UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Klamath River Renewal Corporation
PacifiCorp
Project Nos. 14803-001; 2082-063

AMENDED APPLICATION FOR SURRENDER OF LICENSE
FOR MAJOR PROJECT AND REMOVAL OF PROJECT WORKS

EXHIBIT R
100% Design Report
(Part 4 of 12)
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EXHIBIT R-5
Fall Creek Hatchery
(continued)
Fall Creek Hatchery 100% Design Drawings
KLAMATH RIVER RENEWAL CORPORATION

FALL CREEK FISH HATCHERY

ISSUED FOR CONSTRUCTION

LOCATION MAP

VICINITY MAP

SITE MAP
OVERALL PLAN AND PROJECT CONTROL

Scale: 1" = 30'

NOTE: * INDICATES CONTROL POINT OUTSIDE OF DRAWING AREA AND NOT SHOWN.

SURVEY CONTROL POINT TABLE

<table>
<thead>
<tr>
<th>POINT</th>
<th>NORTHING</th>
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SURVEY CONTROL POINT TABLE

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</tr>
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</table>

WARNING

IF THIS BAR IS NOT INSTALLED IN PROPER LOCATION, IT WILL NOT WORK AS DESIGNED.

IN THIS DRAWING, "SH" INDICATES "WATER CONTACT".
SUPPLY DESIGN CRITERIA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
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<tbody>
<tr>
<td>INTAKE SCREEN PERCENT OPEN AREA</td>
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<tr>
<td>INTAKE SCREEN PERCENT OCCUPIED</td>
<td>80%</td>
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<tr>
<td>INTAKE LOSSES</td>
<td>0.21 ft</td>
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<tr>
<td>SUPPLY PIPING HAZEN-WILLIAMS COEFFICIENT</td>
<td>120</td>
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<tr>
<td>MAXIMUM WATER BIGHT</td>
<td>10 CFS</td>
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<tr>
<td>INTAKE PIPING MINIMUM ALLOWABLE VELOCITY</td>
<td>1.5 ft/s</td>
</tr>
<tr>
<td>INTAKE PIPING MAXIMUM ALLOWABLE VELOCITY</td>
<td>5.0 ft/s</td>
</tr>
</tbody>
</table>

SHEET NOTES:
1. DRAIN PIPING, WASTE DRAIN PIPING, UTILITY WATER PIPING, AND FISH RELEASE PIPING NOT SHOWN ON THIS SHEET FOR CLARITY.
2. SUPPLY PIPING HYDRAULICS WERE EVALUATED UNDER 5 DIFFERENT SCENARIOS TO ACCOUNT FOR CONTINGENCIES IN PIPE ROUGHNESS, OPERATIONAL CHANGES, ADDITIONAL INTAKE LOSSES, AND ALTERNATIVE MINOR LOSS ACCOUNTING. THE HYDRAULIC PROFILE OF THE PROPOSED SYSTEM WAS FOUND TO PROVIDE THE REQUIRED DESIGN FLOW TO ALL DEMAND NODES IN EACH OF THE SCENARIOS. REPORTS AND SURVEYS ON THE SHEET REFER TO THE SUPPLY PIPING HYDRAULICS EVALUATED ON THIS SHEET.
3. SUPPLY PIPING TO THE SPAWNING BUILDING IS USED FOR UTILITY WATER ONLY, AND THEREFORE IS NOT SHOWN ON THIS SHEET. SUPPLY TO THE SPAWNING BUILDING WILL BE TAPPED FROM THE ADULT HOLDING SUPPLY PIPE.
4. FLOW RATES INDICATED AS MAXIMA ARE ANNUAL MAXIMA BASED ON BIOPROGRAM DEMANDS FOR EACH OF THE FACILITIES. MAXIMUM FLOWS OCCUR AT DIFFERENT TIMES DURING THE YEAR. AT ALL TIMES DURING THE YEAR, BIOPROGRAM DEMANDS ARE WITHIN THE 10 CFS WATER RIGHT.
5. WATER SUPPLIED THROUGH DIFFUSER PLATE FROM CHINOOK AND COHO ADULT HOLDING POND OVERFLOW.

SCALE: NTS
### DRAY PIPING DESIGN CRITERIA

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Maximum Flow Depth - Inner Diameter</td>
<td>5%</td>
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<tr>
<td>Minimum Self-Cleaning Velocity</td>
<td>2.0 ft/s</td>
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<tr>
<td>Adult Holding Orifice Coefficient</td>
<td>0.42</td>
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<tr>
<td>Adult Holding Number of Orifices</td>
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</tr>
<tr>
<td>Pressure Pipe Roughness Coefficient</td>
<td>0.013</td>
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</table>

### SHEET NOTES

1. The design listed is maximum design flow. Flow depth corresponds to the maximum design flow.
2. All supply piping, waste, drain piping, utility water piping, and fish release piping not shown on this sheet for clarity.
3. Pipe inlet configurations at the Coho Area Raceways allow for sufficient airflow to aerate the upper reach of the drain system.
4. 24" Dr Chinook raceways drain pipes equipped with vent pipe and elbow that will serve to aerate the Chinook raceways drain and the trout units.
5. Pipe sizes at the adult holding ponds will induce the drain pipes to fill at approx EL 2506.00 when the full 10 CFS is conveyed by the pressure to the adult holding ponds. This will be the maximum elevation attained by the pressure flow, and for lower flow rates, this elevation will be slightly lower. In no case does the pressure flow cause an inundation of the upper site drain systems.

### ABBREVIATIONS

- S = Pipe Slope
- Q = Maximum Discharge
- d = Flow Depth

### DRAWING INSTRUCTIONS

- By Date
- Description
- Rev
- Drawing
- Checked
- Drawn
- Designed
- Project Date
WASTE DRAIN PIPING DESIGN CRITERIA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
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</thead>
<tbody>
<tr>
<td>Maximum Flow Depth - % Inner Diameter</td>
<td>75%</td>
</tr>
<tr>
<td>Minimum Self-Cleaning Velocity</td>
<td>2.0 FT/S</td>
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<tr>
<td>Design Setting Velocity</td>
<td>0.00151 FT/S</td>
</tr>
<tr>
<td>Cleaning Maximum Flow Rate, See Note 3</td>
<td>200 GPM</td>
</tr>
<tr>
<td>Setting Pond Weir Coefficient</td>
<td>3.33</td>
</tr>
<tr>
<td>Open Channel Pipe Roughness Coefficient</td>
<td>0.013</td>
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</table>

SHEET NOTES:
1. At each pond or vat a riser pipe will be provided at grade such that pond waste can be vacuumed to the waste drain system.
2. All supply piping, drain piping, utility waste piping, and fish release piping not shown on this sheet are for clarity.
3. Maximum cleaning rate is controlled by the size of the two settling pond bays, and therefore the pipeline was sized for this condition. It is assumed that this will allow for the operation of two vacuums simultaneously.
4. CHINOOK RACEWAYS WASTE DRAIN PIPE EQUIPPED WITH VENT PIPE TO EL 2506.00. CHINOOK RACEWAY WASTE DRAIN VENT PIPE SERVES TO VENTILATE THE WASTE DRAIN PIPE AND THE TRUNK LINE.
5. WASTE DRAIN PIPE DISCHARGES TO WET WELL WITH (2) SUBMERSIBLE NON-CLOG SUMP PUMPS. PUMP CONFIGURATION, START/STOPS, AND ALARMS ARE SHOWN ON SHEET M614.

ABBREVIATIONS:
S = PIPE SLOPE
Q = MAXIMUM DISCHARGE
d = FLOW DEPTH

WASTE DRAIN PIPING HYDRAULIC PROFILE

SCALE: NTS

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
### Commonly Used Functions

<table>
<thead>
<tr>
<th>Commonly Used Functions</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>DR</td>
<td>Drain</td>
</tr>
<tr>
<td>FR</td>
<td>Fish Release (Note 16)</td>
</tr>
<tr>
<td>SF</td>
<td>Ship Water</td>
</tr>
<tr>
<td>LW</td>
<td>Utility Water (Inst, Potable)</td>
</tr>
<tr>
<td>WT</td>
<td>Waste Drain</td>
</tr>
<tr>
<td>SWD</td>
<td>Storm Drain</td>
</tr>
<tr>
<td>SUC</td>
<td>Structural Undersink Collector</td>
</tr>
<tr>
<td>R</td>
<td>Refrigerant</td>
</tr>
</tbody>
</table>

### Fluid Abbreviation

<table>
<thead>
<tr>
<th>Fluid Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER (A)</td>
<td>Water</td>
</tr>
<tr>
<td>WATER (B)</td>
<td>Water</td>
</tr>
<tr>
<td>WATER (C)</td>
<td>Water</td>
</tr>
<tr>
<td>WATER (D)</td>
<td>Water</td>
</tr>
</tbody>
</table>

### Piping Material Group Function Shown Thus * Shall Be Insulated Per Specifications

### Typical Pipe Designation:

<table>
<thead>
<tr>
<th>Material Group Number</th>
<th>Material Group Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>High Density Polyethylene (HDPE) ASTM D3350 - DR26</td>
</tr>
<tr>
<td>B</td>
<td>Ductile Iron, ASME A21.51, Steel, ASTM A53, Schedule 40, Black Welded, Galvanized</td>
</tr>
<tr>
<td>C</td>
<td>Stainless Steel, Type 316, ASTM A312, Schedule 10S</td>
</tr>
<tr>
<td>D</td>
<td>Stainless Steel, Type 316 Welded Slip-On Flange, ASME B16.3 or Stainless Steel, Type 316 Welded Flanged Or Mechanical Couplings</td>
</tr>
<tr>
<td>E</td>
<td>High Density Polyethylene (HDPE) ASTM D3350 - DR26</td>
</tr>
<tr>
<td>F</td>
<td>Ductile Iron, ASME A21.51, Steel, ASTM A53, Schedule 40, Black Welded, Galvanized</td>
</tr>
<tr>
<td>G</td>
<td>Stainless Steel, Type 316 Welded Slip-On Flange, ASME B16.3 or Stainless Steel, Type 316 Welded Flanged Or Mechanical Couplings</td>
</tr>
</tbody>
</table>

### Field Test Requirements

1. **Leakage Allowance**
   - Leakage allowance is as follows:
   - Pipes so designated shall show zero leakage.
   - Pipes so designated shall show zero leakage for 15 minutes.
   - Pipes so designated shall not show a loss of pressure of more than 0.15 gallon per hour per inch of diameter.

2. **Risk of Vacuum**
   - Pipes so designated shall not show a loss of vacuum of more than 1 inch of mercury column.
   - Pipes so designated shall not show a loss of vacuum of more than 4 inches of mercury column.

### Piping Material Schedule (See Note 1)

<table>
<thead>
<tr>
<th>Group No.</th>
<th>Pipe Material</th>
<th>Fittings / Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Steel, ASTM A53, Schedule 40, Black Welded, Galvanized</td>
<td>Copper, Bronze, Galvanized, Iron, A500 Ee, A500 1, Threaded, Grooved, Grooved, Stainless, Steel, 416, 304, 316L, 316, Stainless Steel, Mechanical Couplings</td>
</tr>
<tr>
<td>11</td>
<td>Structural, HDPE, ASTM A437, 66, 4&quot; Diameter and Over (see section 70 23 10)</td>
<td>Copper, Bronze, Galvanized, Iron, A500 Ee, A500 1, Threaded, Grooved, Grooved, Stainless, Steel, 416, 304, 316L, 316, Stainless Steel, Mechanical Couplings</td>
</tr>
</tbody>
</table>

### Notes:

1. High density polyethylene (HDPE) shall be used for the piping system.
2. Pipes shall not show a loss of pressure of more than 0.15 gallon per hour per inch of diameter.
3. Piping shall not show a loss of vacuum of more than 1 inch of mercury column.
4. Piping shall not show a loss of vacuum of more than 4 inches of mercury column.

### Typical Pipe Designation:

<table>
<thead>
<tr>
<th>Material Group Number</th>
<th>Material Group Description</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>High Density Polyethylene (HDPE) ASTM D3350 - DR26</td>
</tr>
<tr>
<td>B</td>
<td>Ductile Iron, ASME A21.51, Steel, ASTM A53, Schedule 40, Black Welded, Galvanized</td>
</tr>
<tr>
<td>C</td>
<td>Stainless Steel, Type 316, ASTM A312, Schedule 10S</td>
</tr>
<tr>
<td>D</td>
<td>Stainless Steel, Type 316 Welded Slip-On Flange, ASME B16.3 or Stainless Steel, Type 316 Welded Flanged Or Mechanical Couplings</td>
</tr>
</tbody>
</table>

### Typical Piping Materials:

- Steel, ASTM A53, Schedule 40, Black Welded, Galvanized
- Copper, Bronze, Galvanized, Iron, A500 Ee, A500 1, Threaded, Grooved, Grooved, Stainless, Steel, 416, 304, 316L, 316, Stainless Steel, Mechanical Couplings
- Structural, HDPE, ASTM A437, 66, 4" Diameter and Over (see section 70 23 10)
1. CONTRACTOR LAYDOWN AND STAGING AREA COORDINATES ARE PROVIDED ON SHEET GC007, BUT SHALL BE COORDINATED PRIOR TO MOBILIZATION TO THE SITE.

2. CONTRACTOR SHALL DEVELOP A DETAILED ACCESS PLAN AND SUBMIT FOR REVIEW AND APPROVAL BY THE OWNER PRIOR TO INITIATING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PERFORM ITS OWN INVESTIGATION OF THE CONSTRUCTION SITE AND PRIVATE OFF-SITE REPAIRS TO PUBLIC ROADWAYS, BRIDGE LOAD LIMITS, AND OTHER LIMITATIONS AFFECTING TRANSPORTATION AND EGRESS TO THE SITE OF THE WORK.


4. THE CONTRACTOR SHALL DEVELOP AND SUBMIT TO THE ENGINEER A PLAN FOR STORING AND DISPOSING OF HAZARDOUS MATERIALS.

5. TRAFFIC AND PARKING AREAS SHALL BE MAINTAINED IN A SOUND CONDITION, FREE OF EXCAVATED MATERIAL, CONSTRUCTION EQUIPMENT, MUD, AND CONSTRUCTION MATERIALS. THE CONTRACTOR SHALL REPAIR BRAKES, TYRES, LOW AREAS WHICH COLLECT STANDING WATER, AND OTHER DEFICIENCIES.

6. THE CONTRACTOR SHALL RESTORE THE STAGING AREA, HAZARDOUS MATERIALS STORAGE AREA, AND PARKING AREAS AT PROJECT COMPLETION ACCORDING TO THE SITE RESTORATION PLAN ON DRAWINGS C105 AND C106.
CONSTRUCTION LIMITS FENCE DETAIL

NOTE:

1. POST SHALL HAVE SUFFICIENT STRENGTH AND DURABILITY TO SUPPORT THE FENCE THROUGH THE LIFE OF THE PROJECT.

6'-0" MAX

STEEL T-BAR POST

SELF-LOCKING TIE (NYLON 6/6) (MIN GRADE) 50# MIN TENSILE STRENGTH, UV STABILIZED

16" TYP

2x2 WOOD POST

SELF-LOCKING TIE (NYLON 6/6) (MIN GRADE) 50# MIN TENSILE STRENGTH, UV STABILIZED

STAPLE OR TOP TIE

2x2 WOOD OR STEEL T-BAR POST

ENVIRONMENTALLY SENSITIVE AREA BOUNDARY

HIGH DENSITY POLYETHYLENE OR POLYPROPYLENE MESH, UV RESISTANT, ORANGE COLOR

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
EROSION AND SEDIMENT CONTROL NOTES - BMP MEASURES:

1. All runoff from site construction activities and from rainfall events shall be detained on-site and filtered prior to discharge. Stormwater runoff shall not be allowed to leave the site untreated (suspended and dissolved). If this occurs, the contractor will be held solely responsible for any permit violations and fines.

2. Contractor shall take appropriate measures to prevent accretion of construction waste and litter on-site.

3. Contractor shall ensure all construction waste is properly disposed of in the designated areas and on any additional locations where material could leave the construction site. Failure to do so will result in fines.

4. The cut edges and/or stream banks shall be stabilized prior to any construction activities.

5. Contractor shall provide all water necessary for sprinkler/dust prevention.

6. Stockpiled excavation materials shall be protected from water and wind erosion by covering as appropriate. When exposed for more than 14 days, stockpiles shall be covered with impermeable tarps to protect disturbed soil and slopes.

7. Stockpiles shall be graded, and placed in separate stockpiles. After backfilling, exposure of stockpiles shall be minimized and covered.

8. Contractor shall maintain all BMP's at all times. Contracted equipment for work inside of the ordinary high water mark shall utilize food-grade hydraulic fluid.

9. Ensure all equipment is clean and free of debris, leaves, dirt, plants and animals or fragments of plants, aquatic invasive species, and other vegetative matter. Equipment for work inside of the ordinary high water mark shall utilize food-grade hydraulic fluid.

EROSION AND SEDIMENT CONTROL NOTES - GENERAL:

1. The contractor shall submit an erosion and sediment control plan for work during construction that meets all federal, state, and local requirements.

A. The contractor is responsible for implementing and maintaining all erosion and sediment control measures (shading of stream, silt diversion devices, etc.) dictated by field conditions to prevent erosion or the introduction of dirt, mud, or debris to existing or new streamways. The contractor is responsible for providing all BMP’s as shown on the contractor's prepared stormwater pollution prevention plan (SPWPP) document.

B. The general erosion and sediment control plan on the EC drawings shall be followed by the contractor. The contractor shall develop a spill prevention, containment, and response plan that will be attached to the SWPPP.

C. Contractor is responsible for providing all necessary erosion control measures for the duration of the project; maintenance of both temporary and permanent erosion control measures shall be continued as incidental.

D. All BMP required materials shall meet or exceed state of California stormwater quality association (CASQA) requirements.

E. Every contractor shall develop a spill prevention, containment, and response plan that will be attached to the SWPPP.

2. The contractor shall develop and implement a spill prevention, containment, and response plan that will be attached to the SWPPP.
1. See drawing EC100 for standard erosion and sediment control notes.

2. Utilize surface roughening and/or silt fence as required to stabilize soils during construction of intake structure.

3. Bulk storage of hazardous materials, including plants, must not be allowed in the intake structure area. Only minimum quantities necessary for current work efforts shall be stored at the intake structure site.

4. Contractor shall submit specifications to understand the hydraulics and hydraulics of Fall Creek when designing the cofferdam. Contractor shall submit the cofferdam design for review in accordance with the contract.

5. Contractor's cofferdam staging shall not interfere with the city of Yreka intake access to water at any time.

6. Proposed cofferdam staging is provided to aid the contractor in development of a plan for in-water work. Contractor shall be responsible for staging of work, coordination with site hydraulics, cofferdam design, construction, and maintenance, flow bypassing, etc., as incidental to the construction process.

**Proposed Cofferdam Staging, See Note 6.**

- **A.** Construct cofferdam to isolate intake structure construction area, and dam A overflows, maintain flow to the city of Yreka intake for the duration of construction.

- **B.** Concurrent with upstream cofferdam construction, install flow bypass pipe to pass powerhouse flows downstream of canal. Destabilize, utilizing any pumps or siphons as required by flow by-passing outlet. At outlet of bypass pipe, place temporary riprap to protect the creek from erosion, prior to any supporting earthworks. The city of Yreka water line must be field located and protected for the duration of construction.

- **C.** Construct cofferdam downstream of east canal demobilization to prevent backwater from the consequence of powerhouse channel and Fall Creek inundating the construction area.

- **D.** Perform fish salvage operations per specification (if E.C. 5.1.6, then identify construction area for fish salvage area). After upstream cofferdam construction, use by-passed water to flow into existing construction area. Contractor shall be responsible for treating water by an approved method in accordance with the contractor's CGP prior to discharge.

- **E.** After construction is complete and the construction area is ready to receive powerhouse flows again, safely remove downstream cofferdam, follow the same procedures as specified in 5.1.6. Conducting the discharge commission), then safely breach upstream cofferdam and allow construction area to rewet. Last, remove flow bypass pipe.

- **F.** For fish release pool, construct cofferdam as reed in time of the bypassed canal flows, the majority of construction will be performed in the downstream area, and shall be performed in the dry. When the construction area is complete, remove cofferdam and allow Fall Creek for flows to bypass the construction area. Following construction of the fishrelease pools and appurtenant piping, supports, etc., safely breach the cofferdams and redate.
SHEET NOTES:
1. SEE DRAWING EC100 FOR STANDARD EROSION AND SEDIMENT CONTROL NOTES.
2. CONTRACTOR SHALL REVIEW SPECIFICATIONS TO UNDERSTAND THE HYDROLOGY AND HYDRAULICS OF FALL CREEK. WHEN DESIGNING THE COFFERDAM, CONTRACTOR SHALL SUBMIT THE COFFERDAM PLAN FOR APPROVAL AS PER SPECIFICATION 02 15 00. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND DEVELOPMENT OF A PLAN FOR IN-WATER WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR STAGING OF WORK, COORDINATION WITH SITE HYDROLOGY, COFFERDAM DESIGN, CONSTRUCTION, AND MAINTENANCE. FLOW BYPASSING, ETC. AS INCIDENTAL TO THE CONSTRUCTION PROCESS.

PROPOSED COFFERDAM STAGING, SEE NOTE 3:
A. CONSTRUCT UPSTREAM COFFERDAM TO ISOLATE FISH LADDER AND FISH BARRIER CONSTRUCTION AREA.
B. CONCURRENT WITH UPSTREAM COFFERDAM CONSTRUCTION, INSTALL FLOW BYPASS PIPE TO PASS CREEK FLOWS DOWNSTREAM OF THE CONSTRUCTION AREA. AT OUTLET OF BYPASS PIPE, PLACE TEMPORARY RIPRAP TO PROTECT THE CREEK FROM EROSION.
C. CONSTRUCT COFFERDAM DOWNSTREAM OF CONSTRUCTION AREA TO PRECLUDE BACKWATER FROM FALL CREEK INUNDATING THE CONSTRUCTION AREA.
D. PERFORM FISH SALVAGE OPERATIONS AS PER SPECIFICATION 02 15 00. THEN DEWATER CONSTRUCTION AREA FOR THE FISH LADDER AND FISH BARRIER. CONTRACTOR SHALL BE RESPONSIBLE FOR TREATING WATER BY AN APPROVED METHOD IN ACCORDANCE WITH THE CONTRACTOR’S CGP PRIOR TO DISCHARGE.
E. AFTER CONSTRUCTION IS COMPLETE AND THE CONSTRUCTION AREA IS READY TO RECEIVE CREEK FLOWS AGAIN, SAFELY REMOVE DOWNSTREAM COFFERDAM (WHILE KEEPING THE BYPASS PIPE IN PLACE). COMMENCE THE SHALLOW BREAKING STAGES OF THE COFFERDAM AND ALLOW CONSTRUCTION AREA TO REWATER. LASTLY, REMOVE FLOW BYPASS PIPE.

LEGEND:
SILT FENCE
COFFERDAM
CONSTRUCTION FENCE
MATCHLINE - SEE DRAWING EC100

SCALE: 1" = 20'
**Sheet Notes:**

1. See drawing EC100 for standard erosion and sediment control notes.
2. Contractor shall review specifications to understand the hydrology and hydraulics of Fall Creek. When designing the cofferdam, contractor shall submit the cofferdam plan for approval as per specification 02 15 00.
3. Contractor’s cofferdam staging shall not interfere with the City of Yreka intake access to water at any time.
4. Proposed cofferdam staging is provided to aid the contractor in development of a plan for in-water work. Contractor shall coordinate their work with the project team, including site hydrology, cofferdam design, construction, and maintenance. Flow bypassing, etc. as incidental to the construction process.

**Proposed Cofferdam Staging, See Note 4:**

A. Construct upstream cofferdam to isolate Dam B modifications construction area. Maintain flow to the City of Yreka intake for the duration of construction.

B. Concurrent with upstream cofferdam construction, install flow bypass pipe to pass creek flows downstream of the construction area. Stage pumps on spawning as need by the flow bypass routing. At outlet of bypass pipe place temporary quarry spalls or riprap to protect the creek from erosion.

C. Perform fish salvage operations per specification 02 15 00. Then dewater construction area for Dam B barrier modifications. Enter construction area to treat water by an approved method in accordance with the contractor’s CGP prior to discharge.

D. After construction is complete and the construction area is ready to receive creek flows again, safely breach and remove upstream cofferdam and allow construction area to rewater. Lastly, remove flow bypass pipe.

**Legend:**

- **Silt Fence**
- **Cofferdam**

**Project Work Boundaries and Clearing and Grubbing Limits**

**Approximate Location of Dam B Access Trail**

**Erosion and Sediment Control Dam B Plan**

Scale: 1" = 5'
SHEET NOTES:

1. THE EXISTING CONCRETE SLAB, WHERE INDICATED, SHALL BE RETAINED AND PROTECTED DURING CONSTRUCTION TO PREVENT DAMAGE TO THE EXISTING CONSTRUCTION EQUIPMENT. ON-THE-CONCRETE PAVING SHALL BE ALLOWED. CONSTRUCTION EQUIPMENT SHALL ACCESS THIS AREA FROM OUTSIDE THE EXISTING PAD.

SHEET KEY NOTES:

A. DEMOLISH AND REMOVE CONCRETE WALLS DOWN TO EXISTING SLAB.
B. DEMOLISH AND REMOVE EXISTING WALKWAY GRATING, SUPPORTS, GUARDRAILS, AND LADDERS.
C. DEMOLISH CONCRETE OUTLET STRUCTURE WALLS, SLAB AND PIPING.
D. DEMOLISH ADJACENT RACEWAY SLAB TO THE EXTENTS SHOWN.
E. PROTECT EXIST CONC. SLAB, BURN BACK DECK NEAR 2' BELOW SURFACE.
F. DEMOLISH AND REMOVE BUILDING AND CONCLUSION SOIL.
G. DEMOLISH EXISTING SLAB LOCALLY FOR CONSTRUCTION OF DEFLUSSER BOX, SETTLE POND SHUT-WELL AND VALVE BOX. DEMO SLAB ONLY TO THE EXTENTS SHOWN.
H. DEMOLISH EXISTING PVC PIPE FROM EXISTING CONCRETE SUPPLY FLUSH TO EXISTING LOWER RACEWAY BANK. NO PIPE SIZE INFORMATION IS AVAILABLE FOR THE BURIED PIPE.
I. DEMOLISH EXISTING CONCRETE SAWDUST.
J. REMOVE EXISTING TREE, AS REQUIRED FOR CONSTRUCTION. NOT ALL TRUNK REMOVAL REQUIRED (DOCUMENTED HERE). SEE SPECIFICATION SS 12.00 FOR DETAILS ON TREE REMOVAL WITHIN CONSTRUCTION LIMITS.
SHEET KEY NOTES:

A. DEMOLISH AND REMOVE DAM WALL, COMPLETE DAM FOOTING, AND LEVEE WALL AT LOCATION OF INFRASTRUCTURE.

B. PROJECT WALL, WALLER, FOOTING, FILL AND LEVEE WALL.

C. REMOVE EXISTING TREE, AS REQUIRED FOR CONSTRUCTION. NOT ALL TREE REMOVAL REQUIRED IS DOCUMENTED HERE. SEE SPECIFICATION SS 11.00 FOR DETAILS ON TREE REMOVAL WITHIN CONSTRUCTION LIMITS.

SECTION
SCALE: NTS

PHOTO
SCALE: NTS

PHOTO
SCALE: NTS
CROWDER (FRONT VIEW)

CROWDER (UNDERSIDE VIEW)

SHEET NOTES:
1. SET MECHANICAL DRAWINGS FOR PROPOSED MODIFICATIONS TO IRON GATE DRAWER FOLLOWING INSTALLATION.

SHEET KEY NOTES:
A. SALVAGE AND RELOCATE MECHANICAL IRON GATE DRAWER FROM IRON GATE DRAWER.
B. CUT 34" OFF LOWER GUIDES PRIOR TO RELOCATION. TOTAL HEIGHT OF GUIDES SHALL BE 97 3/8" AFTER DEMO.
C. DEMOOUTH LOWER BRACE PRIOR TO RELOCATION.
D. DEMOOUTH LOWER BRACE PRIOR TO RELOCATION.

WARNING: IF THIS DRAWING IS NOT MEASURED TO SCALE, DRAWING IS NOT TO SCALE.
GENERAL PROJECT NOTES:
1. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
2. SLOPE UNIFORMity BETWEEN CONTours AND SPOT ELEVATIONS SHOWN.
3. GEOTECHNICAL EVALUATION WAS NOT PREPARED SPECIFICALLY FOR THE FALL CREEK FISH HATCHERY PROJECT. HOWEVER, TWO BORINGS WERE COMPLETED BY AECOM IN 2019 TO SUPPORT THE COPCO BRIDGE DESIGN. REFER TO LOG OF CORE BORINGS B-13 AND B-14 PROVIDED AS AN ATTACHMENT TO THE SPECIFICATIONS.
4. CONTRACTOR SHALL REPAIR ALL EXIST SURFACE, UTILITIES, BUILDINGS, AND FOUNDATIONS IMPACTED BY CONSTRUCTION, WHICH ARE NOT INDICATED TO BE DEMOllISHED.
5. CONTRACTOR SHALL KEEP ALL CONSTRUCTION WITHIN THE WORK BOUNDARIES DEFINED FOR THIS PROJECT AS SHOWN. THIS INCLUDES, BUT IS NOT LIMITED TO, LIMITS OF TRENCH EXCAVATION, STOCKPILED EXCAVATED MATERIAL, BACKFILL MATERIAL, AND PIPE MATERIAL.
6. SEE SPECIFICATION 21.00.06 FOR AGGREGATE MATERIAL TYPES.

GENERAL CONSTRUCTION NOTES:
1. ALL MATERIALS FURNISHED ON OR FOR THE PROJECT MUST MEET THE MINIMUM REQUIREMENTS OF APPROVING AGENCIES. AT THE REQUEST OF THE APPROVING AGENCY OR THE DESIGN ENGINEER, CONTRACTORS SHALL FURNISH PROOF THAT ALL MATERIALS INSTALLED ON THIS PROJECT MEET THE SPECIFICATION REQUIREMENTS SET FORTH IN THE PROJECT SPECIFICATIONS.
2. ANY DEVIATION FROM THE APPROVED PLANS AND SPECIFICATIONS MUST HAVE DESIGN ENGINEER AND OWNER APPROVAL IN WRITING PRIOR TO CONSTRUCTION.
3. ALL DISTURBED SURFACES SHALL BE RETURNED TO ORIGINAL OR BETTER CONDITIONS.

GENERAL YARD PIPING AND UTILITY NOTES:
1. EXIST BASE MAP MAY CONTAIN ERRORS. CONTRACTOR TO VERIFY LOCATION OF EXIST PIPES, STRUCTURES, AND OVERHEAD UTILITIES PRIOR TO THE START OF CONSTRUCTION OR THE SUBMITTAL OF SHOP DRAWINGS.
2. EXIST PIPING LOCATIONS ARE UNRELIABLE. CONTRACTOR SHALL DEMOLISH ALL EXIST PIPING SYSTEMS AS APPROVED BY THE ENGINEER.
3. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES TO REMAIN.
4. THE CONTRACTOR SHALL CONTACT THE Utility AGENCIES FOR FIELD LOCATION OF UTILITIES, AT LEAST 72 HOURS PRIOR TO START OF CONSTRUCTION.
5. SHADING, SCREENING, OR LIGHT-LINING OF PIPING AND/OR EQUIPMENT IS USED TO INDICATE EXIST COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS FOR WHICH INFORMATION IS PRESENTED ELSEWHERE IN THE DRAWINGS. REFER TO CONTENT OF EACH SHEET FOR USAGE.
6. ALL BUILDING COORDINATES ARE TO OUTSIDE CORNER OF BUILDING STAY WAIl UNLESS OTHERWISE NOTED.
7. FOR PIPING INSIDE STRUCTURES AND POND INLETS, SEE MECHANICAL DRAWINGS.
8. ALL PIPE TRENCHING AND BACKFILL SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
9. CONTRACTOR SHALL PROVIDE PIPE PENETRATIONS PER MECHANICAL DETAILS M402 OR M404 FOR ALL PIPES PENETRATING CONCRETE WALLS, UNLESS SHOWN OTHERWISE.
10. ALL SLEEVE COUPLINGS ON YARD PIPING SHALL BE UNRESTRAINED, UNLESS NOTED OTHERWISE.
**NOTES:**

1. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. EXTENSION ARM MAY BE TURNED IN AT OPTION OF OWNER.
3. OTHERS SHALL BE 12" OR 5 X POST DIAMETER, WHICHER IS GREATER.
4. GATE AND CORNER POSTS SHALL BE 12" OR 5 X POST DIAMETER, WHICHER IS GREATER.
5. INSTALLATION REQUIREMENTS.
6. SEE SPECIFICATIONS FOR CLEARANCES IN SNOW REGIONS.
7. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
1. PRECAST WHEEL STOP

**SCALE: NTS**

- Precast Wheel Stop shall be 5'-0" long unless indicated otherwise.
- Wheel Stop shall be constructed of Portland cement concrete.
- All exposed corners on Wheel Stop to be rounded with a 6" radius unless noted otherwise.

**NOTES:**

1. Filter material, 18" Min Length, #4 Dowel at 48" OC, Drain out for 6" Bituminous Material shall be placed at 50 feet spacing and where valve butts other concrete structure.
2. Concrete used shall be placed on 6" thick compacted subgrade and fill sections. See Specification 33 37 00 for compaction.

2. ASPHALT REPAIR

**SCALE: NTS**

- Riprap and armor protection, See Note 1.
- Filter material, See Specification 31 37 00.
- Compacted subgrade.

**NOTES:**

1. Riprap armor and bedding size. See indicated Riprap Type on plans and drill in positions in Specification 33 37 00.
2. For slope see grading plan.

3. CONCRETE LINED SWALE

**SCALE: NTS**

- Concrete Lined Swale.
- See pipe Schedule.

**NOTES:**

1. Expansion joints of 18" bituminous material shall be placed at 50 feet spacing and where valve butts other concrete structure.
2. Concrete used shall be placed on 6" thick compacted subgrade and fill sections. See specification 33 00 00 for compaction.

4. PRESSURIZED SYSTEM CLEANOUT TO GRADE (PCOTG)

**SCALE: NTS**

- Pressurized System Cleanout to Grade (PCOTG).
- See note 3.

**NOTES:**

1. Use flanged pipe connectors or flanges for transitions (see piping schedule).
2. 6" dia pipe consistent with drain line.

5. FRENCH DRAIN

**SCALE: NTS**

- French Drain.
- See note 3.

**NOTES:**

1. 1" boss pipe valve, threaded with wedge and quick connect female end type finished grade.
2. Cap screws 316 SS.

6. CLEANOUT TO GRADE (COTG)

**SCALE: NTS**

- Cleanout to Grade (COTG).
- See note 3.

**NOTES:**

1. Directory joint of 18" bituminous material shall be placed at 50 feet spacing and where valve butts other concrete structure.
2. Concrete used shall be placed on 6" thick compacted subgrade and fill sections. See specification 33 00 00 for compaction.
3. Thrust as required.
A. FLEXIBLE PIPE REFERS TO ALL STEEL, DUCTILE-IRON, AND PLASTIC PIPES.
B. TYPICAL TRENCH SECTIONS ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF SOILS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE NOTIFIED BEFORE WORK OCCURS IN SUCH AREAS.
C. EXCAVATION WALLS AND DEPTH AND ELEVATION SHELVES SHALL BE DETERMINED CONSIDERING APPROPRIATE LOCAL, STATE, AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS, AND GEOENGINEERING CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS.
E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND CONFORMITY WITH APPROPRIATE LOCAL, STATE AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS CONFORMITY AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN CALCULATIONS.
F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALLS SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS CONFORMITY AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN CALCULATIONS.
G. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS CONFORMITY AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN CALCULATIONS.
H. IF EXCAVATION DUE TO EARTH FOUNDATION IS REQUIRED BY THE DESIGNER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO EARTHWORK SPECIFICATION 31 00 00.
I. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED. APPROPRIATE Dewatering shall BE IMPLANTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE APPLICABLE LOCAL, STATE AND FEDERAL OSHA SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS CONFORMITY AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN CALCULATIONS.
J. ALL PIPE BEDDING, PIPE ZONE BACKFILL, AND TRENCH WALL MATERIALS TYPES AND QUANTITIES ARE TO BE SELECTED IN ACCORDANCE WITH SPECIFICATIONS INDICATED IN SPECIFICATION 31 00 00.

TRENCH SECTION FLEXIBLE PIPE

1. PIPE SIZE = 9.5 SQ FT = 100% OF THRUST PER PSI OF WATER
2. MIN TRENCH BOTTOM WIDTH = O.D. + 24" FOR LESS THAN 18" PIPE O.D.
3. O.D. + 36" FOR 18" & LARGER PIPE O.D.
4. WHERE PIPES ARE UNDER GRAVEL ROAD SURFACING OR ASPHALT REPAIR, FINAL EMBANKMENT THE TRENCH WALL MATERIALS SHOWN ON THE PLANS.
5. THE NEED FOR PROTECTIVE SYSTEMS AND BACKFILL MATERIALS TYPES AND QUANTITIES ARE TO BE SELECTED IN ACCORDANCE WITH SPECIFICATIONS INDICATED IN SPECIFICATION 31 00 00.

CONCRETE THRUST BLOCKS

1. PIPE ZONE BACKFILL MATERIALS ARE TO RESIST 100% OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.
2. MIN TRENCH BOTTOM WIDTH = O.D. + 24" FOR LESS THAN 18" PIPE O.D.
3. O.D. + 36" FOR 18" & LARGER PIPE O.D.
4. WHERE PIPES ARE UNDER GRAVEL ROAD SURFACING OR ASPHALT REPAIR, FINAL EMBANKMENT THE TRENCH WALL MATERIALS SHOWN ON THE PLANS.
5. THE NEED FOR PROTECTIVE SYSTEMS AND BACKFILL MATERIALS TYPES AND QUANTITIES ARE TO BE SELECTED IN ACCORDANCE WITH SPECIFICATIONS INDICATED IN SPECIFICATION 31 00 00.

NOTE: IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED. APPROPRIATE Dewatering shall BE IMPLANTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO EARTHWORK SPECIFICATION 31 00 00.

WARNING

CONCRETE THRUST BLOCKS

Note: 100% at Thrust Block
Indicated percent of total thrust to be applied for bearing area.
2" AIR RELEASE VALVE [ARV] ASSEMBLY

PRECAST CONCRETE BOX

2" AIR RELEASE VALVE W/ SS FLG OUTLET

2" SCREEN PLUG VALVE

2" PVC WATER PIPES

2" PVC WATER PIPE

2" PVC WATER PIPE

CONCRETE BOX

2" FLANGED-OUTLET W/ SS FLG ON环氧 COATED STL SPRETZ SADDLE

STORM DRAIN OUTFALL

SCALE: NTS

PRECAST CONCRETE BOX AND
TRAFFIC GATED COVER

2'-0" MIN INSIDE

STORM DRAIN OUTFALL

SCALE: NTS

2" AIR RELEASE VALVE [ARV] ASSEMBLY

PRECAST CONCRETE BOX

2" AIR RELEASE VALVE W/ SS FLG OUTLET

2" SCREEN PLUG VALVE

2" SCREEN PLUG VALVE

2" PVC WATER PIPES

2" PVC WATER PIPE

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STORM DRAIN OUTFALL

SCALE: NTS

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CONCRETE BOX

2" FLANGED-OUTLET W/ SS FLG ON环氧 COATED STL SPRETZ SADDLE

STORM DRAIN OUTFALL

SCALE: NTS
NOTES:

1. IF IN UNIMPROVED AREA TOP SHALL BE 6" ABOVE GRADE.

2. SEE PLAN FOR STATION AND INVERT ELEVATION. PIPE AND FITTINGS SHALL BE OF THE SAME MATERIAL AS THE MAIN DRAIN LINE.

VENT CLEANOUT TO GRADE

SCALE: NTS

EXTERIOR TRENCH DRAIN SYSTEM

SCALE: NTS

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

KLAMATH RIVER RENEWAL CORPORATION

FALL CREEK FISH HATCHERY

CIVIL STANDARD

DETAILS 5
### Sheet Notes
1. Piping coordinates shown on horizontal inflection points. Only see spans and/or sheet for vertical inflection points.
2. Northings, eastings, and elevations are located at the center of the fitting in the horizontal plane.

### General Information
- **Date:** 7/03/77
- **Drawing Number:** GC008
- **Drawing Title:** Klamath River Renewal Corporation - Fall Creek Fish Hatchery
- **Scale:** 1/4" = 1'-0"
- **Issue Date:** 7/03/77
- **Job No:** 000000

### Piping Coordinantes
#### Easting, Northing, Elevation

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*All elevations are invert elevations*

### Inflection Points

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### Additional Information
- **Warning:** Use caution when handling this sheet.
- **Checked:** A. Lemm
- **Audited:** C. Eder
- **Project Date:** 7/03/77

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### Additional Details
- **Klamath River Renewal Corporation**
- **FALL CREEK FISH HATCHERY**
- **PIPING COORDINATES**

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### Drawing Information
- **Designed by:** A. Lemm
- **Drawn by:** J. Lemm
- **Checked by:** C. Eder
- **Sheet No.:** GC008
- **Project Date:** 7/03/77

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- **Klamath River Renewal Corporation**
- **Fall Creek Fish Hatchery**
- **Piping Coordinates**

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*All elevations are invert elevations*

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- **Checked:** A. Lemm
- **Audited:** C. Eder
- **Project Date:** 7/03/77

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### Drawing Information
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- **Drawn by:** J. Lemm
- **Checked by:** C. Eder
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- **Fall Creek Fish Hatchery**
- **Piping Coordinates**

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*All elevations are invert elevations*
1. Cut and fill slopes shall typically be 2H:1V. Unsoil excavation slopes may be modified based upon soil and groundwater conditions encountered in the field.

2. Match existing grade and provide smooth transition between all new surfacing and existing surfacing.

3. Provide positive drainage away from facilities.

SITE GRADING NORTH PLAN

SCALE: 1" = 20'

MATCHLINE - SEE DRAWING

1. Cut and fill slopes shall typically be 2H:1V. Unsoil excavation slopes may be modified based upon soil and groundwater conditions encountered in the field.

2. Match existing grade and provide smooth transition between all new surfacing and existing surfacing.

3. Provide positive drainage away from facilities.

SITE GRADING NORTH PLAN

SCALE: 1" = 20'
SITE GRADING SOUTH PLAN

1. CUT AND FILL SLOPES SHALL TYPICALLY BE 2H:1V UNLESS EXCAVATION SLOPES MAY BE MODIFIED BASED UPON SOIL AND GROUNDWATER CONDITIONS ENCOUNTERED IN THE FIELD.
2. MATCH EXISTING GRADE AND PROVIDE SMOOTH TRANSITION BETWEEN ALL NEW SURFACING AND EXISTING SURFACING.
3. PROVIDE POSITIVE DRAINAGE AWAY FROM FACILITIES WHERE POSSIBLE, IN ACCORDANCE WITH THIS GRADING PLAN. TRENCH DRAIN SYSTEM TO BE PROVIDED TO DIRECT SURFACE RUNOFF TO CATCH BASINS. SEE SHEET C113.
1. All disturbed areas that will not be receiving a finish course per this plan, will need to be revegetated at project completion. Contractor to manage disturbances to the existing vegetation to the extent practical within the project natural vegetation buffers around the project limits in addition to the erosion and sediment control measures.

2. Any disturbed stream bank shall be restored with in-kind materials at project completion. Contractor to receive final acceptance of stream restoration materials from both the owner and the engineer prior to demobilization from the site.

3. For riprap size, see area-specific sections and details and specification 31 37 00.
SITE RESTORATION SOUTH PLAN

SCALE: 1" = 20'

LEGEND:
- Gravel Surface
- Revegetation (See Note 1)
- Riprap (See Note 2)
- Concrete
- Restore Original Creek Bed/Cobbles (See Note 2)

SHEET NOTES:
1. All disturbed areas that will not be receiving a finish course per this plan, will need to be revegetated at project completion. Contractor to minimize disturbances to the existing vegetation to the extent practical within the project natural vegetation buffers around the project limits in addition to the erosion and sediment control measures.

2. Any disturbed stream banks shall be restored with in-kind materials at project completion. Contractor to receive final acceptance of stream restoration materials from both the owner and the engineer prior to demobilization from the site.

3. For riprap size, see area-specific sections and details and specification 31 37 00.

40' 20' 0'

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
SHEET NOTES:

1. ALL FILL MATERIALS AND PLACEMENT COMPACTING REQUIREMENTS ARE DEFINED IN SPECIFICATION 31 00 00.
2. WHERE BUILDING SUBGRADE AND POND SUBGRADE (EXTENDED 3.0' BEYOND LIMITS) OVERLAP, PLACE NON-WOVEN GEOTEXTILE BETWEEN ANY SF FILL AND DRG FILL, AND WRAP GEOTEXTILE DOWN AROUND EDGES OF DRG FILL.
3. GEOTEXTILE NOT SHOWN FOR CLARITY. GEOTEXTILE WILL BE ATTACHED TO THE CHAIN LINK FENCE AT THE CHINOOK RACEWAY EDGES.
4. AT VAULT TOILET, PLACE BEDDING FILL AS INDICATED UNDER CONCRETE SLAB AND UNDER AND AROUND UNDERGROUND VAULT. PLACE POSITIVE DRAINAGE TO ADJACENT CONCRETE SWALE.
5. VAULT TOILET CONCRETE FLOOR TO BE SET A MINIMUM OF 3" ABOVE THE FINISHED GRADE. WHERE CUT SLOPES ENCOUNTER THE PAD, PROVIDE POSITIVE DRAINAGE TO ADJACENT CONCRETE SWALE.
6. VAULT TOILET SHALL BE A VENDOR PACKAGE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.

SHEET KEY NOTES:

A. 18" THICK TYPE SF FILL UNDER BUILDING FOOTINGS, AND 6" THICK TYPE SF FILL UNDER SLABS. EXTEND BEYOND 18" ALL SIDES.
B. GENERAL GRAVEL SURFACING PER .
C. 6" THICK TYPE DRG FILL UNDER POND SLABS AND WATER RETAINING STRUCTURES, EXTEND BEYOND 3.0' ALL SIDES.
D. PIPE TRENCH PER .
E. BACKFILL WITH TYPE SF OR TYPE C FILL.
F. CONCRETE LINED SWALE TO CATCH BASIN / STORM DRAIN SYSTEM.
G. PLACE FINAL 6" WITH TOPSOIL AND REVEGETATE.
H. TYPE DRG FILL IN DRAIN ROCK SUMP, LINED WITH GEOMEMBRANE ALONG THE BOTTOM AND SIDES. OVERLAY SUMP WITH 12OZ NON-WOVEN GEOTEXTILE. EXTEND BOTH GEOTEXTILE AND GEOMEMBRANE 1.0' BEYOND THE LIMITS OF THE SUMP.
Sheet Notes:

1. All fill materials and placement/completion requirements are defined in Specification 31-00.
2. In areas of existing road, the road surface must be tied to existing. Do not reseed in areas of existing gravel road surfaces.
3. Sump dimensions will vary by location based on slopes from north pad. Maintain sufficient bottom width for perforated pipe. See storm drain north plan for pipe details.
4. Existing Copco asphalt demolished as part of the pipe trench excavation to be replaced according to schedule.

Sheet Key Notes:

A. 18" thick type SF fill under building footings, and 6" thick type SF fill under slabs. Extend beyond 18" all sides.
B. General gravel surfacing per schedule.
C. 6" thick type SF fill under pond slabs and water retaining structures, extend beyond 6" all sides.
D. Pipe trench per schedule.
E. Backfill with type SF or type C fill.
F. Concrete lined swale to catch basin/storm drain system.
G. Place final 6" with topsoil and revegetate.
H. Type DRC fill in drain rock sump, lined with geomembrane along the bottom and sides. Overlay sump with 12 oz non-woven geotextile. Extend both geotextile and geomembrane 1.0' beyond the limits of the sump.

Section: Scale 1"=2'

Approx Profile of Existing Ground

Sheet Notes:

1. Approx Profile of Existing Ground

Scale: 1"=2'

Section: Scale 1"=2'

Approx Profile of Existing Ground

Sheet Notes:

1. Approx Profile of Existing Ground

Scale: 1/2"=1'-0'

Section: Scale 1/2"=1'-0'

Geomembrane Pipe Boot Detail

Note: All notes, specifications, and details are subject to change without notice. Refer to the project manual for the latest information.
1. ALL FILL MATERIALS AND PLACEMENT/COMPACTION REQUIREMENTS ARE DEFINED IN SPECIFICATION 31 00 00.
2. ONLY A PORTION OF THE EXISTING LOWER RACEWAY BANK SLAB WILL BE REPLACED. SEE DEMO SHEETS FOR DETAILS.
3. FOR ALL FINISHED GROUNDS LOFELS, SEE THE GRADING PLANS. PAD GRADING TO DRAIN TO CATCH BASINS, CORE SWALES OR DRAINAGE SWAPS ACCORDING TO THE GRADING PLANS.

### SHEET KEY NOTES:

A 18" THICK TYPE SF FILL UNDER BUILDING FOOTINGS, AND 6" THICK TYPE SF FILL UNDER SLABS. EXTEND BEYOND 18" ALL SIDES.
B GENERAL GRAVEL SURFACING PER .
C 6" THICK TYPE DRG FILL UNDER POND SLABS AND WATER RETAINING STRUCTURES. EXTEND BEYOND 3.0' ALL SIDES.
D FIRE TRENCH PER .
E BACKFILL WITH TYPE C OR UC TYPE C FILL.
F EXTERIOR TRENCH DRAWN PER .
G PLACE FINISH 6" WITH TOPSOIL AND REVEGETATE.
H TYPE DRC FILL IN DRAIN ROCK SUMP, LINED WITH GEOMEMBRANE ALONG THE BOTTOM AND SIDES. OVERLAY SUMP WITH LOG ROSS-RIVER (OR EQUIVALENT). EXTEND BOTH GEOMEMBRANE AND GEOTEXTILE 1.0' BEYOND THE LIMITS OF THE SUMP.

### SITE CIVIL

**SECTION**

**SCALE: 1" = 5'**

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**SECTION**

**SCALE: 1" = 5'**

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**SHEET NOTES:**

1. ALL FILL MATERIALS AND PLACEMENT/COMPACTION REQUIREMENTS ARE DEFINED IN SPECIFICATION 31 00 00.
2. ONLY A PORTION OF THE EXISTING LOWER RACEWAY BANK SLAB WILL BE REPLACED. SEE DEMO SHEETS FOR DETAILS.
3. FOR ALL FINISHED GROUNDS LOFELS, SEE THE GRADING PLANS. PAD GRADING TO DRAIN TO CATCH BASINS, CORE SWALES OR DRAINAGE SWAPS ACCORDING TO THE GRADING PLANS.

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**WARNING**

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
1. ALL MATERIALS AND PLACEMENT/COMPACTION REQUIREMENTS ARE DEFINED IN SPECIFICATION 31 00 00.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFE WORKING CONDITIONS, SOIL TYPE, MOISTURE CONTENT, ETC. ALL SLOPES SHALL MEET LOCAL, STATE, AND FEDERAL (OSHA) REQUIREMENTS.
3. IF BEDROCK IS ENCOUNTERED, CONSTRUCT PIPE SUPPORT FOOTING DIRECTLY ON BEDROCK. OTHERWISE, OVER EXCAVATE PIPE SUPPORT FOOTING 6", PLACE NON-WOVEN GEOTEXTILE, AND BACKFILL WITH TYPE DRG FILL TO BOTTOM OF FOOTING ELEVATION.

A. 18" THICK TYPE SF FILL UNDER BUILDING FOOTINGS, AND 6" THICK TYPE SF FILL UNDER SLABS, EXTENDS BEYOND 18" ALL SIDES.
B. GENERAL GRAVEL SURFACING PER .
C. 6" THICK TYPE DRG FILL UNDER POND SLAB AND WATER RETAINING STRUCTURES, EXTENDS BEYOND 3' OF ALL SIDES.
D. PIPE TRENCHING PER .
E. BACKFILL WITH TYPE DRG FILL.
F. CONCRETE LINED SWALE TO CATCH BASIN / STORM DRAIN SYSTEM.
G. PLACE FINAL 6" WITH TOPSOIL AND REVEGETATE.
H. TYPE DRG FILL IN DRAIN ROCK SUMP, LINED WITH GEOMEMBRANE ALONG THE BOTTOM AND SIDES. OVERLAY SWALE WITH 12OZ NON-WOVEN GEOTEXTILE. EXTEND BOTH GEOTEXTILE AND GEOMEMBRANE 1' BEYOND THE LIMITS OF THE SUMP.
I. RIPRAP/ARMOR, FILTER MATERIAL, AND NON-WOVEN GEOTEXTILE PER .

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
SHEET NOTES:

1. LARGE DIAMETER ROCK IS AVAILABLE ON-SITE FROM THE NORTH PAD GRADING. IF ROCK IS ABLE TO BE AMENDED TO MEET SPECIFICATION 31 37 00, IT MAY BE USED IN THIS LOCATION FOR RIPRAPS. EXTEND RIPRAPS USING A MINIMUM OF 3.0 FEET BEYOND CONSTRUCTED SLOPE LIMITS.

2. SEE MECHANICAL FOR ALL GATES AND EQUIPMENT.

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DAM A INTAKE PLAN

SCALE: 1" = 5'

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1. **INTAKE PAD**
   - SEE NOTE 1

2. **HATCHERY INTAKE STRUCTURE**
   - SEE STRUCTURAL

3. **CONC THRUST BLOCK, TYP ALL BENDS AND TEES**
   - SEE STRUCTURAL

4. **FLOW EXIST CITY OF YREKA INTAKE BLDG**
   - 26.58'

5. **EXIST DAM A CREST**
   - 24" RW (16)

6. **24" TEE**
   - 24" x 24" x 16" RED TEE

7. **24" RW (16)**
   - TO CHINOOK INCUBATION BLDG
   - TO CHINOOK RACEWAYS

8. **1'-0"x1'-0" BLOCKOUT IN NEW CONC FOR DEBRIS SLUICING**

9. **FLOW EXIST CITY OF YREKA SLUICE GATE**

10. **DAM A VELOCITY APRON**
    - SEE SHEET C201

11. **DAM A INTAKE BUILDING**

12. **TO ADULT HOLDING PONDS**

13. **TO COHO BUILDING**

14. **DEMOLISH AND REMOVE CONC, SEE DEMO SHEETS**

15. **DAM A INTAKE PLAN**
    - SEE SHEET C100

---

**WARNING**

- IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

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SHEET KEY NOTES:

A. Regrade exist powerhouse channel from FG 2504.30 at the toe of the velocity apron at 0.5% slope downward following the existing channel alignment. Extend exist banks down to the required invert elevations at 2H:1V slope. Tie over excavate 6" below the required FG, and during excavation retain exist channel surface material following excavation exited the channel with the exist surface material.

B. After demolishing the exist conc flume, per demo sheets, backfill the excavation with type C fill compacted to 90% max dry density per ASTM D 1557 (modified proctor) per spec 31 00 00. At point of connection with the powerhouse channel, line the backfill with exist channel surface material, from the powerhouse channel, per note A.

C. After demolishing the exist conc diversion structure, per demo sheets, backfill excavation with type C fill compacted to 90% max dry density per ASTM D 1557 (modified proctor) per spec 31 00 00. Below top 6" of excavation with exist channel surface material per note A.

D. Prior to any excavation for the conc velocity apron, the conc drain, or the downstream channel regrading, contractor shall field locate the exist City of Yreka supply line. The City of Yreka supply line shall not be impacted and shall remain in service throughout the construction duration.

E. For vent piping details and dimensions, including pipe supports, perforations, etc., see mechanical.
**Sheet Notes:**

1. All earthwork materials are to be placed and compacted according to Specification 31 00 00.

2. Excess dam a dimensions are based on as-built data provided by the city of Preka, but may be subject to some variation. Prior to development of shop drawings, contractor to confirm all existing dimensions of dam. If dimensions vary significantly from those reported, contractor to coordinate with the owner and engineer.

3. For conc velocity apron details and dimensions, including connections to dam a, wall thickness, wall penetrations, etc., see structural. For vent piping dimensions and dimensions, including pipe supports, penetrations, etc., see mechanical.

**Sheet Key Notes:**

A. Hand excavation will be required within the footprint of dam a and the dam a footing, as indicated in the structural, drawings. In accordance with Note 2 above and dam a drawing, the contractor shall endeavor caution during excavation outside of these limits to ensure that the dam a conc footing is not impacted.

B. Over excavate 6" below the bottom of the conc velocity apron, rigid and compact 6" thick type drg leveling layer on equipment pad and 31 05 19. If edge of structure, tie-in leveling layer to the drain rock of the two peripheral French drains. If over excavation occurs below the type drg leveling layer, backfill to 6" below the bottom of the structure with type c fill compacted to min. 90% max. dry density. Per ASTM D 69 (mod. proct). If bedrock is encountered at or above the elevation of the 6" over excavation, contractor shall notify engineer immediately and await further direction.

C. The expected flow conditions on the conc velocity apron are summarized below:

- **Powerhouse High Flow (50 cfs):**
  - Flow depth: 2.4 ft
  - Flow velocity: 8.5 ft/s

- **Powerhouse Low Flow (15 cfs):**
  - Flow depth: 1.2 ft
  - Flow velocity: 5.3 ft/s

D. Downstream of dam a, the site survey indicates that there exists a burial of material. If so, it is expected that this high point in the survey represents sediment that has accumulated in the channel over time. As part of the excavation for the conc velocity apron and downstream channel, this material will need to be excavated and disposed of off-site. The required excavation of this accumulated material is expected to be approximately 15% of section 31 00 00, which will be determined by the engineer.

E. The expected flow conditions in the reggraded channel immediately downstream of the velocity apron are summarized below:

- **Powerhouse High Flow (50 cfs):**
  - Flow depth: 3.4 ft
  - Flow velocity: 10.5 ft/s

- **Powerhouse Low Flow (15 cfs):**
  - Flow depth: 2.4 ft
  - Flow velocity: 8.5 ft/s

F. During excavation, retain separately the surficial material from the existing powerhouse channel. Over excavate to 6" below the finished grade elevation of the channel, and backfill with the retained excavated surficial material.
Sheet Notes:

1. French drain detail and sections typical of both sides of the dam a conc. velocity apron. Configuration to be mirrored on opposite side of apron.

2. All earthworks materials are to be placed and compacted according to specification 31 00 00.

3. All non-woven geotextile to be overlapped a minimum of 12" at seams. Care shall be taken during storage, handling, and placement to prevent breakage of any geotextile. After placement and compaction (as specified) geotextile is to be immediately covered with drain rock to prevent contamination with fine materials or existing soils.

4. If seepage at the dam is encountered during construction of the French drains, contractor shall notify the owner and engineer.

5. If this bar does not measure 1" then drawing is not to scale.
EXISTING DAM B MODIFICATIONS

PLANS AND PHOTOGRAPH

1. All earthwork materials are to be placed and compacted according to Specification 31 00 00.
2. Existing crown dimensions are based on as-built data provided by the City of Yreka, but may be subject to some variation. Prior to development of shop drawings, contractor to confirm all existing dimensions of Dam B. If dimensions vary significantly from those reported, contractor to coordinate with the owner and engineer.
3. Prior to any excavation for the conc velocity apron or the associated earthworks, contractor shall field locate the exist city of Yreka supply line. The city of Yreka supply line shall not be impacted and shall remain in service throughout the construction duration.

Sheet Notes:

A. Fabricate new stop logs that fit existing stop log guide slots, see structural for details.
B. Existing center pier to be demolished. Conc to be placed to raise invert elevation of stop log suit to EL 2513.25 for entire width of Dam B. If pier to be cast through the mass conc, and central pier to be reconditioned over new mass conc. See structural for all conc details including conc size, new central conc, and connections to exist conc.
C. Install new pathway across Dam B for access to gate and stop log, see structural.
D. Fabricate (1) nappe extension fittings for placements atop newly fabricated stop logs (see "A" above). See structural for details.
E. Create a 2x2' 4.5' conc block at EL 2501.90, around outlet of drain pipe, with 2H:1V side slopes up to channel invert, see structural for details. Elsewhere redefine the downstream channels from EL 2503.25 at the toe of conc velocity apron downstream at 1.5% slope following the exist creek alignment until exist grade is met (approx 2517.1), where not in bedrock, over excavate 5' below the required invert line, and during excavation retain exist channels/substrate material, following excavation rebuild the exist channel with 6" thickness of the exist surface material.
F. Place 3.0' thick layer of type IV riprap per spec 31 37 00 behind walls either side of the new conc velocity apron, with 2H:1V non-woven geotextile underlay. Where adjacent slopes are bedrock, place to adjacent slopes and side, excavate and line 3.0' thick layer 2.0' up the slope.
G. After completion of the work in this area, but prior to breaching of and removal of cofferdams, contractor shall restore original channel material to all disturbed areas within the swale. Areas outside of the swale that have been disturbed shall be restored with a 6" layer of topsoil and reseeded.
EXIST INTAKE STRUCTURE CONCRETE SLAB

ADULT LOW FLOW (37 CFS)
FLOW VELOCITY: 13.1 FT/S
FLOW DEPTH: 4.9"

JUVENILE HIGH FLOW (62 CFS)
FLOW VELOCITY: 3.9 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.8 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.7 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.6 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.5 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.4 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.3 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.2 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.1 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 3.0 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.9 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.8 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.7 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.6 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.5 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.4 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.3 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.2 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.1 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 2.0 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.9 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.8 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.7 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.6 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.5 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.4 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.3 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.2 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.1 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 1.0 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.9 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.8 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.7 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.6 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.5 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.4 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.3 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.2 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.1 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 0.0 FT/S
FLOW DEPTH: 2.0'

FLOW VELOCITY: 12.7 FT/S
FLOW DEPTH: 4.7"
**Sheet Notes:**

1. Riprap not shown in plan on this sheet for clarity. For riprap layer above French drain see sheets C210 and C211.
2. All non-woven geotextile to be overlapped a minimum of 12" at seams. Care shall be taken during storage, placement, and compaction of drain rock materials that drain rock is not contaminated with fine materials or existing soils. After placement and compaction (Type DRC fill only) drain rock is to be immediately covered with geotextile prior to final backfill.
3. Type IV riprap shall be placed by light equipment over the French drain. END DUMPING WILL BE PERMITTED ON TOP OF THE FRENCH DRAIN OR DRAIN ROCK.
4. Type IV riprap shall have 12oz non-woven geotextile where placed against natural grade, or in locations of excavation where placed against backfill material.
5. All earthworks materials are to be placed and compacted according to Specification 31 00.

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**Scale:** 1" = 2'
1. See structural for facility dimensions. See mechanical for all interior piping, penetrations, and appurtenances.
2. Contractor shall be responsible for maintaining safe working slopes based on working conditions, soil type, moisture content, etc. All slopes shall meet local, state, and federal (Osha) requirements.
3. All earthworks materials are to be placed and compacted according to specification 31 00 00.

Sheet Notes:

Sheet Key Notes:

A. Either side of the meter vault transition between pipe material (16) and (11) (See sheet 2001 for pipe schedules) via reducing sleeve couplings. Reducing sleeve couplings shall be Romac RC501, or approved equal. In total, (4) x 12"Ø DI x PVC reducing sleeve couplings and (4) x 20"Ø DI x PVC reducing sleeve couplings.

B. Construct 3.0 CR drain rock sump of type DRC material wrapped in a 12 oz non-woven geotextile. Drain rock sump dimensions shall be 3.0' wide x 0.8' long x 3.0' deep, and shall maintain 6" of vegetated topsoil above. Route 1.5"Ø meter vault sump discharge to the drain rock sump 24" below finished grade.

C. For all piping fittings and appurtenances, outside of the meter vault, see piping plans and profiles.

D. Place 6" thick layer of Type DRC fill per Spec 31 00 00 under the meter vault, and underlay with 12 oz non-woven geotextile. Extend Type DRC layer and geotextile a minimum of 3.0' beyond the footprint of the meter vault. Place Type DRC Fill in all areas outside of the meter vault footprint.

E. Place and compact Type C fill to 95% dry density according to ASTM D 1557 (Modified Proctor) per Spec 31 00 00.