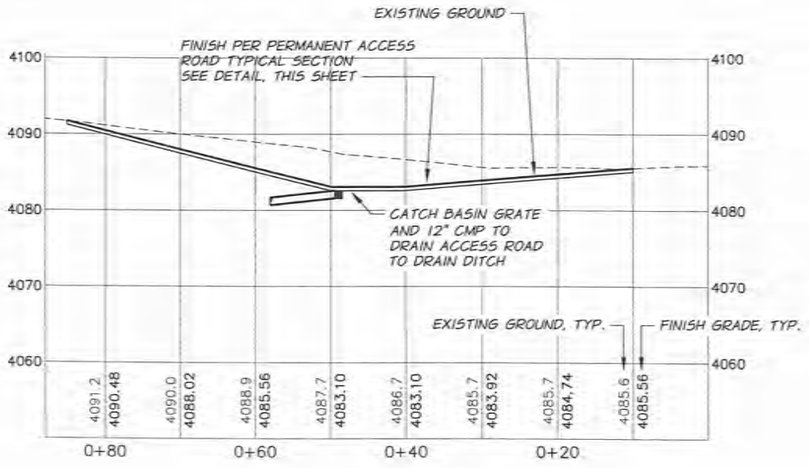
PERMANENT ACCESS ROAD TYPICAL SECTION

SCALE: 3/4"=1'-0"



FARM ACCESS ROAD PLAN

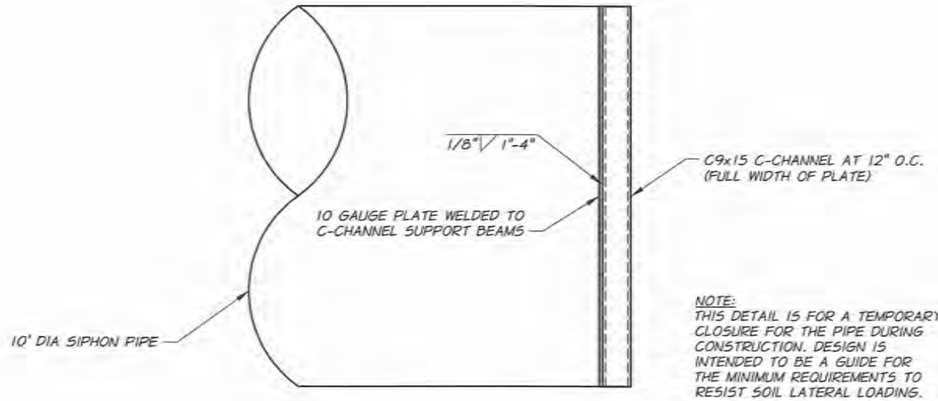
SCALE: 1"=10'



FARM ACCESS ROAD PROFILE

(SEE SHEET A1)

SCALE: 1"=10'



NOTE:
THIS DETAIL IS FOR A TEMPORARY CLOSURE FOR THE PIPE DURING CONSTRUCTION. DESIGN IS INTENDED TO BE A GUIDE FOR THE MINIMUM REQUIREMENTS TO RESIST SOIL LATERAL LOADING.

TEMPORARY PIPE CLOSURE PLATE

SCALE: 1/2"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
MISCELLANEOUS DETAILS I

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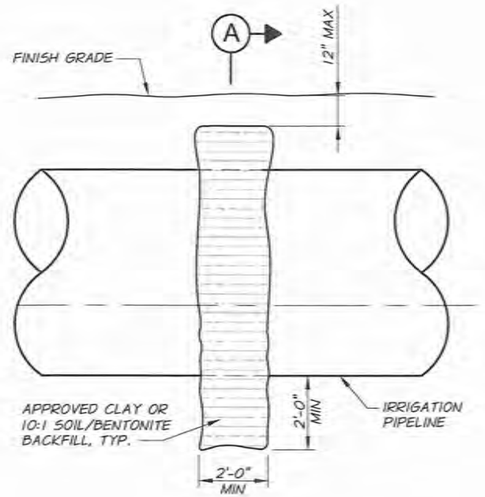
2930 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: DETL_MISC.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 46 OF 79

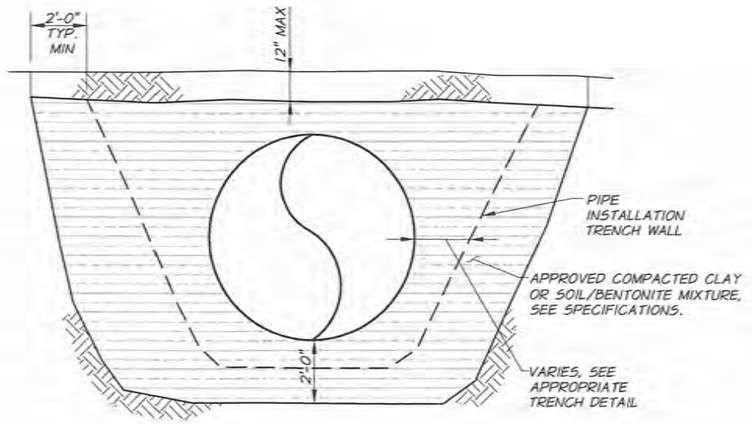
A21

R:\KID\462-00_C Flume Replacement\dwg\DETL_Misc.dwg, MISC-DET (5), 3/25/2016 11:45:55 AM, prichardson



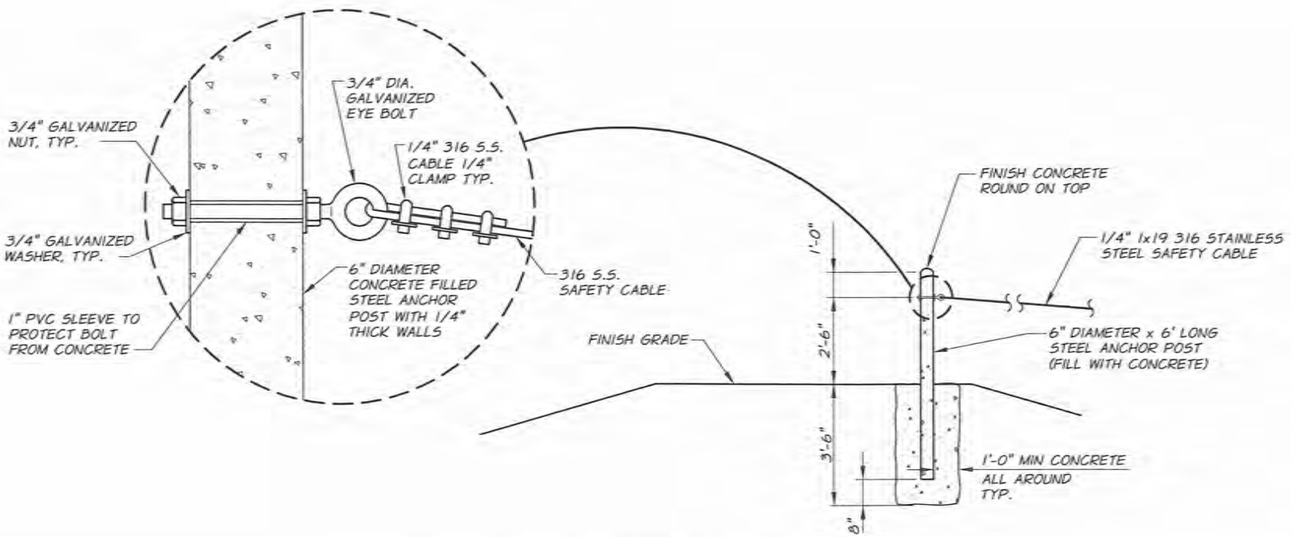
BENTONITE CUTOFF WALL

N.T.S.



BENTONITE CUTOFF WALL SECTION A

N.T.S.



MOORING POST DETAIL

N.T.S.

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KLAMATH FALLS, OR
FOR
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MISCELLANEOUS DETAILS II

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REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_MISC.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 47 OF 79

A22

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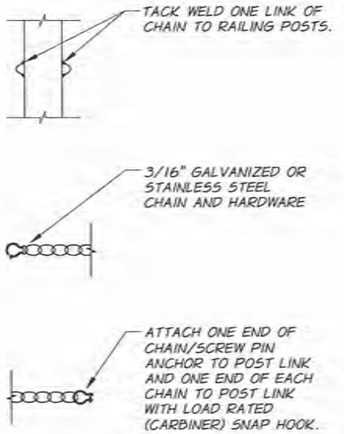
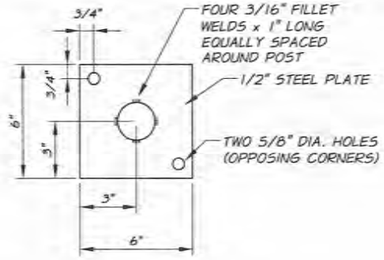


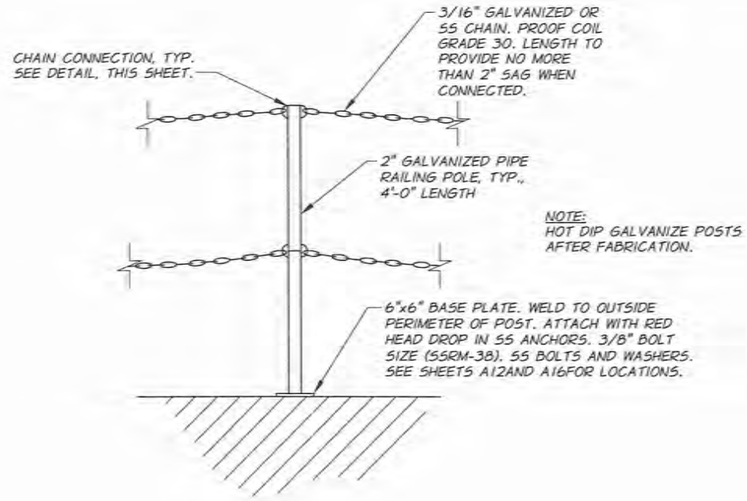
CHAIN CONNECTION DETAIL

N.T.S.



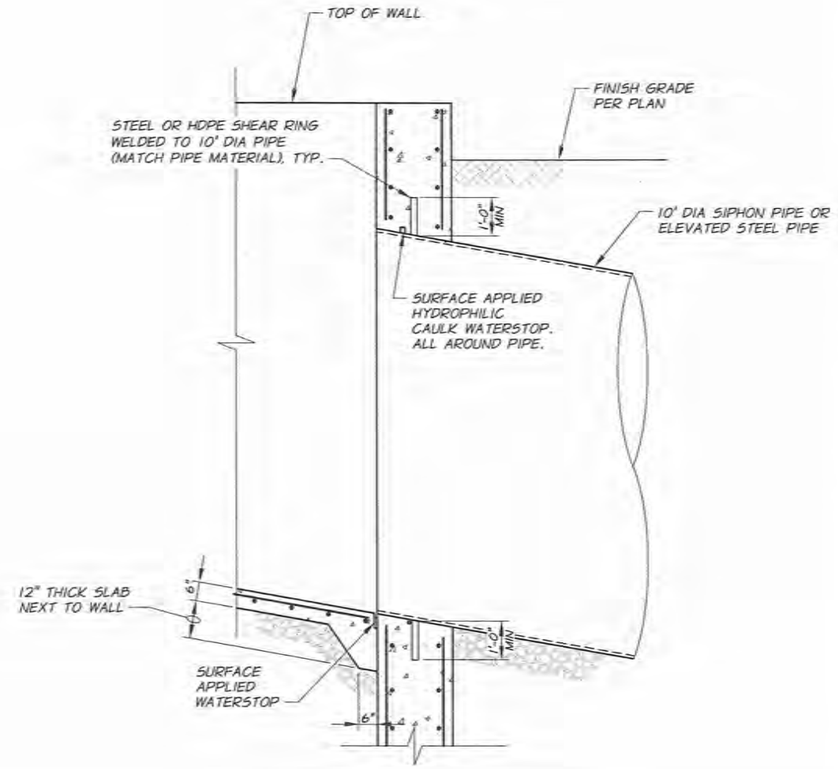
POST BASE WELD DETAIL

SCALE: N.T.S.



SAFETY CHAIN DETAIL

SCALE: N.T.S.



PIPE TO WALL CONNECTION DETAIL

SCALE: 1/4"=1'-0"

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OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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FOR
KLAMATH IRRIGATION DISTRICT
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STRUCTURAL DETAILS I

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2950 Shasta Way - Klamath Falls, OR 97603
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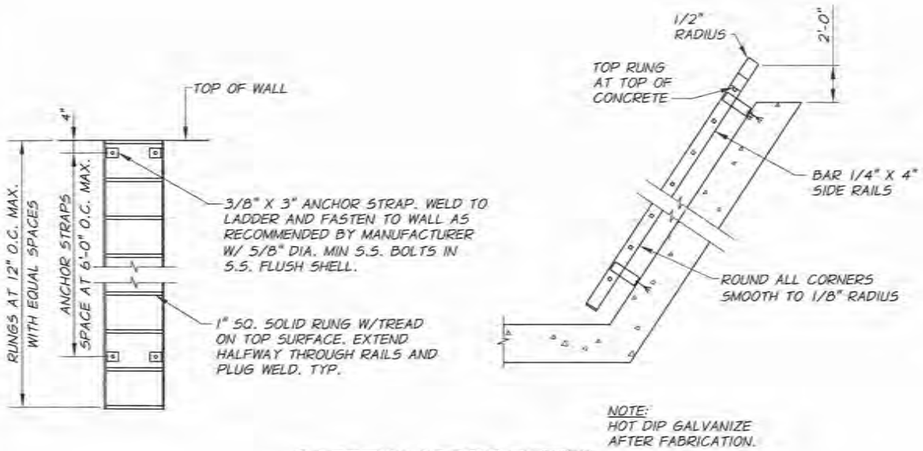
DATE: March 25, 2016
PROJECT: 462-00
FILE: DETL_STRUC.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 48 OF 79

A23

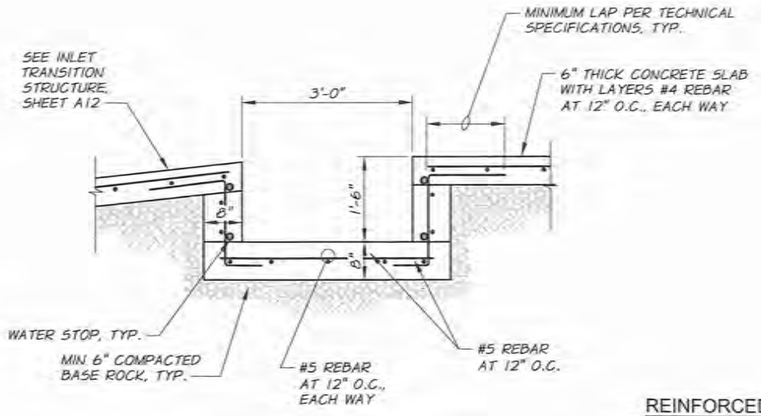
C:\AP WORK\KID\462-00_C Flume Replacement\dwg\DETL_Struc.dwg, MISC-DET, 3/24/2016 5:38:37 AM, lwilhite



NOTE:
HOT DIP GALVANIZE AFTER FABRICATION.

SAFETY LADDER DETAIL

N.T.S.

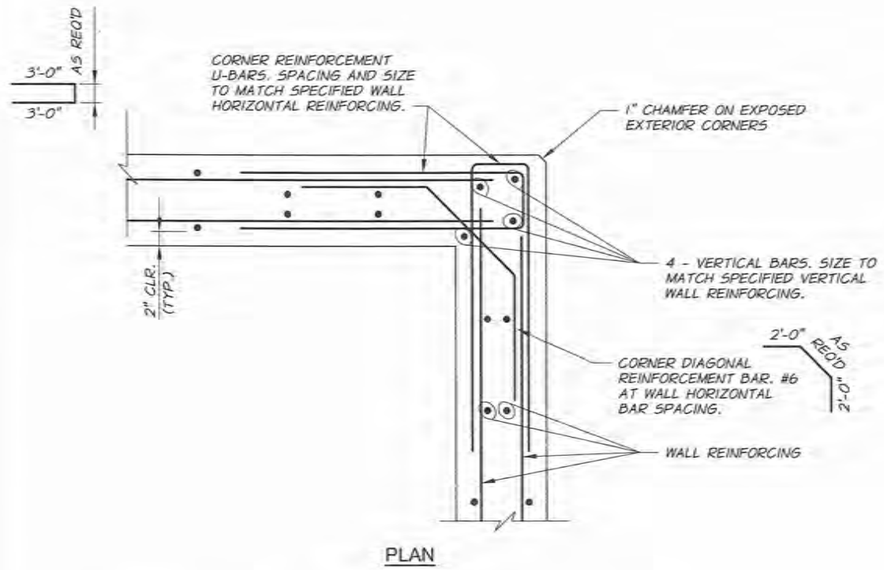


SUMP TRENCH DETAIL

SCALE: 3/8"=1'-0"

REINFORCED CONCRETE NOTES

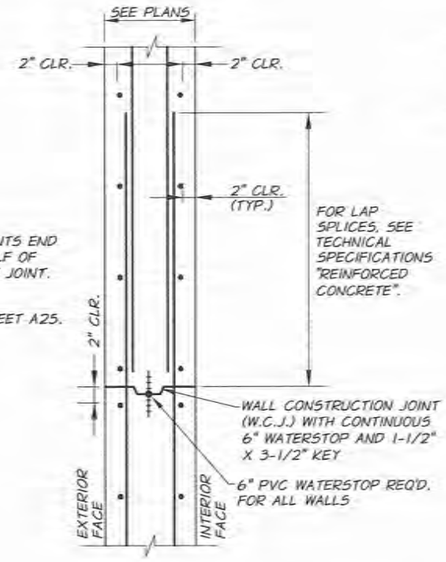
1. ALL CONCRETE CONSTRUCTION, INCLUDING BENDING OF BARS, SHALL COMPLY WITH ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318), UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE COVER FROM THE FACE OF CONCRETE TO REINFORCING BARS SHALL BE 2" (3" FOR CONCRETE CAST AGAINST SOIL).
3. KEYWAYS AND WATERSTOPS SHALL END 3" BELOW THE TOP OF WALLS, UNLESS THERE IS A SLAB ON TOP OF THE WALL, IN WHICH CASE IT SHALL END AT THE BOTTOM OF THE SLAB. IN JOINTS WHERE WATERSTOP TERMINATES AT ADJOINING SLAB OR WALL, WATERSTOP SHALL BE EMBEDDED IN ADJOINING SLAB OR WALL A MINIMUM OF 6".
4. WATERSTOPS SHALL BE PLACED IN ALL CONSTRUCTION, CONTRACTION, AND EXPANSION JOINTS IN ALL FOOTING SLABS AND WALLS OF WATER CONTAINMENT STRUCTURES, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. WATERSTOP IN THE WALLS SHALL BE CARRIED 2'-0" BELOW ADJOINING SLABS.
5. NO BACKFILL SHALL BE PLACED AGAINST WALLS UNTIL CONCRETE HAS REACHED THE SPECIFIED STRENGTH AND THE CONNECTING SLABS AND BEAMS HAVE BEEN CAST AND HAVE REACHED THE SPECIFIED STRENGTH, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. NOT ALL WATERSTOPS ARE SHOWN ON EACH DETAIL FOR CLARITY PURPOSED. ALL WATER BEARING WALL AND SLAB JOINTS SHALL HAVE CONTINUOUS WATERSTOPS.



PLAN

TYPICAL EXTERIOR WALL CORNER DETAIL

(DOUBLE MAT REINFORCEMENT)
N.T.S.



NOTES:
1. FOR CONTRACTION JOINTS END EVERY OTHER BAR (HALF OF HORIZONTAL STEEL) AT JOINT.
2. FOR REINFORCING REQUIREMENTS SEE SHEET A25.

TYPICAL WALL CONSTRUCTION JOINT DETAIL

(WATER CONTAINMENT STRUCTURES)
(PLAN VIEW)
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
STRUCTURAL DETAILS II

No.	REVISION	DATE	BY

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engineering, surveying, planning
LA GRANDE, OR WALLA WALLA, WA

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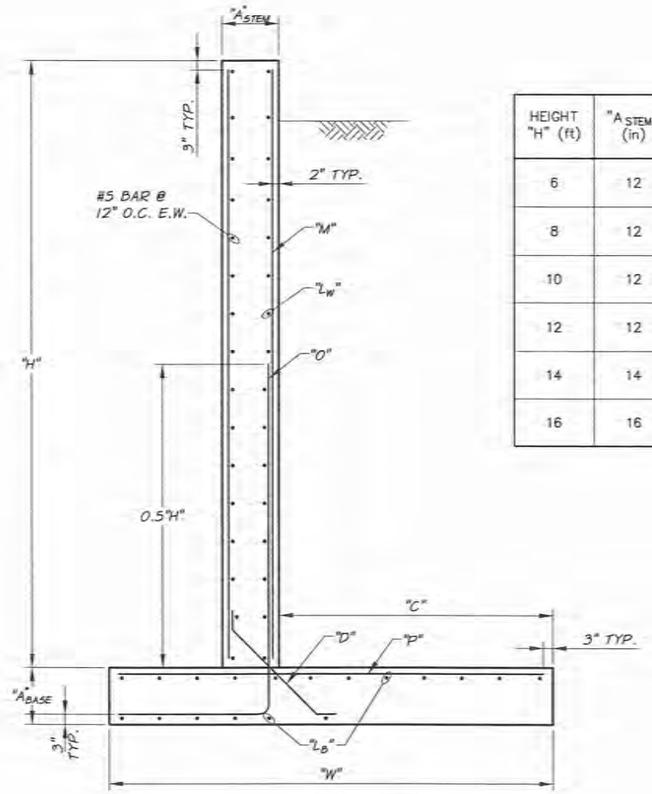
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5355

DATE: March 25, 2016
PROJECT: 462-00
FILE: DETL_MISC.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 49 OF 79

A24

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\DETL_Misc.dwg, MISC-DET (3), 3/23/2016 4:35:53 PM, lwilhite



RETAINING WALL DETAIL

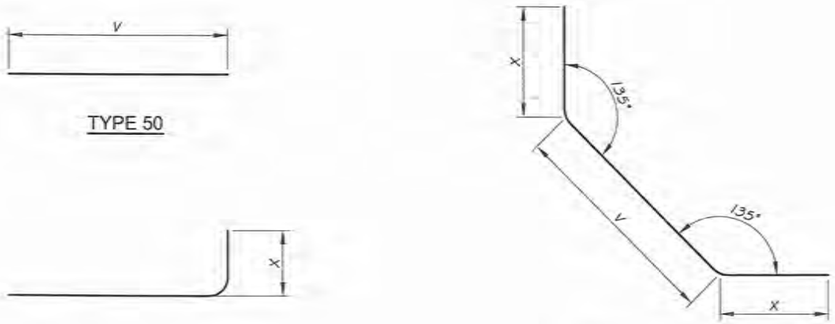
SCALE: 1/2"=1'-0"

RETAINING WALL SCHEDULE

HEIGHT "H" (ft)	"A STEM" (in)	"C" (ft-in)	"W" (ft-in)	"A BASE" (in)	"O"	DOWELS INTO STEM	"M"	"D"	"Lw"	"P"	"LB"
6	12	1-9	3-9	12	R1 AT 9"	-	R2 AT 12"	R3 AT 9"	R4 AT 12"	R5 AT 9"	(5) #4
8	12	3-0	5-6	12	R6 AT 9"	-	R7 AT 12"	R8 AT 9"	R9 AT 12"	R10 AT 9"	(7) #4
10	12	4-3	7-0	12	R11 AT 18"	-	R12 AT 12"	R13 AT 18"	R14 AT 12"	R15 AT 18"	(9) #4
12	12	5-3	8-6	12	R16 AT 9"	2-2	R17 AT 18"	R18 AT 9"	R19 AT 12"	R20 AT 9"	(5) #6
14	14	6-3	10-3	18	R21 AT 9"	2-5	R22 AT 18"	R23 AT 9"	R24 AT 12"	R25 AT 9"	(7) #6
16	16	7-3	11-9	18	R26 AT 9"	3-2	R27 AT 18"	R28 AT 9"	R29 AT 11"	R30 AT 9"	(13) #5

Retaining Wall - Bar List

Mark	Location	Size	Bend Type	V	X
R1	Wall Dowels	4	54	3'-9"	1'-6"
R2	Wall Vert	5	50	5'-6"	-
R3	Stem Dowels	4	78	1'-9"	1'-0"
R4	Wall Horiz	4	50	varies	-
R5	Slab	4	50	3'-3"	-
R6	Wall Dowels	4	54	4'-9"	2'-0"
R7	Wall Vert	5	50	7'-6"	-
R8	Stem Dowels	4	78	1'-9"	1'-0"
R9	Wall Horiz	4	50	varies	-
R10	Slab	4	50	5'-0"	-
R11	Wall Dowels	8	54	5'-9"	2'-3"
R12	Wall Vert	5	50	9'-6"	-
R13	Stem Dowels	4	78	1'-9"	1'-0"
R14	Wall Horiz	4	50	varies	-
R15	Slab	6	50	6'-6"	-
R16	Wall Dowels	6	54	6'-9"	2'-9"
R17	Wall Vert	6	50	11'-6"	-
R18	Stem Dowels	4	78	1'-9"	1'-0"
R19	Wall Horiz	5	50	varies	-
R20	Slab	5	50	8'-0"	-
R21	Wall Dowels	7	54	7'-9"	3'-6"
R22	Wall Vert	6	50	13'-6"	-
R23	Stem Dowels	4	78	2'-8"	1'-0"
R24	Wall Horiz	6	50	varies	-
R25	Slab	6	50	9'-9"	-
R26	Wall Dowels	8	54	8'-9"	4'-0"
R27	Wall Vert	7	50	15'-6"	-
R28	Stem Dowels	5	78	2'-11"	1'-0"
R29	Wall Horiz	6	50	varies	-
R30	Slab	6	50	11'-3"	-



BEND TYPES

(ALL DIMENSIONS ARE OUT TO OUT)

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ALIGNMENT IMPROVEMENTS
RETAINING WALL DETAILS

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2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5535

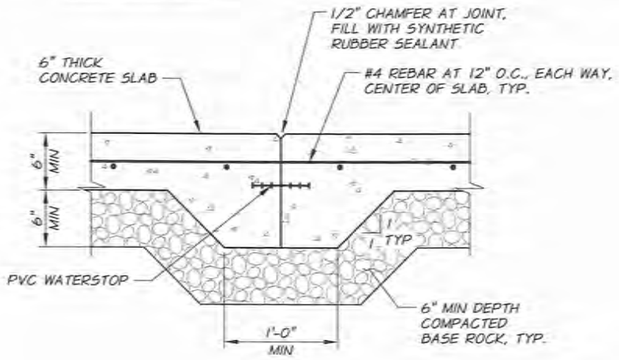
DATE: March 25, 2016
PROJECT: 462-00
FILE: TRANSITION_PLN-ELEV.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 50 OF 79

A25

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\Transition_Pln-Elev.dwg, Ret wall det, 3/23/2016 4:26:40 PM, lwillhite

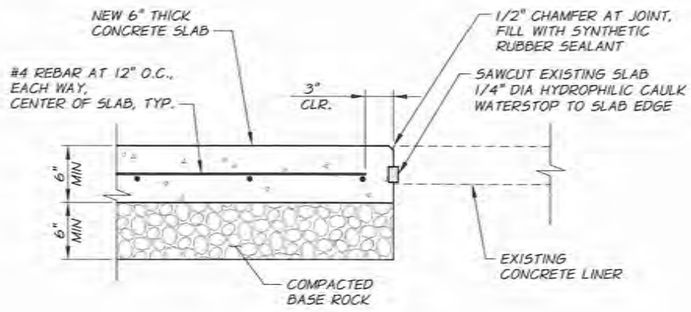
NOTES:
1. CONSTRUCTION/CONTROL JOINTS MAX. EVERY 12 FT IN TRANSVERSE DIRECTIONS WITH CONCRETE JOINT SEAL.
2. SPLICES AND HOOKS MADE IN REINFORCING STEEL SHALL BE STAGGERED WITH MIN. 12" OVERLAP.
3. BREAK IN REINFORCEMENT ACROSS CONSTRUCTION/CONTROL JOINTS EVERY OTHER BAR.



CONCRETE SLAB AND CONSTRUCTION/CONTROL JOINT DETAIL

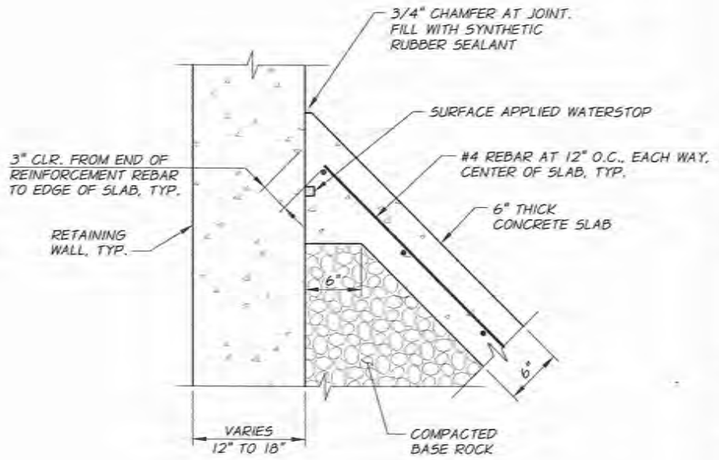
SCALE: 1 1/2"=1'-0"

NOTES:
1. SLAB REINFORCING IS TO BE LOCATED IN THE CENTER OF SLAB, UNLESS OTHERWISE NOTED.
2. SPLICES AND HOOKS MADE IN REINFORCING STEEL SHALL BE STAGGERED WITH MIN. 18" OVERLAP.



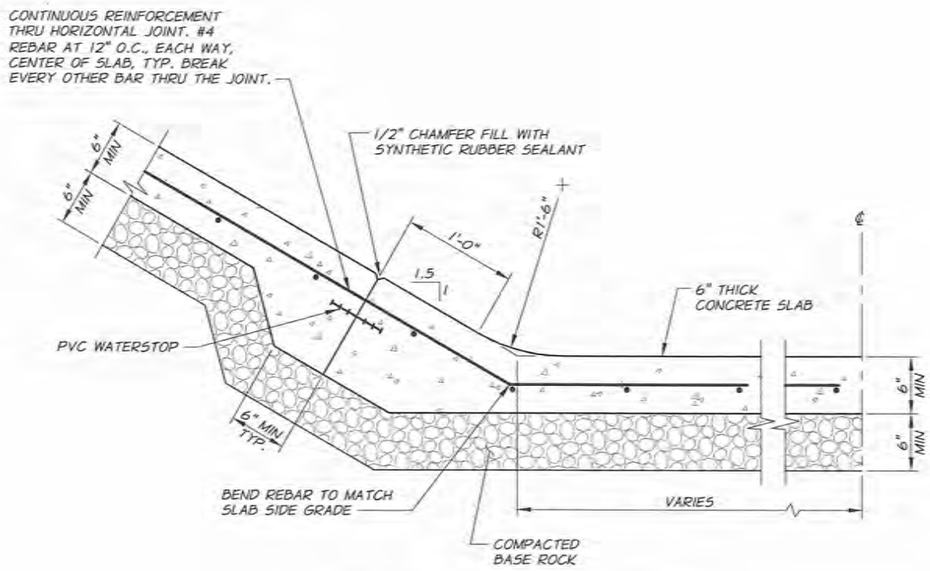
CONNECTION TO EXISTING CANAL LINING DETAIL

SCALE: 1 1/2"=1'-0"



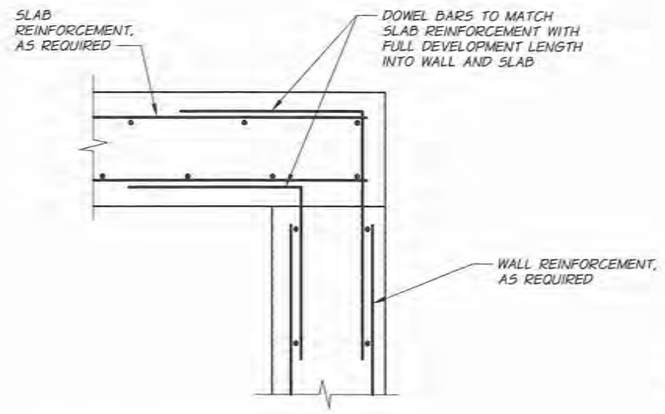
SLAB SIDE TO RETAINING WALL DETAIL

SCALE: 1 1/2"=1'-0"



SLAB SIDE TO BOTTOM DETAIL

SCALE: 1 1/2"=1'-0"



ELEVATED SLAB TO WALL DETAIL

SCALE: 1 1/2"=1'-0"

6" 0 6" 12" 18"
SCALE IN INCHES

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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C-FLUME REPLACEMENT
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FOR
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ALIGNMENT IMPROVEMENTS
CONCRETE SLAB DETAILS

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2950 Shasta Way · Klamath Falls, OR 97601
(541) 884-4666 · FAX (541) 884-5535

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_INLET-OUTLET.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 51 OF 79

A26

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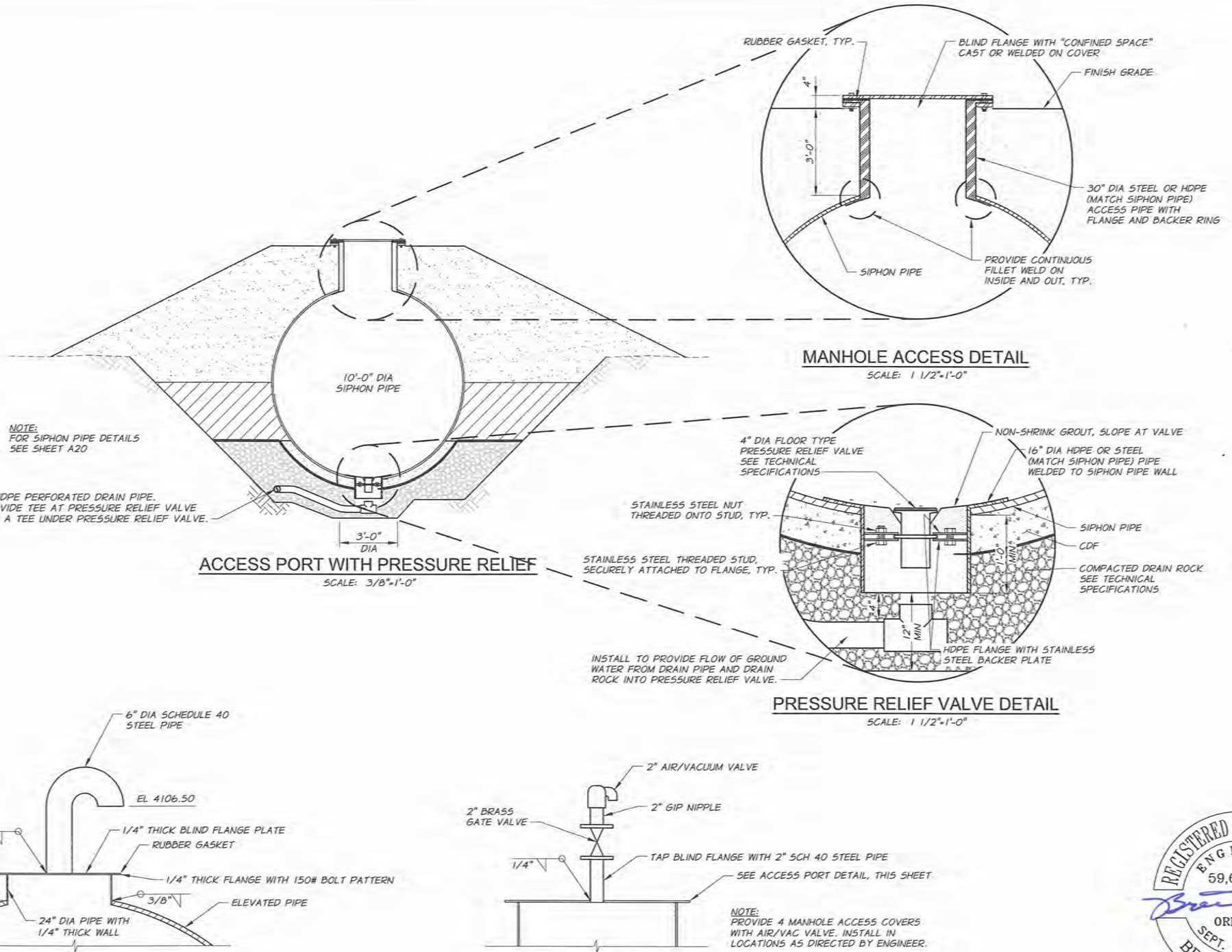

MANHOLE ACCESS DETAIL
SCALE: 1 1/2"=1'-0"

ACCESS PORT WITH PRESSURE RELIEF
SCALE: 3/8"=1'-0"

PRESSURE RELIEF VALVE DETAIL
SCALE: 1 1/2"=1'-0"

24" DIA. ACCESS PROT WITH 6" DIA VENT
(STA. 37+35)
SCALE: 1"=1'-0"

MANHOLE ACCESS WITH AIR/VAC VALVE
SCALE: 1 1/2"=1'-0"

SCALE IN FEET
SCALE IN FEET
SCALE IN INCHES

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59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

No.	REVISION	DATE	BY

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ACCESS PORT WITH PRESSURE RELIEF DETAILS

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(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_SIPHON.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 52 OF 79

A27

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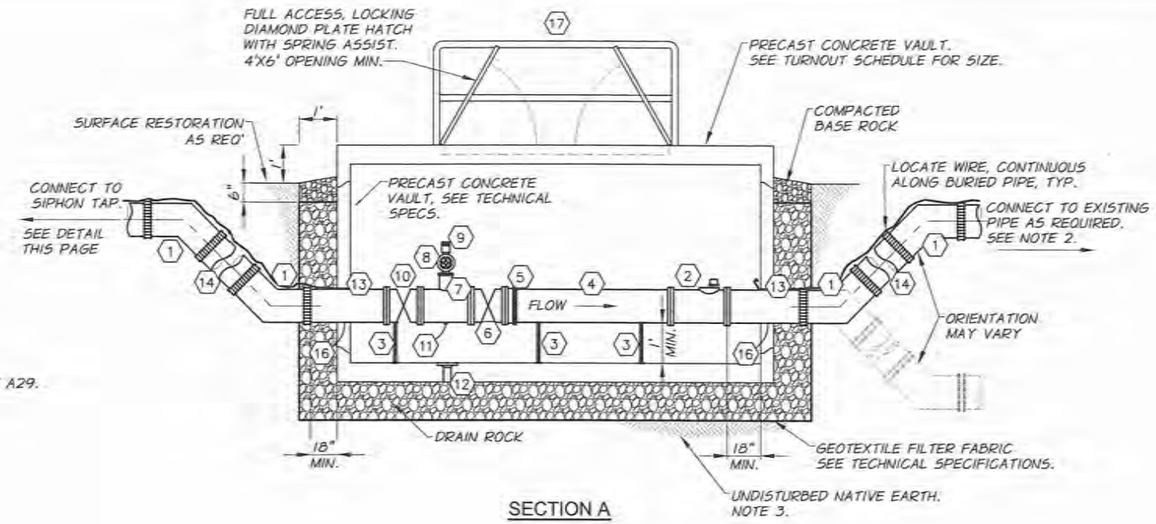
TURNOUT SCHEDULE

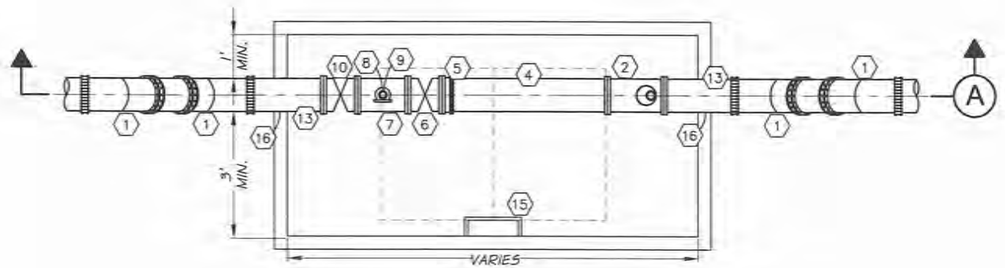
TURNOUT	STATION	DESIGN FLOW (CFS)	TAP Ø	ANGLE	VAULT SIZE*	TURNOUT PIPING Ø	CONNECT TO
'A'	4+73 R	1.5-2.5	8"	90°	12'X5'X6'	8"	EXTG 18" CMP
'B'	18+45 L	2.0-4.5	12"	90°	14'-6"X5'X6'	12"	EXTG 12" DIP
'C'	20+57 L	3.0-4.0	12"	90°	14'-6"X5'X6'	12"	EXTG 18" RCP
'D'	28+25 L	1.0	8"	45°	10'-6"X4'-6"X6'	6"	EXTG 6" DIP
	TURNOUT 'D' BRANCHES OFF SIPHON DRAIN. SEE SIPHON DRAIN DETAIL SHEET A4D.						
'E'	37+47 R	10-20	18"	90°	N/A	18"	TURNOUT 'E' OUTLET STRUCTURE DETAIL, SHEET A29.
'F'	43+55 R	0.5-4.5	12"	45°	14'-6"X5'X6'	12"	48" CMP SUMP
'G'	43+61 L	2.0	8"	45°	12'X5'X6'	8"	EXTG 18" CMP

* MINIMUM INSIDE DIMENSIONS - LENGTH X WIDTH X DEPTH

CMP = CORRUGATED METAL PIPE
DIP = DUCTILE IRON PIPE
RCP = REINFORCED CONCRETE PIPE

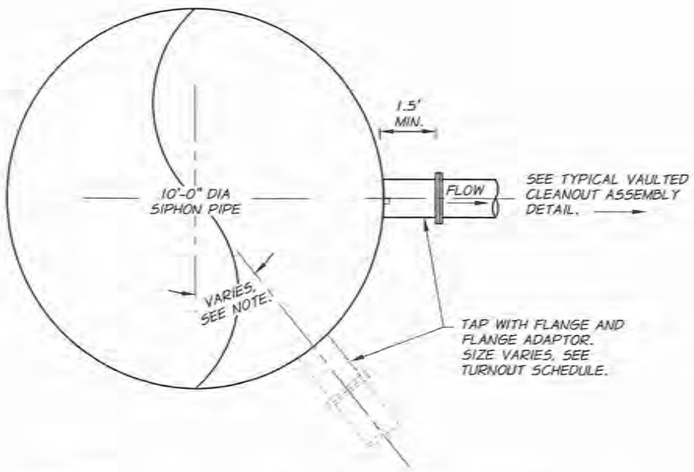


SECTION A



PLAN

NOTES:
1. USE A "DOUBLE-45°" FITTING CONFIGURATION WITH PIPE LENGTH AS REQUIRED TO MAKE CONNECTIONS TO SIPHON TAP AND EXISTING PIPES.
2. FIELD VERIFY ALL "CONNECT TO EXISTING" LOCATIONS, PIPE SIZES, REQUIRED FITTINGS, AND MATERIAL PRIOR TO INSTALLING CLEANOUT VAULTS.
3. IF DRAIN ROCK IS TO BE PLACED ON TOP OF DISTURBED SOIL CONTRACTOR SHALL COMPACT DISTURBED SOIL TO 95% OF STANDARD PROCTOR (ASTM-T99) AND PLACE 1' OF COMPACTED 4"-0 PIT RUN PRIOR TO PLACING FABRIC AND DRAIN ROCK.
4. ALL VAULTED FITTINGS SHALL BE FLG x FLG TYPE UNLESS SPECIFIED OTHERWISE.



NOTES:
1. TAP ANGLE MEASURED FROM LOWER VERTICAL CENTERLINE OF SIPHON PIPE. SEE TURNOUT SCHEDULE FOR INSTALLATION ANGLES AND LOCATIONS.

SIPHON TAP DETAIL
SCALE: 1/2"=1'-0"

FITTING SCHEDULE

1. 45° BEND WITH RESTRAINED JOINT . SEE NOTE 1.
2. INLINE FLOWMETER. SEE TECHNICAL SPECIFICATIONS.
3. PIPE JACKS. SEE TYPICAL DETAIL.
4. PE X FLG, LENGTH = 5 TIMES PIPE DIA.
5. FLANGE COUPLING ADAPTOR.
6. USER ISOLATION VALVE, FLG GATE VALVE WITH HANDWHEEL OPERATION.
7. __ X 6" FLG TEE WITH BLIND FLANGE.
8. 2" TAP WITH BRASS GATE VALVE.
9. 2" CAMLOCK COUPLING.
10. K.I.D. ISOLATION VALVE, FLG GATE VALVE WITH HANDWHEEL OPERATION.
11. FACTORY INSTALLED BOSS WITH 3/4" BRASS BALL VALVE.
12. BRASS GRATED FLOOR DRAIN WITH 4" DRAIN PIPE.
13. FLG X PE D.I. SPOOL. LENGTH AS REQUIRED.
14. PE X PE D.I. SPOOL. LENGTH AS REQUIRED.
15. GALVANIZED STEEL LADDER WITH "LADDER UP" EXTENSION.
16. SEAL PIPE PENETRATIONS WITH NON-SHRINK GROUT.
17. RAILING. SEE DETAILS, SHEETS EP6 THRU EP8.

TYPICAL VAULTED TURNOUT ASSEMBLY DETAIL
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ALIGNMENT IMPROVEMENTS
TURNOUT DETAILS

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Engineering ▲ Surveying ▲ Environmental Services
LA GRANDE, OR. WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
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2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-3535

DATE: March 25, 2016
PROJECT: 462-00
FILE: TURNOUT DETAILS.DWG
DESIGNED BY: BLP
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 53 OF 79

A28

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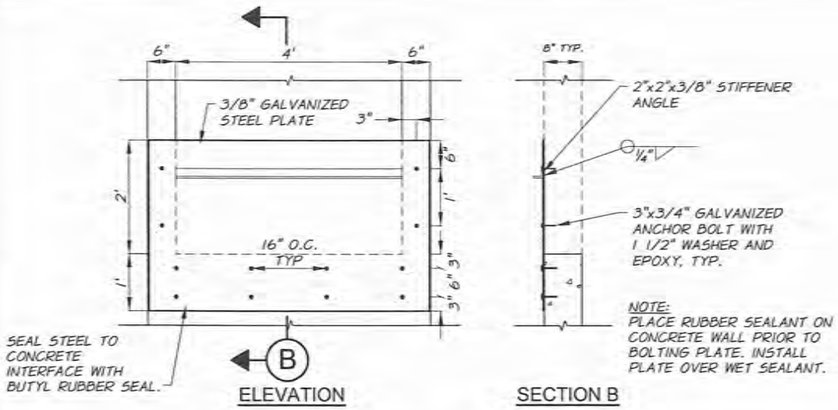
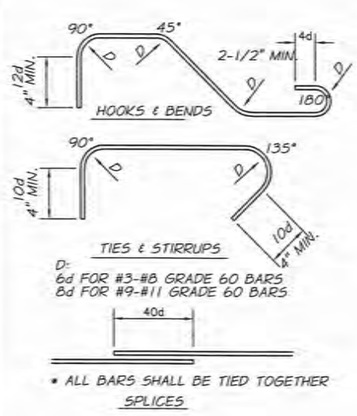
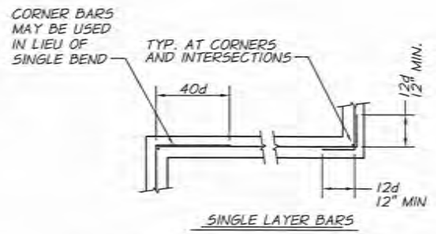


WEIR PLATE DETAIL

SCALE: 3/4"=1'-0"



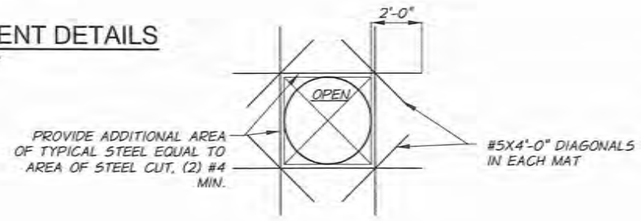


CONCRETE WALL & FOOTING REINFORCEMENT DETAIL

NTS

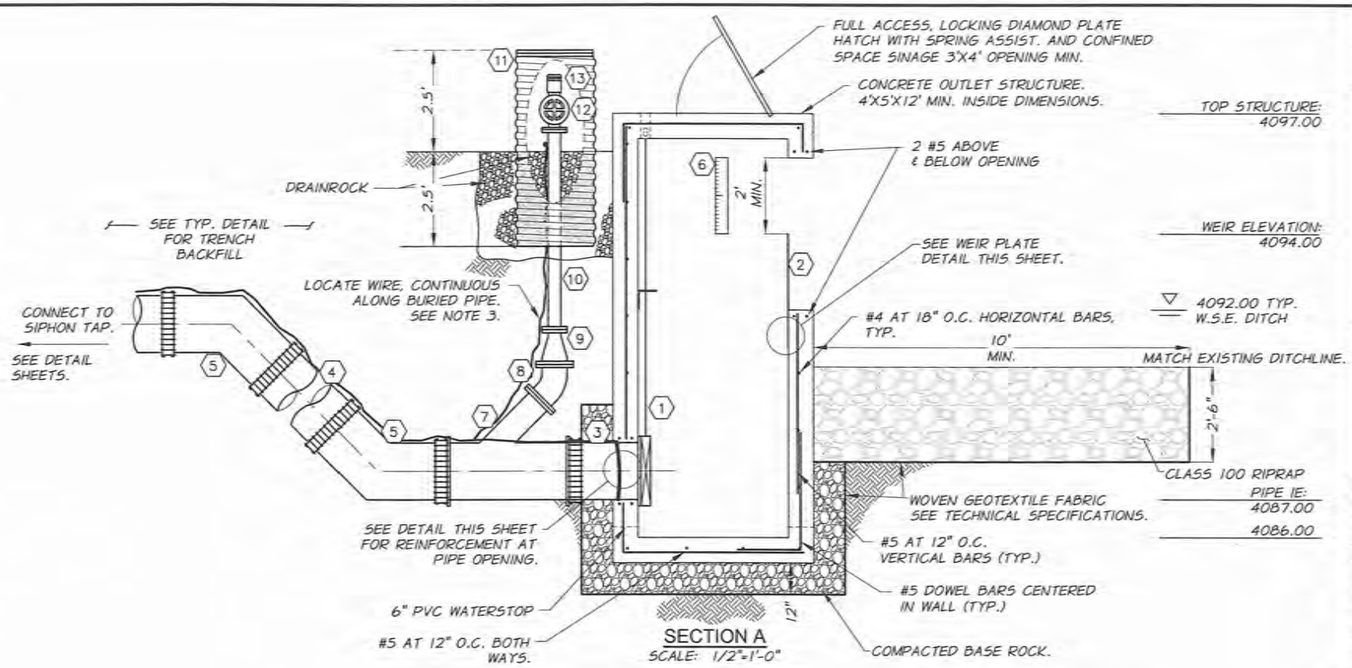
REINFORCEMENT DETAILS

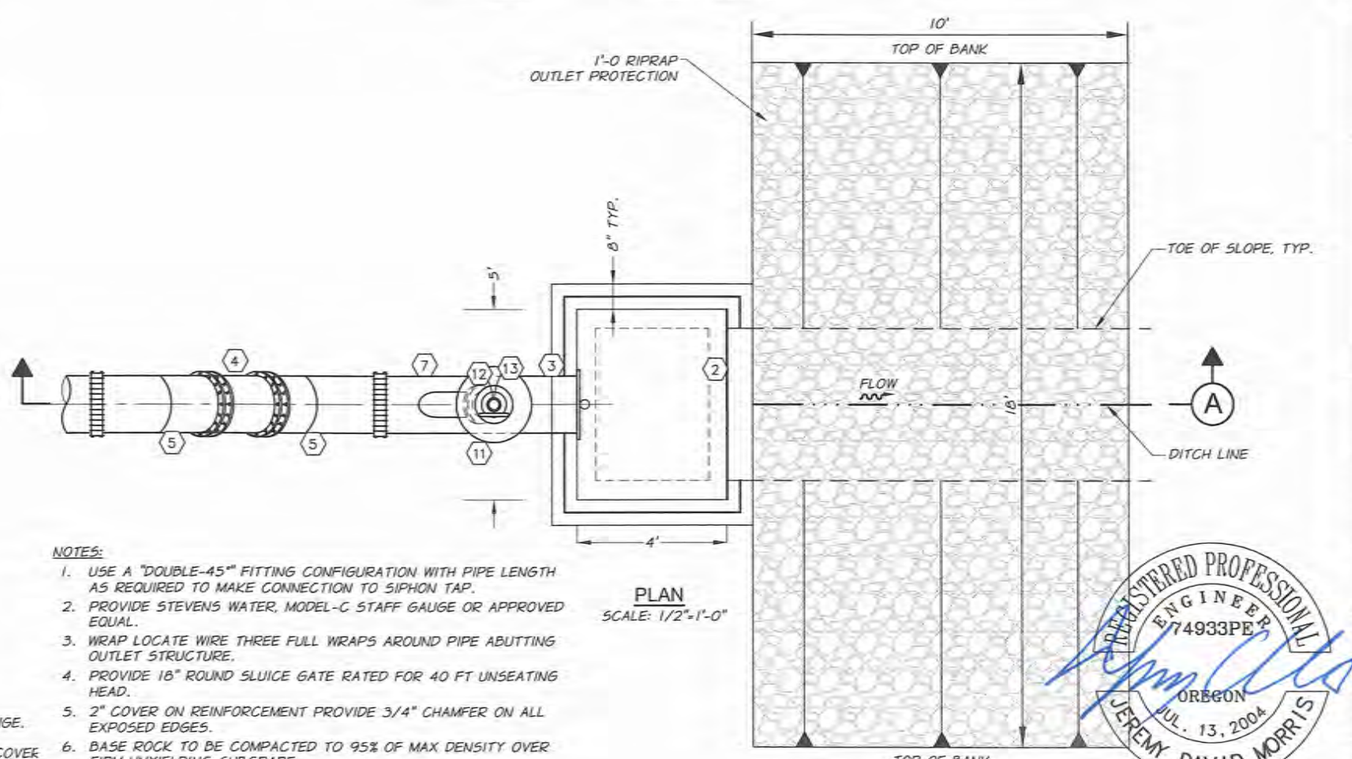
NTS



WALL REINFORCEMENT AT PIPE

N.T.S.





PLAN

SCALE: 1/2"=1'-0"

FITTING SCHEDULE

1. SLUICE GATE WITH T-HANDLE OPERATOR. SEE TECHNICAL SPECIFICATIONS AND NOTE 4.
2. 5' X 2' X ¼" GALVANIZED STEEL WEIR PLATE.
3. FLG X PE D.I. SPOOL, LENGTH AS REQUIRED.
4. PE X PE D.I. SPOOL, LENGTH AS REQUIRED.
5. 45° BEND WITH RESTRAINED JOINT. SEE NOTE 1.
6. STAFF GAUGE. SEE NOTE 2.
7. 18"X8" WYE FLGXFLG.
8. 45° 4"X4" BEND FLGXFLG.
9. REDUCING FLG 4"X8"
10. 5'-3" X 4" FLGXFLG D.I. SPOOL WITH BLIND FLANGE.
11. 24" VERTICAL CMP WITH GALVANIZED LOCKING COVER CENTER AROUND VALVE & COUPLING.
12. 2" TAP WITH BRASS GATE VALVE.
13. 2" CAMLOCK COUPLING.

NOTES:

1. USE A "DOUBLE-45°" FITTING CONFIGURATION WITH PIPE LENGTH AS REQUIRED TO MAKE CONNECTION TO SIPHON TAP.
2. PROVIDE STEVENS WATER, MODEL-C STAFF GAUGE OR APPROVED EQUAL.
3. WRAP LOCATE WIRE THREE FULL WRAPS AROUND PIPE ABUTTING OUTLET STRUCTURE.
4. PROVIDE 18" ROUND SLUICE GATE RATED FOR 40 FT UNSEATING HEAD.
5. 2" COVER ON REINFORCEMENT PROVIDE 3/4" CHAMFER ON ALL EXPOSED EDGES.
6. BASE ROCK TO BE COMPACTED TO 95% OF MAX DENSITY OVER FIRM UNYIELDING SUBGRADE.

TURNOUT 'E' OUTLET STRUCTURE DETAIL

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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FOR
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ALIGNMENT IMPROVEMENTS
TURNOUT 'E' DETAILS

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Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-3535

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	TURNOUT DETAILS.DWG
DESIGNED BY:	BLP
DRAWN BY:	BLP
CHECKED BY:	JDM

SHEET 54 OF 79

A29

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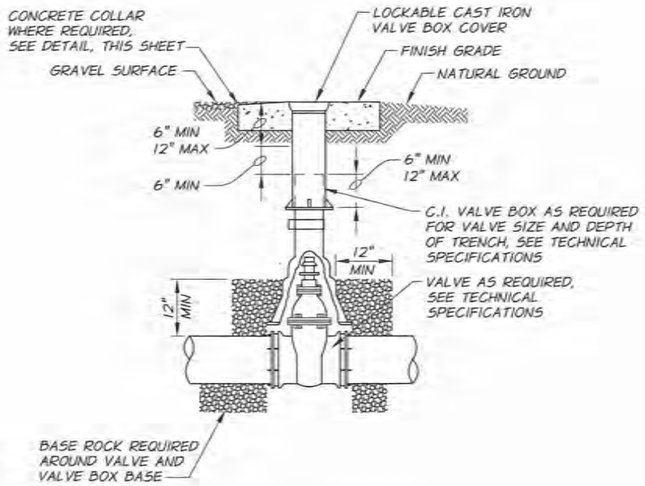
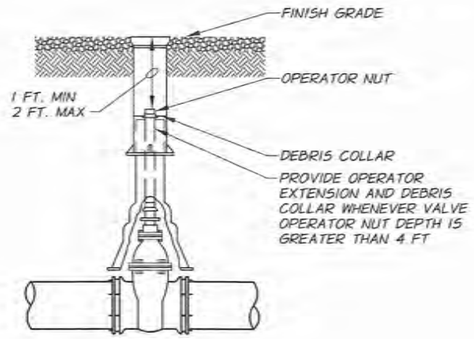


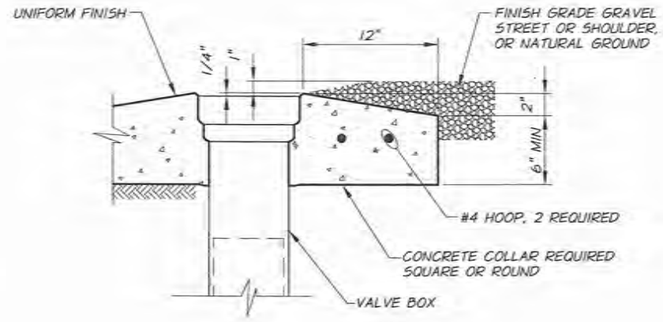
VALVE BOX DETAIL

N.T.S.



VALVE OPERATOR EXTENSION DETAIL

N.T.S.



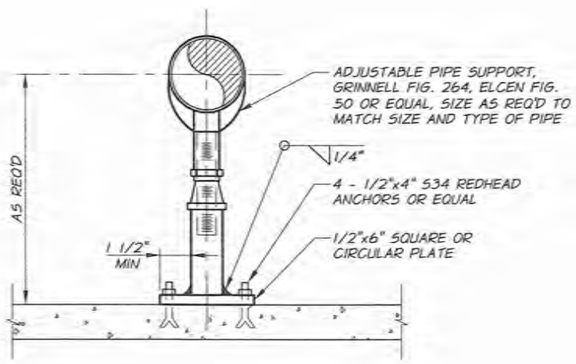
REQUIREMENTS FOR CONCRETE COLLARS:

1. CONCRETE : 3/4", 4000 PSI AT 28 DAYS, 2" TO 4" SLUMP, 4-7% AIR.
2. COLLAR TO BE FORMED AND UNIFORMLY ROUND.
3. SMOOTH BROOM FINISH REQUIRED
4. APPLY CONCRETE CURING COMPOUND.
5. PROTECT FROM TRAFFIC FOR 4 DAYS MINIMUM.

VALVE BOX CONCRETE COLLAR DETAIL

IN GRAVEL STREETS OR NATURAL GROUND

N.T.S.



PIPE SUPPORT DETAIL

N.T.S.

REGISTERED PROFESSIONAL ENGINEER
59,632PE
OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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FOR
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ALIGNMENT IMPROVEMENTS
PIPING DETAILS

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DATE: March 25, 2016
PROJECT: 462-00
FILE: DETL_MISC2.DWG
DESIGNED BY: HMM
DRAWN BY: LDW
CHECKED BY: BMM

SHEET 55 OF 79

A30

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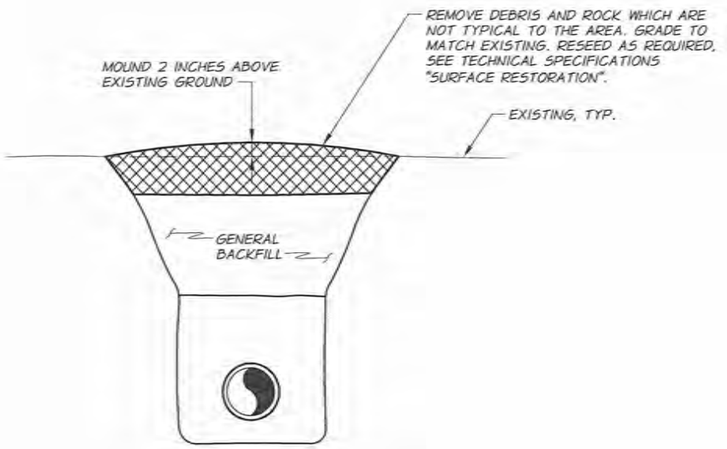
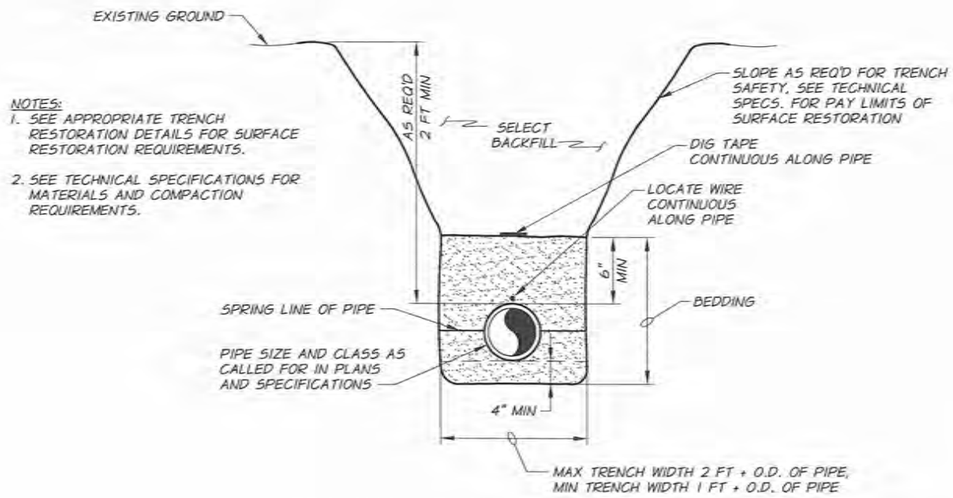


TRENCH RESTORATION
NATURAL AREAS
N.T.S.



TRENCH EXCAVATION AND BACKFILL
(PIPE DIA < 48")
N.T.S.

No.	REVISION	DATE	BY

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FOR
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ALIGNMENT IMPROVEMENTS
TRENCH RESTORATION DETAILS

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OREGON
SEPT. 2, 1998
BRETT MOORE
RENEWS 12-31-16

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DATE:	March 25, 2016
PROJECT:	462-00
FILE:	DETL_MISC2.DWG
DESIGNED BY:	HMM
DRAWN BY:	LDW
CHECKED BY:	BMM

SHEET 56 OF 79

A31

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EROSION CONTROL NOTES

1. INSTALL SILT FENCE PER DETAIL 1, SHEET EC2.
2. INSTALL CONSTRUCTION ENTRANCE PER DETAIL 2, SHEET EC2.
3. APPROXIMATE LOCATION OF TIRE WASH (SEE DETAIL 3, EC2). PROVIDE CLEAN GRAVEL ACCESS FROM TIRE WASH TO PAVED ROADWAYS. TRACK-OUT IS NOT PERMITTED.

GENERAL NOTES

1. RESTORE ALL AREAS ADJACENT TO THE WORK AREA TO AN EQUIVALENT OR BETTER CONDITION THAT EXISTED PRIOR TO CONSTRUCTION.
2. THE ESCP REQUIREMENTS SHOWN ARE FOR ANTICIPATED SITE CONDITIONS METHODS AND SEQUENCING. **SEE NPDES 1200CA PERMIT (APPENDIX B-CONTRACT DOCS) FOR ADDITIONAL REQUIREMENTS.**
3. COORDINATE CONCRETE WASHOUT LOCATION WITH THE ENGINEER AND OWNER IN FIELD.

LEGEND

- SILT FENCE
- RAILROAD
- USBR OR ODOT RIGHT-OF-WAY
- TEMPORARY ACCESS ROADS, SEE SHEET G7

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16
5/5/16

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No.	REVISION	DATE	BY
1	ADDENDUM 3		

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EROSION CONTROL PLAN

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DATE: April 28, 2016
PROJECT: 462-00
FILE: EC PLAN.DWG
DESIGNED BY: JDM
DRAWN BY:
CHECKED BY: JDM

EC1

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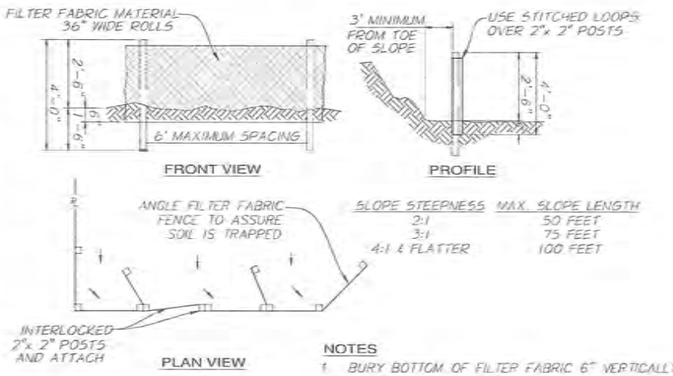
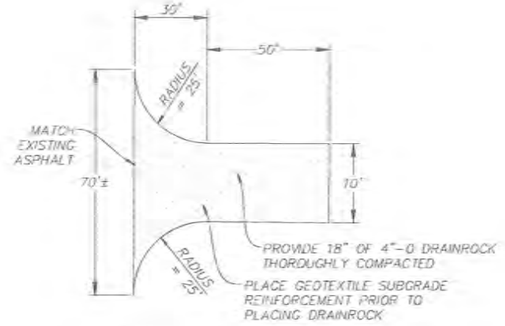


NOTES

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.

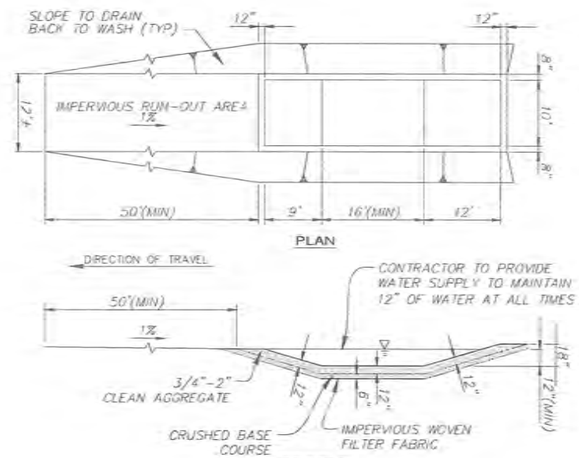
1 EC2 SILT FENCE DETAIL N.T.S.



NOTE

1. TIRE WASH MAY BE REQUIRED IF CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.

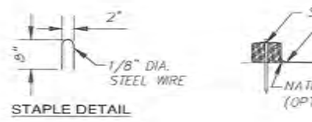
2 EC2 CONSTRUCTION ENTRANCE DETAIL N.T.S.



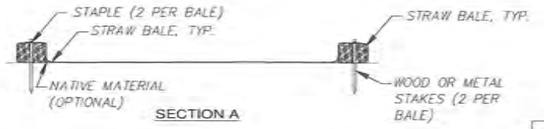
NOTES

1. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH AS REQUIRED.
2. USE WOVEN IMPERMEABLE GEOTEXTILE FABRIC BETWEEN 6" BASE COURSE AND 12" TOP COURSE.
3. TIRE WASH REQUIRED IF STABILIZED CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.
4. IF UTILIZED, CONTRACTOR MUST MAINTAIN A CLEAN GRAVEL ROAD FROM THE TIRE WASH TO THE CONSTRUCTION ENTRANCE.

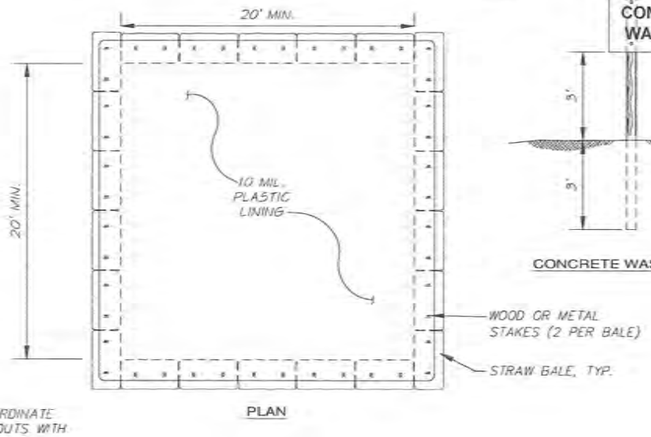
3 EC2 TIRE WASH DETAIL N.T.S.



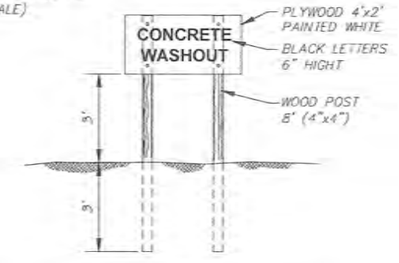
STAPLE DETAIL



SECTION A



PLAN



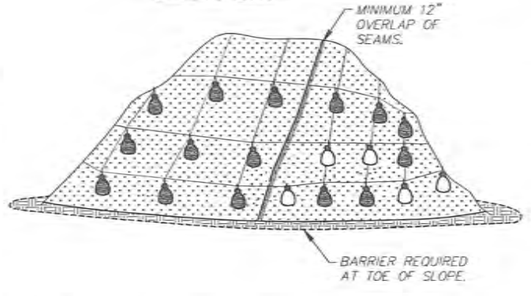
CONCRETE WASHOUT SIGN DETAIL

NOTES:
CONTRACTOR TO COORDINATE LOCATION OF WASH OUTS WITH ENGINEER IN THE FIELD.

⚠1 4 EC2 CONCRETE WASHOUT AREA DETAILS N.T.S.

NOTES:

1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER REQUIRED AT TOE OF STOCK PILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.
4. INSPECT DAILY FOR WIND DAMAGE AND IMMEDIATELY REPAIR ANY TEARS OR RIPS IN SHEETING.
5. PROTECT STOCK PILES FROM CONCENTRATED OVERLAND FLOWS.



⚠1 5 EC2 PLASTIC SHEETING STOCKPILE COVERING N.T.S.

⚠ EROSION CONTROL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ESCP REQUIREMENTS FOUND IN NPDES 1200A PERMIT (SEE APPENDIX B – CONTRACT DOCUMENTS). THIS PLAN IS MEANT TO PROVIDE GENERAL GUIDANCE TO THE CONTRACTOR AND IS NOT TO BE CONSIDERED A REPLACEMENT FOR THE NPDES 1200CA PERMIT REQUIREMENTS.
2. CONTRACTOR IS REQUIRED TO SUBMIT A COMPLETE ESCP IN ACCORDANCE WITH THE NPDES 1200CA PERMIT (SEE APPENDIX B – CONTRACT DOCUMENTS).
3. CONTRACTOR SHALL KEEP A COPY OF THE APPROVED ESCP ON-SITE AT ALL TIMES.
4. IF INSPECTION BY THE ENGINEER, OWNER, OR B.O.R. REVELS THAT APPROVED ESC METHODS ARE IN-ADEQUATE, THE CONTRACTOR MAY BE DIRECTED TO MODIFY ESC METHODS UNTIL THE DESIRED EROSION OR SEDIMENT CONTROL IS ACHIEVED.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
5/5/16
RENEWS 12-31-16

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⚠2	ADDENDUM 2		

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

EROSION CONTROL DETAILS

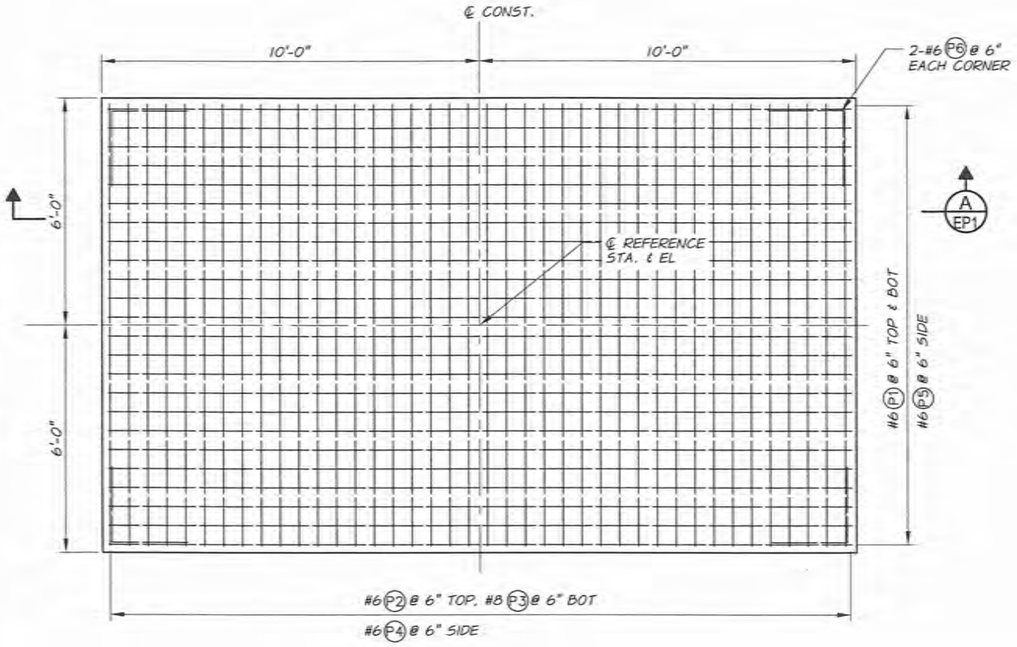
anderson perry & associates, inc.
engineering surveying natural resources
LA GRANDE, OR · WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers & Planners & Surveyors
Klamath Falls · Medford
2500 Daggett Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: April 28, 2016
PROJECT: 462-00
FILE: EC PLAN.DWG
DESIGNED BY: JDM
DRAWN BY:
CHECKED BY: JDM

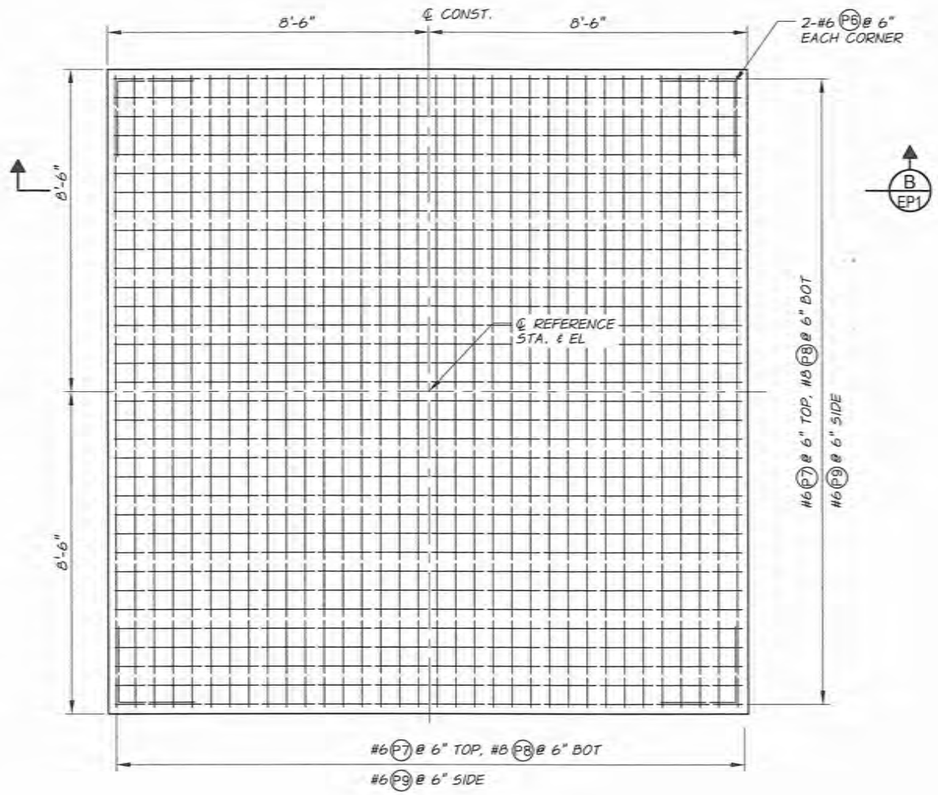
EC2

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\EC PLAN.dwg, EC2, 4/28/2016 8:11:33 AM, lwillhite



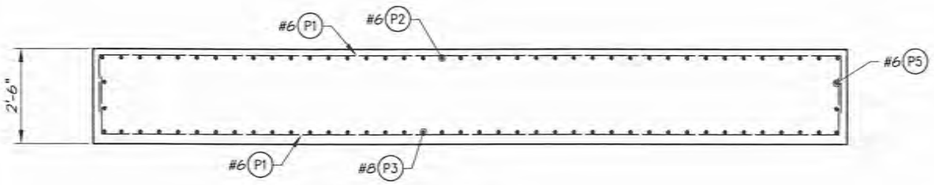
PLAN-PIER 1

SCALE: 1/2"=1'-0"



PLAN-PIER 2 & 5

SCALE: 1/2"=1'-0"



SECTION A

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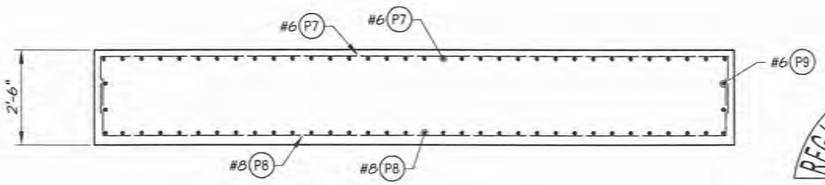

SECTION B

SCALE: 1/2"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
74800PE
OREGON
MAY 11, 2004
ERIC DEAN ZITTERKOPF
3/24/16
RENEWS 06-30-2016

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ELEVATED PIPE
PIER TYPE I AND II

anderson perry & associates, inc.
engineering • surveying • land development services
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	462-00-060C-00EP1-3.DWG
DESIGNED BY:	EDZ
DRAWN BY:	EDZ
CHECKED BY:	BMM

SHEET 57 OF 79

EP1

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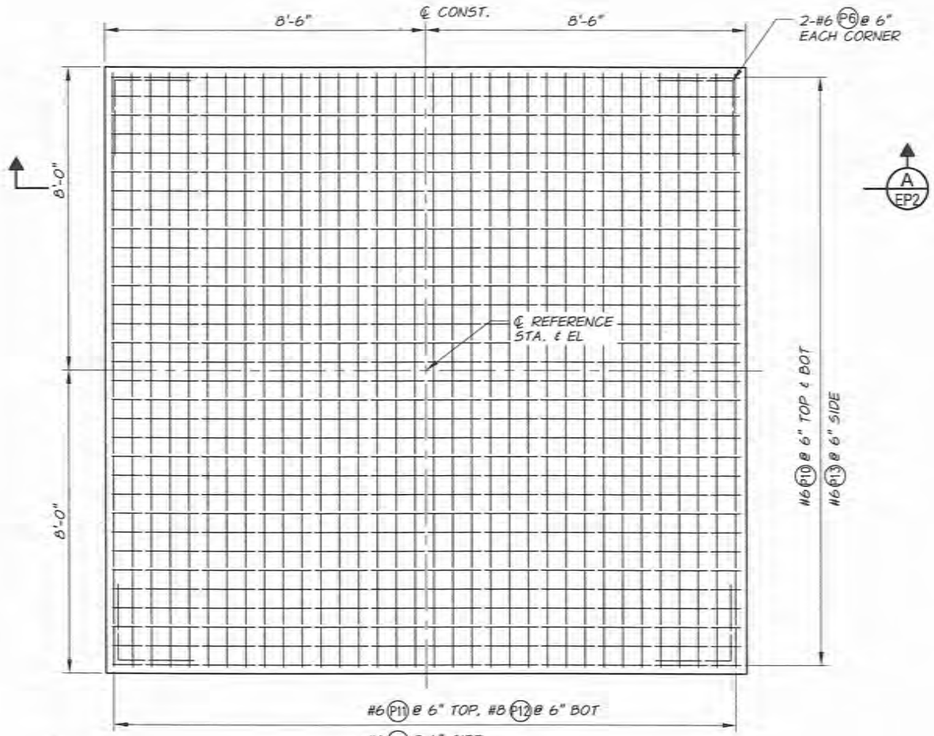
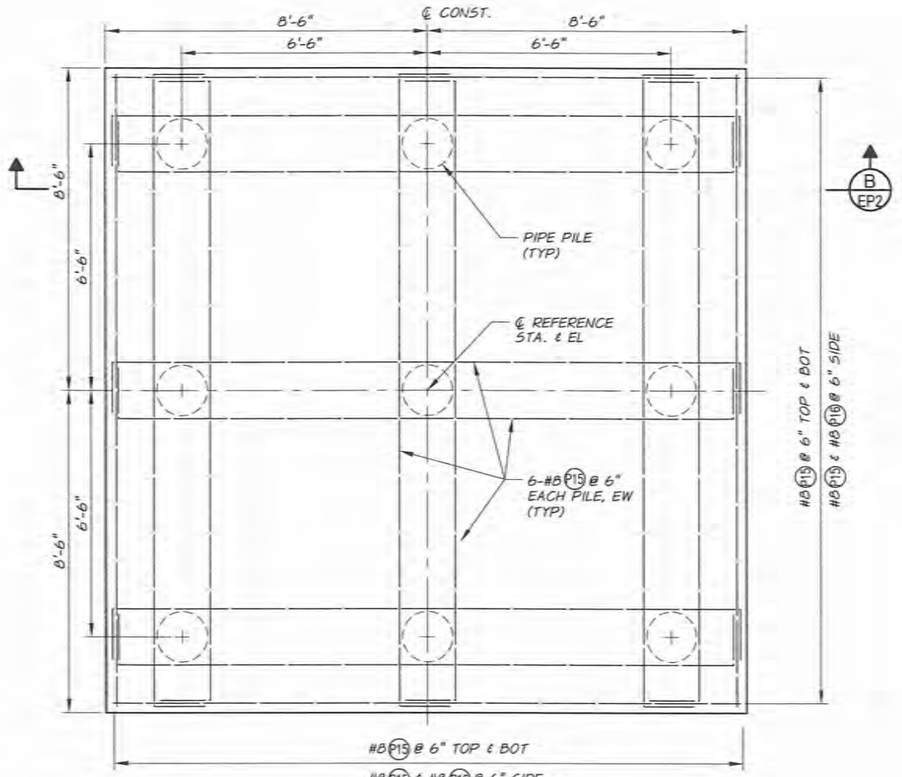


PLAN-PIER 3 & 4

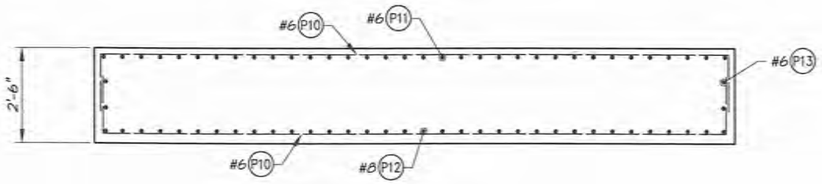
SCALE: 1/2"=1'-0"



NOTES:
1. NOT ALL REINFORCING SHOWN FOR CLARITY.
2. SEE DETAIL 1/EP3 FOR SUPPLEMENTAL REINFORCING AT PILE PENETRATIONS.

PLAN-PIER 6, 7, 8, 9

SCALE: 1/2"=1'-0"



SECTION A

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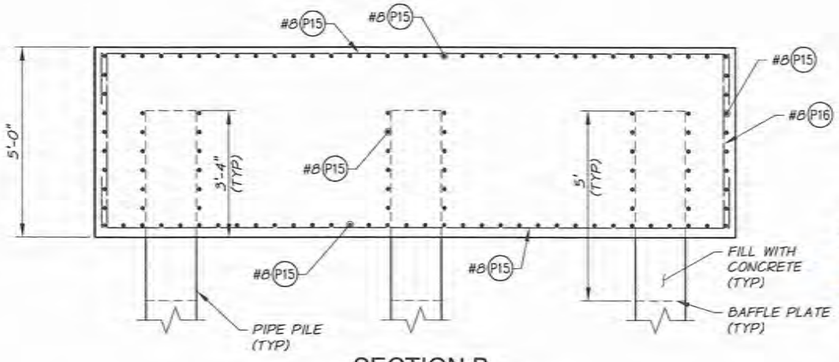

SECTION B

SCALE: 1/2"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
74800PE
OREGON
MAY 11, 2004
ERIC DEAN ZITTERKOPF
RENEWS 06-30-2016

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ELEVATED PIPE
PIER TYPE III

anderson perry & associates, inc.
engineering ▲ surveying ▲ construction management
LA GRANDE, OR · WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Medford
2020 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-9335

DATE: March 25, 2016
PROJECT: 462-00
FILE: 462-00-060C-00EP1-3.DWG
DESIGNED BY: EDZ
DRAWN BY: EDZ
CHECKED BY: BMM

SHEET 58 OF 79

EP2

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PIER GENERAL NOTES

MATERIAL:
CONCRETE (CAST-IN-PLACE): CLASS 4000
REINFORCING STEEL: ASTM A-706, GRADE 60

FINISHING:
CONCRETE: ALL EXPOSED CAST-IN-PLACE SURFACES ABOVE THE FINISHED GRADE NOT TO RECEIVE A CLASS B FINISH. ALL EXPOSED EDGES OF CAST-IN-PLACE CONCRETE SHALL BE CHAMFERED WITH A 1" (DIAGONAL LENGTH) CHAMFER.

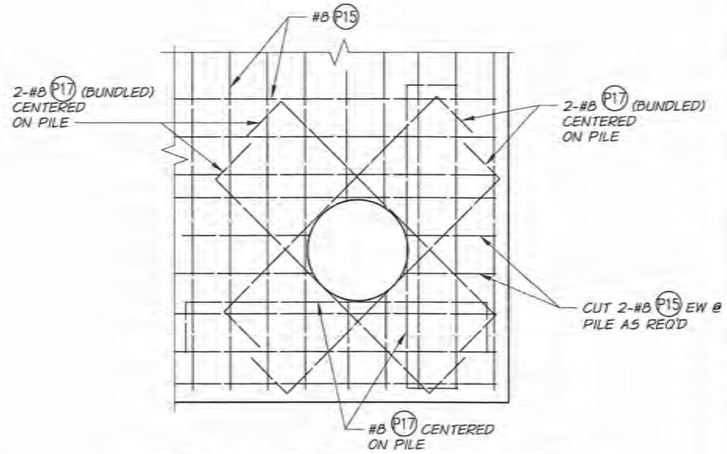
OTHER:
UNLESS OTHERWISE SHOWN ON THE PLANS, CONCRETE COVER FROM THE FACE OF CONCRETE TO REINFORCING BARS SHALL BE 2" (3" FOR CONCRETE CAST AGAINST SOIL).

ABBREVIATIONS:

EF - EACH FACE	TYP - TYPICAL
NF - NEAR FACE	OC - ON CENTER
FF - FAR FACE	ES - EQUALLY SPACED
CLR - CLEAR	BRG - BEARING

ALL PILING SHALL BE DRIVEN TO THE FOLLOWING			
LOCATION	MIN NOMINAL BEARING (KIP)	MIN TIP ELEVATION	ESTIMATED TIP ELEVATION
PIER 6	375	4068	4061
PIER 7	375	4071	4063
PIER 8	375	4056	4049
PIER 9	375	4067	4059

1. ALL PILING SHALL BE PP16 X 0.5 MEETING THE MATERIAL REQUIREMENTS OF ASTM A252 GRADE 3
2. PILES SHALL BE CLOSED ENDED FOR PIERS 6, 7, 9.
3. BAFFLE SHALL BE INSTALLED AT 25' ABOVE PILE TIP FOR PIER 8 PILES.



NOTE: DETAIL SHOWN IS FOR PENETRATION OF BOTTOM MAT OF REINFORCING AND APPLIES TO ALL PILE PENETRATIONS.

1 / EP3 **DETAIL**
PILE SUPPLEMENTAL REINFORCING
SCALE 1"=1'-0"

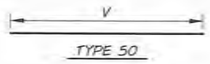
PIER - BAR LIST

MARK NO	LOCATION	SIZE	BEND TYPE	V	W	X	Y	Z
P1	PIER 1	6	61	19'-8"	1'-6"	1'-6"		
P2	PIER 1	6	61	11'-8"	1'-6"	1'-6"		
P3	PIER 1	8	61	11'-8"	1'-6"	1'-6"		
P4	PIER 1	6	50	11'-8"				
P5	PIER 1	6	50	19'-8"				
P6	PIER CORNER	6	61	2'-0"	2'-0"			
P7	PIER 2&5	6	61	16'-8"	1'-6"	1'-6"		
P8	PIER 2&5	8	61	16'-8"	1'-6"	1'-6"		
P9	PIER 2&5	6	50	16'-8"				
P10	PIER 3&4	6	61	16'-8"	1'-6"	1'-6"		
P11	PIER 3&4	6	61	15'-8"	1'-6"	1'-6"		
P12	PIER 3&4	8	61	15'-8"	1'-6"	1'-6"		
P13	PIER 3&4	6	50	15'-8"				
P14	PIER 3&4	6	50	16'-8"				
P15	PIER 6,7,8,9	8	61	16'-8"	1'-4"	1'-4"		
P16	PIER 6,7,8,9	8	50	4'-7"				
P17	PIER 6,7,8,9	8	61	4'-0"	1'-4"	1'-4"		

CONTRACTOR SHALL VERIFY DIMENSIONS OF REINFORCING STEEL BEFORE ORDERING

BEND TYPES

(ALL DIMENSIONS ARE OUT TO OUT)



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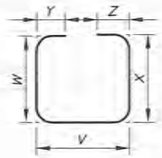
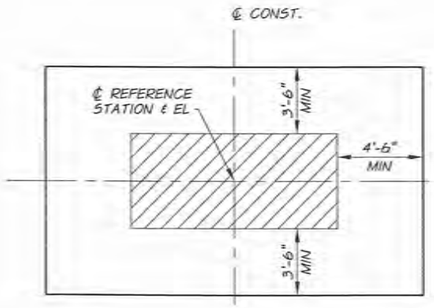
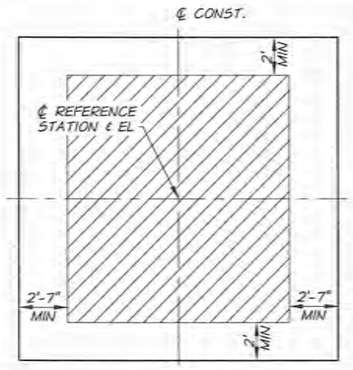


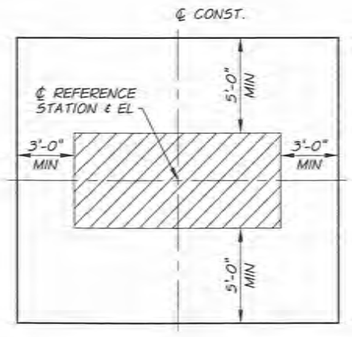
TYPE 61



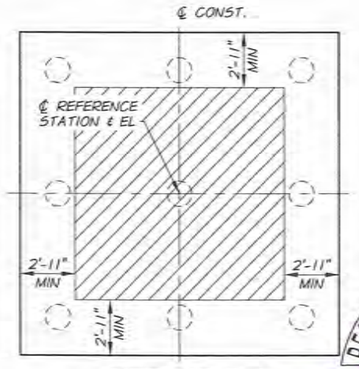
PIER 1



PIER 2, 5



PIER 3, 4



PIER 6, 7, 8, 9

NOTES:
1. FOR PIERS WITH SINGLE PAIR OF SUPPORTS CENTER SUPPORTS ON PIER.
2. FOR PIERS WITH TWO PAIRS OF SUPPORTS CONFINE SUPPORTS TO AREA SHOWN AND CENTER ON ℄ REFERENCE POINT.

2 / EP4 **DETAIL**
SUPPORT PLACEMENT
SCALE 1/4"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
74800PE
OREGON
MAY 11, 2004
ERIC DEAN ZITTERKOPF
3/24/16
RENEWS 06-30-2016

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ELEVATED PIPE
FOUNDATION NOTES AND BAR LIST

anderson perry & associates, inc.
engineering - surveying - construction management
LA GRANDE, OR WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way / Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5325

DATE: March 25, 2016
PROJECT: 462-00
FILE: 462-00-060C-00EP1-3.DWG
DESIGNED BY: EDZ
DRAWN BY: EDZ
CHECKED BY: BMM

SHEET 59 OF 79

EP3

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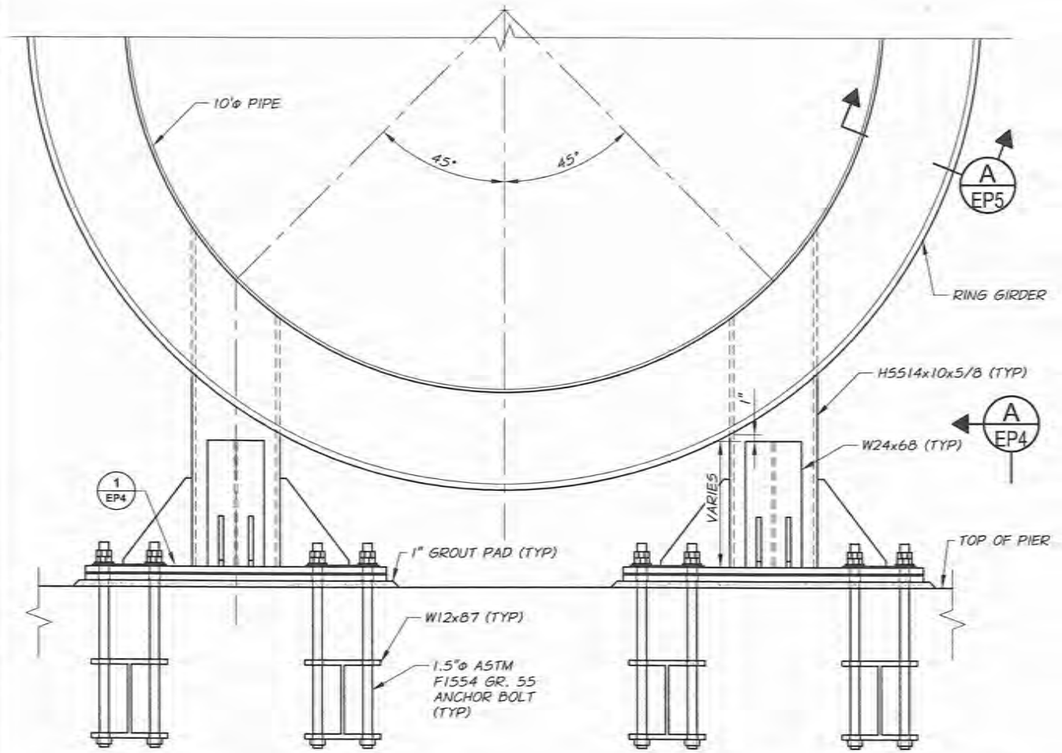
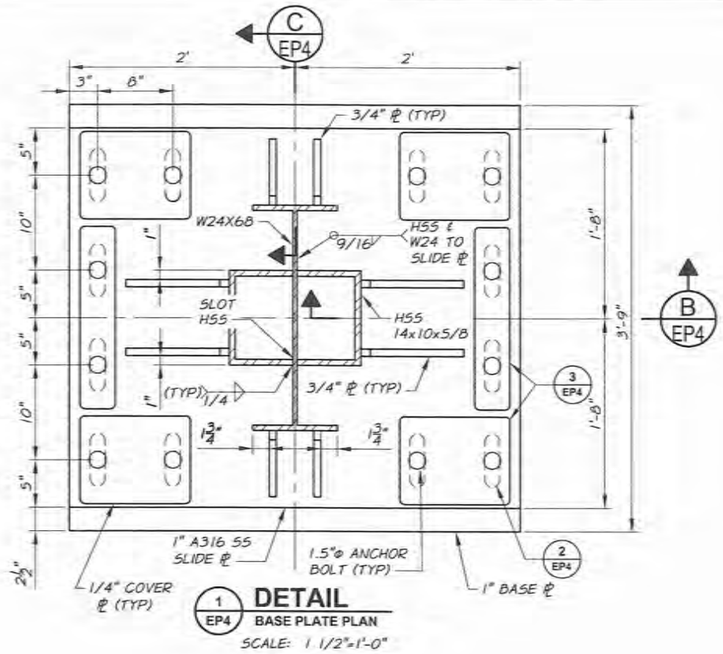


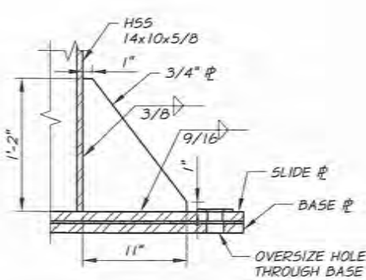
SLIDING BEARING SUPPORT

SCALE: 1"=1'-0"



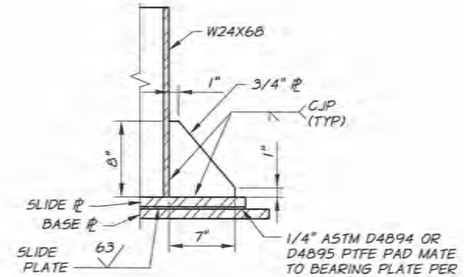
1 EP4 DETAIL
BASE PLATE PLAN

SCALE: 1 1/2"=1'-0"



SECTION B

SCALE: 1 1/2"=1'-0"



SECTION C

SCALE: 1 1/2"=1'-0"

SHEET EP4 AND EP5 NOTES

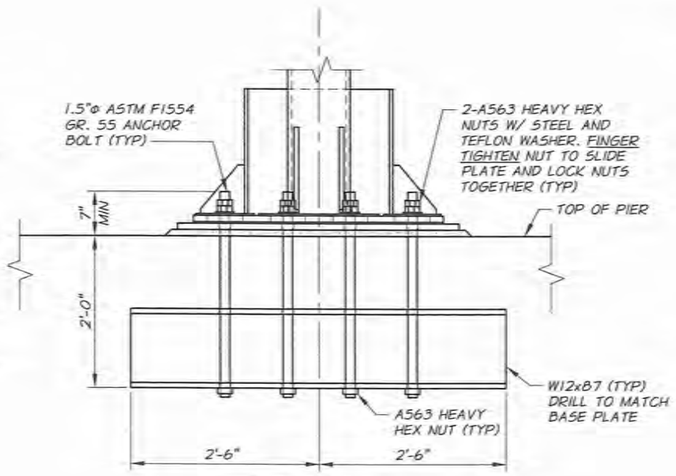
MATERIAL:
ROLLED STEEL SHAPES AND PLATES: ASTM A709 GRADE 36
BOLTS: ASTM F1554 GRADE 55
NUTS: ASTM A563B HEAVY HEX
WASHERS: ASTM F436

FINISHING:
COMPLETED ASSEMBLY SHALL BE PRIMED AND PAINTED TO MATCH PIPE.

OTHER:
BASE PLATES SHALL RECEIVE SURFACE FINISH AS SPECIFIED AND PROTECTED FROM DAMAGE DURING TRANSPORT AND INSTALLATION.

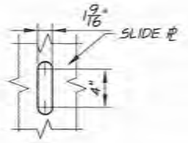
CLEARANCES ASSUME 70° F INSTALL TEMP. CLEARANCES TO BE ADJUSTED FOR OTHER TEMP.

SEE 2 EP3 FOR SUPPORT PLACEMENT ON PIERS.



SECTION A

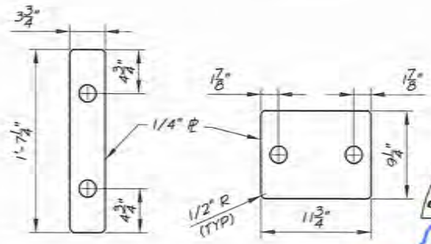
SCALE: 1"=1'-0"



NOTE: ANCHOR BOLTS TO BE CENTERED IN SLOT AT TIME OF INSTALL AT ASSUMED INSTALL TEMP OF 70° F.

2 EP4 DETAIL
SLIDE PLATE BOLT HOLE

SCALE: 1 1/2"=1'-0"



3 EP4 DETAIL
COVER PLATE

SCALE: 1 1/2"=1'-0"

SCALE: FEET

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REGISTERED PROFESSIONAL ENGINEER 74800PE OREGON MAY 11, 2004 ERIC DEAN ZITTERKOPF 3/23/16

RENEWS 06-30-2016

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ELEVATED PIPE
SLIDING BEARING SUPPORT

anderson perry & associates, inc.
engineering ▲ surveying ▲ natural resources
LA GRANDE, OR WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5535

DATE: March 25, 2016
PROJECT: 462-00
FILE 462-00-060C-00EP4-5.DWG
DESIGNED BY: EDZ
DRAWN BY: EDZ
CHECKED BY: BMM

SHEET 60 OF 79

EP4

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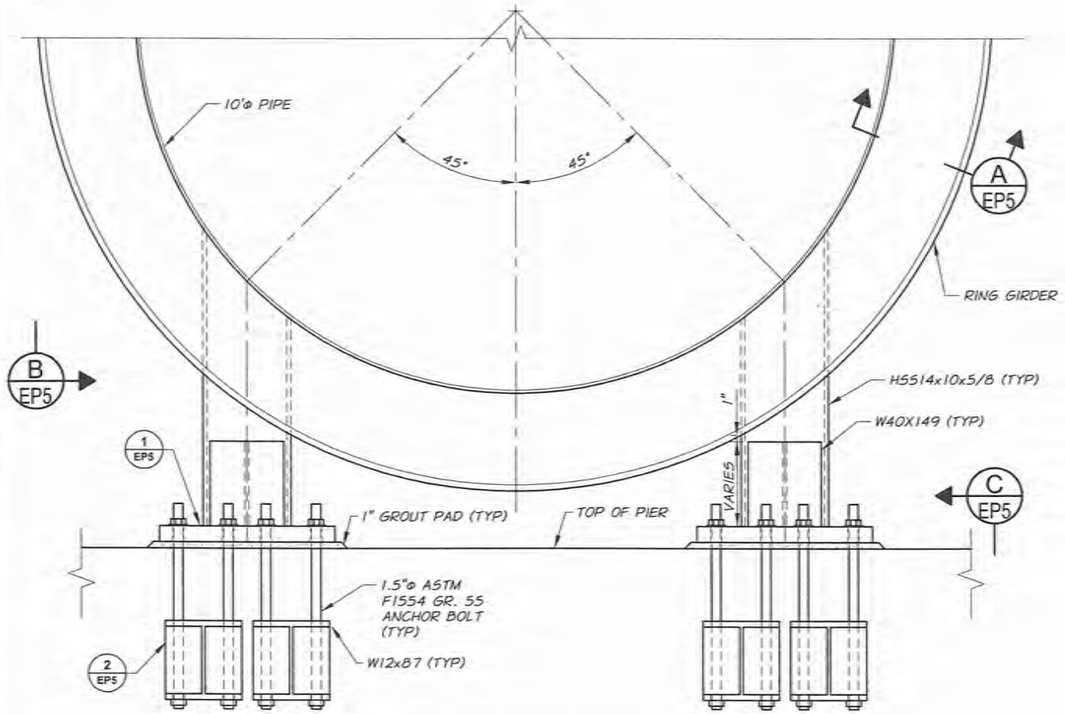
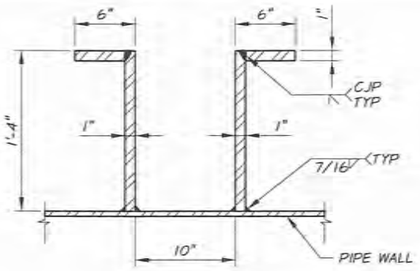


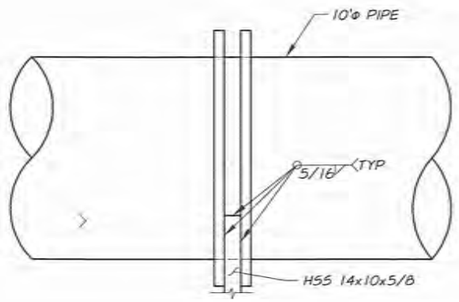
FIXED BEARING SUPPORT

SCALE: 1"=1'-0"



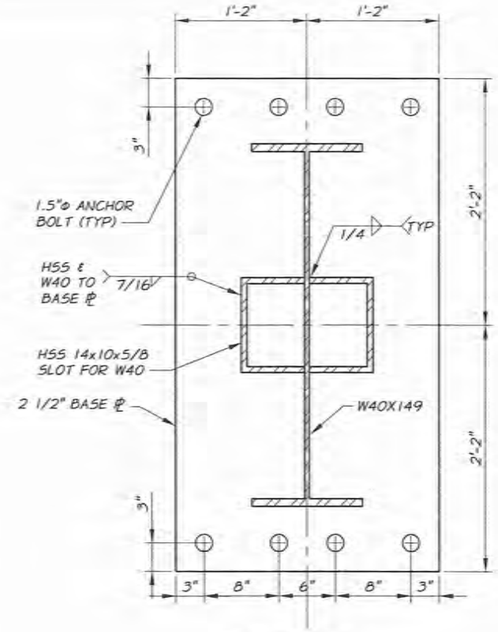
SECTION A

SCALE: 1"=1'-0"

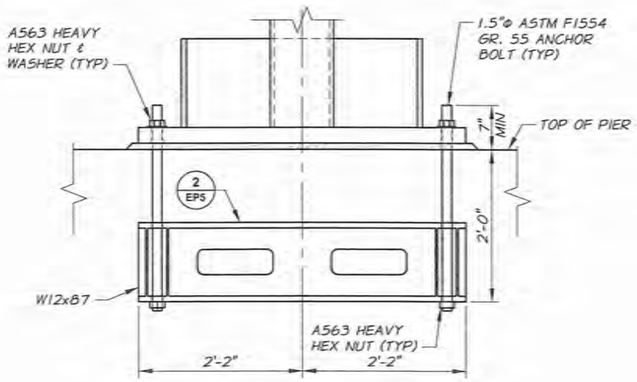


SECTION B

NTS

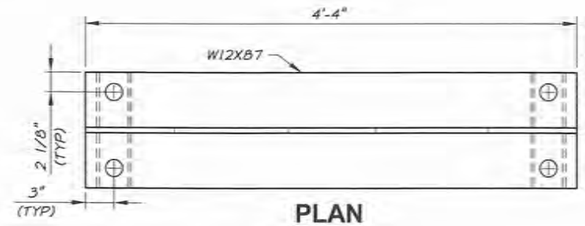


1 EP5 **DETAIL**
BASE PLATE PLAN
SCALE: 1 1/2"=1'-0"

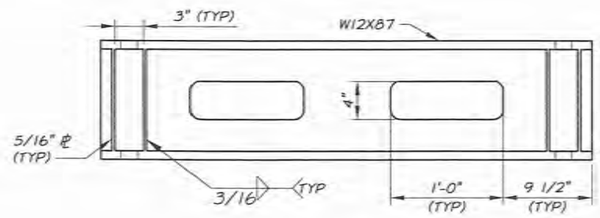


SECTION C

SCALE: 1"=1'-0"

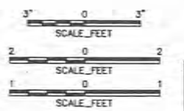


PLAN



ELEVATION

2 EP5 **DETAIL**
ANCHOR BEAM
SCALE: 1 1/2"=1'-0"



REGISTERED PROFESSIONAL ENGINEER
74800PE
OREGON
MAY 11, 2004
ERIC DEAN ZITTERKOPF
5/24/16
RENEWS 06-30-2016

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ELEVATED PIPE
FIXED BEARING SUPPORT

anderson perry & associates, inc.
engineering ▲ surveying ▲ environmental services
LA GRANDE, OR. WALLA WALLA, WA.

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Engineers ▲ Planners ▲ Surveyors
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CHECKED BY: BMM

SHEET 61 OF 79

EP5

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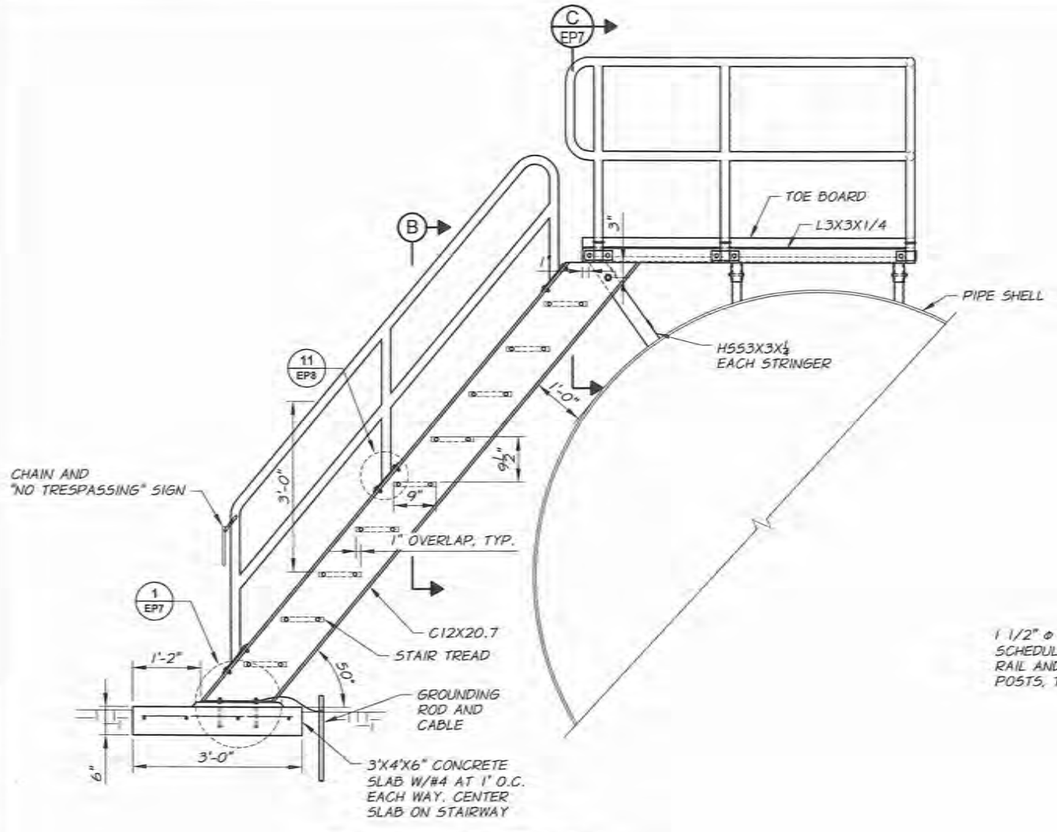
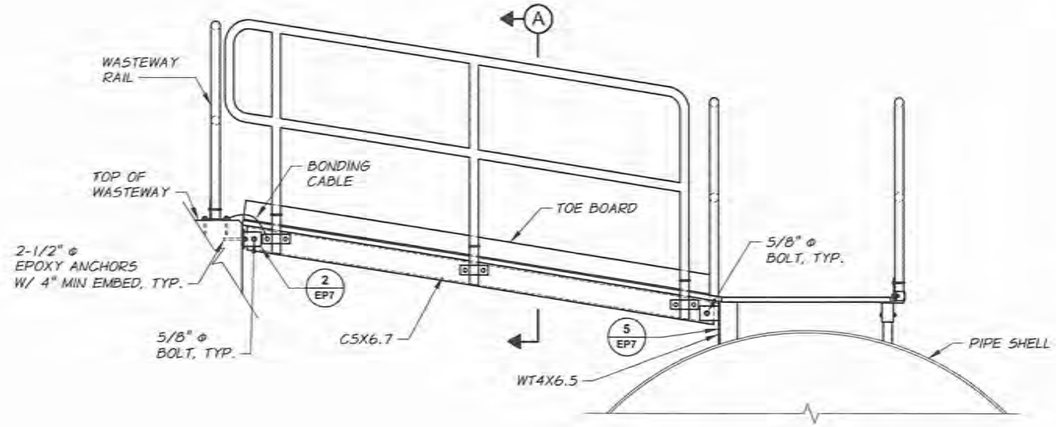


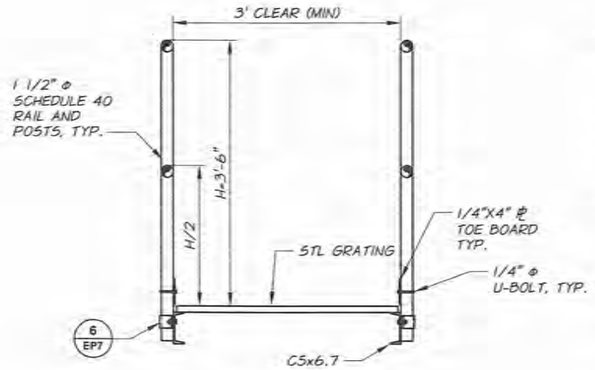
CATWALK STAIRWAY

SCALE: 3/4"=1'-0"



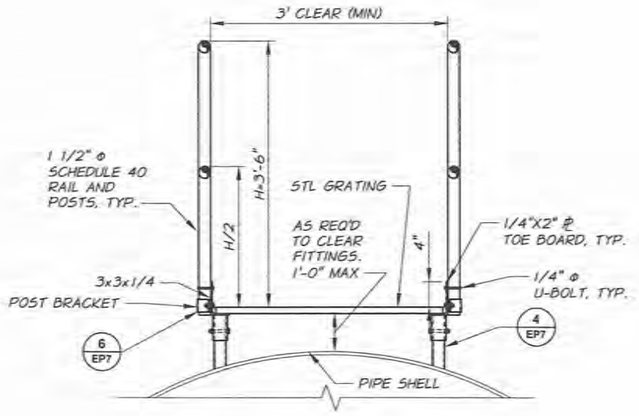
WASTEWAY RAMP

SCALE: 3/4"=1'-0"



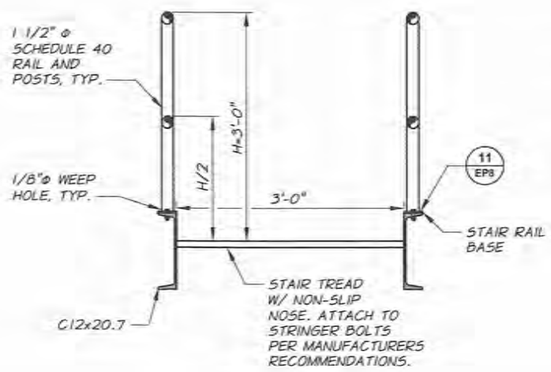
SECTION A

SCALE: 1"=1'-0"



TYPICAL CATWALK SECTION

SCALE: 1"=1'-0"



SECTION B

SCALE: 1"=1'-0"

CATWALK NOTES

1. MATERIAL:
   ROLLED STEEL SHAPES AND PLATES: ASTM A709 GRADE 36
   PIPE: ASTM A 53 GRADE B SCHEDULE 40
   BOLTS: ASTM A325
   ANCHOR BOLTS: EPOXY SET A193 GRADE BB (304,316SS)
   GRATING: WELDED STEEL BAR, GALVANIZED, 100 PSF LOAD RATING 100 LB MAX. SECTION WEIGHT.
   STAIR TREAD: WELDED STEEL BAR, GALVANIZED W/ NON-SLIP NOSE
2. FINISHING:
   ALL CATWALK COMPONENTS UNLESS OTHERWISE NOTED SHALL BE GALVANIZED AFTER FABRICATION. NO CUTTING, WELDING OR DRILLING OF GALVANIZED COMPONENTS IS ALLOWED.
3. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION INCLUDING AN ERECTION DIAGRAM. MATERIAL BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
4. CUTTING SHALL BE COMPLETED BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH.
5. WELDING SHALL BE COMPLETED IN ACCORDANCE WITH AWS D1.1.
6. PIPE RAILING MAY BE HEATED TO FACILITATE FORMING OR BENDING.
7. MINIMUM BEND RADIUS FOR PIPE RAILING IS 5 INCHES
8. ALL GRATING SHALL BE FIELD MEASURED BEFORE FABRICATION.
9. GRATING ENDS AND OPENINGS SHALL BE SHOP BANDED.
10. WEIGHT OF INDIVIDUAL GRATING SECTIONS SHALL NOT EXCEED 50 LBS.
11. GRATING SHALL BE DESIGNED FOR 100 PSF LOAD AND L/480 DEFLECTION.
12. GRATING SHALL BE ATTACHED TO BEARING SURFACE USING GALVANIZED OR STAINLESS STEEL CLIP FASTENERS AND BOLTS.
13. GROUND AND BOND ALL RAIL AND GRATING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE REQUIREMENTS.

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MAY 11, 2004
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3/24/16
RENEWS 06-30-2016

1 0 1
SCALE IN FEET
1 0 1
SCALE IN FEET

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ELEVATED PIPE
CATWALK I

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DATE: March 25, 2016
PROJECT: 462-00
FILE: 462-00-060C-00EP6-8.DWG
DESIGNED BY: EDZ
DRAWN BY: EDZ
CHECKED BY: BMM

SHEET 62 OF 79

EP6

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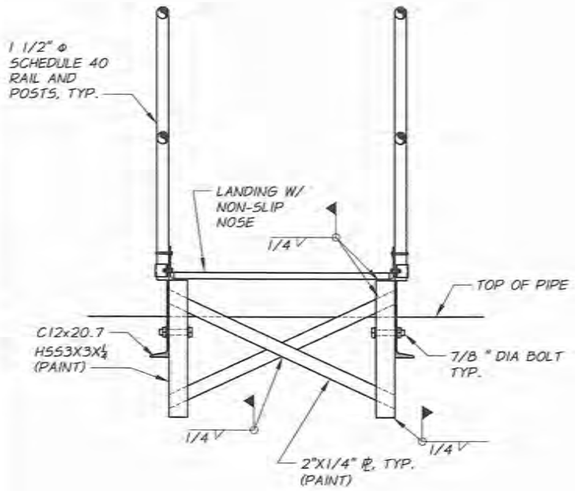
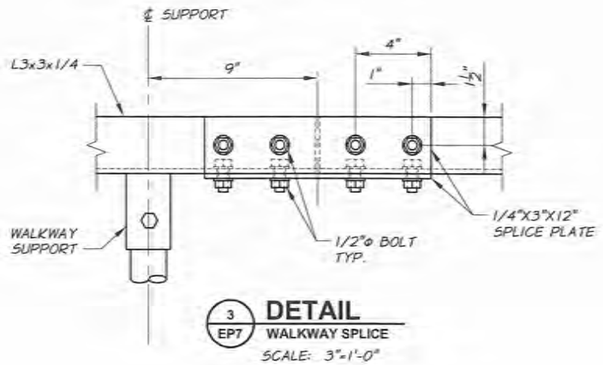
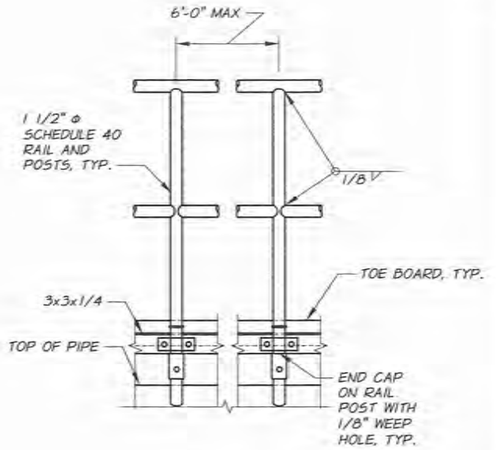


SECTION C

SCALE: 1"=1'-0"

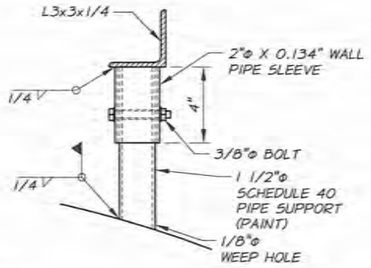


3 EP7 **DETAIL**
WALKWAY SPLICE
SCALE: 3"=1'-0"



7 EP7 **DETAIL**
TYPICAL RAILING
SCALE: 1"=1'-0"

1 EP7 **DETAIL**
STAIR BASE PLATE
SCALE: 3"=1'-0"

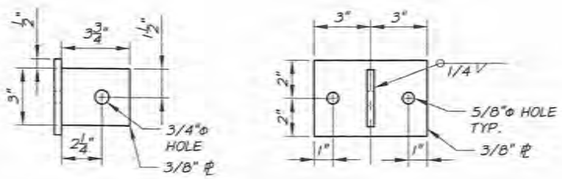


NOTE
MAXIMUM SPACING OF WALKWAY SUPPORTS IS 6'-0".

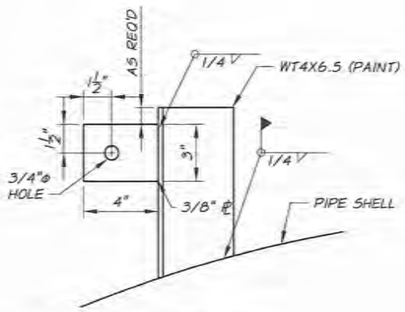
4 EP7 **DETAIL**
WALKWAY SUPPORT
SCALE: 3"=1'-0"

NOTE
MAXIMUM JOINT SPACING IS 24'. PARALLEL RAILS SHALL HAVE JOINT AT SAME LOCATION.

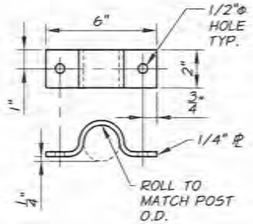
8 EP7 **DETAIL**
RAIL SLIP JOINT
SCALE: 3"=1'-0"



2 EP7 **DETAIL**
RAMP SUPPORT
SCALE: 3"=1'-0"



5 EP7 **DETAIL**
RAMP SUPPORT
SCALE: 3"=1'-0"



NOTE
SECURE WITH 3/8"ϕ BOLTS.

6 EP7 **DETAIL**
POST BRACKET
SCALE: 3"=1'-0"

3" 0 3"
SCALE IN INCHES

1 0 1
SCALE IN FEET

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3/24/16
RENEWS 06-30-2016

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ELEVATED PIPE
CATWALK II

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DATE: March 25, 2016
PROJECT: 462-00
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SHEET 63 OF 79

EP7

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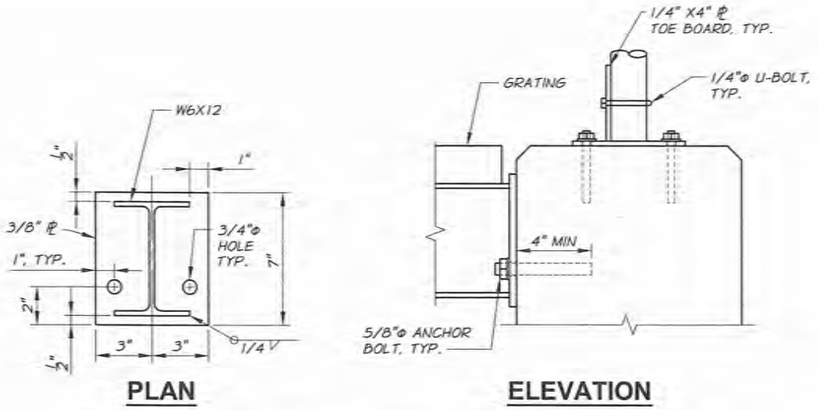
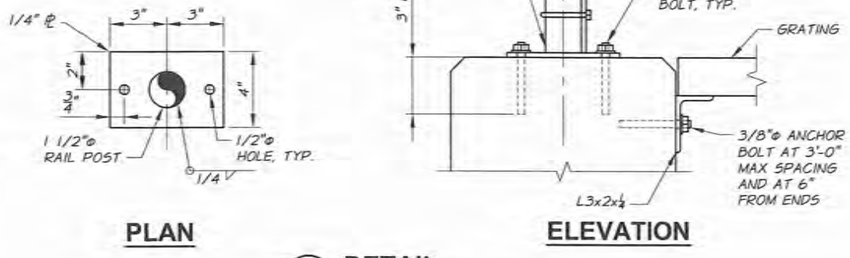
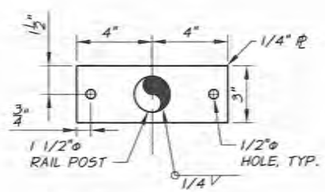


9 EP8 **DETAIL**
WASTEWAY GRATE SUPPORT
SCALE: 3"=1'-0"



10 EP8 **DETAIL**
RAIL BASE FOR CONCRETE
SCALE: 3"=1'-0"



11 EP8 **DETAIL**
RAIL BASE FOR STAIR
SCALE: 3"=1'-0"

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3" 0 3"
SCALE IN INCHES

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ELEVATED PIPE
CATWALK III

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EP8

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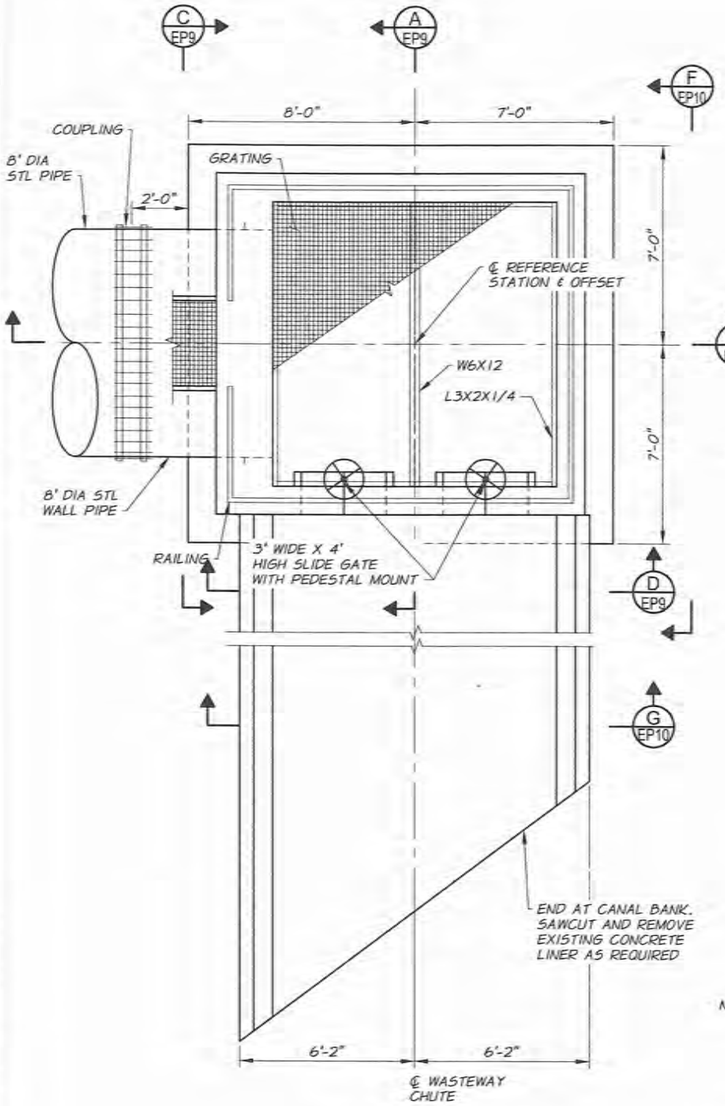
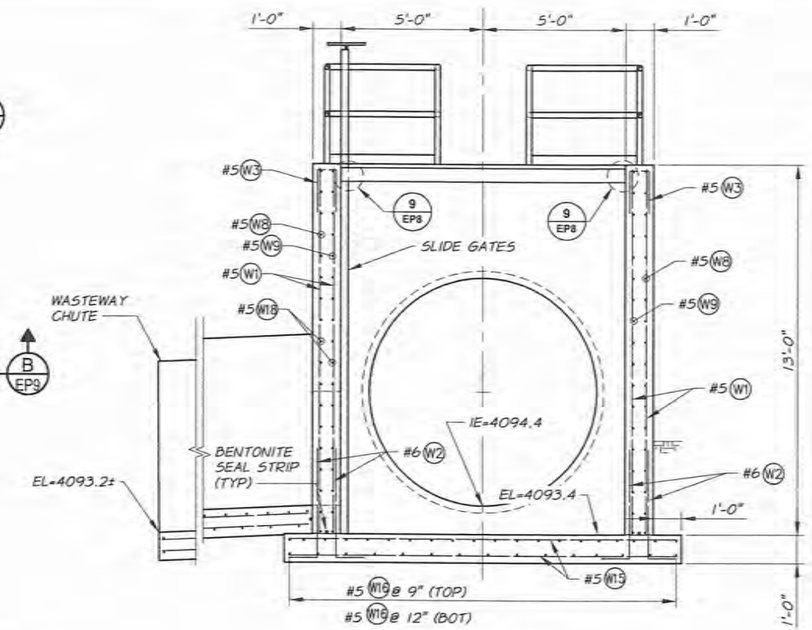


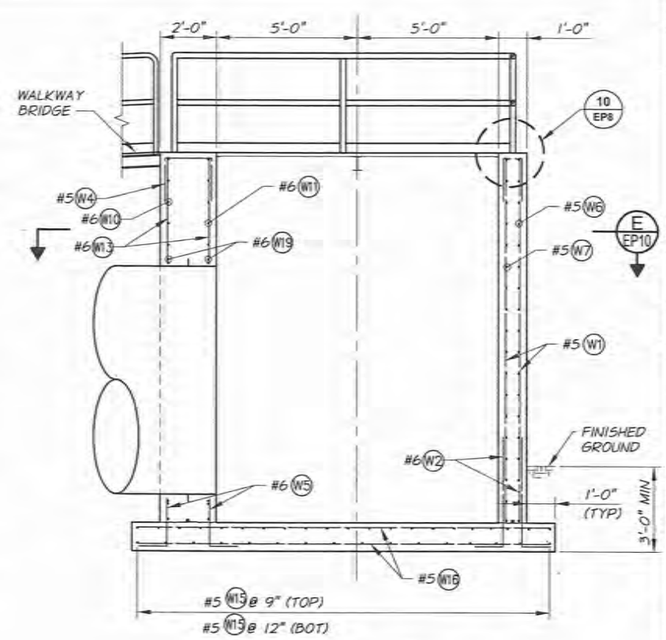
PLAN-WASTEWAY

SCALE: 3/8"=1'-0"



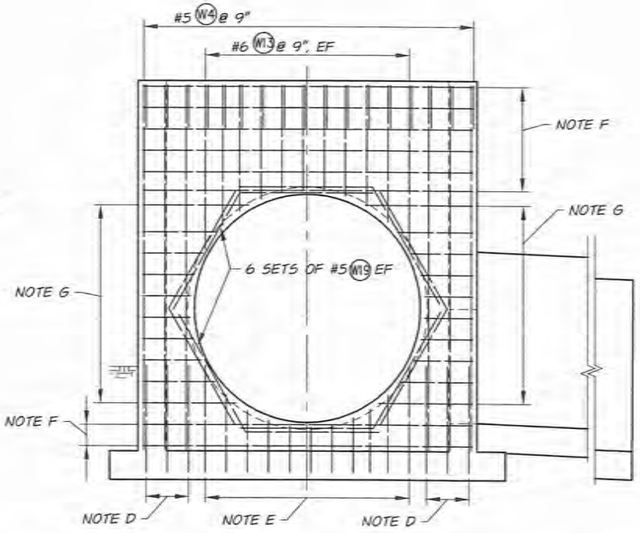
SECTION A

SCALE: 3/8"=1'-0"



SECTION B

SCALE: 3/8"=1'-0"

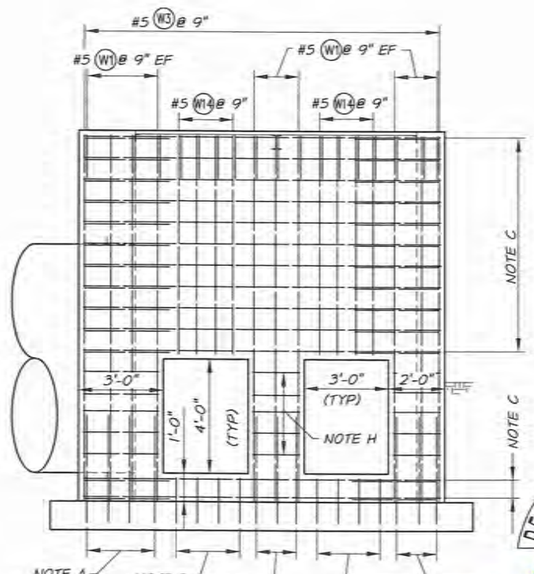


NOTE D - #6 W2 & #6 W12 @ 9" EF
NOTE E - #6 W5 @ 9" EF
NOTE F - #6 W10 @ 9" NF, #6 W1 @ 9" FF
NOTE G - #6 W17 @ 9" EF

*RAILING AND OTHER APPURTENANCES NOT SHOWN FOR CLARITY.

SECTION C

SCALE: 3/8"=1'-0"



NOTE A - #6 W2 @ 9" EF
NOTE B - #6 W5 @ 9" EF
NOTE C - #5 W6 @ 9" NF, #5 W7 @ 9" FF
NOTE H - #5 W18 @ 9" EF

*RAILING AND OTHER APPURTENANCES NOT SHOWN FOR CLARITY.

SECTION D

SCALE: 3/8"=1'-0"

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2 0 2
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FOR
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ELEVATED PIPE
WASTEWAY I

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EP9

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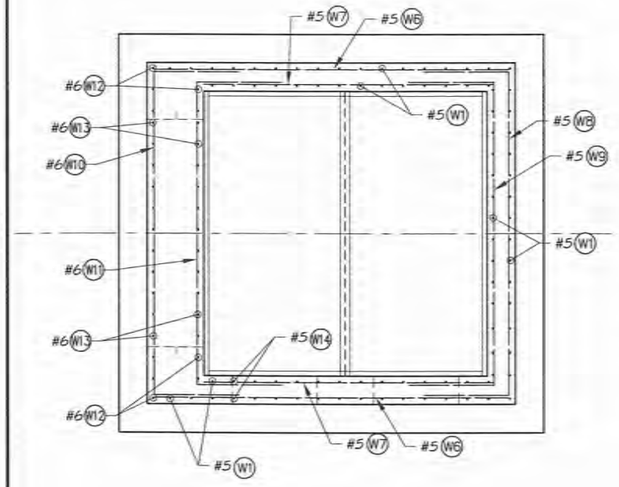
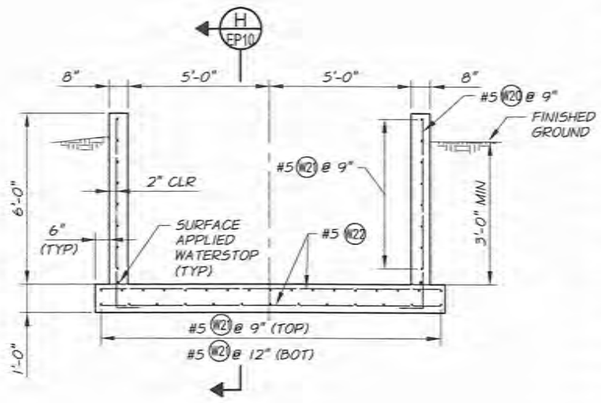


SECTION E

SCALE: 3/8"=1'-0"



SECTION G

SCALE: 3/8"=1'-0"

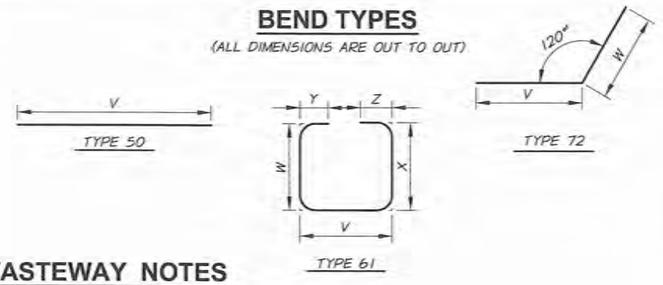
WASTEWAY - BAR LIST

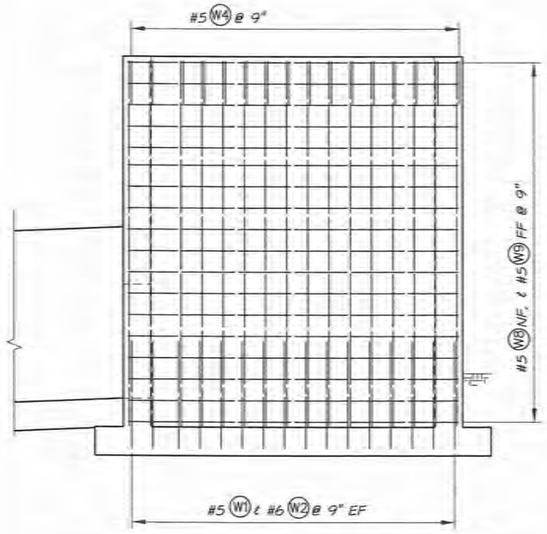
MARK NO	LOCATION	SIZE	BEND TYPE	V	W	X	Y	Z
W1	WALL VERT	5	50	12'-10"				
W2	SLAB DOWELS	6	61	3'-9"	1'-0"			
W3	WALL TOP	5	61	0'-8"	1'-6"	1'-6"		
W4	WALL TOP	5	61	1'-8"	1'-6"	1'-6"		
W5	SHORT SLAB DOWELS	6	61	VARIES	1'-0"			
W6	WALL HORIZ	5	50	12'-8"				
W7	WALL HORIZ	5	50	10'-0"				
W8	WALL HORIZ	5	61	11'-8"	3'-0"	3'-0"		
W9	WALL HORIZ	5	61	10'-6"	3'-0"	3'-0"		
W10	WALL HORIZ	6	61	11'-8"	3'-0"	3'-0"		
W11	WALL HORIZ	6	61	10'-6"	3'-0"	3'-0"		
W12	WALL VERT	6	50	12'-10"				
W13	WALL VERT	6	50	VARIES				
W14	WALL VERT	5	50	7'-8"				
W15	SLAB	5	50	14'-8"				
W16	SLAB	5	50	13'-8"				
W17	WALL HORIZ	6	61	VARIES	3'-0"			
W18	WALL HORIZ	5	50	1'-8"				
W19	PIPE OPENING	5	72	4'-8"	4'-8"			
W20	CHUTE WALL VERTS	5	61	6'-7"	0'-10"			
W21	CHUTE WALL HORIZ	5	50	VARIES				
W22	CHUTE SLAB	5	50	12'-0"				

CONTRACTOR SHALL VERIFY DIMENSIONS OF REINFORCING STEEL

BEND TYPES

(ALL DIMENSIONS ARE OUT TO OUT)

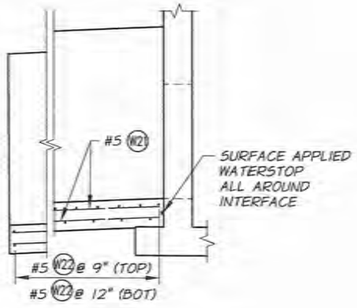




*RAILING AND OTHER APPURTENANCES NOT SHOWN FOR CLARITY.

SECTION F

SCALE: 3/8"=1'-0"



SECTION H

SCALE: 3/8"=1'-0"

WASTEWAY NOTES

MATERIAL:
CONCRETE (CAST-IN-PLACE): CLASS A
REINFORCING STEEL: ASTM A-706, GRADE 60

FINISHING:
CONCRETE: ALL EXPOSED CAST-IN-PLACE SURFACES ABOVE THE FINISHED GRADE NOT TO RECEIVE A CLASS B FINISH.
ALL EXPOSED EDGES OF CAST-IN-PLACE CONCRETE SHALL BE CHAMFERED WITH A 1" (DIAGONAL LENGTH) CHAMFER.

OTHER:
UNLESS OTHERWISE SHOWN ON THE PLANS, CONCRETE COVER FROM THE FACE OF CONCRETE TO REINFORCING BARS SHALL BE 2" (3" FOR CONCRETE CAST AGAINST SOIL).

UNLESS OTHERWISE SHOWN, THE MINIMUM REINFORCING BAR SPLICE LENGTH SHALL BE AS FOLLOWS:

#5 - 2'-6"
#6 - 3'-0"

ABBREVIATIONS:

EF - EACH FACE	TYP - TYPICAL
NF - NEAR FACE	OC - ON CENTER
FF - FAR FACE	ES - EQUALLY SPACED
CLR - CLEAR	BRG - BEARING

RENEWS 06-30-2016

2 0 2
SCALE IN FEET

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
ELEVATED PIPE
WASTEWAY II

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EP10

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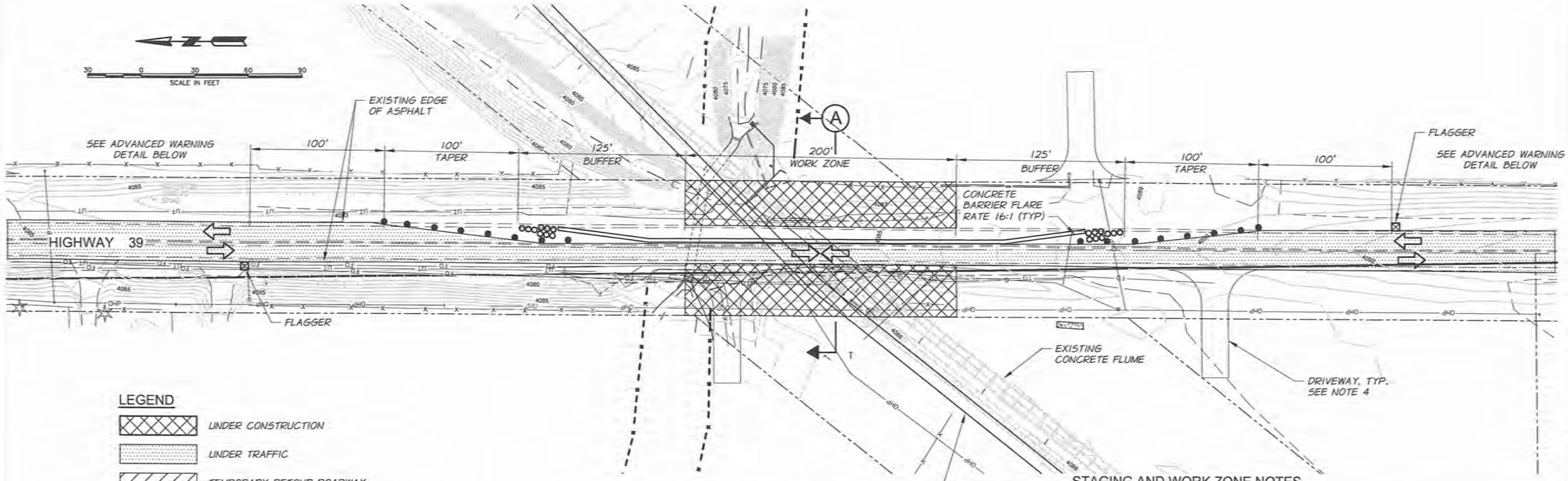


PLAN

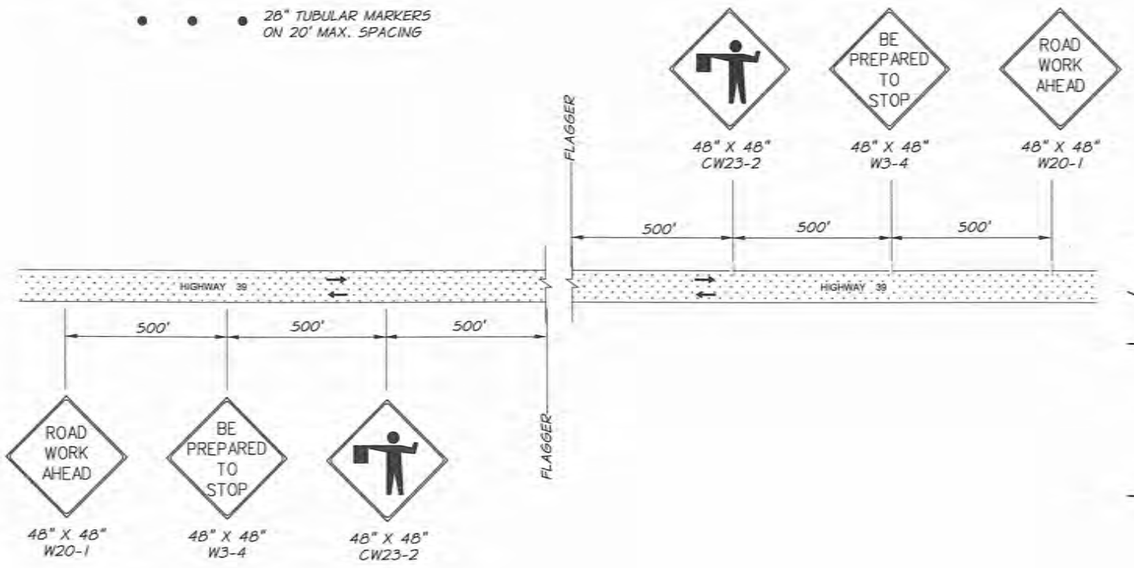
SCALE: 1"=40'

LEGEND

- UNDER CONSTRUCTION
- UNDER TRAFFIC
- TEMPORARY DETOUR ROADWAY
- TEMPORARY CONCRETE BARRIER
- TEMPORARY PLASTIC DRUMS AT 20' MAX SPACING
- 28" TUBULAR MARKERS ON 20' MAX. SPACING

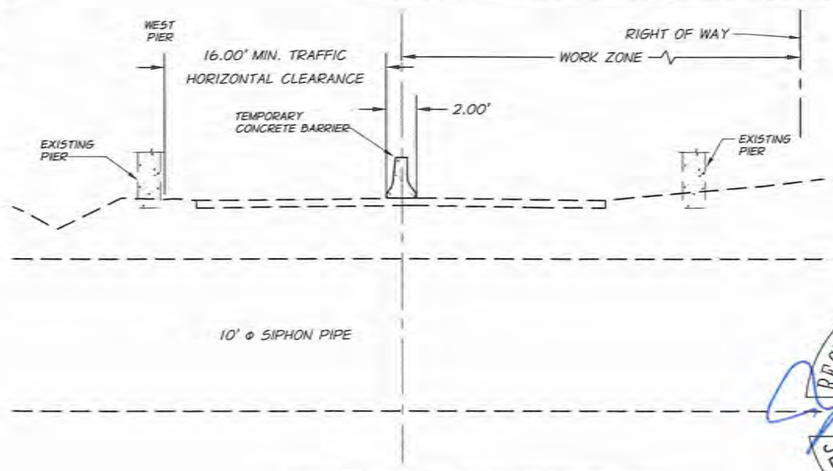
STAGING AND WORK ZONE NOTES

1. SET UP ADVANCE WARNING SIGNS PER THIS SHEET ACCOMPANIED BY ODOT STD. DWG. TM800, TM821, TM831, TM850.
2. TRAFFIC CONTROL SHOWN APPLIES TO, STAGE I TEMPORARY SHORING AND CONSTRUCTION, STAGE III PAVING OPERATIONS, OR OTHER OPERATIONS AS NEEDED BY CONTRACTOR TO PROTECT WORK ZONE & TRAVELING PUBLIC. SHORT TERM TRAFFIC CONTROL FOR PRE-CONSTRUCTION POTHOLING SHALL BE PER ODOT STD. DWG. TM 850
3. EAST SIDE CLOSURE SHOWN, WEST SIDE SIMILAR.
4. ACCESS TO EXISTING DRIVEWAYS MUST BE MAINTAINED AT ALL TIMES.
5. CONCRETE BARRIER END TREATMENTS PER ODOT STD. DWG. TM831



ADVANCE WARNING DETAIL

NTS



SECTION A - LOOKING NORTH

NTS

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS

RENEWS 12-31-16

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No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

TRAFFIC CONTROL
HIGHWAY 39 ONE-WAY TRAFFIC CONTROL PLAN

anderson perry & associates, inc.
engineering ▲ surveying ▲ natural resources
LA GRANDE, OR WALLA WALLA WA

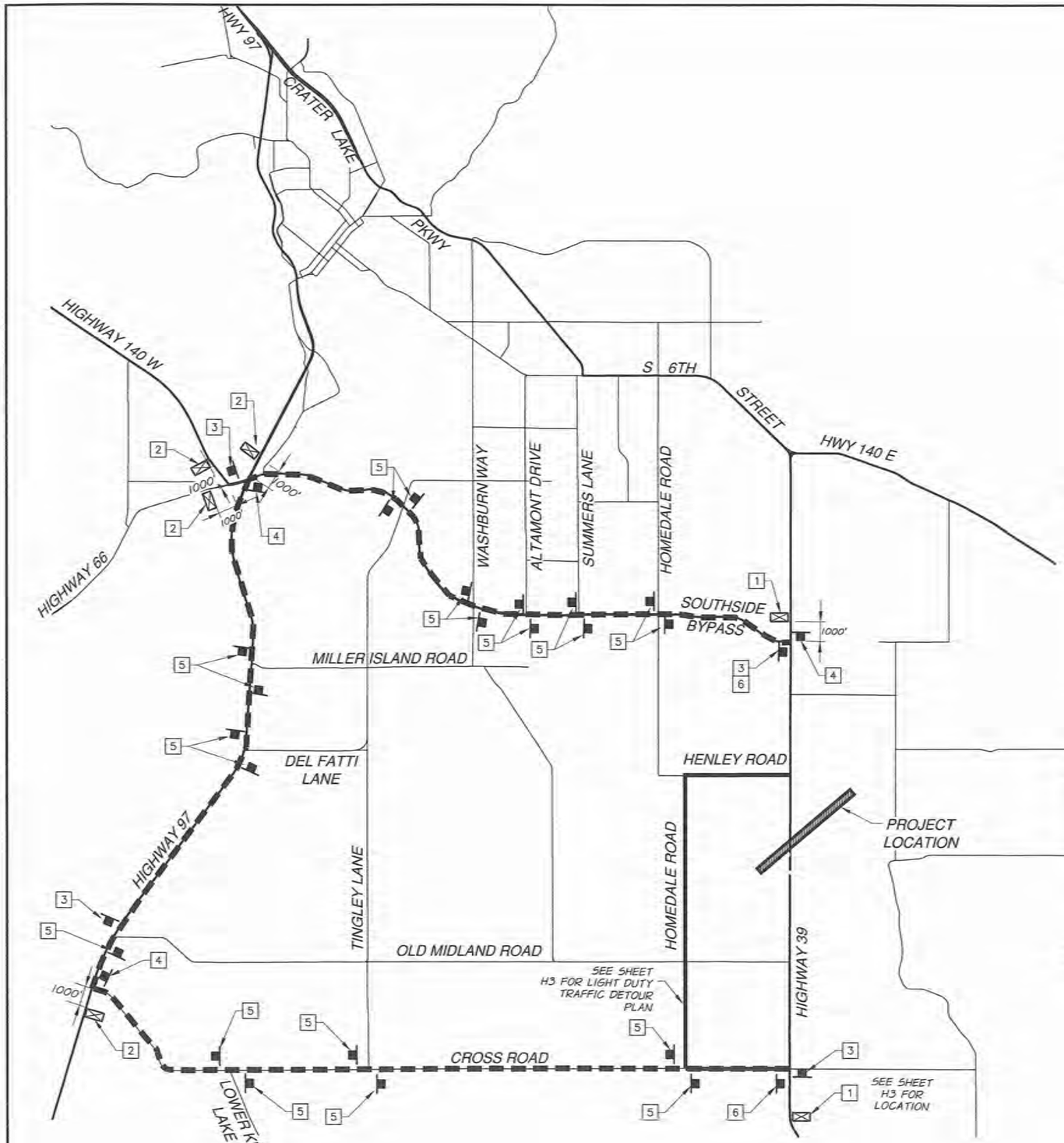
ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: DETOUR PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 67 OF 79

H1

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\DETOUR PLAN.dwg, H1, 3/24/2016 11:09:23 AM, lwillhite



LEGEND

- TRUCK DETOUR
- PASSENGER VEHICLE DETOUR

[1]

ROAD CLOSED AHEAD	FOLLOW DETOUR SIGNS

178" X 86" PORTABLE CHANGEABLE MESSAGE SIGN

[2]

OR39 SB CLOSED AT OR140	TRUCKS FOLLOW DETOUR

178" X 86" PORTABLE CHANGEABLE MESSAGE SIGN

[3]

TRUCK DETOUR	24" X 18" W1	TRUCK DETOUR	24" X 18" W1	TRUCK DETOUR	24" X 18" W1
39	24" X 24" M1-4	39	24" X 24" M1-4	39	24" X 24" M1-4
	15" X 21" M5-1L		15" X 21" M5-1R		15" X 21" M6-3

[6]

END DETOUR	24" X 18" M4-8A

NOTE:
TRAFFIC CONTROL SHOWN APPLIES TO STAGE I PIPE CONSTRUCTION AT HIGHWAY 39 & STAGE II EXISTING FLUME DEMOLITION AT HIGHWAY 39.

DETOUR NOTES:

1. TEMPORARY PROTECTION & DIRECTION OF TRAFFIC SHALL BE INSTALLED, MAINTAINED, AND OPERATED BY THE CONTRACTOR IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE CURRENT EDITION OF THE ODOT TEMPORARY TRAFFIC CONTROL HANDBOOK.
2. ALL LAND OWNERS AFFECTED BY CONSTRUCTIONS ACTIVITIES AND TRAFFIC CONTROL MEASURES SHALL HAVE VEHICULAR ACCESS TO THEIR PROPERTY.
3. 24-HOUR FLAGGING SHALL BE IMPLEMENTED WHILE DETOUR IS IN EFFECT.
4. REFERENCE ODOT STANDARD DRAWINGS TM800, TM820, TM821, TM840 AND TM850
5. DETOUR PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES. CONTRACTOR SHALL DEVELOP THEIR OWN DETOUR PLAN AND SUBMIT FOR REVIEW ONE WEEK PRIOR TO PRECONSTRUCTION CONFERENCE.
6. DETOUR PLAN SHALL BE IN EFFECT WHILE STAGE I PIPE WORK CROSSES HWY 39 AND WHILE STAGE I DEMOLITION WORK CROSSES HWY 39.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
TRAFFIC CONTROL
OVERALL DETOUR PLAN

anderson perry & associates, inc.
engineering · surveying · construction management
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DATE:	March 25, 2016
PROJECT:	462-00
FILE	DETOUR PLAN.DWG
DESIGNED BY:	MDR
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H2

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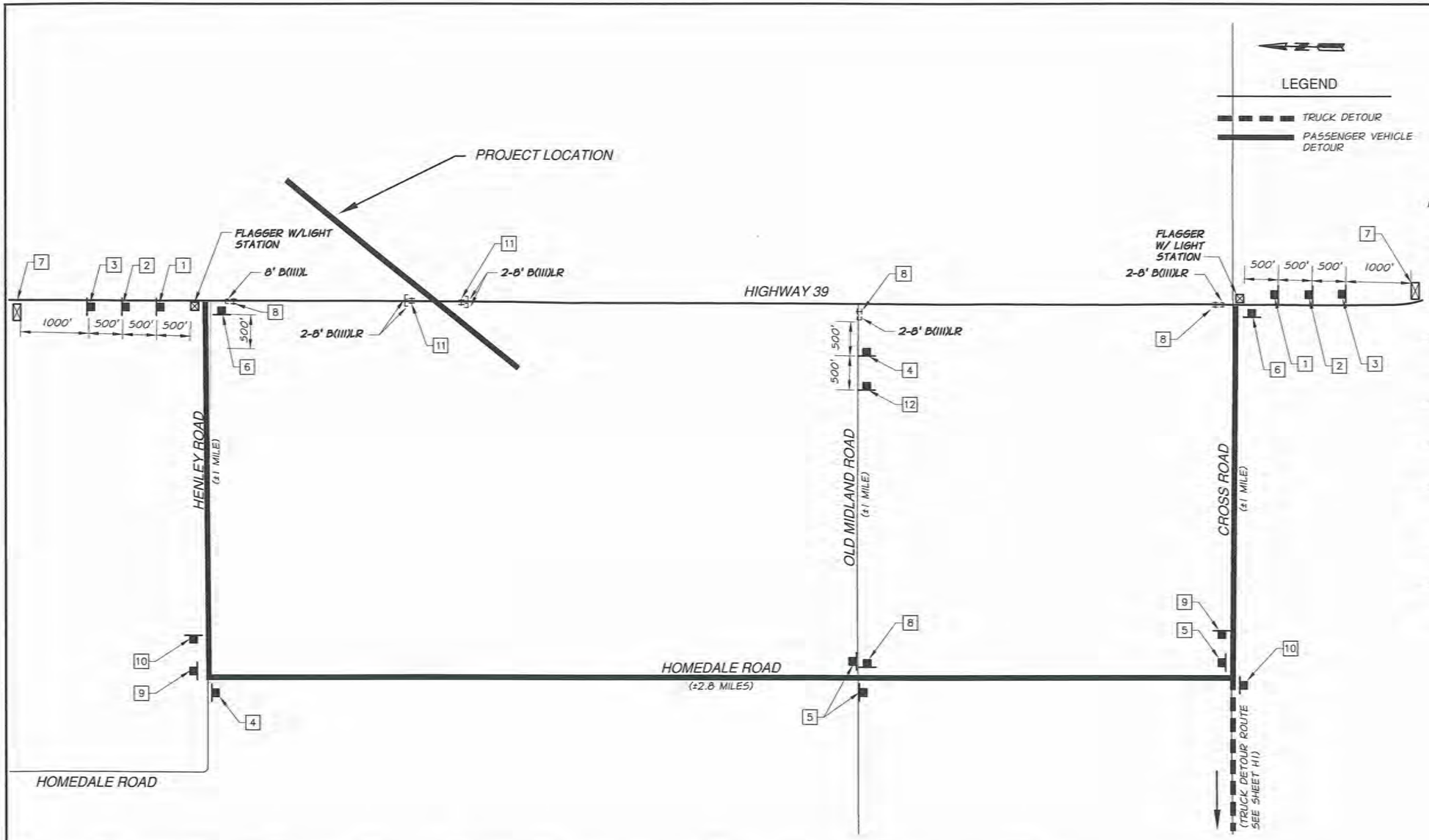

DETOUR NOTES:

1. TEMPORARY PROTECTION & DIRECTION OF TRAFFIC SHALL BE INSTALLED, MAINTAINED, AND OPERATED BY THE CONTRACTOR IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE CURRENT EDITION OF THE ODOT TEMPORARY TRAFFIC CONTROL HANDBOOK.
2. ALL LAND OWNERS AFFECTED BY CONSTRUCTIONS ACTIVITIES AND TRAFFIC CONTROL MEASURES SHALL HAVE VEHICULAR ACCESS TO THEIR PROPERTY.
3. 24-HOUR FLAGGING SHALL BE IMPLEMENTED WHILE DETOUR IS IN EFFECT.
4. REFERENCE ODOT STANDARD DRAWINGS TM800, TM820, TM821, TM840 AND TM850
5. DETOUR PLAN SHOWN ON THIS SHEET IS CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES. CONTRACTOR SHALL DEVELOP THEIR OWN DETOUR PLAN AND SUBMIT FOR REVIEW ONE WEEK PRIOR TO PRECONSTRUCTION CONFERENCE.
6. DETOUR PLAN SHALL BE IN EFFECT WHILE STAGE 1 PIPE WORK CROSSES HWY 39 AND WHILE STAGE 1 DEMOLITION WORK CROSSES HWY 39.

1 — 48" X 48" CW23-2

2 — BE PREPARED TO STOP — 48" X 48" W3-4

3 — ROAD WORK AHEAD — 48" X 48" W20-1

4 — ROAD CLOSED 500 FT — 48" X 48" W20-1

5 — DETOUR 24" X 12" M4-8; 39 24" X 24" M1-4; 15" X 21" M6-3

6 — END DETOUR 24" X 18" M4-8a

7 — ROAD CLOSED AHEAD / FOLLOW DETOUR SIGNS — 178" X 86" PORTABLE CHANGEABLE MESSAGE SIGN

8 — ROAD CLOSED TO THRU TRAFFIC LOCAL ACCESS ONLY — 60" X 30" I1-3

9 — DETOUR — 48" X 18" W10-4R

10 — DETOUR — 48" X 18" W10-4L

11 — ROAD CLOSED — 48" X 30" R11-2

12 — ROAD CLOSED 1000 FT — 48" X 48" W20-1

800 0 800 1600 2400
SCALE IN FEET

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REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
TRAFFIC CONTROL
LIGHT DUTY LOCAL TRAFFIC

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2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: DETOUR PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 69 OF 79

H3

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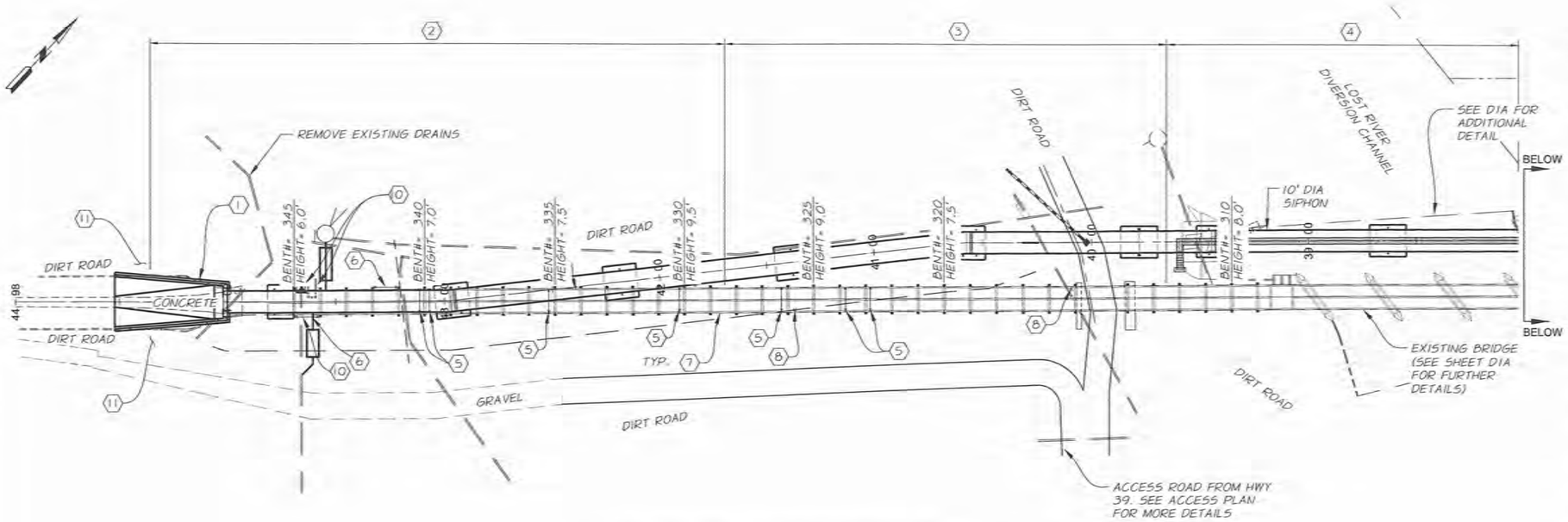
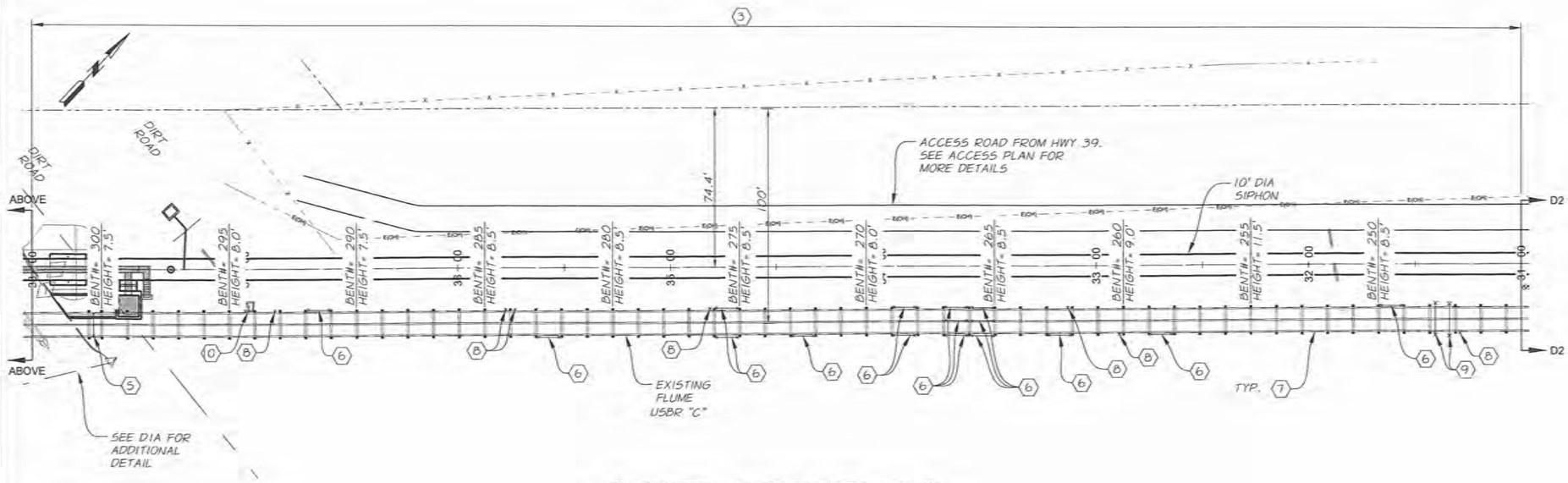


PLAN STA. 38+00 TO STA. 44+50

SCALE: 1"=30'



PLAN STA. 31+00 TO STA. 38+00

SCALE: 1"=30'

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE FOLLOWING:

(1) CONCRETE CANAL LINER PER DETAIL 2, SHEET D9.

(2) DEMOLITION IN CONJUNCTION WITH STAGE II CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL STEEL BEAMS AND CONCRETE FOUNDATIONS SHALL BE REMOVED.

(3) DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL CONCRETE FOUNDATIONS SHALL BE ABANDONED IN PLACE.

(4) DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION THRU THE LOST RIVER DIVERSION CHANNEL PER DETAILS ON SHEET D6, D7 AND D8. ALL STEEL BEAMS AND CONCRETE FOUNDATIONS SHALL BE REMOVED. EXCEPT IN THE LRDC.

(5) TRANSVERSE STRINGER SUPPORT PER DETAIL 2, SHEET D5.

(6) LONGITUDINAL STRINGER SUPPORT PER DETAIL 3, SHEET D5.

(7) FLUME SECTIONS PER DETAILS ON SHEET D6 AND D7.

(8) ISOLATED PIPE JACK BRACE PER DETAIL 1, SHEET D5.

(9) SHORING AT DIAGONAL PER DETAIL 4, SHEET D5.

(10) EXISTING TURNOUT DETAIL PER DETAIL 1, SHEET D9.

(11) REMOVE EXISTING CONCRETE AND SLURRY (BELOW GRADE) AS NECESSARY TO FACILITATE CONSTRUCTION, LOCATION APPROXIMATE.

GENERAL NOTES

1. SOME OF THE COLUMNS HAVE BEEN ENCASED IN 3" TO 4" OF CONCRETE FOR REINFORCEMENT THROUGH THE YEARS. THE LOCATION OF THESE IMPROVEMENTS HAVE NOT BEEN IDENTIFIED ON THE PLANS.
2. BENT HEIGHTS VARY. SELECTED BENT HEIGHTS HAVE BEEN LABELED AND ALL BENT HEIGHTS IN BETWEEN LABELED BENTS ARE TRANSITIONAL ACCORDINGLY.
3. VARIOUS REPAIRS EXIST. CONTRACTOR SHALL IDENTIFY AND APPROPRIATELY ACCOUNT FOR IN PREPARATION OF BID.
4. CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS, AND BRACING.
5. CONTRACTOR SHALL PROVIDE MEASURES TO PROTECT STRUCTURES (RAILROAD ABUTMENTS, TURNOUTS, WASTEWAYS, PIPE, ETC.) FROM ROLLING/FALLING DEBRIS.

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS

RENEWS 12-31-16

30 0 30 60 90 SCALE IN FEET

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION PLANS
STA. 31+00 TO STA. 44+50

No.	REVISION	DATE	BY

anderson perry & associates, inc.
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ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
2950 Biddle Way - Klamath Falls, OR 97603
(541) 882-4666 - FAX: (541) 884-5395

DATE: March 25, 2016
PROJECT 462-00
FILE: D1-D4 DEMOLITION PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 70 OF 79

D1

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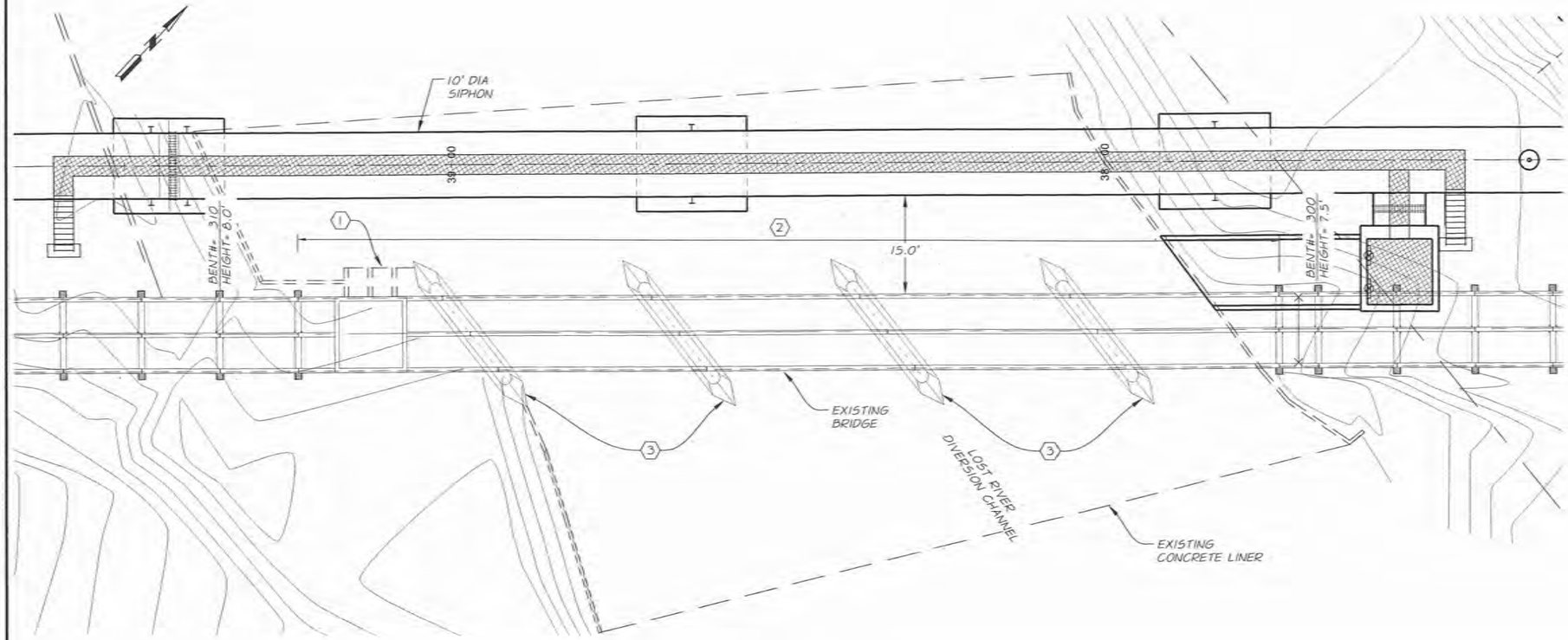

PLAN
LOST RIVER DIVERSION CHANNEL
SCALE: 1"=10'

DEMOLITION NOTE
DEMOLISH AND DISPOSE OF THE FOLLOWING:

1. WASTEWAY ALONG WITH STAIRS, RAILING, GEARED GATE HOIST, ETC. AS SHOWN ON SHEET D8.
2. DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION THRU THE LOST RIVER DIVERSION CHANNEL PER DETAILS ON SHEET D6, D7 AND D8. CONCRETE TUBS AND STEEL BEAMS TO BE REMOVED.
3. LRDC PIERS TO REMAIN

GENERAL NOTES
1. SOME OF THE COLUMNS HAVE BEEN ENCASED IN 3" TO 4" OF CONCRETE FOR REINFORCEMENT THROUGH THE YEARS. THE LOCATION OF THESE IMPROVEMENTS HAVE NOT BEEN IDENTIFIED ON THE PLANS.
2. BENT HEIGHTS VARY. SELECTED BENT HEIGHTS HAVE BEEN LABELED AND ALL BENT HEIGHTS IN BETWEEN LABELED BENTS ARE TRANSITIONAL ACCORDINGLY.
3. VARIOUS REPAIRS EXIST. CONTRACTOR SHALL IDENTIFY AND APPROPRIATELY ACCOUNT FOR IN PREPARATION OF BID.
4. CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS, AND BRACING.
5. CONTRACTOR SHALL PROVIDE MEASURES TO PROTECT STRUCTURES (RAILROAD ABUTMENTS, TURNOUTS, WASTEWAYS, PIPE ETC.) FROM ROLLING/FALLING DEBRIS.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION PLANS
LOST RIVER DIVERSION CHANNEL

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Klamath Falls · Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-8335

DATE: March 25, 2016
PROJECT: 462-00
FILE: D1-D4 DEMOLITION PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: EMM

SHEET 71 OF 79

D1A

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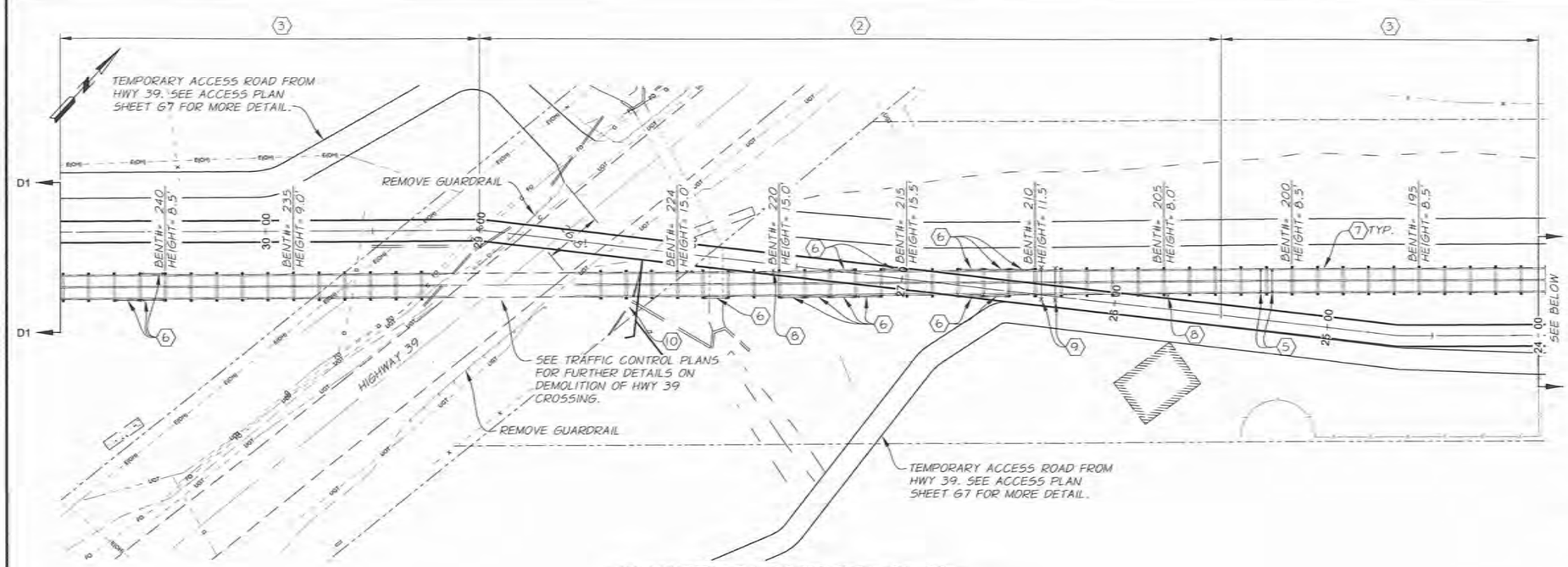
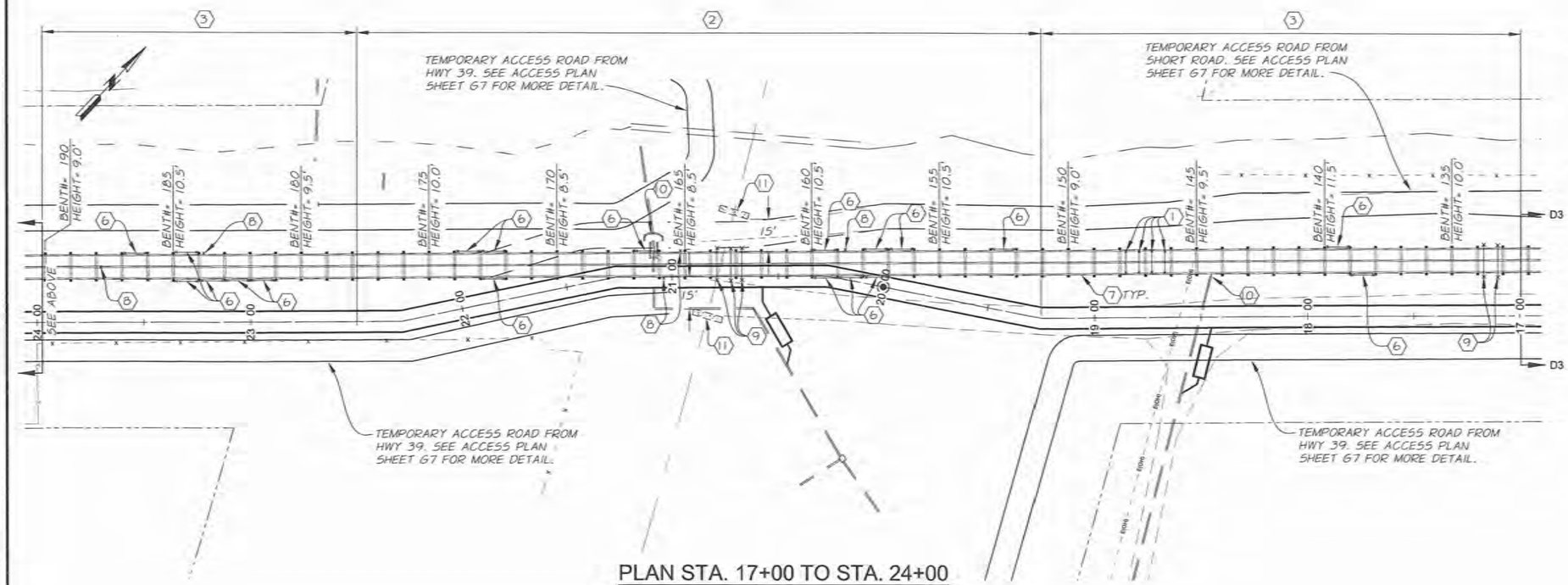


PLAN STA. 24+00 TO STA. 31+00

SCALE: 1"=30'



PLAN STA. 17+00 TO STA. 24+00

SCALE: 1"=30'

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE FOLLOWING:

1. FULL BENT SHORING PER DETAILS 5, SHEET D5.
2. DEMOLITION IN CONJUNCTION WITH STAGE II CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL STEEL BEAMS AND CONCRETE FOUNDATIONS SHALL BE REMOVED.
3. DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL CONCRETE FOUNDATIONS SHALL BE ABANDONED IN PLACE.
4. DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION ACROSS HIGHWAY 39 PER DETAILS ON SHEET D6, D7 AND D8. ALL STEEL BEAMS AND CONCRETE FOUNDATIONS SHALL BE REMOVED.
5. TRANSVERSE STRINGER SUPPORT PER DETAIL 2, SHEET D5.
6. LONGITUDINAL STRINGER SUPPORT PER DETAIL 3, SHEET D5.
7. FLUME SECTIONS PER DETAILS ON SHEET D6 AND D7.
8. ISOLATED PIPE JACK BRACE PER DETAIL 1, SHEET D5.
9. SHORING AT DIAGONAL PER DETAIL 4, SHEET D5.
10. EXISTING TURNOUT PER DETAIL 1, SHEET D9.
11. PROTECT EXISTING BNSF RAILROAD ABUTMENTS.

GENERAL NOTES

1. SOME OF THE COLUMNS HAVE BEEN ENCASED IN 3" TO 4" OF CONCRETE FOR REINFORCEMENT THROUGH THE YEARS. THE LOCATION OF THESE IMPROVEMENTS HAVE NOT BEEN IDENTIFIED ON THE PLANS.
2. BENT HEIGHTS VARY. SELECTED BENT HEIGHTS HAVE BEEN LABELED AND ALL BENT HEIGHTS IN BETWEEN LABELED BENTS ARE TRANSITIONAL ACCORDINGLY.
3. VARIOUS REPAIRS EXIST. CONTRACTOR SHALL IDENTIFY AND APPROPRIATELY ACCOUNT FOR IN PREPARATION OF BID.
4. CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS, AND BRACING.
5. CONTRACTOR SHALL PROVIDE MEASURES TO PROTECT STRUCTURES (RAILROAD ABUTMENTS, TURNOUTS, WASTEWAYS, ETC.) FROM ROLLING/FALLING DEBRIS.
6. RECORD DRAWINGS ARE UNAVAILABLE FOR THE HWY 39 CROSSING. CONTRACTOR TO FAMILIARIZE HIMSELF WITH WHAT IS CONSTRUCTED PRIOR TO BIDDING.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION PLANS
STA. 17+00 TO STA. 31+00

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LA GRANDE, OR WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
3050 Double Way - Klamath Falls, OR 97603
(541) 884-1808 - FAX (541) 884-5325

DATE:	March 25, 2016
PROJECT:	462-00
FILE:	D1-D4 DEMOLITION PLAN.DWG
DESIGNED BY:	MDR
DRAWN BY:	MDR
CHECKED BY:	JMM

SHEET 72 OF 79

D2

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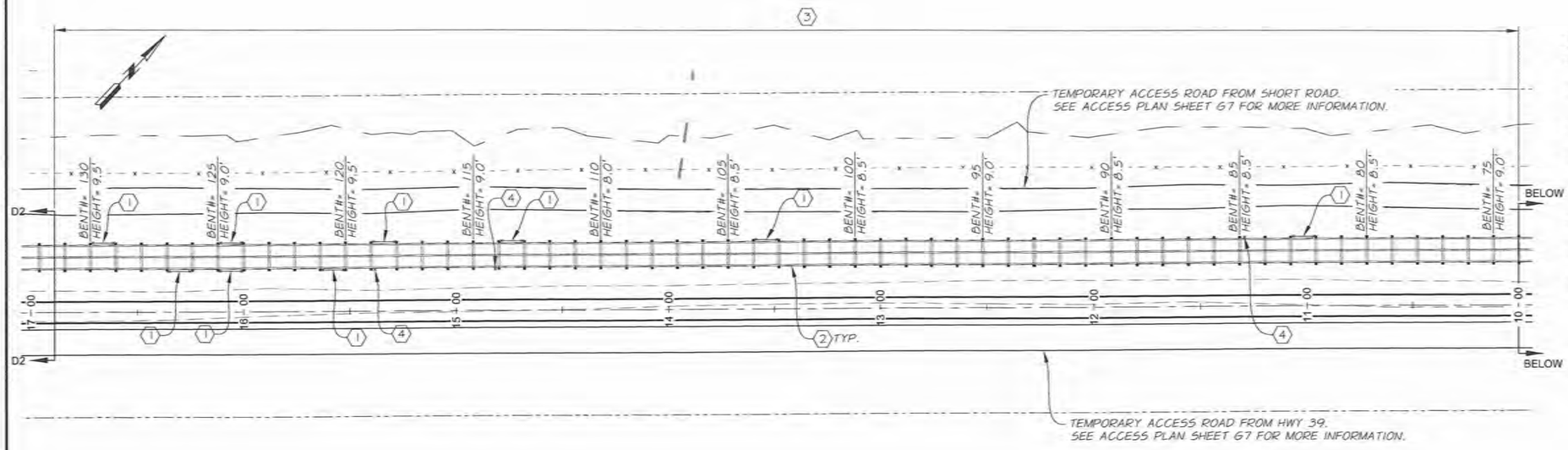


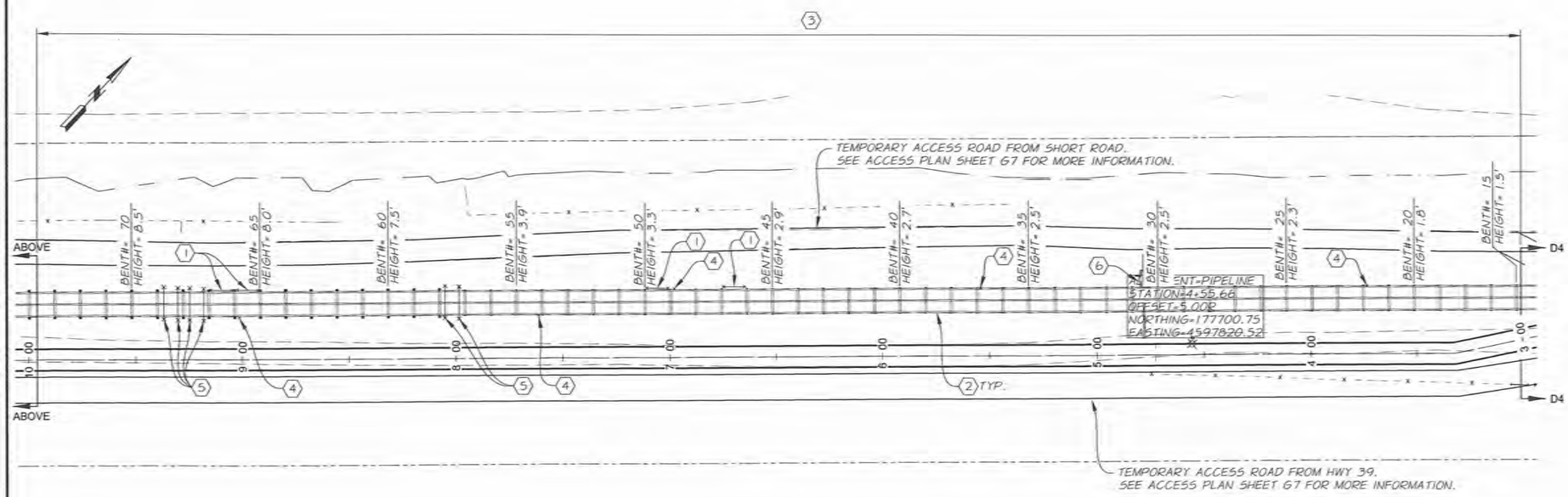
PLAN STA. 10+00 TO STA. 17+00

SCALE: 1"=30'

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE FOLLOWING:

1. LONGITUDINAL STRINGER SUPPORT PER DETAIL 3, SHEET D5.
2. FLUME SECTIONS PER DETAILS ON SHEET D6 AND D7.
3. DEMOLITION IN CONJUNCTION WITH STAGE III CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL CONCRETE FOUNDATIONS SHALL BE ABANDONED IN PLACE.
4. ISOLATED PIPE JACK BRACE PER DETAIL 1, SHEET D5.
5. SHORING AT DIAGONAL PER DETAIL 4, SHEET D5.
6. EXISTING TURNOUT PER DETAIL 1, SHEET D9.



PLAN STA. 3+00 TO STA. 10+00

SCALE: 1"=30'

GENERAL NOTES

1. SOME OF THE COLUMNS HAVE BEEN ENCASED IN 3" TO 4" OF CONCRETE FOR REINFORCEMENT THROUGH THE YEARS. THE LOCATION OF THESE IMPROVEMENTS HAVE NOT BEEN IDENTIFIED ON THE PLANS.
2. BENT HEIGHTS VARY. SELECTED BENT HEIGHTS HAVE BEEN LABELED AND ALL BENT HEIGHTS IN BETWEEN LABELED BENTS ARE TRANSITIONAL ACCORDINGLY.
3. VARIOUS REPAIRS EXIST. CONTRACTOR SHALL IDENTIFY AND APPROPRIATELY ACCOUNT FOR IN PREPARATION OF BID.
4. CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS AND BRACING.
5. CONTRACTOR SHALL PROVIDE MEASURES TO PROTECT STRUCTURES (RAILROAD ABUTMENTS, TURNOUTS, WASTEWAY, ETC.) FROM ROLLING/FALLING DEBRIS.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

30 0 30 60 90
SCALE IN FEET

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KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION PLANS
STA. 3+00 TO STA. 17+00

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
3900 Shasta Way - Klamath Falls, OR 97603
(541) 884-4666 - FAX (541) 884-5335

DATE: March 25, 2016
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FILE: D1-D4 DEMOLITION PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 73 OF 79

D3

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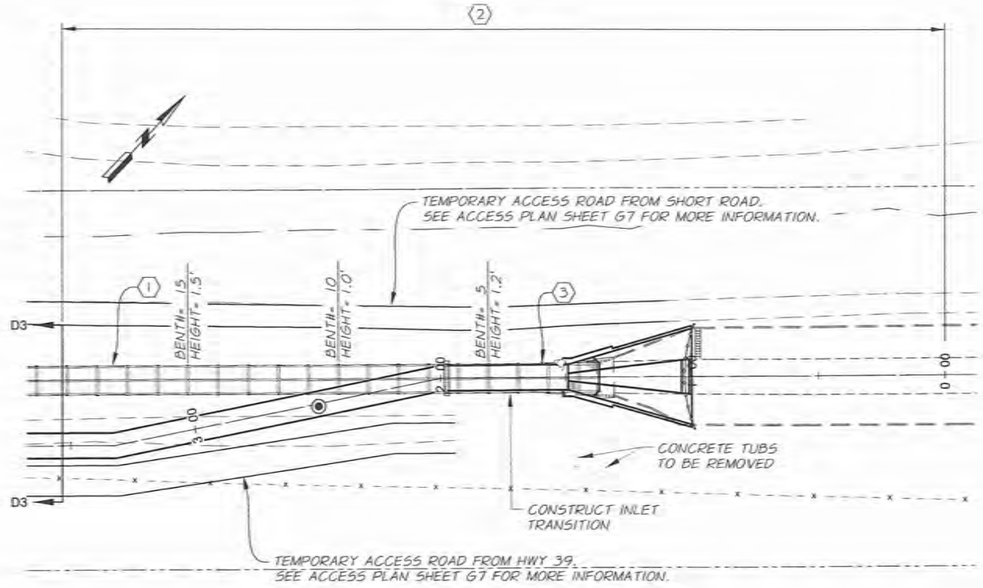


PLAN STA. 0+00 TO STA. 3+00

SCALE: 1"=30'

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE FOLLOWING:

1. FLUME SECTIONS PER DETAILS ON SHEET D6 AND D7.
2. DEMOLITION IN CONJUNCTION WITH STAGE II CONSTRUCTION PER DETAILS ON SHEET D6 AND D7. ALL CONCRETE FOUNDATIONS SHALL BE REMOVED.
3. ISOLATED PIPE JACK BRACE PER DETAIL 1, SHEET D5.

GENERAL NOTES

1. SOME OF THE COLUMNS HAVE BEEN ENCASED IN 3" TO 4" OF CONCRETE FOR REINFORCEMENT THROUGH THE YEARS. THE LOCATION OF THESE IMPROVEMENTS HAVE NOT BEEN IDENTIFIED ON THE PLANS.
2. BENT HEIGHTS VARY. SELECTED BENT HEIGHTS HAVE BEEN LABELED AND ALL BENT HEIGHTS IN BETWEEN LABELED BENTS ARE TRANSITIONAL ACCORDINGLY.
3. VARIOUS REPAIRS EXIST. CONTRACTOR SHALL IDENTIFY AND APPROPRIATELY ACCOUNT FOR IN PREPARATION OF BID.
4. CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS AND BRACING.
5. CONTRACTOR SHALL PROVIDE MEASURES TO PROTECT STRUCTURES (RAILROAD ABUTMENTS, TURNOUTS, WASTEWAY, ETC.) FROM ROLLING/FALLING DEBRIS.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

30 0 30 60 90
SCALE IN FEET

THIS DRAWING HAS BEEN REDUCED 50%.
ADJUST SCALE ACCORDINGLY.
BARSCALE SHOWN IS ACCURATE.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION PLANS
STA. 0+00 TO STA. 3+00

anderson perry & associates, inc.
engineering • surveying • natural resources
LA GRANDE, OR WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford
2960 Shasta Way • Klamath Falls, OR 97603
(541) 884-4666 • FAX (541) 884-5535

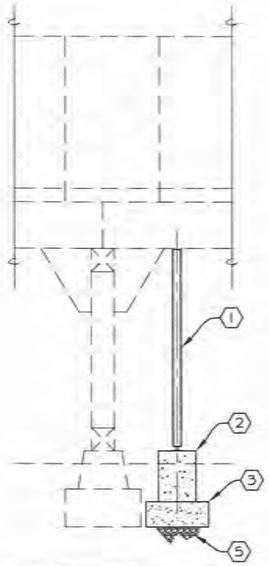
DATE: March 25, 2016
PROJECT: 462-00
FILE: D1-D4 DEMOLITION PLAN.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 74 OF 79

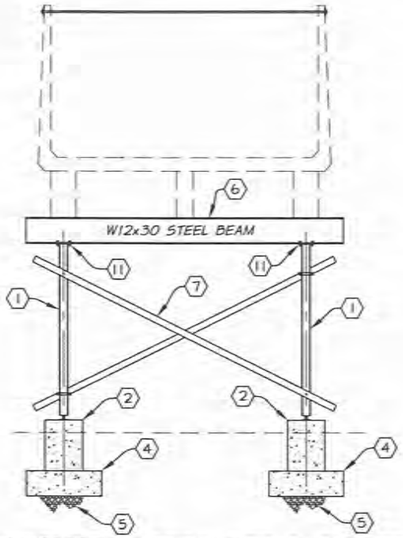
D4

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\D1-D4 DEMOLITION PLAN.DWG, D4, 3/24/2016 12:25:58 PM, lwillhite

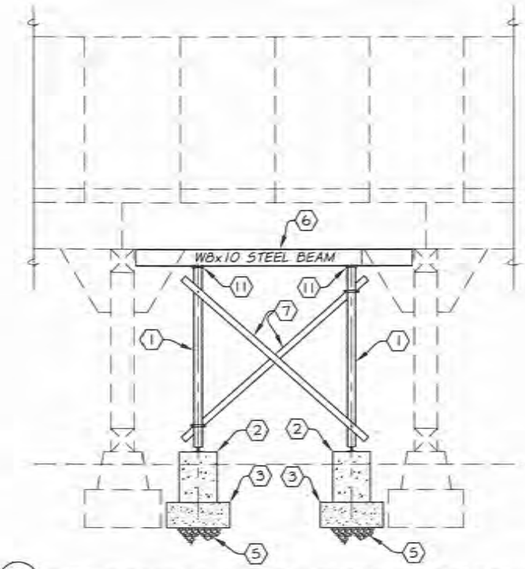
DETAILS SHOW TEMPORARY SUPPORTS PREVIOUSLY CONSTRUCTED
THAT ARE TO BE DEMOLISHED
WITH COMPONENTS SALVAGED AND RETURNED TO OWNER



(1/D5) ISOLATED PIPE JACK BRACE
SCALE: 1"=3'

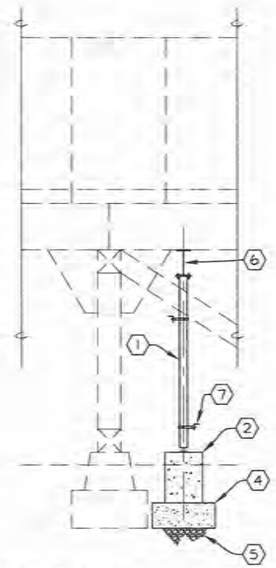


(2/D5) TRANSVERSE STRINGER SUPPORT
SCALE: 1"=3'

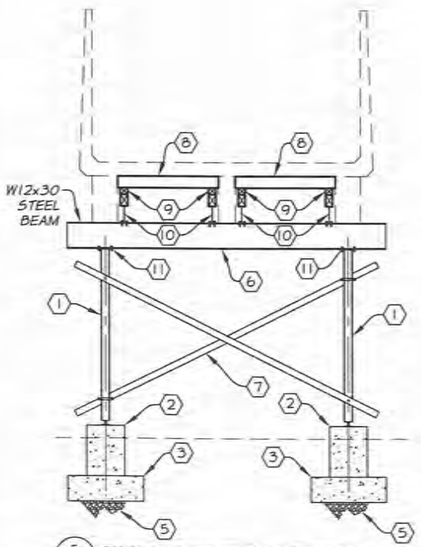


(3/D5) LONGITUDINAL STRINGER SUPPORT
SCALE: 1"=3'

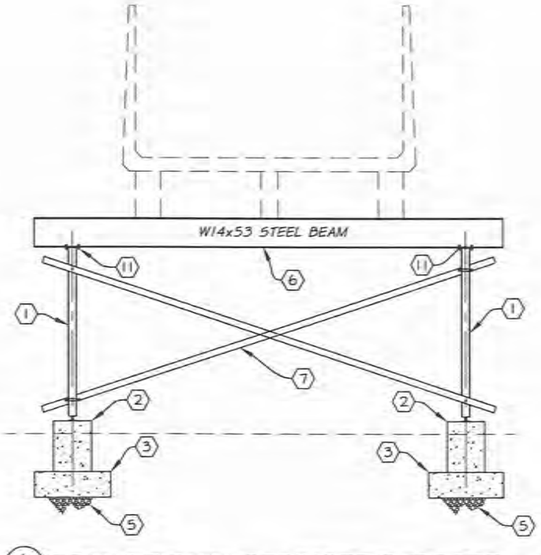
(4/D5)



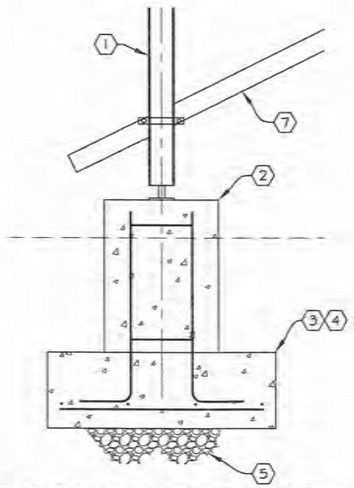
SHORING AT DIAGONAL
SCALE: 1"=3'



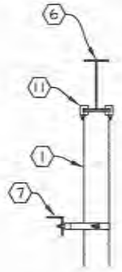
(5/D5) FULL BENT SHORING
SCALE: 1"=3'



(6/D5) TRANSITIONAL STRINGER SUPPORT
SCALE: 1"=3'



(7/D5) TYPICAL FOUNDATION DETAIL
SCALE: 1"=1'



(8/D5) BRACING DETAIL
SCALE: 1"=1'

COMPONENTS TO BE REMOVED

1. 4"ø SCHED. 40 ADJUSTABLE PIPE JACK POST
2. 18"ø C.I.P COLUMN W/STAY-IN-PLACE FORMS W/(4) #5 VERT & #4 TIES TOP & BOTT. STANDARD HOOK INTO FOUNDATION PROVIDED.
3. 2'-6" SQ x 10" FOOTING W/(3) #4 E.W.
4. 3'-0" SQ x 10" FOOTING W/(4) #4 E.W.
5. OVER-EXCAVATED TO FIRM SOIL, BACKFILLED TO BOTTOM OF FOOTING WITH 3/4"-0" CRUSHED ROCK (2' TYPICAL) COMPACTED TO 95% MAX DENSITY (PILASTER BACKFILLED WITH NATIVE SOIL)
6. STEEL BEAM AS NOTED. CONNECTED TO PIPE COLUMN CAP WITH 3/8"ø BOLT BEAM CLAMP.
7. 3x2.5x3/16 ANGLE BRACE, CONNECTED TO COLUMN WITH 4" SPLIT PIPE HANGER WITH 3/8" BOLT
8. 4x6 PT PLANKING
9. 4x4 PT BLOCKING/SHIM
10. W8x10 STRINGER CLAMPED TO BEAM BELOW
11. BEAM CLAMP (SEE BRACING DETAIL, THIS SHEET)

DEMOLITION NOTE

CONTRACTOR TO SALVAGE AND DELIVER TO OWNER ALL CLAMPS, JACKS, STRINGERS, AND BRACING.

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

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ADJUST SCALE ACCORDINGLY.
BARSCALE SHOWN IS ACCURATE.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION DETAILS
CATEGORY I REPAIR DEMOLITION

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Engineers ▲ Planners ▲ Surveyors
Klamath Falls - Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE:
PROJECT:
FILE: D5-D9 DEMOLITION DETAILS-2.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 75 OF 79

D5

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\D5-D9 DEMOLITION DETAILS-2.dwg, D5, 3/23/2016 4:55:35 PM, lwilhite

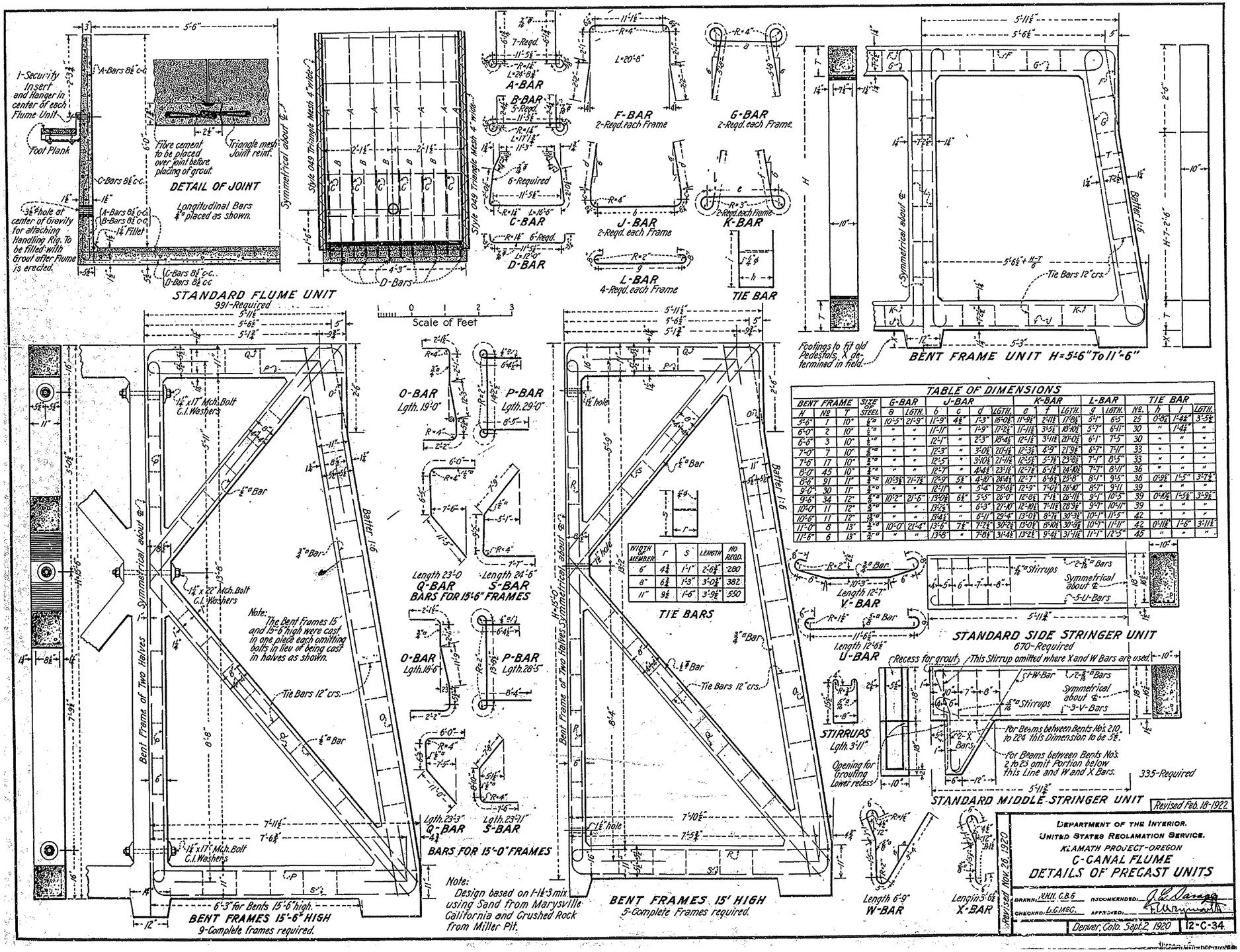

TABLE OF DIMENSIONS

BENT	FRAME No	FRAME T	SIZE OF STEEL	G-BAR a	G-BAR LGTH.	J-BAR b	J-BAR c	J-BAR d	J-BAR LGTH.	K-BAR e	K-BAR f	K-BAR LGTH.	L-BAR g	L-BAR LGTH.	TIE BAR No.	TIE BAR h	TIE BAR i	TIE BAR LGTH.
5'-6"	1	10"	½"ø	10'-5"	21'-9"	11'-9"	4½"	1'-3"	16'-0½"	11'-5½"	2'-11½"	17'-8½"	5'-4"	6'-5"	25	0'-8½"	1'-4½"	3'-5½"
6'-0"	2	10"	½"ø	"	"	11'-11"	"	1'-9"	17'-2½"	11'-11½"	3'-5½"	18'-10½"	5'-7"	6'-11"	30	"	1'-4½"	"
6'-6"	3	10"	½"ø	"	"	12'-1"	"	2'-3"	18'-4½"	12'-1½"	3'-11½"	20'-0½"	6'-1"	7'-5"	30	"	"	"
7'-0"	7	10"	½"ø	"	"	12'-3"	"	3'-0½"	20'-1½"	12'-3½"	4'-5"	21'-9½"	6'-7"	7'-11"	33	"	"	"
7'-6"	17	10"	½"ø	"	"	12'-5"	"	3'-10½"	21'-11½"	12'-5½"	5'-1½"	23'-8½"	7'-1"	8'-5"	33	"	"	"
8'-0"	45	10"	½"ø	"	"	12'-7"	"	4'-4½"	23'-1½"	12'-7½"	6'-1½"	24'-10½"	7'-7"	8'-11"	36	"	"	"
8'-6"	91	11"	½"ø	10'-3½"	21'-7½"	12'-9"	5½"	4'-10"	24'-4½"	12'-7"	6'-6½"	25'-8"	8'-1"	9'-5"	36	0'-9½"	1'-5"	3'-7½"
9'-0"	30	11"	½"ø	"	"	12'-11"	"	5'-4"	25'-6½"	12'-5"	7'-0½"	26'-10½"	8'-7"	9'-11"	39	"	"	"
9'-6"	34	12"	½"ø	10'-2"	21'-6"	13'-0½"	6½"	5'-5"	26'-0"	12'-8½"	7'-3½"	26'-1½"	9'-1"	10'-5"	39	0'-10½"	1'-5½"	3'-9½"
10'-0"	11	12"	½"ø	"	"	13'-2½"	"	6'-3"	27'-10"	12'-10½"	7'-11½"	28'-5½"	9'-7"	10'-11"	39	"	"	"
10'-6"	11	12"	½"ø	"	"	13'-4½"	"	6'-11"	29'-4"	13'-0½"	8'-7½"	30'-3½"	10'-1"	11'-5"	42	"	"	"
11'-0"	8	13"	½"ø	10'-0"	21'-4"	13'-6"	7½"	7'-2½"	30'-2½"	13'-0½"	8'-10½"	30'-9½"	10'-9"	11'-11"	42	0'-11½"	1'-6"	3'-11½"
11'-6"	6	13"	½"ø	"	"	13'-8"	"	7'-6½"	31'-4½"	13'-2½"	9'-4½"	31'-1½"	11'-1"	12'-5"	45	"	"	"

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE COMPONENTS AS CALLED OUT IN THE DETAILS.

C-CANAL FLUME: DETAILS OF PRECAST UNITS

N.T.S.

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

DEMOLITION DETAILS
FLUME AND BENT FRAMES

No.	REVISION	DATE	BY

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Klamath Falls - Medford
2950 Shasta Way, Klamath Falls, OR 97603
(541) 884-4666 . FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: D5-09 DEMOLITION DETAILS.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 76 OF 79

D6

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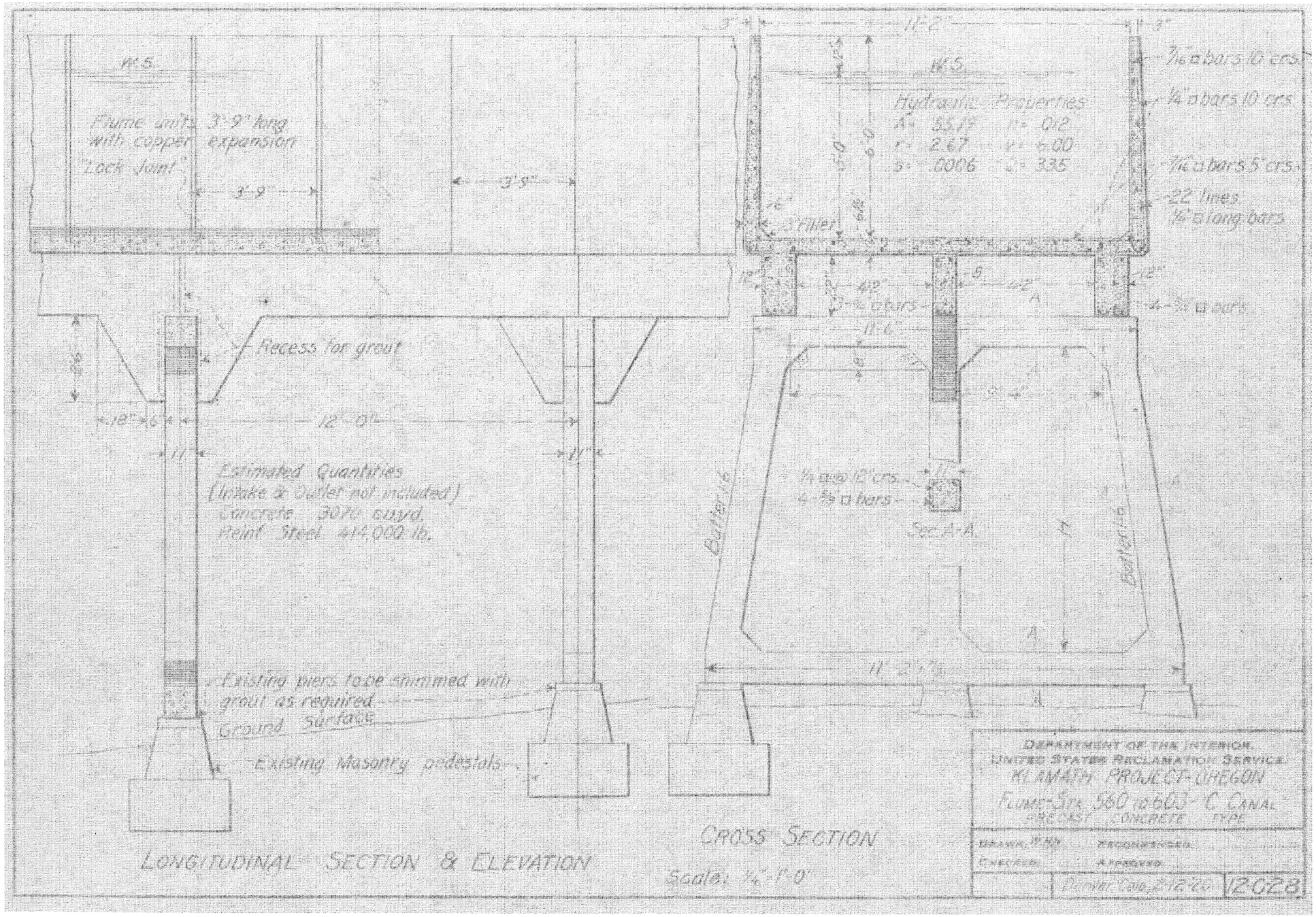

C-CANAL FLUME SECTIONS

N.T.S.

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE COMPONENTS AS CALLED OUT IN THE DETAILS.

No.	REVISION	DATE	BY

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

DEMOLITION DETAILS
FLUME-BENT-FOUNDATION

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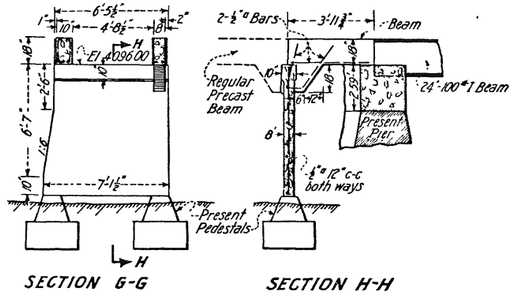
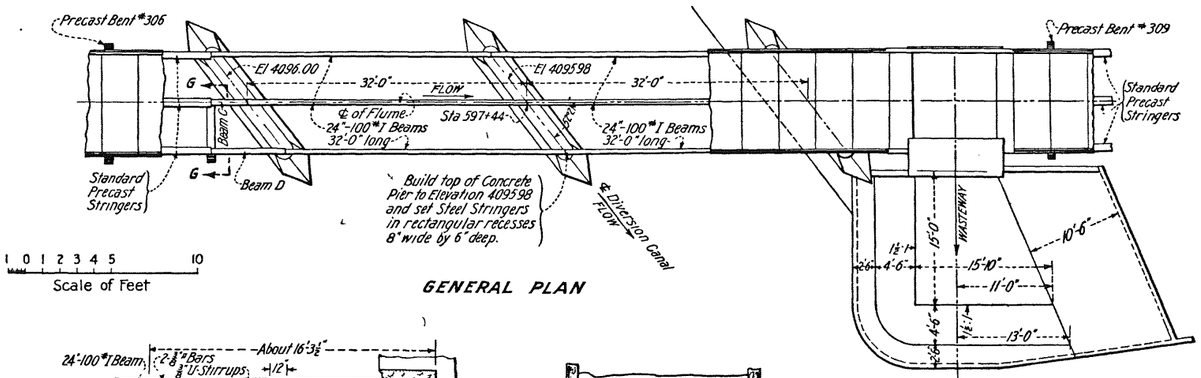
Klamath Falls - Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

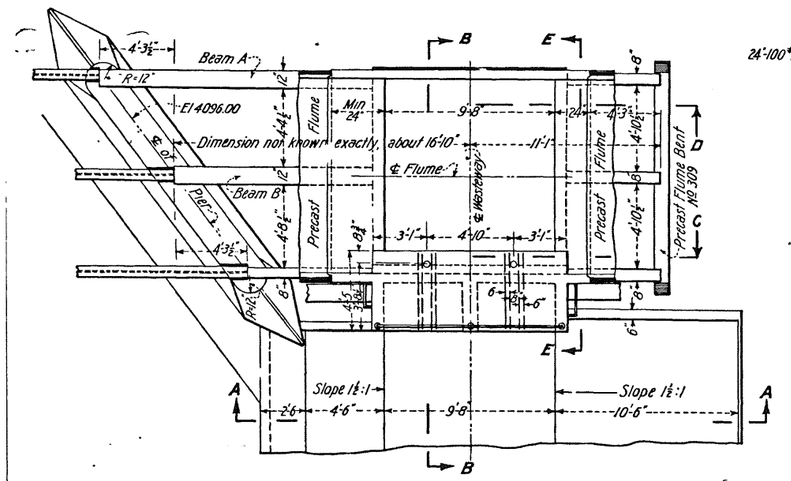
DATE: March 25, 2016
PROJECT: 462-00
FILE: D5-09 DEMOLITION DETAILS.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

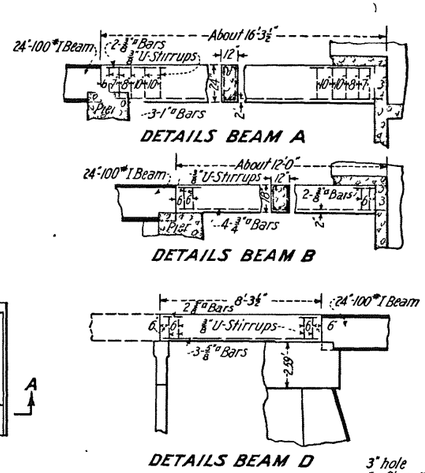
SHEET 77 OF 79

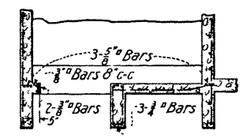
D7











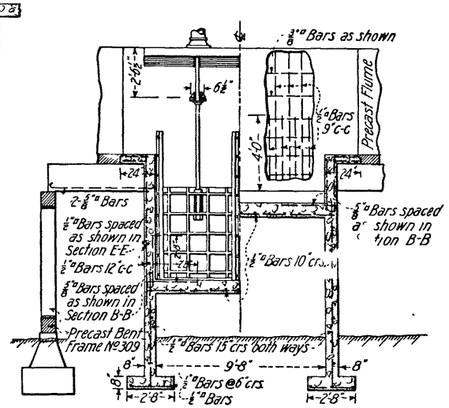
Notes:-

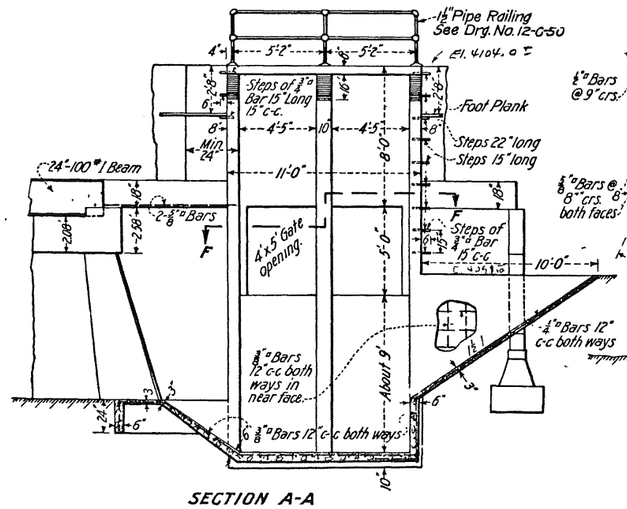
All main Reinforcing Steel except as otherwise shown to be 1½" from face of Concrete.

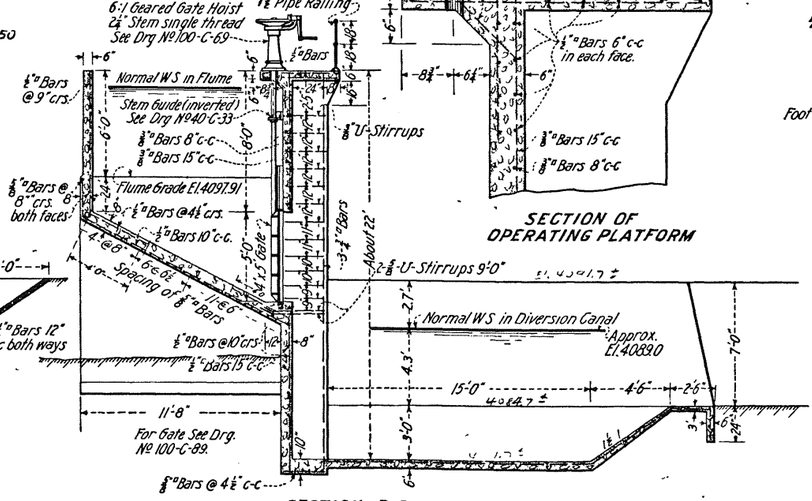
New Concrete in Pier to be 1-3-6 mix.

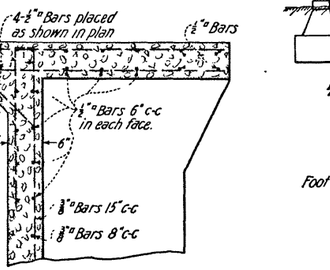
Concrete in Shilling Basin and Foundation Walls to be 1-2½-5 mix

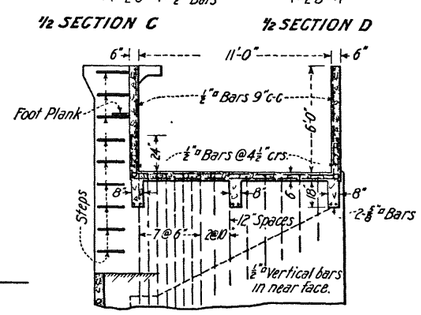
Remainder of Concrete in Spillway Structure to be 1-1½-3 mix.











DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE COMPONENTS AS CALLED OUT IN THE DETAILS.

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE
KLAMATH PROJECT-OREGON
C-CANAL FLUME
WASTEWAY & DIVERSION CANAL CROSSING

Revised Feb 18, 1922
Revised Nov 26, 1920

DRAWN: W.H.n C.B.G. RECOMMENDED:
CHECKED: D.C.M.&C. APPROVED:
Denver, Colo. Sept 14, 1920 | 12-C-37

C-CANAL FLUME: WASTEWAY AND DIVERSION CANAL CROSSING

N.T.S.

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION DETAILS
LOST RIVER DIVERSION CHANNEL CROSSING

No.	REVISION	DATE	BY

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2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: March 25, 2016
PROJECT: 462-00
FILE: D5-D9 DEMOLITION DETAILS.DWG
DESIGNED BY: MDR
DRAWN BY: MDR
CHECKED BY: JMM

SHEET 78 OF 79

D8

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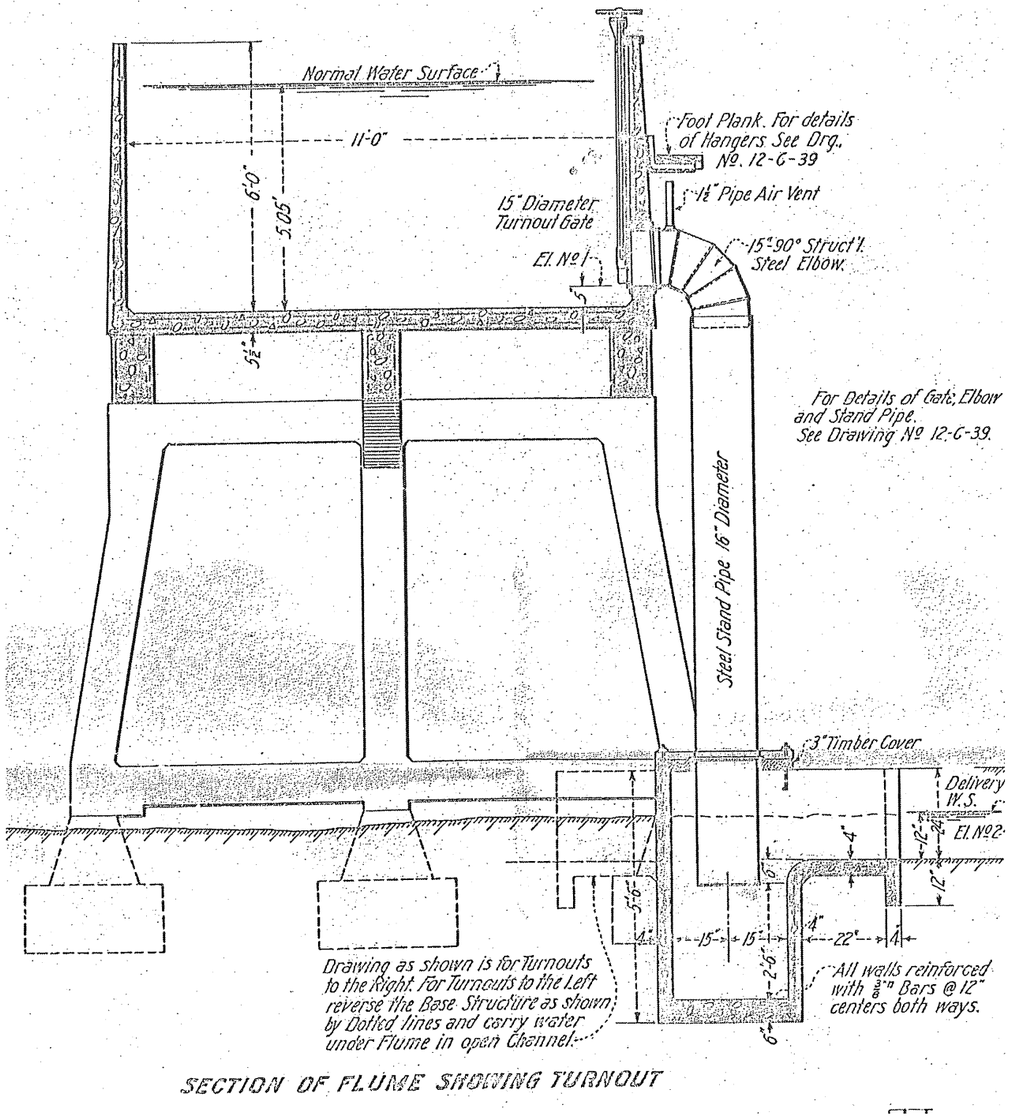


SECTION OF FLUME SHOWING TURNOUT

DETAIL 1

EXISTING FLUME WITH TURNOUT

N.T.S.

HYDRAULIC PROPERTIES

A = 73.92 S = .00045
r = 2.96 V = 4.66
n = .014 Q = 345

LINED CANAL STA.-603+07 TO 675+00

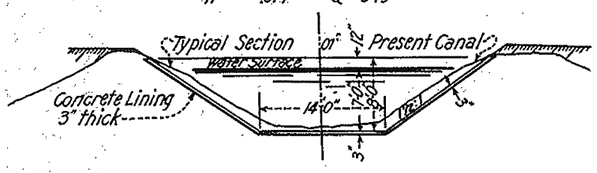
DETAIL 2

CONCRETE CANAL LINER - BEFORE FLUME

N.T.S.

HYDRAULIC PROPERTIES

A = 171.5 S = .00005
r = 4.37 V = 2.01
n = .014 Q = 345



LINED CANAL STA.-556+40 TO 559+91

DETAIL 3

CONCRETE CANAL LINER - AFTER FLUME

N.T.S.

DEMOLITION NOTE

DEMOLISH AND DISPOSE OF THE COMPONENTS AS CALLED OUT IN THE DETAILS.

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT
DEMOLITION DETAILS
TURNOUT AND LINED CANAL

No.	REVISION	DATE	BY

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(541) 884-4666 - FAX (541) 884-3335

DATE: March 25, 2016
PROJECT: 462-00
FILE: D5-D9 DEMOLITION DETAILS.DWG
DESIGNED BY: MDR
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CHECKED BY: JMM

SHEET 79 OF 79

D9

ADDENDUM NO. 1

To the Bidding Documents and Contract Documents

KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

April 19, 2016

Original Bid Date: April 25, 2016
Revised Bid Date: May 9, 2016
Bid Closing: 2:00 p.m.
Bid Opening: 2:00 p.m.
Disclosure Deadline: 4:00 p.m.

The following additions, deletions, and modifications shall be made to the Bidder's Packet, Bidding Documents and Contract Documents. Please verify that all sheets and drawings are included.

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS
RENEWS 12-31-16
4/19/16

I. GENERAL

The Bid opening, disclosure deadline, and Bid closing shall be postponed to May 9, 2016, at the local times listed on the attached revised First-Tier Subcontractor Disclosure Form. See the attached revised Bidder's Packet.

II. BIDDER'S PACKET

A. Bid Form and First-Tier Subcontractor Disclosure Form

The Bid Form and First-Tier Subcontractor Disclosure Form have been revised. A revised Bidder's Packet is attached.

III. BIDDING DOCUMENTS

A. BIDDING REQUIREMENTS, INSTRUCTIONS TO BIDDERS

1. ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT, 19.03 Evaluation of Bids, B., page 9. Modify paragraph 19.03.B as follows:

B. In the comparison of Bids, pipe type alternates (additive or deductive) will be applied at the Owner's discretion. Alternates will be accepted, as deemed appropriate by the Owner, in order to produce the lowest bid price. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its alternate Bids for which Owner determines funds will be available at the time of award. The Owner also reserves the right to authorize any portion of the alternative work at a later date during the construction Contract by Change Order at the prices stated in the Bid. If authorized at a later date to perform Alternative work, the Contractor will be given additional Contract time only for the additional work. All originally awarded Work shall be completed within the original Contract time.

The intent is to provide the Owner with bid price options for siphon pipe type alternatives. The Base Bid will include the cost of steel pipe and, if chosen by the Owner, a selected pipe type alternate price would replace the steel type bid item producing the total bid price.

IV. CONTRACT DOCUMENTS

A. GENERAL REQUIREMENTS

1. PARAGRAPH Q. EXISTING UTILITIES, page GR-20. Add utility contact information paragraph "f" as follows:

f. Communications
CenturyLink
Contact Person: Ardis Arbuckle
Telephone No.: 541-826-6161

V. TECHNICAL SPECIFICATIONS

A. SECTION 2 SIPHON PIPE, PART 2 – MATERIALS, 2.2 Siphon Pipe.

1. **C. Profile Wall Polyethylene Pipe, 1., page 2-5.** Remove the last sentence of paragraph 1, which reads, "Pipe shall be Weholite RSC400, or approved equal," and add subparagraphs a and b as follows:

    a. Buried siphon pipe crossing Highway 39 shall be Weholite RSC400, or approved equal.

    b. All other buried siphon pipe shall be Weholite RSC250, or approved equal.

2. Add the following paragraph D:

    D. Fiberglass Pipe

        1. Fiberglass pipe shall conform to the requirements of AWWA C950 and AWWA M45 for fiberglass pressure pipe. The pipe shall be a nominal 10-foot diameter with an inside diameter of not less than 9 feet, 10 inches with a smooth interior and be capable of being installed as shown on the Drawings. Pipe shall be Flowtite, or approved equal.

        2. Pipe joints shall be watertight at the design operating pressure, consist of the same material as the pipe, and meet the requirements of ASTM D 4161. Only couplers supplied or recommended by the manufacturer shall be used.

        3. All fabricated fittings shall be supplied or recommended by the manufacturer and constructed to ensure no loss of structural integrity. All pipe taps shall be shop fabricated and consist of the same material as the pipe.

- END OF ADDENDUM NO. 1 -

REVISED

BIDDER'S PACKET

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS
CONSULTING ENGINEERING
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA. PRINEVILLE, OR.

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BID FORM - REVISED

Klamath Irrigation District

C-Flume Replacement - 2016

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum, Date**

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of

such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BID SCHEDULE

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

NO.	ITEM	UNIT	UNIT PRICE	AMOUNT	TOTAL PRICE
1.	Mobilization/Demobilization (not to exceed 5% of Total Bid Price)	L.S.	XXX	All Req'd	_____
2.	Temporary Protection and Direction of Traffic	L.S.	XXX	All Req'd	_____
3.	Project Safety	L.S.	XXX	All Req'd	_____
4.	Temporary Environmental Controls	L.S.	XXX	All Req'd	_____
5.	Temporary Access Roads	L.S.	XXX	All Req'd	_____
6.	Siphon Pipe - Steel Type	L.S.	XXX	All Req'd	_____
7.	Elevated Steel Pipe	L.S.	XXX	All Req'd	_____
8.	Lost River Diversion Crossing	L.S.	XXX	All Req'd	_____
9.	Inlet Transition Structure	L.S.	XXX	All Req'd	_____
10.	Outlet Transition Structure	L.S.	XXX	All Req'd	_____
11.	Highway 39 Crossing	L.S.	XXX	All Req'd	_____
12.	Steel Piles	L.F.	_____	1,168	_____
13.	Turnouts	L.S.	XXX	All Req'd	_____
14.	Demolition	L.S.	XXX	All Req'd	_____
15.	Permanent Access Road	L.S.	XXX	All Req'd	_____
16.	Surface Restoration	L.S.	XXX	All Req'd	_____
				TOTAL BASE BID PRICE	$_____
DEDUCTIVE BID ALTERNATE A - SIPHON PIPE - DUROMAXX TYPE					
6.	Siphon Pipe - DuroMaxx Type	L.S.	XXX	All Req'd	_____
DEDUCTIVE BID ALTERNATE B - SIPHON PIPE - WEHOLITE TYPE					
6.	Siphon Pipe - Weholite Type	L.S.	XXX	All Req'd	_____
DEDUCTIVE BID ALTERNATE C - SIPHON PIPE - FIBERGLASS TYPE					
6.	Siphon Pipe - Fiberglass Type	L.S.	XXX	All Req'd	_____

5.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. A completed First-Tier Subcontractor Disclosure Form (see instructions on the form).

C. A completed and signed Bidder's Performance and Payment Bond Statement.

D. A completed and signed Bidder's Certification Statement as required by certain Oregon Revised Statutes (ORS).

7.02 A. The following shall be submitted by the apparent lowest responsible bidder prior to award.

1. Subcontractor list

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

Bidder is: ☐ An Individual ☐ A Partnership ☐ A Corporation ☐ Joint Venture

(*Check correct designation.)*

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

State Contractor License No. _____

Employer's Federal Tax ID No. _____

A Joint Venture requires the signature of all parties involved. Attach evidence of authority to sign.

_____ _____

_____ _____

_____ _____

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

BID
Bid Due Date:
Description *(Project Name - Include Location)*:
C-Flume Replacement - 2016
Klamath Falls, Oregon

BOND
Bond Number:
Date:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

BIDDER'S PERFORMANCE AND PAYMENT BOND STATEMENT

(Name of Contractor) _____, hereinafter referred to as Bidder, is submitting a Bid to **Klamath Irrigation District** pursuant to the latter's Advertisement for Bids for the Project **C-Flume Replacement - 2016**.

Bidder certifies that if it is awarded the Contract, Bidder has the financial ability to obtain good and sufficient bonds issued by a surety to the Owner in sums equal to the amount of the Bid providing for the faithful performance of the Contract and payment of labor and materials.

The surety requested to issue the Performance and Payment Bonds will be

_____. Bidder hereby authorizes
(Surety Company)

_____ to disclose any information
(Surety Company)

to the Owner concerning Bidder's ability to supply Performance and Payment Bonds in the amount of the Contract.

_____
Bidder

_____
By:

BIDDER'S CERTIFICATION STATEMENTS AS REQUIRED BY

CERTAIN OREGON REVISED STATUTES (ORS)

The Bidder, _____, certifies to the following:
(Company Name)

(1) Bidder is registered with the Oregon Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055. The Bidder certifies that Registration Number _____ allows his/her company to perform Work on Public Works Projects and that this registration is current and valid. The Bidder further certifies that, if awarded the Contract, all Subcontractors performing Work will be registered with the Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055 before the Subcontractors commence Work under the Contract (reference ORS 279C.365).

(2) Bidder agrees to be bound by and will comply with the provisions of the Oregon Prevailing Wage Law (ORS 279C.800 through ORS 279C.870 and OAR 839-25) and, if applicable, the federal Davis-Bacon Act (40USC1371-1377), which provides for payment of not less than the applicable prevailing wage rate (state or federal, whichever is greater), including fringe benefits, the posting of wage rates on the jobsite, the furnishing of payroll certifications, and other requirements. In addition, the Bidder will comply with ORS 279C.520 and 279C.540 in the hours of employment and the payment of overtime.

(3) Bidder is in compliance with State of Oregon tax laws in accordance with ORS 305.385.

(4) Bidder, in accordance with ORS 279A.110, does not discriminate against minorities, women, or emerging small business enterprises in obtaining any subcontracts (reference ORS 279A.110).

(5) Bidder is a [*Non-resident Bidder*] or [*Resident Bidder*] **(circle correct designation)** as defined in ORS 279A.120. "Resident Bidder" means a Bidder that has paid unemployment taxes or income taxes in the State of Oregon during the 12 calendar months immediately preceding submission of the Bid and has a business address in the State of Oregon (reference ORS 279C.365).

(6) Bidder and Bidder's Subcontractors are not on the Oregon Construction Contractors Board list of corporations, partnerships, or other business entity of which the Contractor or Subcontractor is an owner, shareholder, or officer of the business or was an owner or officer of the business and who have been determined not to be qualified to hold or participate in a public contract for a public improvement.

(7) Bidder has an employee drug testing program that meets state and federal standards (reference ORS 279C.505).

Bidder: _____
(Signature)

Title: _____

Date: _____

Project: **Klamath Irrigation District**
C-Flume Replacement - 2016

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM - REVISED
(OAR 137-049-0360)

PROJECT NAME: Klamath Irrigation District - C-Flume Replacement - 2016

BID CLOSING:	**Date: May 9, 2016**	**Time: 2:00 PM (Local Time)**
DISCLOSURE DEADLINE:	**Date: May 9, 2016**	**Time: 4:00 PM (Local Time)**
BID OPENING:	**Date: May 9, 2016**	**Time: 2:00 PM (Local Time)**

This form must be submitted within two (2) working hours after the advertised Bid closing date and time, no later than the DISCLOSURE DEADLINE stated above. Working hours include the hours between 8 a.m. and 5 p.m.

List below the Name, Address, Type of Work Performed, Contact Name, and Telephone Number of each Subcontractor who will be furnishing labor or labor and materials that are required to be disclosed. Enter "NONE" if there are no Subcontractors who need to be disclosed. **(IF NEEDED, ATTACH ADDITIONAL SHEETS.)**

	NAME/ADDRESS	TYPE OF WORK PERFORMED	DOLLAR AMOUNT OF WORK	CONTACT NAME/ PHONE #
1)				
2)				
3)				

The above listed first-tier Subcontractor(s) are providing labor or labor and materials with a Dollar Value equal to or greater than:

a) Five (5) percent of the total Contract Price, but at least $15,000 (including all alternates). If the Dollar Value is less than $15,000, do not list the Subcontractor above; or

b) $350,000 regardless of the percentage of the total Contract Price.

FAILURE TO SUBMIT THIS FORM BY THE DISCLOSURE DEADLINE WILL RESULT IN A BID SUBMITTED BECOMING NON-RESPONSIVE, AND SUCH BIDS SHALL NOT BE CONSIDERED FOR AWARD!

Form Submitted By (Bidder Name): _____ _____

Contact Name: _____ Phone #: _____

Deliver Form to Owner: **Klamath Irrigation District**

Person Designated to Receive Form: **Darin Kandra** Phone #: **541-882-6661**

Owner's Address: **6640 KID Lane, Klamath Falls, Oregon 97603**

IT IS THE RESPONSIBILITY OF BIDDERS TO SUBMIT THIS DISCLOSURE FORM AND ANY ADDITIONAL SHEETS, WITH THE PROJECT NAME CLEARLY MARKED, AT THE LOCATION INDICATED BY THE SPECIFIED DISCLOSURE DEADLINE. SEE INSTRUCTIONS TO BIDDERS.

INSTRUCTIONS FOR
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

1. This form must be submitted within two (2) working hours of the advertised Bid closing date and time. (See disclosure deadline on Disclosure Form and location where form must be submitted.) Working hours include the hours between 8 a.m. and 5 p.m., excluding the noon hour.

2. This form may be submitted to the Owner by one of three means:

   a. Include the completed form in the envelope containing the Bid, and note on the outside of the envelope that the form is included.
   b. Submit the completed form to the Owner separately from the Bid, within the time required, to the address listed on the form.
   c. Fax the completed form to the fax number shown on the form.

3. Reference ARTICLE 22 in the Instructions to Bidders for further instructions relative to this disclosure.

NOTE: It shall be the Bidder's sole responsibility to ensure the form is delivered to the Owner within the required deadline. The Owner assumes no liability for a malfunction of the Owner's equipment or for any other cause. The resulted failure of the Owner to receive the Disclosure Form due to fax problems or any other problem will not relieve the Bidder from meeting the deadline.

ADDENDUM NO. 2

To the Bidding Documents and Contract Documents

KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

May 3, 2016

Original Bid Date: April 25, 2016
Revised Bid Date: May 9, 2016
Bid Closing: 2:00 p.m.
Bid Opening: 2:00 p.m.
Disclosure Deadline: 4:00 p.m.

5/2/16

The following additions, deletions, and modifications shall be made to the Bidding Documents and Contract Documents. Please verify that all sheets and drawings are included.

I. BIDDER'S PACKET

A. BID FORM - REVISED, ARTICLE 5 - BID SCHEDULE, 5.01. In "Deductive Bid Alternates A, B, and C delete the word "Deductive."

II. BIDDING DOCUMENTS

A. BIDDING REQUIREMENTS, INSTRUCTIONS TO BIDDERS

1. ARTICLE 7 – INTERPRETATIONS AND ADDENDA, 7.03, page 5.

Written addenda shall be made digitally available not later than 48 hours prior to the date fixed for the opening of bids.

2. ARTICLE 11 – SUBSTITUTE, "OR-EQUAL" ITEMS, AND PRE-BID SUBMITTALS, 11.04, Pre-Bid Submittals, A., page 6. Add the following language:

Pre-bid submittals are not required for the specified pipe.

3. ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT, 19.03, Evaluation of Bids, B., page 9. Modify paragraph 19.03.B as follows:

B. In the comparison of Bids, pipe type alternates will be applied at the Owner's discretion. Pipe alternates will be accepted, as deemed appropriate by the Owner, in order to produce the highest value at the lowest bid price, as determined by the Owner. After determination of the successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these instructions, the award may be made to said successful Bidder on its Base Bid and/or any selected alternate pipe type Bid for which the Owner determines funds are available at the time of award, and is in the best interest of the Owner to do so.

The Intent is to provide the Owner with bid price options for siphon pipe type alternatives. The Base Bid will include the cost of steel pipe and, if chosen by the Owner, a selected pipe type alternate price would replace the steel type bid item producing the total Bid price.

III. CONTRACT DOCUMENTS

A. SUPPLEMENTARY CONDITIONS

1. **ARTICLE 5 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS, page 2 of 22.** Add the following:

   SC-5.01 Replace Paragraph C with the following:

   C. BOR will acquire all right-to-enter authorizations for all additional lands and access thereto that may be required for temporary construction activities such as but not limited to: vehicle/equipment access or storage of materials and equipment.

2. **ARTICLE 19 - FEDERAL REQUIREMENTS, SC-19.02 Environmental Requirements, page 14 of 22.** Insert the following new Paragraph A and associated tables and re-letter existing Paragraphs A through K to B through L.

   A. General

   The Contractor shall be responsible for complying with all environmental requirements identified in the EA/FONSI (see Appendix A) as well as all federal, state, and local laws and/or permits that have already been obtained or are yet to be obtained (see Section 1.7 of the EA). BOR safety and health standards and all applicable BOR standards/directives will be applied during construction activities to minimize environmental impacts. The Contractor shall provide access and accommodation for an archaeological observer, fish biologist, or any other environmental compliance worker at the request of the owner

   The following tables summarize regulatory compliance laws, required control plans, and permit/authorizations that must be complied with during construction.

Regulatory Compliance Laws

Law	Reference
National Environmental Policy Act	Pages 11-12 of EA (See Appendix A)
Endangered Species Act	
Clean Air Act	
Clean Water Act	
Federal Migratory Bird Treaty Act of 1918	
National Historic Preservation Act	
State of Oregon Limited License	
State of Oregon Scientific Take Permit	

Control Plans

Plan	Plan Developer		Submittal Required
	Contractor	BOR	
Erosion and Sediment Control Plan	*		*[1]
Hazardous and Toxic Materials Control Plan	*		*[2]
Spill Prevention Control and Countermeasures	*		*[2]
Traffic Control Plan	*		*[3]
Work Area Isolation Plan	*		*[4]
Fugitive Dust Control Plan	*		*[5]
LRDC Dewater and Fish Salvage Plan		*[6]	
Railroad Access/Control Plan		*	
Dredge and Fill Management Practices	*[7]		
Groundwater Dewatering Management Practices	*		*[1]

[1] See NPDES 1200-CA Permit for plan and submittal requirements (Appendix B). Also see EA/FONSI (Appendix A) and Dredge-Fill Permit (Appendix D).

[2] See FONSI (Appendix A) Item 14 – subheading "Hazardous Fuels and Materials" for submittal requirements.

[3] Traffic Control plan shall meet ODOT requirements for work in the highway right-of-way.

[4] See page 19 and Appendix D of the C Canal Flume Replacement Environmental Assessment (Appendix A).

[5] See FONSI (Appendix A) Item 12 - subheading "Air Quality" and page 33-34 of the EA for plan and submittal requirements.

[6] Contractor shall provide a minimum notice of 2 weeks prior to work in the LRDC for BOR to complete dewatering.

[7] Contractor shall comply with the requirements of the USACE Dredge-Fill Permit and associated NWP conditions (Appendix D) and page 19 of the EA (Appendix A).

Permits/Authorizations

Permits/Authorization	Agency	Permittee[1]		Reference
		Contractor	BOR	
Non-Reporting Nationwide Permit (NWP - CWA Section 404 Permit)	USACE		*	Appendix D
NPDES 1200-CA Permit (CWA Sec 402 Permit)	DEQ		*	Appendix B
Scientific Take Permit	DEQ		*	See BOR
Permit to Occupy and Perform Operations on a State Highway (for staging area in material site)	ODOT		*	Appendix C
Limited License of Use of Water for Fugitive Dust Control	OWRD		*	Appendix E
Memorandum of Agreement to Resolve Adverse Effect to the C Flume	SHPO		*	See BOR
Air Quality Discharge Permit	DEQ	*		
Permit to Occupy or Perform Operations Upon a State Highway (for work in OR39 right-of-way)	ODOT	*		
Private Property Construction/Access Easements	Private Parties		*	See BOR

[1] The Contractor shall adhere to the requirements of all permits/authorizations obtained by the BOR when applicable to the scope of work of the Contract. Permit references as "see BOR" will have no additional requirements for the Contractor other than currently included in the Contract Documents.

ARTICLE 19 - FEDERAL REQUIREMENTS, SC-19.02 Environmental Requirements, E. Cultural E. Cultural and Paleontological Resources, page 16 of 22. Insert the following new Paragraph 3.

3. A visual environmental site survey as part of the pre-construction meeting with BOR will be conducted prior to initiating construction. Any materials or hazardous substances in the ROW that could be exposed will be removed or appropriately remediated prior to construction.

4. **ARTICLE 19 - FEDERAL REQUIREMENTS, SC-19.02 Environmental Requirements, K. Water Quality, Paragraph 2., page 17 of 22.** Delete Paragraph 2 in its entirety and replace it with the following:

2. Erosion control BMPs will be implemented during all ground-disturbing activities to reduce runoff and allow for infiltration, provide sediment trapping and support the establishment of permanent ground cover (e.g., vegetative cover). The Contractor shall also comply with the Erosion and Sediment Control Plan as outlined in the Environmental Assessment in Appendix A and modified in the National Pollutant Discharge Elimination System 1200-CA Permit (Appendix B). This plan and permit will

serve to provide detailed information about the construction site, and will serve as a blueprint for the location, installation, and maintenance of the erosion and sediment control measures to minimize erosion and reduce sediment entering the LRDC. Erosion prevention BMPs may include, but are not limited to surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

5. **ARTICLE 19 - FEDERAL REQUIREMENTS, SC-19.02 Environmental Requirements, K. Water Quality, Paragraph 3., page 17 of 22.** Add the following to the end of this paragraph:

   The Contractor shall comply with the requirements of the USACE NWP Permit (see Appendix D).

6. **ARTICLE 19 - FEDERAL REQUIREMENTS, SC-19.02 Environmental Requirements, K. Water Quality, Paragraph 5., page 18 of 22.** Add the following to the end of this paragraph:

   (See Appendix E.)

B. GENERAL REQUIREMENTS

1. **F. Permissions, page GR-6.** Delete the first paragraph in its entirety and replace it with the following:

   The Contractor shall coordinate with any landowner prior to entering a property to make improvements or for general access. Construction access easements will be obtained by the BOR for this Project. The Contractor shall be responsible to limit operations within the areas provided by the easements. All disturbed private and public areas shall be restored to pre-project conditions at the sole expense of the Contractor; such restoration is incidental to the bid item "Surface Restoration." Pre-project conditions shall be recorded using video and copies submitted to the Owner, Engineer, and the BOR.

2. **G. Environmental Requirements, page GR-6.** Delete all four paragraph in their entirety and replace them with the following:

   The Contractor shall be responsible for complying with all environmental requirements identified in the EA/FONSI (see Appendix A) as well as all federal, state, and local laws and/or permits that have already been obtained or are yet to be obtained (see Section 1.7 of the EA). BOR safety and health standards and all applicable BOR standards/directives will be applied during construction activities to minimize environmental impacts. The Contractor shall provide access and accommodation for an archaeological observer, fish biologist, or any other environmental compliance worker at the request of the owner.

   The following tables summarize regulatory compliance laws, required control plans, and permit/ authorizations that must be complied with during construction.

Regulatory Compliance Laws

Law	Reference
National Environmental Policy Act	Pages 11-12 of EA (See Appendix A)
Endangered Species Act	
Clean Air Act	
Clean Water Act	
Federal Migratory Bird Treaty Act of 1918	
National Historic Preservation Act	
State of Oregon Limited License	
State of Oregon Scientific Take Permit	

Control Plans

Plan	Plan Developer		Submittal Required
	Contractor	BOR	
Erosion and Sediment Control Plan	*		*[1]
Hazardous and Toxic Materials Control Plan	*		*[2]
Spill Prevention Control and Countermeasures	*		*[2]
Traffic Control Plan	*		*[3]
Work Area Isolation Plan	*		*[4]
Fugitive Dust Control Plan	*		*[5]
LRDC Dewater and Fish Salvage Plan		*[6]	
Railroad Access/Control Plan		*	
Dredge and Fill Management Practices	*[7]		
Groundwater Dewatering Management Practices	*		*[1]

[1] See NPDES 1200-CA Permit for plan and submittal requirements (Appendix B). Also see EA/FONSI (Appendix A) and Dredge-Fill Permit (Appendix D).

[2] See FONSI (Appendix A) Item 14 – subheading "Hazardous Fuels and Materials" for submittal requirements.

[3] Traffic Control plan shall meet ODOT requirements for work in the highway right-of-way.

[4] See page 19 and Appendix D of the C Canal Flume Replacement Environmental Assessment (Appendix A).

[5] See FONSI (Appendix A) Item 12 - subheading "Air Quality" and page 33-34 of the EA for plan and submittal requirements.

[6] Contractor shall provide a minimum notice of 2 weeks prior to work in the LRDC for BOR to complete dewatering.

[7] Contractor shall comply with the requirements of the USACE Dredge-Fill Permit and associated NWP conditions (Appendix D) and page 19 of the EA (Appendix A).

Permits/Authorizations

Permits/Authorization	Agency	Permittee[1]		Reference
		Contractor	BOR	
Non-Reporting Nationwide Permit (NWP - CWA Sec 404 Permit)	USACE		*	Appendix D
NPDES 1200-CA Permit (CWA Sec 402 Permit)	DEQ		*	Appendix B
Scientific Take Permit	DEQ		*	See BOR
Permit to Occupy and Perform Operations on a State Highway (for staging area in material site)	ODOT		*	Appendix C
Limited License of Use of Water for Fugitive Dust Control	OWRD		*	Appendix E
Memorandum of Agreement to Resolve Adverse Effect to the C Flume	SHPO		*	See BOR
Air Quality Discharge Permit	DEQ	*		
Permit to Occupy or Perform Operations Upon a State Highway (for work in OR39 right-of-way)	ODOT	*		
Private Property Construction/Access Easements	Private Parties		*	See BOR

[1] The Contractor shall adhere to the requirements of all permits/authorizations obtained by the BOR when applicable to the scope of work of the Contract. Permit requirements as "see BOR" will have no additional requirements for the Contractor other than currently included in the Contract Documents.

3. **I. Project Safety, paragraph 5, page GR-7.** Delete this paragraph in its entirety and replace it with the following:

   5. All construction Work shall be performed in accordance with the provisions of the Occupational Safety and Health Regulations of the Oreg on Occupational Safety and Health Division, Reclamation Health and Safety Standards (http://www.usbr.gov/ssle/safety/RSHS/rshs.html), and other applicable regulations. It shall be the Contractor's responsibility to meet all requirements of Chapter 437 of the State of Oregon Administrative Rules. In addition, Oregon Revised Statutes (ORS) 757.542 through 757.562 and Oregon Administrative Rules (OAR) 860 024-0007 administered by the Oregon Public Utilities Commission shall apply.

4. **W. Water for Construction and Dust Control, page GR-27.** Add GR section "W" as follows:

   Water use for construction and dust control is approved by the OWRD Limited License (LL-1624) (Appendix E). Water source locations must be identified by the CONTRACTOR in the required Fugitive Dust Control Plan and approved by the BOR. The CONTRACTOR must comply with the period, duty rates, and ODFW Fish Screening Criteria as defined by the Limited License as well all of the environmental requirements listed in General Requirements - Section G and Supplementary Conditions.

II. TECHNICAL SPECIFICATIONS

A. SECTION 2 SIPHON PIPE, PART 2 - MATERIALS, 2.2 Siphon Pipe, B. Steel Pipe, a. Butt Straps, page 2-4. Delete this paragraph in its entirety. Butt straps are not required on the steel siphon pipe.

SECTION 4 LOST RIVER DIVERSION CROSSING

1. **PART 1 - GENERAL, 1.3 SUBMITTALS AND WORK DRAWINGS, page 4-1.** Insert an additional paragraph as follows:

   Drawings and details depicting how the Work area will be isolated from the active stream flow upstream, through, and downstream of the Work area using the temporary management facilities are outlined on page 19 and in Appendix D of the C Canal Flume Replacement Environmental Assessment (Appendix A).

2. **PART 3 - EXECUTION, page 4-3.** Add the following after Paragraph 3.1:

   4.2 Work Area Isolation

   Work area isolation measures shall be carried out in accordance with all requirements of the Environmental Assessment (Appendix A) for the Lost River Diversion crossing. The following paragraphs outline methodology developed by U.S. Bureau of Reclamation (BOR).

   Two cofferdams would be installed in a "U" shape within the prism of the Lost River Diversion crossing to further isolate water from the Work area. The Work area includes the area around the crane pad, all or a large portion of the existing concrete liner, and the areas along the embankment where new piles would be driven. The cofferdams may be constructed using heavy plastic bladder dams and/or through the use of a plastic tarp-like material anchored in place with a total of 90 cubic yards (CY) of crushed rock (45 CY per cofferdam). The 90 CY of crushed rock would originate from a BOR-approved site and would not contain recycled asphalt or concrete materials due to potential contamination concerns. The cofferdams would be placed in the Lost River Diversion crossing prism and then removed within three weeks of completion of the pipe structure spanning the Lost River Diversion crossing. Cofferdams would be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a cofferdam by pushing material from the Lost River Diversion crossing bed or banks would not occur. The cofferdams would include sand and gravel bag dams that would be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the channel.

   Construction activities within the Lost River Diversion crossing would commence around November 2016. Prior to beginning construction work, the Lost River Diversion crossing would be dewatered for approximately 2 weeks through a coordinated effort by the BOR, the Owner, the Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and the Tulelake Irrigation District (see the Environmental Assessment, page 19).

SECTION 6 TURNOUTS, PART 2 - MATERIALS, page 6-3. Add the following after Paragraph 2.5: Paragraph 2.5:

2.6 Flowmeters

A. Flowmeters shall be propeller type with instantaneous flow rate indicator and straight reading, six-digit totalizer. Flow rate indicator and totalizer shall report cubic feet per second and cubic feet, respectively, and be accurate to ±2 percent of the readings.

B. Flowmeters shall meet AWWA C704-02 requirements for propeller type flowmeters.

C. Flowmeters shall be capable of being field serviced without the need for factory recalibration.

D. All flowmeter diameters shall match the piping dimensions for the turnout assembly in which they are being installed unless noted otherwise.

E. Flowmeters shall be McCrometer MW500, or approved equal.

D. SECTION 7 GENERAL EARTHWORK AND ROADWAYS

1. **PART 1 - GENERAL, 1.3 Submittals, C., page 7-2.** Delete Paragraph C in its entirety and replace it with the following:

   C. Groundwater Dewatering

   Groundwater dewatering operations shall be the responsibility of the Contractor. A dewatering plan, stamped by a qualified Professional Engineer, shall be submitted to the Engineer for review 10 days prior to any dewatering operations. Any groundwater dewatering operations shall conform to the requirements of the BOR and NPDES 1200-CA Permit (see Appendix B) and applicable measures in the EA (Appendix A)

2. **PART 1 - GENERAL, 1.7 Soil and Groundwater Conditions, B., page 7-3.** Add the following to the end of this paragraph:

   Historic groundwater levels are documented in the Geotechnical Investigation Report completed by Foundation Engineering, Inc.

3. **PART 3 - EXECUTION, 3.1 Earthwork, L. Dust and Mud Control, page 7-10.** Add the following new Paragraph 3 after Paragraph 2:

   3. All dust and mud control measures shall be performed in accordance with the EA/FONSI (see Appendix A) and OWRD Limited License (see Appendix E).

4. **PART 3 - EXECUTION, 3.1 Earthwork, M. Erosion Control, page 7-10.** Delete Paragraphs 1 and 2 in their entirety and replace them with the following:

Erosion control Best Management Practices (BMPs) will be implemented during all ground-disturbing activities to reduce runoff, allow for infiltration, provide sediment trapping, and support the establishment of permanent ground covers. The Owner and Contractor shall also comply with the Erosion and Sediment Control Plan as shown in the EA/FONSI (see Appendix A) and as detailed by the Owner or Engineer. Erosion prevention BMPs may include, but are not limited to, tire washes, construction entrances, surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

5. **PART 3 - EXECUTION, 3.5 Drainage Ditches, page 7-12.** Delete this paragraphs in its entirety and replace it with the following:

   Maintain existing drainage ditches as necessary to ensure construction activities do not impede flows. Temporary drainage ditches may be necessary to direct surface flows away from construction activities. All temporary drainage ditches must conform to the erosion and sediment control and stormwater pollution requirements of the EA/FONSI (see Appendix A) and NPDES 1200-CA Permit (see Appendix B).

E. SECTION 8 DEMOLITION, PART 3 - EXECUTION, 3.1 Elevated Concrete Flume, B. Disposal, page 8-2. Add the following to the end of this paragraph:

The Contractor shall obtain an Air Quality Discharge Permit from the Oregon Department of Environmental Quality prior to crushing operations.

F. SECTION 9 EXCAVATION AND BACKFILL OF TRENCHES, PART 3 - EXECUTION

1. **3.3 Trench Excavation, E., page 9-6.** Delete Paragraphs 1 and 2 in their entirety and replace them with the following:

   Erosion control Best Management Practices (BMPs) will be implemented during all ground-disturbing activities to reduce runoff, allow for infiltration, provide sediment trapping, and support the establishment of permanent ground covers. The Owner and Contractor shall also comply with the Erosion and Sediment Control Plan as shown in the EA/FONSI (see Appendix A) and as detailed by the Owner or Engineer. Erosion prevention BMPs may include, but are not limited to, tire washes, construction entrances, surface roughening, temporary vegetation cover, erosion blankets, dust control, etc.

2. **3.5 Dewatering Excavated Areas, D., page 9-7.** Delete Paragraph D in its entirety and replace it with the following:

   D. Contractor shall dispose of all waste and water removed from the trench. Disposal shall be in accordance with all federal, state, and local regulations.

G. SECTION 14, TEMPORARY ENVIRONMENTAL CONTROLS. Delete Section 14 in its entirety and replace it with the following:

PART 1 - GENERAL

The Contractor shall be responsible for complying with all environmental requirements identified in the EA/FONSI (see Appendix A) as well as all federal, state, and local laws and/or

permits that have already been obtained or are yet to be obtained (see Section 1.7 of the EA). BOR safety and health standards and all applicable BOR standards/directives will be applied during construction activities to minimize environmental impacts. The Contractor shall provide access and accommodation for an archaeological observer, fish biologist, or any other environmental compliance worker at the request of the owner.

The following tables summarize regulatory compliance laws, required control plans, and permit/authorizations that must be complied with during construction.

Regulatory Compliance Laws

Law	Reference
National Environmental Policy Act	Pages 11-12 of EA (See Appendix A)
Endangered Species Act	
Clean Air Act	
Clean Water Act	
Federal Migratory Bird Treaty Act of 1918	
National Historic Preservation Act	
State of Oregon Limited License	
State of Oregon Scientific Take Permit	

Control Plans

Plan	Plan Developer		Submittal Required
	Contractor	BOR	
Erosion and Sediment Control Plan	*		*[1]
Hazardous and Toxic Materials Control Plan	*		*[2]
Spill Prevention Control and Countermeasures	*		*[2]
Traffic Control Plan	*		*[3]
Work Area Isolation Plan	*		*[4]
Fugitive Dust Control Plan	*		*[5]
LRDC Dewater and Fish Salvage Plan		*[6]	
Railroad Access/Control Plan		*	
Dredge and Fill Management Practices	*[7]		
Groundwater Dewatering Management Practices	*		*[1]

[1] See NPDES 1200-CA Permit for plan and submittal requirements (Appendix B). Also see EA/FONSI (Appendix A) and Dredge-Fill Permit (Appendix D).
[2] See FONSI (Appendix A) Item 14 – subheading "Hazardous Fuels and Materials" for submittal requirements.
[3] Traffic Control plan shall meet ODOT requirements for work in the highway right-of-way.
[4] See page 19 and Appendix D of the C Canal Flume Replacement Environmental Assessment (Appendix A).
[5] See FONSI (Appendix A) Item 12 - subheading "Air Quality" and page 33-34 of the EA for plan and submittal requirements.
[6] Contractor shall provide a minimum notice of 2 weeks prior to work in the LRDC for BOR to complete dewatering.

[7] Contractor shall comply with the requirements of the USACE Dredge-Fill Permit and associated NWP conditions (Appendix D) and page 19 of the EA (Appendix A).

Permits/Authorizations

Permits/Authorization	Agency	Permittee[1]		Reference
		Contractor	BOR	
Non-Reporting Nationwide Permit (NWP - CWA Section 404 Permit)	USACE		*	Appendix D
NPDES 1200-CA Permit (CWA Sec 402 Permit)	DEQ		*	Appendix B
Scientific Take Permit	DEQ		*	See BOR
Permit to Occupy and Perform Operations on a State Highway (for staging area in material site)	ODOT		*	Appendix C
Limited License of Use of Water for Fugitive Dust Control	OWRD		*	Appendix E
Memorandum of Agreement to Resolve Adverse Effect to the C Flume	SHPO		*	See BOR
Air Quality Discharge Permit	DEQ	*		
Permit to Occupy or Perform Operations Upon a State Highway (for work in OR39 right-of-way)	ODOT	*		
Private Property Construction/Access Easements	Private Parties		*	See BOR

[1] The Contractor shall adhere to the requirements of all permits/authorizations obtained by the BOR when applicable to the scope of work of the Contract. Permit requirements as "see BOR" will have no additional requirements for the Contractor other than currently included in the Contract Documents.

PART 2 - NOT USED

PART 3 - RESERVED

PART 4 - NOT USED

III. DRAWINGS

A. Drawing A2. Revise Note #10 to read:

Connect existing PVC pipe to siphon via 15-inch siphon tap located at T.D.C. See Siphon Tap Detail, Sheet A28.

- END OF ADDENDUM NO. 2 -

ADDENDUM NO. 3

To the Bidding Documents and Contract Documents

KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

May 5, 2016

Original Bid Date: April 25, 2016
Revised Bid Date: May 10, 2016
Bid Closing: 2:00 p.m.
Bid Opening: 2:00 p.m.
Disclosure Deadline: 4:00 p.m.

The following additions, deletions, and modifications shall be made to the Bidding Documents and Contract Documents. Please verify that all sheets and drawings are included.

I. GENERAL

A. Bid Opening Date Change

The Bid opening, disclosure deadline, and Bid closing shall be postponed to May 10, 2016, at the local times listed on the attached revised First-Tier Subcontractor Disclosure Form. See the attached revised Bidder's Packet.

B. Supplemental Groundwater Information

The attached groundwater graphs supplement the soil bore logs shown on Sheets G8 through G16.

II. BIDDER'S PACKET

A. Bid Form and First-Tier Subcontractor Disclosure Form

The Bid Form and First-Tier Subcontractor Disclosure Form have been revised. A revised Bidder's Packet is attached.

III. BIDDING DOCUMENTS

A. BIDDING REQUIREMENTS, INSTRUCTIONS TO BIDDERS, ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT, 19.03 Evaluation of Bids, page 9. Add paragraph C as follows:

C. Bid option prices will not be considered in the determination of the successful Bidder and award of the Contract. The Owner reserves the right to authorize any portion of optional work at a later date during construction for the price listed in the original Bid Form, additive or deductive. If authorized to perform Work at a later date, the Contractor may be granted additional time to complete the Work based on the amount and nature of the Work authorized. All Work originally awarded shall be completed within the original Contract Time.

IV. TECHNICAL SPECIFICATIONS

A. SECTION 16 PAINTING

1. **PART 3 - EXECUTION, 3.6 Extra Paint, page 16-8.** Delete the first sentence of this paragraph in its entirety and replace it with the following:

   The Contractor shall provide 5 gallons of extra paint for each major color and system used.

2. **PART 4 - MEASUREMENT AND PAYMENT, 4.1 Basis, page 16-8.** Add the following sentence at the beginning of paragraph 4.1:

   Painting of any given item is considered incidental to construction/installation of said item – no separate payments will be made for painting.

3. **SECTION 18 MEASUREMENT AND PAYMENT, PART 1 - EXECUTION, 1.4 Payment Items, B. Method of Payment, page 18-5.** Add item 14A Partial Demolition by Owner.

   14A. Partial Demolition by Owner

   Payment for Deductive Bid Option 14A will be deducted from Base Bid Item 14 Demolition. Deduction for partial demolition by Owner shall be on a lump sum basis for the Owner to demolish the existing flume structure between approximate project stationing 5+00 to 18+00 and 30+00 to 36+50. The Contractor shall coordinate with the Owner exact extents in the field to accommodate construction and existing bent spacing.

V. DRAWINGS

A. SHEET G7. Replace Sheet G7 with the attached revised Sheet G7.

B. SHEET G7A. Add the attached Sheet G7A to the Drawing set.

C. SHEET A21. The maximum slope for Farm Access Road shall be 12 percent.

D. SHEET EP5. The 5/16-inch fillet weld shown on Section B should be a field weld.

E. **SHEET EP5.** For the 7/16-inch fillet weld shown on Section A, a shop weld is preferred; the Contractor may opt to field weld.

F. **SHEET EC1.** Add the attached Sheet EC1 to the Drawing set.

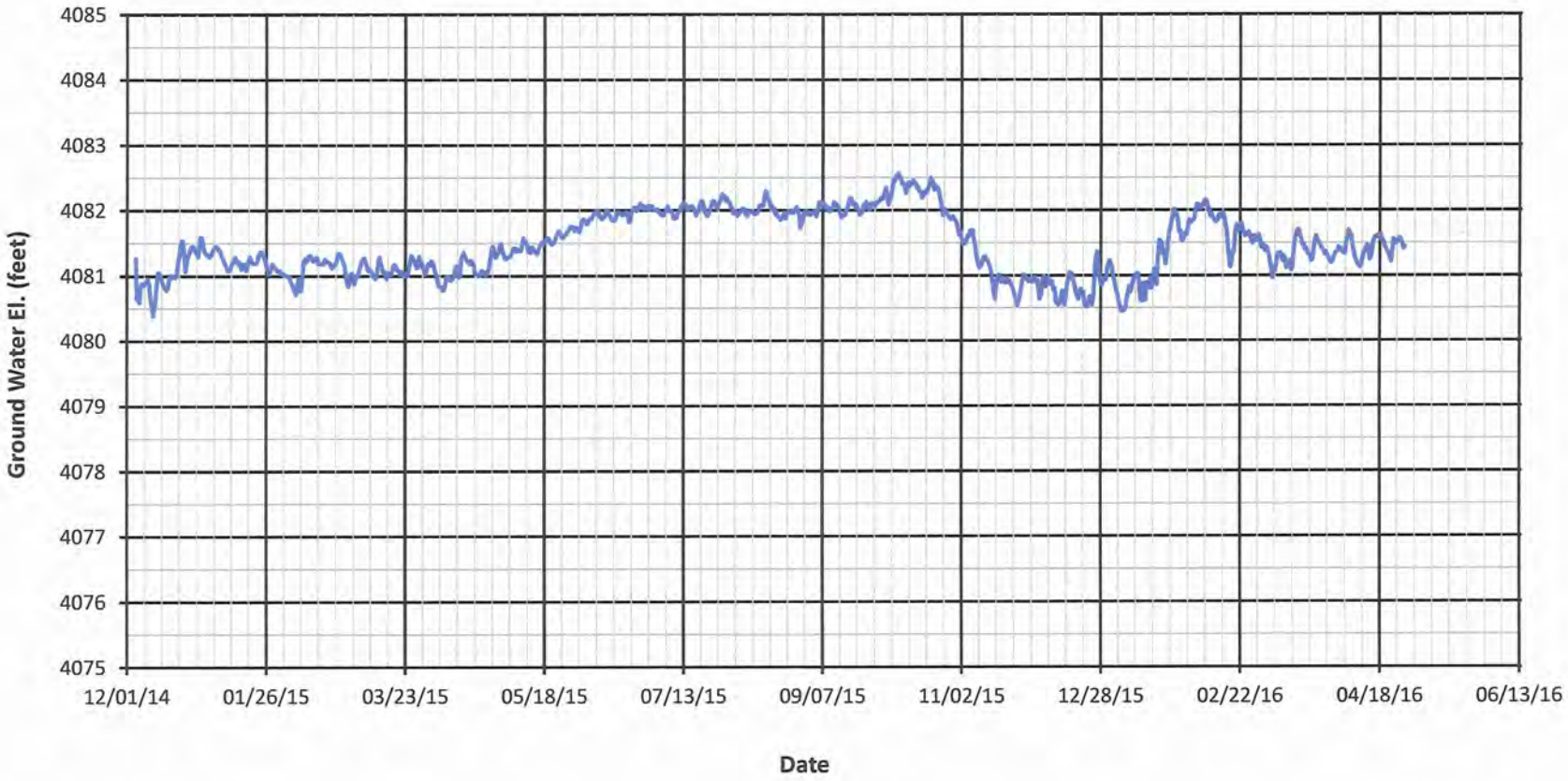
G. **SHEET EC2.** Add the attached Sheet EC2 to the Drawing set.

- END OF ADDENDUM NO. 3 -

BH-6 Ground Water Data

Ground Surface at ±El. 4083.5 and
vibrating wire piezometer at ±El. 4064.5

BH-10 Ground Water Data



Ground Surface at ±El. 4099.0 and
vibrating wire piezometer at ±El. 4074.0

REVISED FOR ADDENDUM NO. 3
BIDDER'S PACKET

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS
CONSULTING ENGINEERING
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA. PRINEVILLE, OR.

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Bid Bond	
Bidder's Performance and Payment Bond Statement	
Bidder's Certification Statements as Required by Certain Oregon Revised Statutes (ORS)	
First-Tier Subcontractor Disclosure Form	

BID FORM - REVISED FOR ADDENDUM NO. 3

Klamath Irrigation District

C-Flume Replacement - 2016

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ARTICLE 2 – Bidder's Acknowledgements 1

ARTICLE 3 – Bidder's Representations 1

ARTICLE 4 – Bidder's Certification 2

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ARTICLE 6 – Time of Completion 4

ARTICLE 7 – Attachments to this Bid 4

ARTICLE 8 – Defined Terms 4

ARTICLE 9 – Bid Submittal 5

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of

such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BID SCHEDULE

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

NO.	ITEM	UNIT	UNIT PRICE	AMOUNT	TOTAL PRICE
1.	Mobilization/Demobilization (not to exceed 5% of Total Bid Price)	L.S.	XXX	All Req'd	_____
2.	Temporary Protection and Direction of Traffic	L.S.	XXX	All Req'd	_____
3.	Project Safety	L.S.	XXX	All Req'd	_____
4.	Temporary Environmental Controls	L.S.	XXX	All Req'd	_____
5.	Temporary Access Roads	L.S.	XXX	All Req'd	_____
6.	Siphon Pipe - Steel Type	L.S.	XXX	All Req'd	_____
7.	Elevated Steel Pipe	L.S.	XXX	All Req'd	_____
8.	Lost River Diversion Crossing	L.S.	XXX	All Req'd	_____
9.	Inlet Transition Structure	L.S.	XXX	All Req'd	_____
10.	Outlet Transition Structure	L.S.	XXX	All Req'd	_____
11.	Highway 39 Crossing	L.S.	XXX	All Req'd	_____
12.	Steel Piles	L.F.	_____	1,168	_____
13.	Turnouts	L.S.	XXX	All Req'd	_____
14.	Demolition	L.S.	XXX	All Req'd	_____
15.	Permanent Access Road	L.S.	XXX	All Req'd	_____
16.	Surface Restoration	L.S.	XXX	All Req'd	_____
				TOTAL BASE BID PRICE	$_____
BID ALTERNATE A - SIPHON PIPE - DUROMAXX TYPE					
6.	Siphon Pipe - DuroMaxx Type	L.S.	XXX	All Req'd	_____
BID ALTERNATE B - SIPHON PIPE - WEHOLITE TYPE					
6.	Siphon Pipe - Weholite Type	L.S.	XXX	All Req'd	_____
BID ALTERNATE C - SIPHON PIPE - FIBERGLASS TYPE					
6.	Siphon Pipe - Fiberglass Type	L.S.	XXX	All Req'd	_____
DEDUCTIVE BID OPTION					
14A.	Partial Demolition by Owner	L.S.	XXX	All Req'd	_____

5.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. A completed First-Tier Subcontractor Disclosure Form (see instructions on the form).

C. A completed and signed Bidder's Performance and Payment Bond Statement.

D. A completed and signed Bidder's Certification Statement as required by certain Oregon Revised Statutes (ORS).

7.02 A. The following shall be submitted by the apparent lowest responsible bidder prior to award.

1. Subcontractor list

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

Bidder is: ☐ An Individual ☐ A Partnership ☐ A Corporation ☐ Joint Venture

(Check correct designation.)

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

State Contractor License No. _____

Employer's Federal Tax ID No. _____

A Joint Venture requires the signature of all parties involved. Attach evidence of authority to sign.

_____ _____

_____ _____

_____ _____

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:

Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

BID

Bid Due Date:

Description *(Project Name - Include Location)*:

C-Flume Replacement - 2016
Klamath Falls, Oregon

BOND

Bond Number:

Date:

Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

---

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

BIDDER'S PERFORMANCE AND PAYMENT BOND STATEMENT

(Name of Contractor) _____, hereinafter referred to as Bidder, is submitting a Bid to **Klamath Irrigation District** pursuant to the latter's Advertisement for Bids for the Project **C-Flume Replacement - 2016**.

Bidder certifies that if it is awarded the Contract, Bidder has the financial ability to obtain good and sufficient bonds issued by a surety to the Owner in sums equal to the amount of the Bid providing for the faithful performance of the Contract and payment of labor and materials.

The surety requested to issue the Performance and Payment Bonds will be

_____. Bidder hereby authorizes
(Surety Company)

_____ to disclose any information
(Surety Company)

to the Owner concerning Bidder's ability to supply Performance and Payment Bonds in the amount of the Contract.

_____
Bidder

_____
By:

BIDDER'S CERTIFICATION STATEMENTS AS REQUIRED BY

CERTAIN OREGON REVISED STATUTES (ORS)

The Bidder, _____, certifies to the following:
(Company Name)

(1) Bidder is registered with the Oregon Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055. The Bidder certifies that Registration Number _____ allows his/her company to perform Work on Public Works Projects and that this registration is current and valid. The Bidder further certifies that, if awarded the Contract, all Subcontractors performing Work will be registered with the Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055 before the Subcontractors commence Work under the Contract (reference ORS 279C.365).

(2) Bidder agrees to be bound by and will comply with the provisions of the Oregon Prevailing Wage Law (ORS 279C.800 through ORS 279C.870 and OAR 839-25) and, if applicable, the federal Davis-Bacon Act (40USC1371-1377), which provides for payment of not less than the applicable prevailing wage rate (state or federal, whichever is greater), including fringe benefits, the posting of wage rates on the jobsite, the furnishing of payroll certifications, and other requirements. In addition, the Bidder will comply with ORS 279C.520 and 279C.540 in the hours of employment and the payment of overtime.

(3) Bidder is in compliance with State of Oregon tax laws in accordance with ORS 305.385.

(4) Bidder, in accordance with ORS 279A.110, does not discriminate against minorities, women, or emerging small business enterprises in obtaining any subcontracts (reference ORS 279A.110).

(5) Bidder is a [*Non-resident Bidder*] or [*Resident Bidder*] **(circle correct designation)** as defined in ORS 279A.120. "Resident Bidder" means a Bidder that has paid unemployment taxes or income taxes in the State of Oregon during the 12 calendar months immediately preceding submission of the Bid and has a business address in the State of Oregon (reference ORS 279C.365).

(6) Bidder and Bidder's Subcontractors are not on the Oregon Construction Contractors Board list of corporations, partnerships, or other business entity of which the Contractor or Subcontractor is an owner, shareholder, or officer of the business or was an owner or officer of the business and who have been determined not to be qualified to hold or participate in a public contract for a public improvement.

(7) Bidder has an employee drug testing program that meets state and federal standards (reference ORS 279C.505).

Bidder: _____
(Signature)

Title: _____

Date: _____

Project: **Klamath Irrigation District**
C-Flume Replacement - 2016

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM - REVISED FOR ADDENDUM NO. 3
(OAR 137-049-0360)

PROJECT NAME: Klamath Irrigation District - C-Flume Replacement - 2016

BID CLOSING:	**Date: May 10, 2016**	**Time: 2:00 PM (Local Time)**
DISCLOSURE DEADLINE:	**Date: May 10, 2016**	**Time: 4:00 PM (Local Time)**
BID OPENING:	**Date: May 10, 2016**	**Time: 2:00 PM (Local Time)**

This form must be submitted within two (2) working hours after the advertised Bid closing date and time, no later than the DISCLOSURE DEADLINE stated above. Working hours include the hours between 8 a.m. and 5 p.m.

List below the Name, Address, Type of Work Performed, Contact Name, and Telephone Number of each Subcontractor who will be furnishing labor or labor and materials that are required to be disclosed. Enter "NONE" if there are no Subcontractors who need to be disclosed. **(IF NEEDED, ATTACH ADDITIONAL SHEETS.)**

	NAME/ADDRESS	TYPE OF WORK PERFORMED	DOLLAR AMOUNT OF WORK	CONTACT NAME/ PHONE #
1)				
2)				
3)				

The above listed first-tier Subcontractor(s) are providing labor or labor and materials with a Dollar Value equal to or greater than:

a) Five (5) percent of the total Contract Price, but at least $15,000 (including all alternates). If the Dollar Value is less than $15,000, do not list the Subcontractor above; or

b) $350,000 regardless of the percentage of the total Contract Price.

FAILURE TO SUBMIT THIS FORM BY THE DISCLOSURE DEADLINE WILL RESULT IN A BID SUBMITTED BECOMING NON-RESPONSIVE, AND SUCH BIDS SHALL NOT BE CONSIDERED FOR AWARD!

Form Submitted By (Bidder Name): _____ _____

Contact Name: _____ Phone #: _____

Deliver Form to Owner: **Klamath Irrigation District**

Person Designated to Receive Form: **Darin Kandra** Phone #: **541-882-6661**

Owner's Address: **6640 KID Lane, Klamath Falls, Oregon 97603**

IT IS THE RESPONSIBILITY OF BIDDERS TO SUBMIT THIS DISCLOSURE FORM AND ANY ADDITIONAL SHEETS, WITH THE PROJECT NAME CLEARLY MARKED, AT THE LOCATION INDICATED BY THE SPECIFIED DISCLOSURE DEADLINE. SEE INSTRUCTIONS TO BIDDERS.

INSTRUCTIONS FOR
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

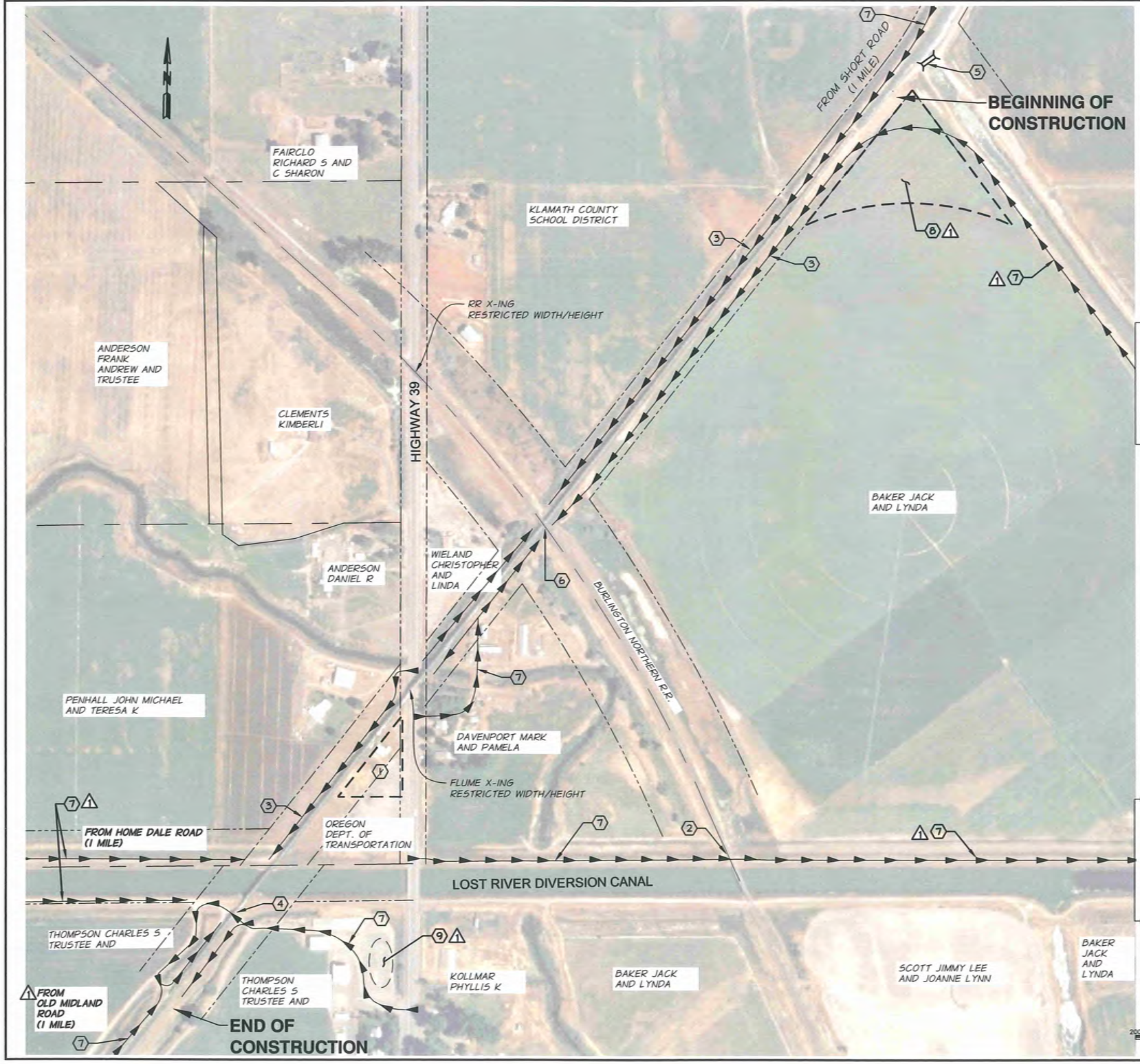
1. This form must be submitted within two (2) working hours of the advertised Bid closing date and time. (See disclosure deadline on Disclosure Form and location where form must be submitted.) Working hours include the hours between 8 a.m. and 5 p.m., excluding the noon hour.

2. This form may be submitted to the Owner by one of three means:

    a. Include the completed form in the envelope containing the Bid, and note on the outside of the envelope that the form is included.
    b. Submit the completed form to the Owner separately from the Bid, within the time required, to the address listed on the form.
    c. Fax the completed form to the fax number shown on the form.

3. Reference ARTICLE 22 in the Instructions to Bidders for further instructions relative to this disclosure.

NOTE: It shall be the Bidder's sole responsibility to ensure the form is delivered to the Owner within the required deadline. The Owner assumes no liability for a malfunction of the Owner's equipment or for any other cause. The resulted failure of the Owner to receive the Disclosure Form due to fax problems or any other problem will not relieve the Bidder from meeting the deadline.



ACCESS NOTES

1. STAGING AREA. SEE ODOT PERMIT #11M36741 TO OCCUPY OR PERFORM OPERATIONS UPON A STATE HIGHWAY.
2. AT GRADE RAILROAD X-ING. CONSULT BURLINGTON NORTHERN FOR ACCESSIBILITY AND POSSIBLE LOAD RESTRICTIONS.
3. CONSTRUCT TEMPORARY CONSTRUCTION ACCESS.
4. FLUME UNDER CROSSING (LIMITED CLEARANCE, MINIMIZE USE).
5. SMALL BRIDGE, LIGHT VEHICLE TRAFFIC ONLY. ACCESS FROM SHORT ROAD (1 MILE NORTH). **CAN BE UPGRADED BY CONTRACTOR TEMPORARY OR PERMANENT.**
6. WIDTH RESTRICTED UNDERNEATH RAILROAD CROSSING.
7. USE EXISTING ROADWAY, MAINTAIN AS REQUIRED. **GRAVEL TO REMAIN.**
8. TEMPORARY CONSTRUCTION **STAGING:**
   - REMOVE TOPSOIL MATERIAL
   - CONSTRUCT TEMPORARY ROAD/**STAGING**
   - RESTORE TO EXISTING CONDITIONS

   (IE - FARMABLE - MAY REQUIRE TILL/DISKING)
9. **TEMPORARY CONSTRUCTION STAGING (± 1/2 ACRE) GRAVEL TO REMAIN AFTER CONSTRUCTION**

1. IF IMPROVEMENTS ARE REQUIRED OUTSIDE OF USBR RIGHT-OF-WAY OR OTHER PRE-APPROVED AREAS NOTIFY THE PROJECT ENGINEER IMMEDIATELY.
2. OVERHEAD AND UNDERGROUND UTILITIES NOT SHOW HERE. VERIFY CLEARANCES ONSITE PRIOR TO MOBILIZATION AND CONSTRUCTION.

LEGEND

- TEMPORARY ACCESS ROUTE
- RAILROAD
- USBR OR ODOT RIGHT-OF-WAY
- STAGING AREA

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS 5/5/16

RENEWS 12-31-16

THIS DRAWING HAS BEEN REDUCED 50%. ADJUST SCALE ACCORDINGLY. BARSCALE SHOWN IS ACCURATE.

No.	REVISION	DATE	BY
1	ADDENDUM 3		

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ACCESS PLAN

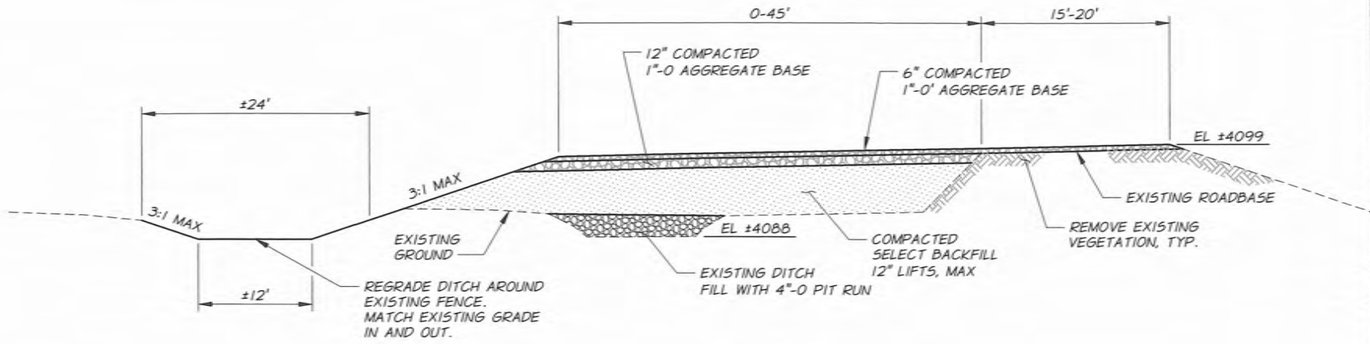
anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Eugene ▲ Portland ▲ Medford ▲ Klamath Falls
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

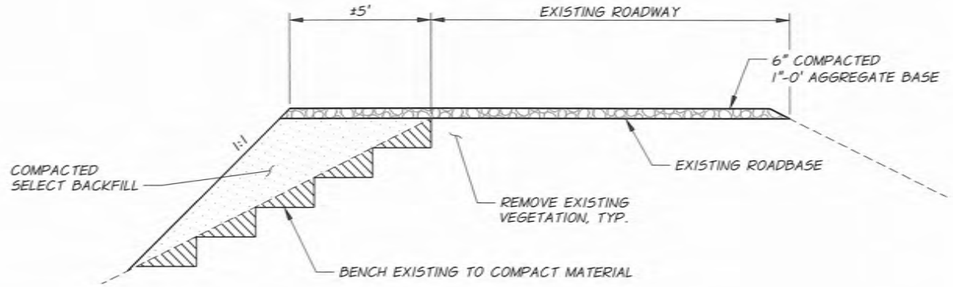
DATE:	May 5, 2016
PROJECT:	462-00
FILE:	ACCESS PLAN.DWG
DESIGNED BY:	ACE
DRAWN BY:	BLP
CHECKED BY:	JDM

SHEET 8 OF 79

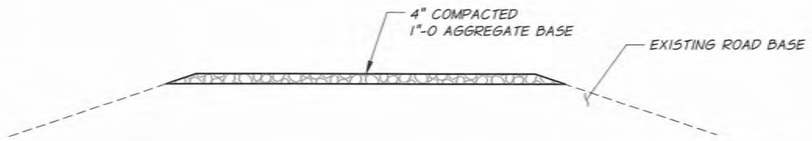
G7



SECTION A
CORNER WIDENING
SCALE: 1/8"=1'-0"



SECTION B
ACCESS ROAD WIDENING
SCALE: 3/8"=1'-0"



SECTION C
ACCESS ROAD SURFACING
SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
5/5/16
RENEWS 12-31-16

100 0 100 200 300
SCALE IN FEET

THIS DRAWING HAS BEEN REDUCED 50%.
ADJUST SCALE ACCORDINGLY.
BARSCALE SHOWN IS ACCURATE.

No.	REVISION	DATE	BY
1	ADDENDUM 3		

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

ACCESS PLAN

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers · Planners · Surveyors
Klamath Falls, Medford
2950 Shasta Way · Klamath Falls, OR 97603
(541) 884-4666 · FAX (541) 884-5335

DATE: May 5, 2016
PROJECT: 462-00
FILE: ACCESS PLAN.DWG
DESIGNED BY: ACE
DRAWN BY: BLP
CHECKED BY: JDM

SHEET 8 OF 79

G7A

C:\AP WORK\KLAM\462-00\C Flume Replacement\dwg\ACCESS PLAN.dwg, Layout1 (2), 5/5/2016 8:17:49 AM, lwilhite

EROSION CONTROL NOTES

1. INSTALL SILT FENCE PER DETAIL 1, SHEET EC2.
2. INSTALL CONSTRUCTION ENTRANCE PER DETAIL 2, SHEET EC2.
3. APPROXIMATE LOCATION OF TIRE WASH (SEE DETAIL 3, EC2). PROVIDE CLEAN GRAVEL ACCESS FROM TIRE WASH TO PAVED ROADWAYS. TRACK-OUT IS NOT PERMITTED.

GENERAL NOTES

1. RESTORE ALL AREAS ADJACENT TO THE WORK AREA TO AN EQUIVALENT OR BETTER CONDITION THAT EXISTED PRIOR TO CONSTRUCTION.
2. THE ESCP REQUIREMENTS SHOWN ARE FOR ANTICIPATED SITE CONDITIONS METHODS AND SEQUENCING. **SEE NPDES 1200CA PERMIT (APPENDIX B-CONTRACT DOCS) FOR ADDITIONAL REQUIREMENTS.**
3. COORDINATE CONCRETE WASHOUT LOCATION WITH THE ENGINEER AND OWNER IN FIELD.

LEGEND

- SILT FENCE
- RAILROAD
- USBR OR ODOT RIGHT-OF-WAY
- TEMPORARY ACCESS ROADS, SEE SHEET G7

No.	REVISION	DATE	BY
2	ADDENDUM 2		

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

EROSION CONTROL PLAN

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR · WALLA WALLA, WA

ADKINS CONSULTING ENGINEERING, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford
2950 Shasta Way • Klamath Falls, OR 97603
(541) 884-4666 • FAX (541) 884-5535

REGISTERED PROFESSIONAL ENGINEER
74933PE
OREGON
JUL. 13, 2004
JEREMY DAVID MORRIS
RENEWS 12-31-16

DATE:	May 5, 2016
PROJECT:	462-00
FILE:	EC PLAN.DWG
DESIGNED BY:	JDM
DRAWN BY:	
CHECKED BY:	JDM

THIS DRAWING HAS BEEN REDUCED 50%. ADJUST SCALE ACCORDINGLY. BARSCALE SHOWN IS ACCURATE.

EC1

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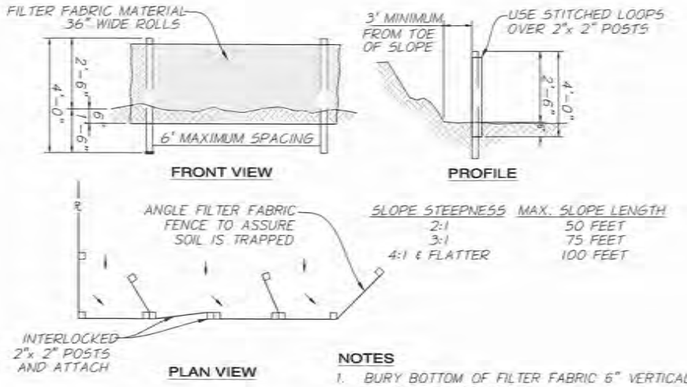
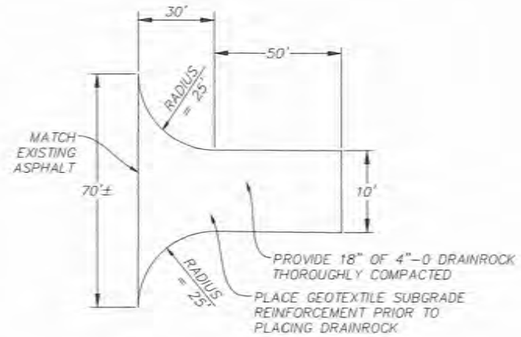


NOTES

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.

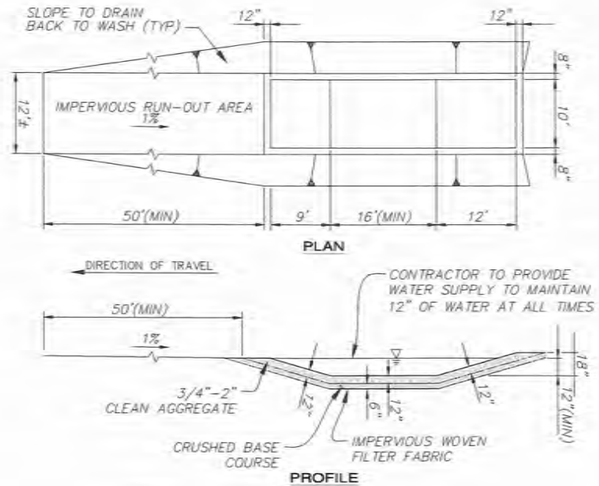
1 EC2 **SILT FENCE DETAIL** N.T.S.



NOTE

1. TIRE WASH MAY BE REQUIRED IF CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.

2 EC2 **CONSTRUCTION ENTRANCE DETAIL** N.T.S.



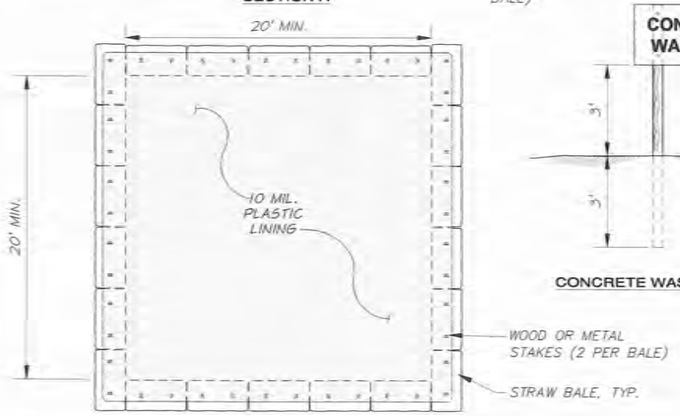
NOTES

1. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH AS REQUIRED.
2. USE WOVEN IMPERMEABLE GEOTEXTILE FABRIC BETWEEN 6" BASE COURSE AND 12" TOP COURSE.
3. TIRE WASH REQUIRED IF STABILIZED CONSTRUCTION ENTRANCE DOES NOT PREVENT TRACKING.
4. IF UTILIZED, CONTRACTOR MUST MAINTAIN A CLEAN GRAVEL ROAD FROM THE TIRE WASH TO THE CONSTRUCTION ENTRANCE.

3 EC2 **TIRE WASH DETAIL** N.T.S.

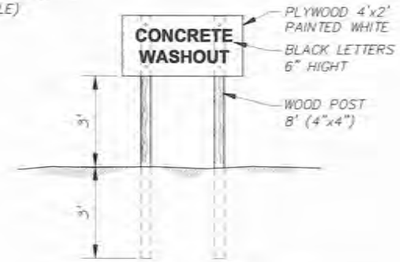
STAPLE DETAIL

SECTION A



PLAN

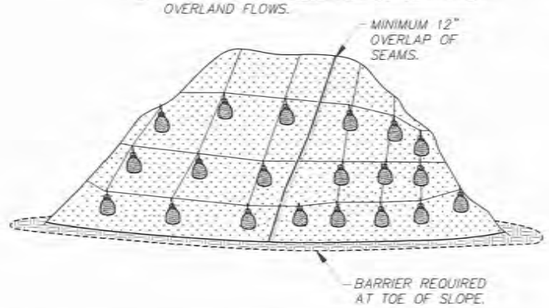
NOTES:
CONTRACTOR TO COORDINATE LOCATION OF WASH OUTS WITH ENGINEER IN THE FIELD.



CONCRETE WASHOUT SIGN DETAIL

1 EC2 **CONCRETE WASHOUT AREA DETAILS** N.T.S.

NOTES:
1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER REQUIRED AT TOE OF STOCK PILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.
4. INSPECT DAILY FOR WIND DAMAGE AND IMMEDIATELY REPAIR ANY TEARS OR RIPS IN SHEETING.
5. PROTECT STOCK PILES FROM CONCENTRATED OVERLAND FLOWS.



1 EC2 **PLASTIC SHEETING STOCKPILE COVERING** N.T.S.

EROSION CONTROL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ESCP REQUIREMENTS FOUND IN NPDES 1200A PERMIT (SEE APPENDIX B – CONTRACT DOCUMENTS). THIS PLAN IS MEANT TO PROVIDE GENERAL GUIDANCE TO THE CONTRACTOR AND IS NOT TO BE CONSIDERED A REPLACEMENT FOR THE NPDES 1200CA PERMIT REQUIREMENTS.
2. CONTRACTOR IS REQUIRED TO SUBMIT A COMPLETE ESCP IN ACCORDANCE WITH THE NPDES 1200CA PERMIT (SEE APPENDIX B – CONTRACT DOCUMENTS).
3. CONTRACTOR SHALL KEEP A COPY OF THE APPROVED ESCP ON-SITE AT ALL TIMES.
4. IF INSPECTION BY THE ENGINEER, OWNER, OR B.O.R. REVELS THAT APPROVED ESC METHODS ARE IN-ADEQUATE, THE CONTRACTOR MAY BE DIRECTED TO MODIFY ESC METHODS UNTIL THE DESIRED EROSION OR SEDIMENT CONTROL IS ACHIEVED.

REGISTERED PROFESSIONAL ENGINEER 74933PE OREGON JUL. 13, 2004 JEREMY DAVID MORRIS 5/5/16

RENEWS 12-31-16

THIS DRAWING HAS BEEN REDUCED 50%. ADJUST SCALE ACCORDINGLY. BARSCALE SHOWN IS ACCURATE.

C-FLUME REPLACEMENT
KLAMATH FALLS, OR
FOR
KLAMATH IRRIGATION DISTRICT

No.	REVISION	DATE
2	ADDENDUM 2	

EROSION CONTROL DETAILS

anderson perry & associates, inc.
engineering · surveying · natural resources
LA GRANDE, OR. WALLA WALLA, WA.

ADKINS
ENGINEERS, LLP
Engineers ▲ Planners ▲ Surveyors
Klamath Falls · Madras
1950 Shasta Way · Klamath Falls, OR 97603
(541) 884-8666 · FAX (541) 884-8338

DATE: May 5, 2016
PROJECT: 462-00
FILE: EC PLAN.DWG
DESIGNED BY: JDM
DRAWN BY:
CHECKED BY: JDM

EC2

C:\AP WORK\KID\462-00_C Flume Replacement\dwg\EC PLAN.dwg, EC2, 5/5/2016 10:58:18 AM, lwillhite

ADDENDUM NO. 4

To the Bidding Documents and Contract Documents

KLAMATH IRRIGATION DISTRICT
C-FLUME REPLACEMENT - 2016

May 6, 2016

Original Bid Date: April 25, 2016
Revised Bid Date: May 10, 2016
Bid Closing: 2:00 p.m.
Bid Opening: 2:00 p.m.
Disclosure Deadline: 4:00 p.m.

The following additions, deletions, and modifications shall be made to the Bidding Documents and Contract Documents.

I. TECHNICAL SPECIFICATIONS

1. **SECTION 9 EXCAVATION AND BACKFILL OF TRENCHES, PART 2 - MATERIALS, 2.3 Select Backfill, A., page 9-3.** Delete this paragraph in its entirety and replace it with the following:

   A. Select backfill shall consist of material excavated from the trench. Select backfill material shall be free of vegetative matter, boulders (4-inch plus), frozen material, saturated material, and any other unsuitable material, and shall have a moisture content that will allow for the required compaction of the select backfill material. Use of backfill material containing consolidated masses 4-inch in diameter or greater is prohibited.

II. DRAWINGS

A. SHEET EP3.

1. Add the following sentence to the "Finishing" section of the Pier General Notes:

   All piles exposed to air and/or water in their final (post-construction) configuration shall be prep'd/coated/painted in conformance with pipe coating/painting specifications.

2. Add the following sentence to Note 2 in the table:

   1-inch thick steel plate or an approved cast steel point shall be welded in place on closed ended piles.

3. Add the following sentence to Note 3 in the table:

   1/2-inch thick steel baffle plates to be installed 5 feet from top of piles and 25 feet from pile tip. Plates shall be welded in place in accordance with the Technical Specifications.

4. Add the following Note 4 to the table:

   4. Piles are not required to be filled with concrete except the upper 5 feet.

- END OF ADDENDUM NO. 4 -

BIDDER'S PACKET

KLAMATH IRRIGATION DISTRICT

C-FLUME REPLACEMENT

2016

ADKINS
CONSULTING ENGINEERING
Engineers ▲ Planners ▲ Surveyors
Klamath Falls • Medford

anderson perry & associates, inc.
engineering • surveying • natural resources
LA GRANDE, OR. WALLA WALLA, WA. PRINEVILLE, OR.

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BID FORM - REVISED FOR ADDENDUM NO. 3

Klamath Irrigation District

C-Flume Replacement - 2016

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date
001	4-19-16
002	5-3-16
003	5-5-16
004	5-6-16

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of

such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BID SCHEDULE

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

NO.	ITEM	UNIT	UNIT PRICE	AMOUNT	TOTAL PRICE
1.	Mobilization/Demobilization (not to exceed 5% of Total Bid Price)	L.S.	XXX	All Req'd	430,000.00
2.	Temporary Protection and Direction of Traffic	L.S.	XXX	All Req'd	86,000.00
3.	Project Safety	L.S.	XXX	All Req'd	100,000.00
4.	Temporary Environmental Controls	L.S.	XXX	All Req'd	237,700.00
5.	Temporary Access Roads	L.S.	XXX	All Req'd	156,400.00
6.	Siphon Pipe - Steel Type	L.S.	XXX	All Req'd	3,502,100.00
7.	Elevated Steel Pipe	L.S.	XXX	All Req'd	1,825,557.00
8.	Lost River Diversion Crossing	L.S.	XXX	All Req'd	592,000.00
9.	Inlet Transition Structure	L.S.	XXX	All Req'd	454,700.00
10.	Outlet Transition Structure	L.S.	XXX	All Req'd	357,700.00
11.	Highway 39 Crossing	L.S.	XXX	All Req'd	250,000.00
12.	Steel Piles	L.F.	160.00 PER FT	1,168	186,880.00
13.	Turnouts	L.S.	XXX	All Req'd	416,000.00
14.	Demolition	L.S.	XXX	All Req'd	415,600.00
15.	Permanent Access Road	L.S.	XXX	All Req'd	57,600.00
16.	Surface Restoration	L.S.	XXX	All Req'd	25,000.00
				TOTAL BASE BID PRICE	$9,093,237.00
BID ALTERNATE A - SIPHON PIPE - DUROMAXX TYPE					
6.	Siphon Pipe - DuroMaxx Type	L.S.	XXX	All Req'd	2,903,524.00
BID ALTERNATE B - SIPHON PIPE - WEHOLITE TYPE					
6.	Siphon Pipe - Weholite Type	L.S.	XXX	All Req'd	3,065,629.00
BID ALTERNATE C - SIPHON PIPE - FIBERGLASS TYPE					
6.	Siphon Pipe - Fiberglass Type	L.S.	XXX	All Req'd	4,481,879.00
DEDUCTIVE BID OPTION					
14A.	Partial Demolition by Owner	L.S.	XXX	All Req'd	75,000.00

5.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. A completed First-Tier Subcontractor Disclosure Form (see instructions on the form).

C. A completed and signed Bidder's Performance and Payment Bond Statement.

D. A completed and signed Bidder's Certification Statement as required by certain Oregon Revised Statutes (ORS).

7.02 A. The following shall be submitted by the apparent lowest responsible bidder prior to award.

1. Subcontractor list

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

Bidder is: ☐ An Individual ☐ A Partnership ☒ A Corporation ☐ Joint Venture

(Check correct designation.)

BIDDER: *[Indicate correct name of bidding entity]*

R+G Excavating Inc.

By:
[Signature] Del Bibler

[Printed name] Del Bibler

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] Sheri Zellner

[Printed name] Sheri Zellner

Title: Corp. Secretary

Submittal Date: May 10, 2016

Address for giving notices:

R+G Excavating Inc.
39300 Montgomery Dr.
Scio OR 97374

Telephone Number: 503-394-2190

Fax Number: 503-394-2169

Contact Name and e-mail address: Del Bibler
RandGbids@aol.com

State Contractor License No. 165135

Employer's Federal Tax ID No. 93-0954235

A Joint Venture requires the signature of all parties involved. Attach evidence of authority to sign.

n/a

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:
R & G Excavating, Inc.
39300 Montgomery Dr.
Scio, OR 97302

SURETY *(Name, and Address of Principal Place of Business)*:
Liberty Mutual Insurance Company
175 Berkeley St., Boston, MA 02116

OWNER *(Name and Address)*:
Klamath Irrigation District
6640 KID Lane
Klamath Falls, Oregon 97603

BID
Bid Due Date: May 10th, 2016
Description *(Project Name - Include Location)*:
C-Flume Replacement - 2016
Klamath Falls, Oregon

BOND
Bond Number: N/A
Date: May 6th, 2016
Penal sum --Five Percent of the Total Amount Bid-- $--(5%)--
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
R & G Excavating, Inc. (Seal)	Liberty Mutual Insurance Company (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: Del Bibler	By: Ty Moffett
Signature	Signature (Attach Power of Attorney)
Del Bibler	Ty Moffett
Print Name	Print Name
Vice President	Attorney-in-Fact
Title	Title
Attest: [signature]	Attest: Melissa Brechlin
Signature	Signature
Title Corp. Secretary	Title Witness

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7214640

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, A. G. Sadowski; Derek A. Sadowski; Kathleen M. Sadowski; Ty Moffett

all of the city of Salem, state of OR each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 21st day of December, 2015.

American Fire and Casualty Company
The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 21st day of December, 2015, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2016.

By: _____
Gregory W. Davenport, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, rate or residual guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

LMS_12873_122013

BIDDER'S PERFORMANCE AND PAYMENT BOND STATEMENT

(Name of Contractor) R+G Excavating Inc., hereinafter referred to as Bidder, is submitting a Bid to **Klamath Irrigation District** pursuant to the latter's Advertisement for Bids for the Project **C-Flume Replacement - 2016**.

Bidder certifies that if it is awarded the Contract, Bidder has the financial ability to obtain good and sufficient bonds issued by a surety to the Owner in sums equal to the amount of the Bid providing for the faithful performance of the Contract and payment of labor and materials.

The surety requested to issue the Performance and Payment Bonds will be

Liberty Mutual Insurance Co. . Bidder hereby authorizes
(Surety Company)

Liberty Mutual Insurance Co. to disclose any information
(Surety Company)

to the Owner concerning Bidder's ability to supply Performance and Payment Bonds in the amount of the Contract.

R+G Excavating Inc.
Bidder

By:

BIDDER'S CERTIFICATION STATEMENTS AS REQUIRED BY

CERTAIN OREGON REVISED STATUTES (ORS)

The Bidder, R+G Excavating Inc., certifies to the following:
(Company Name)

(1) Bidder is registered with the Oregon Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055. The Bidder certifies that Registration Number 60135 allows his/her company to perform Work on Public Works Projects and that this registration is current and valid. The Bidder further certifies that, if awarded the Contract, all Subcontractors performing Work will be registered with the Construction Contractors Registration Board in accordance with ORS 701.035 through 701.055 before the Subcontractors commence Work under the Contract (reference ORS 279C.365).

(2) Bidder agrees to be bound by and will comply with the provisions of the Oregon Prevailing Wage Law (ORS 279C.800 through ORS 279C.870 and OAR 839-25) and, if applicable, the federal Davis-Bacon Act (40USC1371-1377), which provides for payment of not less than the applicable prevailing wage rate (state or federal, whichever is greater), including fringe benefits, the posting of wage rates on the jobsite, the furnishing of payroll certifications, and other requirements. In addition, the Bidder will comply with ORS 279C.520 and 279C.540 in the hours of employment and the payment of overtime.

(3) Bidder is in compliance with State of Oregon tax laws in accordance with ORS 305.385.

(4) Bidder, in accordance with ORS 279A.110, does not discriminate against minorities, women, or emerging small business enterprises in obtaining any subcontracts (reference ORS 279A.110).

(5) Bidder is a [*Non-resident Bidder*] or [*Resident Bidder*] **(circle correct designation)** as defined in ORS 279A.120. "Resident Bidder" means a Bidder that has paid unemployment taxes or income taxes in the State of Oregon during the 12 calendar months immediately preceding submission of the Bid and has a business address in the State of Oregon (reference ORS 279C.365).

(6) Bidder and Bidder's Subcontractors are not on the Oregon Construction Contractors Board list of corporations, partnerships, or other business entity of which the Contractor or Subcontractor is an owner, shareholder, or officer of the business or was an owner or officer of the business and who have been determined not to be qualified to hold or participate in a public contract for a public improvement.

(7) Bidder has an employee drug testing program that meets state and federal standards (reference ORS 279C.505).

Bidder: _____
(Signature)

Title: Vice President

Date: May 10, 2016

Project: **Klamath Irrigation District**
C-Flume Replacement - 2016

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM - REVISED FOR ADDENDUM NO. 3
(OAR 137-049-0360)

PROJECT NAME: Klamath Irrigation District - C-Flume Replacement - 2016

BID CLOSING:	**Date: May 10, 2016**	**Time: 2:00 PM (Local Time)**
DISCLOSURE DEADLINE:	**Date: May 10, 2016**	**Time: 4:00 PM (Local Time)**
BID OPENING:	**Date: May 10, 2016**	**Time: 2:00 PM (Local Time)**

This form must be submitted within two (2) working hours after the advertised Bid closing date and time, no later than the DISCLOSURE DEADLINE stated above. Working hours include the hours between 8 a.m. and 5 p.m.

List below the Name, Address, Type of Work Performed, Contact Name, and Telephone Number of each Subcontractor who will be furnishing labor or labor and materials that are required to be disclosed. Enter "NONE" if there are no Subcontractors who need to be disclosed. **(IF NEEDED, ATTACH ADDITIONAL SHEETS.)**

	NAME/ADDRESS	TYPE OF WORK PERFORMED	DOLLAR AMOUNT OF WORK	CONTACT NAME/ PHONE #
1)	NONE			
2)				
3)				

The above listed first-tier Subcontractor(s) are providing labor or labor and materials with a Dollar Value equal to or greater than:

a) Five (5) percent of the total Contract Price, but at least $15,000 (including all alternates). If the Dollar Value is less than $15,000, do not list the Subcontractor above; or

b) $350,000 regardless of the percentage of the total Contract Price.

FAILURE TO SUBMIT THIS FORM BY THE DISCLOSURE DEADLINE WILL RESULT IN A BID SUBMITTED BECOMING NON-RESPONSIVE, AND SUCH BIDS SHALL NOT BE CONSIDERED FOR AWARD!

Form Submitted By (Bidder Name): R+G Excavating Inc.

Contact Name: Del Bibler Phone #: 503-394-2190

Deliver Form to Owner: **Klamath Irrigation District**

Person Designated to Receive Form: **Darin Kandra** Phone #: **541-882-6661**

Owner's Address: **6640 KID Lane, Klamath Falls, Oregon 97603**

IT IS THE RESPONSIBILITY OF BIDDERS TO SUBMIT THIS DISCLOSURE FORM AND ANY ADDITIONAL SHEETS, WITH THE PROJECT NAME CLEARLY MARKED, AT THE LOCATION INDICATED BY THE SPECIFIED DISCLOSURE DEADLINE. SEE INSTRUCTIONS TO BIDDERS.

R & G Excavating
39300 Montgomery Dr.
Scio, OR 97374
Office: (503) 394-2190
Fax: (503) 394-2169

AFFIDAVIT OF AUTHORITY TO SIGN FOR A CORPORATION

DATE: August 13, 2013

We, *R&G Excavating, Inc., 39300 Montgomery DR, Scio, OR 97374* certify that Gary Zellner, Del Bibler, and Sharon Zellner have the authority to execute contract agreements, bid bonds, performance bonds, payment bonds and loan agreements.

Gary Zellner, President

Del Bibler, Vice President

Sharon Zellner, Secretary

MINUTES OF THE ANNUAL MEETING OF THE SHAREHOLDERS
OF
R & G EXCAVATING, INC.

Pursuant to waiver of notice of meeting, the annual meeting of the shareholders of R & G EXCAVATING, INC., an Oregon corporation, was held on January 4, 1992. Present and voting were, all of the shareholders of the corporation.

The meeting was called to order by Gary L. Zellner, who acted as chairman and kept the minutes.

The chairman proposed that 10 shares of stock be issued by the Corporation be issued to Stephen Zellner, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that 10 shares of stock be authorized to be issued to Stephen Zellner.

The chairman proposed that 10 shares of stock be issued by the Corporation be issued to Delmar Bibler, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that 10 shares of stock be authorized to be issued to Delmar Bibler.

The chairman proposed that the Board of Directors be increased from one (1) director to three (3) directors, whereupon the following resolution was made and unanimously adopted.

> RESOLVED, that the Board of Directors be increased from one (1) director to three (3) directors.

The chairperson proposed that Delmar Bibler be elected as Vice-President of this corporation, whereupon the following resolution was made and unanimously adopted:

> RESOLVED, that Delmar Bibler be elected as Vice-President of this corporation.

The chairperson proposed that Stephen J. Zellner be elected as Secretary of this corporation, whereupon the following resolution was made and unanimously adopted:

> RESOLVED, that Stephen J. Zellner be elected as Secretary of this corporation.

W. WALLACE OGDAHL • Attorney at Law
515 High St. SE • PO Box 843 • Salem, OR 97308
(503) 399-9511 • Fax (503) 399-7904

There being no further business to come before the meeting, the same was adjourned.

SECRETARY

NOTICE OF THE ABOVE MEETING WAIVED AND ALL ACTIONS TAKEN THERE ARE HEREBY CONSENTED TO:

Gary L. Zellner, Shareholder

Delmar Bibler, Shareholder

Stephen J. Zellner, Shareholder

W. WALLACE OGDAHL · Attorney at Law
515 High St. SE · PO Box 843 · Salem, OR 97308
(503) 399-9511 · Fax (503) 399-7904