R & E Grant Application 15 Biennium

Project #: 15-032

Jetty Creek Fish Passage

Project Information

R&E Project Request: $53,937.00
Total Project: $512,457.00
Start Date: 5/10/2015
End Date: 4/30/2017
Organization: Lower Nehalem Watershed Council (Tax ID #: 911826263)

Fiscal Officer

Name: Claudine Rehn
Address: P.O. Box 493
Garibaldi, OR 97118
Telephone: 503-322-2222
Email: claudine@tbnep.org

Technical Contact

Name: Michele Long
Address: 4907 Third St.
Tillamook, OR 97141
Telephone: 503-842-2741 x237
Fax: 503-842-8385
Email: Michele.L.Long@state.or.us

Applicant Information

Name: Alix Lee
Address: PO Box 249
Nehalem, OR 97131
Telephone: 503-368-7424
Telephone 2: 541-231-8041
Email: lnwc@nehalemtel.net

Past Recommended or Completed Projects

Number	Name	Status
09-258	Jetty Creek Fish Passage Technical Assistance	Completed
11-010	God's Valley Meadows Fish Passage Improvement	Approved
13-042	Jack Horner Creek LWD Enhancement	Approved

13-062	McDonald Slough Reconnection Project	Approved

Location Information

Where is it?

The project will occur on public land owned or managed by another party

Landowner Information

Name:	City of Rockaway Beach
Address:	276 S. Highway 101, PO Box 5 Rockaway Beach, OR, 97136
Phone:	(503) 355-2291
Fax:	(503) 355-8221
Email:	LukeShepard@rockawaybeachor.us

Site Description

Street Address, nearest intersection, or other descriptive location.

Jetty Creek, City of Rockaway Beach Water Treatment Plant. T2N-R10W-Section 17nese. Latitude 45.6566N Longitude -123.9255W.

Directions to the site from the nearest highway junction.

Drive north from Highway 101 at Neah-Kah-Nie High School in Rockaway Beach 1.7 miles, crossing Jetty Creek bridge and taking the first right after the bridge onto Jetty Creek Road. Keep on the right and travel 0.1 mile on gravel road to the Rockaway Beach Water Treatment Plant.

Following project completion, public anglers will be allowed the following level of access to the project site:

No access

Please describe what leases, easements, agreements are in place to ensure angler access to the project site, and what is the length of each agreement.

Jetty creek is not open to fishing. This stream is the first tributary to Nehalem Bay. Fishing access is open throughout the bay and along the jetty. Jetty creek is next to a popular fishing and crabbing business (Jetty Fishery) which draws many visitors each year for fishing, crabbing and recreational boating. Nehalem Bay State Park lies just across the bay from Jetty creek and receives thousands of visitors every year.

Dominant Land Use Type:

Forest

Project Location

General Project Location.

County:	Tillamook
Town/City:	Rockaway Beach
ODFW Dist:	North Coast
Stream/Lake/Estuary Name:	Jetty Creek
Sub-basin:	17100202
Tributary of:	Nehalem Bay

Specific Project Location.

Latitude	Longitude

45.6566	-123.9255

Project Summary

Project Summary

Please provide a couple sentence summary of the proposal.

Jetty creek is the first tributary of Nehalem Bay and has 1.8 miles of high quality salmonid habitat. A previous R&E grant (Project #:09-258) helped to fund designs to restore passage at the city water intake near the mouth. This grant will help to fund the implementation of those designs.

Overall Project Goals

Describe the primary goals or outcomes of the entire project, including elements not requesting funding from R&E.

- Eliminate fish passage barrier and restore fish access to 1.8 miles of habitat
- Enhance aquatic habitat at the site by improving structural complexity and re-establishing transport capability at bypass channel
- Improve instream flow conditions and reconnect upstream and downstream reaches of Jetty Creek

Primary objectives of R&E funding

Please describe the measurable objectives for the R&E portion of the funding request.

R&E funds will help purchase and install the flat plate self cleaning fish screen at point of diversion, along the bank that will allow debris to pass.

Current Situation/Justification

Please describe the current situation and explain why this funding is needed.

Jetty creek is the first tributary adult salmonids encountered in their journey up the Nehalem and the last tributary available for out-migrating juveniles to stop and acclimate before entry to the ocean. Jetty Creek has roughly 2 miles of high quality freshwater salmonid habitat and historically supported runs of coho, Chinook, steelhead and cutthroat trout.

Seven hundred feet from the mouth, is the City of Rockaway Beach Water Treatment Plant (WTP). When the WTP was built, the impoundment was excavated in the floodplain, the original stream channel was plugged, a concrete dam built and the stream rerouted into the impoundment. A fish ladder was included but the ladder has failed to provide fish passage.

The city has partnered with the Lower Nehalem Watershed Council (Council) and ODFW on a project to reconnect Jetty Creek to its original alignment, eliminate the fish passage barrier, provide a reliable delivery of water to the WTP, improve instream flow conditions and enhance aquatic habitat by improving structural complexity and bedload transport. The city's impoundment will be off-channel; the point of diversion will be upgraded with a fish screen and stream flow gauge designed to facilitate water rights management.

Recreation and Commercial Benefit

This project will provide benefits to:

Recreational fisheries

Commercial fisheries

Explain how this project will contribute to current (and/or potential) fishing opportunities, access, or fisheries management.

When the fish passage barrier is removed, Coho, Chinook and steelhead will have access to an additional 1.8 miles of high-quality spawning and rearing habitat. Increasing salmon production within the Nehalem River watershed is vital in supporting bay and ocean fisheries. In recent years ODFW has been able to approve the harvest of wild Nehalem River coho. Restoration projects such as the Jetty Creek proposal are vital to ensure that outstanding recreational fishing opportunities will continue to exist in the Nehalem River watershed.

Is this project part of an approved Salmon-Trout Enhancement Program (STEP) activity?

No

This project has been identified as a priority for:

Local/watershed
Basin/regional

Identify any plan or other document that identifies this priority.

Summary of Watershed Health Indicators for the Oregon Coast ESU

Nehalem Conservation Action Plan

Nehalem Watershed Council Work Plan

This project is intended to benefit the following species:

Fall Chinook Salmon
Coho Salmon
Lamprey
Winter Steelhead
Cutthroat Trout

This project will benefit anglers or fishery by providing:

Habitat Enhancements
Fish Passage

Habitat Enhancements

The primary purpose of this project is to improve/increase:

In water structure, complexity, and habitat
Flow and/or connectivity
Fish passage

Fish Passage

This fish passage project will:

Remove a barrier with an existing fishway/passage structure

We have contacted or have been working with:

ODFW fish passage staff
The project has received approval

Project Description

Schedule

Activity	Date	RE Funding
Finalize Project Designs - Project currently at 90%.	Dec 2015 - Feb 2016	No
Permit Applications - pre-permit application meetings held with ODFW and NOAA.	Dec 2015 - April 2016	No
Bid Solicitation - LNWC and Project Technical Team will solicit bids and select a contractor based on cost, experience and demonstrated abilities.	Feb 2016 - Mar 2016	No
Materials Acquisition - Contractor will be responsible for ordering all supplies for project and working with ODFW on fish screen components.	Feb 2016 - Mar 2016	Yes
Contracting - the LNWC will develop contract documents with input from project engineering firm and consultation with ODFW Fish Screen staff.	Mar 2016 - April 2016	No
Construction - Project installation will occur during in-water work window. Oversight to be provided by project engineering firm, LNWC and ODFW Fish Passage and Screening Program staff; ODFW District staff	July 2016 - Sept 2016	Yes
Project Inspection - Final construction walk-through to be conducted with construction firm, engineering firm, Rockaway City, ODFW, LNWC	Sept 2016 - Dec 2016	No
Post Project Implementation Review - The fishway will beinspected by LNWC and ODFW during first two winters post construction.	Winter 2016-Spring 2018	No

Permits

Permit	Secured?	Date Expected
Tillamook County Development Permit	No	June 2016
USACE RGP/Oregon DSL GA Permit	No	June 2016
ODFW Fish Passage Approval	Yes	Obtained
ODF Forest Practices Notification	No	June 2016
WRD Point of Diversion Transfer Permit	No	June 2016

Project Design and Description

Please describe in detail the methods or approach that will be used to achieve the project objectives.

Restore fish passage while maintaining City of Rockaway's drinking water intake by installation of a natural fishway.

- The project proposes to partition flow to satisfy existing municipal and instream water rights through construction of a 375' long natural fishway that bypasses the existing diversion dam and impoundment. The fishway will be located south-southeast of the City's existing impoundment. The purpose of the fishway is to restore passage and access to 1.8 miles of coho and 1.2 miles of cutthroat spawning and rearing habitat. The fishway design includes riffles and pools to accommodate the natural gradient. The fishway includes a low flow thalweg to maintain water depth during low flow conditions. Additional channel design elements include: resting pools, large wood placements and boulder clusters. The project design intent is to provide passage. The fishway is not being designed to provide spawning or rearing habitat. It is a short reach of channel that will bypass the existing dam and impoundment. Trees cleared to install the fishway will be incorporated into the large wood complexes. Where feasible, these trees will be pulled over to utilize them as whole trees with rootwads.
- The project will utilize sediment and erosion control methods to minimize risk of impairing water quality. Because the fishway location is not connected to the surface water, most of the construction will take place in the dry.
- The site will be dewatered during construction, while still maintaining the City's drinking water diversion. A temporary dam will be installed on the upstream end of the work zone and divert flows into a 24" bypass pipe. The temporary dam will be constructed using bulk bags filled with sand imported from off-site.
- Construction of the fishway channel will require significant excavation. A gravel sand mixture will be used to fill the interstitial spaces of the fishway bed. This material will be sized to match material found up and downstream. The project may generate appropriately sized material from excavation on-site.

- Once the fishway channel is constructed, water will be turned into it to and work will commence on the diversion structure.
- Fishway will have native plantings installed along its length. Any plants that can be salvaged during the site preparation will be used in the fishway restoration.

Install a diversion structure including fish screen, to partition flows to supply municipal water and flow in the constructed fishway.

- Work at this site will include excavation to form a pool at the entrance to the screened diversion. This pool will maintain the water elevation for the intake.
- A non-deformable riffle will be installed on the downstream end of the diversion pool to maintain gradient.
- The bank opposite the screen will be riprapped to create scour conditions at the pool.
- The diversion structure will consist of a concrete wall and abutment located along and parallel to the stream bank, flat plate screen, air burst cleaning system for the screen, adjustable head gate and electronic controls.
- The flat plat screen draws flow from the side of the pool, perpendicular to the direction of flow, regardless of stream stage. The screen orientation allows for excellent debris passing capabilities.
- The vertical flat plate screen is stainless steel with maximum openings of 1/16”.
- Flow is diverted into the impoundment by a trapezoidal weir with a knife gate with electronic controls and gage.
- The intake and weir structures will be connected with an 18” PVC pipe and knife valve that will open and close based on a flow level sensor to allow disruption of flow during and after air burst cleaning.
- Water flows into the impoundment and it is diverted to the drinking water facility at the downstream end of the impoundment.

City’s drinking water impoundment/settling pond becomes off-channel.

- This project will create off-channel storage for the City’s raw water system which is needed to improve diversion operation, reduce raw water turbidity and will improve treatment efficiency.
- To improve the City’s water storage, approximately 11,000 cy of stored sediments will be excavated from the existing impoundment. The new fishway will pass sediment, maintaining channel processes downstream from the impoundment. Under existing conditions, the diversion dam slows the stream’s velocity and forces sediment to drop out of suspension where it is stored in the impoundment.

Modification of existing fish ladder and dam.

- The existing fish ladder and dam will remain in place. The dam is necessary to create the water surface elevations and storage to supply the City’s water intake.
- The dam will be modified to improve water storage capacity. The height of the dam will be raised 8” across the existing spillway in the dam’s center and fish ladder.
- With the construction of the fishway, the fish ladder is no longer needed. In consultation with NOAA Fisheries and ODFW, the following actions were developed to prevent fish from utilizing the ladder and risk entrapment in the impoundment:
    - Fill fish ladder and adjacent open areas to prevent pool formation
    - Install boulders immediately downstream from the fish ladder

Riparian vegetation establishment.
- Native plants will be installed within the project footprint along the newly established fishway and in the disturbed areas.

The proposed project is the result of a 2010 feasibility study that examined alternatives for providing fish passage while maintaining the City's existing municipal water rights. In its existing configuration, all flows from Jetty Creek flow through the City's 6,000 gallon raw water impoundment. The key objectives used to evaluate the design alternatives included:
- Conformance to state and federal fish passage and screening design criteria: Ensure fish are not trapped or harmed within the City's diversion facility or impoundment
- Maintain minimum instream water right: The design of the new diversion structure must incorporate a mechanism to ensure the 0.5 cfs instream water right is maintained
- Diversion capacity: Diversion structure must satisfy the City's 2.0 cfs water right and be seasonally adjustable to ensure ease in regulating diverted flows to maintain the City's 1.0 cfs senior water right while regulating off the 1.0 cfs junior water right when streamflow drops below the instream water right
- Flexibility in diversion operations: Include option to completely shut off the diversion during high flows that cause spikes in turbidity levels. Include ability for City to perform flow regulation remotely.
- Flow monitoring capability to ensure compliance with water rights: The design must include monitoring of flows entering the diversion structure, discharging through the fishway and total stream flow. This will ensure the City's municipal rights and instream water rights are being maintained.
- Operation and maintenance costs: The optimal design will require little to no manual cleaning and have low operational costs.
- Capital costs: The design should be economically feasible and achievable within limited City and grant budgets

HBH engineers evaluated six screen options for the City's water intake. The current design received NOAA fish passage approval when designed in 2011. (See attached memo from NOAA fisheries).

A two-tiered analysis was used to narrow to three options for an in-depth analysis for their feasibility at this site. This analysis evaluated each option with respect to its ability to meet the project's goals (as outlined in R5 above). A matrix with weighted design criteria was used to rank each of the six potential screen alternatives as follows: Fish protection (25 points), Capital costs (25 points), O&M requirements (20 points), Bypass requirements (20 points) and Project construction footprint requirements (10 points).

Based on this matrix, the top three alternatives included: Flat plate screen (93 points), Traveling belt screen (89 points) and Horizontal flat plate (83 points).

PREFERRED ALTERNATIVE: Flat plate screen
Advantages of a flat plate screen for this location include: low operation and maintenance requirements, small construction footprint, considered a proven technology by regulatory

agencies, low construction costs, does not require construction of a fish bypass, excellent debris handling capabilities.

When the top three alternatives were evaluated, the decision was made by the City and the engineering firm that the best screen design for this site is the flat plate screen. Planning level cost estimates were developed for each alternative. Costs for each were under $100,000. Cost was not the decisive factor in selecting a flat plate screen. The site's summer low flow conditions and need to maintain a split flow along with potential for high debris load in winter make the flat plate screen the best choice for this site.

The project design was developed to the 90% stage through the project's partnerships and implementation of a previous OWEB Technical Assistance Grant (210-1017) and R&E Technical Assistance Grant (09-258). The project's feasibility study was developed by engineering staff from HBH Consulting Engineers out of Sherwood.

Aaron Beavers, NOAA Fisheries fish passage engineer, provided technical design consultation and support to HBH during the project's design phase and has approved the project design. Ken Loffink, ODFW Fish Passage Engineer has reviewed and has also approved the project design.

Engineering

Does the project involve capital improvement, engineering, site grading or other construction?

No

Project Management and Maintenance

What is the life expectancy of R&E funded construction, structures, equipment, supplies, data or fishery?

This project removes the need to conduct maintenance on the impoundment, and intake. No maintenance needed on the new channel.

Life expectancy is 35-50 years. City will conduct any needed project maintenance. ODFW will visit the site to check the fish screens and status of fish passage and channel restoration.

Who is responsible for long term management, maintenance, and oversight of the project beyond what is funded by R&E.

Long term management, maintenance, and oversight of the overall project is the responsibility of the City of Rockaway. ODFW will be responsible for any major maintenance and/or repair of the intake screen and conduct regular inspections.

Will the project require ongoing maintenance?

No

Is there a plan to collect baseline data and to conduct monitoring efforts to measure the effectiveness of the project?

Yes

The city conduct monitoring of flows entering the diversion structure, discharging through the fishway and total stream flow. This will ensure the City's municipal rights and instream water rights are being maintained.

The Council, with assistance from ODFW, will be conducting pre and post monitoring of the

stream, passage and riparian conditions and surveys for adult and juvenile fish presence above the project area.
ODFW will also be regularly inspecting the intake and screening structure.

Project Funding

Funding

Have you applied for OWEB funding for this project?

Yes
OWEB application number: 216-1003
R&E money is needed as matching funds.
Awaiting a decision from the panel.
An application was submitted to OWEB in April 2015. The initial Review Team project visit and meeting with the Council and project partners has been held and the application is currently under review.
After approval for funding has been awarded, the funds are expected to become available by September/October of 2015.

Other Funding Source	Type	Secured	Dollar Value	Comments
City of Rockaway Beach	Cash	Secured	$40,000	
City of Rockaway Beach	In-Kind	Secured	$32,000	Materials, equipment, implementation assistance.
ODFW District Staff	In-Kind	Secured	$4,450	North Coast Watershed District staff time
ODFW Fish Screening Program	Cash	Pending	$25,000	Design, construction, and placement of fish screen
Lower Nehalem Watershed Council	In-Kind	Secured	$1,500	Volunteer time
Oregon Watershed Enhancement Board	Cash	Pending	$386,270	
ODFW Fish Passage Program	Cash	Pending	$25,000	
		Total	0	

Budget

Item	Unit Number	Unit Cost	In-kind or non-cash contr butions	Funding from other sources	R&E Funds	Total Costs
PROJECT MANAGEMENT						
	0	0	0	0	0	0
		SUBTOTAL(1)	0	0	0	0
IN-HOUSE PERSONNEL						
	0	0	0	0	0	0
		SUBTOTAL(2)	0	0	0	0
CONTRACTED SERVICES						
Final engineering design, prepare project bid book (HBH Engineering) hrs	80	125	0	10000	0	10000
Bid process and award assistance (HBH Engineering) hrs	32	125	0	4000	0	4000
Construction inspection (HBH Engineering) (hrs)	80	88	0	7040	0	7040
Construction management (HBH Engineering) (hrs)	80	125	0	10000	0	10000
Creek restoration construction management (Engineer subcontractor) (hrs)	120	125	0	15000	0	15000
Project management and permitting (Confluence Consulting) (hrs)	120	65	0	7800	0	7800
Lower Nehalem Watershed Council Volunteers (hrs)	60	25	1500	0	0	1500
City of Rockaway Beach - water right adjustments/move point of diversion	0	8100	8100	0	0	8100
City of Rockaway Beach (hrs)	80	35	2800	0	0	2800
Oregon Department of Fish and Wildlife (hrs)	0	4450	4450	0	0	4450
Equipment mobilization (lump sum)	0	10000	0	10000	0	10000
Erosion control (lump sum)	0	8000	0	8000	0	8000
Dam and fish ladder structural revisions (lump sum)	0	7000	0	7000	0	7000
Excavation (cubic yards)	11000	10	0	110000	0	110000
Stream channel construction (hrs)	100	120	0	12000	0	12000
Backhoe with operator (hrs)	100	120	0	12000	0	12000
Clearing, grubbing and demo (lump sum)	0	8000	0	8000	0	8000
Dewater (lump sum)	0	10000	0	10000	0	10000
Fence relocation (lump sum)	0	1200	0	1200	0	1200
Re-vegetation of all disturbed areas (lump sum)	0	3500	0	3500	0	3500
Large boulders 3-ft diameter (stream channel construction) (per boulder)	400	50	0	20000	0	20000
Medium boulders 1.5 ft diameter (stream channel construction) (per boulder)	300	20	0	6000	0	6000
Large wood (stream channel construction) (each)	20	200	0	4000	0	4000
Flow level sensors	2	2500	0	5000	0	5000
Temporary diesel pump for city drinking water operations (lump sum)	0	21100	21100	0	0	21100
HDPE Liner (60ml) including 2" sand base (per sq ft)	14200	2.75	0	39050	0	39050
Aggregate base for access road (cubic yards)	150	14	0	2100	0	2100
Retaining wall (sq ft)	1540	22	0	33880	0	33880
Weir gate (each)	1	28000	0	28000	0	28000
Self cleaning screen (each)	1	57000	0	25000	32000	57000
Water diversion structure with flat screen (lump sum)	0	33937	0	12000	21937	33937
Contingency - hauling	0	10000	0	10000	0	10000
		SUBTOTAL(3)	37950	420570	53937	512457
TRAVEL						
	0	0	0	0	0	0

		SUBTOTAL(4)	0	0	0	0
SUPPLIES/MATERIALS						
	0	0	0	0	0	0
		SUBTOTAL(5)	0	0	0	0
EDUCATION/OUTREACH						
	0	0	0	0	0	0
		SUBTOTAL(6)	0	0	0	0
EQUIPMENT						
	0	0	0	0	0	0
		SUBTOTAL(7)	0	0	0	0
FISCAL ADMINISTRATION						
	0	0	0	0	0	0
		SUBTOTAL(8)	0	0	0	0
		BUDGET TOTAL	37950	420570	53937	512457

Additional Files

Click a link to view that particular file.

1379_11_LNWC Tax Exempt Documentation

Jetty Cr Design Plans

Jetty Creek Photos

Letters of Support

Map_Coho Distribution

Map_Jetty Cr Aerial

Map_Project Location

Project History

Signature Authorization Page-public

Jetty Creek
Project History

Jetty Creek enters the Nehalem estuary less than a third of a mile from the ocean. The creek is the first tributary adult salmonids encountered in their journey up the Nehalem and the last tributary available for out-migrating juveniles to stop and acclimate before entry to the ocean. Jetty Creek has roughly 2 miles of high quality freshwater salmonid habitat and historically supported its own runs of coho, steelhead and cutthroat trout. Its proximity to the ocean would indicate that chum salmon once used it as well but no records exist to verify that probability.

Seven hundred feet upstream from the estuary, the City of Rockaway Beach owns and operates a Water Treatment Plant (WTP) on Jetty Creek and diverts its water from that site. The city holds two water rights on Jetty Creek for municipal use, each with a flow rate of 1.0 cfs. An instream right of 0.5 cfs also exists. One of the city's rights is senior to the instream right, while the city's second 1.0 cfs water right is junior to the instream right. Summertime stream flows typically are sufficient to allow the city to withdraw a minimum of 1.0 cfs and allow for the instream right of 0.5 cfs; however no gauge exists in the system, making managing for the different water rights a challenge.

When the city built their WTP, Jetty Creek's alignment was altered to provide water flow into the diversion impoundment. The impoundment was excavated in the floodplain, the original stream channel was plugged, a concrete dam built and the stream rerouted into the impoundment. An attempt was made to provide fish passage by constructing a fish ladder within the footprint of the dam but the design was flawed and the newly constructed ladder failed to provide successful fish passage through the impoundment structure. The impoundment not only stopped fish passage, it also disconnected the stream flow, resulting in the sediment load from upstream dropping out in the impoundment and starving the downstream reaches of gravels and sediment. The subsequent accumulation of sediment in the impoundment requires the city to frequently dredge, removing organic and inorganic material from the stream system.

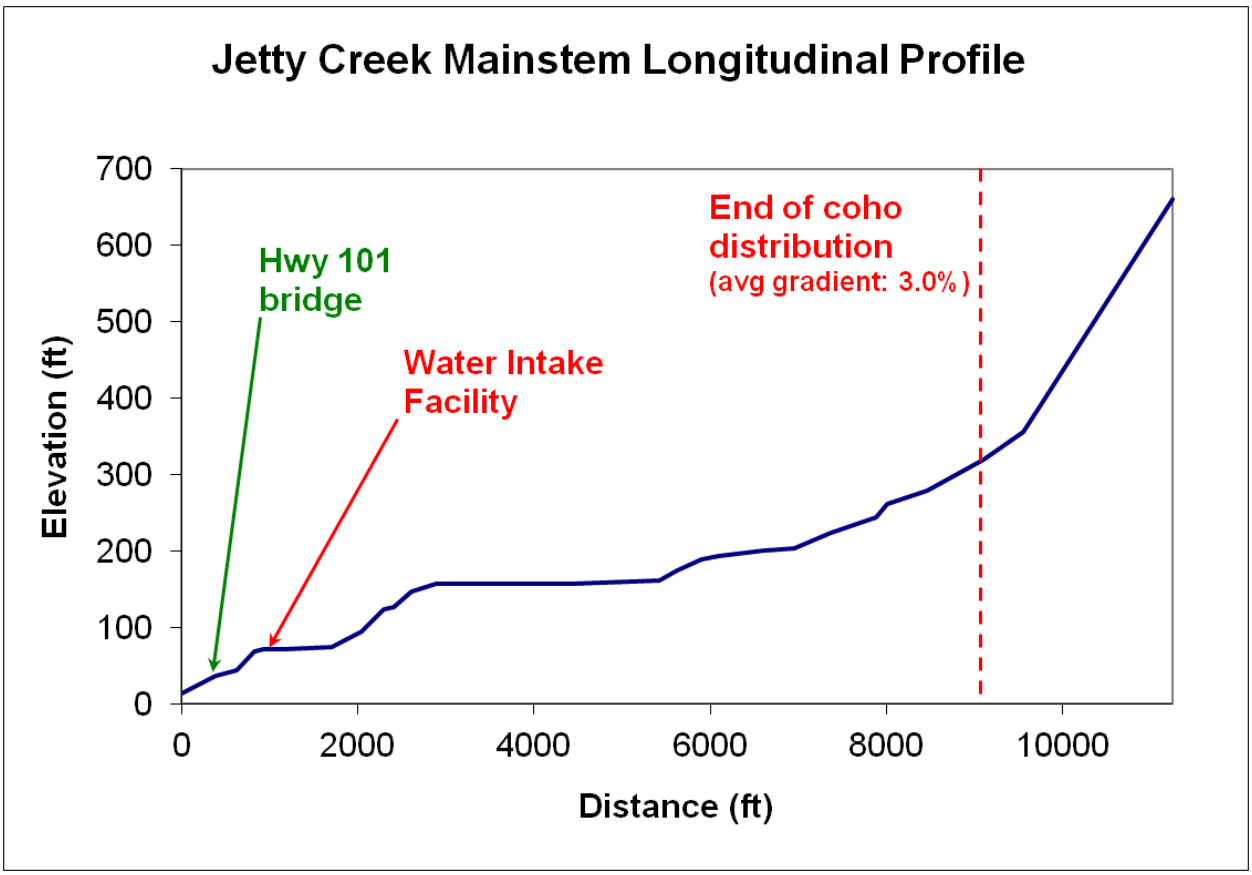
Downstream of the WTP, the creek used to flow through an undersized fish passage barrier culvert under Hwy 101, but in 2008 ODOT replaced the culvert with a bridge, and unimpeded passage was once again available for the stream reach from the estuary to the WTP diversion dam. The city recognized the opportunity provided by the bridge construction and acquired funding from Water Resources Department to conduct an engineering and financial feasibility study on the possibility of restoring the stream to its original channel to improve fish passage and sediment transport while assuring the city's water needs continue to be met. Key components of the feasibility study included a site evaluation, geotechnical investigation, hydrologic analysis and biological inventory.

Following the completion of the feasibility study, the city partnered with the Lower Nehalem Watershed Council (Council) and ODFW on a Technical Assistance (TA) grant from OWEB (210-1017) to develop a technical design solution to reconnect Jetty Creek to its original alignment, eliminate the fish passage barrier, provide a reliable delivery of water to the WTP, improve instream flow conditions and enhance aquatic habitat by improving structural complexity and bedload transport. In this Restoration application the Council, again in partnership with the city, is applying for OWEB funds to implement the designs developed through the TA grant. The original stream channel will be restored, allowing fish to bypass the current weir and fish ladder, providing unimpeded fish access to 1.8 miles of habitat upstream of the Water Treatment Plant. The city's impoundment will be off-channel; the point of diversion will be upgraded with a fish screen and stream flow gauge designed to facilitate water rights management; and

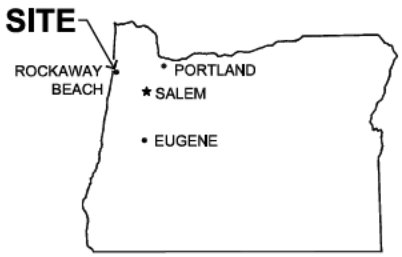
the existing fish ladder and dam structure will be decommissioned to ensure fish utilize the restored stream channel and not attempt to gain access to the city's impoundment pond.

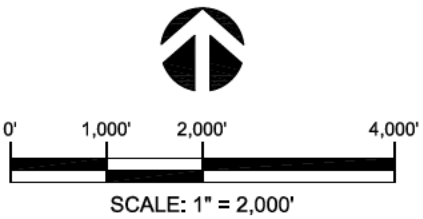
Partners include the City of Rockaway Beach, ODFW Fish Passage & Screening Program, ODFW R&E, Tillamook Estuaries Partnership and the Native Plant Cooperative. OWEB funds will be used for work at the point of diversion, excavation, construction, mobilization, erosion control, project management and administration.

Project Element	Specific Objectives	Measure for Evaluation
Maintain existing municipal water right and provide flow to constructed fishway	Water intake with self-cleaning fish screen that partitions flow to satisfy municipal and instream water rights	Fish screen mesh size Stream gauge
Build natural fishway	Maintain stable gradient. Restore natural fish passage. Restore natural channel processes including sediment and wood transport	Consistent elevation for intake diversion screen Fish presence surveys (juvenile, adult) Reduced need for City to conduct maintenance to manage sediment



SOURCE: USGS NEHALEM QUADRANGLE, OR 1982, PHOTO REVISED 1985.





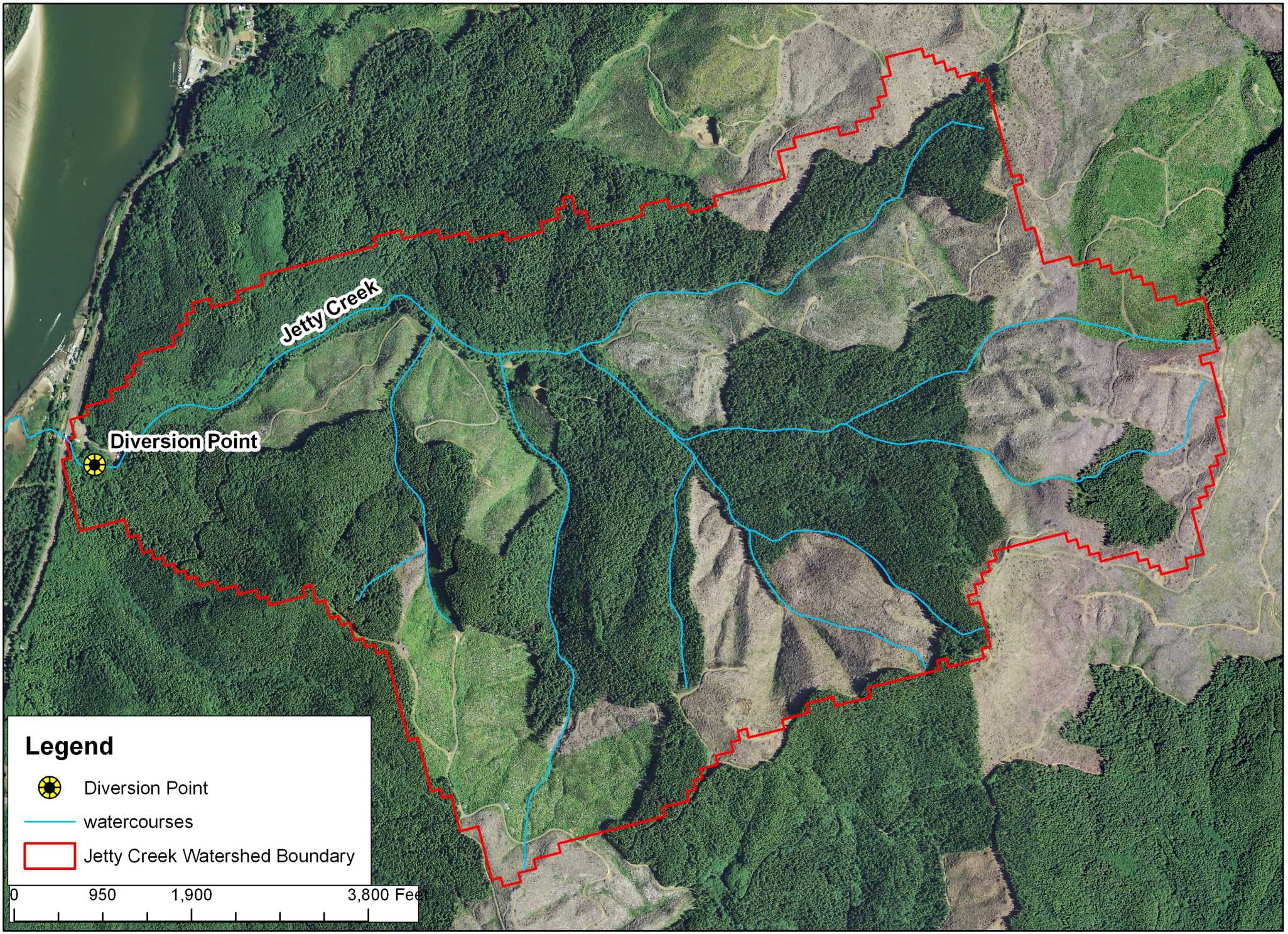
SCALE: 1" = 2,000'

Prepared for: CITY OF ROCKAWAY BEACH

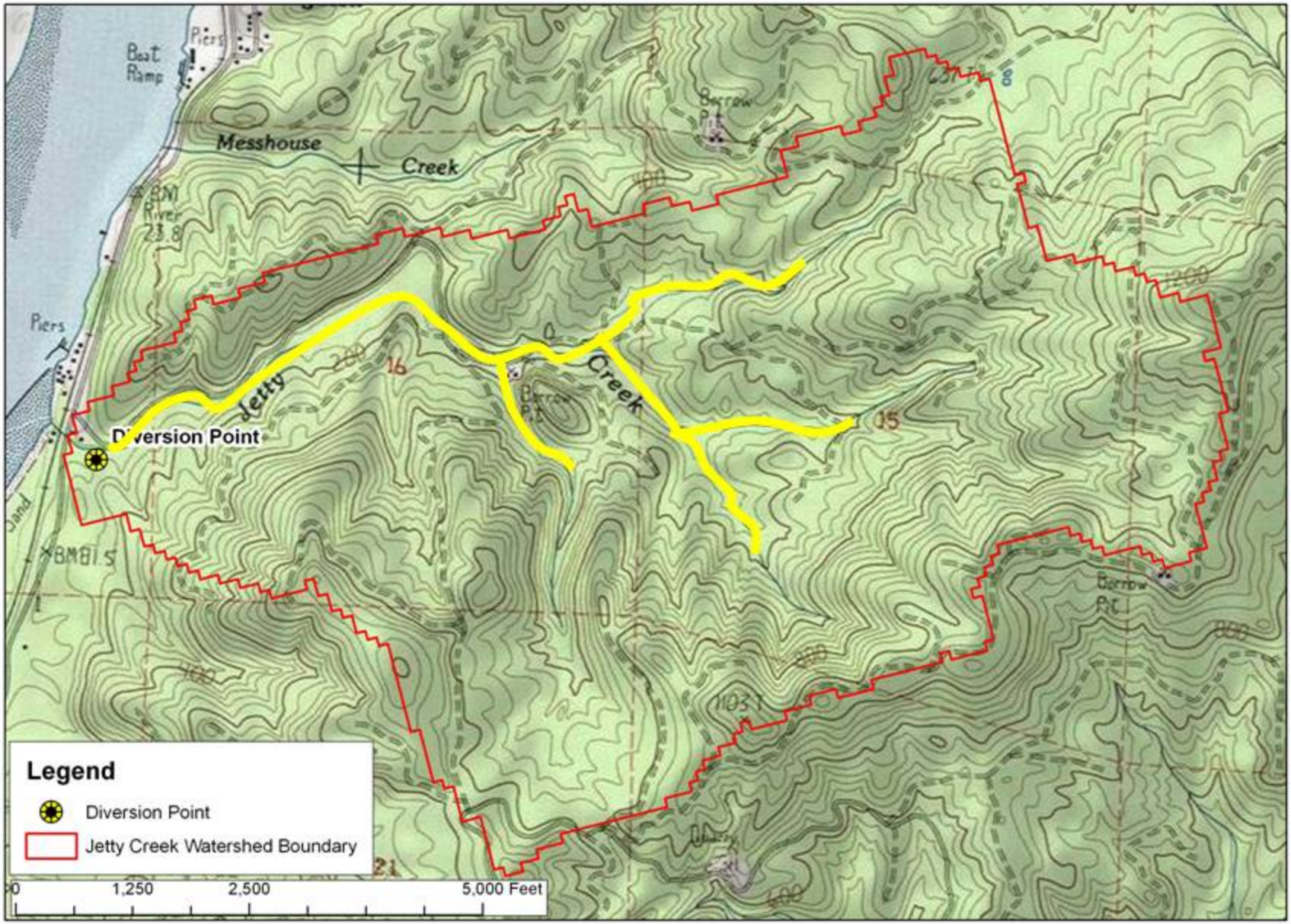
PBS	PROJECT # 72856.000 DATE DEC 2009	SITE LOCATION MAP JETTY CREEK IMPROVEMENT ROCKAWAY BEACH, OREGON	FIGURE 1

L:\VANCOUVER\72000\72800-72899\72856_HBH-RockawayBeach WWTP\GeoDwg\72856_Fig1_SiteLoc.dwg Dec 04, 2009 04:48pm

Jetty Creek Overview



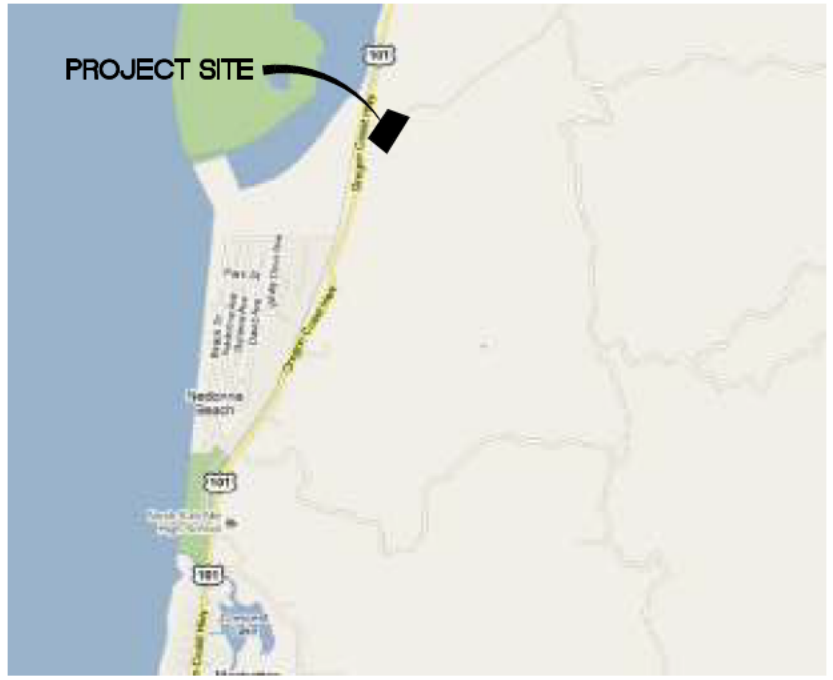
Jetty Creek—Upstream Spawning and Rearing Habitat (Coho)



JETTY CREEK IMPOUNDMENT IMPROVEMENTS

ROCKAWAY BEACH, OREGON

April 14, 2011



VICINITY MAP

SCALE: NTS

ABBREVIATIONS

@	AT	P/L	PROPERTY LINE
AC	ASPHALT	PVC	POLYVINYL CHLORIDE
BV	BUTTERFLY VALVE	PVI	POINT OF VERTICAL INTERSECTION
CB	CATCH BASIN	ROW	RIGHT OF WAY
C/L	CENTERLINE	RT	RIGHT
CMP	CORRUGATED METAL PIPE	S	SOUTH
CO	CLEAN OUT	SE	SOUTH EAST
COTG	CLEAN OUT TO GRADE	SW	SOUTH WEST
CY	CUBIC YARDS	STM	STORM DRAIN
DR	DRIVE	SF	SQUARE FEET
DIP	DUCTILE IRON PIPE	SAN	SANITARY SEWER
E	EAST	ST	STREET
ELEV	ELEVATION	STA	STATION
EP	EDGE OF PAVEMENT	S=	SLOPE EQUALS
EX	EXISTING	S/W	SIDEWALK
FLG	FLANGE	TB	THRUST BLOCK
GUT	GUTTER	TYP	TYPICAL
GV	GATE VALVE	VER	VERTICAL
HDPE	HIGH DENSITY POLYETHYLENE	W	WEST
HOR	HORIZONTAL	W/	WITH
HP	HIGH POINT	WTR	WATER
HYD	HYDRANT		
IE	INVERT ELEVATION		
LF	LINEAR FEET		
LN	LINE		
LP	LOW POINT		
LT	LEFT		
MH	MANHOLE		
MJ	MECHANICAL JOINT		
N	NORTH		
NE	NORTH EAST		
NTS	NOT TO SCALE		
NW	NORTH WEST		
PC	POINT OF CURVATURE		
PRC	POINT OF REVERSE CURVE		
PT	POINT OF TANGENCY		

TAX LOT, PROJECT ADDRESS INFORMATION

THIS PROJECT WILL BE LOCATED SECTION 17, TOWNSHIP 2N, RANGE 10W, TAXLOT 107 (LOT 3) OF THE WILLAMETTE MERIDIAN WITHIN TILLAMOOK COUNTY, STATE OF OREGON.

FUNDING STATEMENT

WORK UNDER THIS CONTRACT WILL BE FUNDED IN PART FROM THE OREGON WATERSHED ENHANCEMENT BOARD (OWEB).

LOCATE

(48 HOUR NOTICE PRIOR TO EXCAVATION)

OREGON LAW REQUIRES YOU TO FOLLOW THE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH 952-001-0090 & ORS 757.542 THROUGH 757.562 AND ORS 757.993. YOU MAY OBTAIN COPIES OF THE RULES FROM THE CENTER BY CALLING (503) 246-1987. ONE CALL SYSTEM NUMBER 1-800-332-2344.

OWNER:

CITY OF ROCKAWAY BEACH
ROCKAWAY BEACH, OREGON 97136
MARK GUNTER
PH: (503) 355-2291
FAX: (503) 355-8221

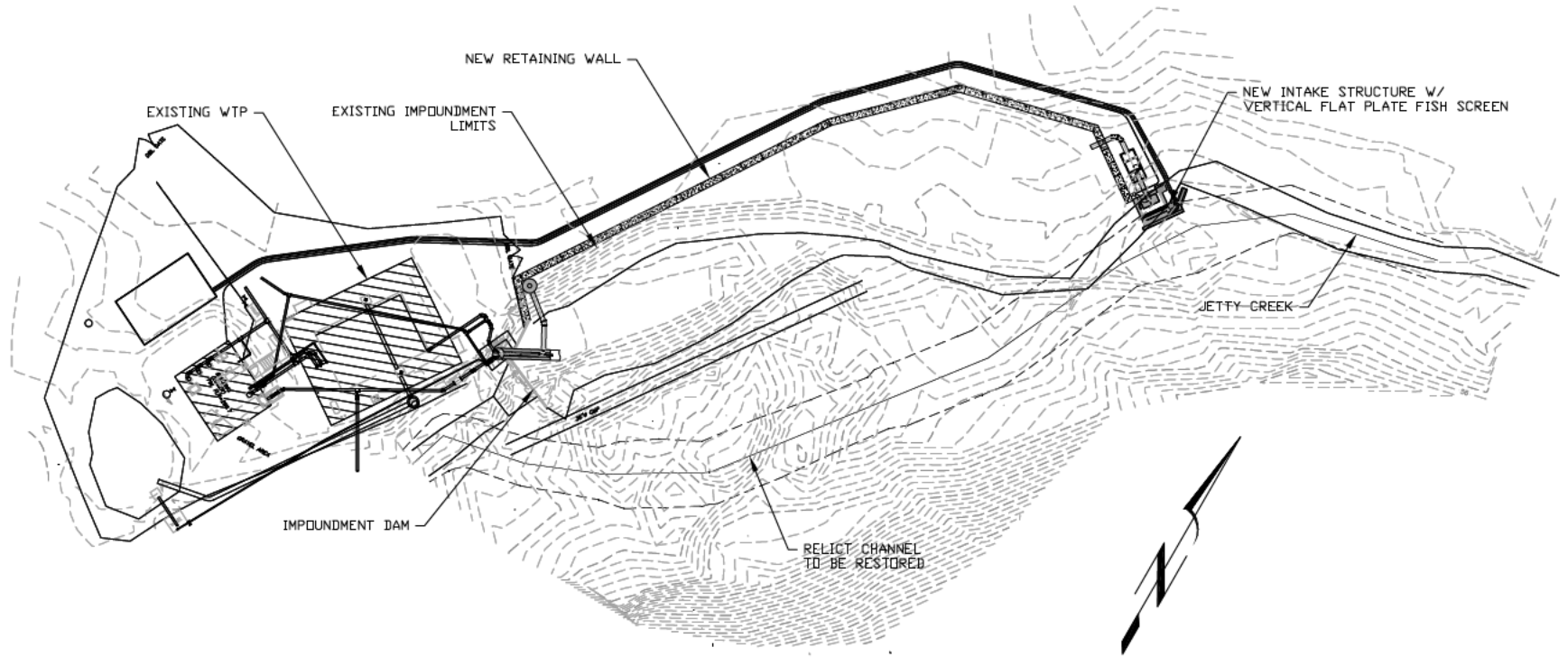
CIVIL ENGINEER

HBH CONSULTING ENGINEERS, INC.
20055 SW PACIFIC HWY, SUITE 201
SHERWOOD, OREGON 97140
CONTACT: MICHAEL D HENRY, ENGINEER
PH: (503) 625-8065
FAX: (503) 625-1531

SURVEYOR

HBH CONSULTING ENGINEERS, INC.
20055 SW PACIFIC HWY, SUITE 201
SHERWOOD, OREGON 97140
CONTACT: JOHN PARIANI
PH: (541) 890-1131

SHEET INDEX



SITE PLAN

SCALE: 1" = 30'

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONTRAGER
EXPIRES: 12/31/2011

H B H
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
Consulting Engineers
503/625-8065 fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: BEC | Drawn By: BEC | Checked By: MDH | Submittal No: PRELIMINARY | Layout: COVER
File: L:\2004-27-17\DWG\Cover

REV.	DATE	DESCRIPTION	BY

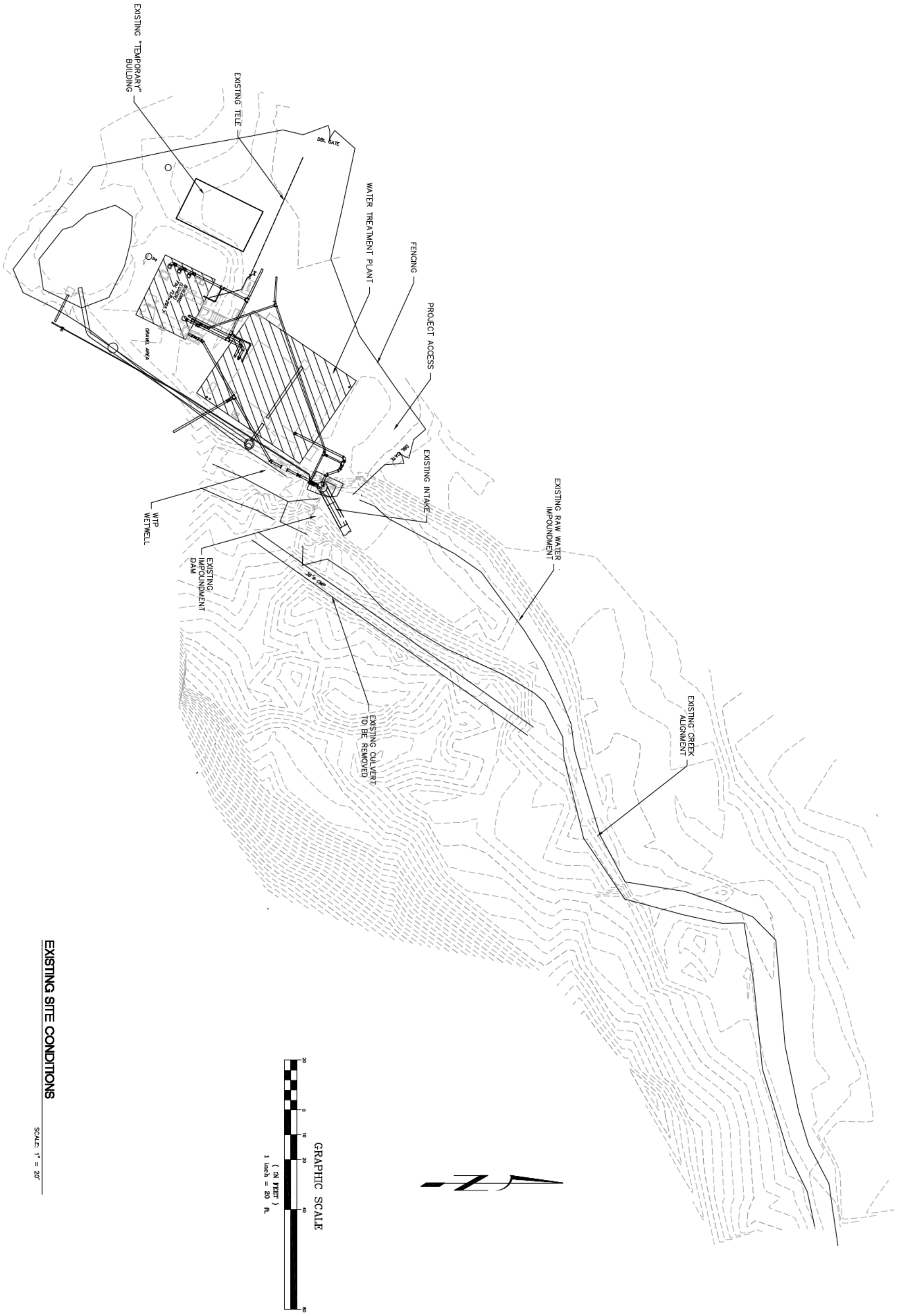
0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON
COVER

Sheet No. 1 of 22
Date 4/14/11
2004.27.17

216-1003



EXISTING SITE CONDITIONS

SCALE: 1" = 20'

Date	4/14/11
Sheet No.	2
	2 OF 22
2004-027-17	

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

EXISTING CONDITIONS AND DEMO PLAN

IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

REV.	DATE	DESCRIPTION	BY

H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL	Drawn By: CLL	Checked By: DKB	Submittal No: PRELIMINARY	
File: L:/2004-027-17/DWG/GRADING			Layout: EXISTING	

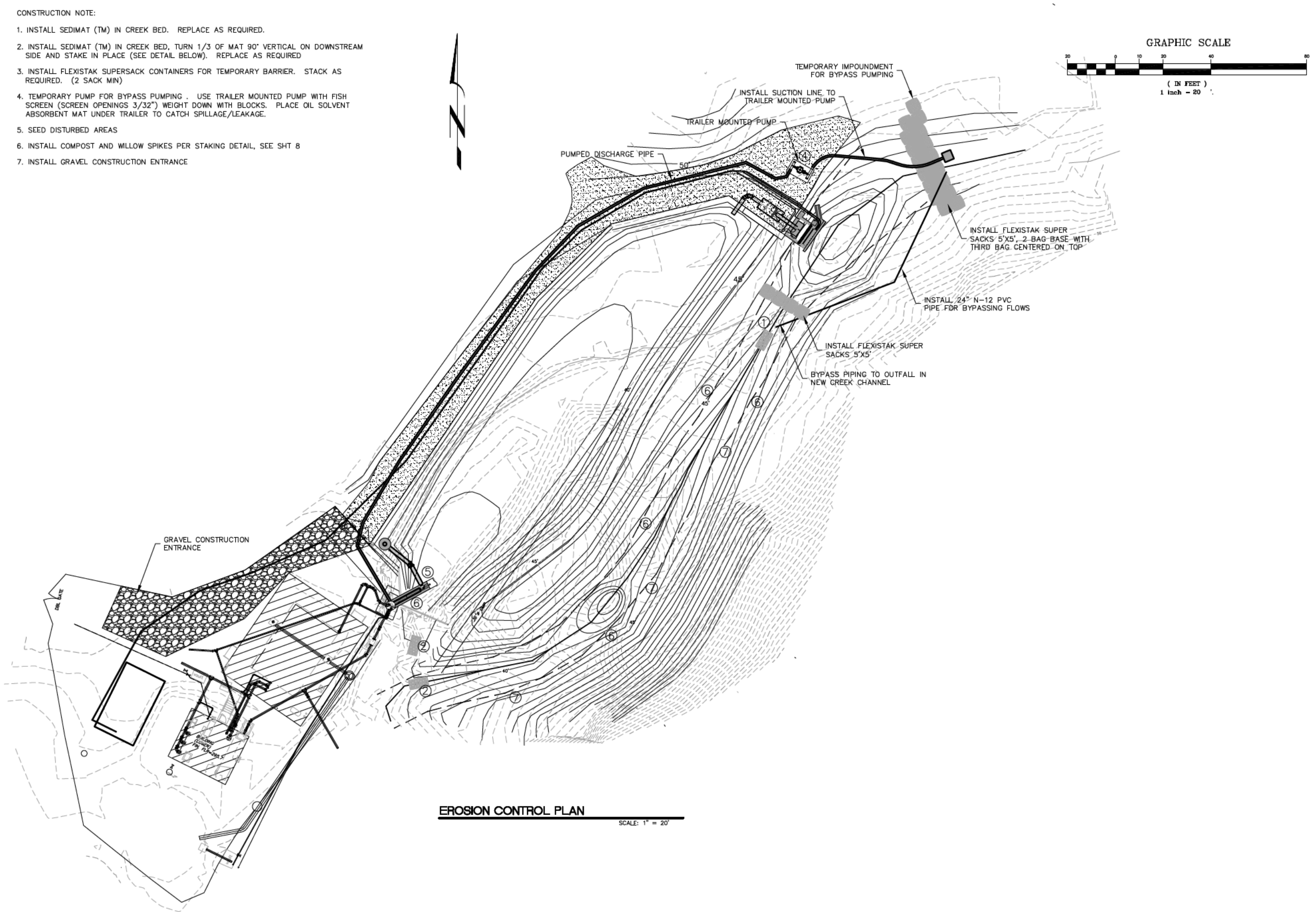
EXPIRES 12/31/2009

OREGON JULY 25, 1997 DAVID K. BOATMAN

REGISTERED PROFESSIONAL ENGINEER 15438

CONSTRUCTION NOTE:

1. INSTALL SEDIMAT (TM) IN CREEK BED. REPLACE AS REQUIRED.
2. INSTALL SEDIMAT (TM) IN CREEK BED, TURN 1/3 OF MAT 90° VERTICAL ON DOWNSTREAM SIDE AND STAKE IN PLACE (SEE DETAIL BELOW). REPLACE AS REQUIRED
3. INSTALL FLEXISTAK SUPERSACK CONTAINERS FOR TEMPORARY BARRIER. STACK AS REQUIRED. (2 SACK MIN)
4. TEMPORARY PUMP FOR BYPASS PUMPING . USE TRAILER MOUNTED PUMP WITH FISH SCREEN (SCREEN OPENINGS 3/32") WEIGHT DOWN WITH BLOCKS. PLACE OIL SOLVENT ABSORBENT MAT UNDER TRAILER TO CATCH SPILLAGE/LEAKAGE.
5. SEED DISTURBED AREAS
6. INSTALL COMPOST AND WILLOW SPIKES PER STAKING DETAIL, SEE SHT 8
7. INSTALL GRAVEL CONSTRUCTION ENTRANCE



EROSION CONTROL PLAN
SCALE: 1" = 20'

216-1003

REGISTERED PROFESSIONAL ENGINEER 15458 OREGON JULY 25, 1991 DAVID K. BOATMAN
EXPIRES 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: BEC | Drawn By: BEC | Checked By: DKB | Submittal No: PRELIMINARY | Layout: LAYOUT1
File: L:\2004-27-17\DWG\EROSIONCONTROL

REV.	DATE	DESCRIPTION	BY

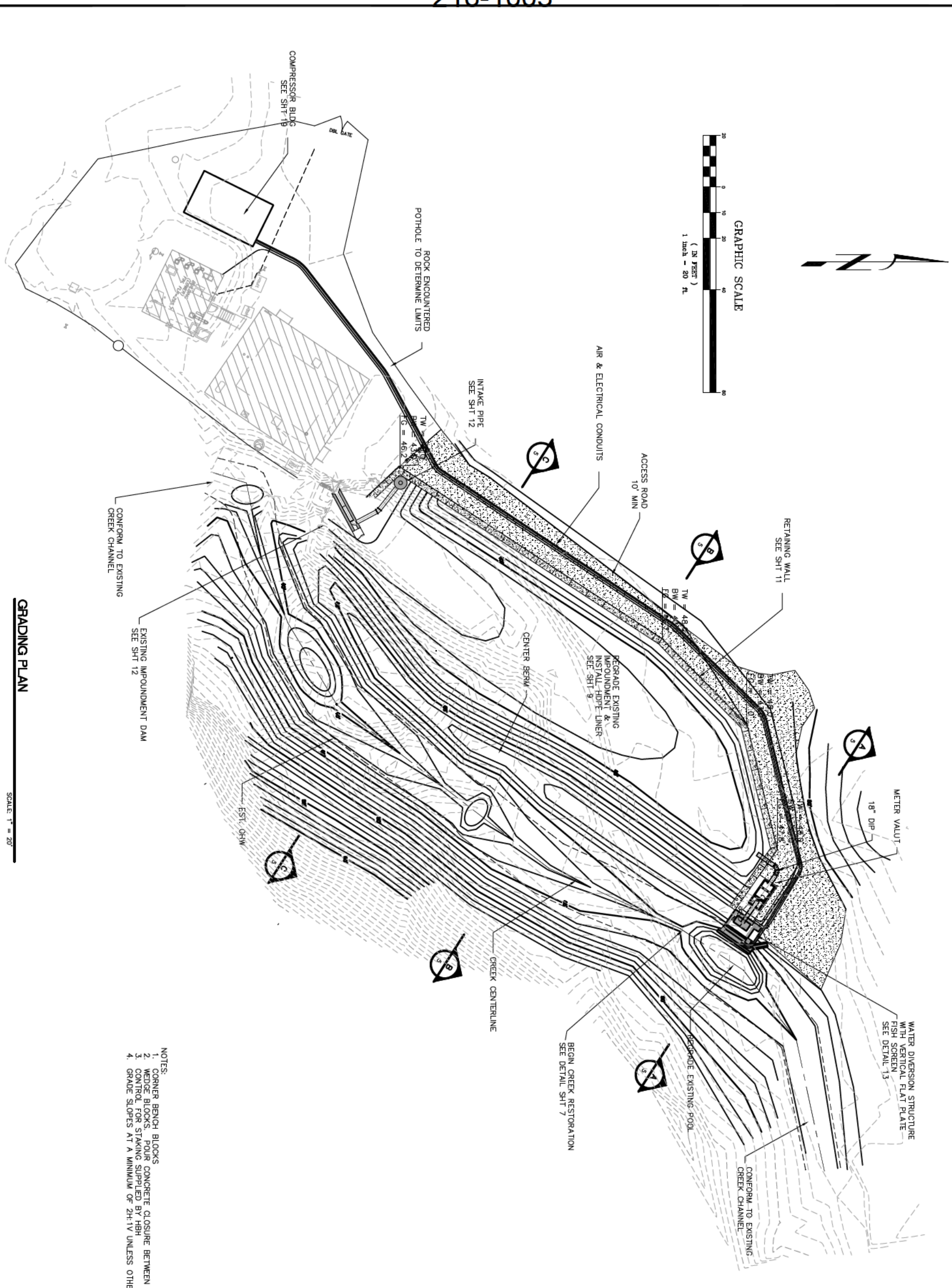
0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

EROSION CONTROL PLAN AND WETWELL SCREEN

Sheet No. 3 of 22
Date 4/14/11
2004-27-17



GRADING PLAN

SCALE: 1" = 20'

NOTES:
1. CORNER BENCH BLOCKS
2. WEDGE BLOCKS. POUR CONCRETE CLOSURE BETWEEN BLOCKS.
3. CONTROL FOR STAKING SUPPLIED BY HBH
4. GRADE SLOPES AT A MINIMUM OF 2H:1V UNLESS OTHERWISE NOTED

2004-027-17

Date	Sheet No.
4/14/11	4
	4 OF 13

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

GRADING PLAN

0" 1" IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

REV.	DATE	DESCRIPTION	BY

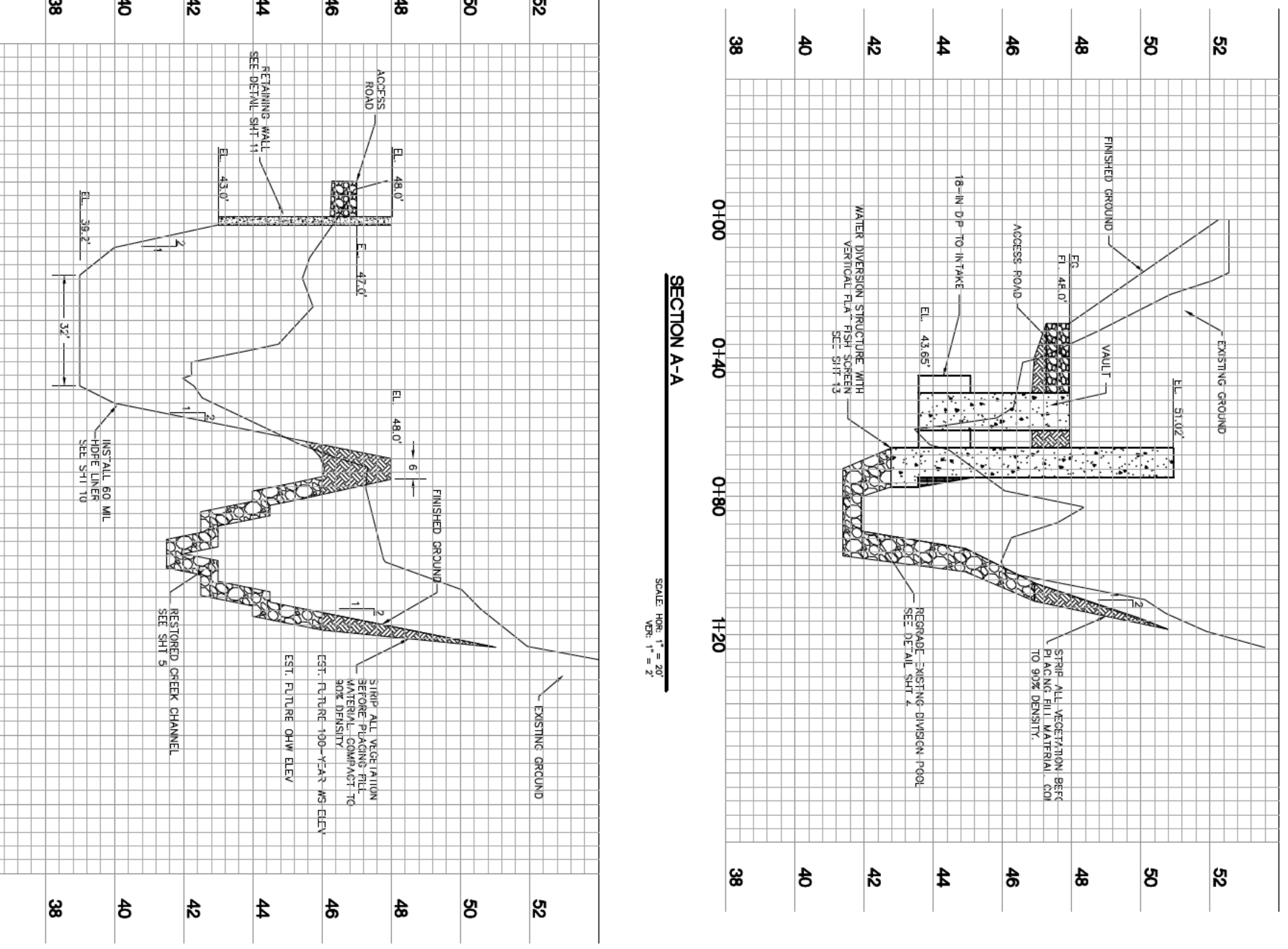
H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By:	CLL	Drawn By:	CLL	Checked By:	DKB	Submittal No:	PRELIMINARY
File:	L:/2004-027-17/DWG/GRADING					Layout:	GRADING

EXPIRES 12/31/2009

OREGON JULY 25, 1961 DAVID K. BOATMAN

REGISTERED PROFESSIONAL ENGINEER 1948

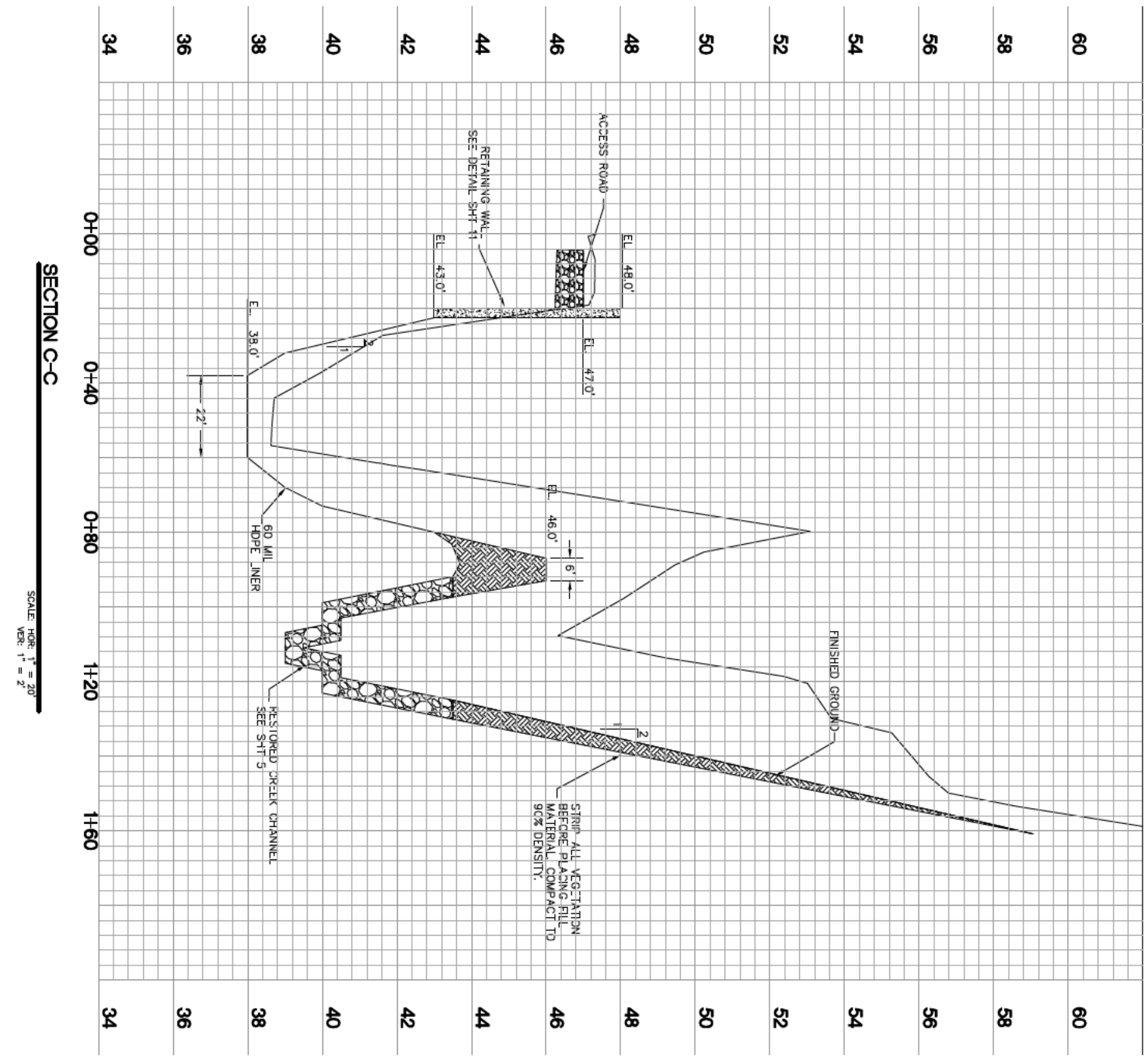


SECTION A-A

SCALE: HOR: 1" = 20'
VER: 1" = 2'

SECTION B-B

SCALE: HOR: 1" = 20'
VER: 1" = 2'



SECTION C-C

SCALE: HOR: 1" = 20'
VER: 1" = 2'

Date	Sheet No.
4/14/11	5
2004-027-17	5 OF 22

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON
CROSS SECTIONS

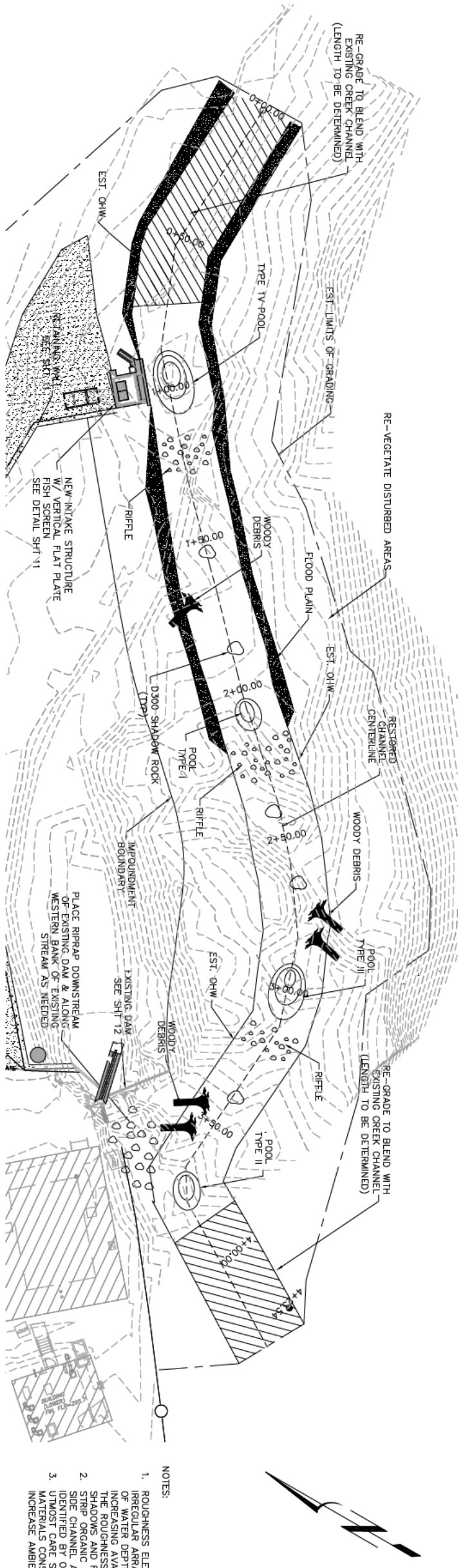
0" 1"
IF THIS LINE IS NOT 1 INCH
SCALE IS NOT AS SHOWN

REV.	DATE	DESCRIPTION	BY

H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL	Drawn By: CLL	Checked By: DKB	Submittal No: PRELIMINARY
File: L:\2004-027-17\DWG\GRADING			Layout: XSECTIONS

OREGON JULY 25, 1991 DAVID K. BOATMAN
EXPIRES: 12/31/2009
REGISTERED PROFESSIONAL ENGINEER

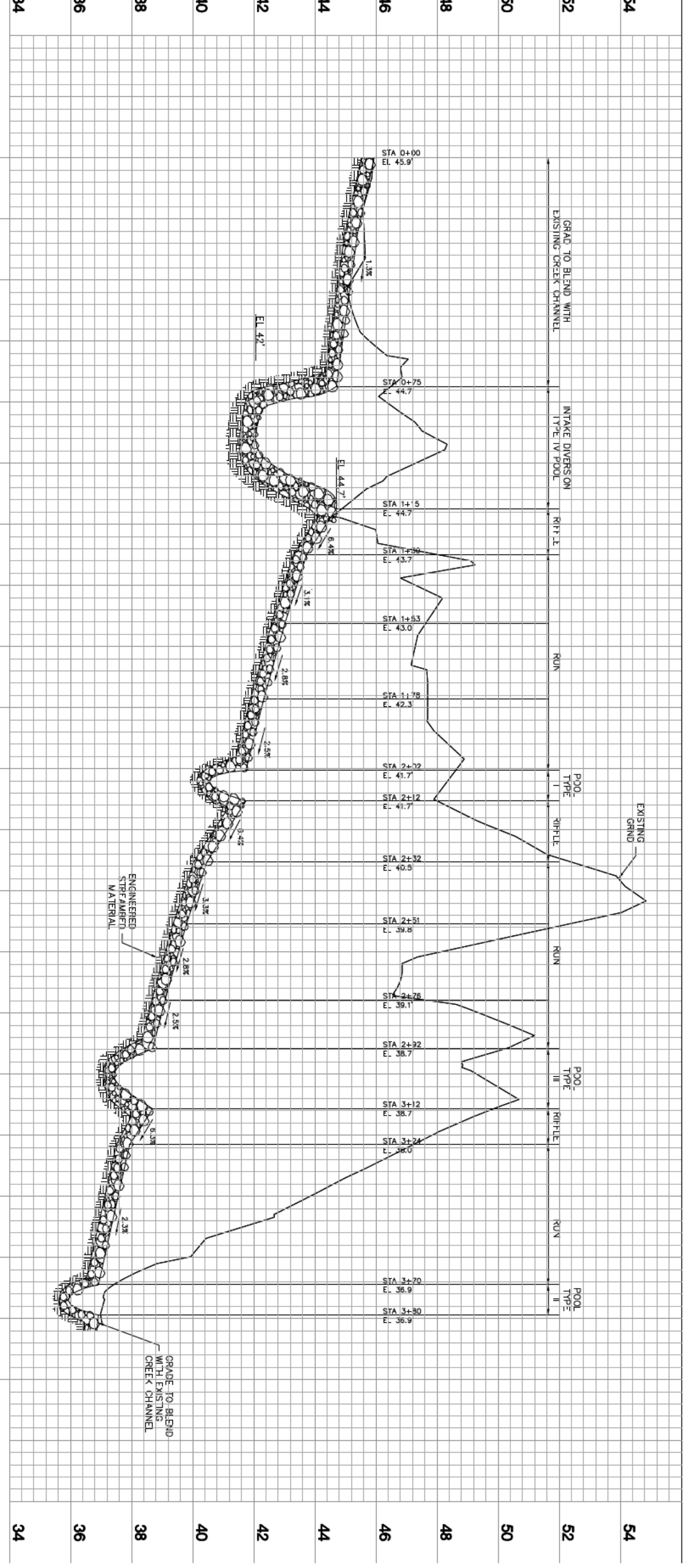


RESTORED CREEK PLAN VIEW

SCALE: HOR: 1" = 20'

NOTES:

1. ROUGHNESS ELEMENTS SHALL BE PLACED IN AN OFFSET, IRREGULAR ARRANGEMENT THAT INCREASES THE DIVERSITY OF WATER DEPTH, SUBSTRATE, AND VELOCITY, THEREBY INCREASING AVAILABLE HABITAT OF A PLANE BED STREAM. THE ROUGHNESS ELEMENTS ALSO PROVIDE VELOCITY SHADOWS AND RESTING PLACES FOR MIGRATING FISH.
2. STRIP ORGANIC MATERIAL AND SALVAGE VEGETATION ALONG SIDE CHANNEL ALIGNMENT AND STOCKPILE AT A LOCATION IDENTIFIED BY OWNER.
3. UTMOST CARE SHALL BE EMPLOYED TO ENSURE EXCAVATED MATERIALS CONSTRUCTION DO NOT ENTER CREEK OR INCREASE AMBIENT TURBIDITY LEVELS.



RESTORED CREEK PROFILE VIEW

SCALE: HOR: 1" = 20'
VER: 1" = 2'

Date	Sheet No.
4/14/11	6
	6 OF 22

2004-027-17

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON
CREEK RESTORATION

0" 1" IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

REV.	DATE	DESCRIPTION	BY

H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL	Drawn By: CLL	Checked By: DKB	Submittal No: PRELIMINARY
File: L:/2004-027-17/DWG/CREEK_RESTORATION			Layout: RESTORATION

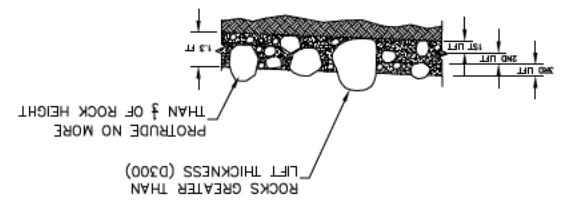
REGISTERED PROFESSIONAL ENGINEER
OREGON JULY 25, 1997 DAVID K. BOTTMAN
EXPIRES: 6/30/2011

NOTES:

1. ALL RESTORED STREAM CHANNELS LOCATED IN SPOIL SHALL BE UNDERCUT A MINIMUM OF 2 FEET AND LINED WITH AN IMPERMEABLE MATERIAL, SUCH AS MINESOIL, NATIVE SOIL, OR A NON-ACID AND NON-TOXIC SHALE UNIT. ALL MATERIAL PLACED IN THIS MANNER SHALL BE PLACED IN 6 INCH LIFTS AND THOROUGHLY COMPACTED.
2. ALL RESTORED STREAM CHANNELS SHOULD BE CONSTRUCTED IN A MANNER WHICH ENSURES POSITIVE DRAINAGE FROM THE VALLEY SIDE SLOPES. A SLOPE OF ONE TO FIVE (1-5%) PERCENT TOWARD THE STREAM CHANNEL IS REQUIRED FROM VALLEY SIDE SLOPES.
3. ALL RESTORED STREAM CHANNELS LOCATED IN SPOIL SHALL BE PROTECTED ALONG THEIR ENTIRE LENGTH BY A RIP-RAP BLANKET. THIS BLANKET SHALL BE USED A S A FILTER MATERIAL TO PREVENT EROSION OF THE SPOIL MATERIAL UNDERLYING THE RESTORED STREAM CHANNEL. THE FILTER SHALL HAVE A D50 LESS THAN 0.5 FT AND A BLANKET THICKNESS OF 1.3(D50).
4. CARE SHALL BE TAKEN TO ENSURE THE D50 OF THE CHANNEL BED MATERIAL IS NEARLY EQUIVALENT TO BUT GREATER THAN THE D50 SPECIFIED ABOVE.
5. NATIVE SUBSTRATE MATERIAL DEVELOPED FROM EXCAVATION MAY BE INCORPORATED INTO GRADATION ABOVE. THIS MIX SHALL BE WELL-GRADED AND REPRESENTATIVE OF IN-SITU SUBSTRATE AND BED MATERIAL. CONSTRUCTED RIFFLE MATERIAL SHALL BE MIXED AND WASHED TO ENSURE THE FILLING OF VOIDS AND GOOD SEAL WITHIN THE CONSTRUCTED FEATURE PER ODFW FISH PASSAGE CRITERIA.
8. WASH EACH LIFT WITH FINES UNTIL WATER CEASES TO BE OBSERVABLE SEEPING INTO DESIGN MIX.
9. ANY SEDIMENT DEPOSITION RESULTING FROM UPSTREAM DISTURBANCES SHALL BE REMOVED FROM THE CHANNEL, PLACED IN AN UPLAND AREA, AND REVEGETATED.
10. ALL ROCK SHALL BE PLACED SO THAT LARGER ROCKS ARE UNIFORMLY DISTRIBUTED AND IN CONTACT WITH ONE ANOTHER WITH SMALLER ROCKS FILL VOIDS. NO END DUMPING OF ROCK WILL BE ALLOWED.
6. TO LIMIT THEIR HYDRAULIC INFLUENCE, BOULDERS SHOULD NOT BE ALLOWED TO BLOCK A SIGNIFICANT PORTION OF THE CHANNEL CROSS-SECTION AND SHOULD BE KEPT RELATIVELY LOW IN THE CHANNEL PROFILE.
10. ROCK FOR MATRIX AND ROUGHNESS ELEMENTS SHOULD BE SOUND, DENSE AND FREE FROM CRACKS, SEAMS, AND OTHER DEFECTS.

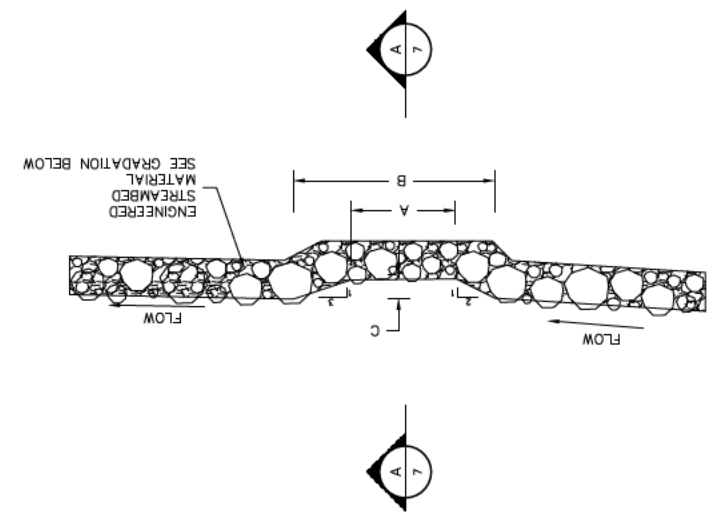
ESM PLACEMENT DETAIL

SCALE: 1" = 5'



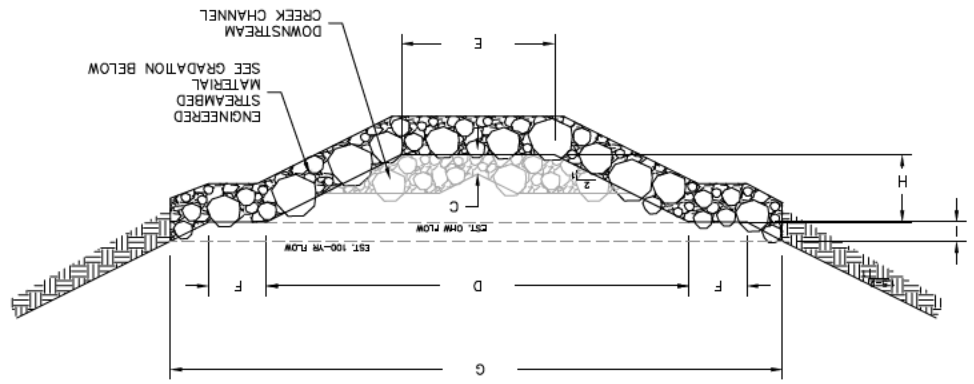
POOL PROFILE DETAIL (TYP)

SCALE: 1" = 5'



SECTION A-A

SCALE: 1" = 5'



ENGINEERED STREAMBED MATERIAL GRADATION (MM)

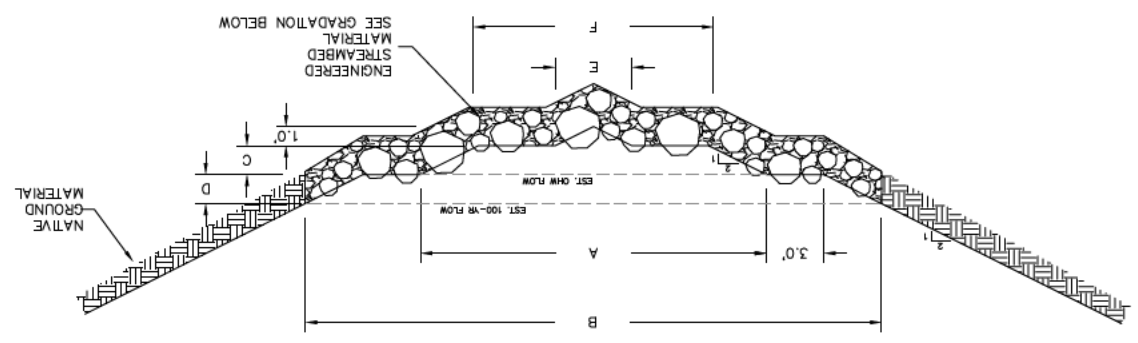
D100= 200
D95 = 175
D84 = 140
D50 = 50
D30 = 18
D10 = 2
D5 = 0.5

POOL DIMENSION TABLE									
POOL TYPE	A	B	C	D	E	F	G	H	I
I	5.0 Ft	10.0 Ft	1.0 Ft	22.0 Ft	8.0 Ft	3.0 Ft	32.0 Ft	3.5 Ft	1.0 Ft
II	5.0 Ft	10.0 Ft	1.0 Ft	20.0 Ft	5.2 Ft	0.0 Ft	28.0 Ft	3.7 Ft	2.0 Ft
III	15.5 Ft	20.0 Ft	1.5 Ft	22.0 Ft	6.0 Ft	0.0 Ft	28.0 Ft	4.0 Ft	1.5 Ft
IV	26.5 Ft	40.0 Ft	2.7 Ft	30.0 Ft	9.2 Ft	0-5 Ft	41.0 Ft	5.2 Ft	1.5 Ft

CHANNEL BED DIMENSION TABLE										
SLOPE	A	B	C	D	E	F	G	H	I	J
2.3%					4.0 Ft	12.0 Ft	18.8 Ft	26.8 Ft	1.7 Ft	2.0 Ft
2.5%	22.0 Ft	34.0 Ft	1.5 Ft	1.5 Ft	4.0 Ft	16.0 Ft	22.0 Ft	28.0 Ft	1.5 Ft	1.5 Ft
2.8%	22.0 Ft	34.0 Ft	1.5 Ft	1.5 Ft	4.0 Ft	16.0 Ft	22.0 Ft	28.0 Ft	1.5 Ft	1.5 Ft
3.1%	22.0 Ft	34.0 Ft	1.5 Ft	1.5 Ft	4.0 Ft	16.0 Ft				
3.3%					4.0 Ft	16.0 Ft	22.0 Ft	28.0 Ft	1.5 Ft	1.5 Ft
6.3%					3.0 Ft	12.0 Ft	18.0 Ft	24.0 Ft	1.5 Ft	1.5 Ft
6.4%	20.0 Ft	30.0 Ft	1.5 Ft	1.0 Ft	3.0 Ft	14.0 Ft	20.0 Ft	24.0 Ft	1.5 Ft	1.0 Ft

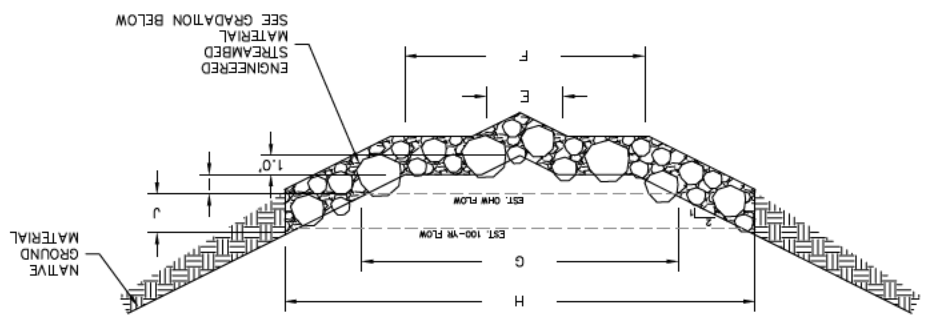
CREEK CROSS SECTION TYPE I (TYP)
STA 0+90 TO STA 2+02

SCALE: 1" = 5'



CREEK CROSS SECTION TYPE II (TYP)
STA 2+12 TO STA 3+70

SCALE: 1" = 5'



H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

BY	DESCRIPTION	DATE	REV.
XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX

IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

Designed By: CLL	Drawn By: CLL	Checked By: DKB	Submittal No.: PRELIMINARY
File: L2004-027-17/DWG/CREEK_RESTORATION			Layout: RESTORATION

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1991
DAVID K. BOATMAN
RENEWAL: 12/31/2012

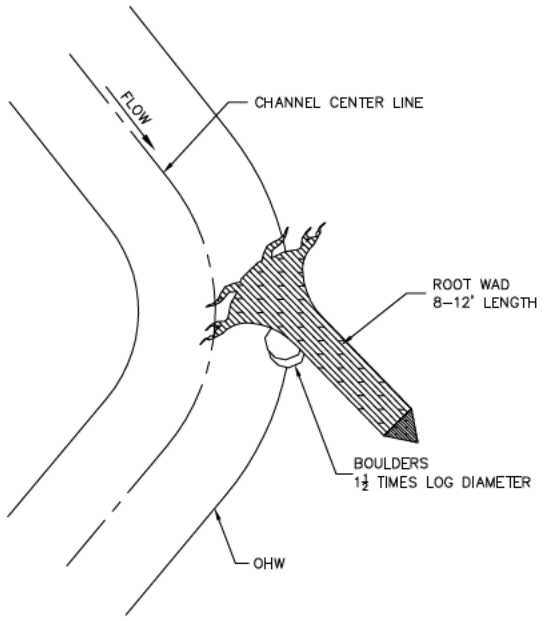
CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON
CREEK DETAILS

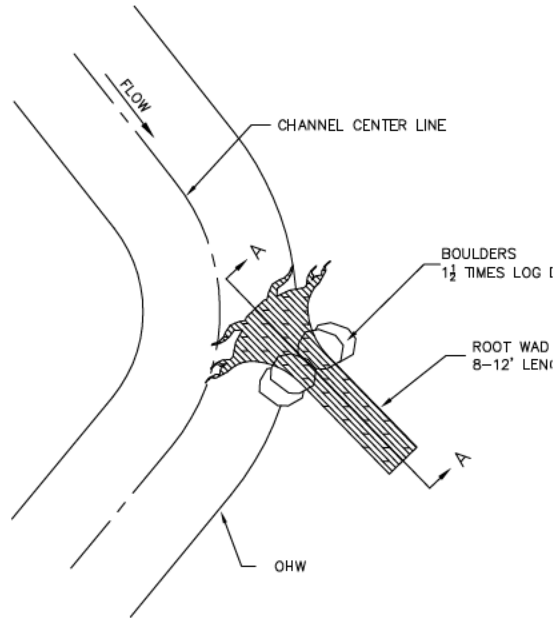
Sheet No.	Date
7	4/14/11
7 of 22	

2004-027-17

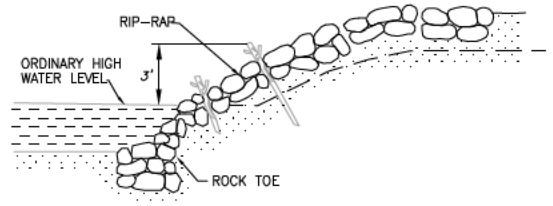
216-1003

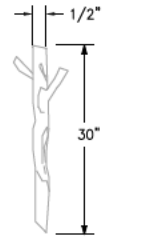


PLAN VIEW
DRIVE POINT METHOD



PLAN VIEW
TRENCHING METHOD





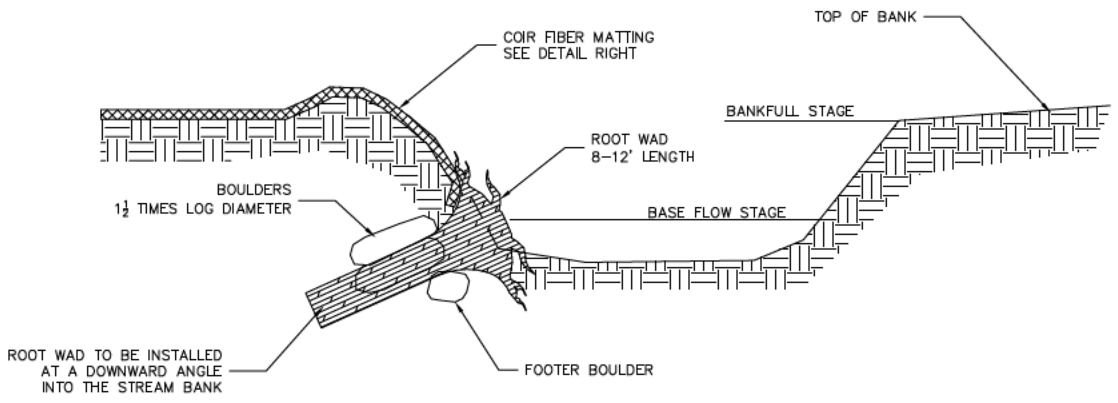
LIVE STAKE DETAIL

WILLOW SPIKES STAKING DETAIL

N.T.S.

NOTES:

1. PLANT LIVE STAKES IN BANK USING DEAD–BLOW HAMMER.
2. INSTALL APPROXIMATELY 80% OF STAKE IN GROUND.
3. BUDS TO BE ORIENTED UPWARDS.
4. OFFSET STAKES 3 FEET FROM CENTER IN TRIANGLE PLANTINGS.
5. PROTECT LIVE STAKES FROM DAMAGE DURING INSTALLATION. USE PRY BAR TO MAKE OPENING IN ROCK OR USE TUBING TO PROVIDE OPENING. CUT EXPOSED ENDS OF LIVE STAKES AFTER INSTALLATION IF STAKES ARE DAMAGED DUE TO INSTALLATION. (I.E. DAMAGED BARK, SPLIT ENDS, ETC.)



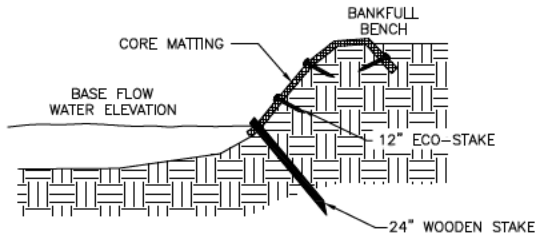
SECTION A–A

ROOT WAD DETAILS

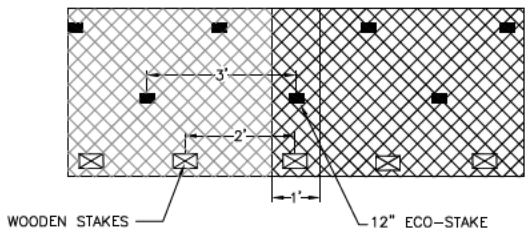
N.T.S.

NOTES:

1. TREE USED FOR ROOT WAD SHALL BE 1½ TIMES BANKFULL WIDTH AND A MINIMUM DIAMETER OF 18" AS MEASURED THREE FEET FROM THE ROOT WAD UNLESS OTHERWISE NOTED.
2. THE ROOT FAN SHALL BE A MINIMUM 5' IN DIAMETER. THE TRUNK SHALL BE TRIMMED OF LIMBS OR BRANCHES. LOPPING SHALL BE PERFORMED SQUARE ACROSS THE TRUNK TREE SHALL BE OF SOUND WOOD AND FREE OF DECAY, BREAKAGE, OR OTHER DAMAGE.
3. ORIENT ROOT WAD SO THAT THE STREAM FLOW MEETS THE ROOT WAD STRAIGHT ON, DEFLECTING THE WATER AWAY FROM THE BANK.
4. FOR DRIVE POINT METHOD INSTALLATION SHARPEN THE END OF THE LOG BEFORE "DRIVING" AT A DOWNWARD ANGLE INTO THE BANK. BOULDER SHOULD BE PLACED ON EACH SIDE OF THE ROOT WAD TO PIN IT IN PLACE. ONE THIRD OF THE ROOT WAD SHOULD REMAIN BELOW NORMAL BASE FLOW CONDITIONS.
5. IF THE ROOT WAD CANNOT BE DRIVEN INTO THE BANK OR THE BANK NEEDS TO BE RECONSTRUCTED, THE TRENCHING METHOD SHOULD BE USED. THIS METHOD REQUIRES THAT A TRENCH BE EXCAVATED FOR THE LOG PORTION OF THE ROOT WAD. IN THIS CASE, FOOTER BOULDERS SHOULD BE INSTALLED UNDERNEATH THE ROOT WAD IN A TRENCH EXCAVATED PARALLEL TO THE BANK AND WELL BELOW THE STREAM BED. BOULDERS SHOULD BE PLACED ON EACH SIDE OF THE ROOT WAD TO PIN IT IN PLACE. ONE–THIRD OF THE ROOT WAD SHOULD REMAIN BELOW NORMAL BASE FLOW CONDITIONS.



PROFILE VIEW



FRONT VIEW

COIR MATTING DETAILS

N.T.S.

NOTES:

1. TRENCH TOP OF MATTING TO A MINIMUM DEPTH OF 6 INCHES. STAKE OR STAPLE IN PLACE AND BACKFILL TO DESIGN GRADE.
2. INSTALL 24" WOODEN STAKES ALONG TOE OF MATTING (INTERCEPT BETWEEN WATER SURFACE AND BANK). WOODEN STAKES SHOULD BE PLACED AT A MAXIMUM SPACING OF 2' AT CENTER.
3. AT JOINTS PROVIDE A MINIMUM 1' OVERLAP OF COIR MATTING SECTIONS.
4. INSTALL 12" ECO–STKES OR 12" STAPLES IN BANK FLUSH WITH COIR MATTING. ECO–STAKES OR STABLES SHALL BE SPACED A MAXIMUM 3' AT CENTERS.

216-1003

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONTRAGER
EXPIRES: 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL | Drawn By: CLL | Checked By: DKB | Submittal No: PRELIMINARY
File: L:\2004-27-17\DWG\Creek Restoration | Layout | LAYOUT1

REV.	DATE	DESCRIPTION	BY

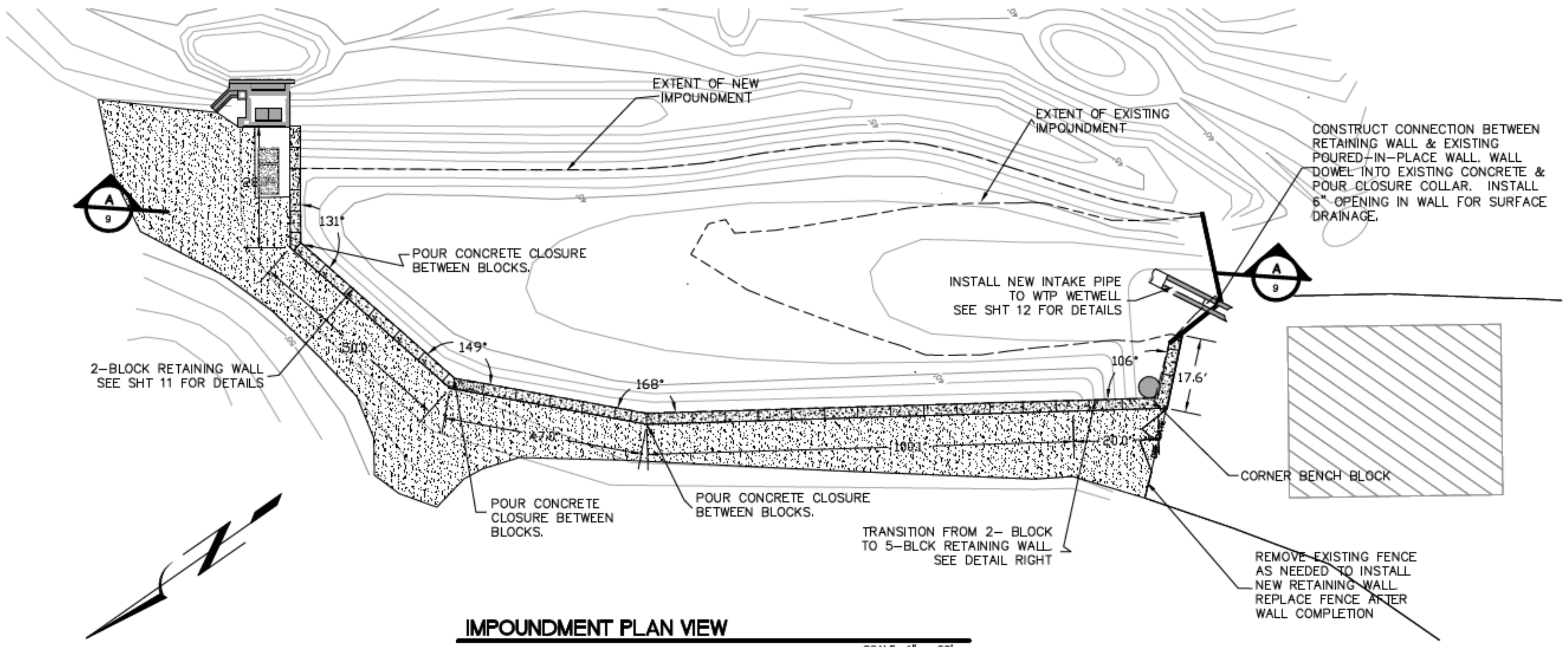
0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

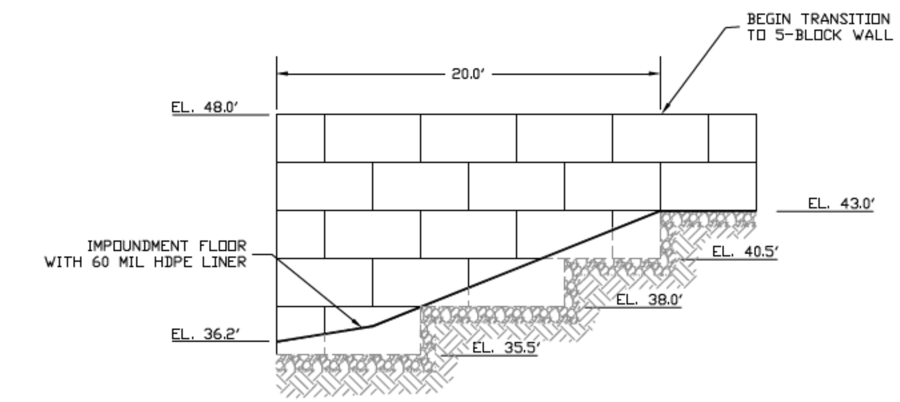
CREEK DETAILS

Sheet No. 8 | 8 of 22
Date 4/14/11
2004-27-17



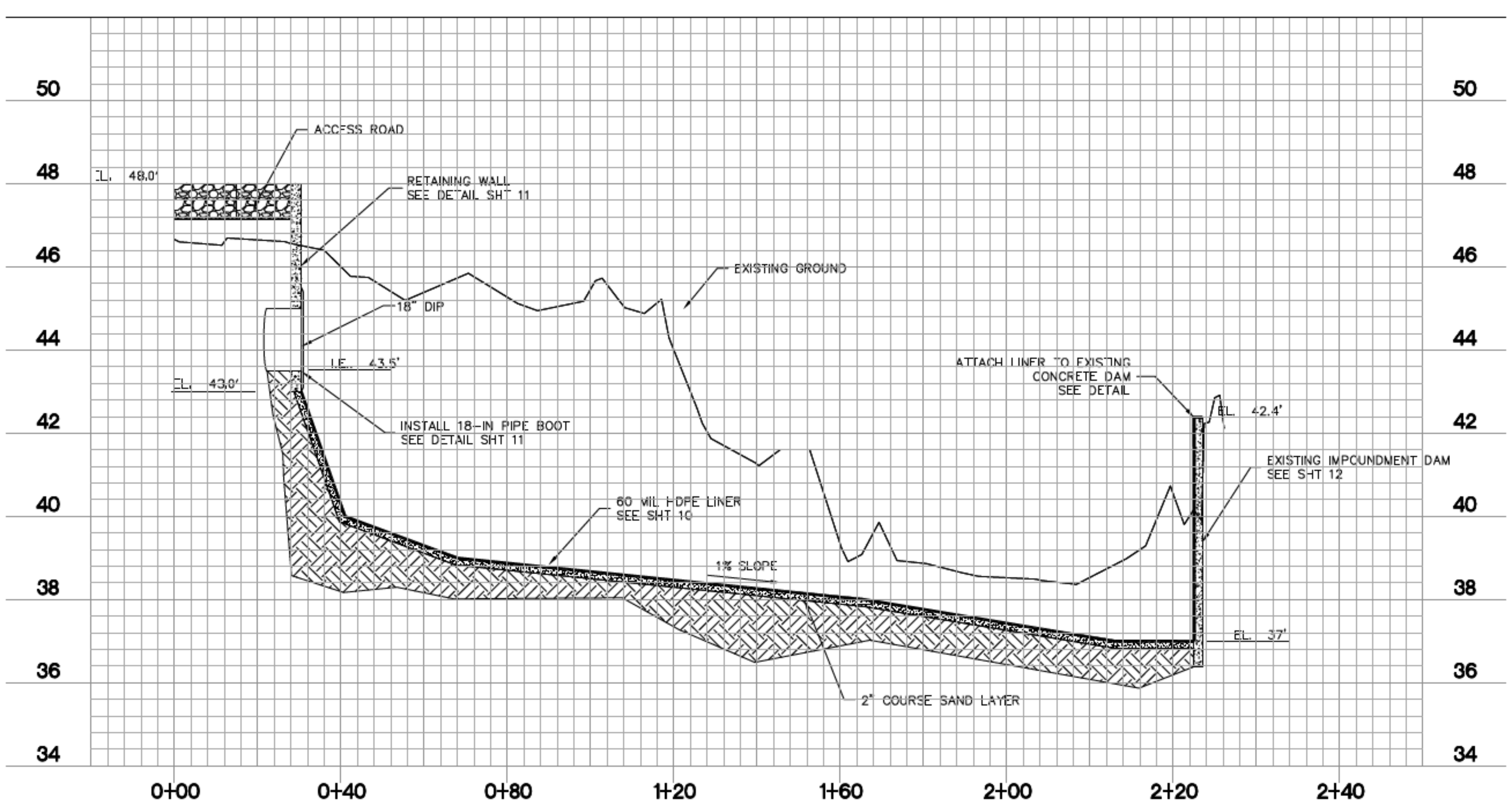
IMPOUNDMENT PLAN VIEW

SCALE: 1" = 20'



WALL TRANSITION DETAIL

SCALE: 1" = 5'



SECTION A-A IMPOUNDMENT PROFILE

SCALE: HOR: 1" = 20'
VER: 1" = 2"

REV.	DATE	DESCRIPTION	BY

0" 1" IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

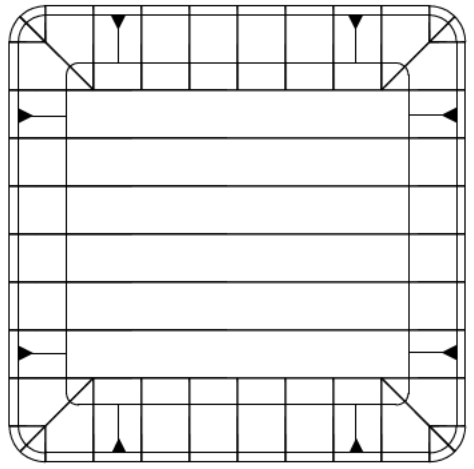
IMPOUNDMENT

HBH Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL | Drawn By: CLL | Checked By: DKB | Submittal No: PRELIMINARY
File: L:/2004-027-17/DWG/IMPOUNDMENT | Layout: IMPOUNDMENT

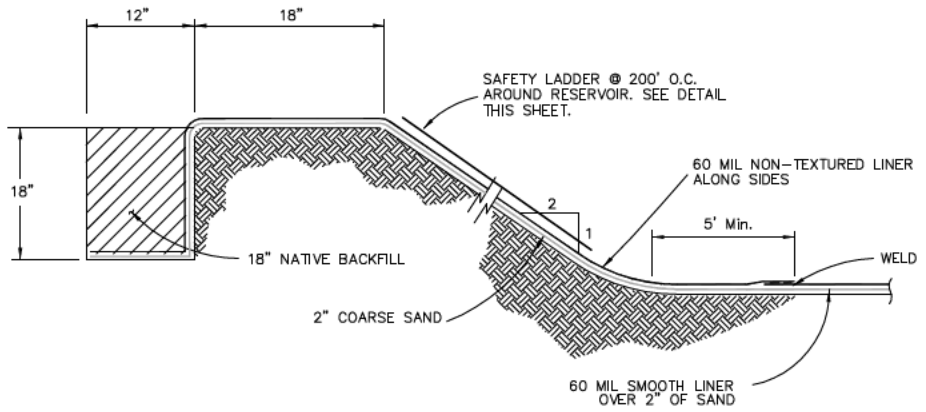
REGISTERED PROFESSIONAL ENGINEER
OREGON
DAVID K BOATMAN
EXPIRES

Date: 4/14/11
Sheet No. 9
9 of 22
2004-027-17

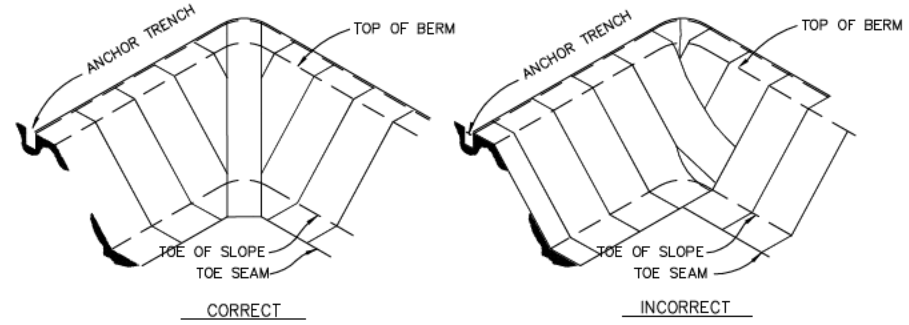


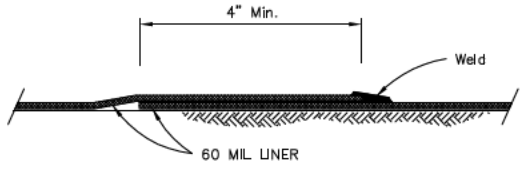
LEGEND
— WELDED SEAMS
— DIRECTION OF SLOPE

TYPICAL PLAN VIEW
N.T.S.

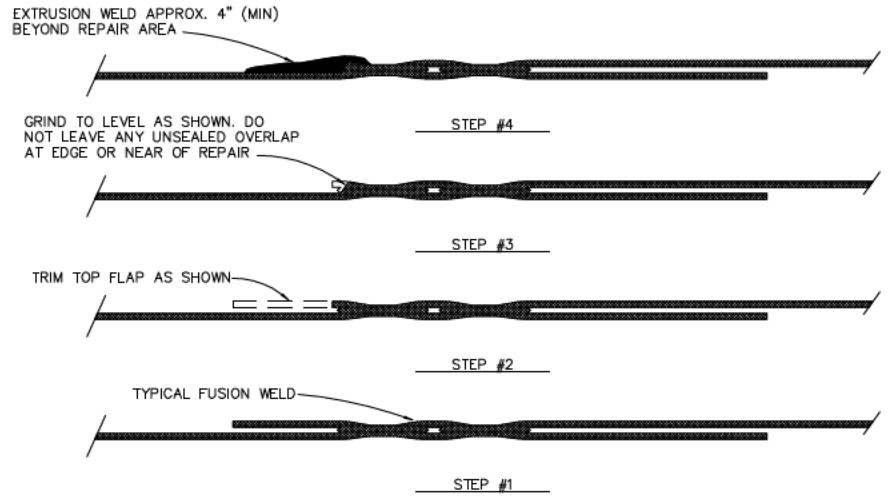


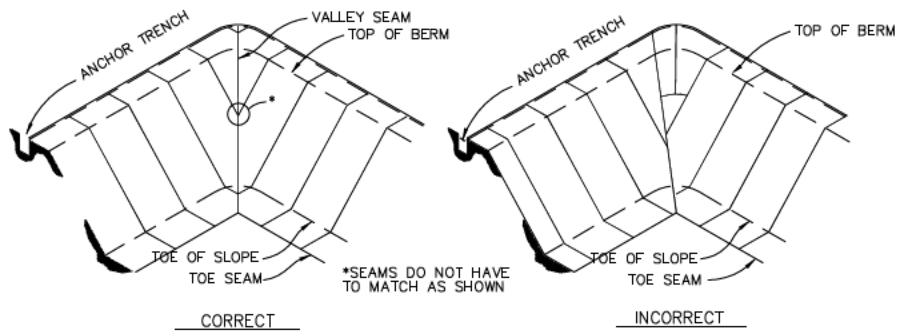
STANDARD ANCHOR TRENCH / HDPE LADDER
N.T.S.



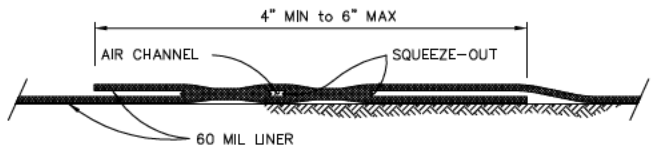


Typical Fillet Extrusion Weld
Not to scale



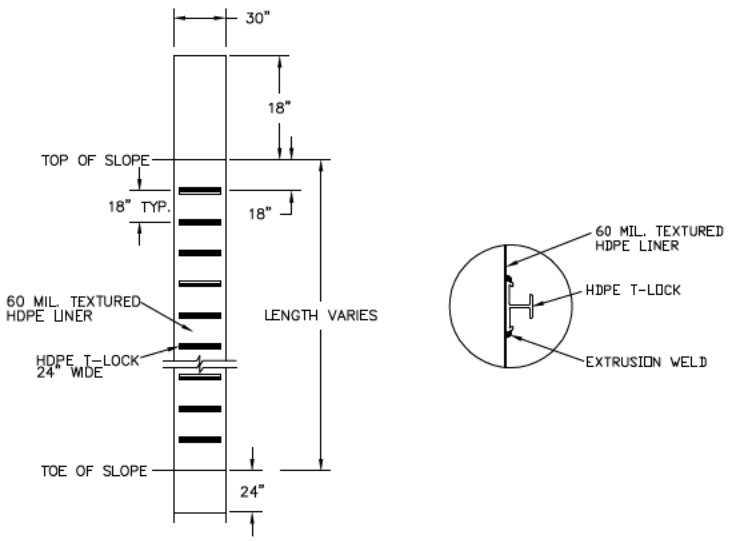


LINER TREATMENT AT CORNERS
N.T.S.

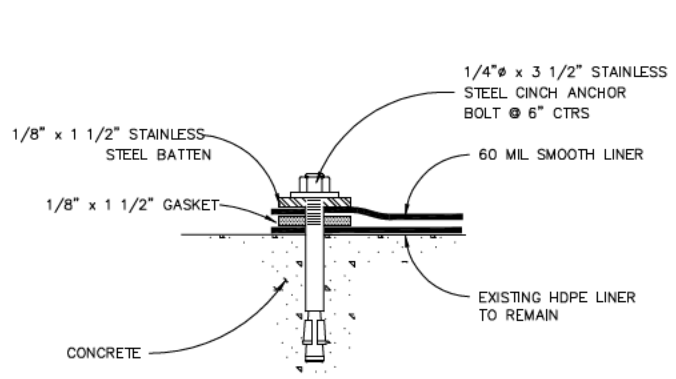


TYPICAL HOT WEDGE DOUBLE TRACK FUSION WELD
N.T.S.

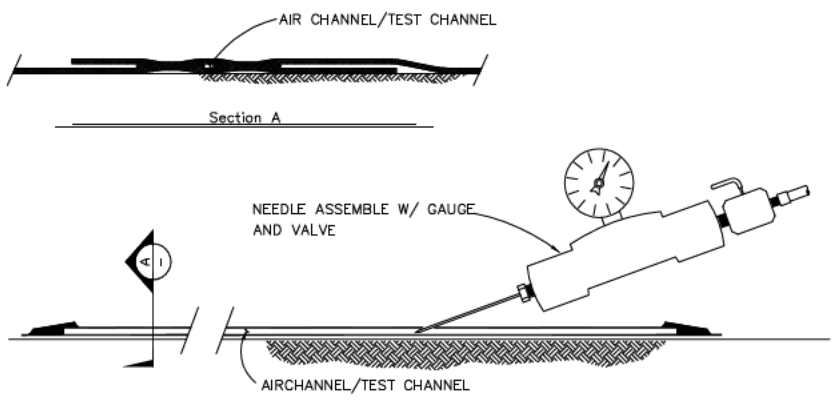
SEAM PREPARATION FOR EXTRUSION WELD
N.T.S.



HDPE SAFETY LADDER
N.T.S.



CONCRETE ANCHOR DETAIL
N.T.S.



TYPICAL AIR TEST
N.T.S.

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONHAM
EXPIRES: 12/31/2011

Designed By: CLL | Drawn By: CLL | Checked By: DKB | Submittal No: PRELIMINARY | Layout: LINER
File: L:\2004-027-17\DWG\IMPOUNDMENT

REV.	DATE	DESCRIPTION	BY

0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5, BAY CITY, OR 97136

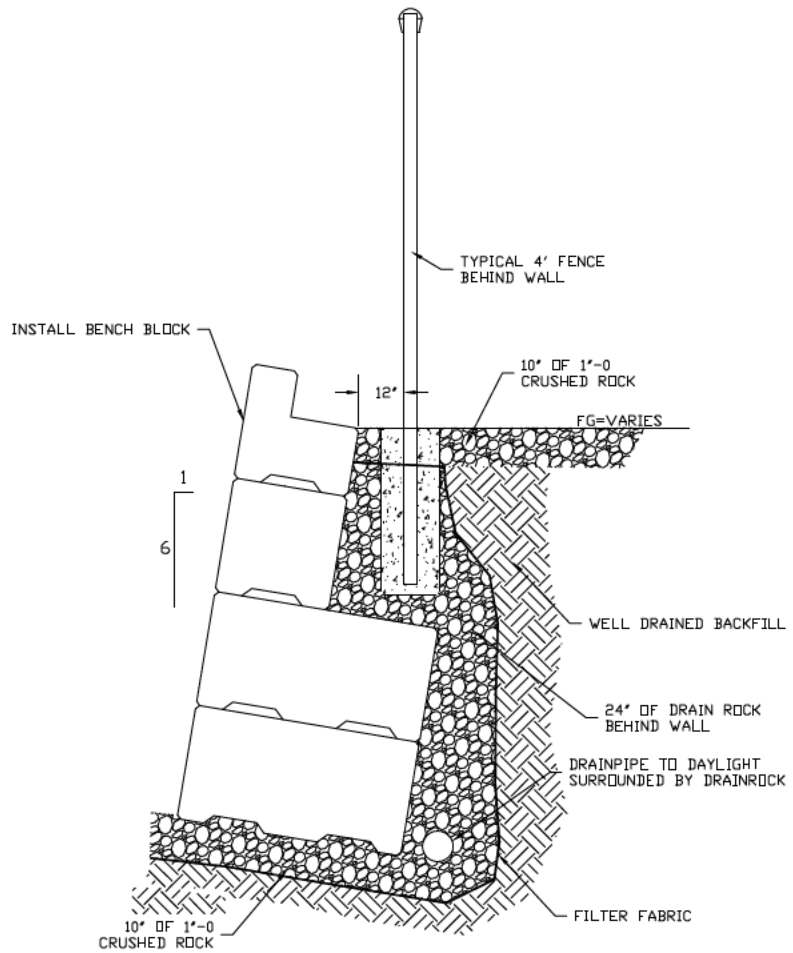
IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

LINER DETAILS

Sheet No. 10 of 22
Date 4/14/11
2004-027-17

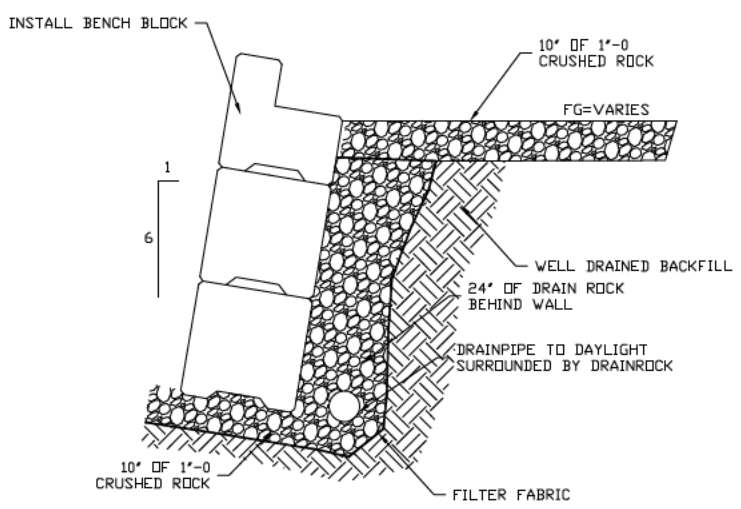
216-1003

216-1003



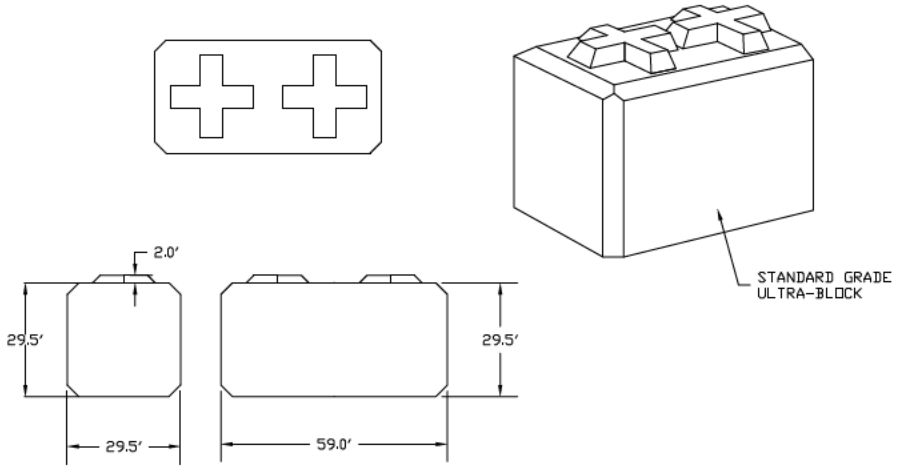
TYPICAL SECTION - 4 BLOCKS OR MORE

N.T.S.



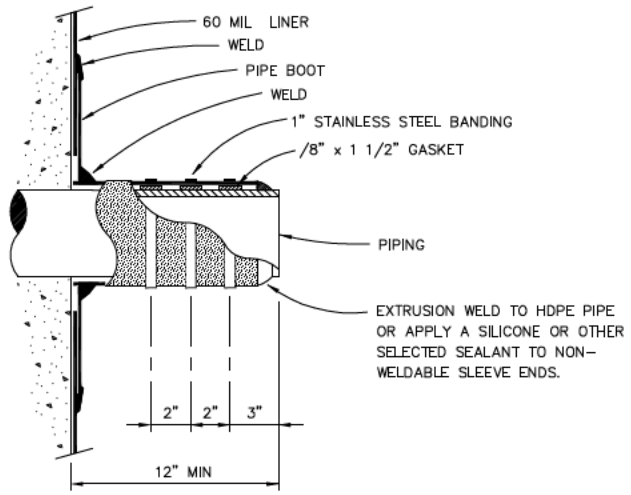
TYPICAL SECTION - 3 BLOCKS OR LESS

N.T.S.



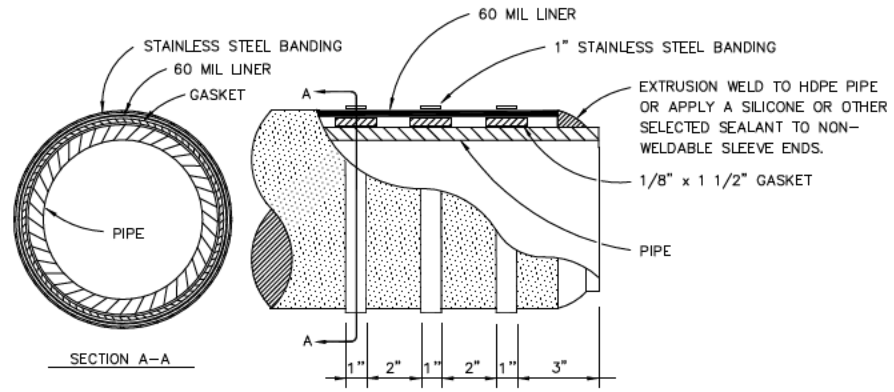
STANDARD BLOCK

N.T.S.



TYPICAL PENETRATION THRU CONCRETE

N.T.S.



PIPE PENETRATION SEAL

N.T.S.

NOTES:
1. CONTRACTOR TO PROVIDE DESIGN SUBMITTAL FOR USE OF APPROVED EQUAL GABION RETAINING WALL. SEE GRAVITY RETAINING WALL SPEC SECTION 02831.

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONHAM
EXPIRES: 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: CLL | Drawn By: CLL | Checked By: DKB | Submittal No: PRELIMINARY
File: L:\2004-027-17\DWG\IMPOUNDMENT | Layout: LINER

BY	DESCRIPTION	REV.	DATE
XXX		XXX	
XXX		XXX	
XXX		XXX	
XXX		XXX	
XXX		XXX	
XXX		XXX	

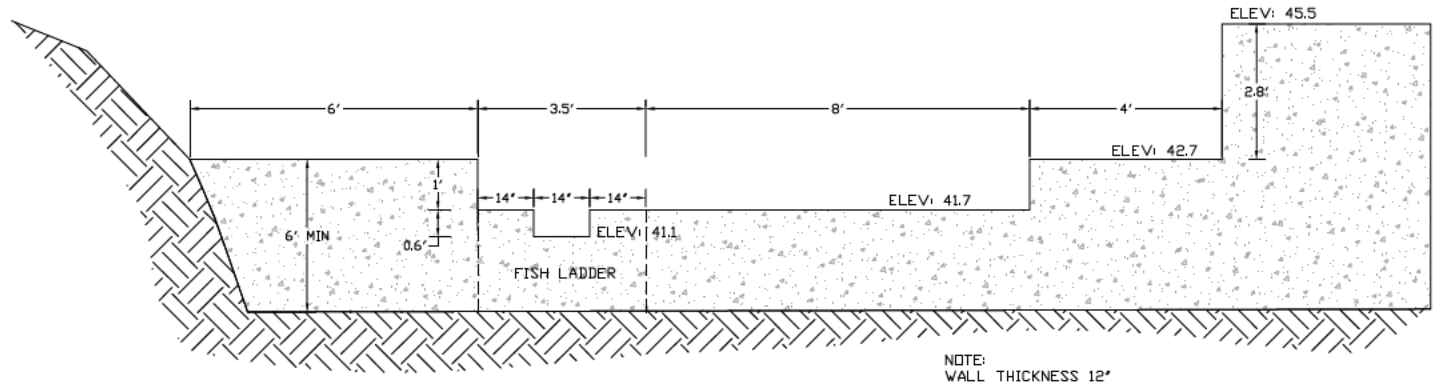
0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

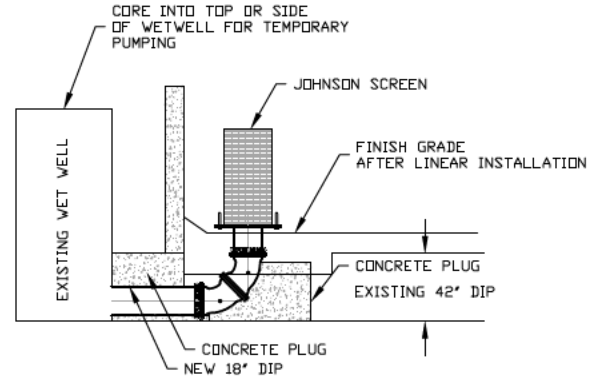
WALL DETAILS

Sheet No. 11 of 22
Date 4/14/11
2004-027-17



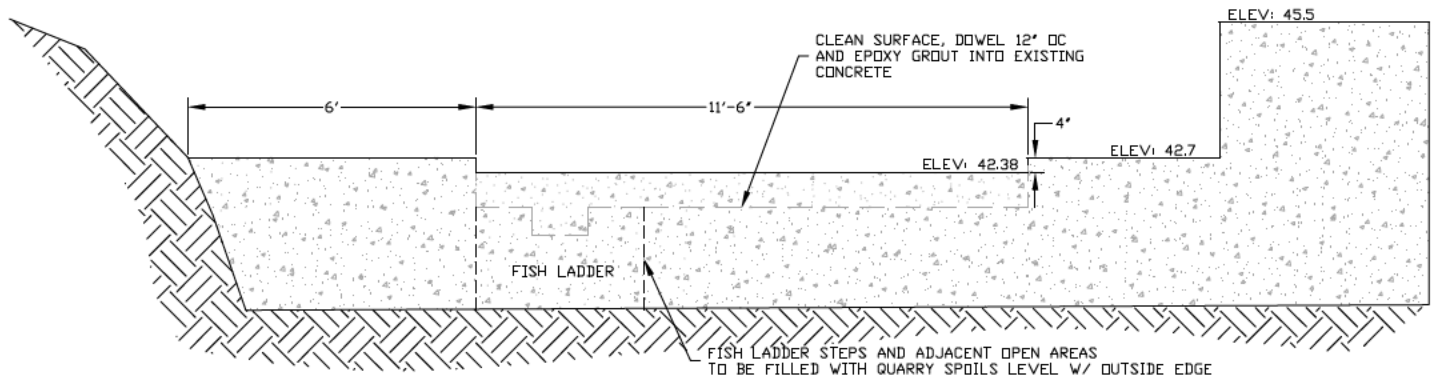
EXISTING DAM SECTION VIEW (LOOKING DOWNSTREAM)

SCALE: 1" = 2'



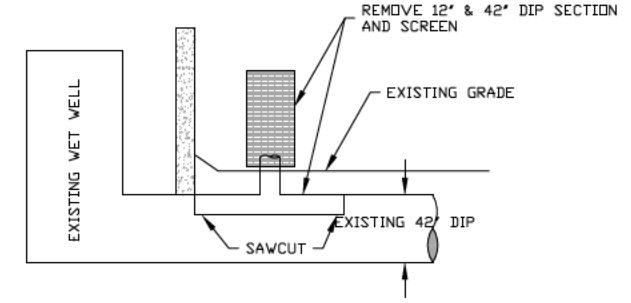
WET WELL SCREEN

SCALE: NTS



NEW DAM SECTION VIEW (LOOKING DOWNSTREAM)

SCALE: 1" = 2'



DEMO PLAN

SCALE: NTS

NOTE:

1. EXISTING 42" HEADER MANIFOLD INFILTRATION GALLERY EXISTS UNDER THE IMPOUNDMENT AREA. THE PIPE WILL BE CUT FLUSH AT THE CONCRETE WALL AND A 18" C900 PVC PIPE PLACED INSIDE THE EXISTING PIPE. THE EXCESS SPACE IS TO BE FILLED WITH HIGH EARLY CONCRETE (SEE DETAIL BELOW). SHUTDOWN TIME TO COMPLETE THIS WORK CANNOT EXCEED 1 CALENDAR DAY (24HRS). THIS 24HR SHUTDOWN DOES NOT INCLUDE THE INSTALLATION OF THE ADDITIONAL PIPING LINER AND PIPE BOOT. THE TEMPORARY PIPE CONNECTION FOR THE BYPASS SHOULD BE IN PLACE PRIOR TO SHUTDOWN. A PUMP WILL BE REQUIRED TO EMPTY IMPOUNDMENT AREA. SEDIMENT CONTROL MUST BE IN PLACE DOWNSTREAM OF THE PUMP DISCHARGE.

216-1003

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONTAMA
RENEWAL: 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: BEC | Drawn By: BEC | Checked By: DKB | Submittal No: PRELIMINARY | Layout: LAYOUT1
File: L:\2004-27-17\DWG\Impoundment

BY	DESCRIPTION	DATE	REV.

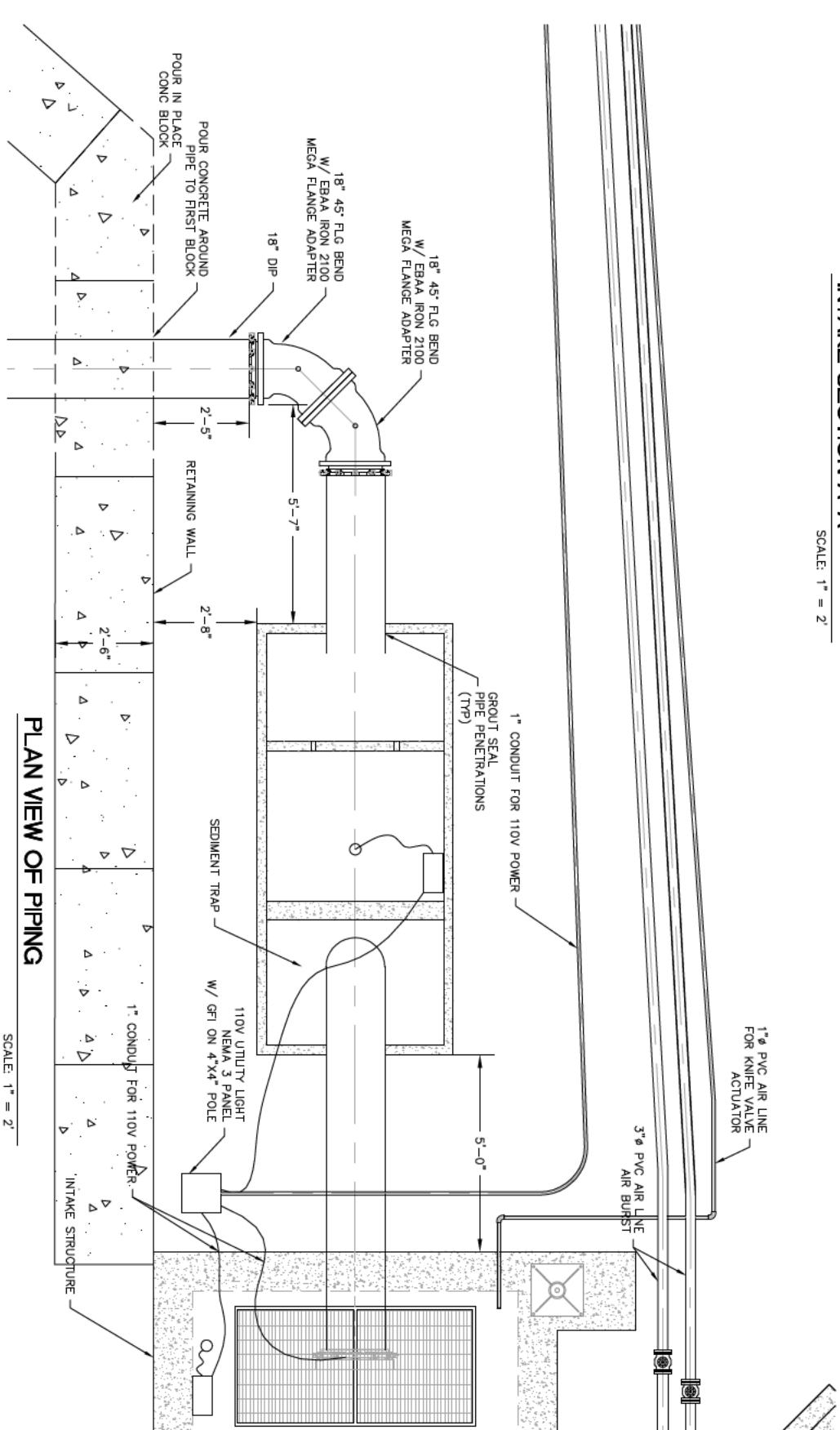
0" 1"
IF THIS LINE IS NOT 1 INCH
SCALE IS NOT AS SHOWN

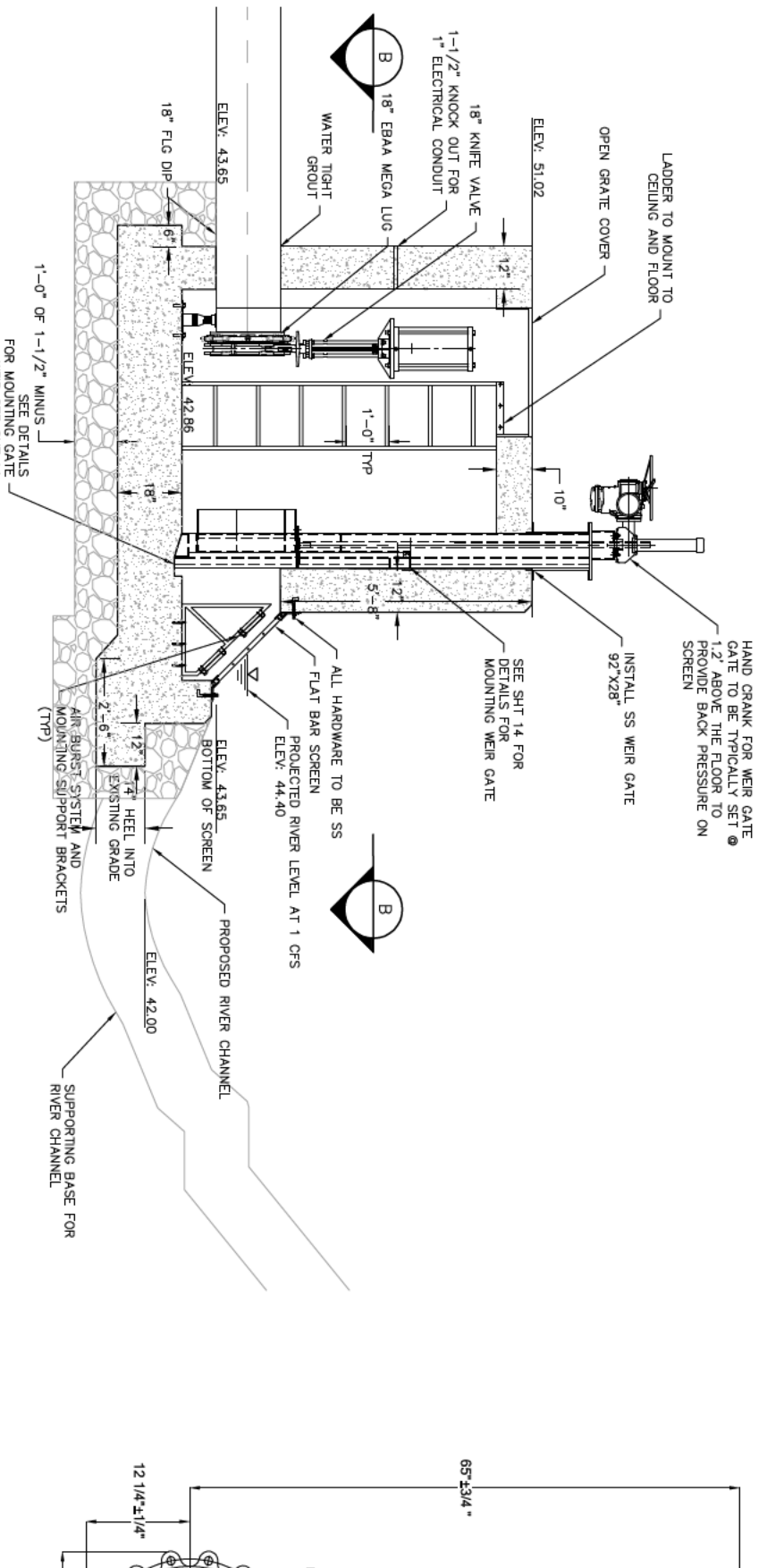
CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

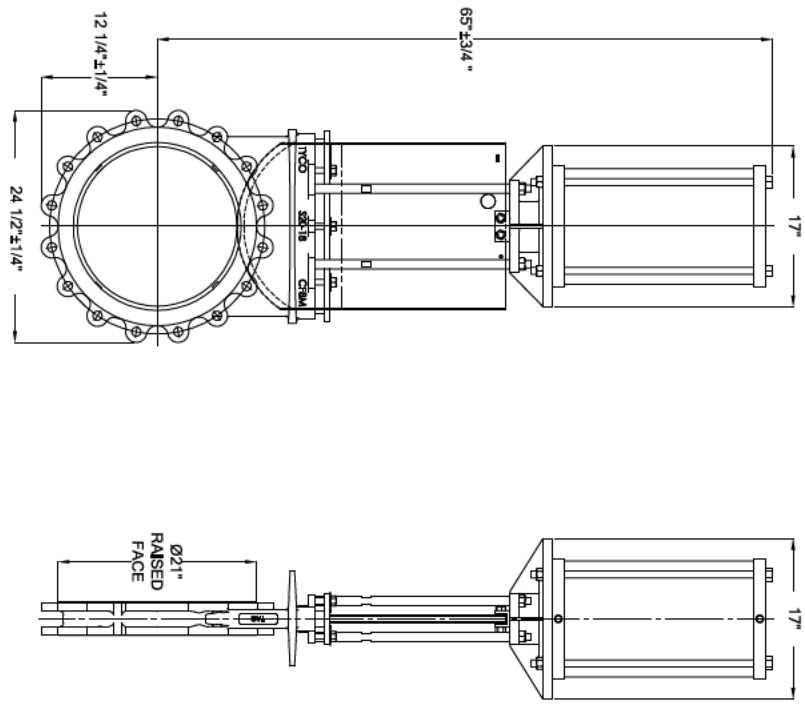
IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

DAM IMPROVEMENTS

Sheet No. 12 of 22
Date 4/14/11
2004-27-17







Date	Sheet No.
4/14/11	13
13 OF 22	

2004-24-17

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

INTAKE SCREEN

IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN (0" 1")

REV.	DATE	DESCRIPTION	BY

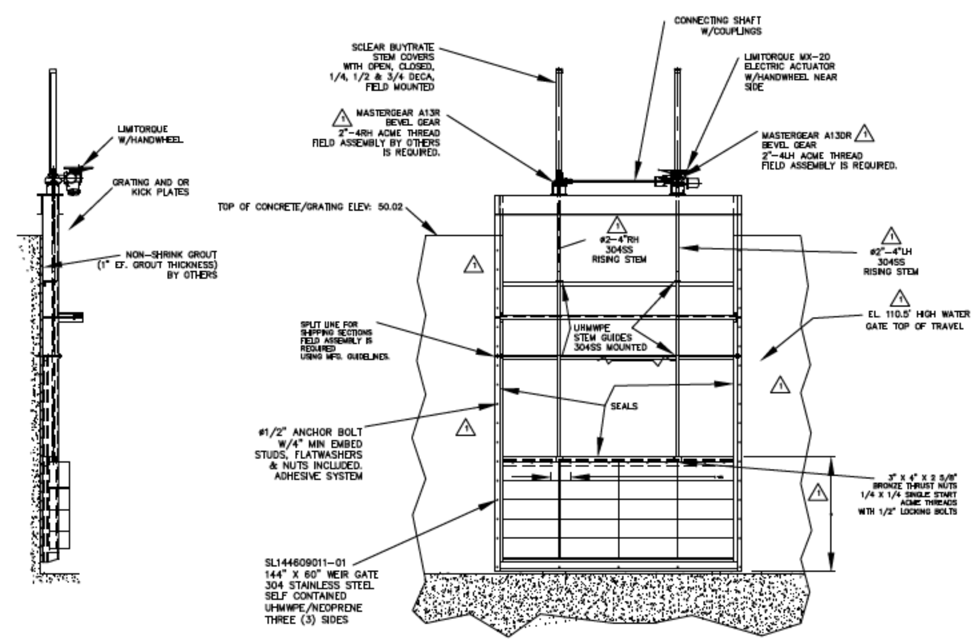
H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By:	Drawn By:	Checked By:	Submittal No: PRELIMINARY
File: L:/2004-27-17/DWG/INTAKE STRUCTURE			Layout: SCREEN

EXPIRES 12/31/2009

OREGON JULY 25, 1991 LAND K. BONTRAGER

REGISTERED PROFESSIONAL ENGINEER



MATERIALS:	
FRAME & LEAF	ASTM A276, TYPE 304L STAINLESS STEEL
STEM AND FASTENERS	ASTM A276, TYPE 304L STAINLESS STEEL
THRUST NUT	ASTM B584, CA954 BRONZE
SEATS/SEALS	UHMWP/NEOPRENE ASTM D2000 50-60 DURO
STEM COVER	BUTYRATE, CLEAR

FERROUS NON-SUBMERGED (GEARBOXES)
Prep: SSPC-SP10
Prime: TNEMEC Series N140-1255, Pota-Pox, 4-6 Mils DFT
Color - Beige
Finish: TNEMEC Series 69, 8-10 Mils DFT
Color - POND 28BL
Total System Thickness: 12-16 Mils DFT

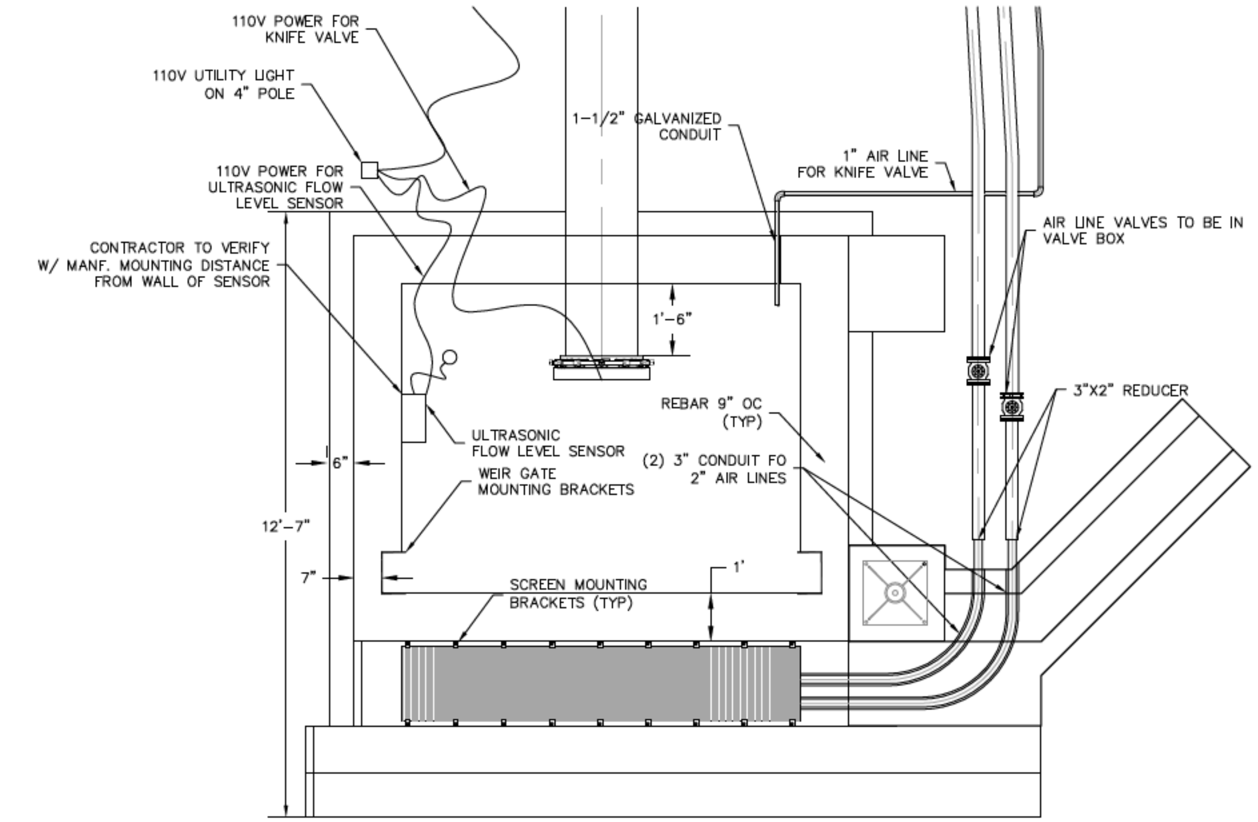
* Stainless steel is not coated.

NOTE:
FOR PROPER OPERATION & SEALING OF GATE, FRAME MUST BE INSTALLED SQUARE AND PLUMB.

304 STAINLESS STEEL NUTS ARE RECOMMENDED BETWEEN FRAME AND CONCRETE WALL FOR ADJUSTING FRAME. A NOMINAL 1" NON-SHRINK GROUT IS RECOMMENDED BETWEEN FRAME & CONCRETE WALL AFTER GATE IS CONFIRMED SET AND SEALED.

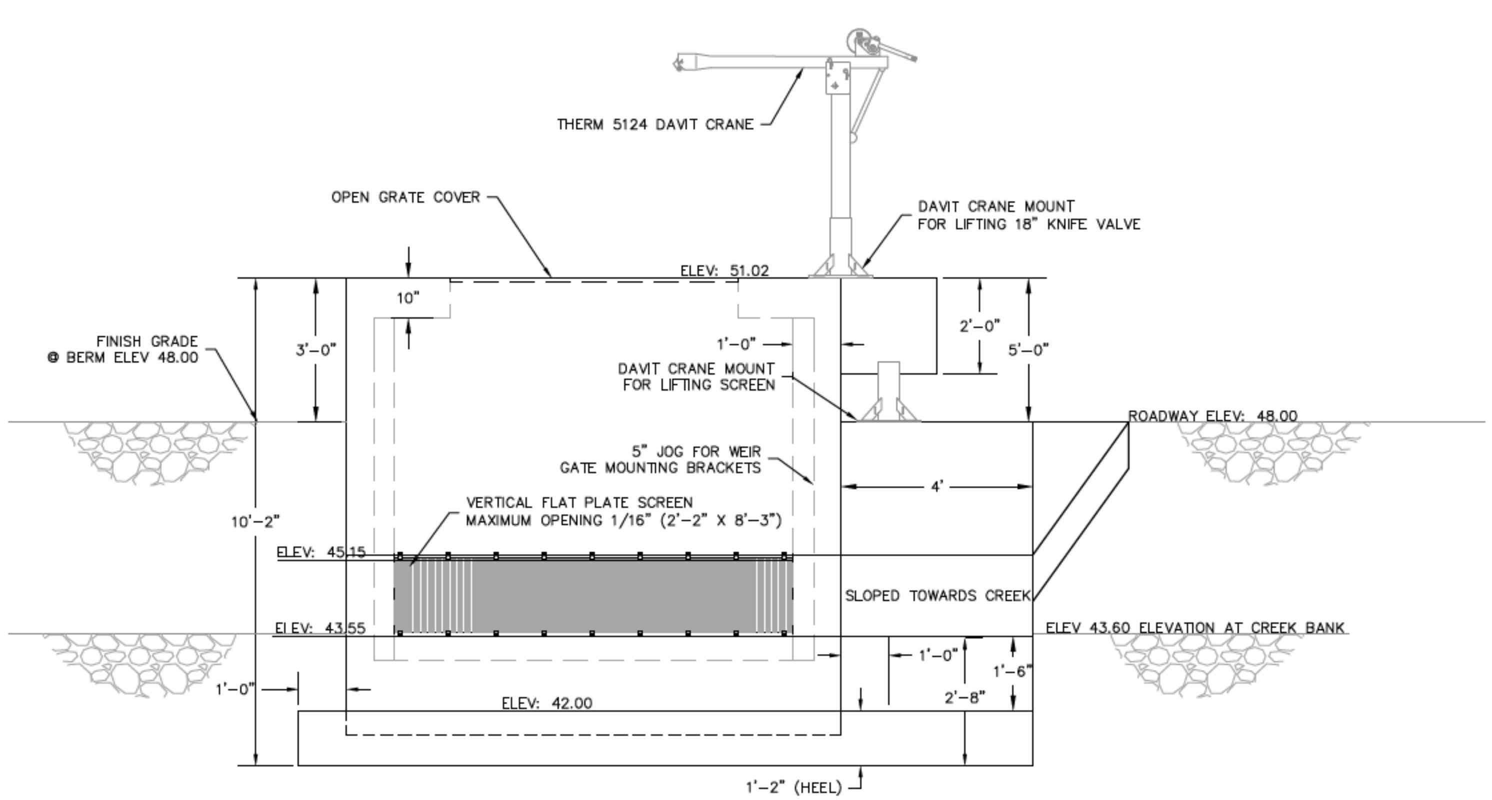
WEIR GATE

SCALE: NTS



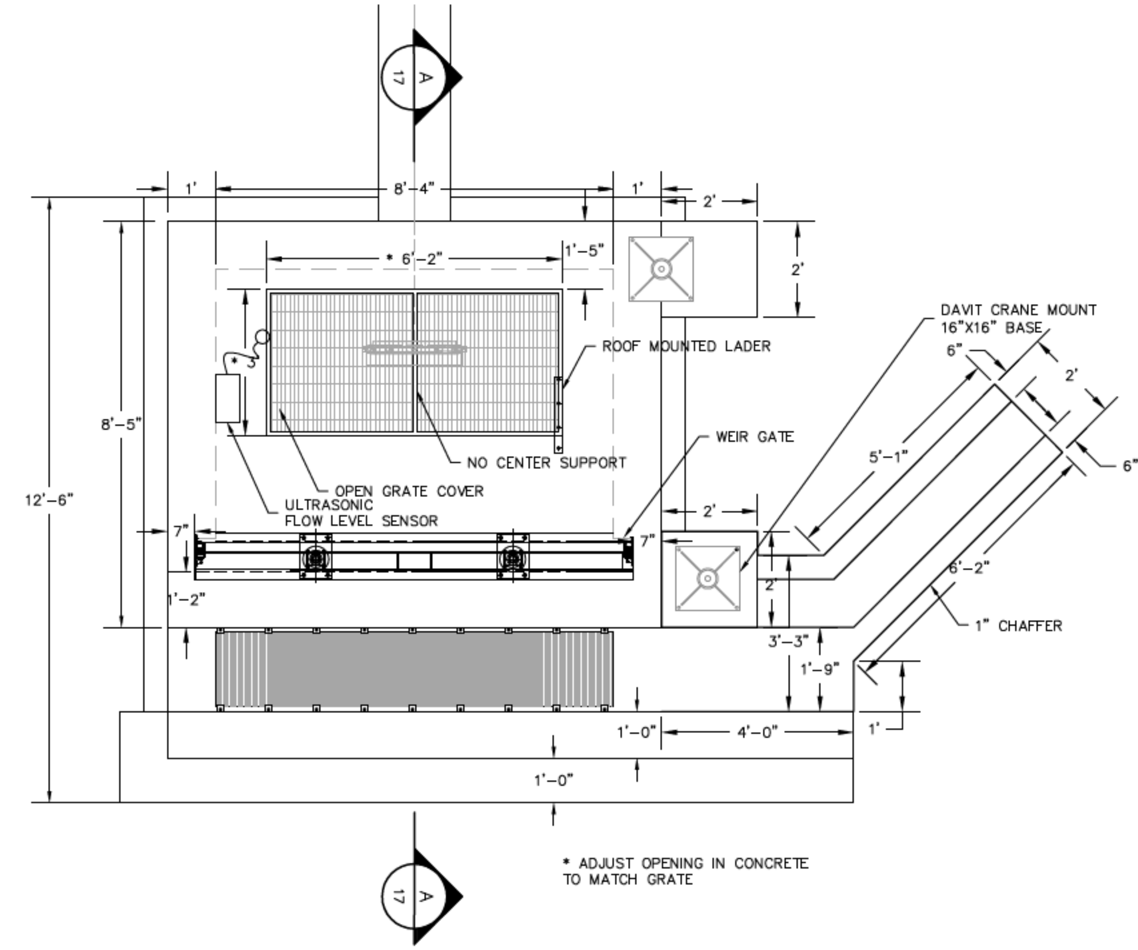
INTAKE SECTIONS

SCALE: 1" = 2'



INTAKE FRONT VIEW

SCALE: 1" = 2'



* ADJUST OPENING IN CONCRETE TO MATCH GRATE

INTAKE PLAN VIEW

SCALE: 1" = 2'

REV.	DATE	DESCRIPTION	BY

IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: | Drawn By: | Checked By: | Submittal No: PRELIMINARY
File: L:/2004-27-17/DWG/INTAKE STRUCTURE | Layout: SCREEN

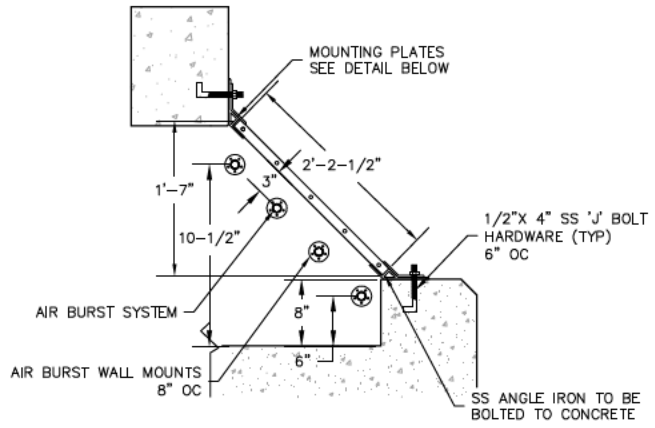
REGISTERED PROFESSIONAL ENGINEER
OREGON
DAVID K. BOATMAN
EXPIRES

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

INTAKE SCREEN SECTIONS

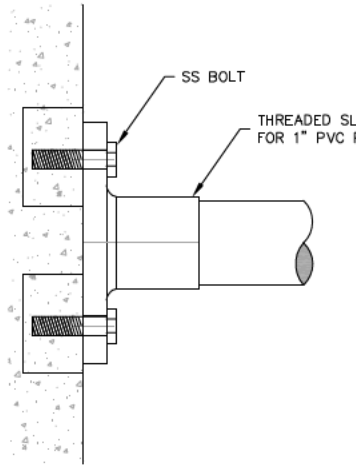
Date: 4/14/11
Sheet No. 14
14 of 22
2004-24-17

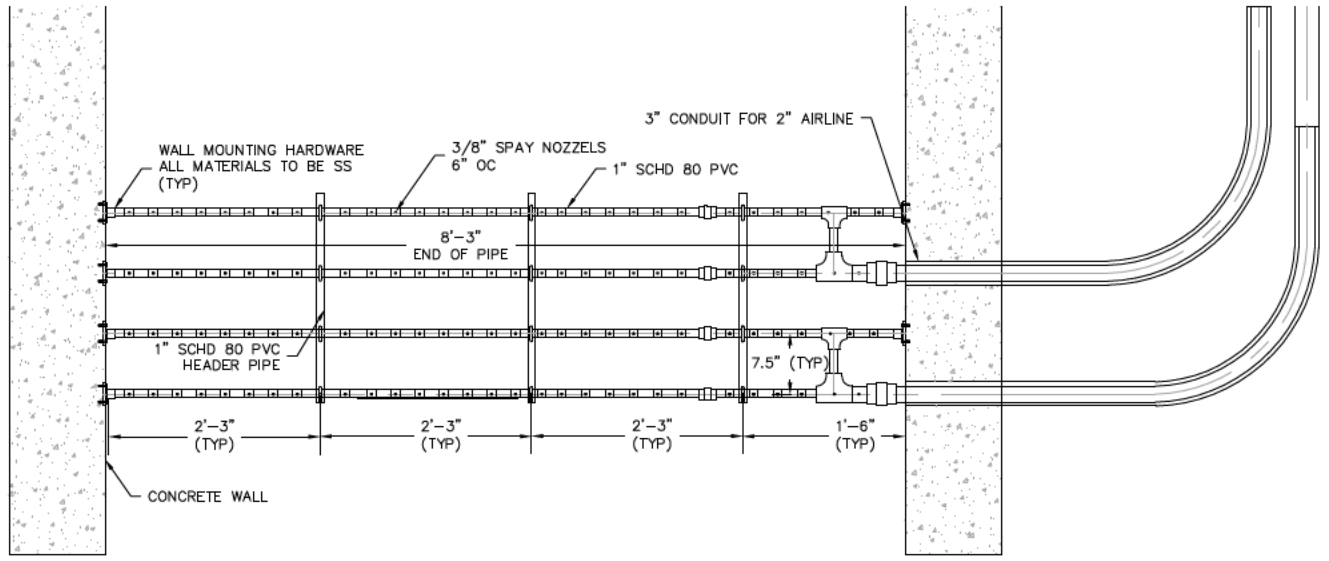


AIR BURST HEADER CROSS SECTION

SCALE: 1" = 1'

NOTE:
AIR BURST WALL MOUNT PLATES ARE DESIGN BUILD





NOTE:
VIEW IS LOOKING AT A PERPENDICULAR CROSS SECTION

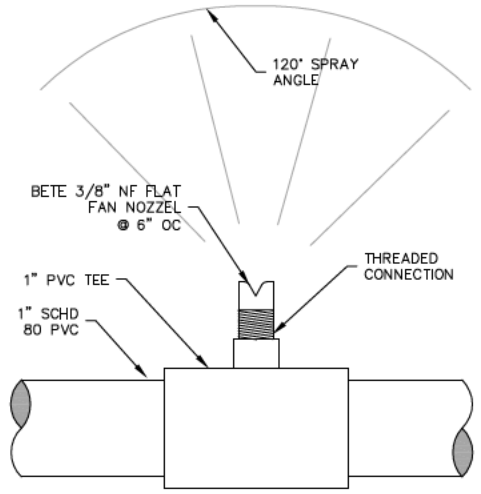
AIR BURST HEADER DETAIL

SCALE: 1" = 1'

NOTES: CLEANING SCREEN

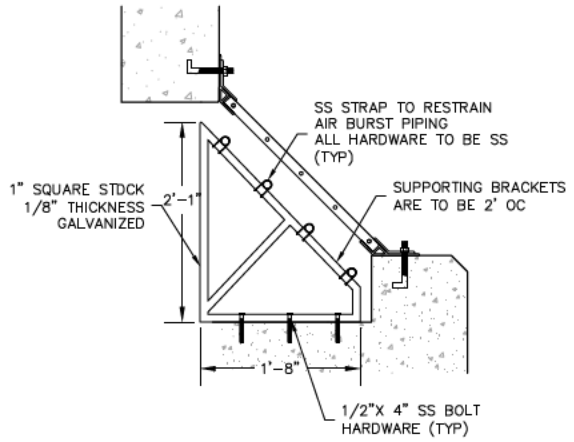
TWO MINUTES PRIOR TO AIR BURST, PLC WILL CLOSE THE 18" KNIFE VALVE SO THAT THE CREEK CHANNEL HAS TIME TO REFILL. AFTER THE TWO MINUTES HAS PASSED, A 30 SECOND AIR BURST WILL CLEAR THE SCREEN OF ALL MATERIALS. THE KNIFE VALVE WILL REMAIN CLOSED FOR AN ADDITIONAL 2 MINUTES AFTER THE AIR BURST TO ALLOW THE BUILD UP MATERIAL THAT HAS BEEN REMOVED FROM THE SCREEN TO FLOAT DOWN THE CREEK CHANNEL. THE VALVE CLOSURE WILL LAST FOR 4.5 MINUTES.

ROTATE HOLES IN PIPE TO DIRECTION TOWARDS FISH SCREEN



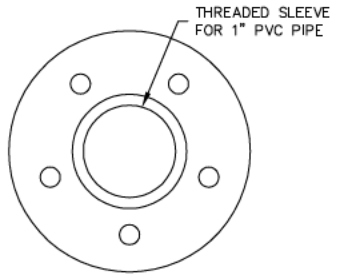
AIR BURST SPRAY NOZZEL DETAIL

SCALE: NTS



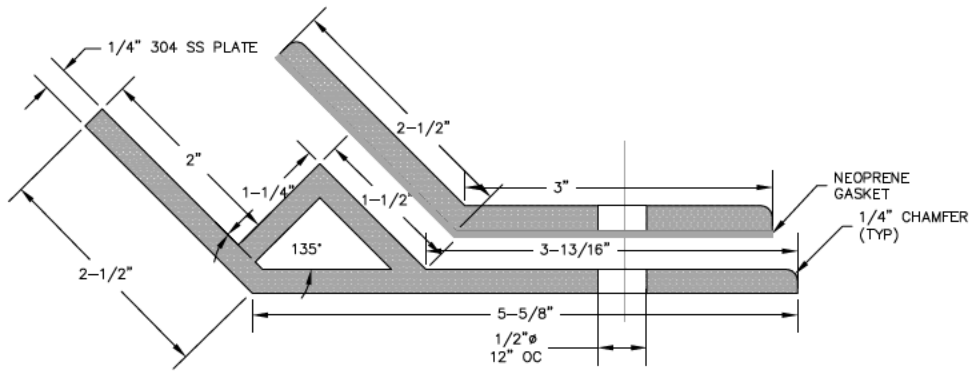
AIR BURST HEADER CROSS SECTION

SCALE: 1" = 1'



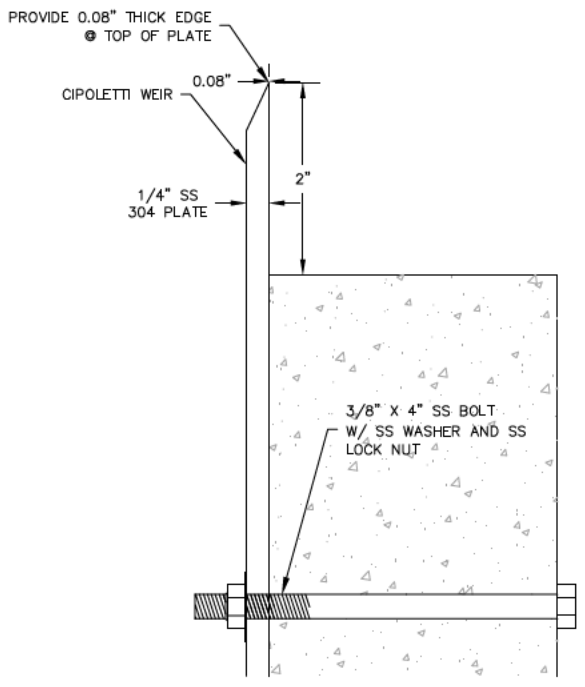
WALL MOUNT DETAIL

SCALE: NTS



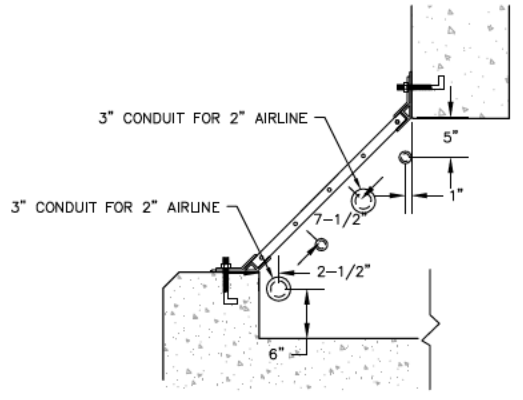
MOUNTING BRACKET

SCALE: 1" = 1"



CIPOLETTI WEIR DETAIL

SCALE: NTS



AIR BURST WALL CONDUIT LOCATIONS

SCALE: 1" = 1'

216-1003

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONTRAGER
EXPIRES: 12/31/2011

Designed By:
Drawn By:
Checked By:
Submittal No: PRELIMINARY
Layout: AIR BURST
File: L:\2004-27-17\DWG\INTAKE STRUCTURE

BY | DESCRIPTION | DATE | REV.

0" 1"
IF THIS LINE IS NOT 1 INCH
SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5, BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

INTAKE SCREEN
AIR BUSRT

Sheet No. 15
Date 4/14/11
15 or 22

2004-24-17

2004-24-17

Sheet No.	Date
16	4/14/11
16 of 22	

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON
CIPOLETTI WEIR

CITY OF ROCKAWAY BEACH
P.O. BOX 5, BAY CITY, OR 97136

IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN
0" 1"

BY	DESCRIPTION	DATE	REV.

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

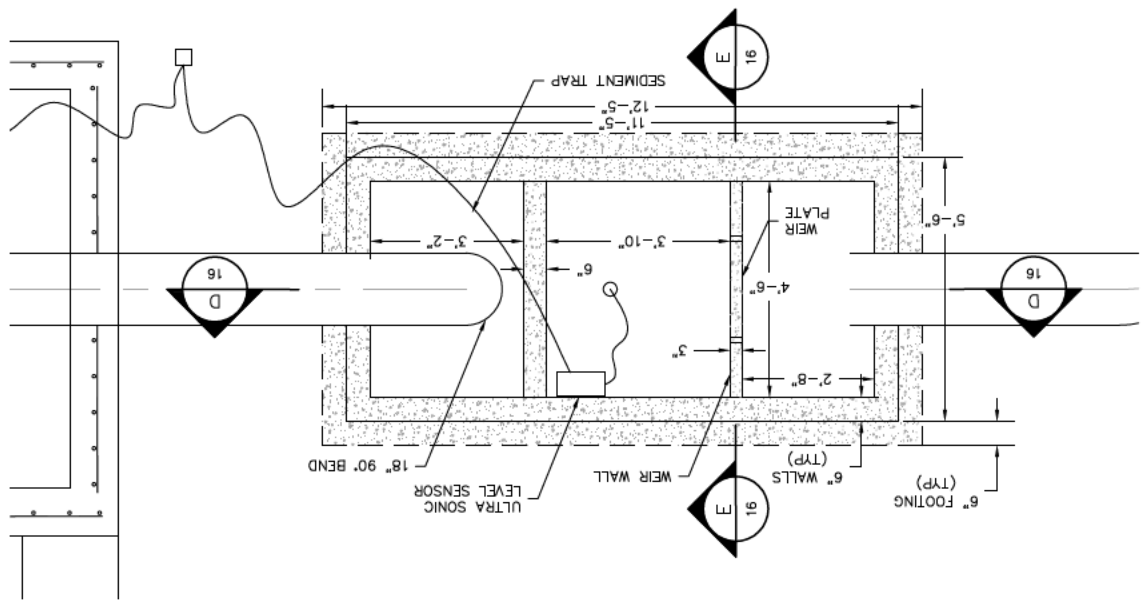
Designed By:	
Drawn By:	
Checked By:	
Submittal No.:	PRELIMINARY
Layout:	SCREEN
File:	L:\2004-27-17\DWG\INTAKE STRUCTURE

EXPIRES: 12/31/2012

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1991
DAVID K. BOWMAN

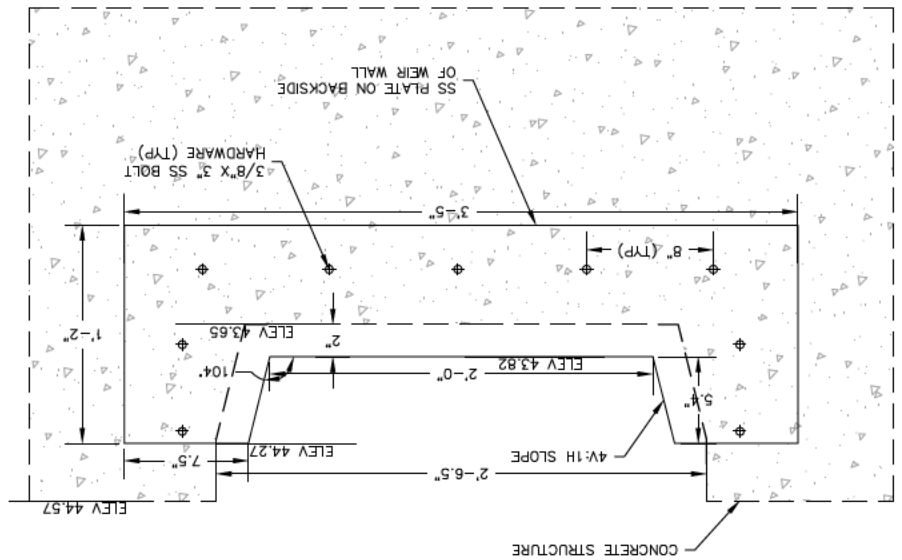
WEIR PLAN VIEW

SCALE: 1" = 2'



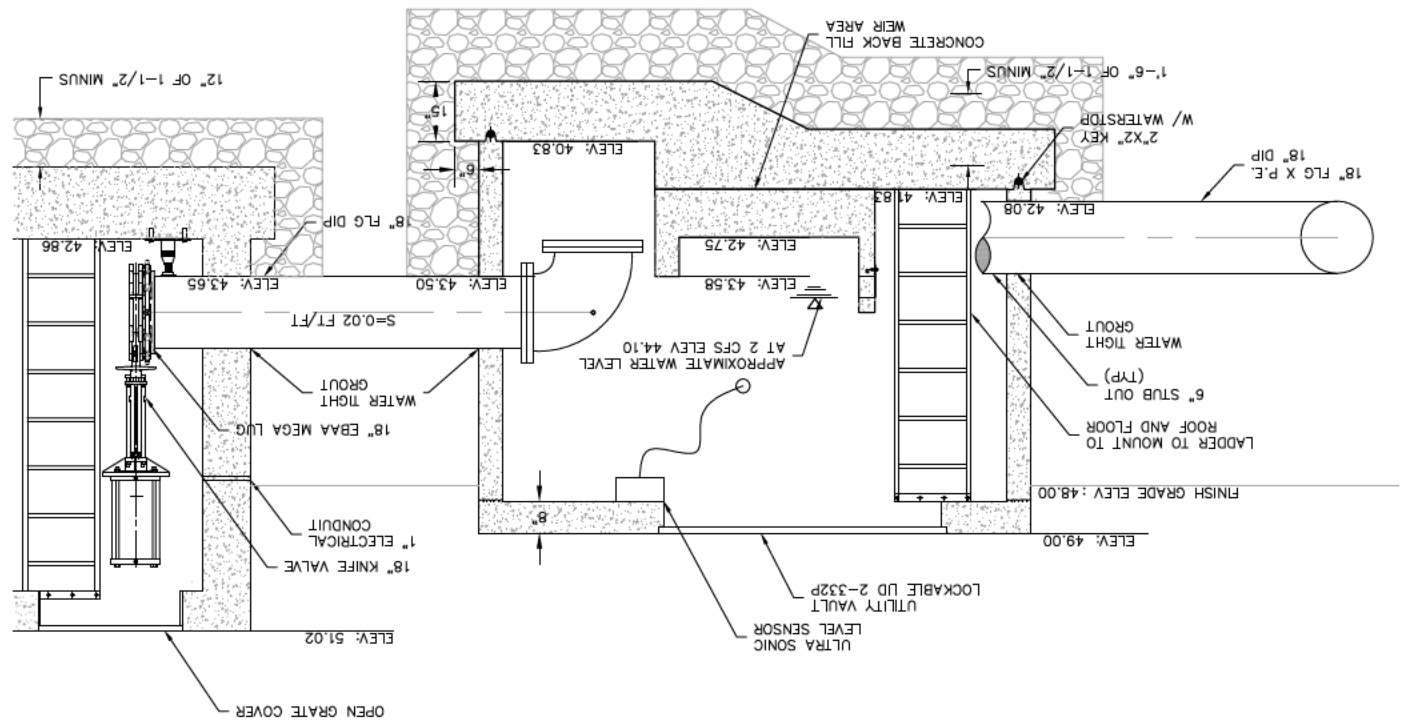
CIPOLETTI WEIR (BACKSIDE)

SCALE: 1" = 6"



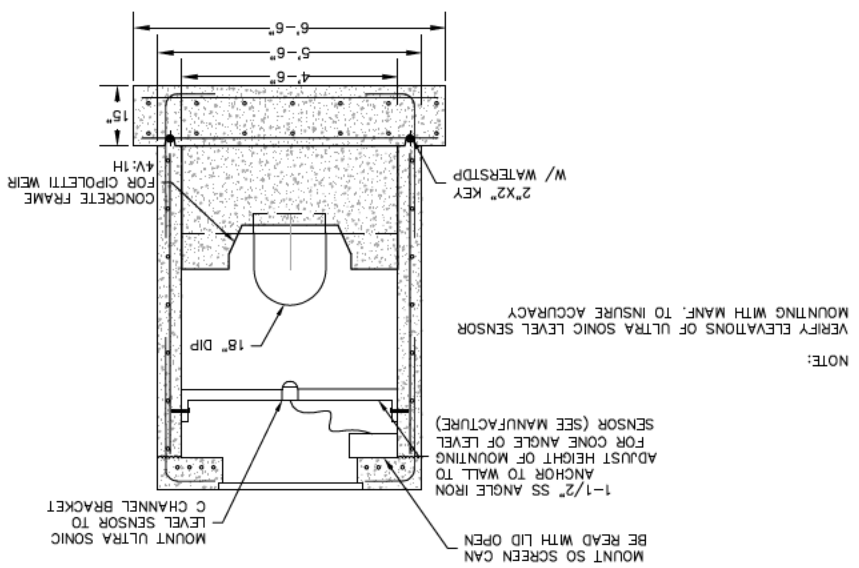
WEIR SECTION D-D

SCALE: 1" = 2'



WEIR SECTION E-E

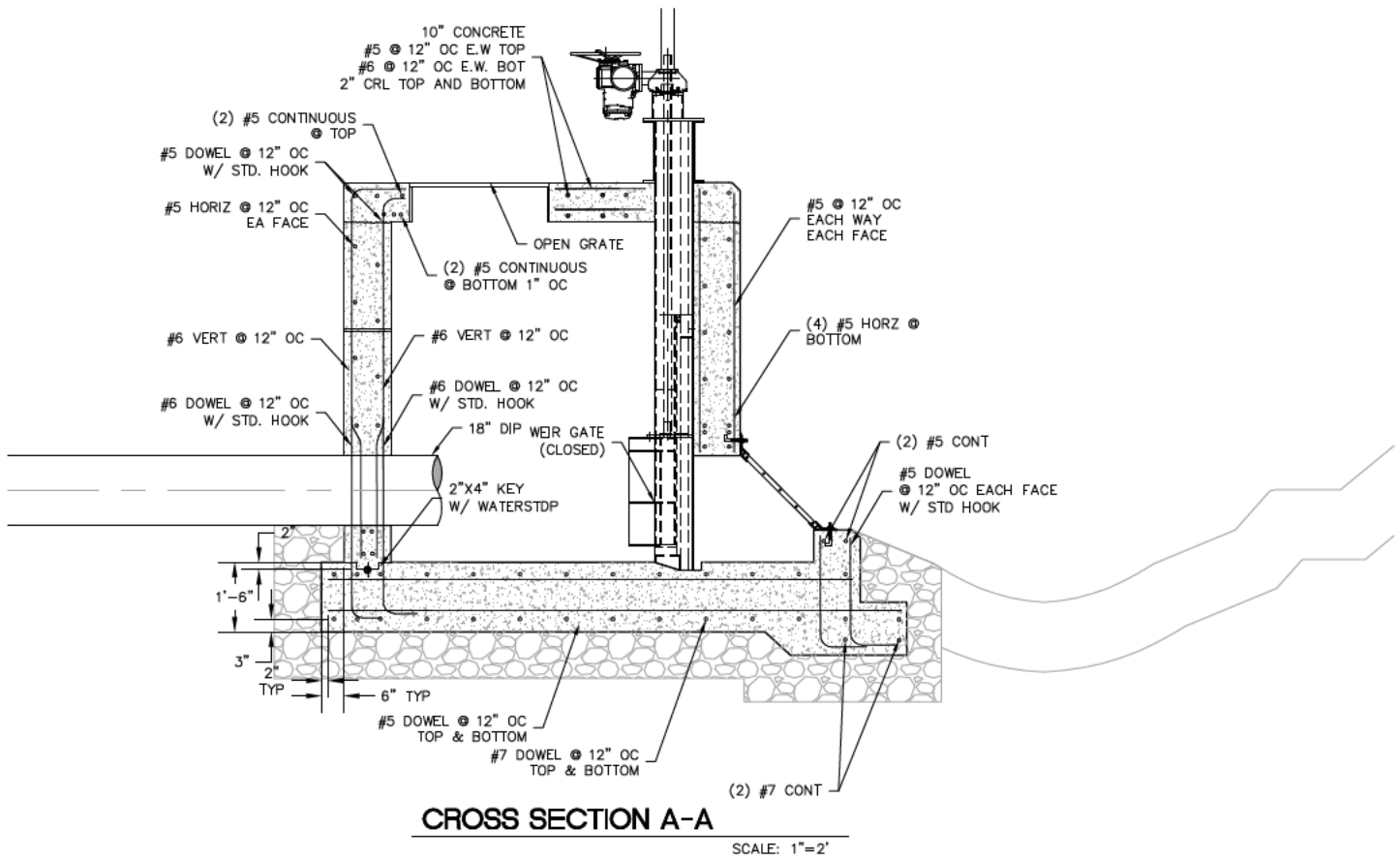
SCALE: 1" = 2'



NOTE:
VERIFY ELEVATIONS OF ULTRA SONIC LEVEL SENSOR MOUNTING WITH MANF. TO INSURE ACCURACY

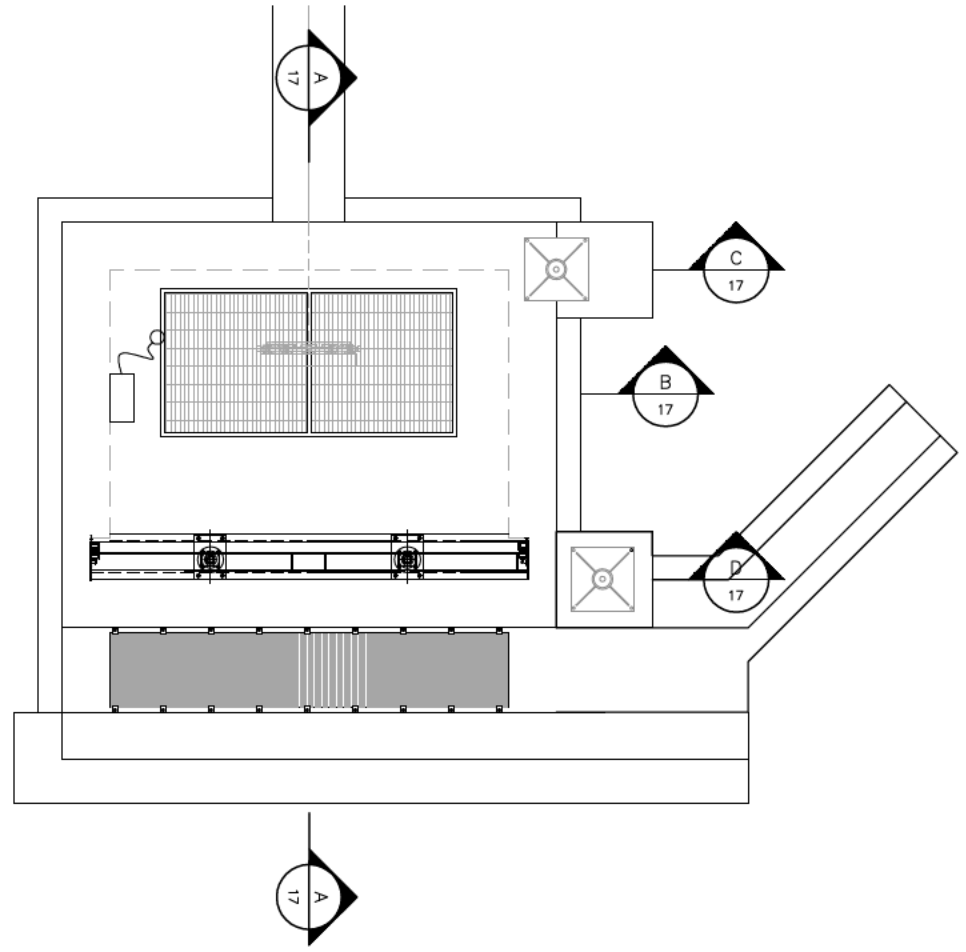
216-1003

216-1003



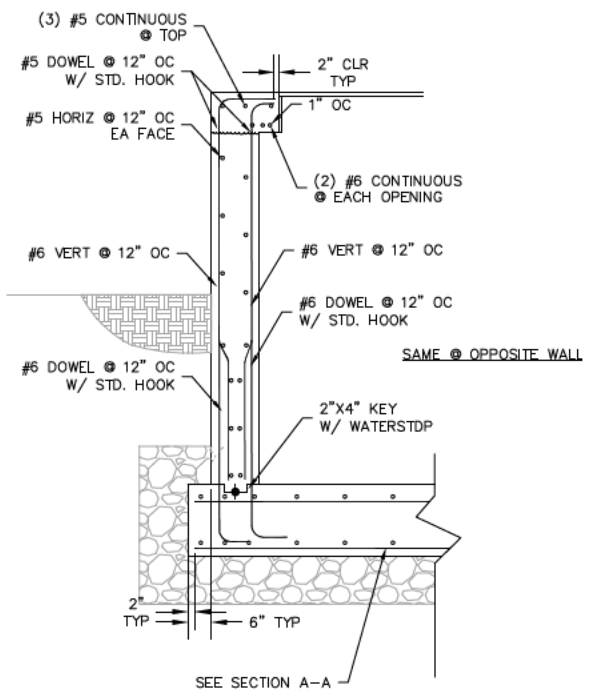
CROSS SECTION A-A

SCALE: 1"=2'



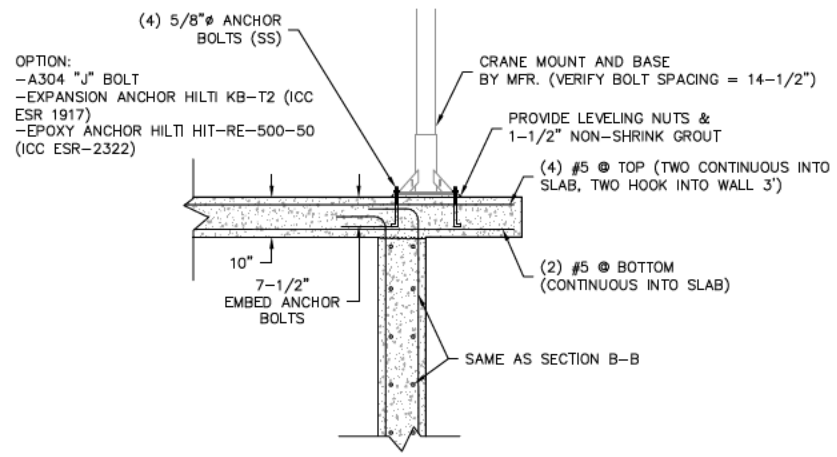
REBAR PLAN

SCALE: 1" = 2'



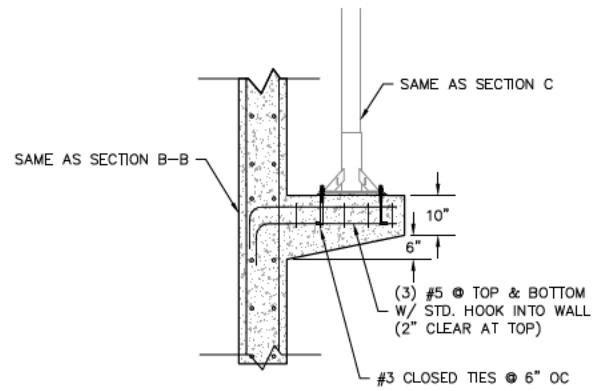
SECTION B

SCALE: 1" = 2'



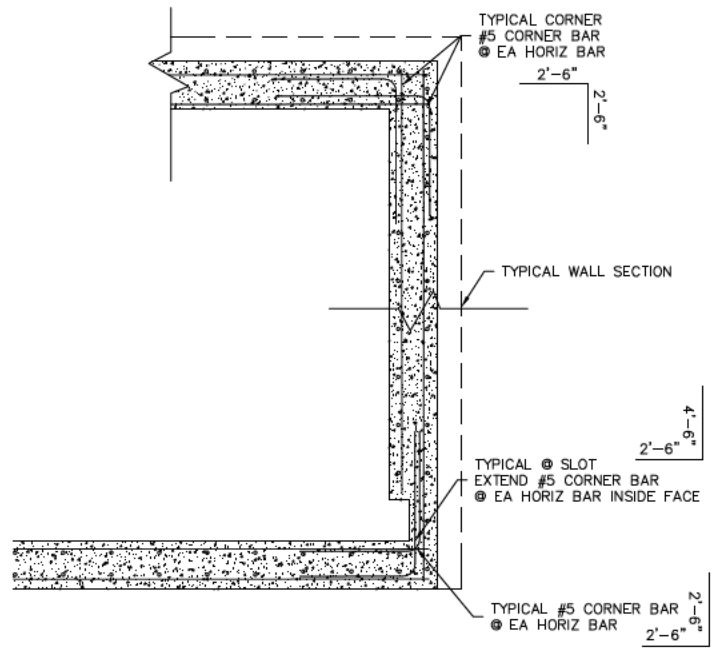
SECTION C CRANE BASE

SCALE: 1" = 2'



SECTION D CRANE BASE

SCALE: 1" = 2'



WALL CORNERS

SCALE: 1" = 2'

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
DAVID K. BONTHAM
EXPIRES: 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By:
Drawn By:
Checked By:
Submittal No: PRELIMINARY SCREEN
Layout:
File: L:\2004-24-17\DWG\INTAKE STRUCTURE

BY	DESCRIPTION	REV.	DATE

0" 1"
IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

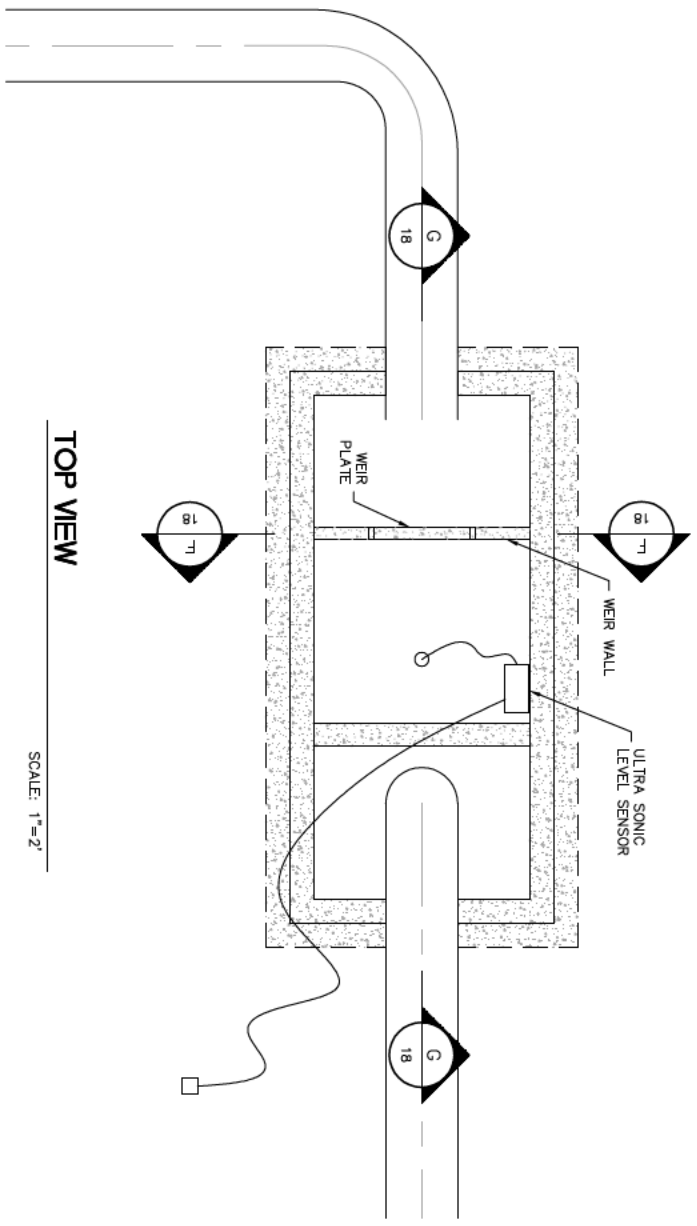
CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

INTAKE SCREEN REBAR PLAN

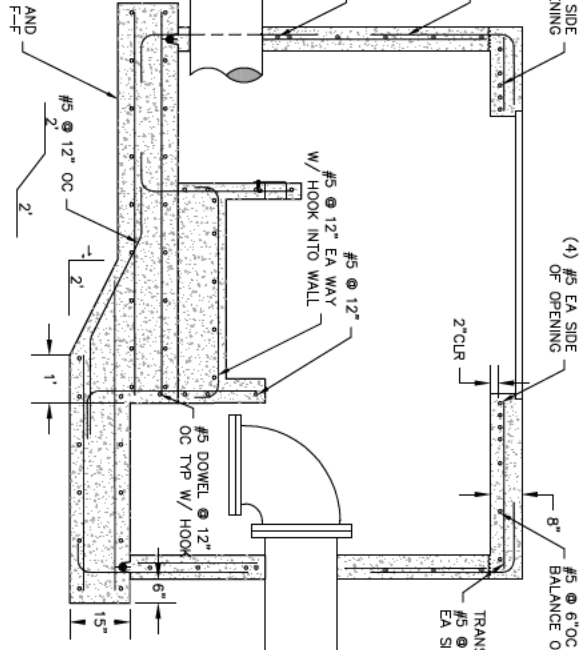
Sheet No. 17 of 22
Date 4/14/11
2004-24-17

216-1003



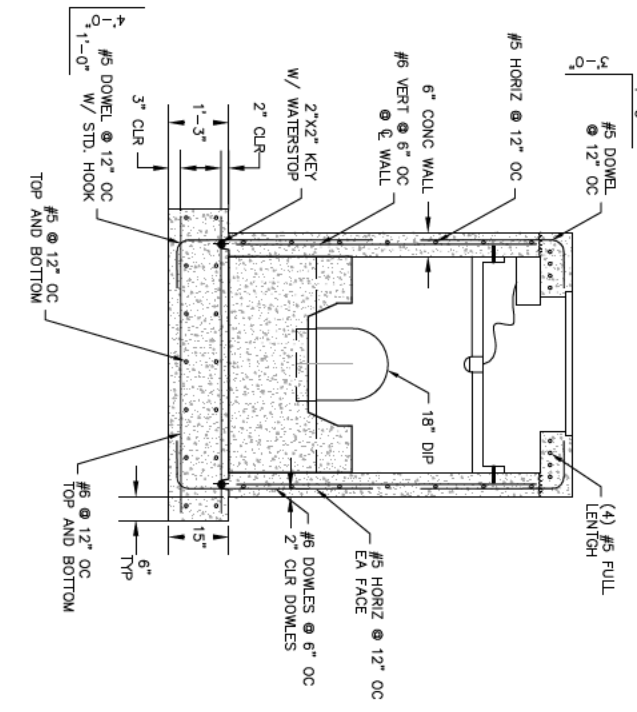
TOP VIEW

SCALE: 1"=2'



SECTION G-G

SCALE: 1" = 2'



SECTION F-F

SCALE: 1" = 2'

Date	Sheet No.
4/14/11	18
18 OF 22	

2004-24-17

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

FLOW CONTROL STRUCTURE REBAR PLAN

0" 1" IF THIS LINE IS NOT 1 INCH SCALE IS NOT AS SHOWN

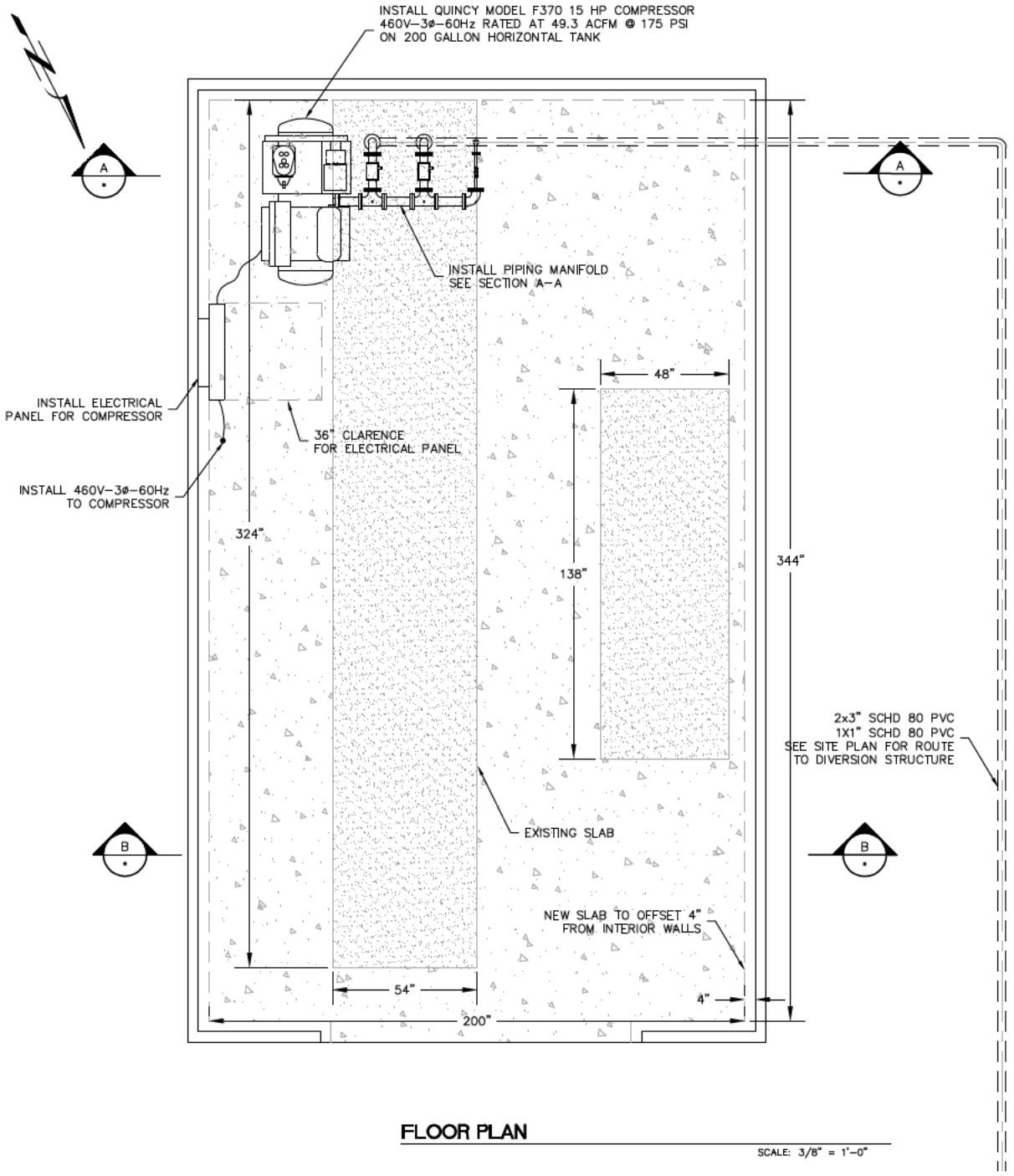
REV.	DATE	DESCRIPTION	BY

H B H Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By:	Drawn By:	Checked By:	Submittal No: PRELIMINARY
File: L:/2004-27-17/DWG/INTAKE STRUCTURE		Layout: SCREEN	

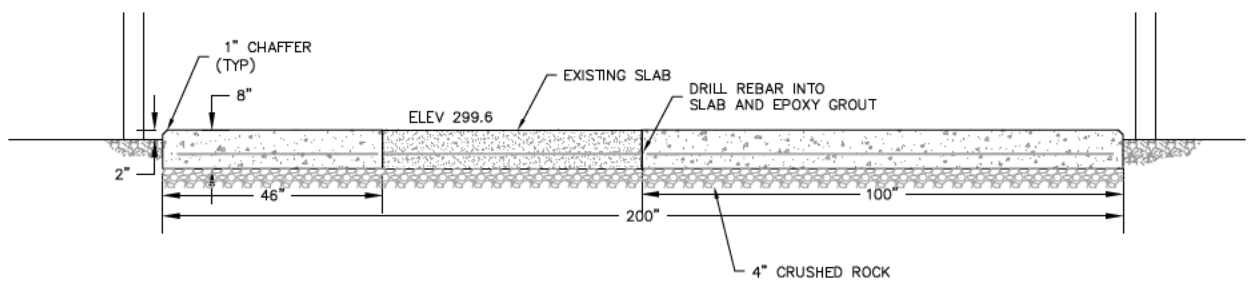
OREGON JULY 28, 1993 MARK K. BOATMAN
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 12/31/2004

216-1003



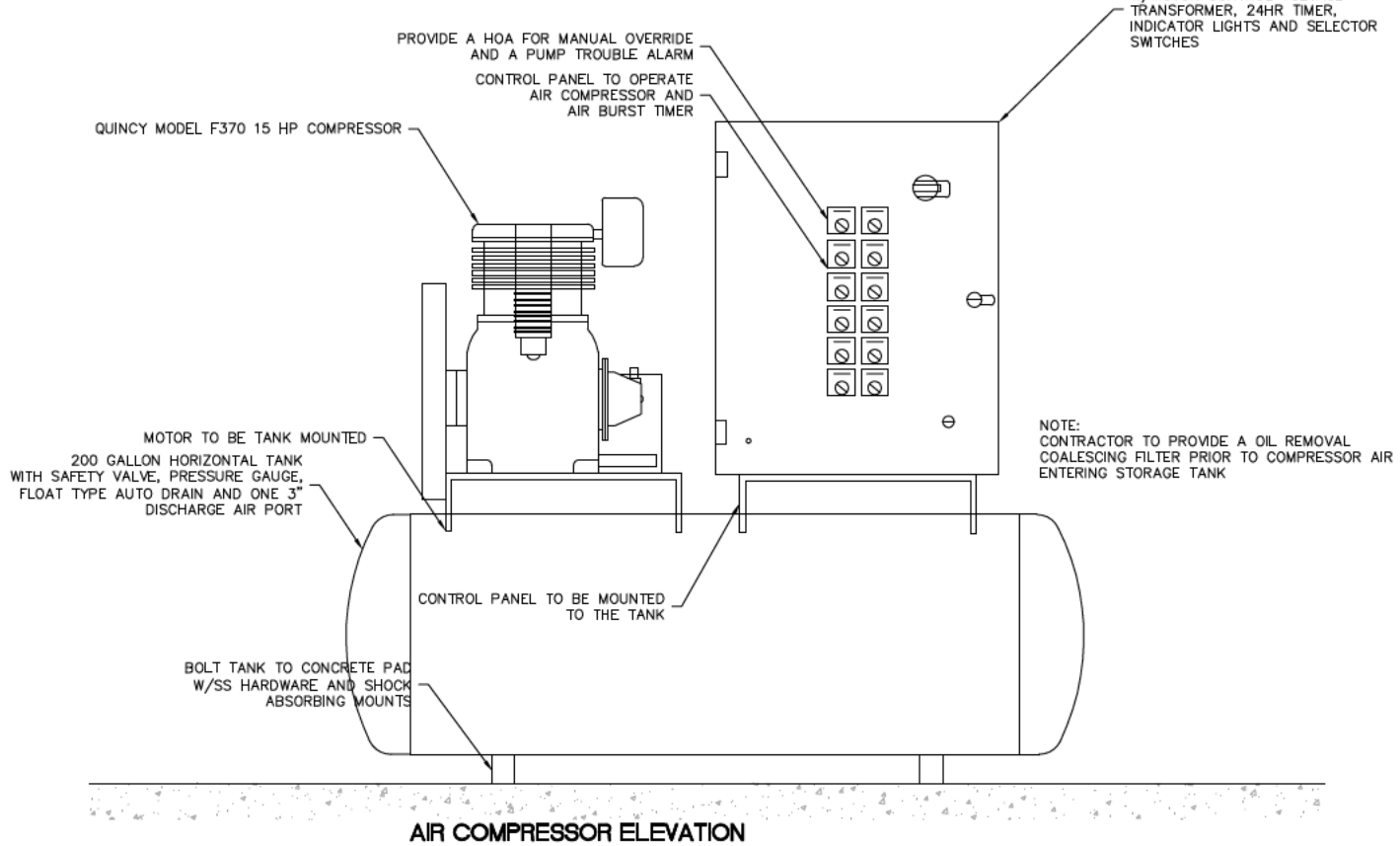
FLOOR PLAN

SCALE: 3/8" = 1'–0"



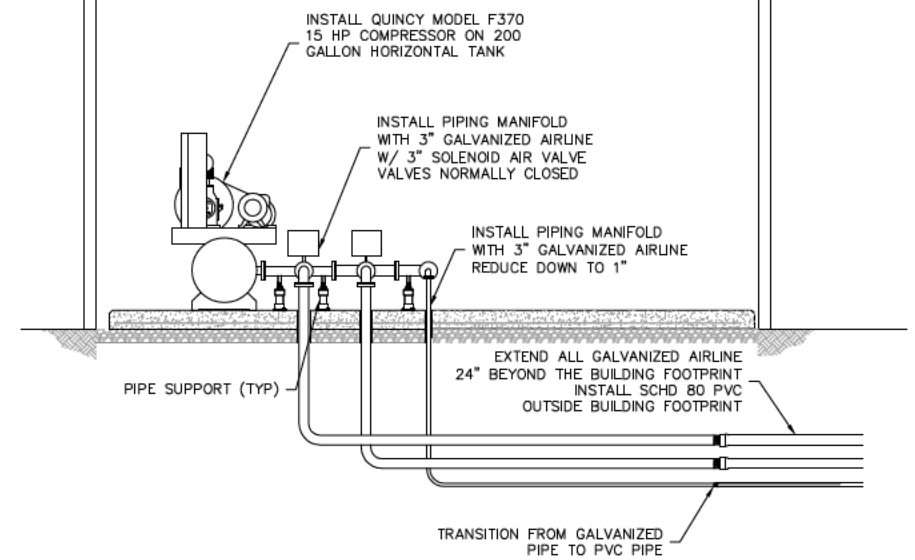
SLAB CROSS SECTION B–B

SCALE: 1" = 20'



AIR COMPRESSOR ELEVATION

SCALE: NTS



AIR COMPRESSOR SECTION A–A

SCALE: 1"=20'

REGISTERED PROFESSIONAL ENGINEER
15458
OREGON
JULY 25, 1997
DAVID K. BOATMAN
EXPIRES 12/31/2011

H B H
Consulting Engineers
20055 SW Pacific Hwy, Suite 201
Sherwood, Oregon 97140
503/625-8065 ■ fax 503/625-1531
email: mail@hbh-consulting.com

Designed By: BEC | Drawn By: BEC | Checked By: | Submittal No: PRELIMINARY | Layout: LAYOUT1
File: L:\2004.27.27\DWG\COMPRESSOR

REV.	DATE	DESCRIPTION	BY

0" 1"
IF THIS LINE IS NOT 1 INCH
SCALE IS NOT AS SHOWN

CITY OF ROCKAWAY BEACH
P.O. BOX 5; BAY CITY, OR 97136

IMPOUNDMENT IMPROVEMENTS
ROCKAWAY BEACH, OREGON

AIR COMPRESSOR + BUILDING SLAB

Date: 4/14/11
Sheet No.: 19 of 22

2004.27.17

Jetty Creek Photos

City of Rockaway Water Intake

- Passage barrier
  - Coho
  - Cutthroat Trout
  - Lamprey
  - Winter Steelhead?
    - No historical presence based on ODFW GIS data, but may use habitat
- Located approx 1100' from mouth

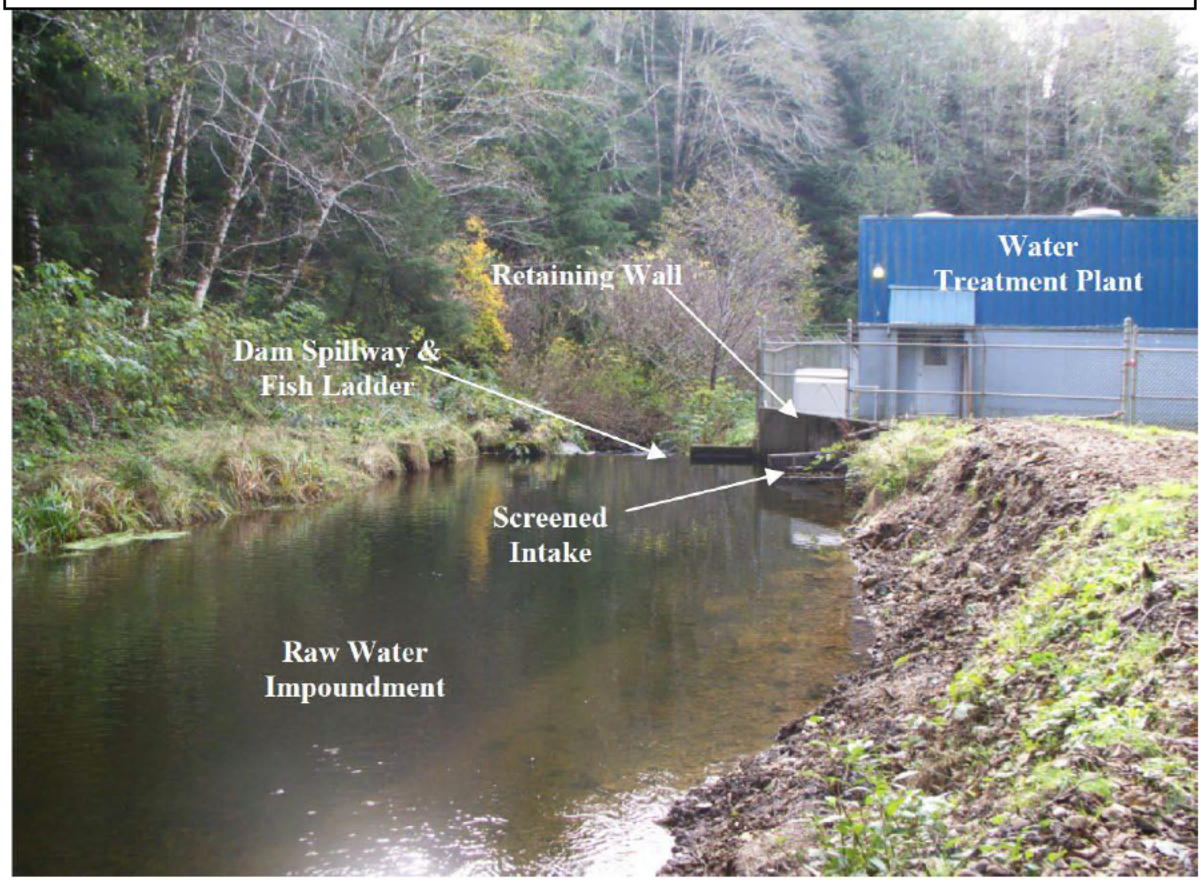
Jetty Creek—Upstream Spawning and Rearing Habitat

- Gradient and VWI conducive for restoration
- Moderate to high HIP (coho winter habitat) throughout

Jetty Creek Tidal/Estuarine Habitat

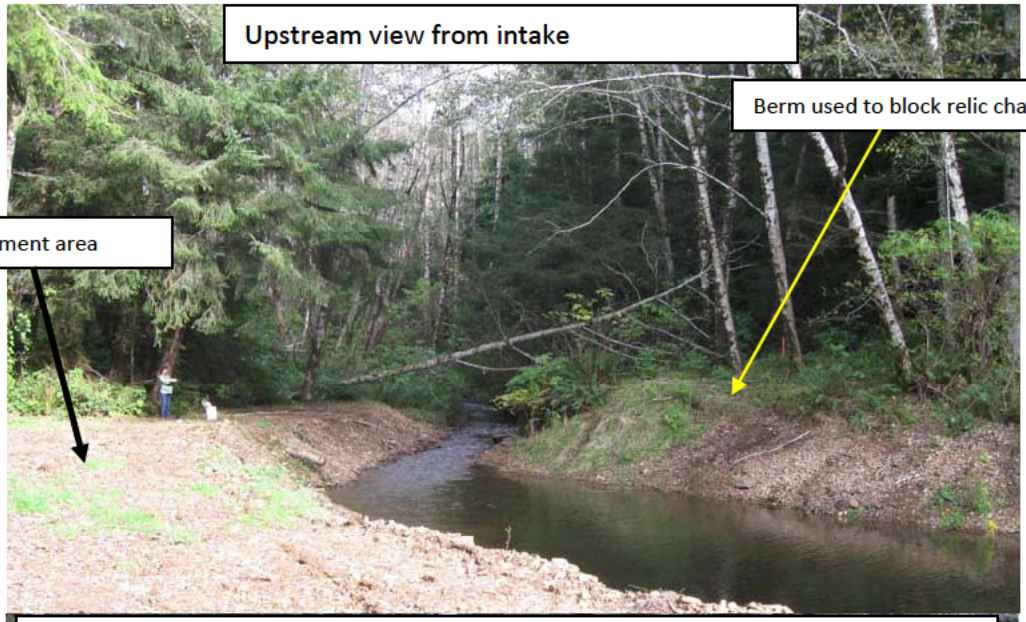
- Lower 400 linear feet
- High connectivity
- Good tidal function
- Well-established salt marsh

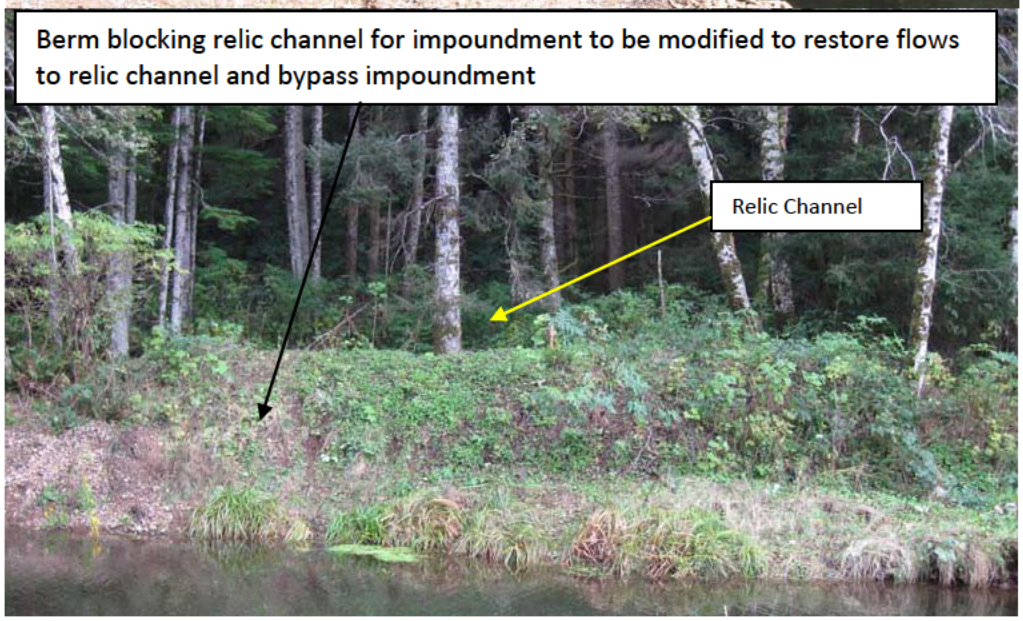
Point of Diversion - Existing Impoundment and Spillway/Ladder

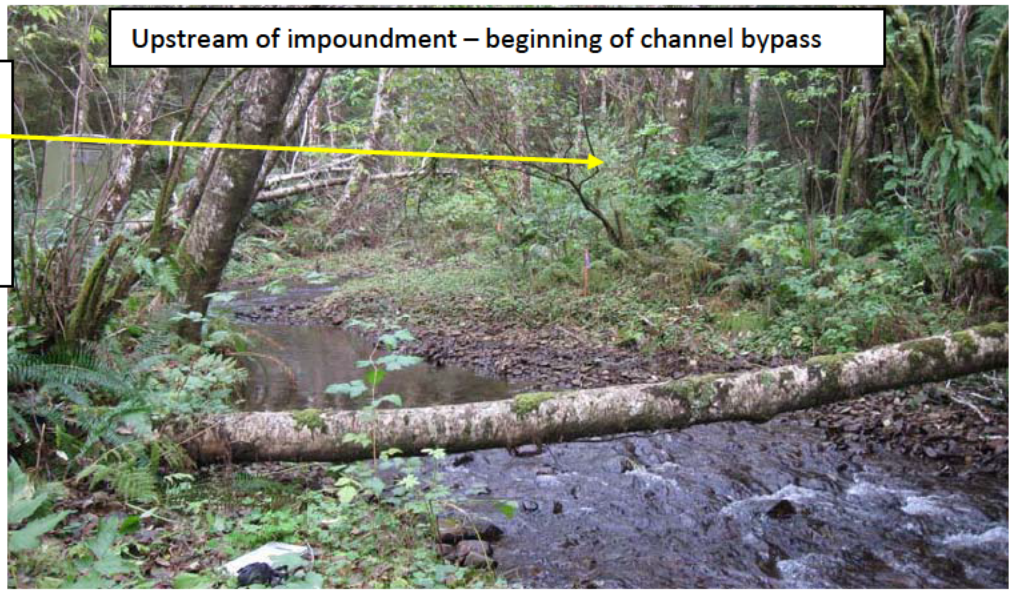



Downstream view towards impoundment


Flat off right bank – new impoundment site


Upstream view from intake
Berm used to block relic channel for impoundment
New Impoundment area


Berm blocking relic channel for impoundment to be modified to restore flows to relic channel and bypass impoundment
Relic Channel


Upstream of impoundment – beginning of channel bypass
Diversion for channel bypass to relic channel begins just upstream of stream bend

[redacted]

Oregon

Kate Brown, Governor

Department of Fish and Wildlife
Northwest Region
4907 3rd Street
Tillamook, OR 97141
(503) 842-2741
Fax (503) 842-8385
ODFW.com

April 13, 2015

[redacted]

RE: Jetty Creek Fish Passage Project

To Whom It May Concern:

This letter represents the Oregon Department of Fish and Wildlife's (ODFW) support for the project to modify the City of Rockaway Beach water intake structure to restore fish passage and the stream channel on Jetty Creek. ODFW is a committed partner in this project and has been working in support of this, and other restoration efforts on Jetty creek since 1995. ODFW supports the proposed project with the improvements on fish passage, fish screening, water quality, and overall improvements of instream habitat and natural channel dynamics within Jetty Creek. ODFW staff in both the Tillamook District office and the Fish Passage/Screening Program will continue to provide overall planning and implementation assistance towards this project.

The fish passage barrier created by the current water intake structure is considered a high priority for replacement by ODFW. It is significantly impacting migration for fish and other aquatic wildlife and is also impacting hydrologic and material flows. Jetty Creek is uniquely situated in the Nehalem Basin as the first tributary at the mouth of Nehalem Bay and one which migrating salmonids would use throughout portions of their life histories. Spawning, migrating and rearing fall Chinook, coastal coho salmon, winter steelhead, sea run cutthroat trout and lamprey will benefit from this project. The proposed channel design and development of a storage pond will end the need for annual disturbance of the stream by dredging maintenance at the city's intake pool.

ODFW's commitment towards this project can be valued at approximately $4,450 for in-kind match between our Fish Passage/Screening Program staff and Tillamook District staff time.

Sincerely,

[redacted]

Chris Knutsen
District Fish Biologist
ODFW - North Coast Watershed District

[redacted]

City of Rockaway Beach, Oregon
276 S. Highway 101, PO Box 5
Rockaway Beach, OR 97136
(503) 355-2291 FAX (503) 355-8221

April 14, 2015

[redacted]

Re: Support for the Lower Nehalem Watershed Council's Jetty Creek Fish Passage project

OWEB Review Team:

It is my pleasure to write this letter of support for the Lower Nehalem Watershed Council's Jetty Creek Fish Passage project. The City of Rockaway Beach has worked closely with the LNWC for close to five years now. Specifically this work includes a 2010 feasibility study, project design, water right perfection and Point of Diversion transfer application.

The City of Rockaway Beach fully supports this project and has included the anticipated cash match contribution of $40,000.00 in its budget for fiscal year 2015-2016. The City has also spent $8,100.00 on water right perfection and a POD transfer application. In addition, City staff has spent approximately 80 hours (at $35/hour) on the project totaling $2800.00. Lastly, the City will be providing a portable diesel pump valued at $21,000.00.

The City of Rockaway Beach looks forward to implementation of the Lower Nehalem Watershed Council's Jetty Creek Fish Passage project, and will continue to support the project during that process.

Sincerely,

[redacted]

Luke Shepard
Public Works Director
The City of Rockaway Beach

LukeShepard@rockawaybeachor.us

[redacted]
LOWER NEHALEM WATERSHED COUNCIL
PO Box 249
Nehalem, OR 97131

(503) 368 – 7424
lnwc@nehalemtel.net

www.lnwc.nehalem.org

April 14, 2015

[redacted]

To Whom It May Concern,

Lower Nehalem Watershed Council (LNWC), in partnership with City of Rockaway Beach, is seeking funds in support of the Jetty Creek Fish Passage project to reconnect 1.8 miles of high quality spawning and rearing habitat for salmon. Jetty Creek is the first stream adult salmon encounter as they migrate from the Pacific into Nehalem Bay and is the final tributary stream for out-migrating juveniles seeking freshwater refugia or a fresh/saltwater transition zone before entering the ocean. This stream is not only essential habitat for salmon, but is also the primary source of municipal water for the City of Rockaway Beach.

Restoration on Jetty Creek has long been a focus of LNWC, the Oregon department of Fish and Wildlife (ODFW), local residents, and private landowners. Throughout the years, restoration projects on the creek have included replacing four large culverts and a large wood placement project in the upper reaches and replacement of an undersized culvert under Highway 101 near the mouth. Since 2008, LNWC, the City of Rockaway Beach, and the Oregon Department of Fish and Wildlife have worked together to remove the final barrier to fish passage along Jetty Creek, the City's water intake structure.

By creating a natural fishway, moving the City's point of diversion upstream, enlarging the City's settling pond and impoundment, the project partners seek to address fish passage, maintain the City's drinking water intake, and improve water quality for the residents of Rockaway Beach. The design of the fishway will allow for fish passage, create habitat, and allow natural sediment transport through the system. The project will also allow for the three water rights, two municipal and one instream, to be gauged and regulated. By essentially making the City's settling pond and impoundment off channel the project will remove the final fish passage barrier on the stream, opening up a significant amount of spawning and rearing habitat essential for coho, steelhead, cutthroat, lamprey and resident species.

In addition to acting as the project manager for the project, LNWC is committed to providing at least $1500 of in-kind match in the form of volunteer time. The time will be spread over multiple volunteers from LNWC in preparation of the project, planning meeting and site visit attendance, contract review, project discussion at Council meetings, and additional support as needed. The hourly rate for volunteer time is $25.00/hour.

The Jetty Creek Fish Passage project is an excellent example of a diverse group of stakeholders working together to improve habitat for fish and to ensure the viability of a community's infrastructure. Projects like this are vital for fisheries and wildlife and local stakeholders, particularly those that promote migratory fish access to habitats essential for their different life history stages. We respectfully encourage the OWEB review team give thoughtful consideration to this project proposal and thank you for your time reviewing our application.

Sincerely,

[redacted]

Alix Lee
Council Coordinator

[redacted]STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232-1274

August 25, 2011

Cindi L. Lombard, E.I.T.
Project Designer
HBH Consulting Engineers
20055 SW Pacific HWY, Suite 201
Sherwood, Oregon 97140

RE: Jetty Creek Restoration and Fish Passage Project, Rockaway Beach, OR

Dear Cindi:

National Marine Fisheries Service (NMFS) reviewed HBH Consulting Engineers' design of both the upstream and downstream passage components of the City of Rockaway Beach's Stream Restoration and Fish Passage project on Jetty Creek. The design meets NMFS fish passage criteria for the Endangered Species Act listed adult and juvenile salmonids and therefore has NMFS approval for construction. This approval is based on the designs previously submitted. Any modifications to the plans stamped and dated 4/14/11 will require additional engineering review. Please retain this memo in your records and provide it as part of the future application packet required for Federal permitting of this project. Please contact Aaron Beavers Aaron.Beavers@noaa.gov or 503-231-2177, of my staff, if you have any questions.

Sincerely,

[redacted]

Keith Kirkendall
Chief, FERC and Water Diversion Branch
Hydropower Division

DEPARTMENT OF THE TREASURY

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

Date: SEP 11 2002

LOWER NEHALEM WATERSHED COUNCIL
PO BOX 249
NEHALEM, OR 97131-0000

Employer Identification Number:
91-1826263
DLN:
17053096747092
Contact Person:
LARRY W BOTHE
ID# 31462
Contact Telephone Number:
(877) 829-5500
Our Letter Dated:
April 1998
Addendum Applies:
No

Dear Applicant:

This modifies our letter of the above date in which we stated that you would be treated as an organization that is not a private foundation until the expiration of your advance ruling period.

Your exempt status under section 501(a) of the Internal Revenue Code as an organization described in section 501(c)(3) is still in effect. Based on the information you submitted, we have determined that you are not a private foundation within the meaning of section 509(a) of the Code because you are an organization of the type described in section 509(a)(1) and 170(b)(1)(A)(vi).

Grantors and contributors may rely on this determination unless the Internal Revenue Service publishes notice to the contrary. However, if you lose your section 509(a)(1) status, a grantor or contributor may not rely on this determination if he or she was in part responsible for, or was aware of, the act or failure to act, or the substantial or material change on the part of the organization that resulted in your loss of such status, or if he or she acquired knowledge that the Internal Revenue Service had given notice that you would no longer be classified as a section 509(a)(1) organization.

You are required to make your annual information return, Form 990 or Form 990-EZ, available for public inspection for three years after the later of the due date of the return or the date the return is filed. You are also required to make available for public inspection your exemption application, any supporting documents, and your exemption letter. Copies of these documents are also required to be provided to any individual upon written or in person request without charge other than reasonable fees for copying and postage. You may fulfill this requirement by placing these documents on the Internet. Penalties may be imposed for failure to comply with these requirements. Additional information is available in Publication 557, Tax-Exempt Status for Your Organization, or you may call our toll free number shown above.

If we have indicated in the heading of this letter that an addendum applies, the addendum enclosed is an integral part of this letter.

LOWER NEHALEM WATERSHED COUNCIL

Because this letter could help resolve any questions about your private foundation status, please keep it in your permanent records.

If you have any questions, please contact the person whose name and telephone number are shown above.

Sincerely yours,

[redacted]

Lois G. Lerner
Director, Exempt Organizations

Signature Authorization Page

I hereby make an application for financial assistance under the terms and conditions of the R&E Program as described in my project application.

I understand that if my project is approved for funding, the following will apply:

- ☒ All project sponsors must sign a grant agreement containing the terms and conditions on which funding will be released.
- ☒ Project expenses which occur before the grant agreement is signed or after the expiration date will not be paid by the R&E Program.
- ☒ Copies of all necessary permits must be submitted to the R&E Program.
- ☒ Project sponsors must certify compliance with local, state, and federal regulations and laws.
- ☒ Landowner, monitoring and maintenance agreements must be submitted to the R&E Program.
- ☒ Regular progress reports may be required, and at the end of each project a Completion Report must be submitted.
- ☒ Educational products resulting from projects are public domain.
- ☒ All information submitted to either party under this application is subject to the federal Freedom of Information Act.

Project Title: **Jetty Creek Fish Passage**

Applicant: **Lower Nehalem Watershed Council**

Date: **6/2/15**

Fiscal Officer: [redacted]

Date: 6/2/15