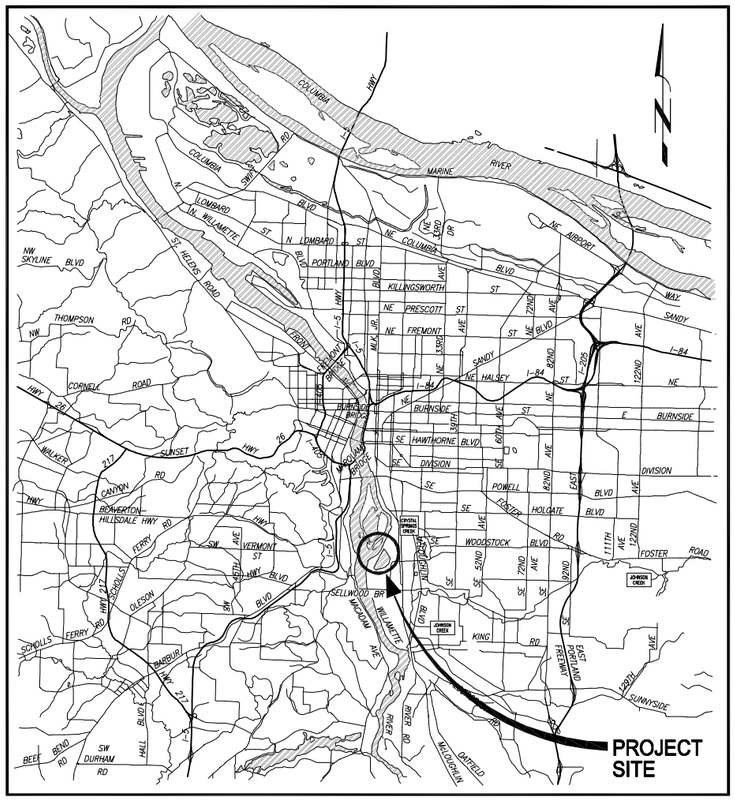
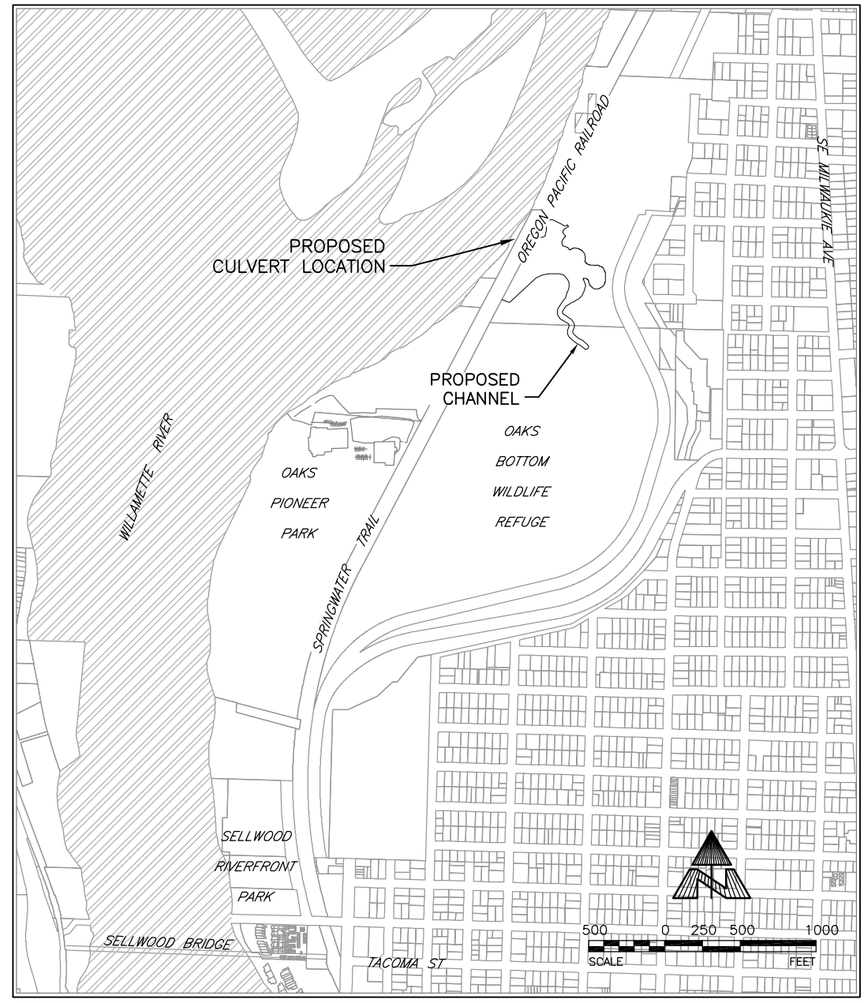
Appendix C
Design

CITY OF PORTLAND, OREGON
PLANS FOR THE CONSTRUCTION OF THE
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT



VICINITY MAP

NOT TO SCALE



PROJECT AREA

SHEET INDEX:

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NOTICE TO EXCAVATORS:
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
(NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)-232-1987).

POTENTIAL UNDERGROUND FACILITY OWNERS

Dig Safely.
Call the Oregon One-Call Center
1-800-332-2344

EMERGENCY TELEPHONE NUMBERS

NW NATURAL GAS	
M-F 7am-6pm	503-226-4211 Ext.4313
AFTER HOURS	503-226-4211
PGE	503-464-7777
QWEST	1-800-573-1311
CITY BUREAU OF MAINTENANCE	503-823-1700
CITY WATER	503-823-4874
VERIZON	1-800-483-1000

IN-WATER WORK WINDOW: JULY 1 THROUGH OCT 31

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

REVISION

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
FINAL MAP DATA
DRAWING NAME:

DESIGNED BY	CJL	DATE APPD.	
DRAWN BY	TAS/MR	PROJECT MGR.	SB
CHECKED BY	JL	CONST. MGR.	MWH
DESIGN MGR.	YHC	SUP. ENG.	LS

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

DAN SALTZMAN
COMMISSIONER
PUBLIC AFFAIRS

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APPROVAL

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT

TITLE SHEET

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. G01
01 OF 27

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LEGEND:

EXISTING	PROPOSED
BENCHMARK	CONSTRUCTION NOTE DESIGNATION (XX)
TREE (CONIFEROUS)	GRADE LINES
TREE (DECIDUOUS)	CUT/FILL EXTENT
MAJOR (5') CONTOUR	CONTROL LINE
MINOR (1') CONTOUR	STRUCTURE
TREELINE	CUT AREA
EXIST STRUCTURE	FILL AREA
FENCE LINE	MAJOR (5') CONTOUR
EDGE OF WATER	MINOR (1') CONTOUR
DSL OHW LINE (ELEV 12.78 FT COP)	TEMP MESH FENCE
	SILT FENCE
	X — X CHAINLINK FENCE
	CONSTRUCTION TRAFFIC ROUTE
	SPRINGWATER TRAIL DETOUR (SHARED ROADWAY)

ABBREVIATIONS & DEFINITIONS:

AC	ASPHALT–CONCRETE	NAD	NORTH AMERICAN DATUM
ACC	ACCORDING	N/A	NOT APPLICABLE
ADD'L	ADDITIONAL	NTS	NOT TO SCALE
ADJ	ADJACENT	O.C.	ON CENTER
ALIGN	ALIGNMENT	OD	OUTSIDE DIAMETER
APPROX	APPROXIMATE	ODFW	OREGON DEPT OF FISH & WILDLIFE
AVG	AVERAGE	ODOT	OREGON DEPT OF TRANSPORTATION
BOB	BASIS OF BEARING	OH	OVERHEAD
BM	BENCHMARK	OHW	ORDINARY HIGH WATER
BMP	BEST MANAGEMENT PRACTICE	OHWM	ORDINARY HIGH WATER MARK
CHNL	CHANNEL	OPRR	OREGON PACIFIC RAILROAD
CITY	CITY OF PORTLAND	OYC	OREGON YACHT CLUB
CL	CENTERLINE	PCL	PRIMARY CONTROL LINE
CMP	CORRUGATED METAL PIPE	PC	POINT OF CURVATURE
CONC	CONCRETE	PDX	PORTLAND
COP	CITY OF PORTLAND	PERM	PERMANENT
COR	CONTRACTING OFFICER'S REPRESENTATIVE	PID	POINT IDENTIFICATION
		PK	PARK
CPC	CONCRETE PIPE CULVERT	POB	POINT OF BEGINNING
CTRL	CONTROL	POE	POINT OF END
CULV	CULVERT	PI	POINT OF INTERSECTION
CY	CUBIC YARD	PROP	PROPOSED
D/S	DOWNSTREAM	PT	POINT
DEMO	DEMOLITION	R, RAD	RADIUS, RIGHT
DIA	DIAMETER	R/W	RIGHT OF WAY
DSL	DEPT OF STATE LANDS	RCBC	REINFORCED CONC BOX CULVERT
FG	FINISH GRADE	REF	REFERENCE
E	EAST, EASTING	RR	RAILROAD
EA	EACH	S	SOUTH
EG	EXISTING GROUND	SCL	SPRINGWATER CONTROL LINE
EL	ELEVATION	SE	SOUTH EAST
ELEC	ELECTRICAL	SF	SQUARE FEET
EXIST	EXISTING	SHT	SHEET
GRND	GROUND	SPEC	SPECIFICATION
H, HORIZ	HORIZONTAL	SS	SIDESLOPE
HP	H–PILE	STA	STATION
IE	INVERT ELEVATION	SY	SQUARE YARD
IN	INCH, INCHES	TBD	TO BE DETERMINED
INV	INVERT	TBM	TEMPORARY BENCHMARK
L	LEFT	TEMP	TEMPORARY
LBS	POUNDS	TH	THICKNESS
LF	LINEAR FOOT, LINEAR FEET	TYP	TYPICAL
LWD	LARGE WOODY DEBRIS	U/S	UPSTREAM
MATL	MATERIAL	V, VERT	VERTICAL
MAX	MAXIMUM	W	WEST
MFR	MANUFACTURER	W/	WITH
MIN	MINIMUM	WCS	WATER CONTROL STRUCTURE
MISC	MISCELLANEOUS	WSE	WATER SURFACE ELEVATION
N	NORTH, NORTHING	XING	CROSSING

NOTES:

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING REQUIREMENTS SET FORTH IN THE PERMITS OBTAINED FOR THIS PROJECT, APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS AND THOSE DEALING WITH TRENCHING AND SHORING. THE CONTRACTOR SHALL MAINTAIN A COPY OF ALL PERMITS ONSITE DURING CONSTRUCTION.
2. ALL CONSTRUCTION WORK AFFECTING AREAS BELOW THE OHWM (+12.8 FT COP) MUST BE CONDUCTED DURING THE APPROVED FISH WINDOW, GENERALLY JULY 1 TO OCTOBER 31, UNLESS AN EXTENSION IS RECEIVED FROM THE OREGON DEPARTMENT OF FISH AND WILDLIFE.
3. DURING THE COURSE OF ALL WORK ON THIS PROJECT, THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR ALL JOB SITE CONDITIONS INCLUDING THE SAFETY OF ALL PERSONS AND SECURITY OF ALL PROPERTY. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE SKILLS AND ATTENTION UTILIZED WITHIN THE INDUSTRY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THIS CONTRACT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
4. THE CONTRACTOR SHALL KEEP JOB SITE AREA CLEAN, HAZARD–FREE, AND PROPERLY DISPOSE OF ALL DEBRIS, RUBBISH, AND CONSTRUCTION WASTE. ALL DISTURBED AREAS ARE TO BE REHABILITATED TO PRE–CONSTRUCTION CONDITIONS OR PER REVEGETATION PLAN.
5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE.
6. AN APPROVED SET OF CONTRACT DOCUMENTS SHALL BE ON THE JOB SITE AT ALL TIMES.
7. DETAILS ON THE PLANS ARE INTENDED TO SHOW THE FINAL RESULTS OF THE DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB SITE DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
8. ALL BID ITEMS ARE COMPLETE IN PLACE, INCLUDING FURNISHING ALL MATERIALS, EQUIPMENT, TOOLS, INCIDENTALS, PERSONNEL AND SUPERINTENDENCE REQUIRED.
9. ALL REVISIONS TO THE CONTRACT SHALL BE APPROVED BY THE ENGINEER, IN WRITING, BEFORE ANY WORK ASSOCIATED WITH THE REVISION IS COMMENCED.

SURVEY CONTROL AND CONSTRUCTION LIMITS

1. ELEVATIONS ARE RELATIVE TO CITY OF PORTLAND VERTICAL DATUM (COP).
2. BASIS OF BEARING IS NAD83 STATE PLANE OREGON NORTH, UNITS OF US SURVEY FEET. REPRESENTATIONS OF TRUE NORTH SHALL NOT BE USED TO IDENTIFY OR ESTABLISH THE BEARING OF TRUE NORTH AT THE JOB SITE.
3. EXISTING TOPOGRAPHY IS BASED ON 2009 LIDAR MAPPING PREPARED BY CITY OF PORTLAND. VERIFICATION OF MAPPING IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. CONSTRUCTION LIMITS, CHANNEL ALIGNMENT AND OFFSET STAKING SHALL BE ESTABLISHED BY THE CONTRACTOR.
5. ALL CONSTRUCTION ACTIVITY, INCLUDING HAUL ROUTES, STAGING AND STOCKPILING, SHALL BE CONFINED TO PARCELS SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL ADHERE TO CONSTRUCTION LIMITS. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS, CONTROL LINES AND LEVELS. DO NOT DISTURB, EXCAVATE OR WORK BEYOND PROJECT LIMITS WITHOUT PERMISSION FROM THE COR.
6. THE CONTRACTOR SHALL PROTECT ALL ADJACENT PROPERTY AND EXISTING AND NEW IMPROVEMENTS, AND SHALL PROVIDE POSITIVE CONTROL OF EARTH SPILLAGE, CONSTRUCTION WATER AND RUNOFF WATER FROM THE SITE.
7. THE LOCATION AND ELEVATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION. UTILITY INFORMATION IS NOT INTENDED TO BE EXACT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER CAN GUARANTEE THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. THE CONTRACTOR SHALL CONTACT 1–800–332–2344 AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION WORK TO ALLOW UTILITY OPERATORS TO CHECK AND MARK LOCATIONS OF EXISTING FACILITIES. THE CONTRACTOR SHALL PROTECT UTILITIES NEAR CONSTRUCTION ACTIVITIES AND COORDINATE WITH UTILITY COMPANIES FOR REMOVAL OR RELOCATION OF INTERFERING FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR COMPARING THE PLANS TO EXISTING CONDITIONS AND FOR VERIFYING ACTUAL FIELD CONDITIONS. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES IN PLACE, UNLESS OTHERWISE SPECIFIED.
8. THE SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS–BUILT DRAWINGS, KEPT BY THE CONTRACTOR, AND ISSUED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.

ENVIRONMENTAL PROTECTION

1. THE CONTRACTOR SHALL MINIMIZE ENVIRONMENTAL POLLUTION AND DAMAGE THAT MAY OCCUR AS THE RESULT OF CONSTRUCTION OPERATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND UTILIZING BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT STORMWATER RUNOFF AND WATER POLLUTION DURING CONSTRUCTION ACTIVITIES. EXAMPLES OF BMPS ARE INCLUDED IN PLAN DETAILS. IF POTENTIAL HAZARDOUS MATERIALS ARE ENCOUNTERED, THE COR SHOULD BE CONTACTED IMMEDIATELY. ALL CONSTRUCTION SPOILS AND WASTE SHALL BE DISPOSED OF AT AN APPROVED LANDFILL FACILITY.
2. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND UTILIZING BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT STORMWATER RUNOFF AND WATER POLLUTION DURING CONSTRUCTION ACTIVITIES. EXAMPLES OF BMPS ARE INCLUDED IN PLAN DETAILS. IF POTENTIAL HAZARDOUS MATERIALS ARE ENCOUNTERED, THE COR SHOULD BE CONTACTED IMMEDIATELY. ALL CONSTRUCTION SPOILS AND WASTE SHALL BE DISPOSED OF AT AN APPROVED LANDFILL FACILITY.
3. EXISTING ON–SITE MATERIALS SHALL BE CAREFULLY REMOVED AND STORED, OR DISPOSED OF. COMPLETELY REMOVE STUMPS, ROOTS, WILLOWS, SHRUBS, WEEDS, AND OTHER DEBRIS PROTRUDING FROM THE GROUND WHERE DIRECTED BY COR. WOODY DEBRIS SHALL BE SALVAGED FOR REUSE AS SHOWN AND NOTED IN THESE PLANS.
4. TREES TO BE CLEARED WILL BE FLAGGED BY CITY. TREES DESIGNATED FOR CLEARING MAY BE REUSED IN STREAM CHANNEL AS LWD AS DIRECTED BY COR.
5. IF WET WEATHER IS FORECAST OR CONSTRUCTION ACTIVITIES ARE NOT ANTICIPATED FOR A 72–HOUR PERIOD, CONTRACTOR SHALL MULCH ALL EXPOSED GROUND. CONTRACTOR SHALL HAVE STRAW BALES ON SITE AT ALL TIMES FOR MULCHING. MULCH SHALL BE FREE FROM WEEDS, MOLD, AND OTHER DELETERIOUS MATERIALS. STRAW OR WOOD CELLULOSE FIBER IS SUITABLE FOR MULCH. STRAW SHALL BE STALKS FROM OATS, WHEAT, RYE, BARLEY, OR RICE.
6. AREAS DISTURBED BY CONSTRUCTION OPERATIONS, SHALL BE SEEDED UPON COMPLETION OF THE PROJECT. SEEDING SHOULD ONLY BE PERFORMED AT OPPORTUNE TIMES. SEEDING SHOULD NOT OCCUR DURING EXCESSIVE PRECIPITATION EVENTS OR IN LOCATIONS WHERE RIVER FLOWS WILL ERODE SEED PLACEMENT. SEED MIXTURE SHALL BE IN ACCORDANCE WITH SHT L02 OF THESE PLANS. SEEDING WILL INCLUDE MULCH. MULCH SHALL BE STABILIZED THROUGH THE USE OF TACKIFIERS.

DEWATERING AND EROSION CONTROL

1. THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN TO THE COR. DEWATERING PLAN IS SUBJECT TO APPROVAL BY COR. NOTICE SHALL BE GIVEN TO THE COR A MINIMUM OF THREE DAYS PRIOR TO ANY DIVERSION OR DEWATERING OPERATIONS.
2. SILT FENCES SHALL BE INSTALLED AS SHOWN ON THESE PLANS AND WITH FIELD–DIRECTION BY THE COR. SILT FENCING MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR.
3. STRAW BALES SHALL BE PLACED DOWNSTREAM OF THE WATER RETURN TO TRAP SILT. BALES SHALL BE SECURED WITH WOOD OR METAL STAKES DRIVEN 2 FEET INTO GROUND. 3" MINUS GRAVEL SHALL BE PLACED AT A DEPTH OF 4" ON THE UP–GRADIENT TOE OF THE BALES.
4. STOCKPILES SHALL BE COVERED IF NOT IN ACTIVE USE FOR MORE THAN 7 DAYS.
5. STAGING AND STOCKPILE AREAS SHALL BE CONTAINED WITH SILT FENCING.

SITE EARTHWORK AND GRADING

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL SITE EARTHWORK AND GRADING ACTIVITIES. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB SITE CONDITIONS PER DIRECTION OF THE COR. SIGNIFICANT DEVIATIONS FROM THESE PLANS SHALL BE COORDINATED WITH THE ENGINEER OF RECORD AND SHALL BE DOCUMENTED FOR INCLUSION IN AS–BUILT DRAWINGS TO BE PREPARED AT COMPLETION OF PROJECT BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL PERFORM EXCAVATION IN A SAFE CONDITION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SHORING, SHEETING, OR OTHER PROTECTIVE MEASURES TO PREVENT DAMAGE TO ADJACENT PROPERTIES, STRUCTURES OR FACILITIES.
3. IF UNANTICIPATED CONDITIONS ARE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION THE CONTRACTOR SHALL IMMEDIATELY BRING THE CONDITION TO THE ATTENTION OF THE ENGINEER.
4. ALL FILL MATERIAL, WHETHER IMPORTED FILL OR BORROW MATERIAL FROM ON–SITE SHALL BE SUBJECT TO VISUAL INSPECTION BY THE COR AND SHALL BE FREE FROM ORGANIC MATTER, SILTS, CLAYBALLS AND OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN STONES LARGER THAN 3 INCHES IN DIAMETER.
5. CHANNEL SHALL BE CONSTRUCTED TO HAVE SLOPES AS SHOWN, OR AS APPROVED BY THE COR AND ENGINEER.
6. EXCAVATED NATIVE SPOILS FROM THE CHANNEL AND WCS AREAS SHALL BE DISPOSED OF AT AN APPROVED LANDFILL. EXCAVATED NATIVE SPOILS FROM THE CULVERT EMBANKMENT MAY BE STOCKPILED AND REUSED FOR BACKFILL OVER THE CULVERT IF FOUND ACCEPTABLE BY THE COR.
7. GEOTECHNICAL OR SUBSURFACE INFORMATION REFERENCED IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TO BE CONSIDERED A PART OF THE CONSTRUCTION DOCUMENTS OR CONTRACT.
8. NEITHER THE OWNER NOR THE ENGINEER WARRANT OR GUARANTEE ANY GEOTECHNICAL OR SUBSURFACE INVESTIGATIONS AS BEING REPRESENTATIVE OF THE SITE, BEYOND THE ACTUAL LOCATION OF THE TEST SPECIMEN(S) AND ASSUME NO RESPONSIBILITY FOR THE MANNER IN WHICH THIS INFORMATION MAY BE USED OR THE CONCLUSIONS REACHED IN UTILIZING THE INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS. FURTHER, THE OWNER AND THE ENGINEER NEITHER WARRANT NOR GUARANTEE THE CONCLUSIONS REACHED, RECOMMENDATIONS MADE OR TEST RESULTS PRESENTED AS PART OF THE GEOTECHNICAL OR SUBSURFACE INVESTIGATION AS BEING REPRESENTATIVE OF THE ENTIRE SITE. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO SUPPLEMENT ANY INFORMATION PROVIDED IN THE CONSTRUCTION DOCUMENTS IS REPRESENTATIVE OF THE CONDITIONS TO BE ENCOUNTERED WITHIN THE LIMITS OF THE PROJECT AT THE TIME OF CONSTRUCTION.

TEMPORARY CONSTRUCTION FACILITIES

1. ALL TEMPORARY UTILITIES AND FACILITIES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY USE OF POTABLE WATER OR ELECTRICITY FROM EXISTING CONNECTIONS ON SITE MUST BE COORDINATED WITH LANDOWNER THROUGH WRITTEN AGREEMENT PRIOR TO USE. A CHEMICAL TOILET OF SUITABLE TYPE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.

ROCK

1. ALL ROCK SHALL BE PROVIDED FROM A SOURCE THAT IS APPROVED BY THE COR AND BE OF SUFFICIENT HARDNESS TO RESIST WEATHERING AND SHALL BE FREE OF CRACKS AND OTHER BLEMISHES. POROUS OR SOFT ROCK SHALL NOT BE ALLOWED FOR USE AS STABILIZATION ROCK.
2. ALL GRAVELS AND COBBLES TO BE PLACED AS STREAMBED SUBSTRATE SHALL BE RIVER RUN, NOT ANGULAR.
3. GEOTEXTILE SHALL BE PLACED OVER THE PREPARED SUBGRADE AND BENEATH ROCK MATERIAL AS SHOWN IN THESE PLANS. SUBGRADE SURFACES SHALL BE PREPARED TO BE REASONABLY SMOOTH, FREE OF MOUNDS, DIPS, CUTS OR OVERHANGING SECTIONS AND FREE OF DEBRIS.

UPDATED 90% PLANS DEC 2012

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OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT

LEGEND, ABBREVIATIONS AND NOTES

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. G02
02 OF 27

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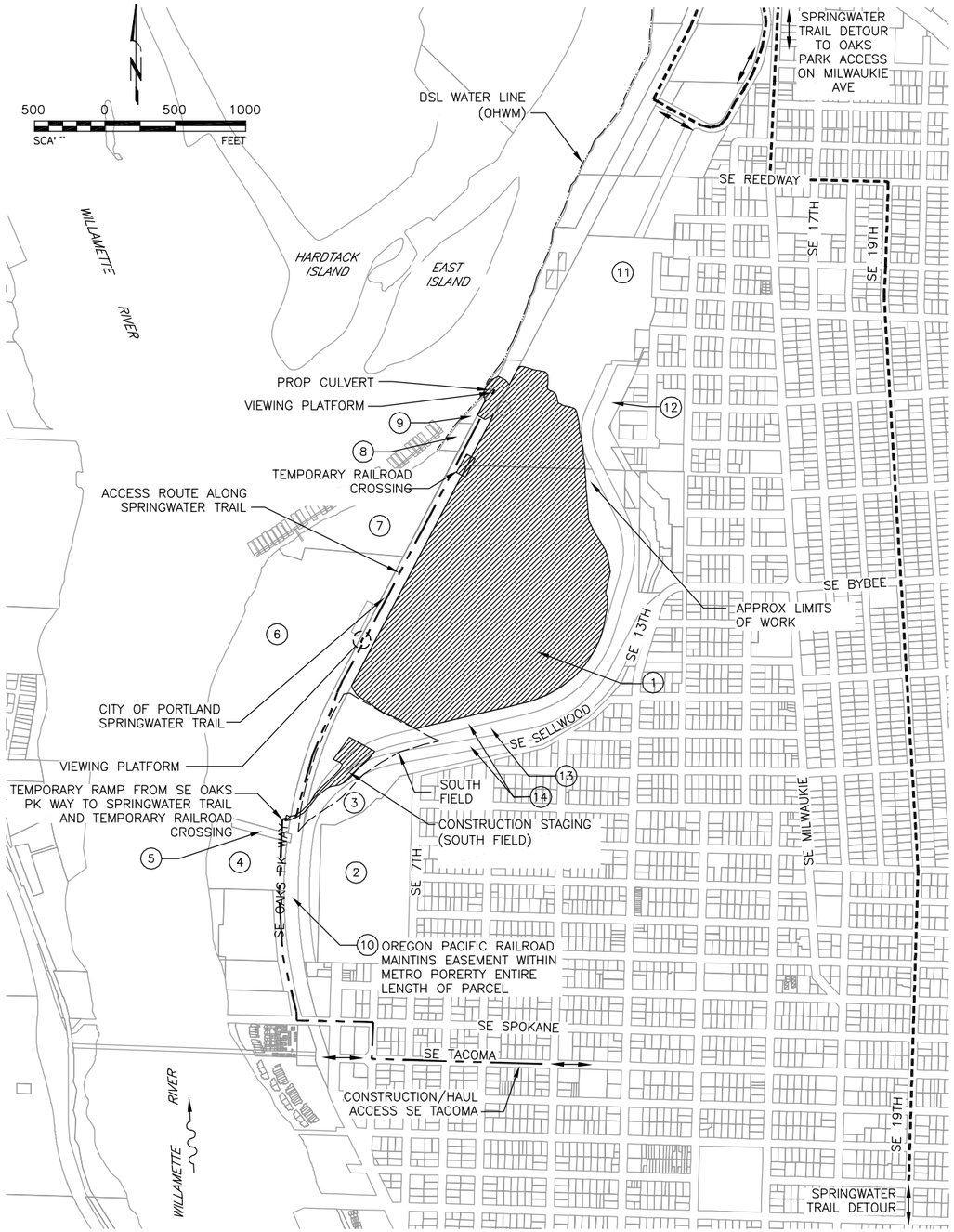

PLAN

NOTES

1. SPRINGWATER TRAIL BIKE ROUTE DETOUR VIA 19TH AVE, REEDWAY AVE, TO OAKS BOTTOM ACCESS AND PARKING LOT ON MILWAUKIE AVE.
2. LOCATIONS OF VIEWING PLATFORMS ARE SHOWN ON SHT C12.

CONSTRUCTION EASEMENTS

NUM	PROPERTY ID	OWNER	TEMP ESTATE		PERMANENT ESTATE
			(SF)	(AC)	(AC)
1	R330381	CITY OF PORTLAND PROPERTY MANAGER	13,325	0.31	53.3
2	R330354	CITY OF PORTLAND BUREAU OF PARKS & RECREATION	0	0	0
3	R330396	CITY OF PORTLAND BUREAU OF PARKS & RECREATION	0	0	0
4	R330317	METRO PROPERTY MANAGER	0	0	0
5	R330312	METRO PROPERTY MANAGER	0	0	0
6	R330303	OAKS PARK ASSOCIATION (OAKS PIONEER PARK)	630	0.01	0
7	R330374	OREGON YACHT CLUB LTD	0	0	0
8	R328442	CITY OF PORTLAND CITY AUDITOR	0	0	0
9	R328471	CITY OF PORTLAND PROPERTY MANAGER	0	0	0.06
10	R502728	METRO PROPERTY MANAGER (INCLUDES EASEMENT AREA FOR CULVERT CONSTRUCTION, CONSTRUCTION STAGING ACCESS, AND ACCESS ALONG SPRINGWATER TRAIL FROM CONSTRUCTION STAGING TO PROPOSED CULVERT FOR CONSTRUCTION WORK AND O&M. AREA FOR ACCESS ALONG SPRINGWATER TRAIL DOES NOT INCLUDE AREA OVERLAYING RAILROAD)	0	0	3.46
11	R328473	CITY OF PORTLAND PROPERTY MANAGER	0	0	8.8
12	R328472	CITY OF PORTLAND PROPERT MANAGER	0	0	0
13	R330395	CITY OF PORTLAND BUREAU OF PARKS & RECREATION	4,277	0.1	0
14	ORDINANCE NUM 106072	CITY OF PORTLAND RIGHT OF WAY	40,696	0.95	0

LEGEND:

- CONSTRUCTION TRAFFIC ROUTE
- SPRINGWATER TRAIL DETOUR (SHARED ROADWAY)
- DSL OHW LINE (ELEV 12.78 FT COP)

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

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1/4 SECTION 1S1E14C
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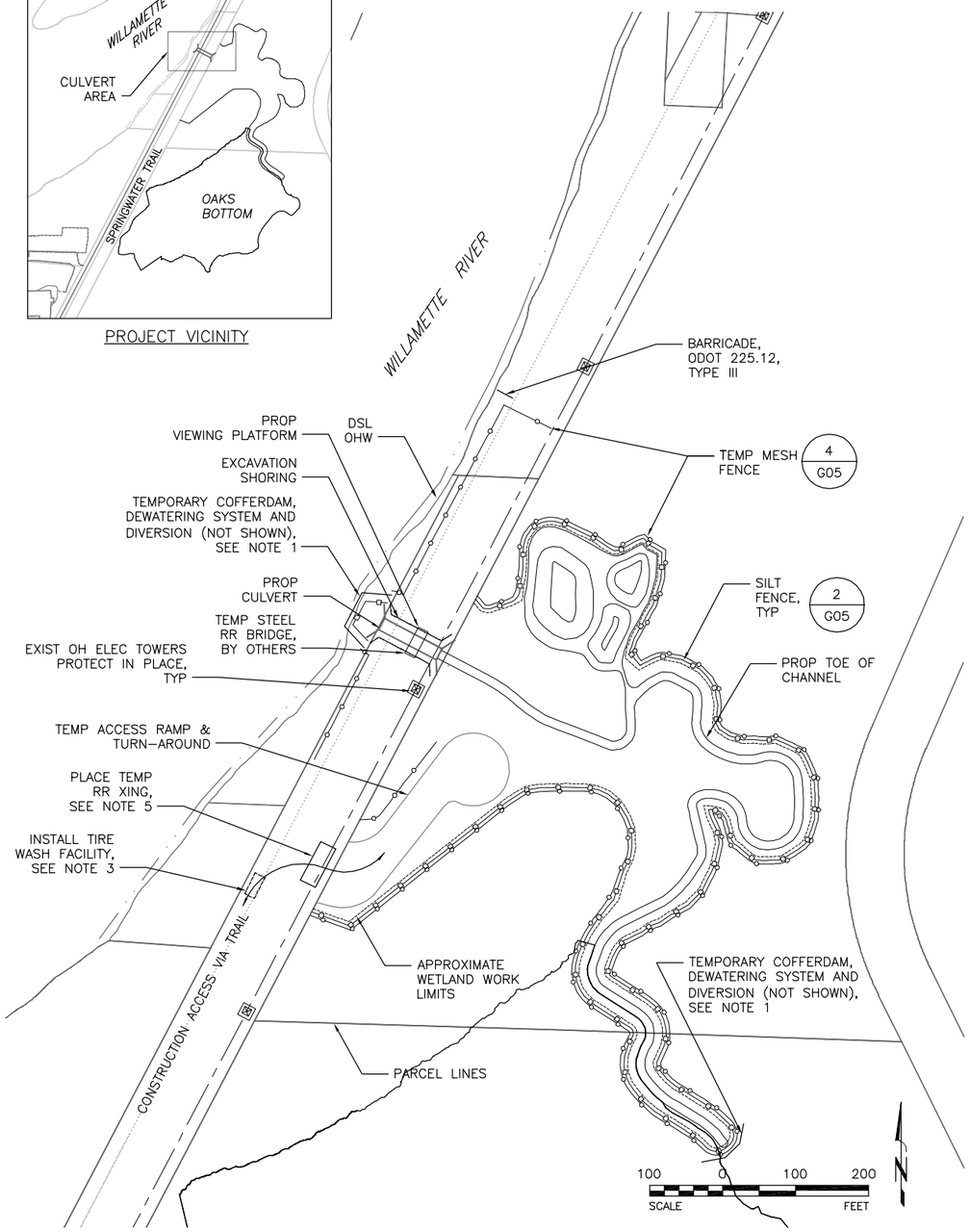
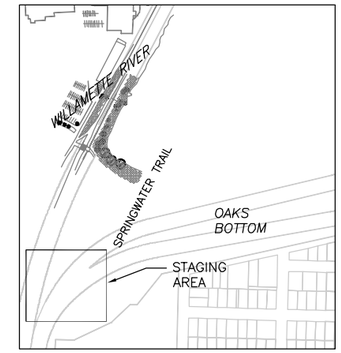
PROJECT VICINITY



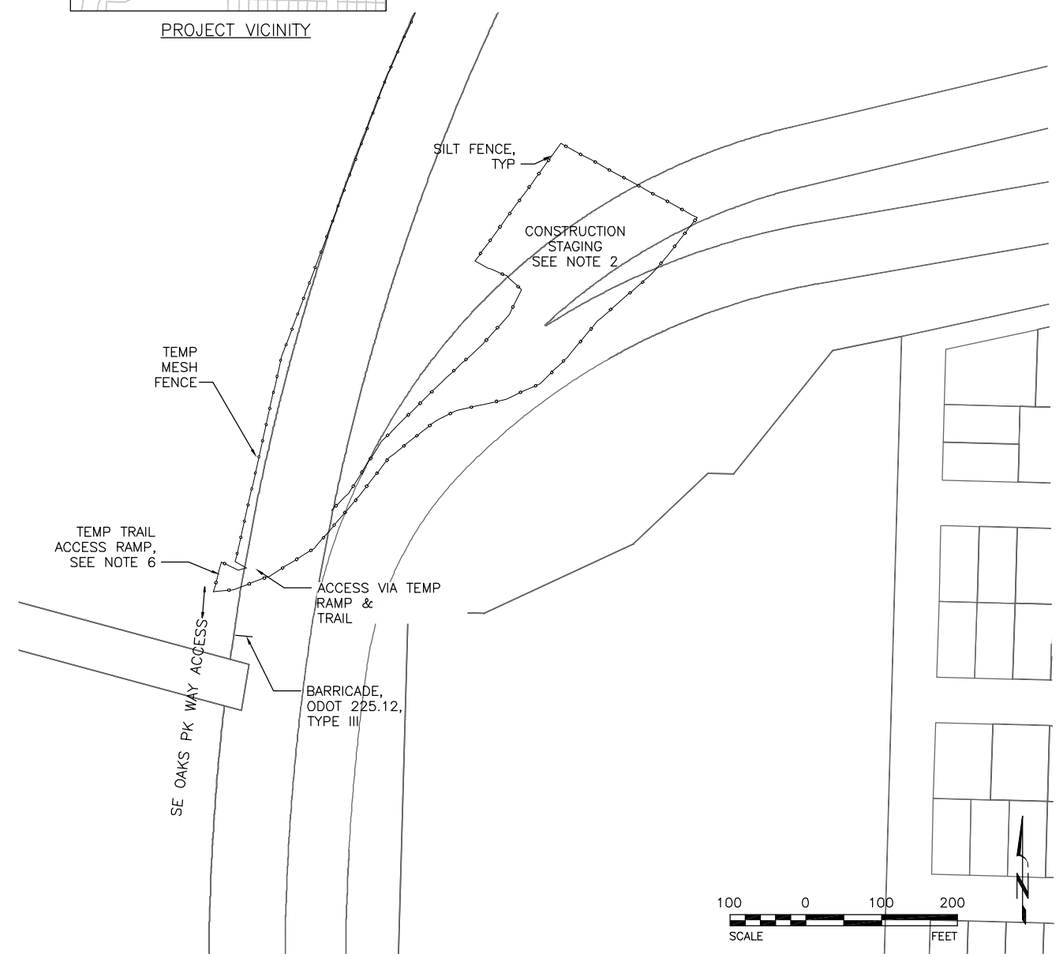
PLAN – CULVERT AREA (1 / –)



PROJECT VICINITY

NOTES

1. CONSTRUCT COFFERDAM TO ENCOMPASS LIMIT OF GRADING PER SHT C02 AND C03 AND TO MIN EL 12. CONTRACTOR TO DEWATER SITE. PUMPED DISCHARGE SHALL CONFORM TO DISCHARGE PERMIT REQUIREMENTS. INFILTRATION INTO DENSE VEGETATION ADJACENT TO WORK AREA MAY BE ALLOWED AS DIRECTED BY COR. WATER FROM RESERVOIR TO BE DIVERTED AROUND WORK AREA TO RIVER (2 CFS DESIGN DIVERSION RATE).
2. PLACE SEPARATION GEOTEXTILE AND 4 IN TH, 1–1/2" MINUS GRAVEL THROUGHOUT STAGING AREA.
3. INSTALL TIRE WASH FACILITY FOR VEHICLES LEAVING CONSTRUCTION AREA PER DETAILS ON SHT G05.
4. CONTRACTOR SHALL PROVIDE AND INSTALL EROSION CONTROL AND TEMP TYPE ORANGE PLASTIC MESH FENCING TO THE SATISFACTION OF THE COR.
5. CONTRACTOR TO CONSTRUCT AND MAINTAIN TEMPORARY RAILROAD CROSSING FOR THE DURATION NEEDED. SEE DETAIL 7 ON SHT G05.
6. CONTRACTOR TO CONSTRUCT AND MAINTAIN TEMPORARY ACCESS RAMPS FOR THE DURATION NEEDED. ACCESS RAMPS TO CONSIST OF SEPARATION GEOTEXTILE FIRST, COMPACTED EARTH FILL, AND THEN 6 IN TH, CRUSHED AGGREGATE (1–1/2 IN MINUS OR APPROVED EQUIVALENT) SURFACE.



PLAN – STAGING AREA (2 / –)

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NO.	DATE	DESCRIPTION	APPD.

REVISION

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DRAWING NAME:

DESIGNED BY	CJL	DATE APPD.	
DRAWN BY	TAS/MR	PROJECT MGR.	SB
CHECKED BY	JL	CONST. MGR.	MWH
DESIGN MGR.	YHC	SUP. ENG.	LS

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ENVIRONMENTAL SERVICES

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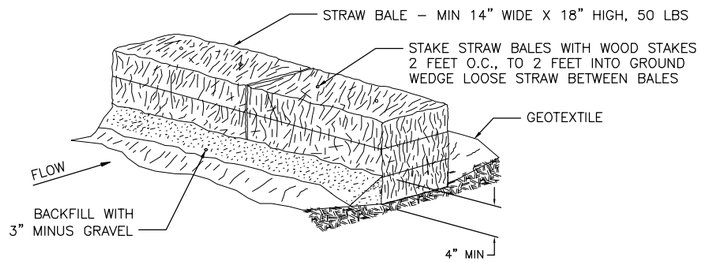
CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT

EXCLUSION & EROSION CONTROL PLAN

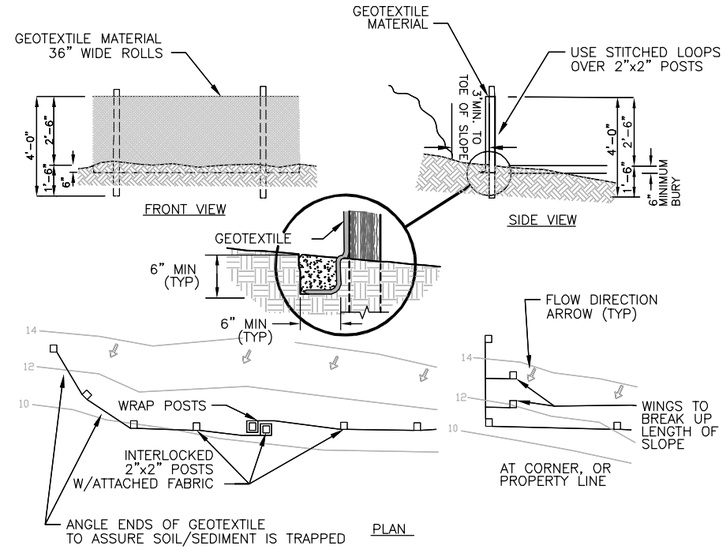
1/4 SECTION	1S1E14C
JOB NO.	E08576
SHEET NO.	G04
	04 OF 27

NOTES

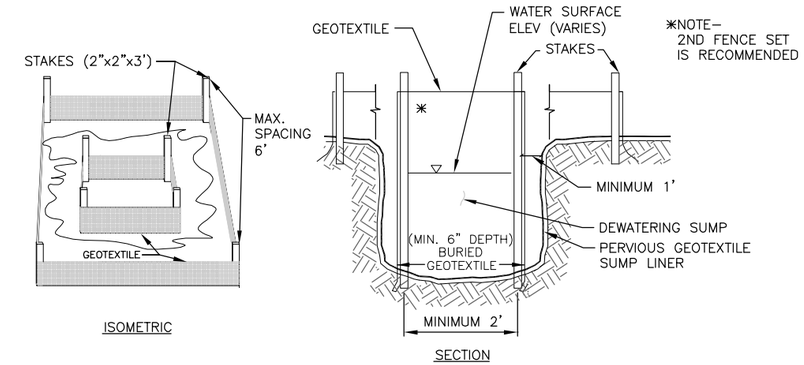
1. EROSION CONTROL DETAILS SHOWN ON THIS SHEET ARE PROVIDED AS EXAMPLES ONLY. THE CONTRACTOR SHALL SUBMIT A DETAILED EROSION CONTROL AND SEDIMENT PLAN (ECSP) IN ACCORDANCE WITH SECTION 00280 OF THE SPECIAL PROVISIONS.
2. CONTRACTOR TO MAINTAIN ALL EROSION CONTROL BMPS AND TEMPORARY ACCESS FACILITIES THROUGHOUT THE DURATION OF CONSTRUCTION.
3. CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. WHEELS SHALL BE CLEANED PRIOR TO ENTERING ONTO PUBLIC RIGHT-OF-WAY.
5. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH; MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.
6. USE GEOTEXTILE WITH AGGREGATE FOR TEMPORARY TIRE WASH.
7. CONTRACTOR SHALL CONSTRUCT COFFERDAM D/S OF THE CULVERT TO DEWATER WORK AREA. COFFERDAM SHALL BE SHEET PILE OR EQUIVALENT STRUCTURE THAT EFFECTIVELY LIMITS SURFACE WATER ENTERING WORK AREA. HEIGHT OF COFFERDAM MUST BE ADEQUATE TO PREVENT OVERTOPPING FROM EXPECTED SUMMER WATER LEVELS, EL +14 FT COP. DEWATERING PLAN INCLUDING COFFERDAM DETAILS MUST BE APPROVED BY OWNER'S REPRESENTATIVE BEFORE CONSTRUCTION BEGINS.



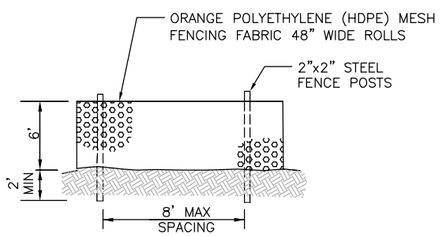
STRAW BALE TYP DETAIL (1 / –)
(NOT TO SCALE)



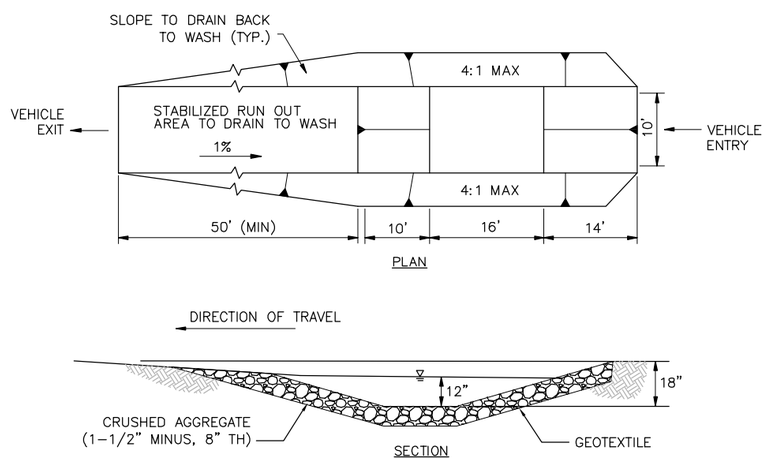
SILT FENCE DETAIL (2 / G04)
(NOT TO SCALE)



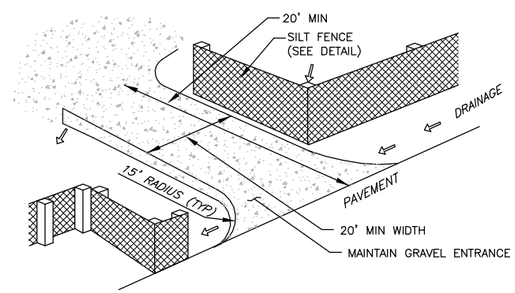
SUGGESTED DEWATER INTAKE DETAIL (3 / –)
(NOT TO SCALE)



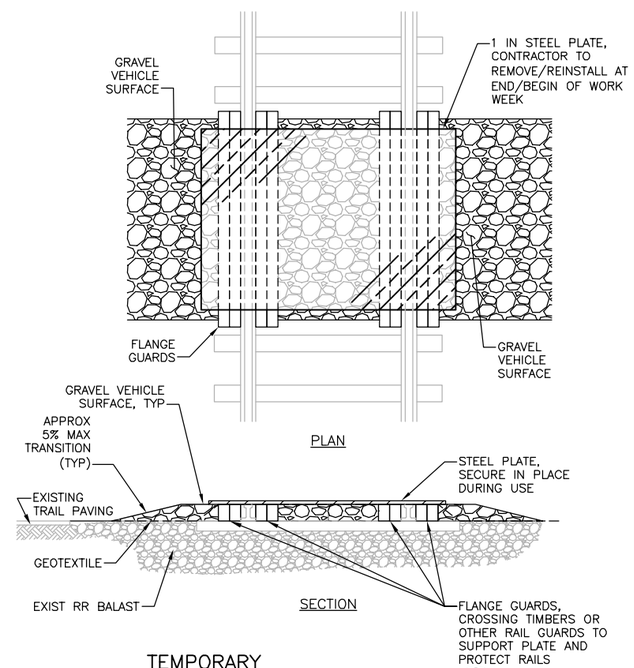
TEMPORARY MESH FENCE DETAIL (4 / –)
(NOT TO SCALE)



TIRE WASH FACILITY (5 / –)
(NOT TO SCALE)



GRAVEL CONSTRUCTION ENTRANCE (6 / –)
(NOT TO SCALE)



TEMPORARY RAILROAD CROSSING DETAIL (7 / –)
(NOT TO SCALE)

UPDATED 90% PLANS DEC 2012

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
EROSION CONTROL DETAILS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. G05
05 OF 27

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CHANNEL A ALIGNMENT

START STATION	TYPE	BEARING	START POINT (EASTING, NORTHING)	RADIUS (FT)	DELTA ANGLE	LENGTH (FT)	TANGENT (FT)	PI INCLUDED ANGLE	PI STATION
10+00.00	Line	S62° 17 59.11"E	(7648717.75,667610.37)			296.36			
12+96.36	Curve		(7648980.15,667472.61)	200.00	14° 18' 06.84"	49.92	25.09	165° 41' 53.16"	13+21.45
13+46.28	Curve		(7649021.01,667444.16)	183.87	14° 43' 45.12"	47.27	23.77	165° 16' 14.88"	13+70.05
13+93.55	Line	S68° 45 35.19"E	(7649059.64,667417.14)			94.94			
14+88.49	Curve		(7649148.13,667382.75)	24.00	74° 18' 50.40"	31.13	18.19	105° 41' 09.60"	15+06.68
15+19.62	Curve		(7649174.06,667395.71)	26.00		12.63	6.44	152° 10' 03.72"	15+26.06
15+32.25	Line	N3° 15 08.71"W	(7649176.38,667408.00)			24.32			
15+56.57	Curve		(7649174.99,667432.29)	24.00	43° 39' 44.28"	18.29	9.61	136° 20' 15.72"	15+66.19
15+74.86	Curve		(7649180.83,667449.16)	108.00	23° 05' 06.72"	43.52	22.06	156° 54' 53.28"	15+96.92
16+18.38	Curve		(7649215.09,667475.51)	21.00	53° 35' 29.76"	19.64	10.61	126° 24' 30.24"	16+28.98
16+38.02	Line	S62° 25 52.23"E	(7649234.02,667475.25)			25.91			
16+63.93	Curve		(7649256.99,667463.26)	20.50	37° 04' 32.88"	13.27	6.87	142° 55' 27.12"	16+70.80
16+77.19	Curve		(7649266.07,667453.92)	51.80	20° 51' 11.88"	18.85	9.53	159° 08' 48.12"	16+86.73
16+96.05	Line	S4° 44 16.70"W	(7649267.44,667435.22)			22.03			
17+18.08	Curve		(7649265.62,667413.27)	40.25	43° 18' 04.32"	30.42	15.98	136° 42' 55.68"	17+34.05
17+48.50	Curve		(7649277.29,667385.95)	96.50	31° 57' 57.40"	53.84	27.64	148° 02' 00.60"	17+76.14
18+02.34	Curve		(7649325.47,667363.53)	86.00	22° 33' 04.68"	33.85	17.15	157° 26' 55.32"	18+19.48
18+36.18	Curve		(7649358.92,667366.99)	37.00	98° 25' 36.84"	63.56	42.89	81° 34' 23.16"	18+79.07
18+99.75	Curve		(7649405.04,667335.18)	304.00	9° 50' 19.68"	52.20	26.17	170° 09' 40.32"	19+25.91
19+51.95	Curve		(7649405.88,667283.05)	39.00	74° 48' 11.88"	50.92	29.82	105° 11' 48.12"	19+81.77
20+02.87	Curve		(7649375.12,667247.01)	34.91	106° 35' 59.28"	64.94	46.83	73° 24' 00.72"	20+49.70
20+67.81	Curve		(7649329.03,667278.78)	37.00	68° 17' 19.32"	44.10	25.10	111° 42' 40.68"	20+92.90
21+11.91	Curve		(7649304.41,667312.23)	67.00	21° 14' 31.56"	24.84	12.56	158° 45' 28.44"	21+24.48
21+36.75	Curve		(7649279.99,667315.97)	23.00	52° 51' 39.96"	21.22	11.43	127° 08' 20.04"	21+48.19
21+57.97	Curve		(7649261.65,667306.88)	17.00	36° 10' 57.72"	10.74	5.55	143° 49' 02.28"	21+63.53
21+68.71	Line	S13° 20 19.53"E	(7649260.78,667296.35)			53.32			
22+22.03	Curve		(7649273.08,667244.47)	27.00	44° 02' 25.08"	20.75	10.92	135° 57' 34.92"	22+32.95
22+42.78	Line	S33° 22 58.44"W	(7649269.67,667224.51)			21.97			
22+64.76	Curve		(7649257.58,667206.16)	133.73	22° 48' 10.44"	53.22	26.97	157° 11' 49.56"	22+91.73
23+17.98	Line	S63° 38 51.03"W	(7649220.34,667168.64)			62.38			
23+80.36	Curve		(7649164.44,667140.95)	76.13	41° 45' 46.80"	55.49	29.04	138° 14' 13.20"	24+09.40
24+35.85	Line	S19° 24 02.48"W	(7649129.60,667099.34)			15.74			
24+51.59	Curve		(7649124.37,667084.49)	32.00	71° 15' 12.60"	39.80	22.93	108° 44' 47.40"	24+74.53
24+91.39	Line	S57° 05 47.11"E	(7649134.64,667048.65)			63.70			
25+55.09	Curve		(7649188.12,667014.05)	31.00	85° 45' 20.88"	46.40	28.79	94° 14' 39.12"	25+83.87
26+01.49	Curve		(7649198.48,666973.15)	69.00	19° 24' 56.16"	23.38	11.80	160° 35' 03.84"	26+13.29
26+24.87	Curve		(7649189.50,666951.69)	35.00	49° 59' 42.72"	29.32	15.58	132° 00' 17.28"	26+40.45
26+54.19	Line	S39° 59 17.51"E	(7649197.35,666924.32)			18.02			
26+72.21	Curve		(7649208.93,666910.51)	118.00	17° 49' 02.64"	36.70	18.50	162° 10' 57.36"	26+90.71
27+08.91	Line	S58° 15 29.46"E	(7649238.37,666888.86)			29.27			
27+38.18	Curve		(7649263.27,666873.46)	114.00	19° 10' 47.64"	38.16	19.26	160° 49' 12.36"	27+57.44
27+76.34	Line	S37° 46 43.50"E	(7649293.26,666850.15)						21.691'

CHANNEL B ALIGNMENT

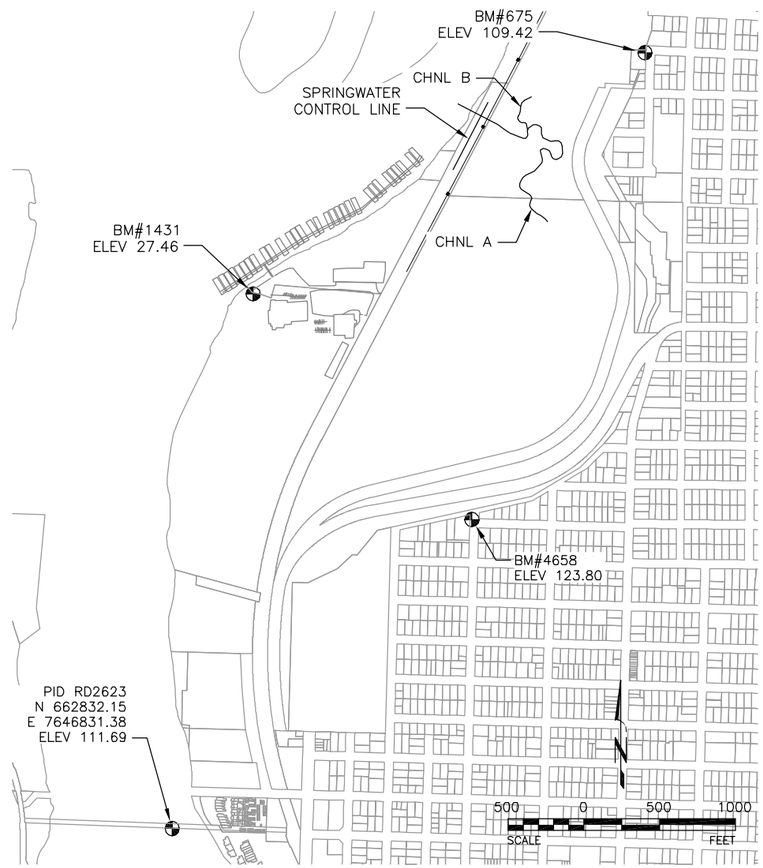
START STATION	TYPE	BEARING	START POINT (EASTING, NORTHING)	RADIUS (FT)	DELTA ANGLE	LENGTH (FT)	TANGENT (FT)	PI INCLUDED ANGLE	PI STATION
2+00.00	Curve		(7649175.55,667438.68)	18.70	28° 45' 44.64"	9.39	4.79	151° 14' 15.36"	2+04.79
2+09.39	Line	N15° 39 49.91"W	(7649175.04,667447.95)			33.38			
2+42.77	Curve		(7649166.03,667480.10)	10.00	72° 21' 30.96"	12.63	7.31	107° 38' 29.04"	2+50.08
2+55.40	Line	N88° 42 37.24"W	(7649156.66,667487.28)			19.84			
2+75.24	Curve		(7649136.82,667487.72)	16.00	50° 34' 28.56"	14.12	7.56	129° 25' 31.44"	2+82.80
2+89.36	Line	N38° 08 08.66"W	(7649124.60,667493.84)			16.22			
3+05.58	Curve		(7649114.58,667506.60)	20.00	74° 50' 85.20"	26.13	15.31	105° 09' 01.80"	3+20.89
3+31.71	Line	N36° 42 49.38"E	(7649114.28,667530.90)			12.42			
3+44.13	Curve		(7649121.70,667540.86)	35.00	34° 50' 57.12"	21.29	10.99	145° 09' 02.88"	3+55.11
3+65.42	Line	N1° 51 52.29"E	(7649128.63,667560.65)			36.36			
4+01.77	Curve		(7649129.81,667596.99)	43.00	60° 43' 45.48"	45.58	25.19	119° 16' 14.52"	4+26.97
4+47.35	Line	N62° 35 37.64"E	(7649153.00,667633.76)			52.17			

SPRINGWATER CONTROL LINE (SCL)

TYPE	DIRECTION	START/END POINT (EASTING, NORTHING)	LENGTH (FT)
POINT 1	S27°42'00.89"W	7648920.53, 667616.81	500
POINT 2		7648688.13, 667174.15	

CONTROL POINT DATA (COP BENCHMARKS)

BM NO	NORTHING (FT)	EASTING (FT)	ELEVATION (FT COP)
1431	NOT REPORTED	NOT REPORTED	27.46
4658	NOT REPORTED	NOT REPORTED	123.80
675	NOT REPORTED	NOT REPORTED	109.42
RD2623	662832.15	7646831.37	111.69



PLAN

NOTES

1. COP BENCHMARK POSITIONS ARE TO BE VERIFIED BY CONTRACTOR. CONTRACTOR TO PERFORM CONSTRUCTION STAKING, AND PERFORM ALL CONSTRUCTION SURVEYS.
2. PROJECT COORDINATES ARE IN NAD 83 OREGON STATE PLANE ZONE NORTH, UNITS OF US SURVEY FEET PER COP SURVEY STANDARDS.
3. ALL ELEVATIONS ARE RELATIVE TO FT COP VERTICAL DATUM.
4. ALIGNMENTS AND CONTROL LINES ARE SHOWN ON SHTS C02, C03 AND C08.
5. COP BENCHMARK LOCATIONS:

BM NO	DESCRIPTION
1431	INTERSECTION OF SE OAKS PARK WY AND WILLAMETTE RIVER. IRON PIPE BENCHMARK, 2 FT BACK OF SEA WALL, 78 FT SOUTH OF NORTH END OF WALL.
4658	SOUTHEAST CORNER OF SE SELLWOOD BLVD AND SE 9TH AVE (APPROX).
675	NORTHEAST CORNER OF SE MARTINS ST AND SE 13TH AVE. 6 FT EAST OF INTERSECTION (APPROX).
RD2623	NORTH SIDEWALK OF TACOMA ST, BETWEEN THE TENTH AND ELEVENTH LIGHT POLE FROM THE EAST END OF SELLWOOD BRIDGE. BRASS CAP MARKED "SELLWOOD 1962", CEMENTED 2.5 FT SOUTH FROM NORTH EDGE OF SIDEWALK. 56 FT EAST OF A LIGHT POLE 35 FEET WEST OF A LIGHT POLE.

UPDATED 90%
PLANS DEC 2012

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OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
SURVEY CONTROL

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. G06
06 OF 27

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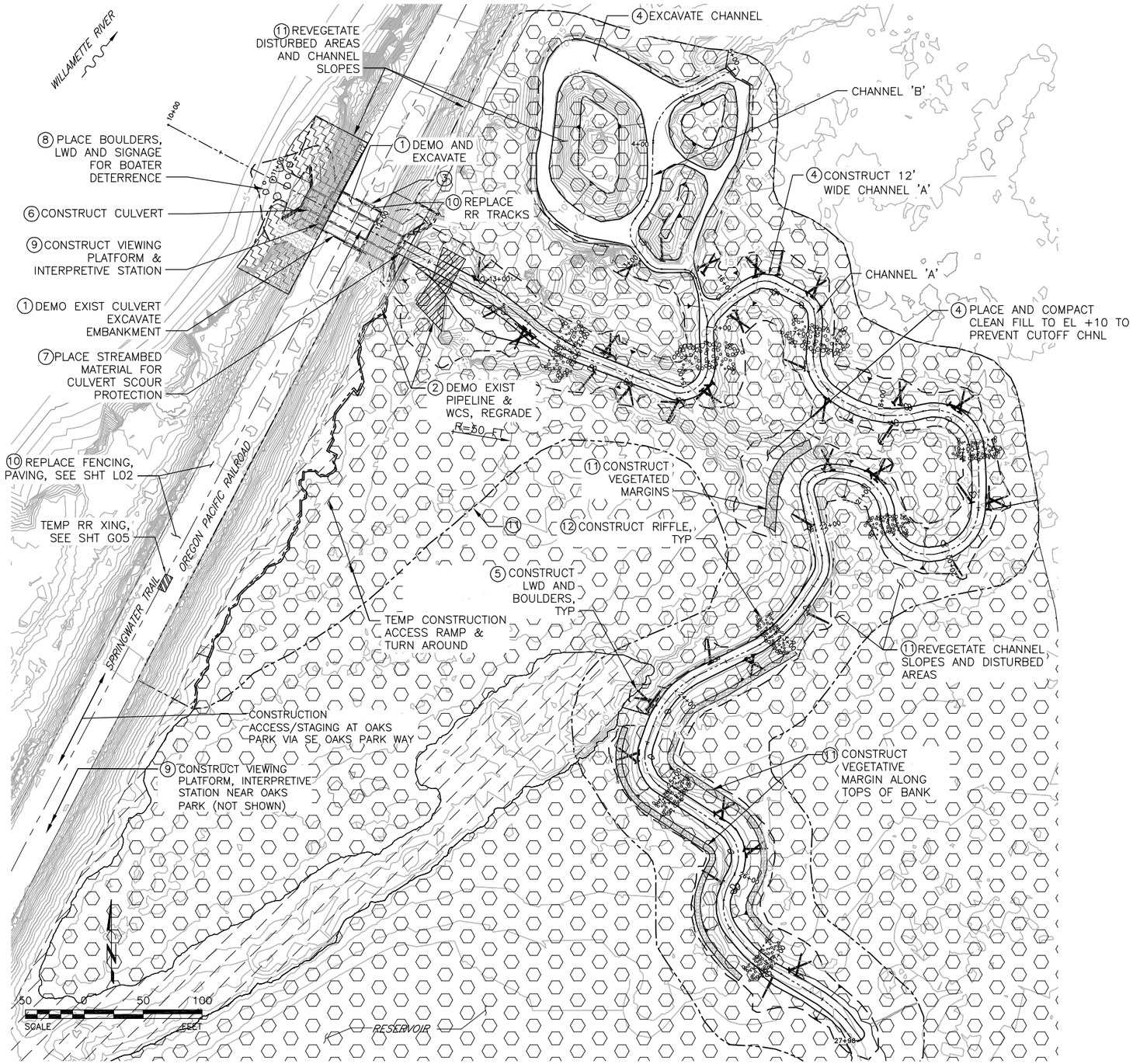

SITE PLAN 1

CONSTRUCTION NOTES

1. DEMO AND DISPOSE OF TRAIL PAVING, FENCING, RAILROAD TRACK, AND EXISTING CULVERT. EXCAVATE EARTHEN EMBANKMENT AND DISPOSE OF PORTIONS OF BURIED TRESTLE ENCOUNTERED IN EMBANKMENT PER PLAN HEREON.
2. DEMO WCS AND ABANDONED NATURAL GAS PIPELINE PER PLAN HEREON. CONTRACTOR TO COORDINATE PIPELINE DEMO, CAPPING OR OTHER REQUIRED WORK WITH UTILITY OWNER.
3. CONSTRUCT SHEET PILE SHORING SYSTEM AND TEMPORARY RAILROAD BRIDGE SUBSTRUCTURE PER PLAN HEREON AND DETAILS ON SHT S02.
4. CONSTRUCT CHANNEL PER PLAN HEREON AND PER PLAN ON SHTS C02 AND C03, PER PROFILE ON SHT C04, AND PER DETAIL AS SPECIFIED ON SHT C10. COMPACT FILL AREAS TO 90% MODIFIED PROCTOR COMPACTION.
5. CONSTRUCT LWD AND BOULDERS PER PLAN HEREON AND PER DETAILS ON SHT C11. PLACEMENT MAY BE FIELD–FIT AS GUIDED BY ENGINEER.
6. PLACE PRECAST THREE–SIDED CONCRETE ARCH CULVERT PER PLAN HEREON, PLAN AND PROFILE ON SHT C08, ELEVATIONS ON SHT C09, AND DETAILS ON SHTS S01, S02, S05 AND S06.
7. BACKFILL CULVERT WITH STREAMBED MATERIAL PER TYPICAL SECTION ON SHT C09.
8. PLACE BOULDERS AND LWD FOR BOATER EXCLUSION PER PLAN AND PROFILE ON SHT C08. PLACEMENT SHALL BE FIELD–FIT AS DIRECTED BY THE ENGINEER. PLACE WARNING SIGNS FOR BOATERS. SIGNS FURNISHED BY CITY PDX. ANCHOR OF SIGNS BY CONTRACTOR TO BE CONCRETE EMBEDDED TYPE PER ODOT DETAIL 1800.
9. CONSTRUCT (2) VIEWING PLATFORMS PER LOCATIONS ON SHT C12, AND DETAILS ON SHTS S03 AND S04.
10. REPLACE DEMOLISHED AND DAMAGED CHAINLINK AND POST AND CABLE FENCING. RAILROAD TRACK TO BE REPLACED BY OPRR. PAVE AND STRIPE SPRINGWATER TRAIL ALONG HAUL ROUTE PER DETAIL ON SHT L02.
11. REVEGETATE WITH HYDROSEEDING AND MULCH. CHANNEL REVEGETATION SHALL INCLUDE LIVE TREE STAKING. CONSTRUCT VEGETATED MARGIN ALONG TOPS OF BANK. SEE SHT L01 FOR REVEGETATION PLAN AND SHT L02 FOR DETAILS.
12. CONSTRUCT GRADE CONTROL RIFFLES PER THIS SHT AND SHTS C02 AND C03, PROFILE ON SHT C04 AND DETAILS ON SHT C10.

NOTES

1. EXIST & PROP CONTOURS ARE 1' INTERVALS.
2. SIDESLOPES AND EXTENT OF EXCAVATION (DAYLIGHT) SHOWN ARE APPROXIMATE. CHANNEL GRADING TO VARY GENERALLY PER SIDESLOPE SHOWN AND PER DIRECTION OF COR IN THE FIELD TO MINIMIZE AVOIDABLE IMPACTS ON EXISTING VEGETATION, INFRASTRUCTURE, AND EXCAVATION QUANTITIES. CONSTRUCT CHANNEL WITH SMOOTH TRANSITIONS BETWEEN SIDESLOPES FOR NATURAL LOOKING CHANNEL. SIDESLOPES SHALL VARY BETWEEN 1.5H:1V (MAX) AND 5H:1V (MIN). SIDESLOPES SHALL BE TRANSITIONED PER DIRECTION OF COR.
3. CONTRACTOR SHALL MAINTAIN TEMPORARY CONSTRUCTION ACCESS RAMP AND TURN AROUND AND TEMP RAILROAD CROSSING PER SHT G05 AS NEEDED THROUGHOUT CONSTRUCTION. SEE SHT G04 FOR RAMP CONSTRUCTION INFORMATION.

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

REVISION

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
FINAL MAP DATA
DRAWING NAME:

DESIGNED BY	CJL	DATE APPD.	
DRAWN BY	TAS/MR	PROJECT MGR.	SB
CHECKED BY	JIL	CONST. MGR.	MWH
DESIGN MGR.	YHC	SUP. ENG.	LS

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DAN SALTZMAN
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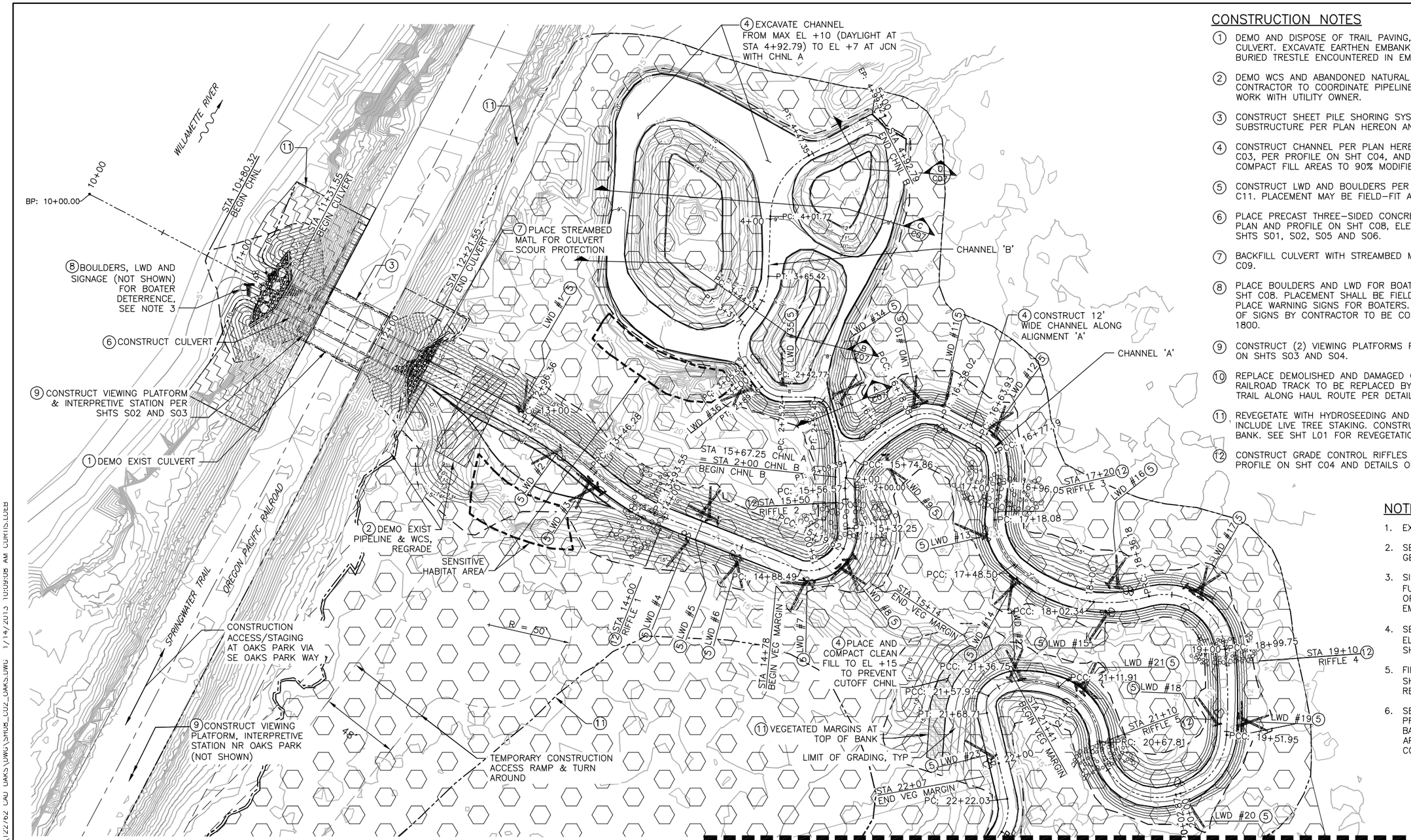
CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
PROJECT SITE PLAN

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C01
07 OF 27

P:\PROJECTS\22762 OAKS BOTTOM DESIGN PHASE\T22762 CAD OAKS\DWG\SH07_C01_OAKS.DWG 1/14/2013 10:06:23 AM TOM.SMRDEL



CONSTRUCTION NOTES

1. DEMO AND DISPOSE OF TRAIL PAVING, FENCING, RAILROAD TRACK, AND EXISTING CULVERT. EXCAVATE EARTHEN EMBANKMENT AND DISPOSE OF PORTIONS OF BURIED TRESTLE ENCOUNTERED IN EMBANKMENT PER PLAN HEREON.
2. DEMO WCS AND ABANDONED NATURAL GAS PIPELINE PER PLAN HEREON. CONTRACTOR TO COORDINATE PIPELINE DEMO, CAPPING OR OTHER REQUIRED WORK WITH UTILITY OWNER.
3. CONSTRUCT SHEET PILE SHORING SYSTEM AND TEMPORARY RAILROAD BRIDGE SUBSTRUCTURE PER PLAN HEREON AND DETAILS ON SHT S02.
4. CONSTRUCT CHANNEL PER PLAN HEREON AND PER PLAN ON SHTS C02 AND C03, PER PROFILE ON SHT C04, AND PER DETAIL AS SPECIFIED ON SHT C10. COMPACT FILL AREAS TO 90% MODIFIED PROCTOR COMPACTION.
5. CONSTRUCT LWD AND BOULDERS PER PLAN HEREON AND PER DETAILS ON SHT C11. PLACEMENT MAY BE FIELD–FIT AS GUIDED BY ENGINEER.
6. PLACE PRECAST THREE–SIDED CONCRETE ARCH CULVERT PER PLAN HEREON, PLAN AND PROFILE ON SHT C08, ELEVATIONS ON SHT C09, AND DETAILS ON SHTS S01, S02, S05 AND S06.
7. BACKFILL CULVERT WITH STREAMBED MATERIAL PER TYPICAL SECTION ON SHT C09.
8. PLACE BOULDERS AND LWD FOR BOATER EXCLUSION PER PLAN AND PROFILE ON SHT C08. PLACEMENT SHALL BE FIELD–FIT AS DIRECTED BY THE ENGINEER. PLACE WARNING SIGNS FOR BOATERS. SIGNS FURNISHED BY CITY PDX. ANCHOR OF SIGNS BY CONTRACTOR TO BE CONCRETE EMBEDDED TYPE PER ODOT DETAIL 1800.
9. CONSTRUCT (2) VIEWING PLATFORMS PER LOCATIONS ON SHT C12, AND DETAILS ON SHTS S03 AND S04.
10. REPLACE DEMOLISHED AND DAMAGED CHAINLINK AND POST AND CABLE FENCING. RAILROAD TRACK TO BE REPLACED BY OPRR. PAVE AND STRIPE SPRINGWATER TRAIL ALONG HAUL ROUTE PER DETAIL ON SHT L02.
11. REVEGETATE WITH HYDROSEEDING AND MULCH. CHANNEL REVEGETATION SHALL INCLUDE LIVE TREE STAKING. CONSTRUCT VEGETATED MARGIN ALONG TOPS OF BANK. SEE SHT L01 FOR REVEGETATION PLAN AND SHT L02 FOR DETAILS.
12. CONSTRUCT GRADE CONTROL RIFFLES PER THIS SHT AND SHTS C02 AND C03, PROFILE ON SHT C04 AND DETAILS ON SHT C10.

NOTES

1. EXIST & PROP CONTOURS ARE 1' INTERVALS.
2. SEE SHT G06 FOR CHANNEL ALIGNMENT GEOMETRY AND COORDINATE DATA.
3. SIGNAGE FOR BOATER DETERRENCE TO BE FURNISHED BY COP. PLACE (2) SIGNS ON OPPOSITE SIDES OF THE CULVERT ON THE EMBANKMENT AT APPROX EL 15 FEET.
4. SEE SHT C03 FOR LWD TABLE (STATIONING, ELEVATIONS AND TYPES). LWD DETAILS ARE SHOWN ON SHT C11.
5. FINAL PLACEMENT OF LWD AND BOULDERS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE.
6. SENSITIVE HABITAT TO BE FLAGGED AND PROTECTED DURING CONSTRUCTION. EXISTING BANKS ARE TO BE PRESERVED. COR TO APPROVE FLAGGING LIMITS PRIOR TO CONSTRUCTION ADJACENT TO AREAS.

30 0 30 60
SCALE FEET

SITE PLAN
STA 10+00 TO 22+00
1 / –

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

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DESIGN MGR.	YHC	SUP. ENG.	LS

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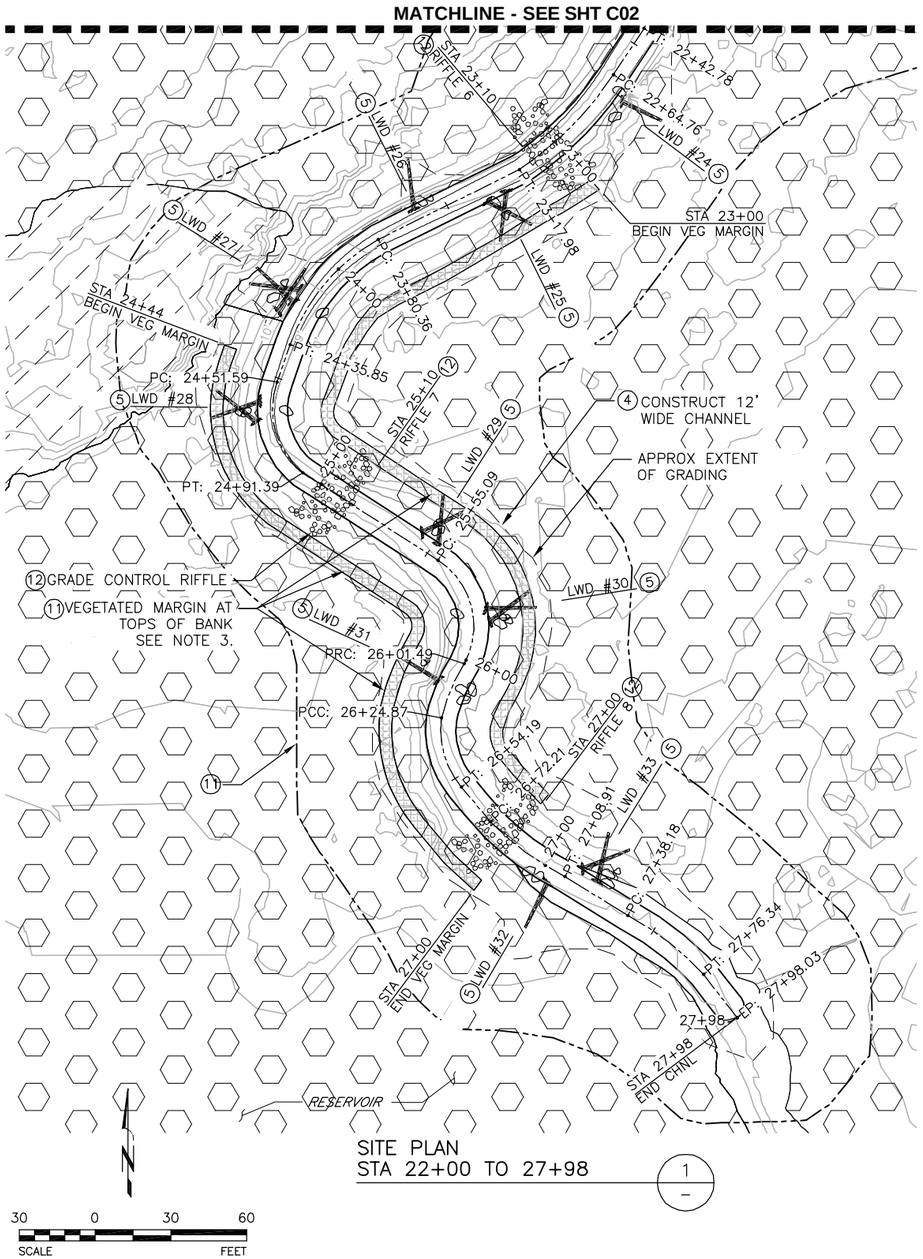
CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
SITE PLAN
STA 10+00 TO 22+00

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C02
08 OF 27

P:\PROJECTS\22/62 OAKS BOTTOM DESIGN PHASE\22/62 CAD OAKS\DWG\SHOB_C02_OAKS.DWG 1/14/2013 10:09:08 AM CHRISLOEB



SITE PLAN
STA 22+00 TO 27+98

1 / –

LWD & BOULDER TABLE				
#	STA	LWD TYPE (SHT 17)	CONTROL ELEV	NO OF HABITAT BOULDERS
CHANNEL A				
1	12+91	2	6.0	1
2	13+24	1	7.0	2
3	13+48	3	7.0	1
4	14+18	1	7.0	3
5	14+22	3	7.0	0
6	14+50	2	7.0	1
7	14+93	2	7.0	2
8	15+13	3	7.0	0
9	15+87	2	7.0	1
10	16+24	2	7.0	1
11	16+36	1	7.0	3
12	16+67	2	7.0	1
13	17+26	1	7.0	2
14	17+54	2	7.0	0
15	18+09	1	7.0	2
16	18+18	2	7.0	4
17	18+65	3	7.0	1
18	19+43	1	7.0	2
19	19+43	3	8.0	0
20	19+98	1	8.0	2
21	21+00	3	8.0	1
22	21+38	2	8.0	0
23	21+94	1	8.0	3
24	22+71	1	8.0	2
25	23+30	2	8.0	1
26	23+62	1	9.0	2
27	24+18	3	9.0	1
28	24+62	2	9.0	1
29	25+48	2	9.0	0
30	25+81	2	10.0	1
31	26+11	1	10.0	3
32	27+03	1	10.0	2
33	27+18	2	10.0	1
CHANNEL B				
34	2+46	2	8.0	1
35	2+75	1	9.0	0
36	2+95	2	9.0	1
TOTAL		66	–	49

CONSTRUCTION NOTES

1. DEMO AND DISPOSE OF TRAIL PAVING, FENCING, RAILROAD TRACK, AND EXISTING CULVERT. EXCAVATE EARTHEN EMBANKMENT AND DISPOSE OF PORTIONS OF BURIED TRESTLE ENCOUNTERED IN EMBANKMENT PER PLAN HEREON.
2. DEMO WCS AND ABANDONED NATURAL GAS PIPELINE PER PLAN HEREON. CONTRACTOR TO COORDINATE PIPELINE DEMO, CAPPING OR OTHER REQUIRED WORK WITH UTILITY OWNER.
3. CONSTRUCT SHEET PILE SHORING SYSTEM AND TEMPORARY RAILROAD BRIDGE SUBSTRUCTURE PER PLAN HEREON AND DETAILS ON SHT S02.
4. CONSTRUCT CHANNEL PER PLAN HEREON AND PER PLAN ON SHTS C02 AND C03, PER PROFILE ON SHT C04, AND PER DETAIL AS SPECIFIED ON SHT C10. COMPACT FILL AREAS TO 90% MODIFIED PROCTOR COMPACTION.
5. CONSTRUCT LWD AND BOULDERS PER PLAN HEREON AND PER DETAILS ON SHT C11. PLACEMENT MAY BE FIELD–FIT AS GUIDED BY ENGINEER.
6. PLACE PRECAST THREE–SIDED CONCRETE ARCH CULVERT PER PLAN HEREON, PLAN AND PROFILE ON SHT C08, ELEVATIONS ON SHT C09, AND DETAILS ON SHTS S01, S02, S05 AND S06.
7. BACKFILL CULVERT WITH STREAMBED MATERIAL PER TYPICAL SECTION ON SHT C09.
8. PLACE BOULDERS AND LWD FOR BOATER EXCLUSION PER PLAN AND PROFILE ON SHT C08. PLACEMENT SHALL BE FIELD–FIT AS DIRECTED BY THE ENGINEER. PLACE WARNING SIGNS FOR BOATERS. SIGNS FURNISHED BY CITY PDX. ANCHOR OF SIGNS BY CONTRACTOR TO BE CONCRETE EMBEDDED TYPE PER ODOT DETAIL 1800.
9. CONSTRUCT (2) VIEWING PLATFORMS PER LOCATIONS ON SHT C12, AND DETAILS ON SHTS S03 AND S04.
10. REPLACE DEMOLISHED AND DAMAGED CHAINLINK AND POST AND CABLE FENCING. RAILROAD TRACK TO BE REPLACED BY OPRR. PAVE AND STRIPE SPRINGWATER TRAIL ALONG HAUL ROUTE PER DETAIL ON SHT L02.
11. REVEGETATE WITH HYDROSEEDING AND MULCH. CHANNEL REVEGETATION SHALL INCLUDE LIVE TREE STAKING. CONSTRUCT VEGETATED MARGIN ALONG TOPS OF BANK. SEE SHT L01 FOR REVEGETATION PLAN AND SHT L02 FOR DETAILS.
12. CONSTRUCT GRADE CONTROL RIFFLES PER THIS SHT AND SHTS C02 AND C03, PROFILE ON SHT C04 AND DETAILS ON SHT C10.

NOTES

1. EXIST & PROP CONTOURS ARE 1' INTERVALS.
2. SEE SHT G06 FOR CHANNEL ALIGNMENT GEOMETRY AND COORDINATE DATA.
3. FINAL PLACEMENT OF LWD AND BOULDERS SHALL BE APPROVED BY OWNER'S REPRESENTATIVE.

UPDATED 90% PLANS DEC 2012

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT

SITE PLAN
STA 22+00 TO 27+98

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C03
09 OF 27

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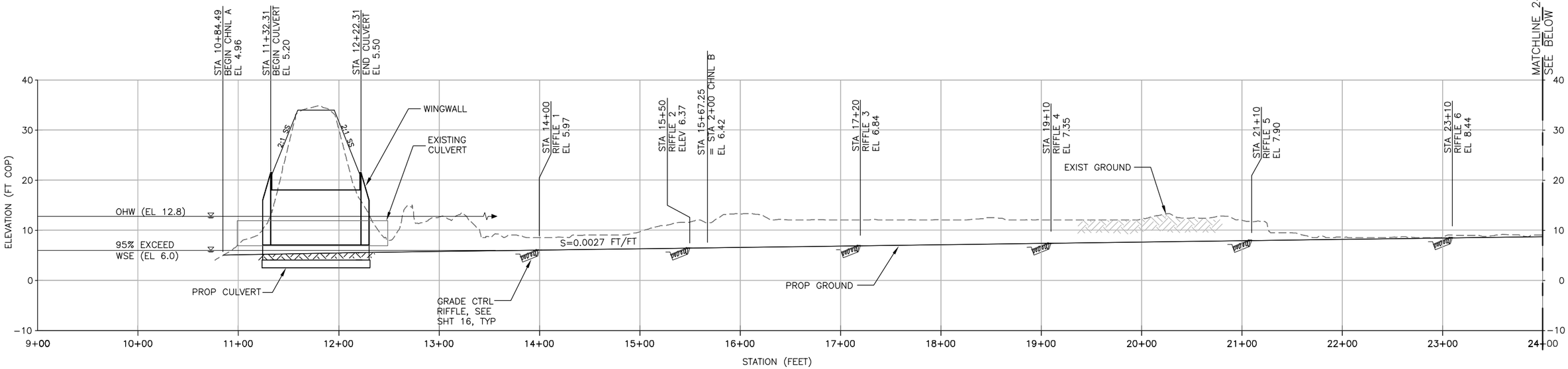
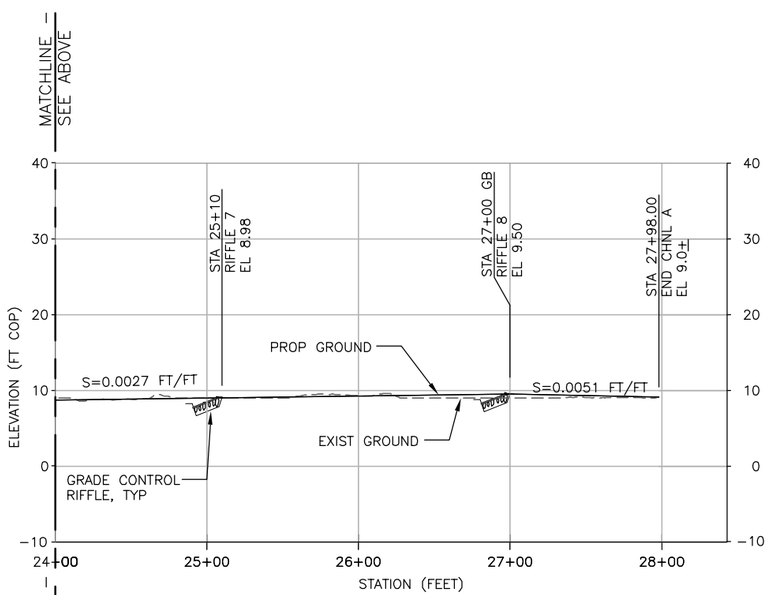


CHANNEL
PROFILE A (1 / –)
(CONTINUED BELOW)



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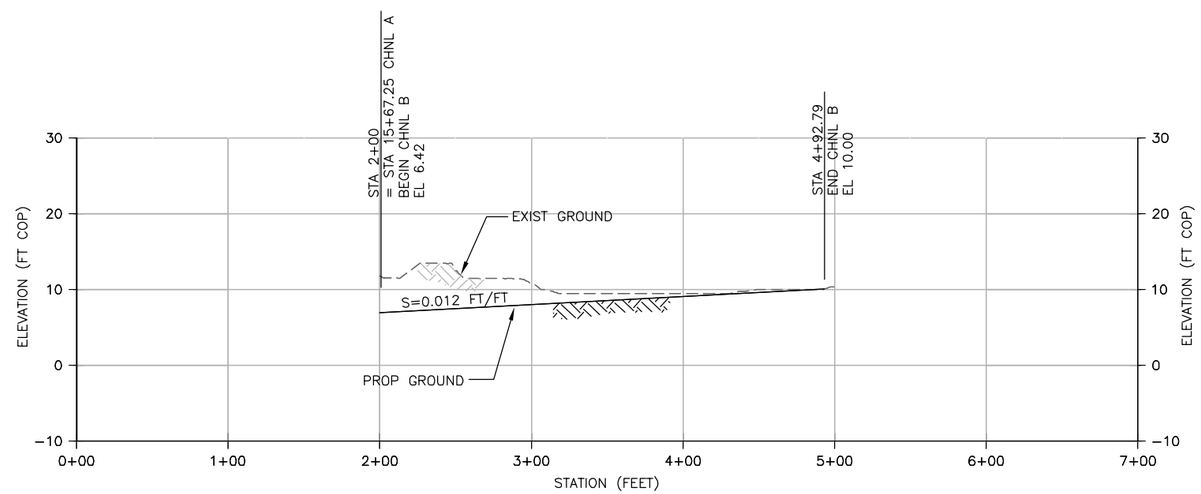
PROFILE A (1 / –)
(CONTINUED FROM ABOVE)



CHANNEL
PROFILE B (2 / –)

NOTES

1. SEE SHT C10 FOR RIFFLE PROFILE, SECTION, AND CONTROL ELEVATION DETAILS.
2. SEE SHT C10 FOR TYPICAL CHANNEL SECTIONS.
3. SEE SHT C08 FOR CULVERT PLAN & PROFILE AND SHT C09 FOR CULVERT ELEVATIONS.
4. SEE SHT C03 FOR LWD AND BOULDER STATIONING.

PROFILE: HORIZ: 1"=50'
VERT: 1"=10'

UPDATED 90%
PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
PROFILES – CHANNELS A AND B

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C04
10 OF 27

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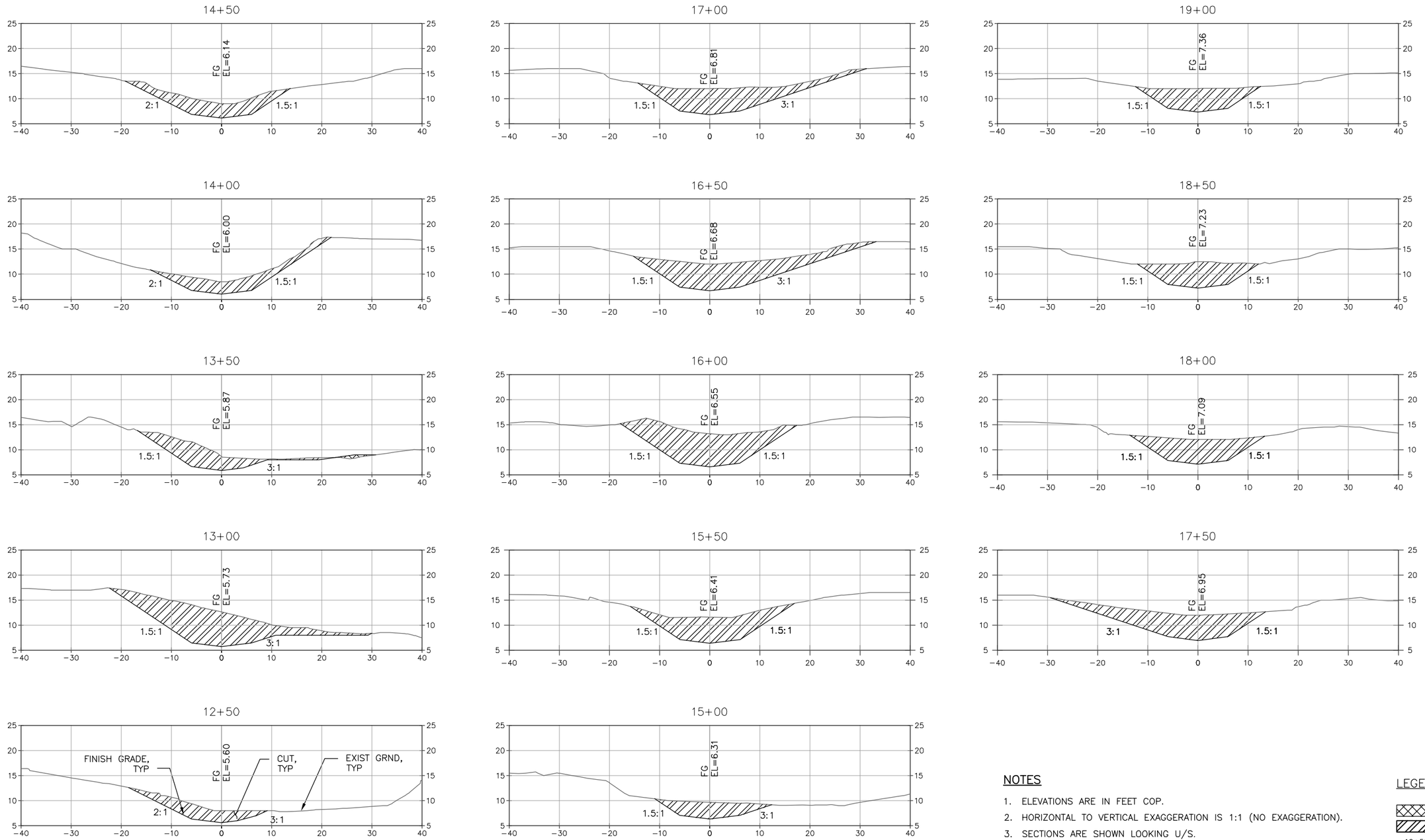

SECTIONS

SCALE: 1"=10'

NOTES

1. ELEVATIONS ARE IN FEET COP.
2. HORIZONTAL TO VERTICAL EXAGGERATION IS 1:1 (NO EXAGGERATION).
3. SECTIONS ARE SHOWN LOOKING U/S.
4. SEE SHTS C02 AND C03 FOR CHANNEL ALIGNMENT STATIONING.
5. SEE SHT C10 FOR TYPICAL EARTHWORK DETAILS.
6. DO NOT FILL CHANNEL FROM STA 12+17 TO APPROX STA 15+00.

LEGEND:

FILL
CUT
12+50 STATIONING

UPDATED 90% PLANS DEC 2012

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
CROSS SECTIONS I – CHANNEL A

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C05
11 OF 27

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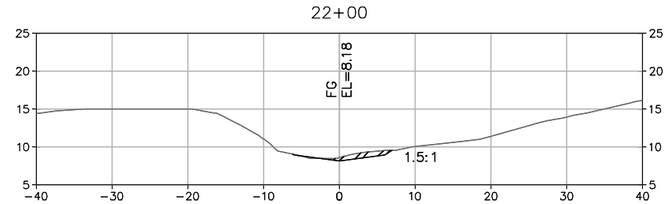

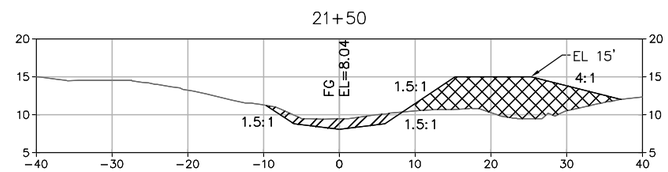

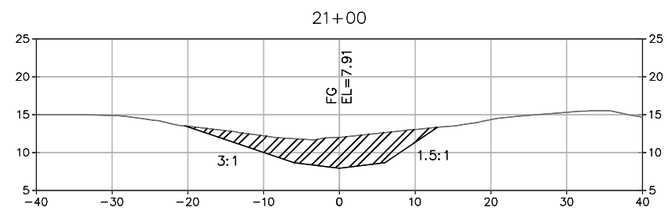

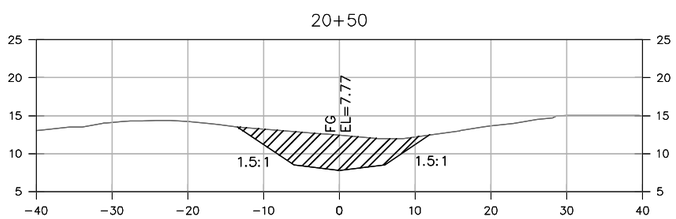

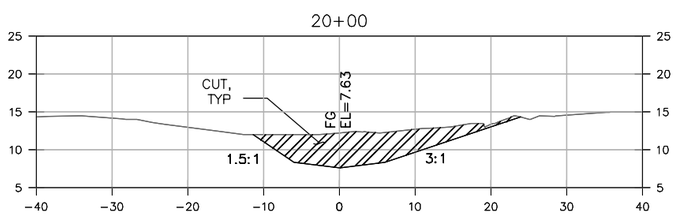

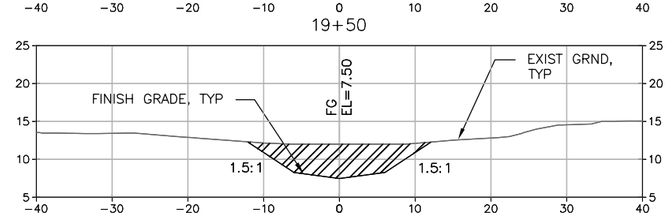

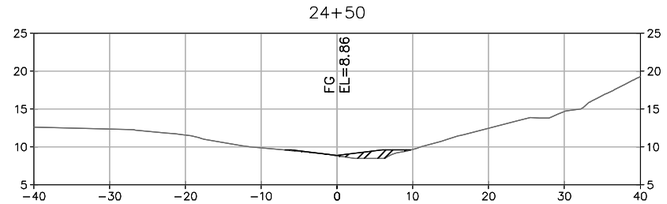

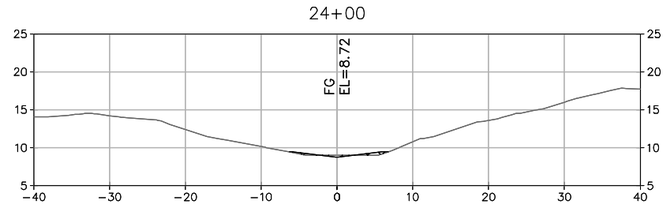

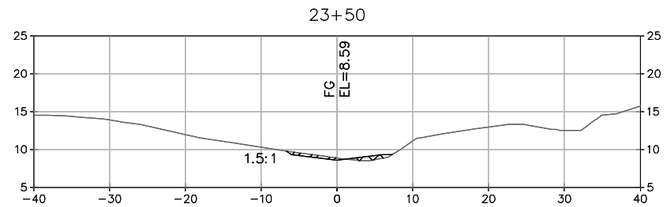

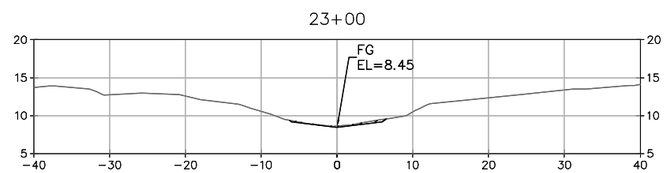

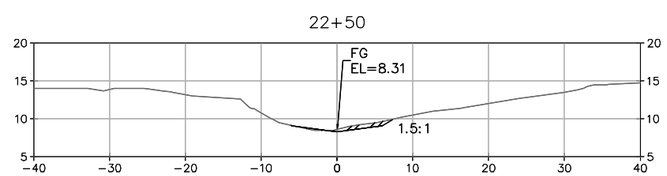

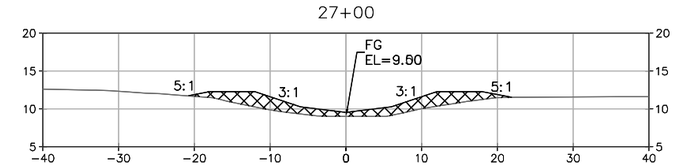

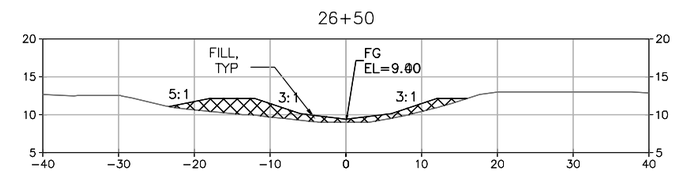

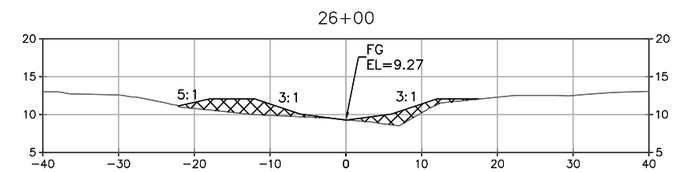

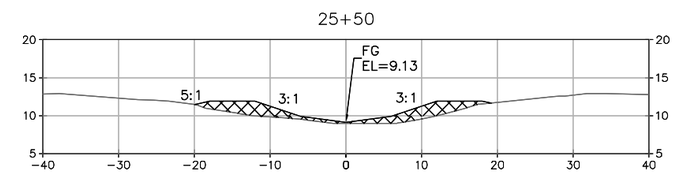

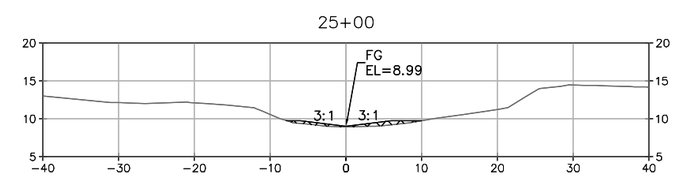

SECTIONS
SCALE: 1"=10'

NOTES

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2. HORIZONTAL TO VERTICAL EXAGGERATION IS 1:1 (NO EXAGGERATION).
3. SECTIONS ARE SHOWN LOOKING U/S.
4. SEE SHTS C02 AND C03 FOR CHANNEL ALIGNMENT STATIONING.
5. SEE SHT C10 FOR TYPICAL EARTHWORK DETAILS.

LEGEND:

FILL
CUT
12+50 STATIONING

UPDATED 90% PLANS DEC 2012

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CHECKED BY	JL	CONST. MGR.	MWH
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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
CROSS SECTIONS II – CHANNEL A

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C06
12 OF 27

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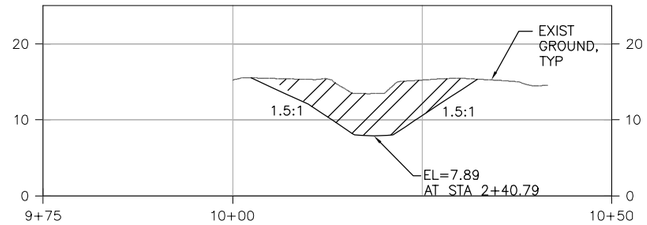

SECTION A / C02
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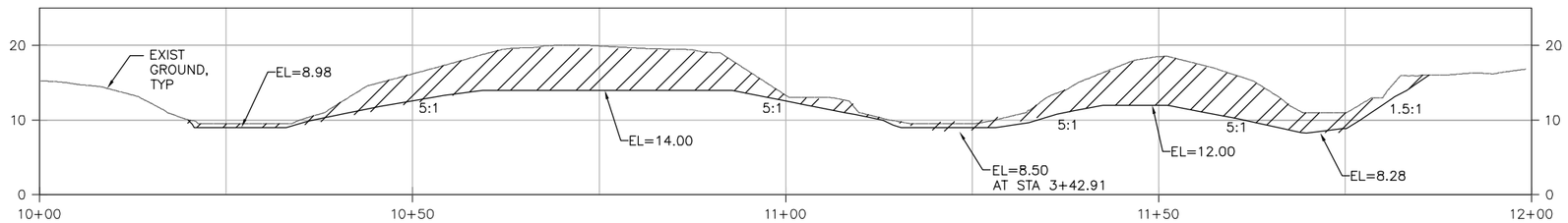

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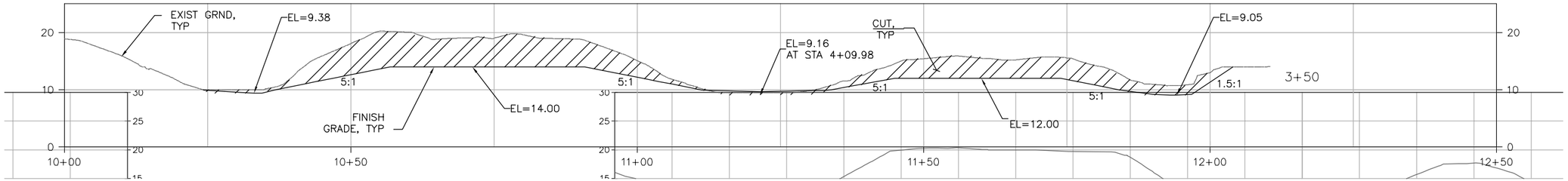

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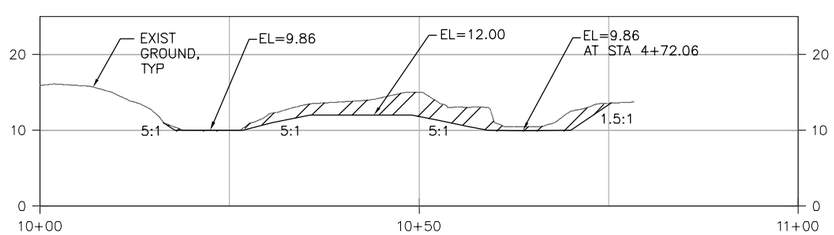

SECTION D / C02
SCALE: 1 IN = 10 FT

NOTES

1. ELEVATIONS ARE IN FEET COP DATUM.
2. HORIZONTAL TO VERTICAL EXAGGERATION IS 1:1 (NO EXAGGERATION).
3. SECTION LOCATIONS AND ORIENTATIONS ARE SHOWN ON SHT C02.

LEGEND:

FILL
CUT

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

REVISION

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CITY OF PORTLAND
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TIDAL RESTORATION PROJECT
CROSS SECTIONS III – CHANNEL B

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C07
13 OF 27

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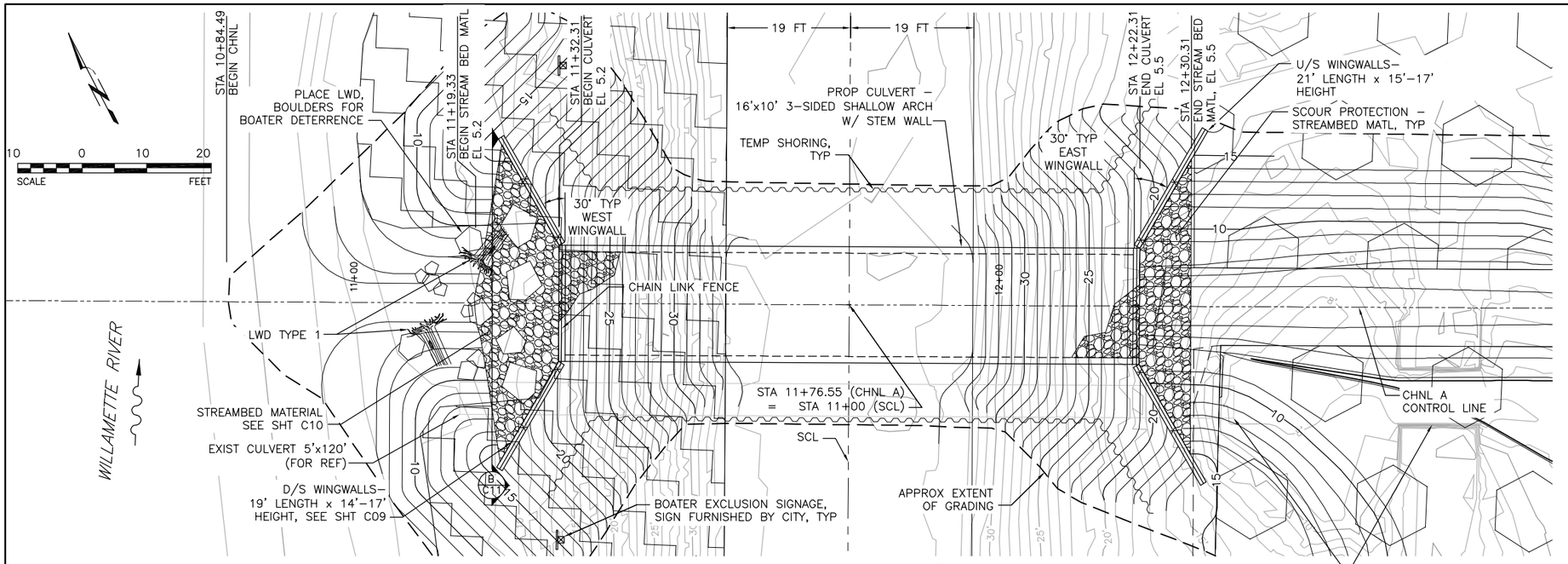
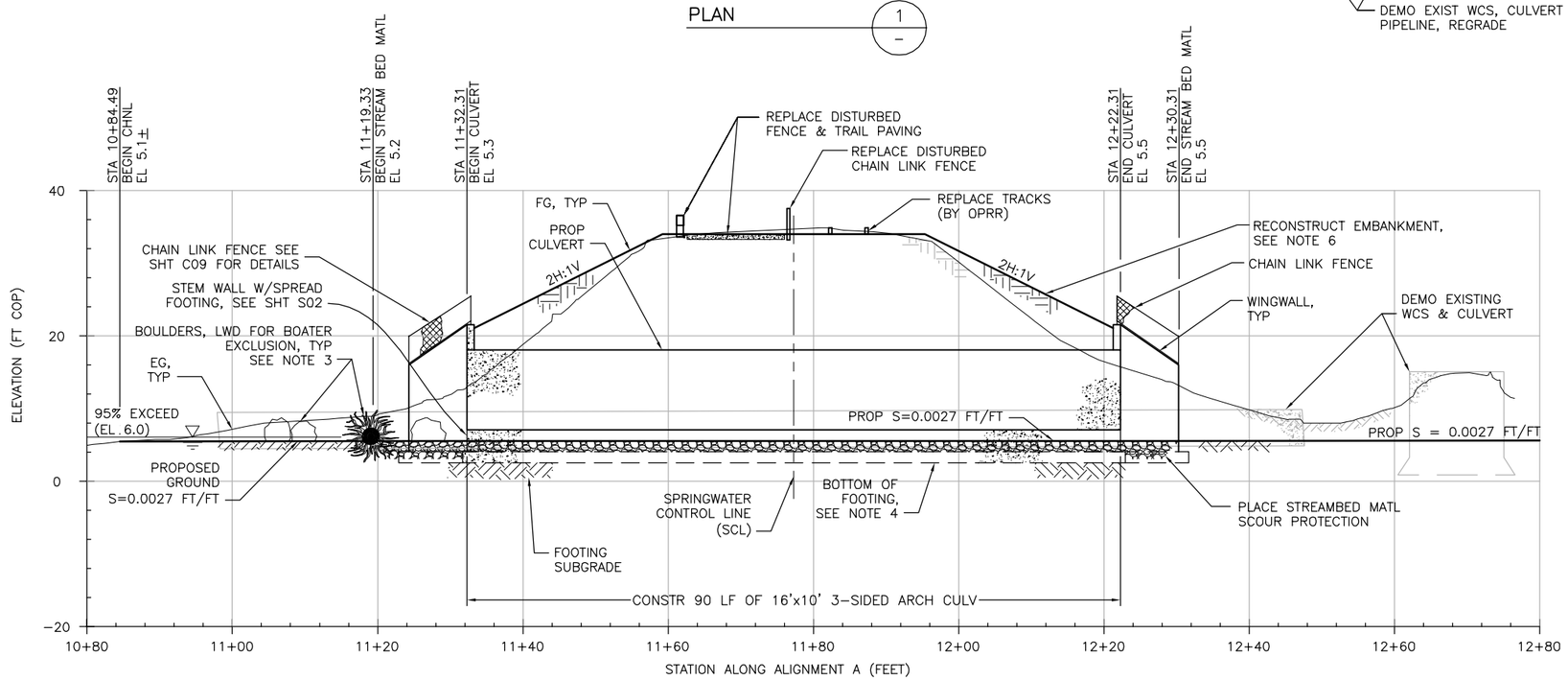


PLAN 1 –

NOTES

1. SPRINGWATER CONTROL LINE (SCL) IS APPROX CENTERLINE OF EMBANKMENT. SEE SHT G06 FOR SCL COORDINATES.
2. EXISTING & PROPOSED CONTOUR INTERVAL IS 1'.
3. PLACE BOULDERS AND LWD AT CULVERT INLET PER PLAN AND PROFILE HEREON. BOULDERS SHALL BE 2–5 FT DIA, AND MAY BE SELECTED FROM EXCAVATION MATL STOCKPILE. BURY BOULDERS 1/3 TO 1/2 OF THEIR DIA. SMALLER BOULDERS SHALL BE GROUPED AS SHOWN PER FIELD DIRECTION BY ENGINEER. FINAL PLACEMENT SHALL BE APPROVED BY COR.
4. CULVERT FOOTINGS (AND STEM WALLS AND MAIN CULVERT UNITS) ARE TO BE PLACED AT ZERO LONGITUDINAL SLOPE. PLACE FOOTINGS AT THE ELEVATIONS SHOWN ON SHT C09.
5. PLACE EMBANKMENT BACKFILL IN LIFTS TO NOT EXCEED 8 IN WHEN COMPACTED TO 90% OF MAXIMUM DRY DENSITY AS SPECIFIED.
6. EMBANKMENT SLOPE TO BE REVEGETATED AFTER COMPLETION OF GRADING.



PROFILE 2 –

SCALE: 1"=10' H AND V

UPDATED 90% PLANS DEC 2012

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
CULVERT PLAN AND PROFILE

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C08
14 OF 27

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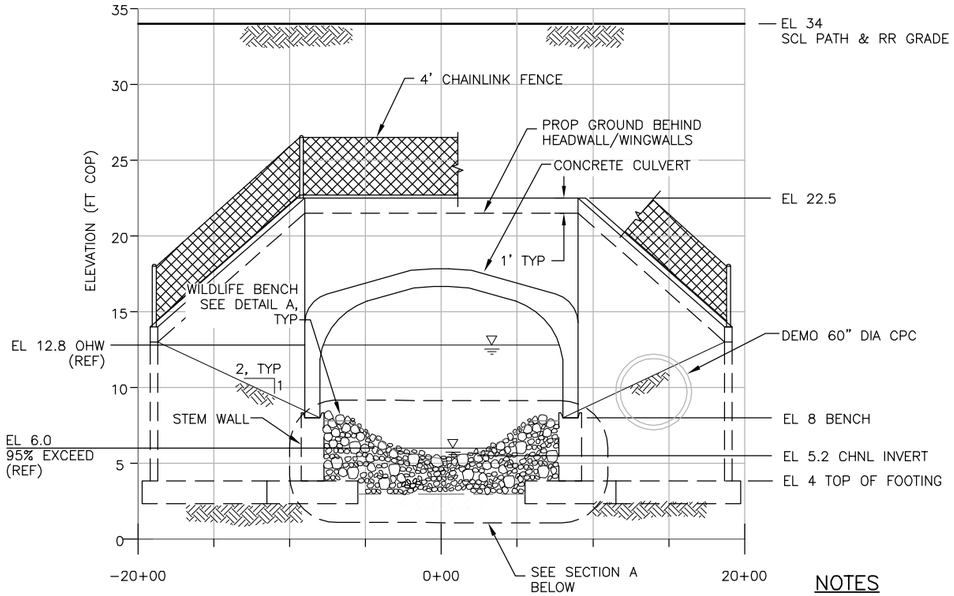
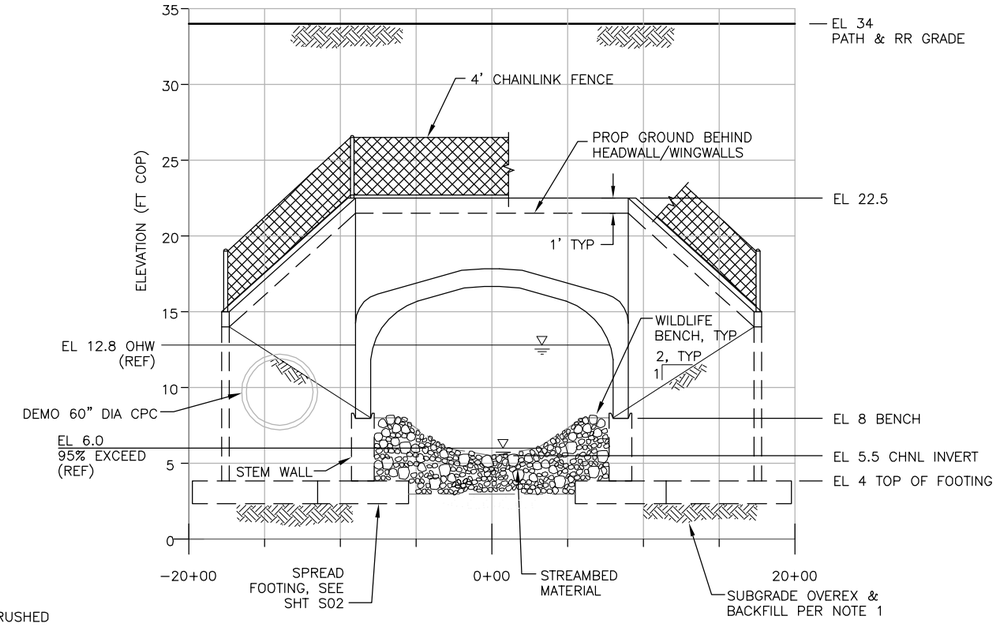


WEST ELEVATION (1 / –)

SCALE: 1"=5'

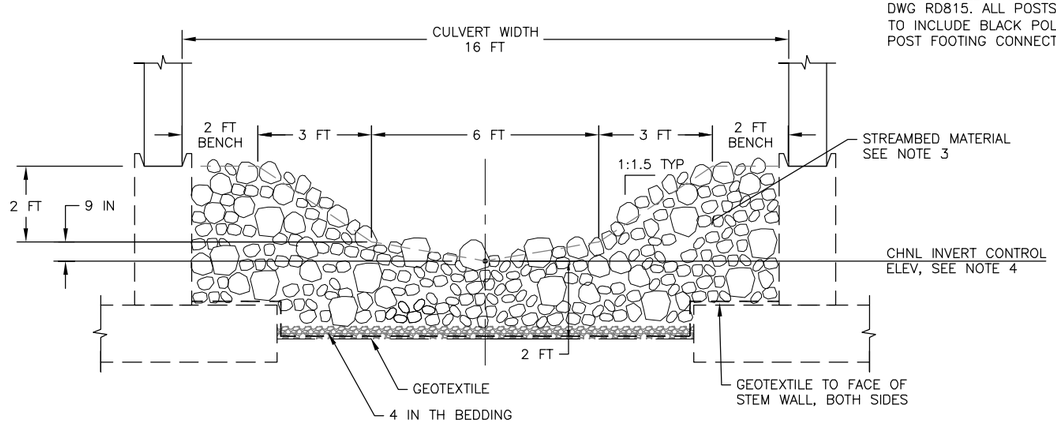


EAST ELEVATION (2 / –)

SCALE: 1"=5'

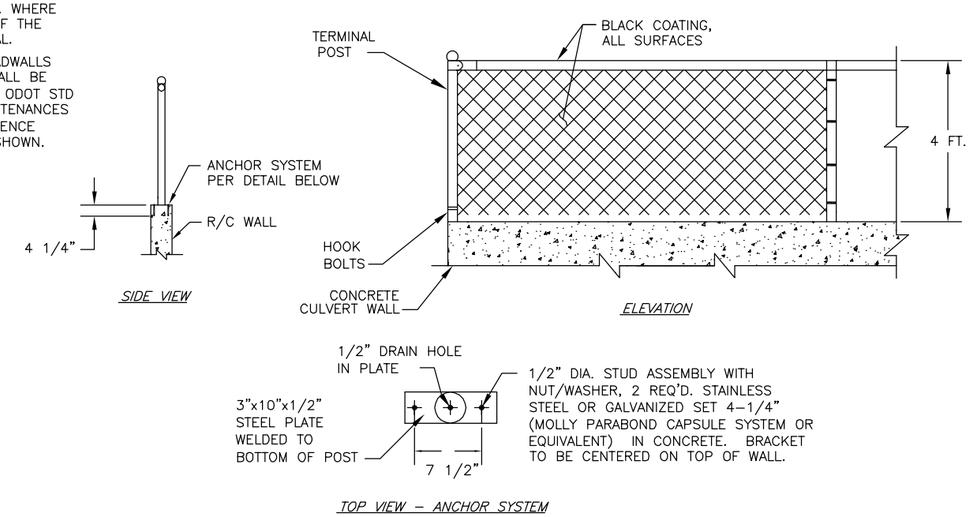
NOTES

1. CULVERT FOOTING SUBGRADE TO CONSIST OF 12 IN TH CRUSHED AGGREGATE (4"–2" OPEN GRADED) OVER GEOTEXTILE. LEVELING COURSE, IF REQD BY CULVERT MANUFACTURER REPRESENTATIVE, SHALL BE PLACED IN ADDITION TO AGGREGATE SUBGRADE SPECIFIED IN GEOTECHNICAL REPORT.
2. CULVERT, STEM WALL AND FOOTING DETAILS ARE SHOWN ON SHTS S01 & S02.
3. STREAMBED MATERIAL GRADATION IS SHOWN ON SHT C10.
4. CULVERT CHANNEL INVERT ELEVATION IS PER PROFILE ON SHT C08.
5. ALL CHAIN LINK FENCE POSTS SHALL BE INSTALLED VERTICALLY. WHERE POSTS ARE INSTALLED ON AN INCLINED SURFACE, THE ANGLE OF THE POST SHALL BE ADJUSTED SO THAT THE POST WILL BE VERTICAL.
6. CHAIN LINK FENCING TO BE PLACED ON TOPS OF CULVERT HEADWALLS AND WINGWALLS ON BOTH ENDS OF THE CULVERT. FENCING SHALL BE 4–FOOT TALL, TYPE CL–4R (TOP RAIL) CHAIN LINK FENCE PER ODOT STD DWG RD815. ALL POSTS, RAILS, CHAIN LINK FABRIC AND APPURTENANCES TO INCLUDE BLACK POLYMER COATING (PVC OR POLYOLEFIN). FENCE POST FOOTING CONNECTION TO PRECAST WALLS SHALL BE AS SHOWN.



TYPICAL CULVERT SECTION (A / –)

SCALE: 1"=2'



CHAIN LINK FENCE DETAIL (3 / –)

NOT TO SCALE

UPDATED 90% PLANS DEC 2012

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OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
CULVERT ELEVATIONS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C09
15 OF 27

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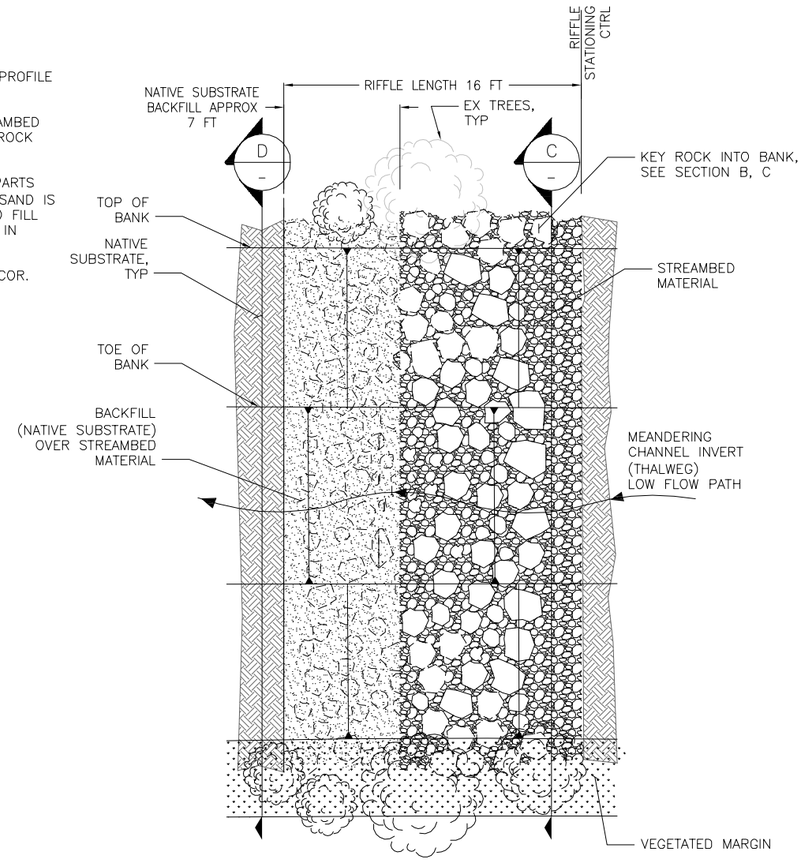
NOTES:

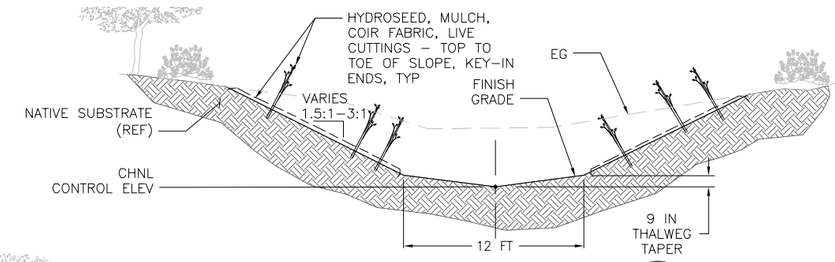
1. CHANNEL CONTROL ELEVATION IS PER ALIGNMENT PROFILE SHOWN ON SHT C04.
2. THE ENGINEER SHALL REVIEW AND APPROVE STREAMBED MATERIAL ROCK SIZES, GRADATIONS, AND MIX OF ROCK BEFORE IT IS USED IN CONSTRUCTION.
3. STREAMBED MATERIAL SHALL CONSIST OF THREE–PARTS RIPRAP TO ONE–PART COBBLE/GRAVEL MATERIAL. SAND IS TO BE WASHED INTO THE STREAMBED MATERIAL TO FILL VOIDS AS SPECIFIED. PLACE STREAMBED MATERIAL IN LAYERS AS SPECIFIED. THE CONTRACTOR MAY MIX MATERIALS ONSITE PRIOR TO PLACEMENT. PLACED STREAMBED MATL SHALL BE ACCEPTABLE TO THE COR.

RIPRAP GRADATION	
ROCK DIAMETER (IN)	PERCENT SMALLER (%)
12–14	100
8–10	75
6–8	50
5–7	30
1–5	10

COBBLE / GRAVEL MATL GRADATION	
ROCK DIAMETER (IN)	PERCENT SMALLER (%)
8–10	100
6–8	50
4–6	30
1/4–3	10



TYPICAL RIFFLE PLAN (1)
SCALE: 1 IN = 5 FT



TYPICAL CHANNEL SECTION (A)
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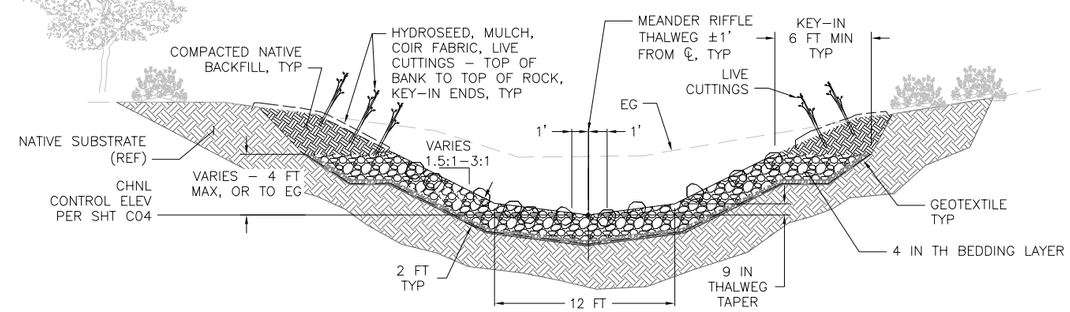

TYPICAL RIFFLE SECTION (B)
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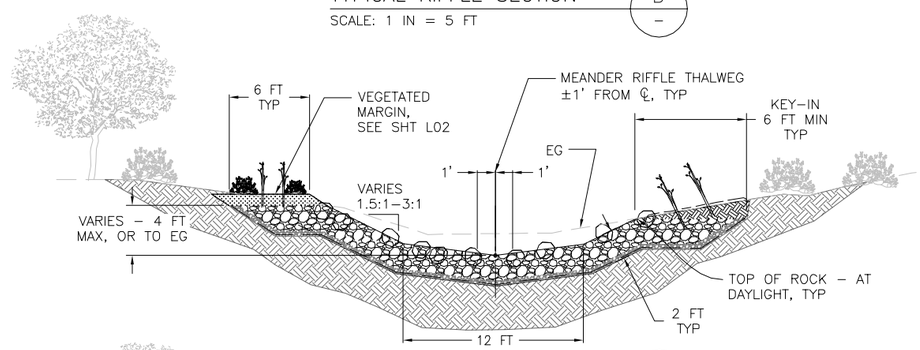

RIFFLE SECTION (C)
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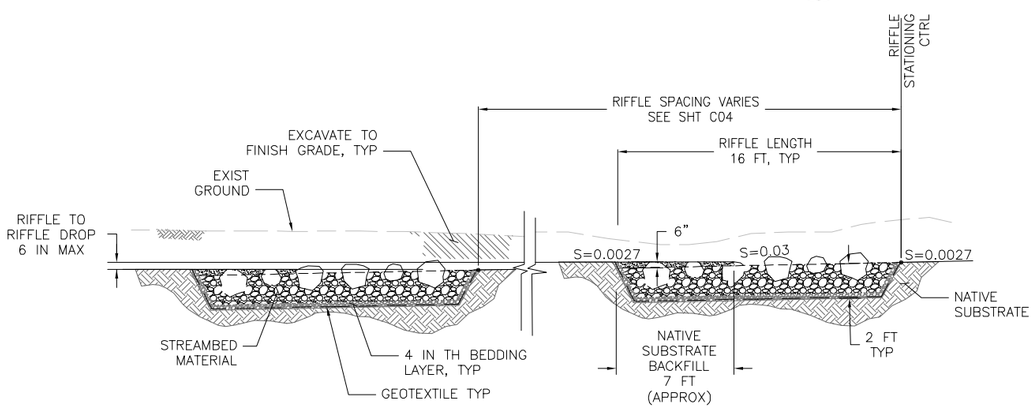

TYPICAL RIFFLE PROFILE (2)
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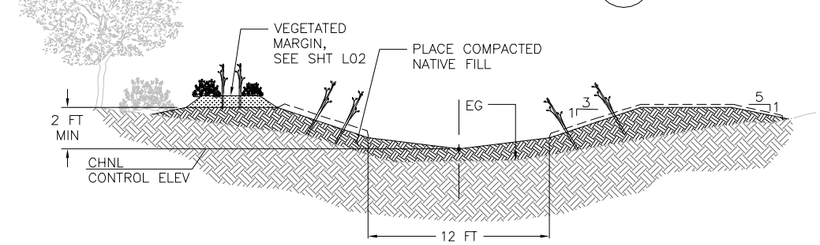

FILL SECTION (D)
STA 25+00 TO STA 27+98
SCALE: 1 IN = 5 FT

UPDATED 90% PLANS DEC 2012

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TIDAL RESTORATION PROJECT
RIFFLE AND CHANNEL DETAILS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C10
16 OF 27

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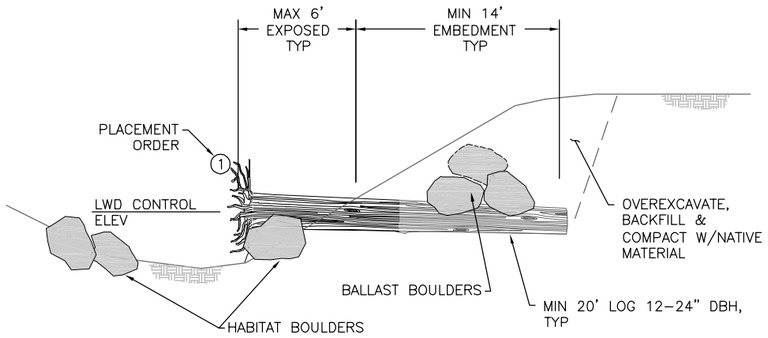
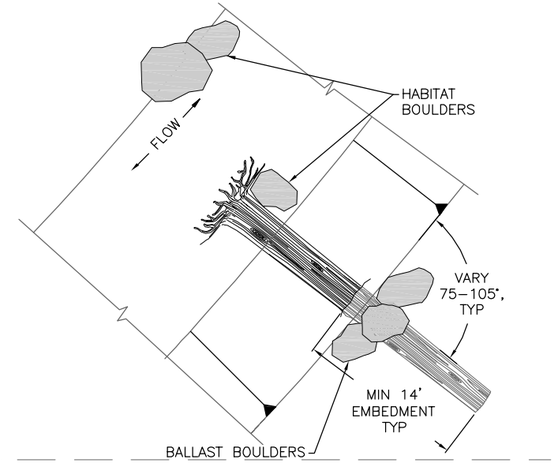
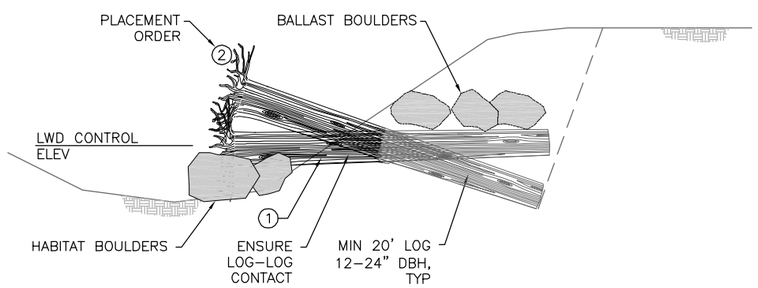
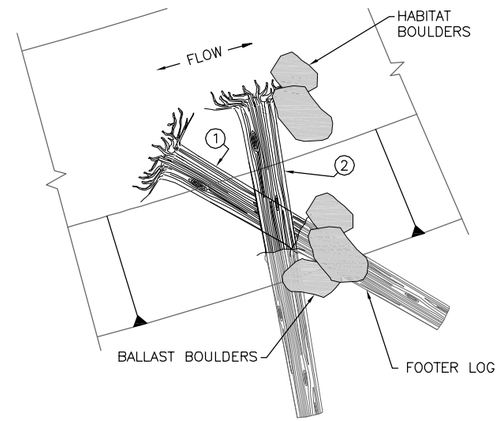


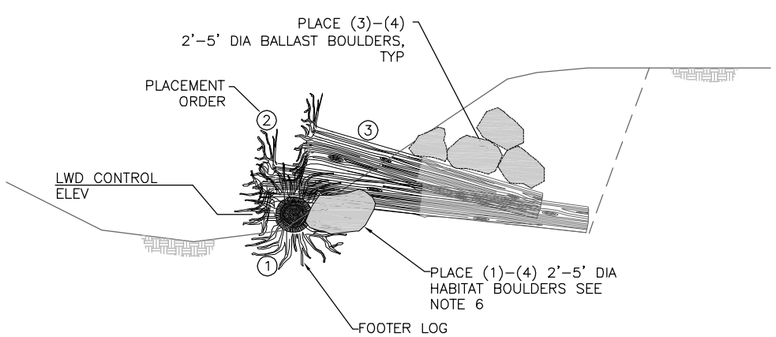
LWD TYPE I (SINGLE)





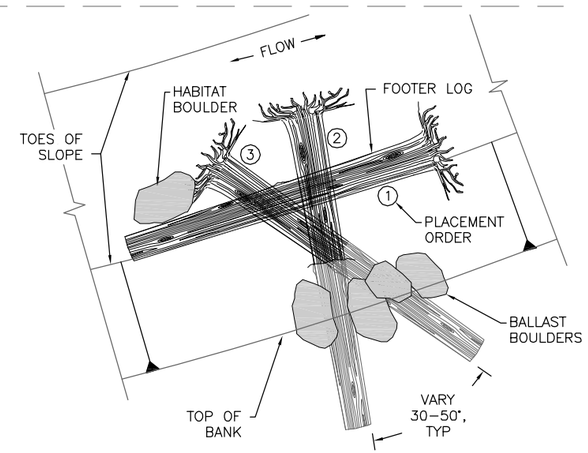
LWD TYPE II (DOUBLE)





TYPICAL SECTIONS A / –
NTS

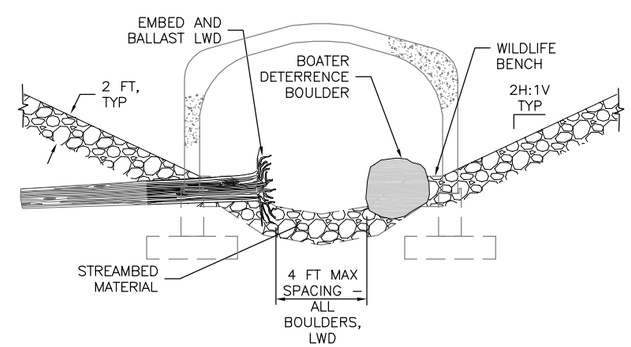
LWD TYPE III (TRIPLE)



TYPICAL PLANS 1 / –
NTS

NOTES:

1. CITY TO FLAG TREES TO BE CLEARED AND SALVAGED FOR REUSE AS LWD. COR TO APPROVE TREES BEFORE CLEARING BEGINS. ON–SITE TREE REMOVAL AND TRANSPORT PROCEDURES SHALL LEAVE THE ROOT BALLS INTACT AND UNTRIMMED. BARK AND BRANCHES SHALL REMAIN INTACT.
2. CONTRACTOR TO VARY PLAN VIEW ORIENTATION OF LOGS WITHIN LIMITS SHOWN AND PER FIELD DIRECTION FROM ENGINEER. LWD CONTROL ELEVATIONS ARE SHOWN ON SHT C03
3. SEE SHTS C02 AND C03 FOR LOCATIONS OF LWD TYPES I, II, & III.
4. ALL LWD SPECIES SHALL BE APPROVED BY COR AND SHALL MEET MINIMUM SIZE REQUIREMENTS.
5. BACKFILL FOR LWD EMBEDMENT SHALL MEET MIN 90% MODIFIED PROCTOR COMPACTION AS SPECIFIED. SURFACE OF BACKFILL SHALL BE SCARIFIED IF NECESSARY TO FACILITATE REVEGETATION.
6. BOULDERS SALVAGED DURING CHANNEL EXCAVATION AND DEMO ACTIVITIES MAY BE USED FOR LWD BALLAST OR HABITAT BOULDERS. BALLAST BOULDERS ARE TO BE COMPLETELY BURIED ON TOP OF LWD TO PREVENT MOVEMENT. HABITAT BOULDERS ARE TO BE BURIED 1/3 TO 1/2 OF THEIR DIA AND LOCATED NEAR THE TOE(S) OF SLOPE, ADJACENT TO LWD AND VARIED AT EACH LWD LOCATION. PLACEMENT PER DIRECTION FROM ENGINEER. SEE SHT C03 FOR QUANTITY OF HABITAT BOULDERS AT EACH LWD LOCATION.
7. LWD MATERIALS SHALL BE DOUGLAS FIR, HEMLOCK, SPRUCE, OR ALDER TREE SPECIES, AND SHALL BE DISEASE FREE, UTILITY GRADE 95% MIN W/ LIMITED ROT AND DECAY, AND CLEAN OF DIRT AND DEBRIS.
8. LWD FOR STREAM PLACEMENT SHALL BE DOUGLAS FIR OR HEMLOCK SPECIES.
9. LWD SOURCING SHALL BE ONE OR MORE OF THE FOLLOWING SOURCES:
   - 9.1. FOREST STEWARDSHIP COUNCIL (FSC) CERTIFIED TIMBER,
   - 9.2. HEALTHY FOREST, HEALTHY COMMUNITIES (HFHC) TIMBER,
   - 9.3. NORTHWEST URBAN SALVAGE TIMBER OR OTHER APPROVED NORTHWEST SALVAGE TIMBER,
   - 9.4. UTILITY GRADE AND 12"+3 SAW LWD ORIGINATING FROM APPROVED OREGON DEPARTMENT OF FORESTRY TIMBER SALES, OR
   - 9.5. OWNER SUPPLIED LWD.
10. CONTRACTOR SUPPLIED LWD SHALL HAVE ROOT BALLS ATTACHED TO TRUNK AND ROOT BALLS SHALL BE UNTRIMMED. ALL TWIGS, BRANCHES, AND BARK SHALL REMAIN INTACT. WOOD SHALL NOT SHOW SIGNS OF DECAY.



SECTION – CULVERT INLET B / C08
SCALE 1"=5'

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TIDAL RESTORATION PROJECT
LARGE WOODY DEBRIS DETAILS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C11
17 OF 27

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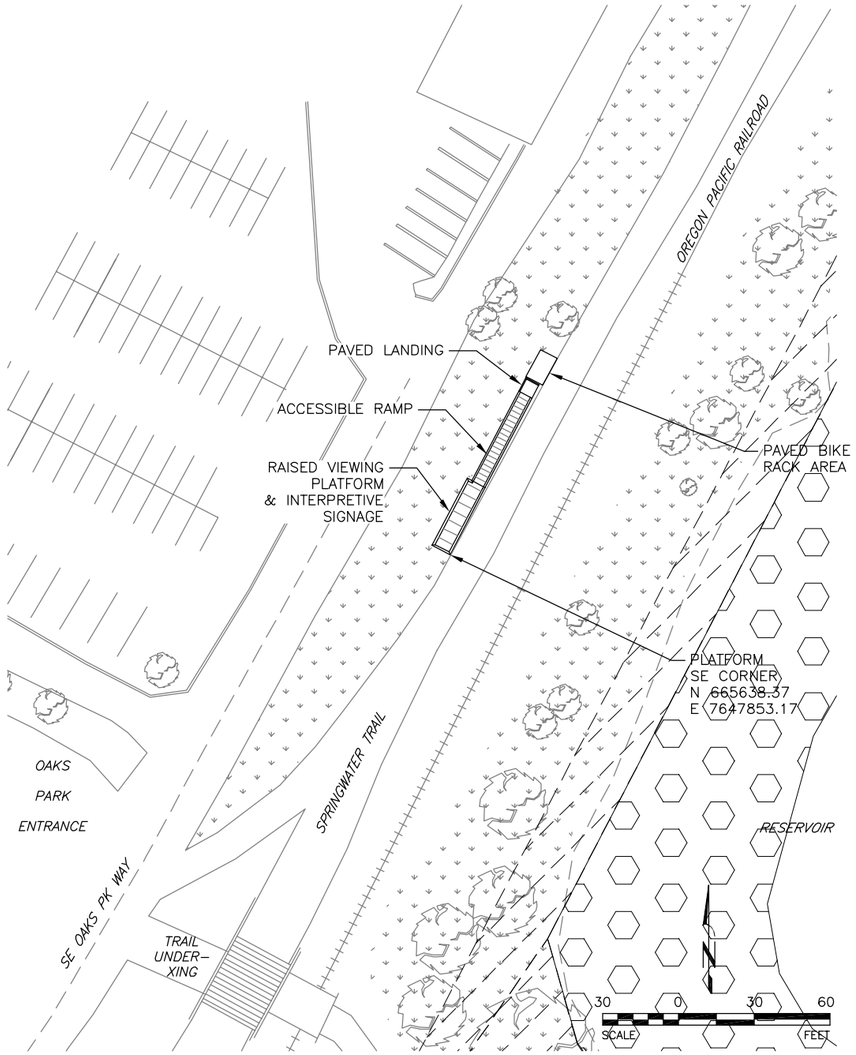
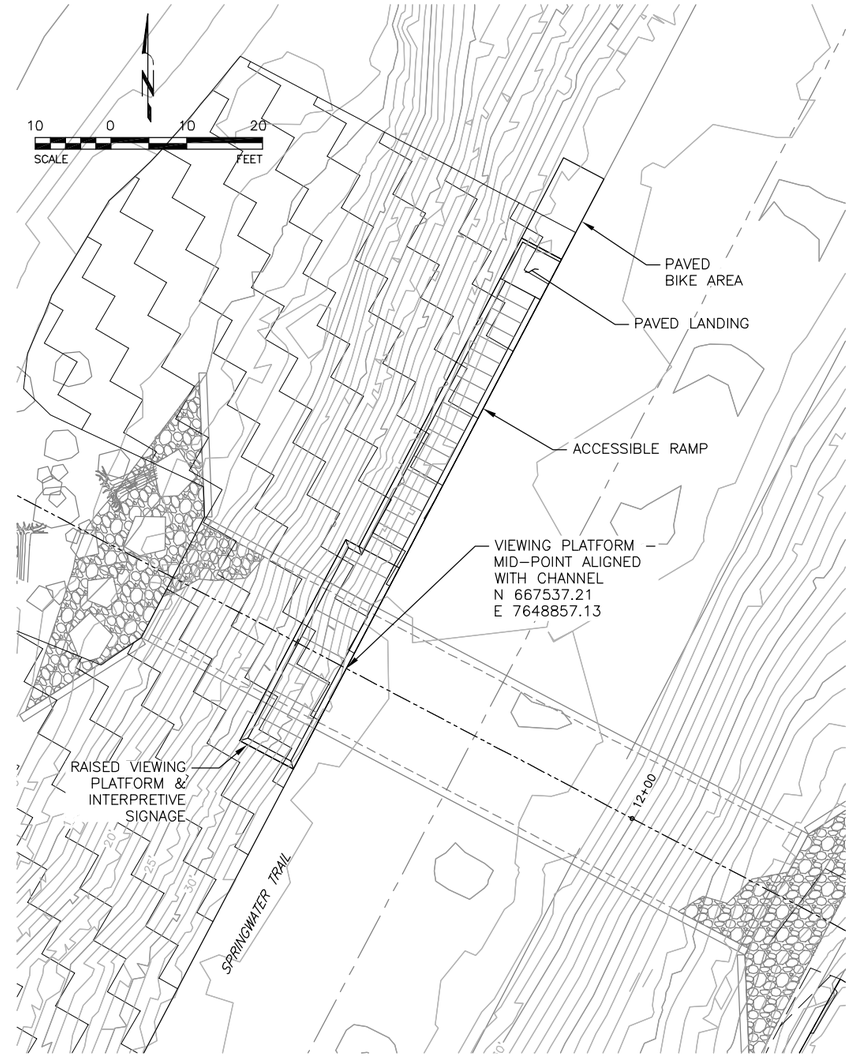


PLAN
PLATFORM 1 (1 / –)



PLAN
PLATFORM 2 (2 / –)

NOTES

1. EXIST & PROP CONTOUR INTERVALS ARE 1 FT.
2. SEE STRUCTURAL SHEETS S03 & S04 FOR PLATFORM CONSTRUCTION DETAILS.
3. VIEWING PLATFORMS, RAMPS, LANDINGS, AND APPURTENANCES ARE TO BE LOCATED ADJACENT TO BUT NOT ENCROACH UPON EXISTING TRAIL.
4. FINAL LOCATIONS OF PLATFORMS TO BE REVIEWED IN FIELD AND APPROVED BY COR BEFORE CONSTRUCTION OF PLATFORMS.

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
VIEWING PLATFORM LOCATIONS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. C12
18 OF 27

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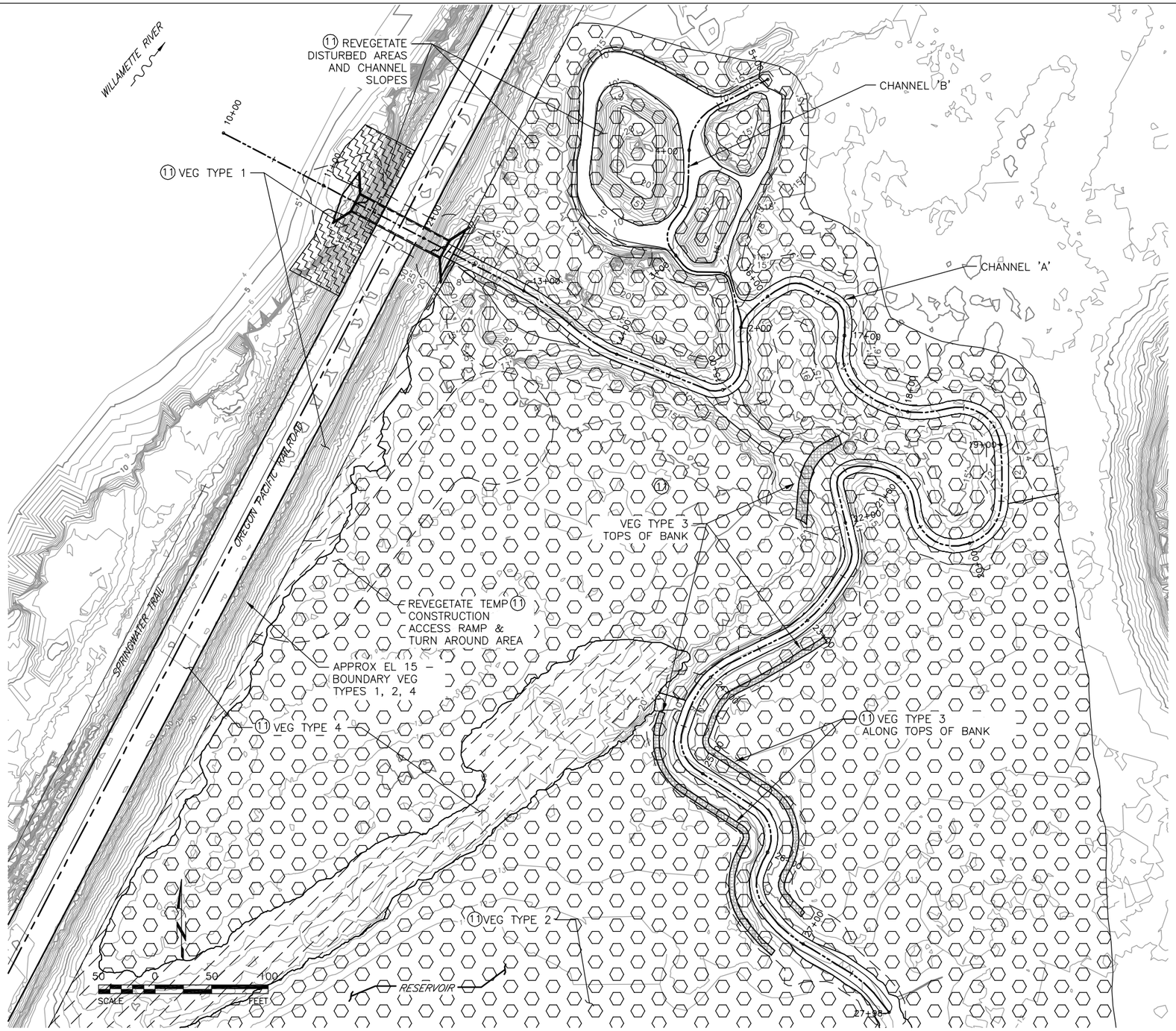

PLAN 1

CONSTRUCTION NOTES

(11) REVEGETATE ALL DISTURBED AREAS INCLUDING THE RR EMBANKMENT AND CHANNELS WITH HYDROSEEDING AND MULCH. CHANNEL REVEGETATION SHALL INCLUDE LIVE TREE STAKING. SEE SHT L02 FOR DETAILS.

NOTES

1. CLEAR & STRIP VEGETATION & ROOTMAT TO A DEPTH OF 6 IN FOR A DISTANCE OF 10 FT FROM TOP OF EXCAVATED SLOPE ON BOTH BANKS.
2. SEED ALL EXCAVATED AND/OR CLEARED AREAS WITH WETLAND SEED MIX AS SHOWN.
3. AREAS NOT CLEARED OR EXCAVATED WITHIN PLANTING ZONE WILL BE MOWED DIRECTED BY COR AND THEN PLANTED WITH THE PACIFIC WILLOW WOODLAND PLANT MIX. THIS AREA SHALL EXTEND APPROXIMATELY 30 FEET FROM THE TOP OF EXCAVATED SLOPE, OR AS OTHERWISE SHOWN. COR TO APPROVE LIMITS OF CLEARING AND MOWING BEFORE REVEGETATION.
4. REVEGETATION DETAILS ARE SHOWN ON SHT L02.
5. REVEGETATION AREA:
   VEG TYPE 1 = 0.6 AC TOT
   VEG TYPE 2 = 33.9 AC TOT
   VEG TYPE 3 = 700 LF TOT
   VEG TYPE 4 = 10.7 AC TOT
6. ONSITE VEGETATION MAY BE SALVAGED AND MAINTAINED IN SUITABLE CONDITION FOR REUSE WITH APPROVAL AND AS DIRECTED BY COR.

LEGEND

- VEGETATION TYPE 1 (RIPARIAN SEED MIX)
- VEGETATION TYPE 2 (WETLAND SEED MIX & PACIFIC WILLOW TEMPORARILY FLOODED WOODLAND PLANT LIST)
- VEGETATION TYPE 3 (VEGETATED MARGINS)
- VEGETATION TYPE 4 BLACK COTTONWOOD TEMPORARILY FLOODED FOREST

UPDATED 90% PLANS DEC 2012

NO.	DATE	DESCRIPTION	APPD.

REVISION

XREF(S) USED:
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PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
FINAL MAP DATA
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OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
REVEGETATION PLAN

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. L01
19 OF 27

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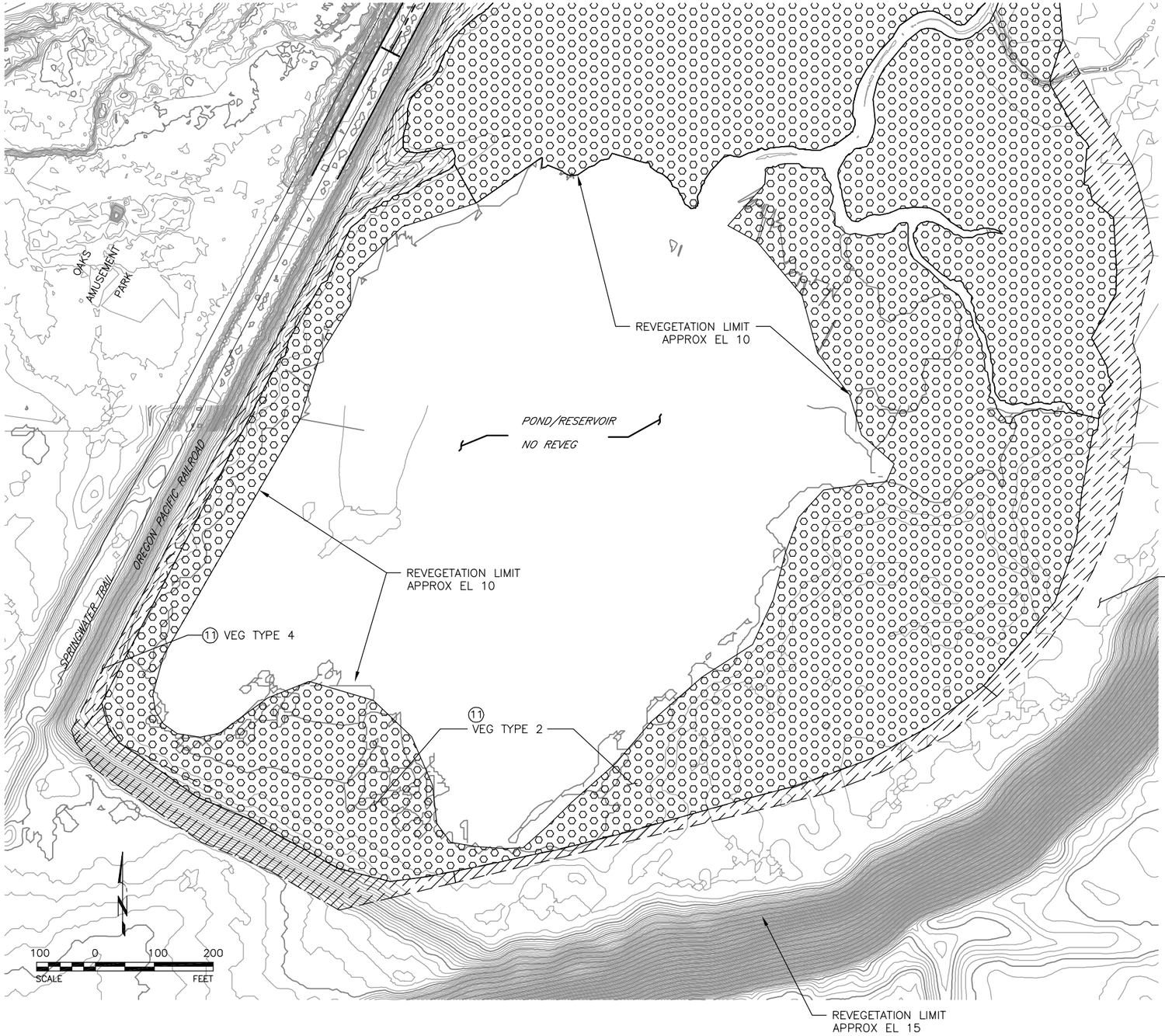

PLAN 1 –

CONSTRUCTION NOTES

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UPDATED 90%
PLANS DEC 2012

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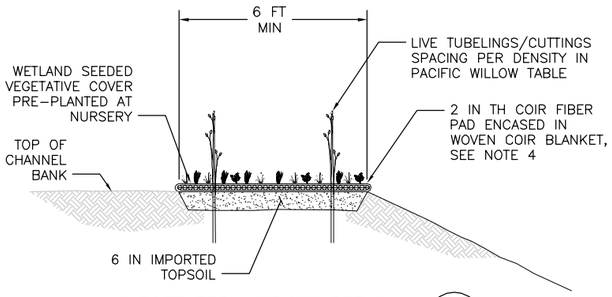
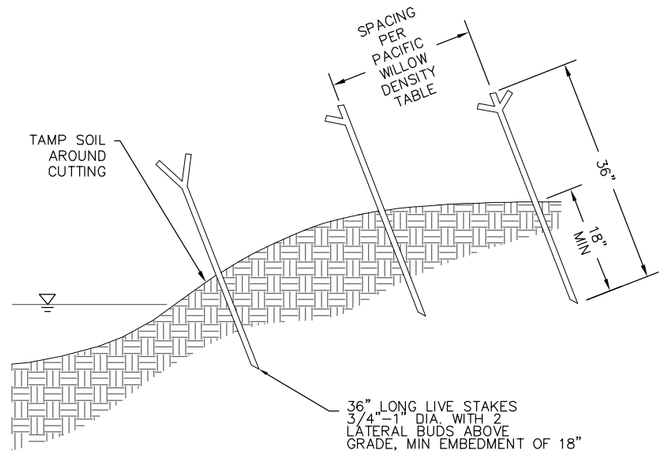
TIDAL RESTORATION PROJECT
REVEGETATION PLAN

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. L02
20 OF 27



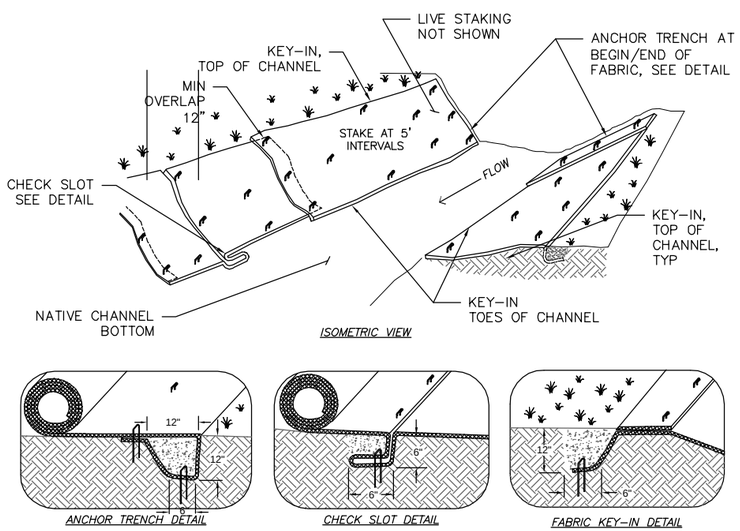
VEGETATED MARGIN DETAIL (1 / –)
NTS



WILLOW STAKE DETAIL (2 / –)
NTS

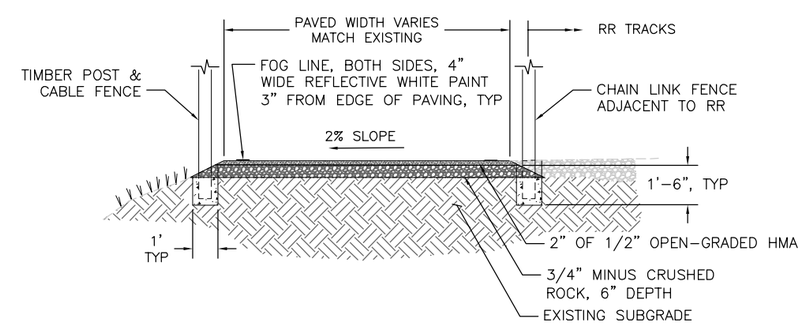
NOTES:

1. AREAS TO BE REVEGETATED ARE SHOWN ON SHT L01.
2. PACIFIC WILLOW TEMPORARY FLOODED WOODLAND AREAS TO PLANTED AS TUBLINGS/CUTTINGS. PLACE LIVE TUBLINGS/CUTTINGS PER THE DENSITIES SHOWN IN THE TABLE.
3. VEGETATED MARGIN TO CONSIST OF TOPSOIL, TUBLINGS/CUTTINGS, AND PREPLANTED COIR PAD/BLANKET. COIR FIBER PAD AND BLANKET SHALL HAVE HIGH WATER HOLDING CAPACITY AND BE SUITABLE FOR GERMINATING SEEDS. ALL MATERIALS SHALL BE BIODEGRADABLE (NON-SYTHETIC AND NON-HAZARDOUS). COIR PAD/BLANKET SHALL BE PRE-GROWN WITH THE WETLAND SEED MIX TO A MINIMUM HEIGHT OF 2 INCHES, PRIOR TO TRANSPORT TO THE PROJECT SITE. PAD AND BLANKET MAY BE ROLANKA BIO-D PILLOW (BIO-D MAT 40) OR EQUIVALENT.
4. VEGETATED MARGIN TO BE LOCATED PER SHTS C02 AND C03:
   LEFT BANK (LOOKING D/S) – STA 21+41 TO 22+07, STA 24+44 TO 27+00
   RIGHT BANK (LOOKING D/S) – STA 23+00 TO 27+00.
5. COIR FABRIC IS TO BE PLACED ON TOP OF THE HYDROSEEDING ALONG ALL REGRADED CHANNEL SLOPES: FROM TOE TO TOP OF CHANNEL; OR FROM TOP OF ROCK TO TOP OF CHANNEL (AT RIFFLE LOCATIONS). FABRIC SHALL BE NATURAL, BIODEGRADABLE WOVEN COIR BRISTLE, MIN WEIGHT OF 980 G/M2, ROLANKA BIOD-MAT 90 OR EQUIVALENT. STAKING FREQUENCY SHALL BE THE GREATER OF THE FREQUENCY SHOWN AND THE MANUFACTURERS RECOMMENDATIONS FOR IN-CHANNEL APPLICATIONS. CHECK SLOT FREQUENCY SHALL BE PER MANUFACTURERS RECOMMENDATIONS. ALL STAKES SHALL BE OF BIODEGRADABLE MATERIALS.



COIR FABRIC DETAILS (3 / C09)
NTS

SCIENTIFIC NAME	COMMON NAME	QUANTITY
WETLAND SEED MIX		
ALOPECURIS GENICULATUS	WATER FOXTAIL	4 LBS/ACRE
AGROSTIS EXARATA	SPIKE BENT GRASS	3 LBS/ACRE
BECKMANIA SYZIGACHNE	AMERICAN SLOUGH GRASS	2 LBS/ACRE
DESCHAMPSIA ELONGATA	SLENDER HAIR GRASS	4 LBS/ACRE
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	5 LBS/ACRE
	TOTAL	18 LBS/ACRE
RIPARIAN SEED MIX		
AGROSTIS EXARATA	SPIKE BENT GRASS	3 LBS/ACRE
DESCHAMPSIA ELONGATA	SLENDER HAIR GRASS	4 LBS/ACRE
ELYMUS GLAUCUS	BLUE WILDRYE	5 LBS/ACRE
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	5 LBS/ACRE
	TOTAL	17 LBS/ACRE
PACIFIC WILLOW TEMP FLOODED WOODLANDS PLANT LIST – PLANTED AS TUBLINGS / CUTTINGS		
SALIX LUCIDA VAR. LASIANDRA	PACIFIC WILLOW	4,000/ACRE 2.9' SPACING
SALIX FLUVIATILIS	COLUMBIA RIVER WILLOW	
SALIX SITCHENSIS	SITKA WILLOW	
SALIX HOOKERIANA	PIPER'S WILLOW	
SPIREA DOUGLASII	SPIREA	
LONICERA INVOLUCRATA	TWIN BERRY	
CORNUS SERICEA	RED OSIER DOGWOOD	



TYPICAL PATH SECTION (4 / C01)
NTS

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CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
LANDSCAPING DETAILS

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. L02
20 OF 27

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GENERAL NOTES:

PROVIDE ALL MATERIALS AND PERFORM ALL WORK ACCORDING TO THE CITY OF PORTLAND, OREGON STANDARD CONSTRUCTION SPECIFICATIONS, 2007.

STRUCTURE IS DESIGNED IN ACCORDANCE TO THE 2007 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH 2009 INTERIMS AND APRIL 2009 ODOT BRIDGE DESIGN AND DRAFTING MANUAL.

STRUCTURE IS DESIGNED WITH AN ALLOWANCE OF 25 PSF FOR FUTURE WEARING SURFACE AND ALL OF THE FOLLOWING LIVE LOADS ACCORDING TO THE 2007 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS:

SERVICE AND STRENGTH - 1 LIMIT STATES:
HL-93:DESIGN TRUCK (OR TRUCKS PER LRFD 3.6.1.3) OR THE DESIGN TANDEMS AND THE DESIGN LANE LOAD.

STRENGTH - 2 LIMIT STATES:
ODOT TYPE OR-STP-5BW PERMIT TRUCK
ODOT TYPE OR-STP-4E PERMIT TRUCK
AREMA COOPER E-80 RAIL LOADING

ALL ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM.

SEE FOUNDATION PLAN FOR FOUNDATION DESIGN NOTES.

PROVIDE ALL OTHER REINFORCING STEEL ACCORDING TO ASTM SPECIFICATION A706, OR AASHTO 31 (ASTM A615) GRADE 60. PROVIDE FIELD BENT STIRRUPS ACCORDING TO ASTM SPECIFICATION A706. USE THE FOLLOWING SPLICE LENGTHS (UNLESS SHOWN OTHERWISE).

REINFORCING SPLICE LENGTHS (CLASS B) GRADE 60											
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#18
UNCOATED	1'-O"	1'-4"	1'-8"	2'-0"	2'-9"	3'-7"	4'-6"	5'-9"	7'-0"	NOT PERMITTED	

SPLICE REINFORCING STEEL AT ALTERNATE BARS, STAGGERED AT LEAST ONE SPLICE LENGTH OR AS FAR AS POSSIBLE, UNLESS SHOWN OTHERWISE.

SUPPORT THE BOTTOM MAT REINFORCING STEEL FROM THE FORMS WITH PRECAST MORTAR BLOCKS AT 24" MAXIMUM CENTERS EACH WAY. SUPPORT THE TOP MAT OF REINFORCING STEEL FROM BOTTOM MAT OF REINFORCING STEEL WITH WIRE BAR SUPPORTS AS SHOWN IN CHAPTER 3 OF THE CRIS MANUAL OF STANDARD PRACTICE (SBU, BBU, OR CHCU), PLACE WIRE BAR SUPPORTS AT 24" MAXIMUM CENTERS.

ALL REINFORCING SHALL BE UNCOATED.

ALL REINFORCING SHALL HAVE 2" OF CONCRETE COVER UNLESS SHOWN OTHERWISE. COVER SHALL BE MEASURED FROM BACK FACE OF ARCHITECTURAL TREATMENT.

ALL REINFORCING SPACING IS INTENDED TO BE MAXIMUM UNLESS OTHERWISE NOTED.

PROVIDE A 3/4" CHAMFER ON ALL EXPOSED CONCRETE EDGES UNLESS NOTED OTHERWISE.

PROVIDE CLASS 4000 - 3/4" CONCRETE STEM WALLS.

PROVIDE CLASS 3600 - 3/4" CONCRETE FOR ALL OTHER CONCRETE.

CASCADE DESIGN PROFESSIONALS, INC

90% PLANS
JUL 2010

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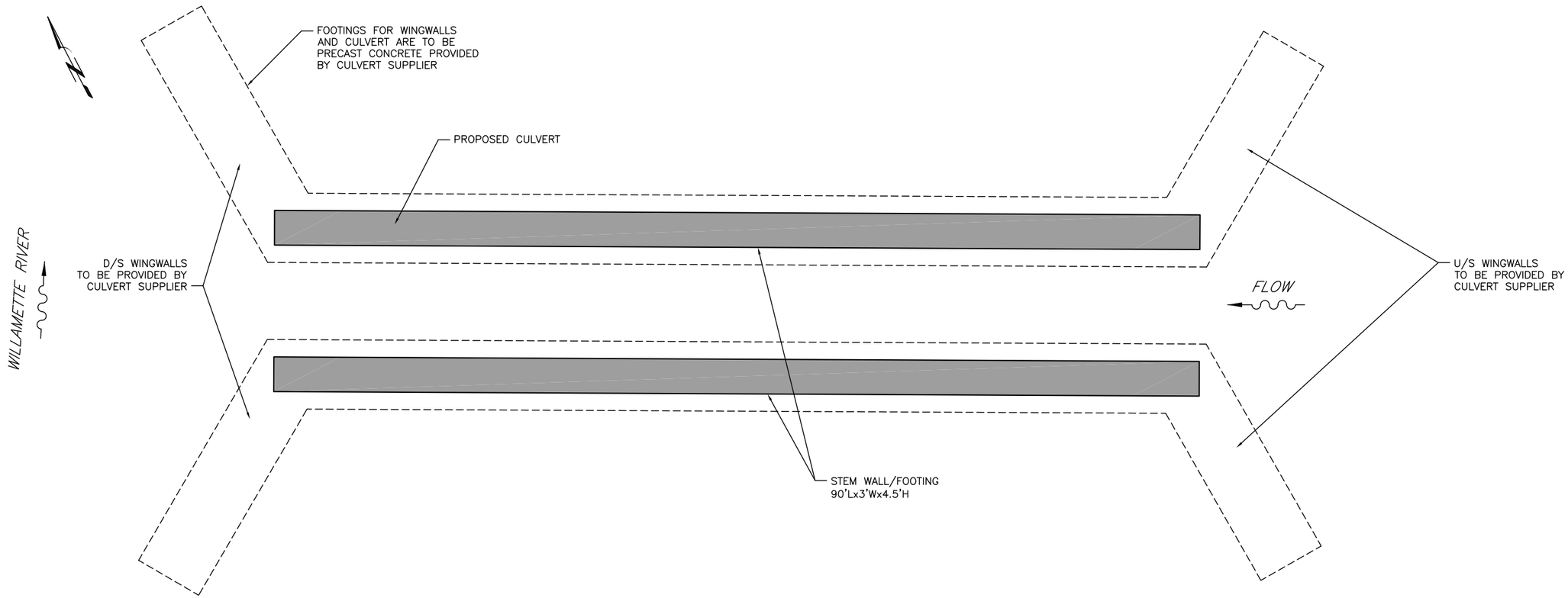
TIDAL RESTORATION PROJECT

CULVERT STRUCTURE
STRUCTURAL NOTES

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S01
21 OF 27



STEM WALL PLAN (1 / –)
SCALE: 1"=5'

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TIDAL RESTORATION PROJECT
STEM WALL PLAN

1/4 SECTION 1S1E14C
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22 OF 27

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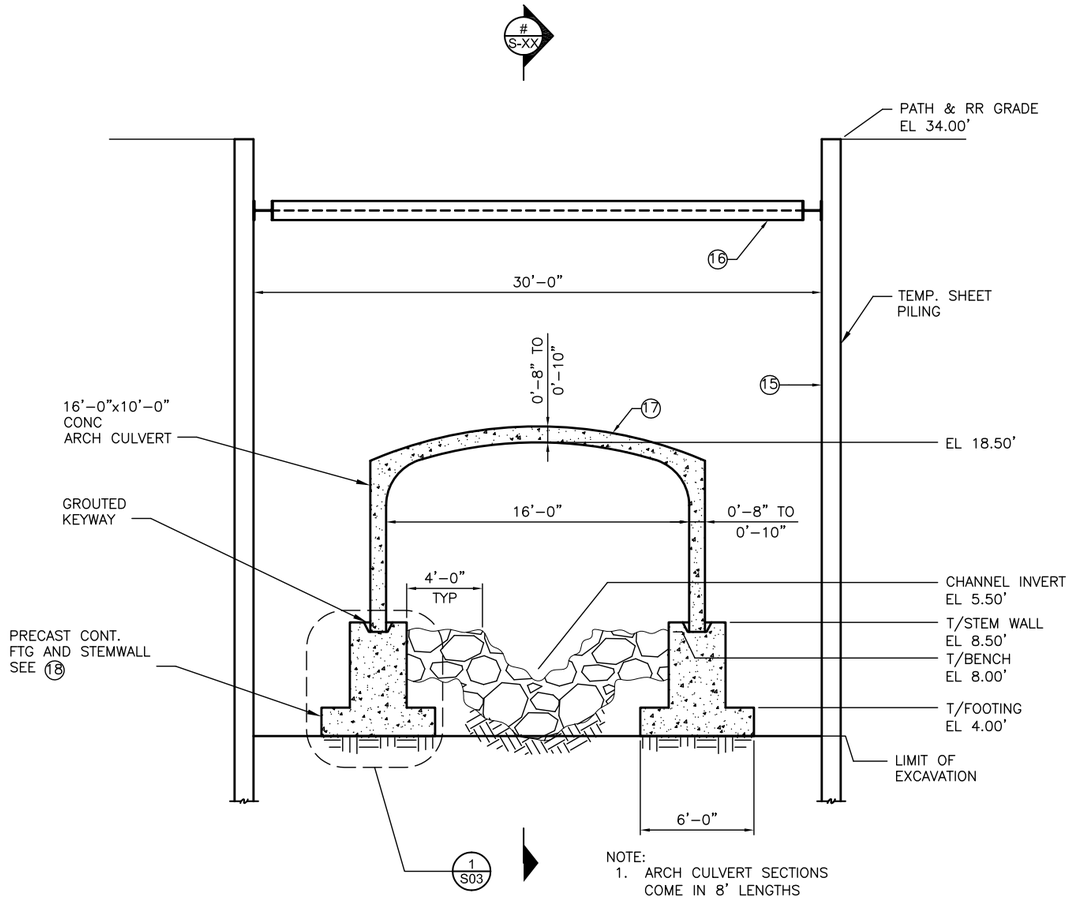
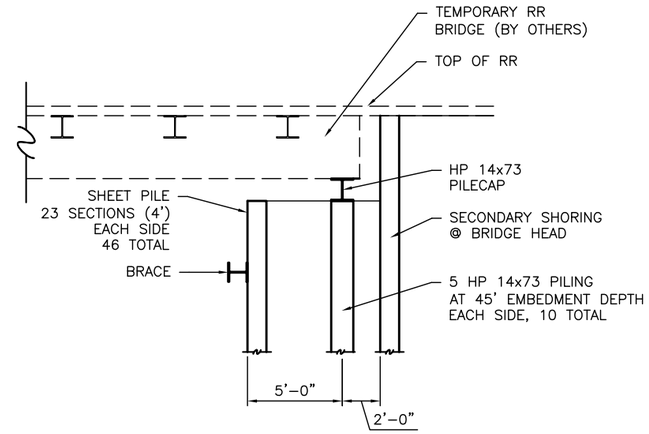


NOTE:
1. ARCH CULVERT SECTIONS COME IN 8' LENGTHS

CONSTRUCTION OPTION #1 ARCH CULVERT & TRENCH SECTION 1

1/4"=1'-0"



TRENCH SECTION AT RR BRIDGE 2

1/4"=1'-0"

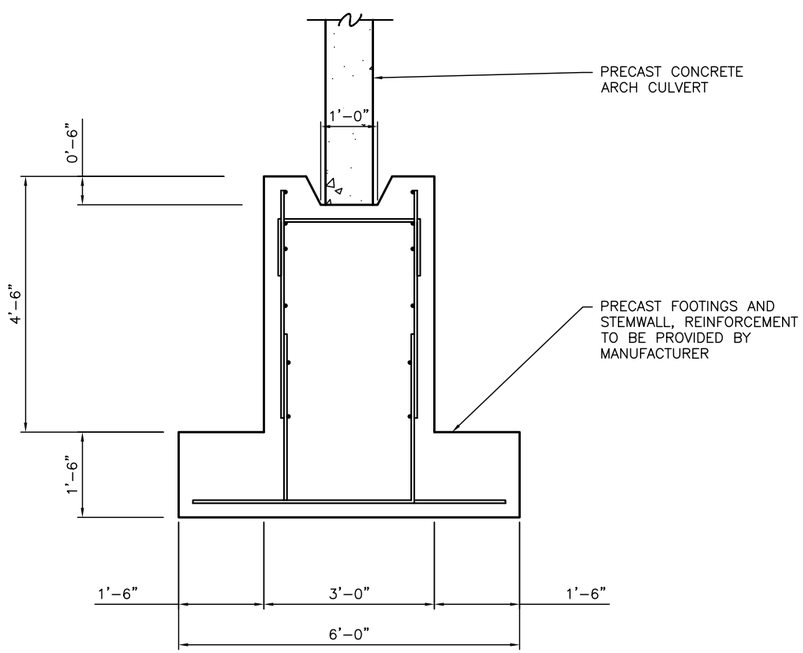
KEY NOTES:

15 SHORING SYSTEM SHOWN CONSISTS OF 'Z' INTERLOCKING SHEET PILING WITH W OR H-SECTION WALERS AND CROSS BRACING, FOR ILLUSTRATIVE PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR SHORING & BRACING DESIGN. REFER TO GEOTECH REPORT BY NW GEOTECH INC. FOR ADDITIONAL INFORMATION.

16 TRENCH BRACING – SEE KEYNOTE 1. COORDINATE LOCATIONS WITH CULVERT SECTION PLACEMENT & TEMPORARY RR BRIDGE LOCATION.

17 PRECAST CONCRETE ARCH CULVERT TO BE DESIGNED & FURNISHED BY CULVERT MANUFACTURER.

18 PRECAST CONCRETE FOOTINGS, PROVIDED BY CULVERT MANUFACTURER. LENGTHS OF INDIVIDUAL SEGMENTS TO BE COORDINATED FOR HANDLING & INSTALLATION.



FOOTING/STEMWALL DETAIL 1

3/4"=1'-0"

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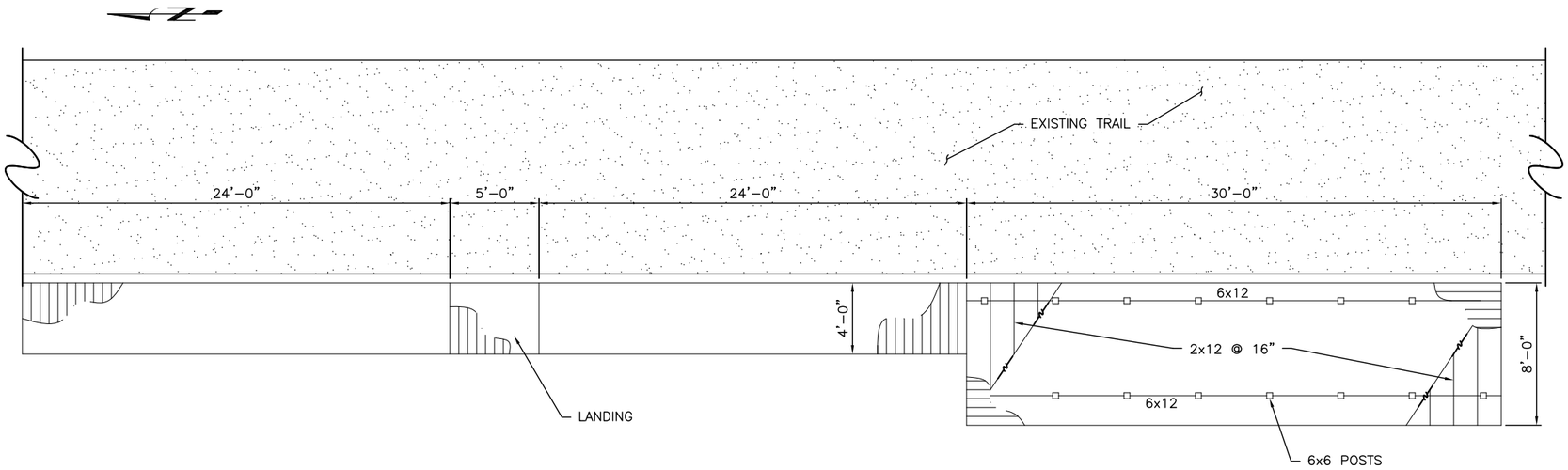
CULVERT STRUCTURE
STRUCTURAL DETAILS

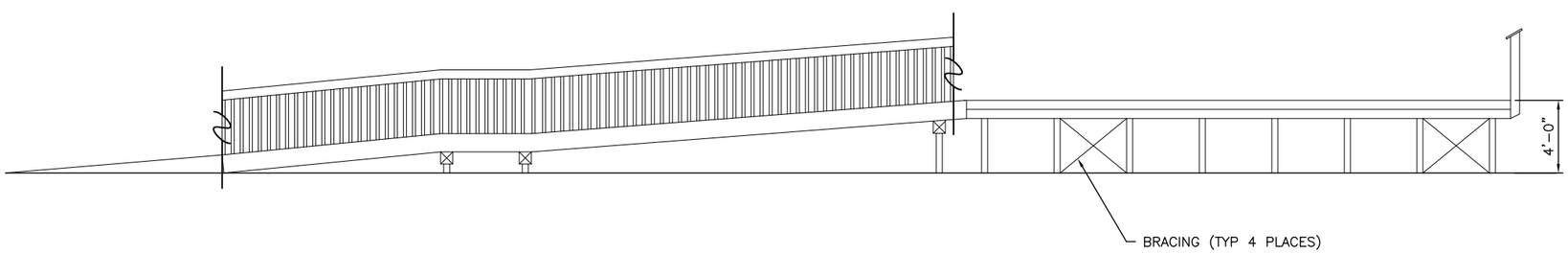
1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S03
23 OF 27

NOTES

1. HAND RAILING TO ENCOMPASS ALL PLATFORMS, RAMPS AND LANDINGS



VIEWING PLATFORM PLAN (1)
1/4"=1'-0"



VIEWING PLATFORM ELEVATION (2)
1/4"=1'-0"

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JUL 2010

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TIDAL RESTORATION PROJECT

VIEWING PLATFORM DETAILS (I)

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S04
24 OF 27

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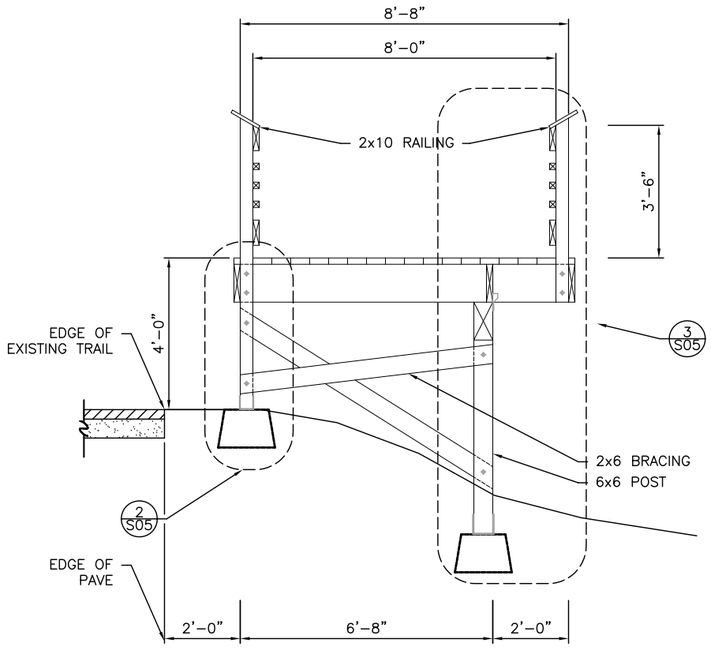
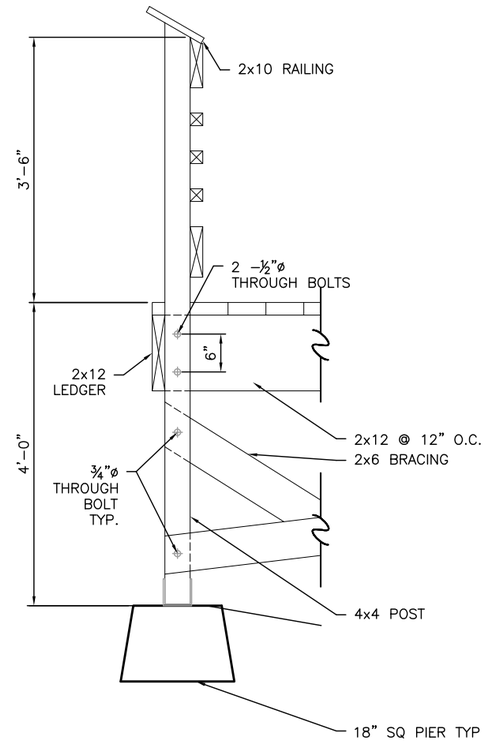
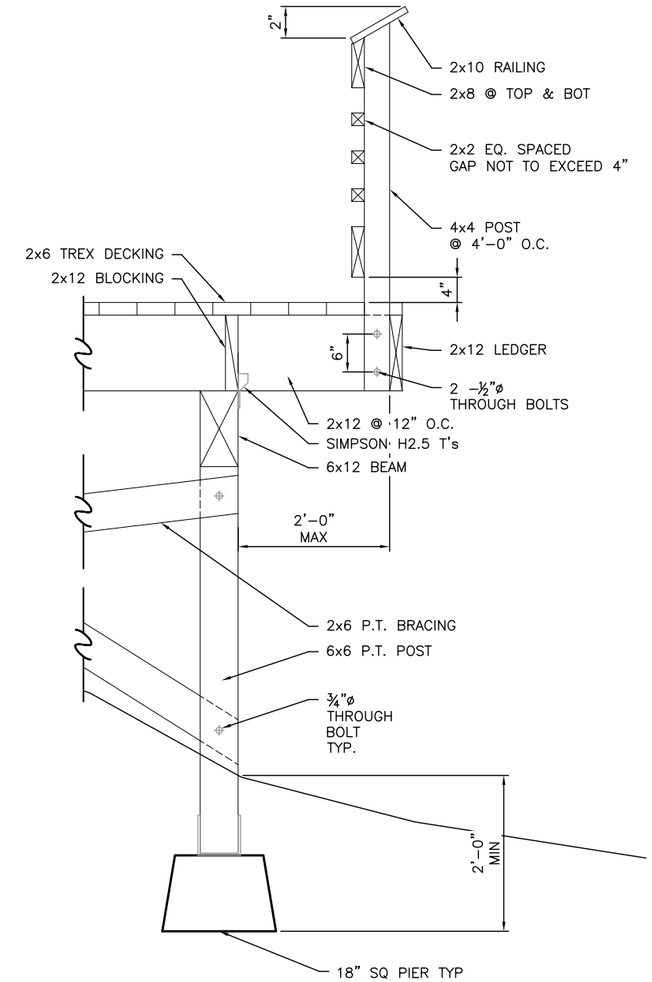


VIEWING PLATFORM SECTION 1
1/2"=1'-0"



FRAMING DETAIL 2
1"=1'-0"



FRAMING DETAIL 3
1"=1'-0"

CASCADE DESIGN
PROFESSIONALS, INC

90% PLANS
JUL 2010

NO.	DATE	DESCRIPTION	APPD.

REVISION

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PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
FINAL MAP DATA
DRAWING NAME:

DESIGNED BY	JJK	DATE APPD.	
DRAWN BY	JJK	PROJECT MGR.	SSB
CHECKED BY	PEK	CONST. MGR.	MWH
DESIGN MGR.	XXX	SUP. ENG.	LS

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
DAN SALTZMAN
COMMISSIONER
PUBLIC AFFAIRS
WILLIAM F. RYAN, P.E.
CHIEF ENGINEER

TETRA TECH, INC.
1020 Taylor Street, Suite 530
Portland, OR 97205
Phone (503) 223-5388
Fax (503) 228-8631

CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT
VIEWING PLATFORM DETAILS (II)

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S05
25 OF 27

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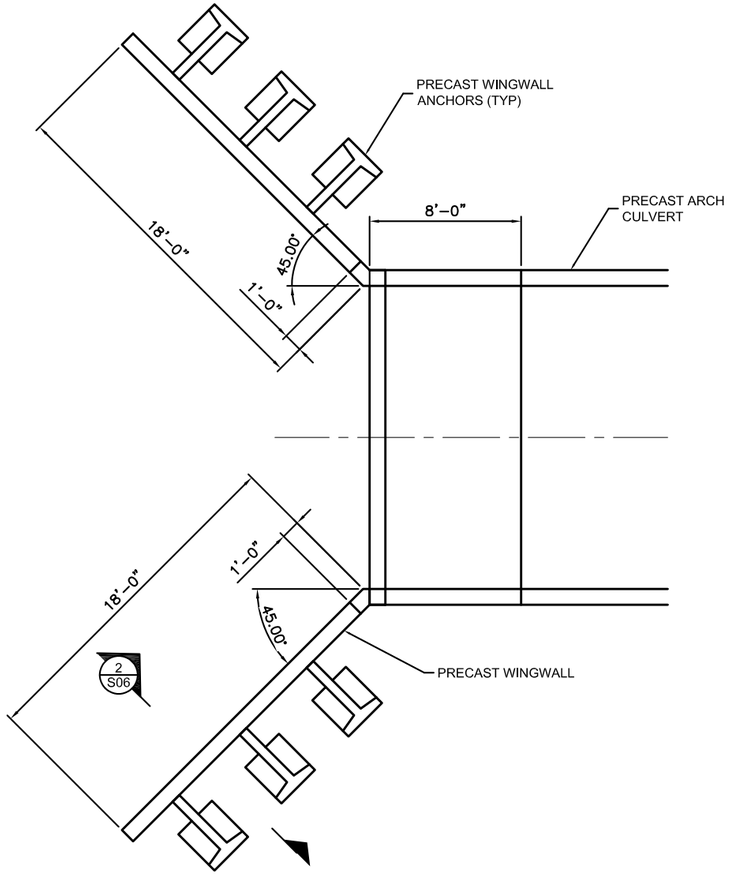
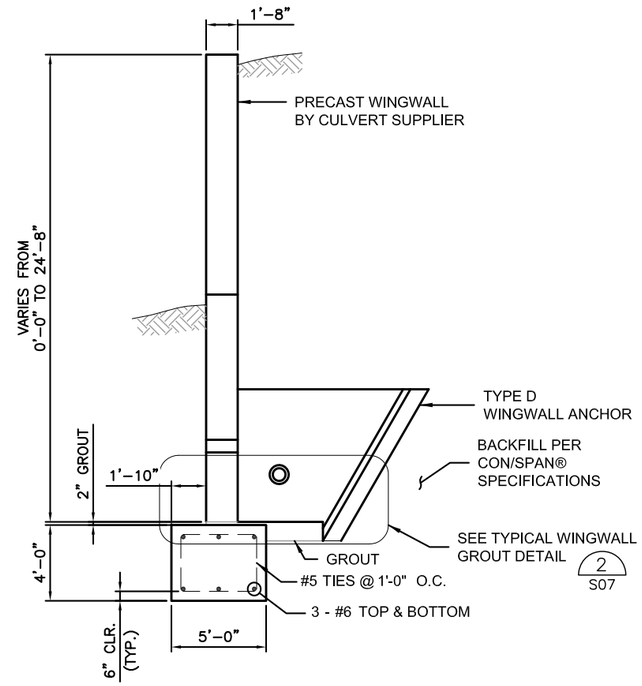
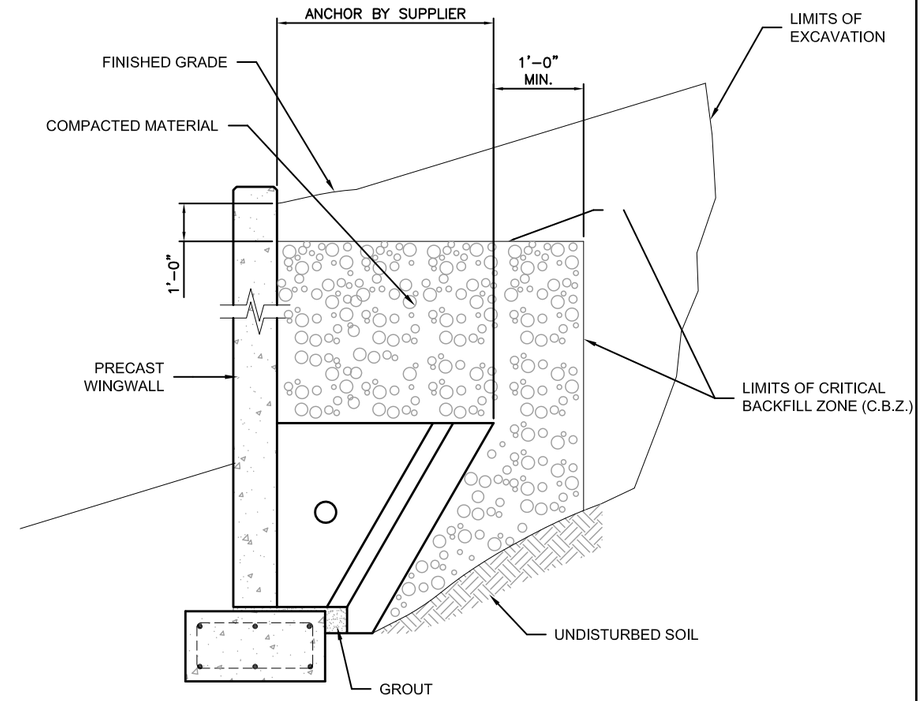


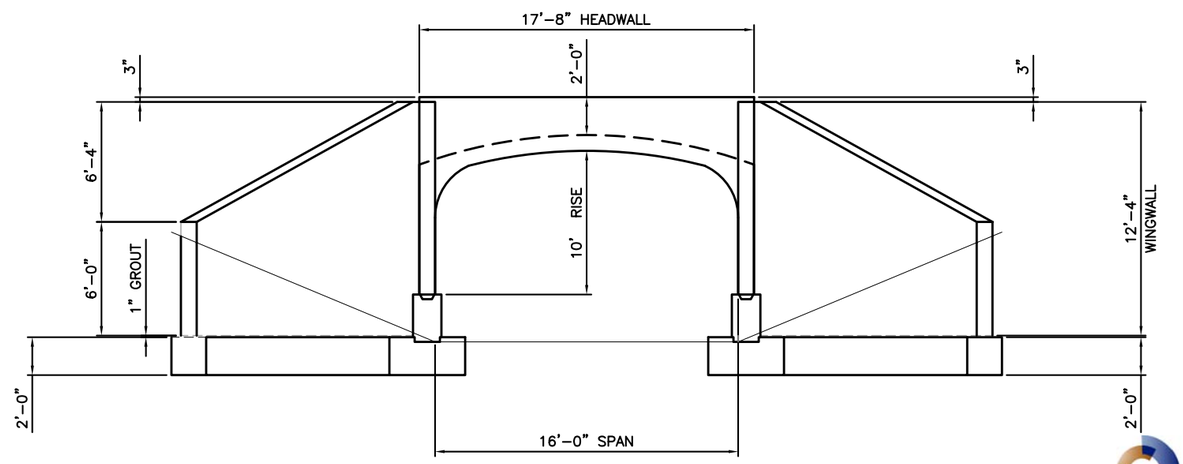
WING WALL/HEADWALL PLAN (1)
1/4"=1'–0"



WING WALL SECTION (2)
1/4"=1'–0"



WALL BACKFILL REQUIREMENTS (3)
1/4"=1'–0"



WINGWALL/HEADWALL ELEVATION (4)
1/4"=1'–0"

NOTES:

1. PRECAST WINGWALL SYSTEM TO BE SUPPLIED BY ARCH CULVERT SUPPLIER AND SHALL INCLUDE ALL COMPONENTS FOR A COMPLETE WALL. SYSTEM SHOWN IS BASED ON CON/SPAN BRIDGE SYSTEMS DESIGN, A DIVISION OF CONTECH CONSTRUCTION PRODUCTS INC.
2. DESIGN OF WALL BY ARCH CULVERT SUPPLIER SHALL FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATION, BY NW GEOTECH, DATED 02/11/2010.
3. CRITICAL BACKFILL ZONE (C.B.Z.) REQUIRES FILL MATERIAL w/ SPECIFICATIONS & COMPACTING PROCEDURES EQUAL TO THAT FOR NORMAL ROAD EMBANKMENTS)

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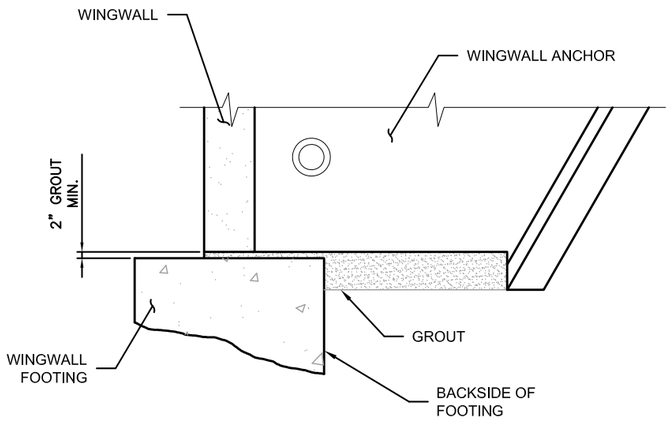
CITY OF PORTLAND
OAKS BOTTOM WILDLIFE REFUGE
TIDAL RESTORATION PROJECT

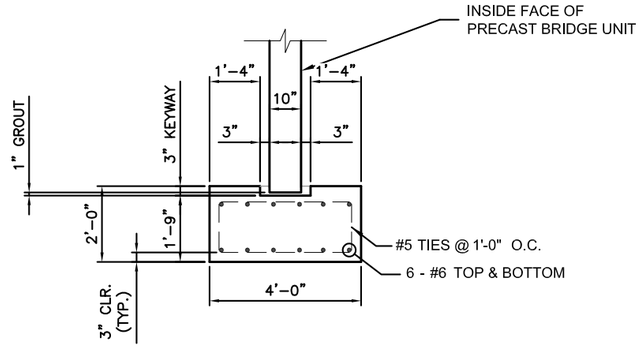
CULVERT DETAILS I

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S06
26 OF 27



NOTES:
- MINIMUM 1" GROUT UNDER WINGWALL LEG & ANCHOR STEM.
- AREA BETWEEN WINGWALL FOOTING AND WINGWALL ANCHOR SHALL BE GROUTED SOLID BEFORE BACKFILL.

TYPICAL WINGWALL GROUT DETAIL (1)
1/2"=1'-0"



GROUT DETAIL (2)
1/2"=1'-0"

CASCADE DESIGN PROFESSIONALS, INC.

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TIDAL RESTORATION PROJECT

CULVERT DETAILS II

1/4 SECTION 1S1E14C
JOB NO. E08576
SHEET NO. S07
27 OF 27

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