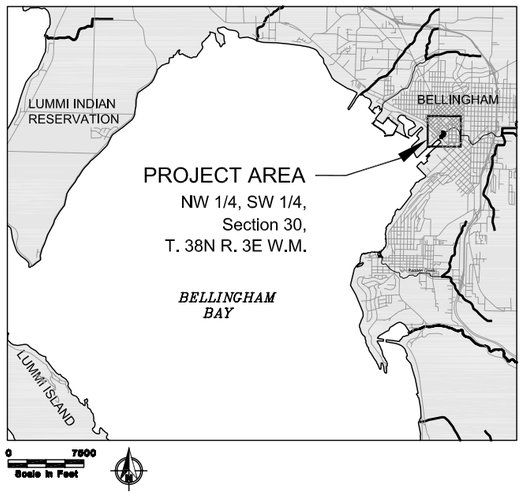
DRAFT FINAL 100% DESIGN SUBMITTAL

HOLLY STREET LANDFILL / WHATCOM CREEK ESTUARY RESTORATION

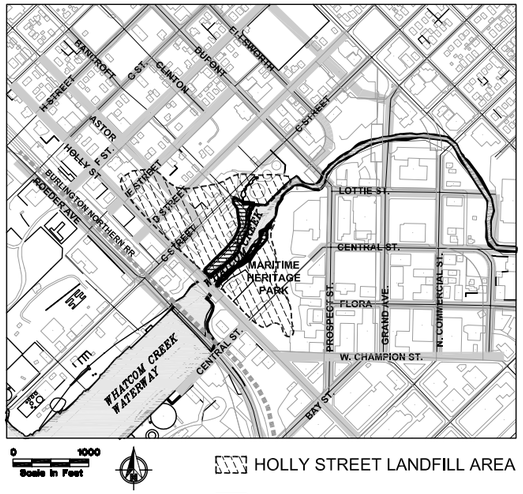
CITY OF BELLINGHAM OFFICE OF NEIGHBORHOODS & COMMUNITY DEVELOPMENT

WORK SUPPORTED BY:
U.S. ENVIRONMENTAL PROTECTION AGENCY: BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT AND SUPPLEMENTAL FUNDING GRANTS.
WASHINGTON STATE DEPARTMENT OF ECOLOGY: DEVELOPED UNDER THE HOLLY STREET LANDFILL SITE CONSENT DECREE.

PROJECT VICINITY



PROJECT AREA



LEGAL DESCRIPTION

(TO BE COMPLETED)

DRAWING INDEX

ANCHOR ENVIRONMENTAL, L.L.C.
1423 3rd Avenue Suite 300
Seattle, WA 98101 (206) 287-9130

COVER SHEET

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

SHEET G-1

LEGEND

- PROPOSED INDEX CONTOUR IN FEET (10)
- PROPOSED INTERMEDIATE CONTOUR IN FEET (9)
- EXISTING CONTOUR IN FEET (5)
- TEMPORARY EXCAVATION DEPTH
- LIMIT OF GRADING
- EXISTING CHAIN LINK FENCE
- RELOCATED CHAIN LINK FENCE
- EXISTING MEAN HIGHER HIGH WATER (MHHW)
- PROPOSED MEAN HIGHER HIGH WATER (MHHW)
- SAW CUT PAVEMENT
- TREES TO BE PROTECTED
- FILTER FABRIC
- ACCESS ROUTE
- WATER FLOW DIRECTION
- WATER COVERAGE AT MEAN HIGHER HIGH WATER (MHHW)
- AREA OF EXTRA SILTY SAND CAP THICKNESS
- CLEARING LIMITS
- REMOVE SURFACE DEBRIS (CONC. RUBBLE, ETC.)
- PROTECT EXISTING VEGETATION
- REMOVE PAVEMENT
- BOARDWALK - SEE SHEET S-1
- EXISTING CRUSHED ROCK OR ASPHALT PATH
- TOPSOIL TYPE A
- TOPSOIL TYPE B
- SURFICIAL GRAVEL
- CONCRETE PAVING
- POTENTIAL STOCKPILING AND STAGING AREA
- EXTENT OF COIR EROSION CONTROL FABRIC
- LIMITS OF GOOSE EXCLOSURE

- ANCHORED LARGE WOODY DEBRIS
- FORMER COLONY DOCK PILES
- 17.5 — 2% PATH — 6:1 SLOPE — SLOPE INCLINATION AND DIRECTION
- AA' / 0 — CROSS SECTION LOCATION AND DESIGNATION AND HORIZONTAL STATIONING ORIGIN POINT
- F.S. 16 — FINISH SURFACE ELEVATION (PROPOSED)
- T.C. 16 — TOP OF CURB ELEVATION (PROPOSED)
- F.G. 16 — FINISH GRADE (PROPOSED)
- AMW-3 — APPROXIMATE LOCATION OF MONITORING WELL
- A — COORDINATE POINT LOCATION AND DESIGNATION
- UNANCHORED DRIFTWOOD
- EXPANSION JOINT (E.J.)
- TOOL JOINT (T.J.)
- EXISTING TREES
- EXISTING WOOD PILE
- X — CUT OFF WOOD BULKHEAD PILES AS SPECIFIED

A (C-5 | C-6)
- DETAIL DESIGNATION
- SHEET SHOWING DETAIL
- SHEET SHOWING CALL-OUT

GENERAL NOTES:

1. SOURCE OF SURVEY: PACIFIC SURVEY AND ENGINEERING, 1812 CORNWALL, BELLINGHAM, WA, 98225, (360) 671-7387, APRIL 24, 2002.

HORIZONTAL DATUM: CITY OF BELLINGHAM COMPREHENSIVE MAPPING PROGRAM OF 1973 STATE PLANE NAD27 NORTH

VERTICAL DATUM: NOAA/NOS MLLW TIDAL DATUM

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CITY OF BELLINGHAM
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& COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

LEGEND AND NOTE SHEET

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

SHEET G-2

DRAFT FINAL 100% DESIGN SUBMITTAL
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Datum Conversion Information

Elevations of tidal datums referred to Mean Lower Low Water (MLLW), in FEET:

HIGHEST OBSERVED TIDAL WATER LEVEL (01/05/1975)	= 10.52
MEAN HIGHER HIGH WATER (MHHW)	= 8.46
MEAN HIGH WATER (MHW)	= 7.70
MEAN TIDE LEVEL (MTL)	= 5.09
* NATIONAL GEODETIC VERTICAL DATUM-1929 (NGVD)	= 4.51
MEAN LOW WATER (MLW)	= 2.48
MEAN LOWER LOW WATER (MLLW)	= 0.00
LOWEST OBSERVED WATER LEVEL (12/30/1974)	= -3.96

* NGVD reference based on adjustment of 3/14/78 and NOS levels of 1975.

◀ Project Benchmark

Plotted: Feb 25, 2004 1:27pm cdavidson K:\Jobs\990062-Holly Street\99006204\100 PERCENT\HOL-99006204-55R1.dwg SHEET G-3 100 %

MICHAEL P. WHELAN
36107
EXPIRES 08/07/04

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CITY OF BELLINGHAM
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HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

EXISTING CONDITIONS

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

SHEET G-3

Construction Notes:

1) Fencing: The existing chain link fence surrounding the Re-Store building storage yard shall be relocated along the perimeter of the Northern Landfill Unit project limits, as shown. The contractor shall establish a temporary fence separating the staging area from the Re-Store yard. Surplus fencing and gate from the existing relocated fence may be used for the temporary fencing. The temporary fence shall be parallel to and no closer than 50 feet from the existing building edge.

2) Salvage large woody debris and tree trunks from all clearing areas, for potential re-use.

0 20 40
Scale in Feet

PROTECT EXISTING FENCE ALONG "C" STREET

PROTECT EXISTING TREE

SALVAGE VIEWPOINT BOULDERS AND LOGS

FISH HATCHERY

BANCROFT ST R.O.W.

SAW CUT PAVEMENT

RELOCATED FENCE (PROVIDE GATE(S) FOR ACCESS AS NEEDED)

RELOCATE EXISTING FENCE

RE-STORE BUILDING

SAW CUT PAVEMENT

"B" ST. R.O.W.

FORMER COLONY DOCK PILES

WHATCOM CREEK

REMOVE SURFACE DEBRIS

HOLLY STREET BRIDGE

REMOVE SURFACE DEBRIS

EXISTING STORM DRAIN TO BE CUT OFF

REMOVE EXPOSED LENGTH OF WOOD BULKHEAD PILES

PROTECT 24" CONCRETE PIPE

PROTECT EXISTING VEGETATION

SALVAGE BENCH

PROTECT EXISTING VEGETATION

PROTECT EXISTING PATHS AND VEGETATION OUTSIDE CONSTRUCTION LIMITS

MARITIME HERITAGE PARK

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CITY OF BELLINGHAM
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HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

DEMOLITION PLAN

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

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Plotted: Feb 25, 2004 11:51am cdavidson K:\Jobs\1990062-Holly Street\1990062041100 PERCENT\HOL-99006204-50R1.dwg SHEET D-1 100 %

Construction Notes:

1) All earthwork shall be limited to periods when water levels are at least one foot below the elevation of the construction activity. In some cases, spalls and gravel placement may be allowed through water, if done below elevation +3 feet MLLW, and subject to requirements in Section 02300 of the specifications.

2) * Indicates estimated slopes, based on existing base maps and cross sections. Actual constructed slopes maybe varied in response to conditions encountered in the field, subject to the engineer's approval.

0 20 40
Scale in Feet

Connect to Existing Sidewalk

CONNECT TO EXISTING GRATING OVER FISH LADDER

FISH HATCHERY

BOARDWALK DECK PAVING F.S. 14.75

RE-STORE BUILDING

PROVIDE MINIMUM 5-FOOT OFFSET BETWEEN EDGE OF RE-STORE BUILDING AND LIMIT OF EXCAVATION

NEW BOARDWALK

BENCHES

ANCHORED LARGE WOODY DEBRIS BARRIER SEE DETAIL E C-1 C-5

FLAT SLOPE

FORMER COLONY DOCK PILES

Top of Berm

GRAVEL BERM

ANCHORED LARGE WOODY DEBRIS STRUCTURE SEE DETAIL D C-1 C-5

WHATCOM CREEK

Toe of Slope 10.0

MHHW 8.5

CUT OFF EXISTING STORM DRAIN WHERE IT EXITS FINAL GRADE

HOLLY STREET BRIDGE

Toe of Fill Slope

Existing Path

SLOPE BREAK

F.S. 12

F.S. 12 DECK/CRUSHED ROCK

MARITIME HERITAGE PARK

A A' B B' C C' D D' E E' F F' G G' H H'

Feb 25, 2004 11:23am cdavidson K:\Jobs\990062-Holly Street\990062041100 PERCENT\HOL-99006204-56R1.dwg SHEET C-1

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HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

GRADING PLAN

DESIGNED PCH, MPW
DRAWN SJD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

PAGE 5 OF 19

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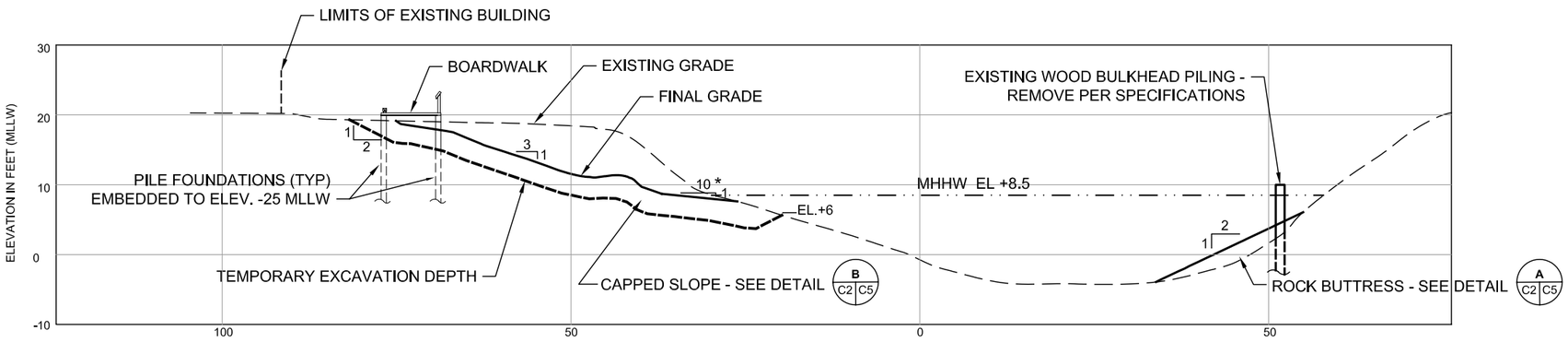
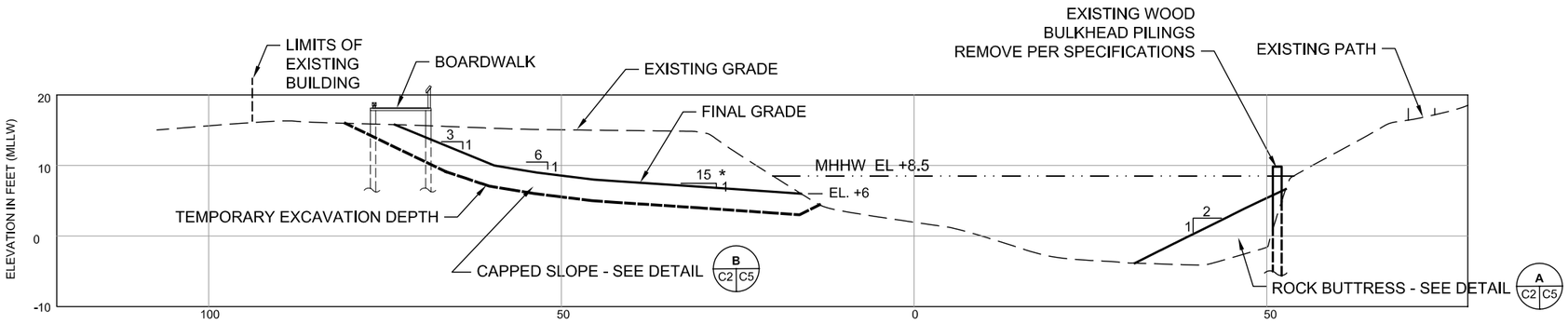
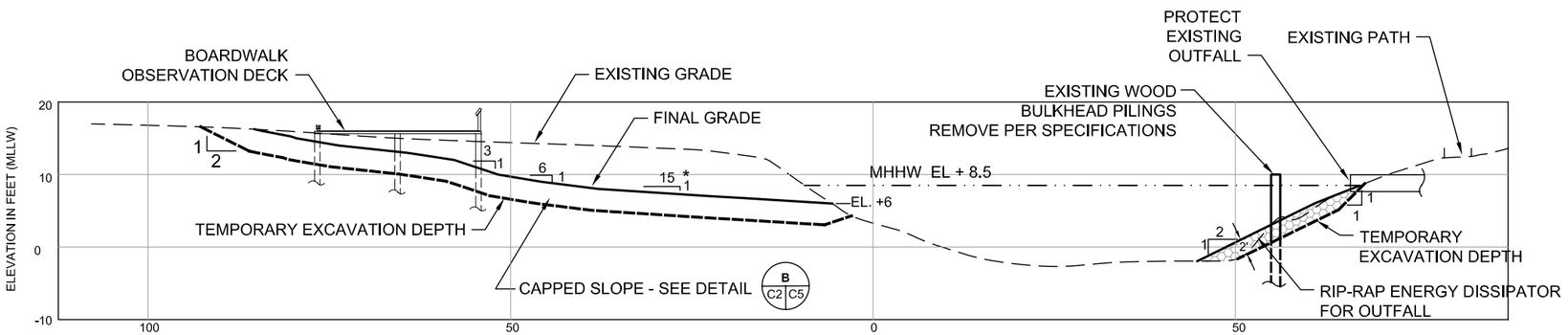
SHEET C-1



CROSS SECTION A-A'



CROSS SECTION B-B'



CROSS SECTION C-C'

0 10 20
SCALE IN FEET

NOTE:
* INDICATES ESTIMATED SLOPES, BASED ON EXISTING BASE MAPS AND CROSS-SECTIONS. ACTUAL CONSTRUCTED SLOPES MAY BE VARIED IN RESPONSE TO CONDITIONS ENCOUNTERED IN THE FIELD, SUBJECT TO THE ENGINEERS APPROVAL.

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GRADING CROSS SECTIONS

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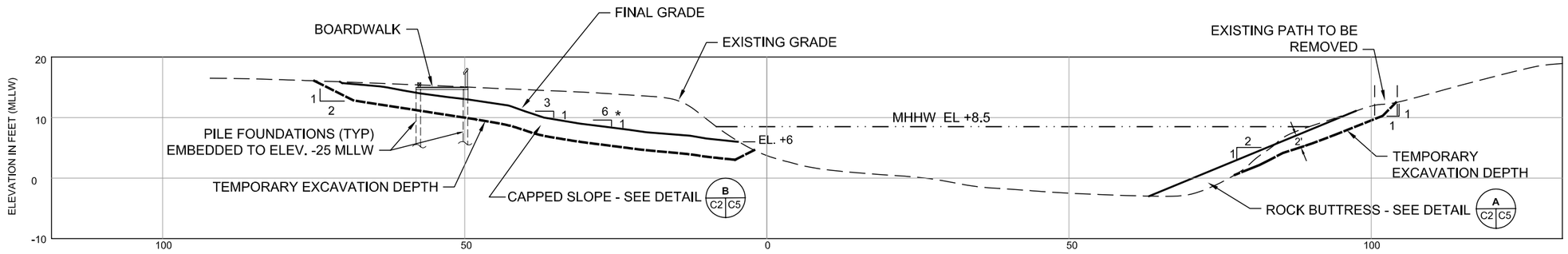
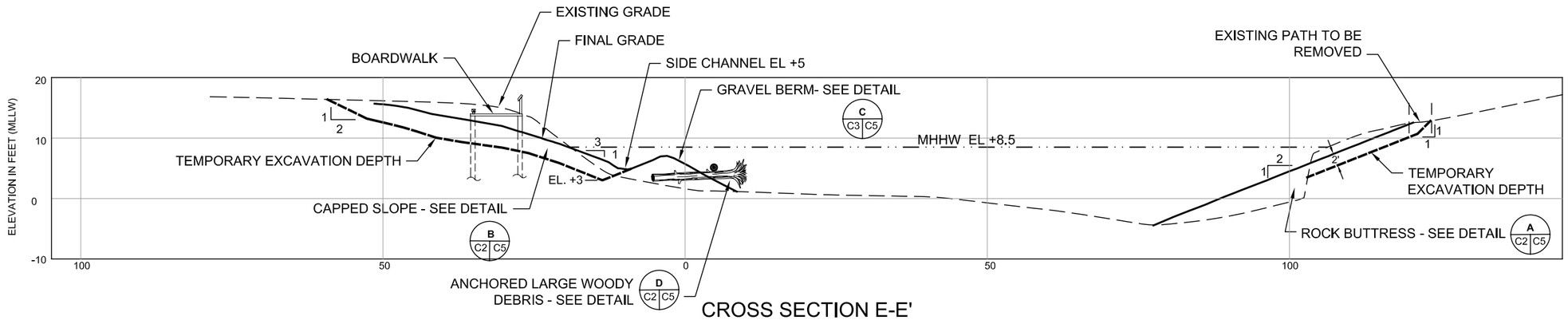
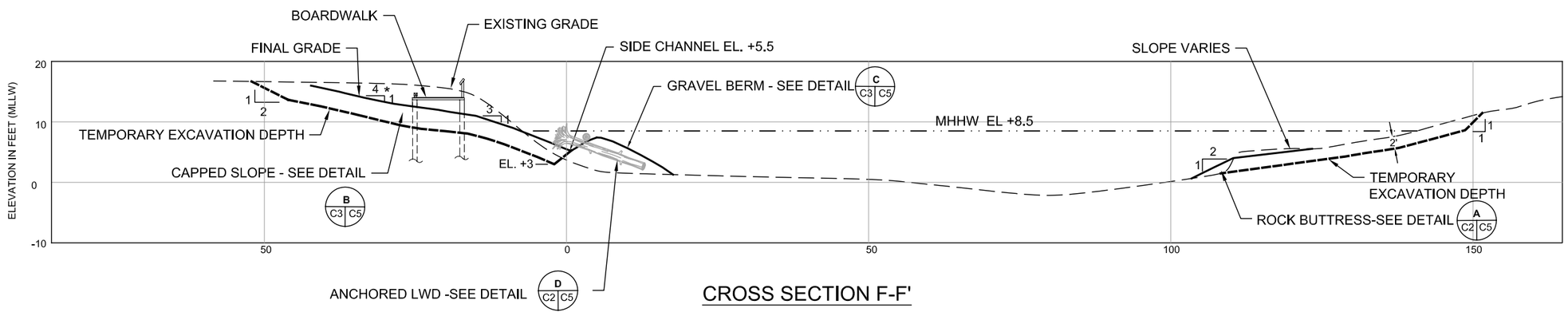
SHEET C-2



CROSS SECTION D-D'



CROSS SECTION E-E'



CROSS SECTION F-F'

0 10 20
SCALE IN FEET

NOTE:
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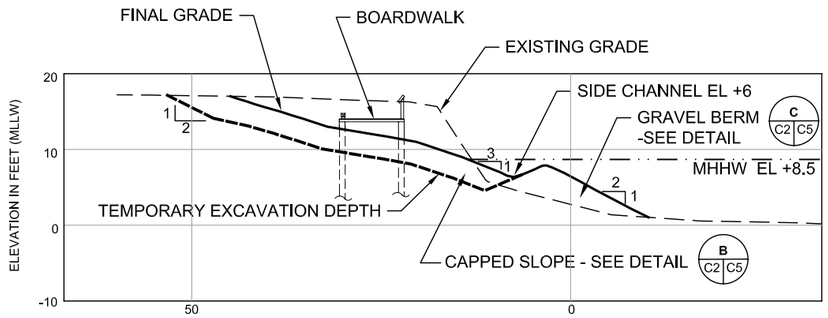
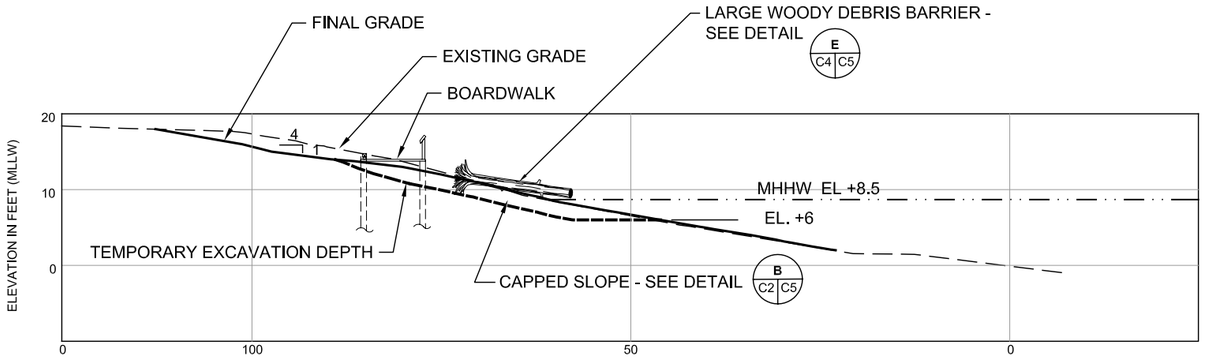


CROSS SECTION G-G'



CROSS SECTION H-H'

0 20

SCALE IN FEET

NOTE:

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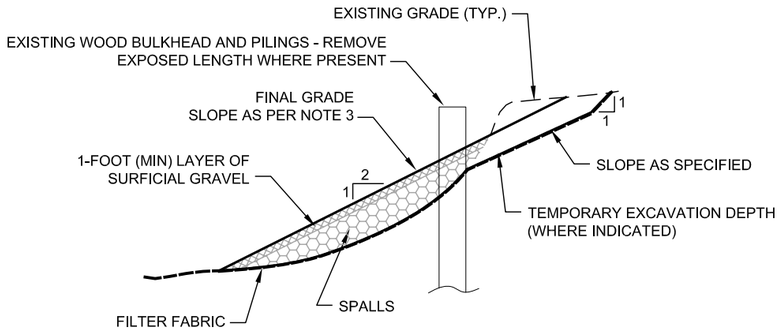
SHEET C-4

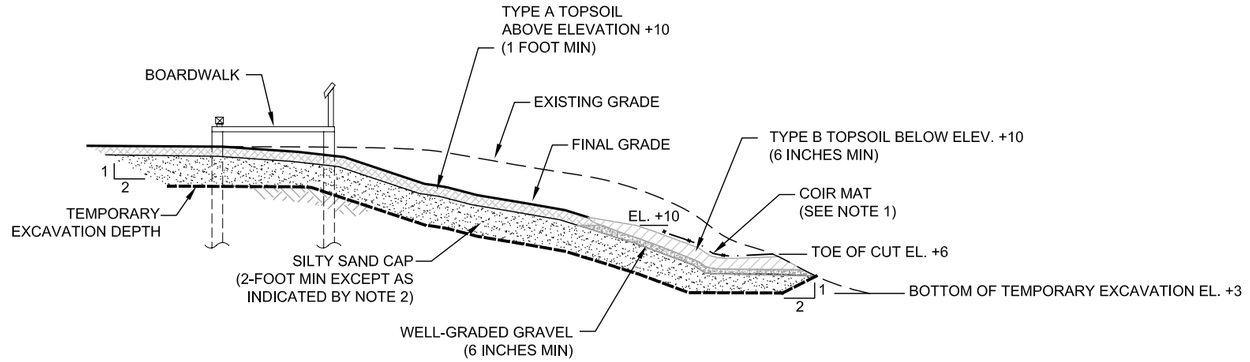


A C-2 C-5 **ROCK BUTTRESS ON SOUTH BANK**
NOT TO SCALE

NOTES:
1. EXCAVATE EXISTING BANK IN ORDER TO PROVIDE ROOM FOR AT LEAST 1-FOOT THICKNESS OF SPALLS

2. IN AREA IDENTIFIED AS RIP-RAP ENERGY DISSIPATER FOR OUTFALL, PLACE RIP-RAP INSTEAD OF 1-FOOT LAYER OF SPALLS AND SURFICAL GRAVEL.

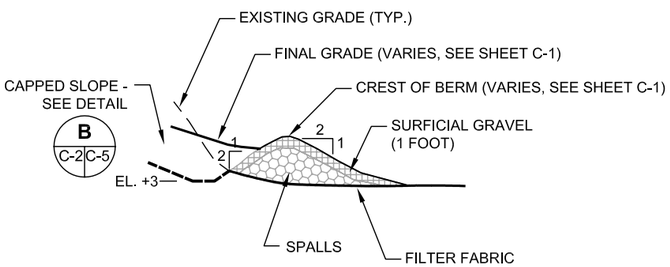
3. SLOPE ROCK BUTTRESS AT 2H:1V EXCEPT AS INDICATED ON SHEET C-1.



B C-2 C-5 **CAPPED SLOPE ON NORTH BANK (TYP.)**
NOT TO SCALE

NOTES:
1. PLACE COIR MAT OVER SURFACE OF TOPSOIL, IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS ON ALL SLOPES INCLINED AT 4H:1V OR STEEPER - SEE DETAIL 1 / L-1

2. SILTY SAND CAP SHALL BE 2 FEET THICK EXCEPT IN THE AREA INDICATED ON SHEET C-1, WHERE IT SHALL BE 2.5 FEET THICK.

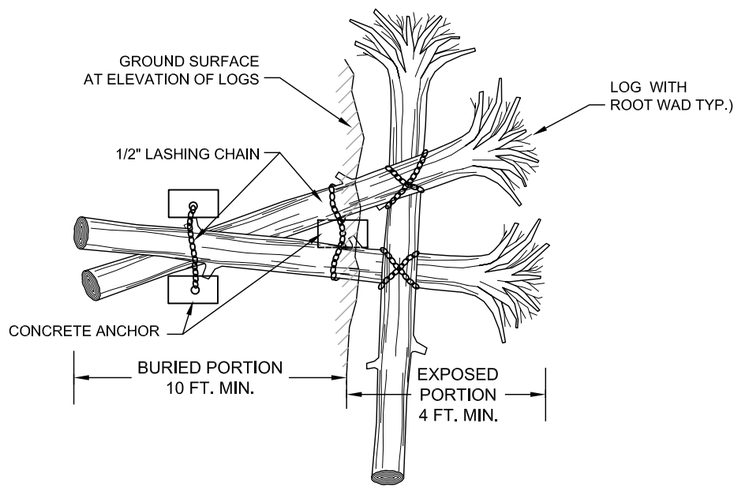


C C-2 C-5 **GRAVEL BERM ALONG NORTH BANK**
NOT TO SCALE

NOTES:
1. LAY DOWN FILTER FABRIC ON EXISTING GRADE AND CONSTRUCT GRAVEL BERM AS INDICATED.

2. EXCAVATE LANDWARD OF BERM TO ALLOW CONSTRUCTION OF CAP SECTION AT THE FINAL GRADES SPECIFIED.

3. EXCAVATE NO DEEPER THAN ELEVATION +3.

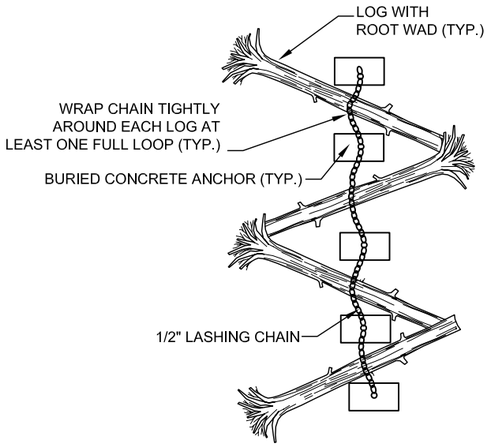


D C-1 C-5 **ANCHORED LARGE WOODY DEBRIS STRUCTURE - (TYP)**
NOT TO SCALE

NOTES:
1. WRAP CHAINS TIGHTLY AROUND EACH LOG AT LEAST ONE FULL LOOP.

2. SET CONCRETE ANCHORS AT OR BELOW ELEVATION OF ADJACENT LOGS.

3. BURIED PORTION OF LOGS SHALL BE AT LEAST 2 FEET DEEP (MIN.) AT THEIR ENDS.



E C-1 C-5 **ANCHORED LARGE WOODY DEBRIS BARRIER**
NOT TO SCALE

NOTES:
1. SET CONCRETE ANCHORS AT OR BELOW ELEVATION OF ADJACENT LOGS AND FULLY COVERED BY AT LEAST ONE FOOT OF SOIL.

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HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

GRADING DETAILS

MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

DESIGNED PCH, MPW
DRAWN SJD, CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

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SHEET C-5

TABLE OF COORDINATES
(STATE PLANE DATUM NAD 27 N)

ID	EASTING	NORTHING
A	1601960.4	643927.4
B	1601998.1	643941.0
C	1601991.1	643904.4
D	1602130.7	644072.0
E	1602144.0	644080.3
F	1602152.1	644093.3
G	1602187.5	644129.6
H	1602228.9	644122.8
I	1602236.1	644138.6
J	1602226.5	644187.8
K	1602241.5	644215.7
L	1602266.3	644203.5
M	1602264.1	644209.3
N	1602269.0	644230.1
O	1602272.2	644240.3
P	1602274.3	644278.8
Q	1602261.4	644310.7
R	1602243.0	644313.2
S	1602264.7	644324.6
T	1602244.9	644347.2
U	1602226.9	644358.7
V	1602244.1	644401.2
W	1602039.1	644246.7
X	1602032.9	644262.2
Y	1602064.6	644271.4
Z	1602172.8	644420.9

ID	EASTING	NORTHING
AA	1602139.1	643891.9
BB	1602211.4	643965.5
CC	1602289.1	644011.4
DD	1602403.4	644210.0
EE	1602247.4	644260.9
FF	1602230.5	644349.3
GG	1602220.6	644366.4

A COORDINATE POINT LOCATION AND DESIGNATION

GRADE BREAKS

0 20 40
Scale in Feet

X (45° N)
34°
RADIUS = 218'
19°
RADIUS = 182'
29°
RADIUS = 182'
CONNECT TO SIDEWALK WITH ADA CURB RAMP (6 C6|C7)
E.J. (TYP)
CONCRETE PAVING (1 C6|C7)
T.J. (TYP)
BENCH
CONCRETE GRID PAVING (2 C-6|C-7)
THICKENED CONCRETE EDGE (3 C-6|C-7)
CONCRETE SEATWALL (4 C-6|C-7)
BOARDWALK ABUTMENT SEE SHEET S-2
CONNECT TO EXISTING GRADING OVER FISH LADDER
REINSTALL SALVAGED LOGS & BOULDERS (AS DIRECTED BY ENGINEER)
FISH HATCHERY
SAND DUNE ST. R.O.W.
5' LOOKOUT BENCH (TYP OF 2)
BOARDWALK SEE SHEET S-1
SILTY SAND CAP 2.5 FEET THICK IN THIS AREA
5' LOOKOUT BENCH (TYP OF 4)
UNANCHORED DRIFTWOOD (TYP.)
CONCRETE SEATWALL (4 C6|C7)
"B" ST. R.O.W.
2' (TYP)
THICKENED CONCRETE EDGE (3 C6|C7)
CONCRETE GRID PAVING (2 C6|C7)
PROPOSED MHHW
CONCRETE CURB & GUTTER (5 C6|C7)
HOLLY STREET BRIDGE
FORMER COLONY DOCK PILES
GRAVEL BERM
BERM CENTERLINE
WHATCOM CREEK
NEW OUTFALL LOCATION
LIIMITS OF GRADING
RIP-RAP
ROCK SWALE - SEE DETAIL (7 C6|C7)
RIP-RAP ENERGY DISSIPATER FOR EXISTING OUTFALL
HANDRAIL SIMILAR TO BOARDWALK HANDRAIL - SEE SHEET S-3
5' LOOKOUT BENCH (TYP OF 2)
SOUTH OBSERVATION DECK - SEE SHEET S-1
OUTFALL
PROPOSED MHHW
EXISTING PATH
MARITIME HERITAGE PARK
HANDRAIL SIMILAR TO BOARDWALK HANDRAIL SEE SHEET S-3
EXISTING PATH

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CITY OF BELLINGHAM
OFFICE OF NEIGHBORHOODS & COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

LAYOUT AND CONSTRUCTION MATERIALS PLAN

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

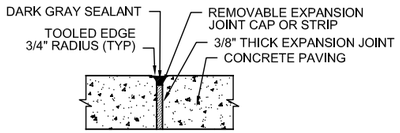
MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

PAGE 10 OF 19

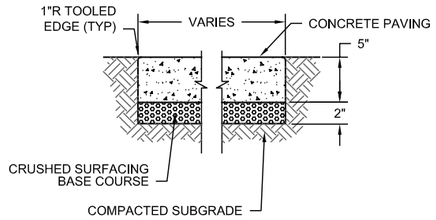
DRAFT FINAL 100% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

SHEET C-6

Plotted: Feb 25, 2004 11:24am cdavidson K:\Jobs\990062-Holly Street\990062041\100 PERCENT\HOL-990062041-59R1.dwg

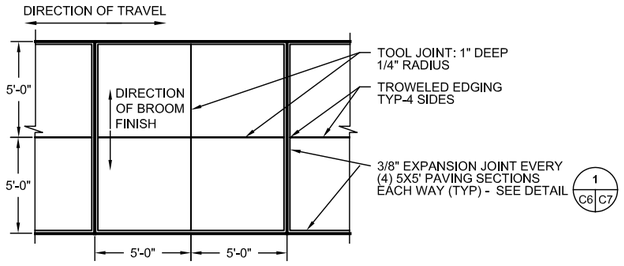


EXPANSION JOINT DETAIL

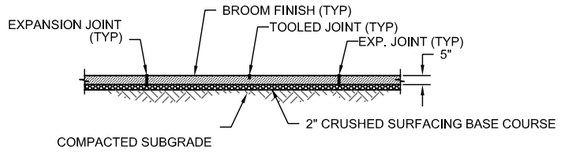


1 / C6 C7 **CONCRETE PAVING**
NOT TO SCALE

NOTE: TOOL JOINTS = 1" DEEP, 1/4" RADIUS



PLAN



TYPICAL SECTION

2 / C6 C7 **TYPICAL CONCRETE GRID PAVING**
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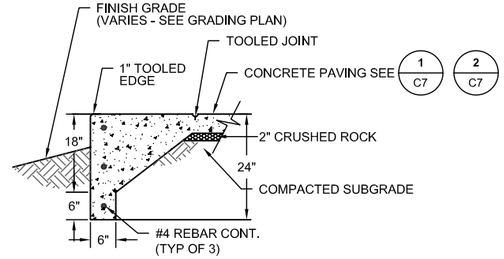

3 / C6 C7 **THICKENED CONCRETE EDGE**
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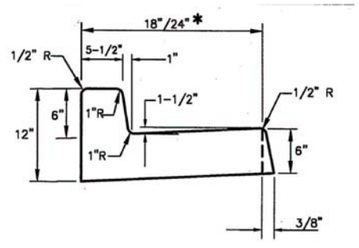
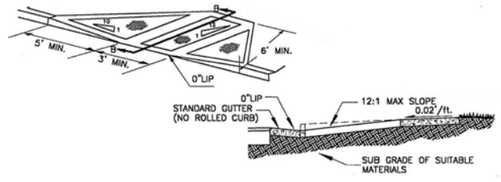


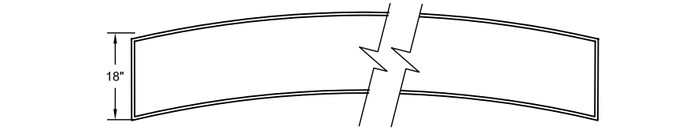
5 / C6 C7 **CONCRETE CURB AND GUTTER**
NOT TO SCALE

NOTE: DETAIL PROVIDED BY CITY OF BELLINGHAM.

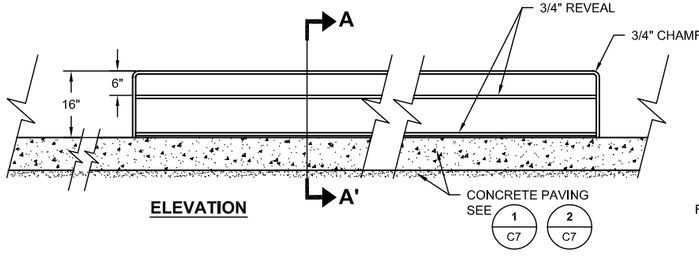


6 / C6 C7 **ADA CURB RAMP**
NOT TO SCALE

NOTE: DETAIL PROVIDED BY CITY OF BELLINGHAM.



PLAN VIEW



ELEVATION

4 / C6 C7 **CONCRETE SEATWALL**
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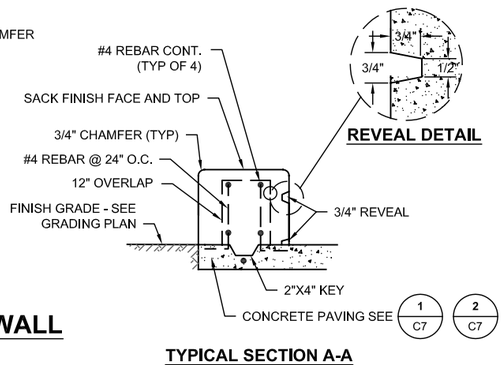
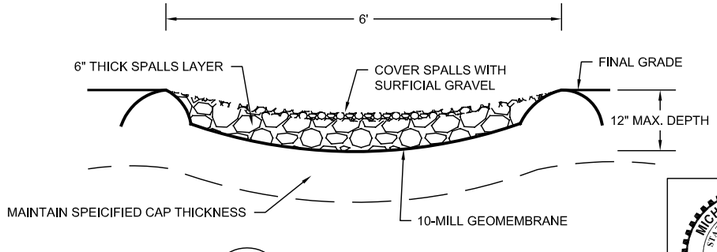


REVEAL DETAIL

TYPICAL SECTION A-A



7 / C6 C7 **ROCK SWALE**
NOT TO SCALE

ANCHOR ENVIRONMENTAL, L.L.C.
1423 3rd Avenue Suite 300
Seattle, WA 98101 (206) 287-9130

CITY OF BELLINGHAM
OFFICE OF NEIGHBORHOODS
& COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

CONSTRUCTION DETAILS

DESIGNED PCH
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

DRAFT FINAL 100% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

SHEET C-7

C STREET

NORTH CONSTRUCTION ENTRANCE

COMMERCIAL ZONE

NORTH STOCKPILING AND STAGING AREA

FISH HATCHERY

BANCROFT ST R.O.W.

RE-STORE BUILDING

EXISTING RE-STORE BUILDING

PROVIDE GATE(S) AS NEEDED ALONG THE RELOCATED FENCE

B ST. R.O.W.

FORMER COLONY DOCK PILES

NORTHERN LANDFILL UNIT AND BANK

WHATCOM CREEK

LIMITS OF GRADING

HOLLY STREET

HOLLY STREET BRIDGE

ACCESS LIMITS FOR SOUTH BANK

SOUTHERN LANDFILL UNIT AND BANK

SOUTH CONSTRUCTION ENTRANCE

WOODEN BRIDGE

TEMPORARY SOUTH BANK ACCESS ROUTE

CRUSHED ROCK EXISTING PATH

PAVED PATH

TEMPORARY TRAIL ENLARGEMENT

SOUTH STOCKPILING AND STAGING AREA

EDUCATION BUILDING

MARITIME HERITAGE PARK

PAVED PATH

Site Access and Stockpiling Notes:

1. Staging Areas: The plans generally depict areas available to the contractor for temporary storage of equipment and materials and staging of the work. No storage of materials, equipment, field office, etc. required for the work shall be done outside the approved staging areas without the written permission of the owner.

2. Contractor shall restore all temporary access, storage, staging, and stockpiling areas to their pre-existing conditions, at project completion.

3. Contractor shall make security arrangements for access to fenced staging area with managers of the Re-store or shall establish a separate gate.

0 30 60

Scale in Feet

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& COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

SITE ACCESS AND STOCKPILING PLAN

DESIGNED PCH, MPW
DRAWN SJD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE DECEMBER 2003

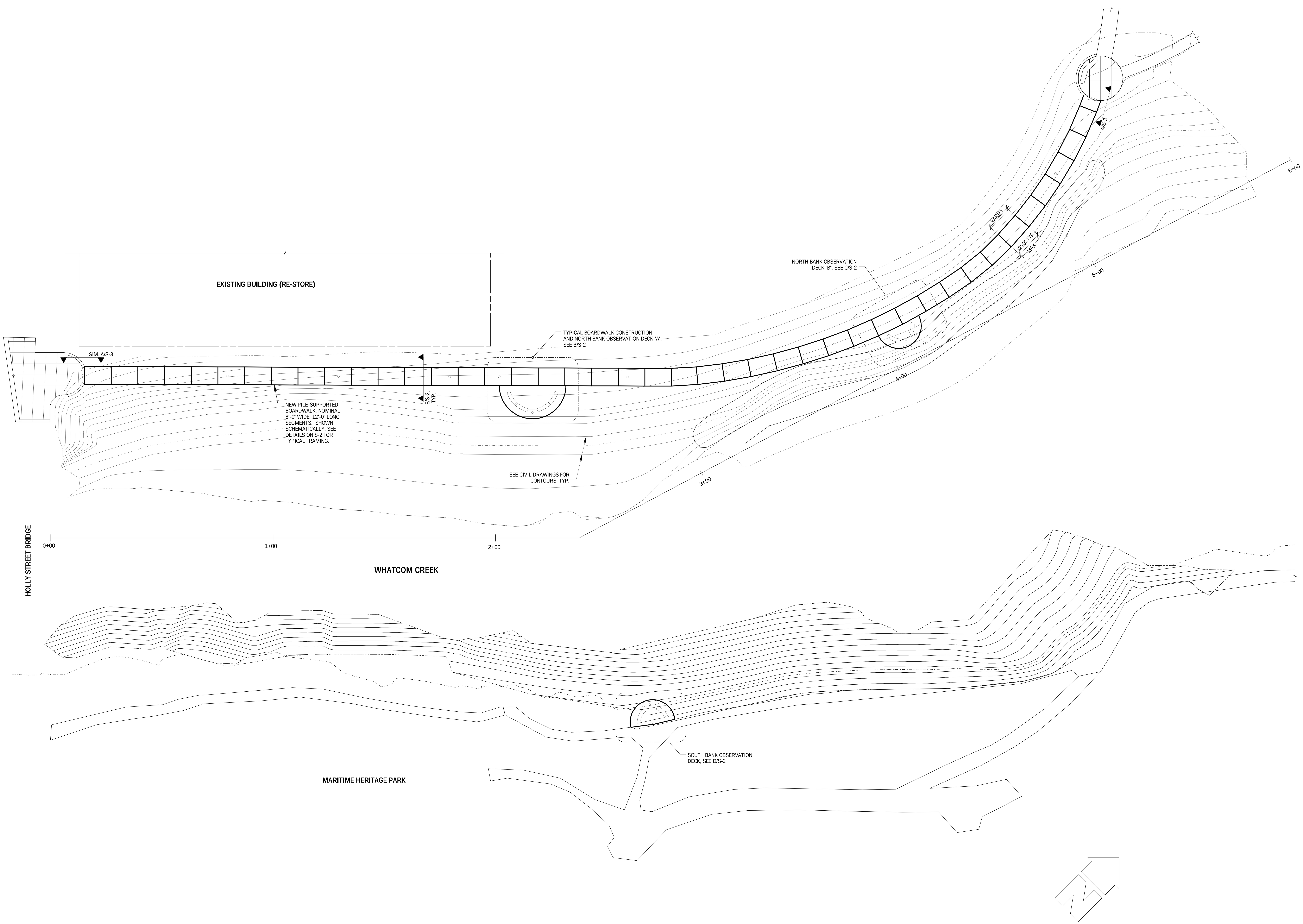
MICHAEL P. WHELAN STATE OF WASHINGTON 36107 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 08/07/04

PAGE 12 OF 19

DRAFT FINAL 100% SUBMITTAL
NOT FOR CONSTRUCTION

SHEET C-8

Feb 25, 2004 11:27am cdavidson K:\Jobs\9900062-Holly Street\990062041100 PERCENT\HOL-99006204-54R1.dwg SHEET C-8



Holly Street Boardwalk and Observation Deck Plan

Scale: 1" = 20'-0"

GEIGER ENGINEERS
114 W. Magnolia Street Suite 505
Bellingham . WA . 98225-4369
tel 360.734.7194 . fax 360.734.7399 .
e-mail : mail@geigerengineers.com

Project Name: Holly Street Landfill Cleanup / Whatcom Creek Estuary Restoration

Project Location: Bellingham, Washington

Drawing Title: New Boardwalk Overall Plan

No.	Issue/Revisions	Date
1	DRAFT FINAL 100%	24 FEB 04
0	90% REVIEW SET	19 DEC 03

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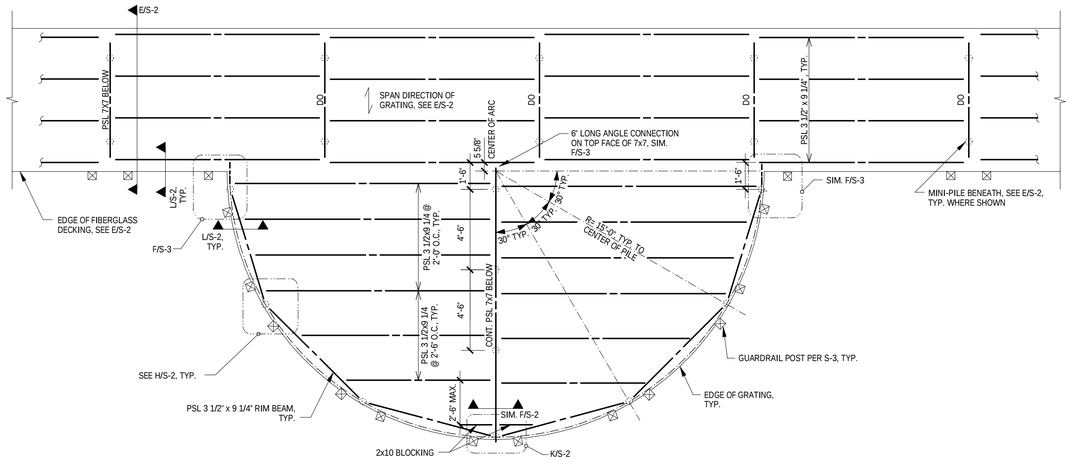
Job No: 202829.00
Drawn By: GDKinney
Checked By: DDLinkhart

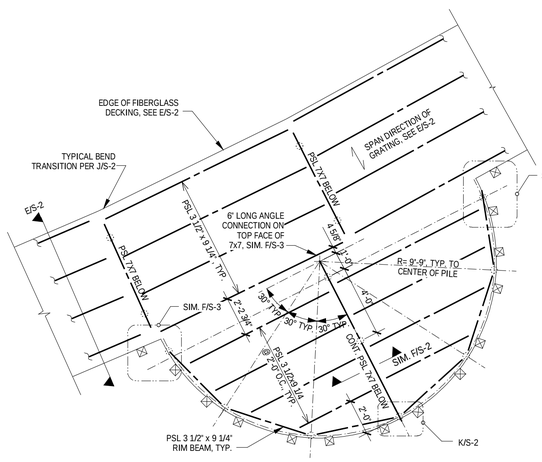
Sheet: S-1

Date Printed: Tuesday, February 24, 2004 3:20:13 PM
File Name: 202829.00 S1 Plan



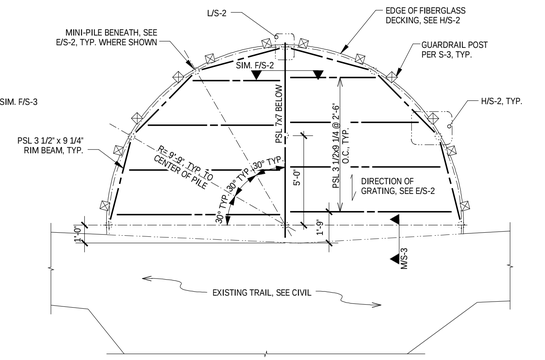
A S-2 **Typical Boardwalk Framing and North Observation Deck - "A"**

Scale: 1/4" = 1'-0"



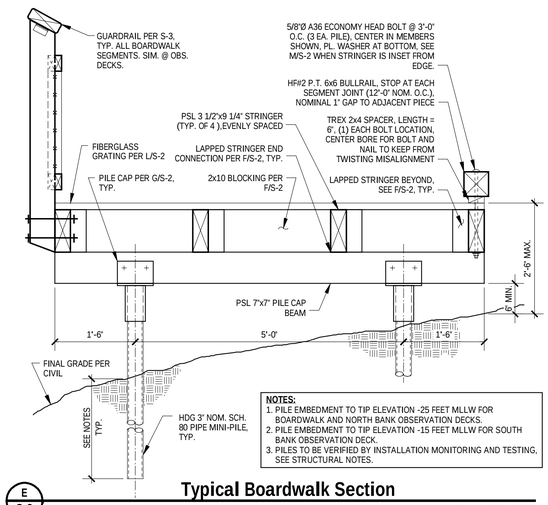
C S-2 **North Bank Observation Deck - "B"**

Scale: 1/4" = 1'-0"



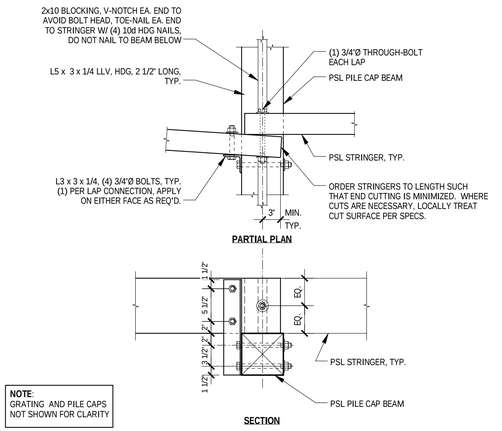
D S-2 **South Bank Observation Deck**

Scale: 1/4" = 1'-0"



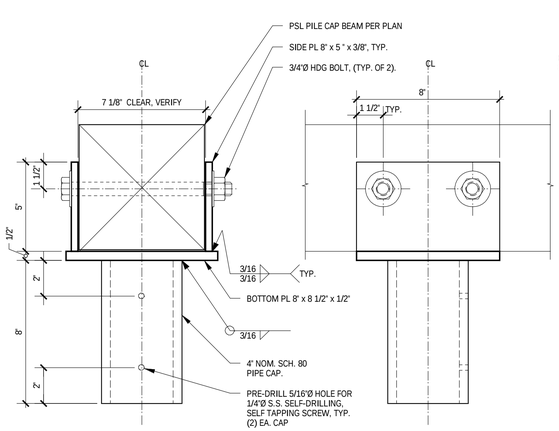
E S-2 **Typical Boardwalk Section**

Scale: 3/4" = 1'-0"



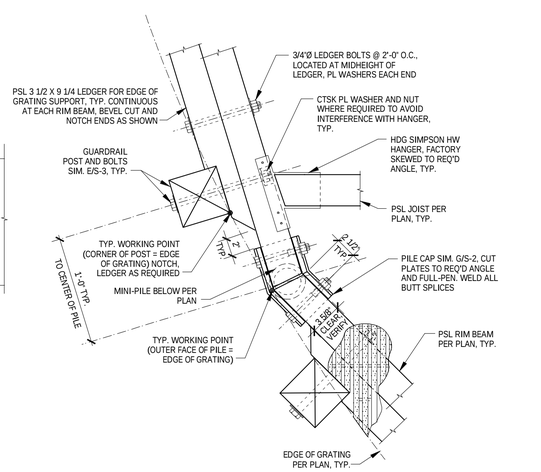
F S-2 **Typical Stringer End Connection**

Scale: 1" = 1'-0"



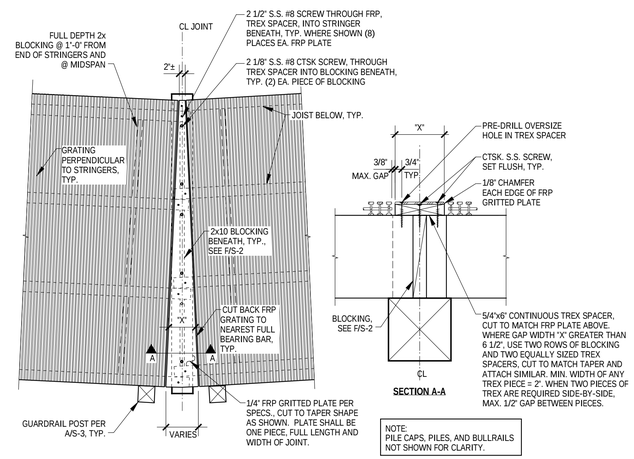
G S-2 **Pile Cap Weldment**

Scale: 3" = 1'-0"



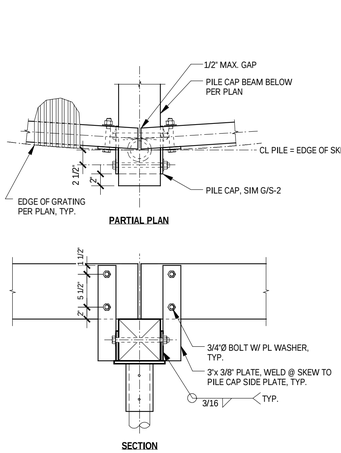
H S-2 **Typical Observation Deck Perimeter Framing Detail**

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



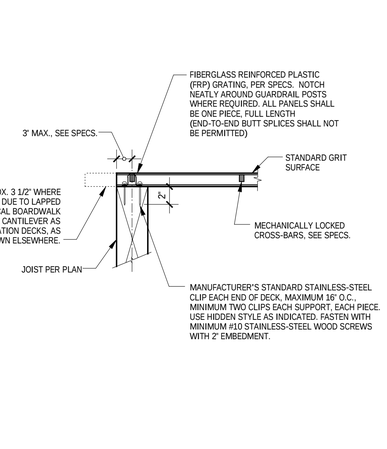
J S-2 **Typical Boardwalk Segment Joint**

Scale: N.T.S.



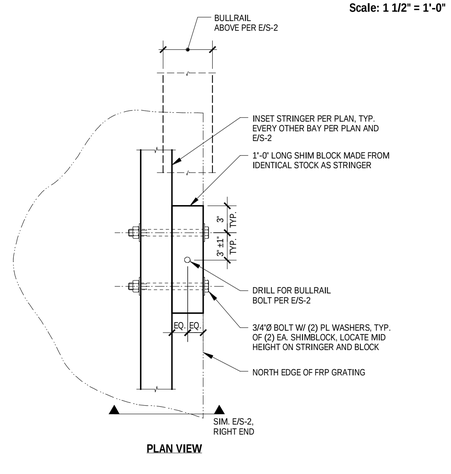
K S-2 **Typical Observation Deck Apex Framing Detail**

Scale: 1" = 1'-0"



L S-2 **Typical Grating Detail**

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



M S-2 **Typical Bullrail Attachment at Inset Stringer**

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

GEIGER ENGINEERS
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e-mail . mail@geigerengineers.com

Project Name: Holly Street Landfill Cleanup / Whatcom Creek Estuary Restoration

Project Location: Bellingham, Washington

Drawing Title: Boardwalk and Observation Deck Details

No.	Issue/Revisions	Date
1	DRAFT FINAL 100%	24 FEB 04
0	90% REVIEW SET	19 DEC 03

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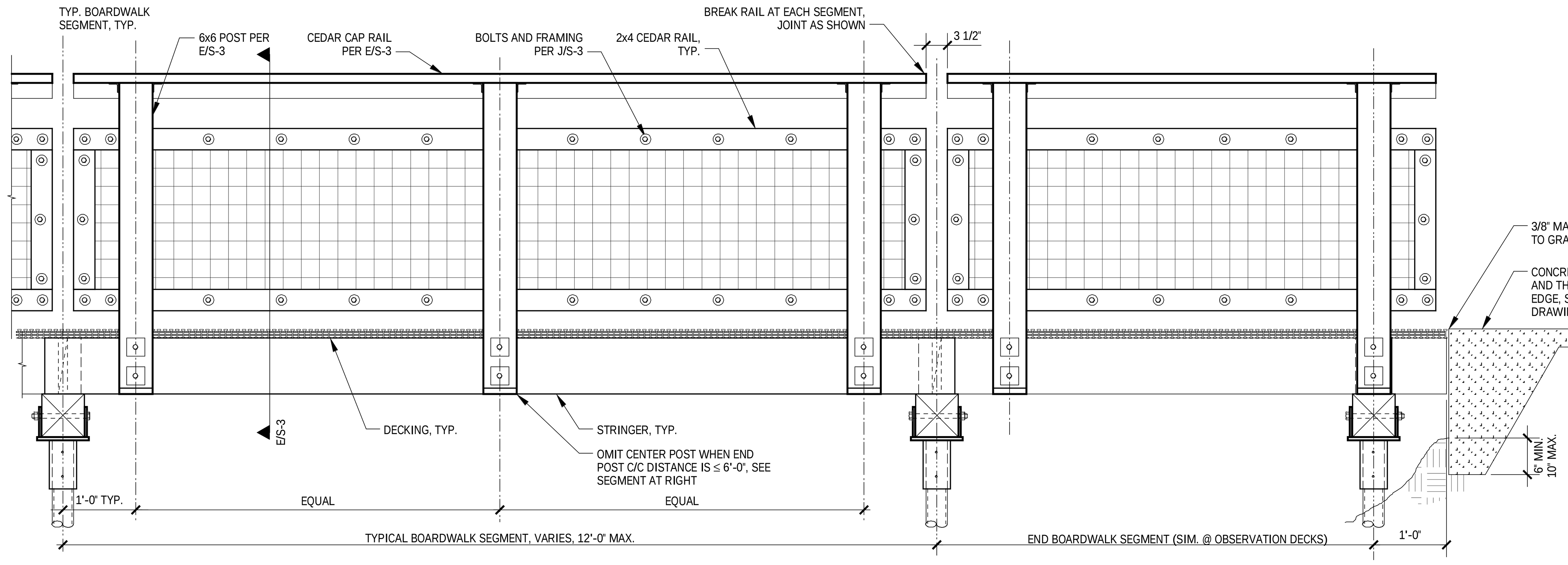
Engineers Seal

Job No: 202829.00
Drawn By: GDKinney
Checked By: DDLinkhart

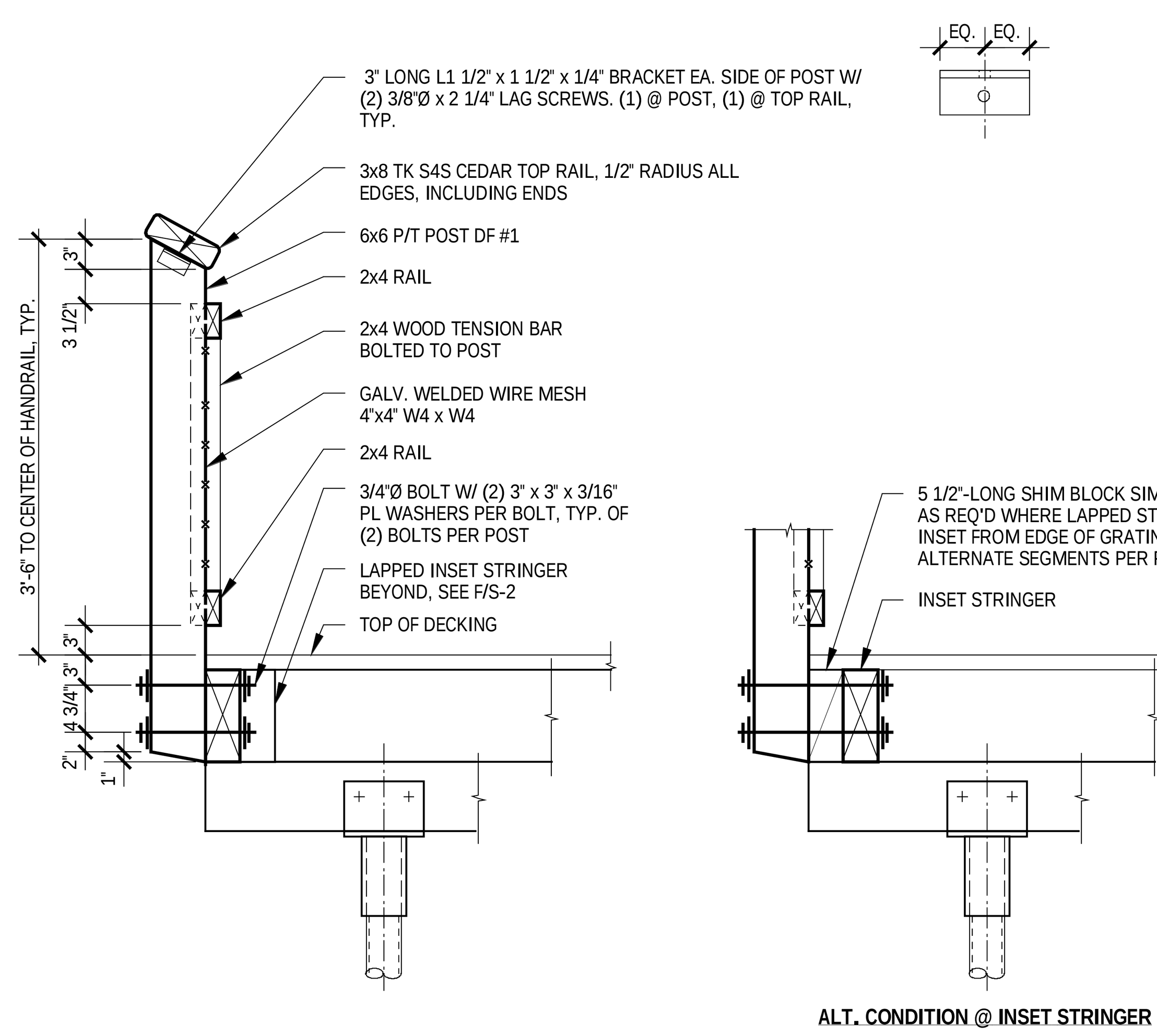
Sheet: S-2

Date Printed: Tuesday, February 24, 2004 3:19:38 PM

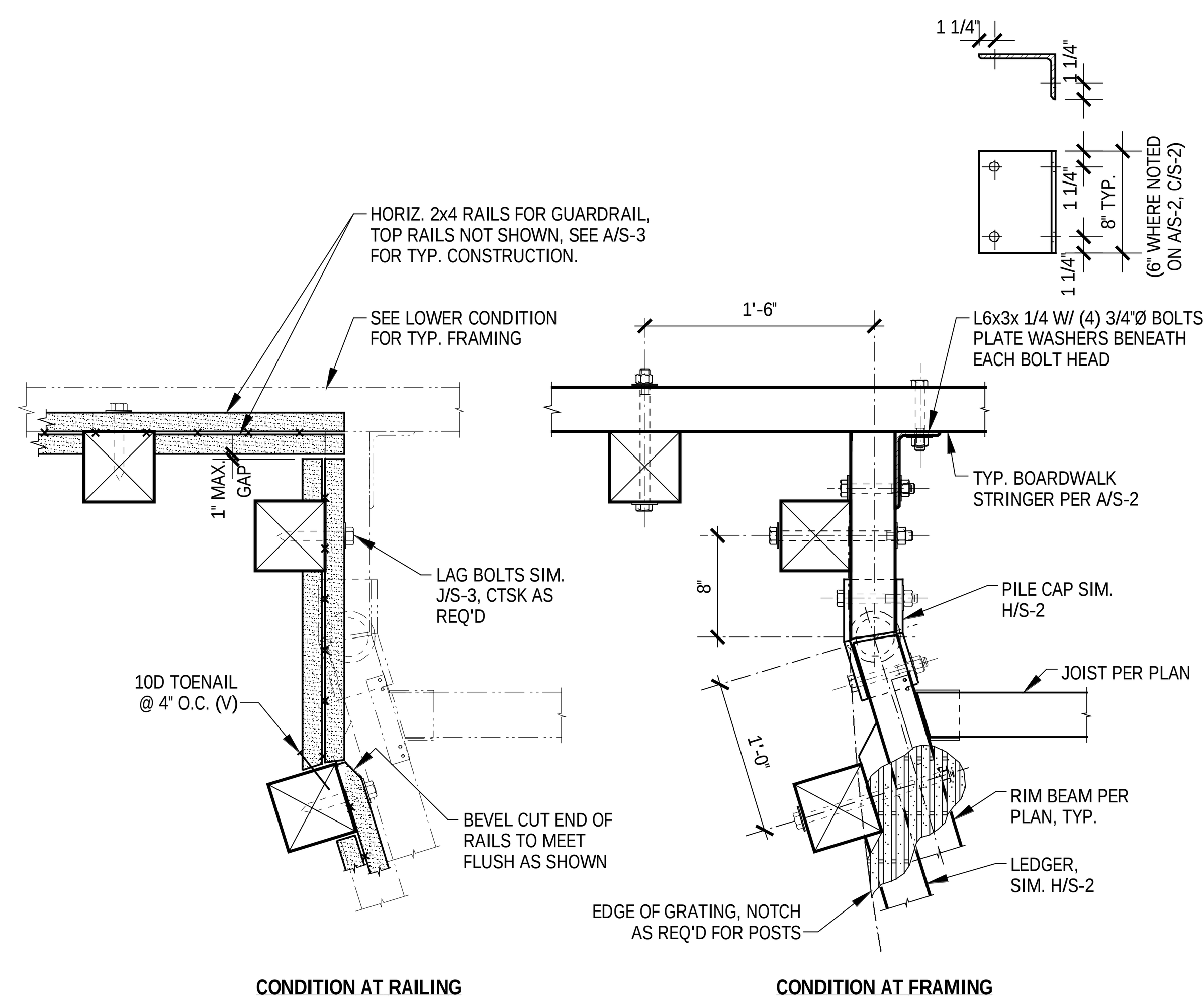
File Name: 202829.00 S2 Details



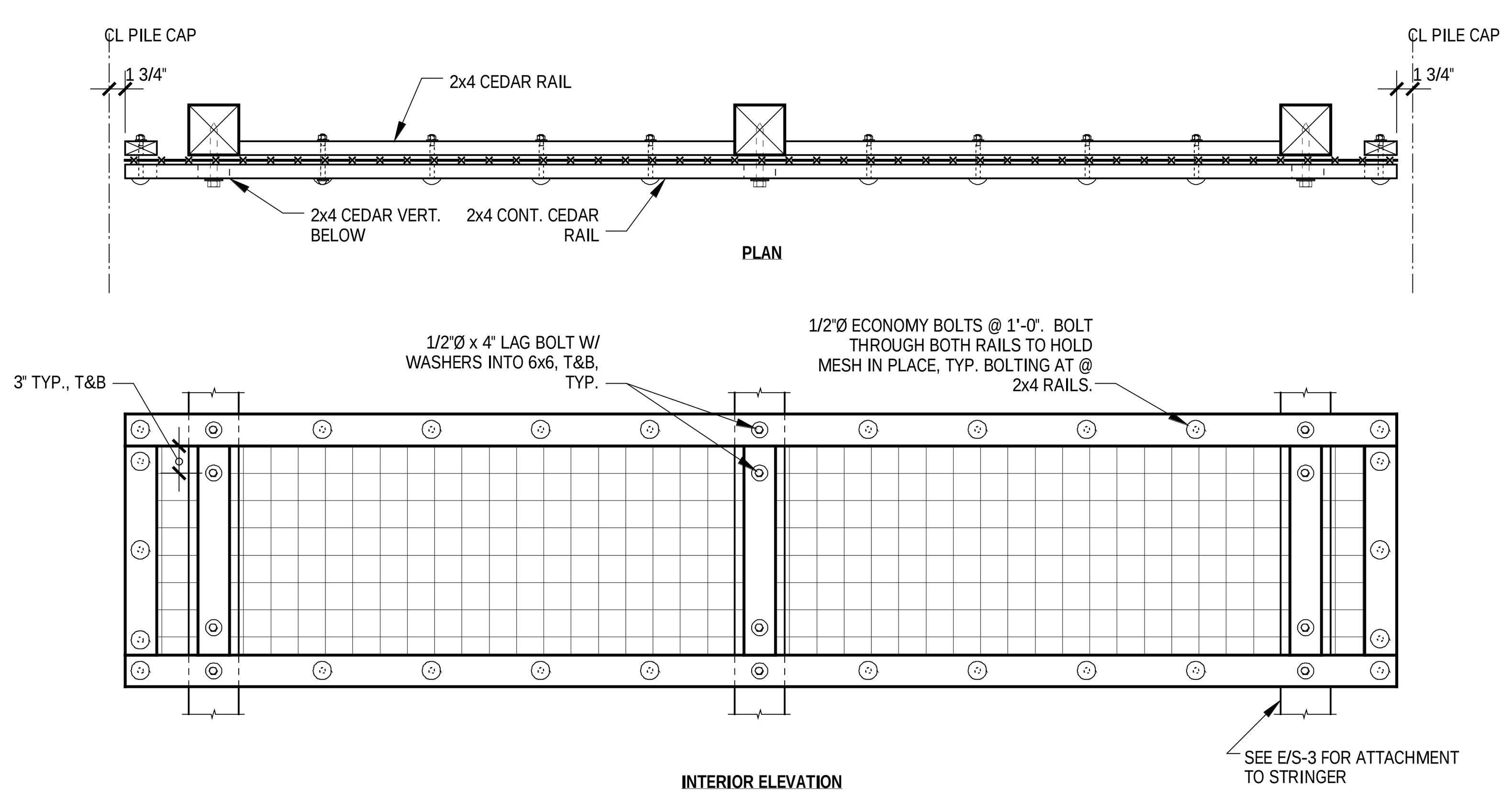
A S-3 **Typical Guardrail Exterior Elevation**
Scale: 3/4" = 1'-0"



E S-3 **Typical Guardrail Section**
Scale: 3/4" = 1'-0"



F S-3 **Partial Plan at Observation Deck Corner**
Scale: 1" = 1'-0"



J S-3 **Typical Guardrail Bolting And Framing**
Scale: 3/4" = 1'-0"

STRUCTURAL NOTES

BUILDING CODE CRITERIA

1 All construction is to be in accordance with the minimum provisions of the 1997 Uniform Building Code (UBC). Where these plans and specifications do not state specifically otherwise the provisions of the UBC shall apply.

2 Structural system:

Timber-framed boardwalk supported on steel pipe mini-piles, with gritted fiberglass decking.

3 Vertical Live Loads:

Uniform Live Load	100	PSF
Sm. Vehicle Axle Load	3000	LBS (non-concurrent with uniform live load)

4 Dead Loads: Vertical

Boardwalk	20	PSF (Including framing)

5 Lateral Loads:

Seismic Loading		Wind Loading	
Seismic Zone	3	Basic Wind Speed	80 MPH
Soil Profile	SE	Exposure	C
Importance Factor	1.0	Importance Factor	1.0
R	2.2		

6 Special Inspections:

The following special inspections are required, and will be performed by the owner's testing agency. In addition, special inspection is required where noted on the drawings. Provide necessary cooperation and access for the inspector. Provide adequate notice for inspection before covering work.

A. Foundation Elements:

1. Pile Installation. Installation of all piles will be observed by the Owner's testing agency and/or Engineer. Inspection and monitoring will include: Adequacy of pile hammer, cushion, and cap block prior to the start of driving; Pile handling before driving, with respect to coupling of pile sections and installation of pile end caps; Pile Installation; Condition of piles during driving; and Movement of adjacent soil and/or piles during driving. Based on the results of these observations, the Engineer may recommend to the Owner that pile tip elevations be modified, either by shortening or lengthening.

2. Pile Testing Program. Piles shall undergo field testing to verify that the design loads can be carried with an adequate factor of safety for the service life of the structure, and to verify the adequacy of the contractor's installation operations. Prior to the installation of production piles on the project, the Contractor shall install two indicator piles: one near the eastern end of the boardwalk and one near the western end. Each pile shall be loaded incrementally to 2 times the anticipated working load or to the point of failure, whichever is achieved first. Vertical displacements will be recorded by the Owner's testing agency or Engineer for each load interval. The Engineer may recommend to the Owner that additional indicator piles be installed. The Contractor shall submit a pile testing plan as part of their Construction Plan and Schedule. This plan shall outline the methods the contractor will employ to verify that installed piles can provide vertical capacities 2 times the anticipated working loads. This document shall be reviewed and approved by the project engineer prior to field implementation.

7 Structural Observation:

The Structural Engineer of record will perform Structural Observations per UBC Section 1702, as required.

01000 GENERAL

1 Employ good standards of workmanship throughout. Provide all materials and perform all construction as indicated. Secure architect's approval for substitutions.

2 See specifications for detailed material and methods. In case of conflict between applicable codes, the specifications, these notes, and the drawings, the most stringent will govern.

3 Verify all dimensions in the field and with the engineer, and upon discovery of any discrepancy between the structural drawings and field conditions or other drawings, notify the engineer.

4 Use these drawings in conjunction with the civil and other disciplines' drawings. They are not to stand alone. These drawings and the designs herein are copyrighted by Geiger Engineers, and are for use on this project only. They may not be copied or used for any other project or purpose other than as originally intended without written approval from Geiger Engineers.

5 Do not scale drawings.

6 Use typical details and schedules wherever applicable. Specific notes and details shall govern over typical details, but any parts of typical details not so altered will still apply.

7 The structure as shown on these drawings is designed to be stable and to resist the indicated loads in the completed condition. The drawings do not indicate the method or sequence of construction, except as may be specifically noted. The contractor is solely responsible for design and supply of all erection bracing and shoring to resist vertical and lateral loads, and for safety programs, methods, and procedures of operation for the construction of the design shown on these drawings.

8 Determine that loading applied to the structure during construction does not exceed the safe load-carrying capacity of the structural system or its members. The loads used in design of the members are listed in above in "Building Code Criteria."

05120 STRUCTURAL STEEL

1 Fabricate, erect, design, and detail all structural steel in accordance with AISC Standard Practice, except as noted.

2 Materials (except as noted in drawings):

All materials shall be new stock, unless noted otherwise.

Plates and bars:	ASTM A36 (A529, A572, A588 optional)	
Steel Pipe:	ASTM A53, Grade B	
Other Shapes:	ASTM A36	
Bolts:	ASTM A307	
Threaded Rods	ASTM A36 Weld electrode: AWS D1.1–98, Table 3.1, E70xx Low hydrogen	
Galvanizing:	Shapes and weldments	ASTM A123
	Bolts and hardware	ASTM A153

3 Minimum welds:

Welds not specified shall be 3/16" continuous fillet welds, or minimum size per AISC, whichever is greater.

All weld sizes are effective sizes; increase as required if gaps exist at meeting surfaces.

Groove welds not otherwise noted shall be complete penetration.

4 Welding shall be by WABO Certified welders and shall be as detailed or as specified by American Welding Society Standards D1.1-90.

5 Field welding is not permitted, except as specifically detailed

6 Bolt holes shall not be more than 1/16th" over-sized, and shall be drilled or punched; if punched, without distortion of the piece. Do not burn holes at any place.

7 All steel shapes, weldments, bolts, or other hardware shall be hot-dip galvanized in accordance with ASTM standards listed above. All damage to galvanizing shall be repaired by hot-stick method.

06100 ROUGH CARPENTRY

1 Materials (except as noted in drawings); all are kiln-dried, moisture content not to exceed 19%:

Posts:	DF#1
Joists and Beams:	PSL per Section 06195
Bullrails:	Hem/Fir #2 or better
Blocking and Bridging:	Hem/Fir Construction Grade
Commercial Connectors:	As manufactured by the Simpson Strong-Tie Company as called out on plans. Provide full catalog nailing and bolting. Hot-dip galvanize all connectors and fasteners per Section 05120.
Cedar Handrails:	TK S4S
Cedar 2x4:	Western Cedar #1
Fabricated Connectors:	As detailed on plans; see Section 05120.
Pressure Treatment:	Water-borne salts per AWPA LP-2, unless noted otherwise.

2 Use pressure treated materials as follows and where indicated on plan:

A	Solid sawn lumber:	AWPA C2
B	PSL framing members	Wolmanized CCA SL-2

3 General Framing-Joists

- At all joists, provide full-depth blocking at midspan.
- Provide miscellaneous blocking where shown on drawings.
- Decking should be produced in full-length panels wherever possible. If decking must be spliced due to manufacturing capabilities, notify engineer and provide additional joist beneath splice.
- Do not notch joists in middle one-half of span; limit depth of notch to 1/6 the depth of the joist, except as detailed. Locate bored holes within the middle 1/3 of the depth of the joist, not-to exceed 2-1/2" diameter.

4 Provide typical nailing per UBC Table 23-II-B-1 where not called out in plans. Unless noted otherwise, all nails are common wire nails. "16d vinyl coated sinkers" may be used in lieu of 10d common nails; they may not be used to replace 16d common nails. Predrill as required to avoid splitting.

5 All fasteners, hardware and fittings shall be hot-dip galvanized per Section 05120.

6 Lag bolts or screws shall be square-head steel bolts with cut threads. Use washers under heads, typical. Pre-drill holes with bit approximately 60% of shank diameter; install bolts by turning, do not hammer into place.

7 Machine bolts shall be ASTM 307 bolts, unless otherwise noted. Use standard washers under head, plate washers under nut.

06195 MANUFACTURED WOOD BEAMS AND JOISTS

1 All sizes shown for manufactured wood beams and joists are actual sizes as shown on plan, unless noted otherwise. Follow the manufacturer's recommendations for handling, cutting and sealing of all manufactured lumber products. Cut holes for other trades only in accordance with the manufacturer's directions.

2 Parallel Strand Lumber (PSL)

A PSL is lumber made of longitudinally oriented Western Species wood strands assembled and bonded under pressure with waterproof adhesive.

B Acceptable Products:

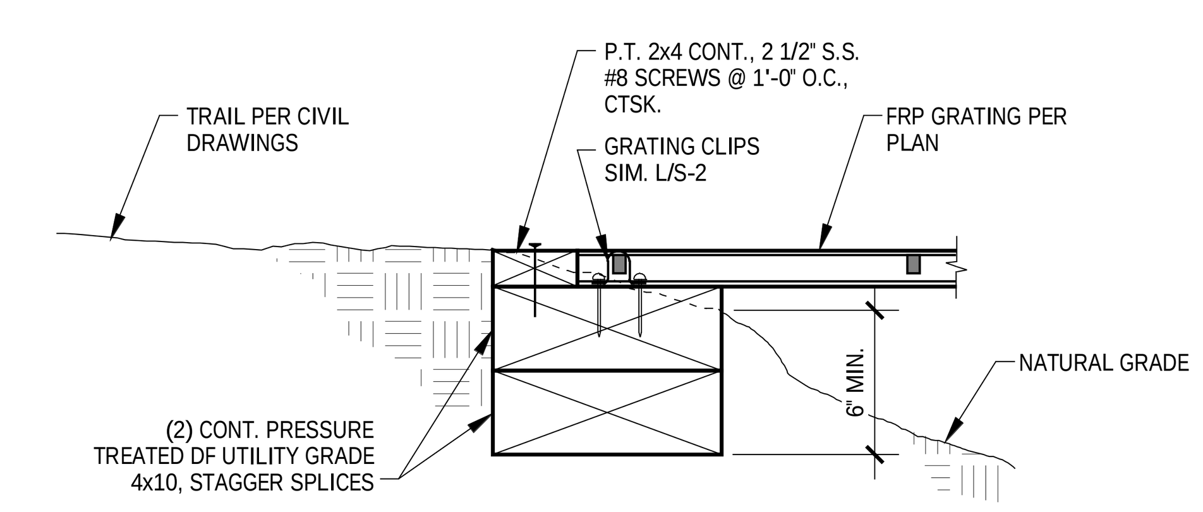
Parallam® by TrusJoist Macmillan

C Allowable Stresses (before Wolmanized CCA process):

Fb = 2900 psi

Fv = 290 psi

E = 2,000 ksi



M S-3 **South Bank Observation Deck Grating at Trail**
Scale: 1 1/2" = 1'-0"

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Project Name: **Holly Street Landfill Cleanup / Whatcom Creek Estuary Restoration**

Project Location: Bellingham, Washington

Drawing Title: **Structural Notes / Guardrail Details**

No.	Issue/Revisions	Date
1	DRAFT FINAL 100%	24 FEB 04
0	90% REVIEW SET	19 DEC 03

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114 WEST MAGNOLIA STREET SUITE 505 BELLINGHAM, WA 98225.

Engineers Seal

Job No:	202829.00
Drawn By:	GDKinney
Checked By:	DDLinkhart

Sheet: **S-3**

Date Printed: Tuesday, February 24, 2004 3:16:55 PM
File Name: 202829.00 S3 Details / Notes

PLANTING LEGEND

LARGE TREES

SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING	DETAIL
	Western Red Cedar	*Thuja plicata*	5-6'	As Shown	3 L-2
	Sitka Spruce	*Picea sitchensis*	5-6'	As Shown	
	Grand Fir	*Abies grandis*	5-6'	As Shown	
	Big Leaf Maple	*Acer macrophyllum*	5-6'	As Shown	5 L-2

SMALL TREES/LARGE SHRUBS

SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING	DETAIL
	Black Hawthorne	*Crataegus douglasii*	5 Gal.	10'	5 L-2
	Douglas Maple	*Acer glabrum*	5 Gal.	10'	
	Oregon Crabapple	*Malus fusca*	5 Gal.	10'	
Alal	Saskatoon Serviceberry	*Almelanchier alnifolia*	2 Gal.	5'	7 L-2
Beaq	Oregon Grape	*Berberis aquifolium*	2 Gal.	5'	
Cost	Red-osier Dogwood	*Cornus stolonifera*	2 Gal.	5'	
Ronu	Nootka Rose	*Rosa nutkana*	2 Gal.	5'	
Saho	Hooker Willow	*Salix hookeriana*	1"x2' live stakes	2'	
Sasc	Scouler Willow	*Salix scouleriana*	1"x2' live stakes	2'	2 L-2

SMALL SHRUBS/GROUNDCOVERS/FERNS

SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING	DETAIL
Gash	Salal	*Gaultheria shallon*	1 Gal.	3'	5 L-2, 7 L-2
Syal	Snowberry	*Symphoricarpos albus*	1 Gal.	3'	
Pomu	Sword Fern	*Polystichum munitum*	1 Gal.	3'	
Loin	Black Twinberry	*Lonicera involucrata*	1 Gal.	3'	
Frch	Beach Strawberry	*Fragaria chiloensis*	4" Pot	2'	
Myga	Sweet Gale	*Myrica Gale*	1 Gal.	3'	6 L-2

EMERGENTS, GRASSES & HERBACEOUS PERENNIALS

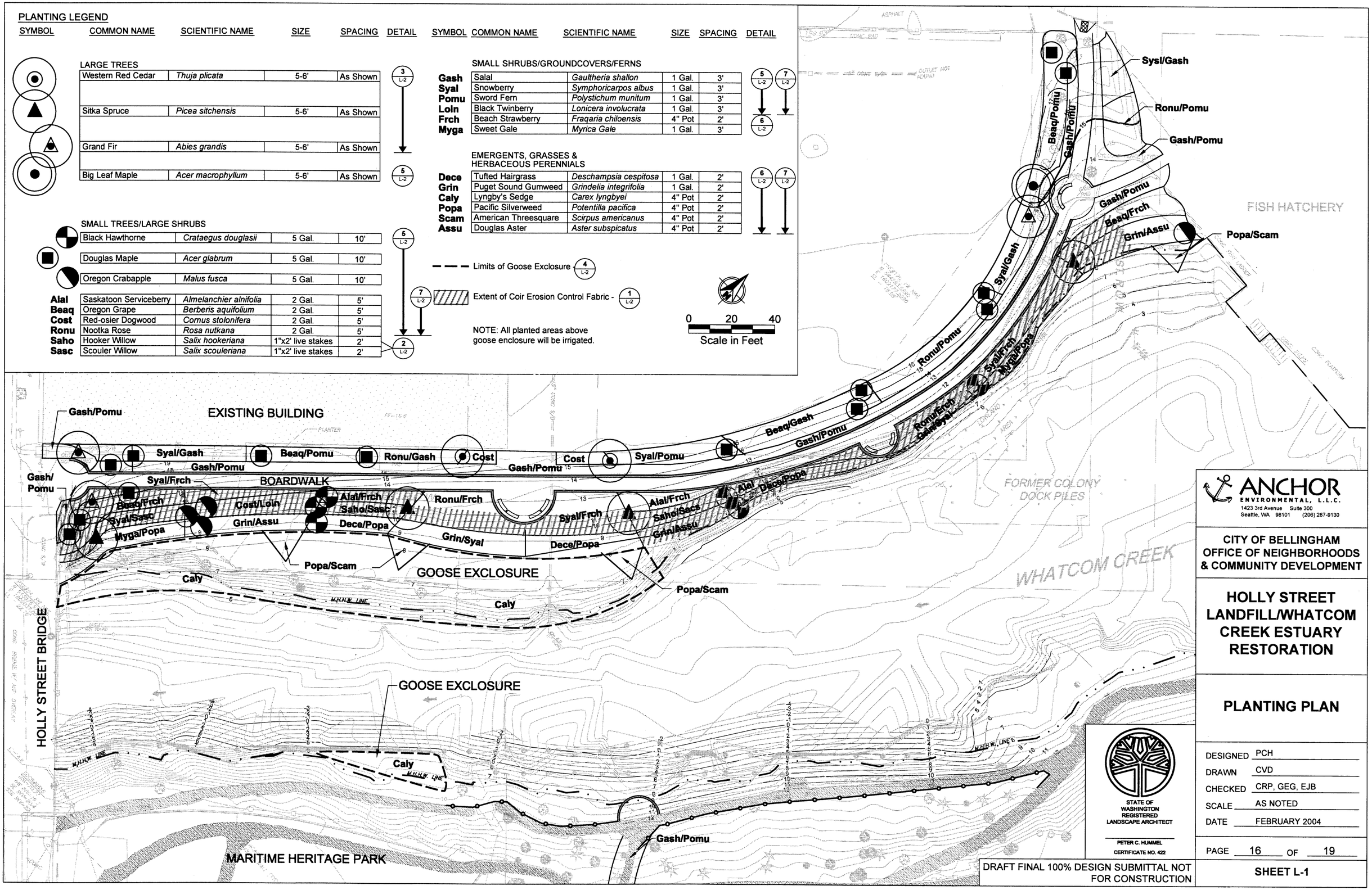
SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING	DETAIL
Dece	Tufted Hairgrass	*Deschampsia cespitosa*	1 Gal.	2'	6 L-2, 7 L-2
Grin	Puget Sound Gumweed	*Grindelia integrifolia*	1 Gal.	2'	
Caly	Lyngby's Sedge	*Carex lyngbyei*	4" Pot	2'	
Popa	Pacific Silverweed	*Potentilla pacifica*	4" Pot	2'	
Scam	American Threesquare	*Scirpus americanus*	4" Pot	2'	
Assu	Douglas Aster	*Aster subspicatus*	4" Pot	2'	

Limits of Goose Exclosure (4 L-2)

Extent of Coir Erosion Control Fabric - (1 L-2)

NOTE: All planted areas above goose enclosure will be irrigated.

0 20 40
Scale in Feet



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CITY OF BELLINGHAM
OFFICE OF NEIGHBORHOODS & COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

PLANTING PLAN

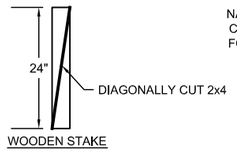
STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

DESIGNED	PCH
DRAWN	CVD
CHECKED	CRP, GEG, EJB
SCALE	AS NOTED
DATE	FEBRUARY 2004

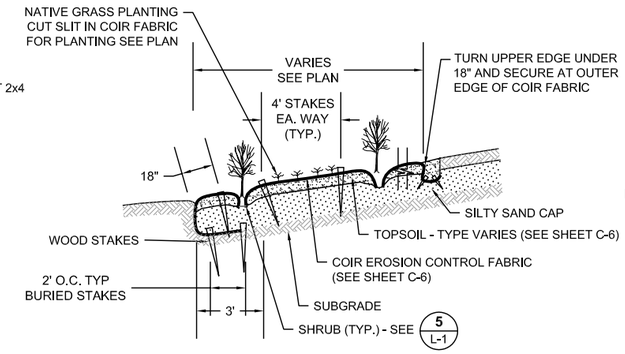
DRAFT FINAL 100% DESIGN SUBMITTAL NOT FOR CONSTRUCTION

SHEET L-1

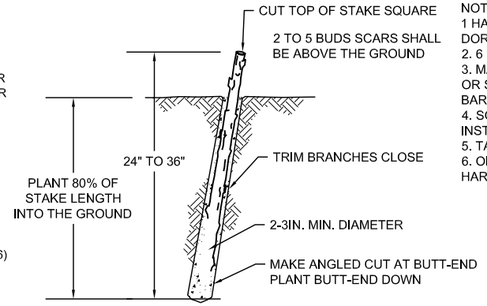
Plotted: Feb 25, 2004 1:28pm cdavidson K:\Jobs\9990062-Holly Street\99006204\100 PERCENT\HOL-99006204-60R1.dwg SHEET L-1 100 %



WOODEN STAKE



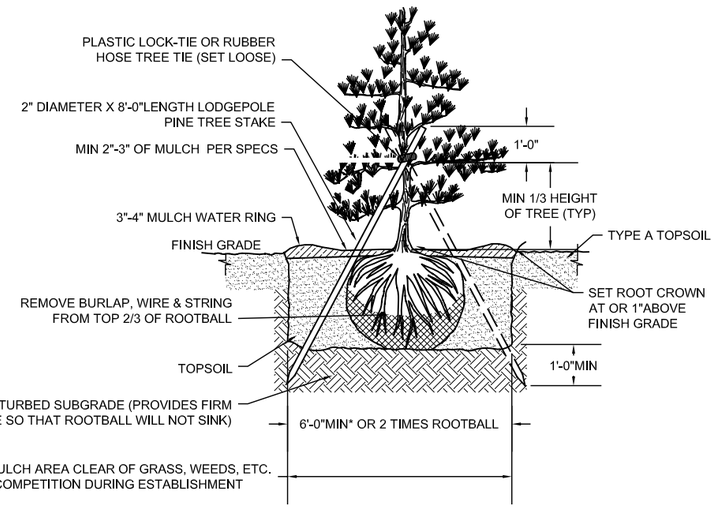
1 L-1 COIR INSTALLATION - SHRUB SLOPE PLANTING DETAIL
NOT TO SCALE



SECTION (TYP.)

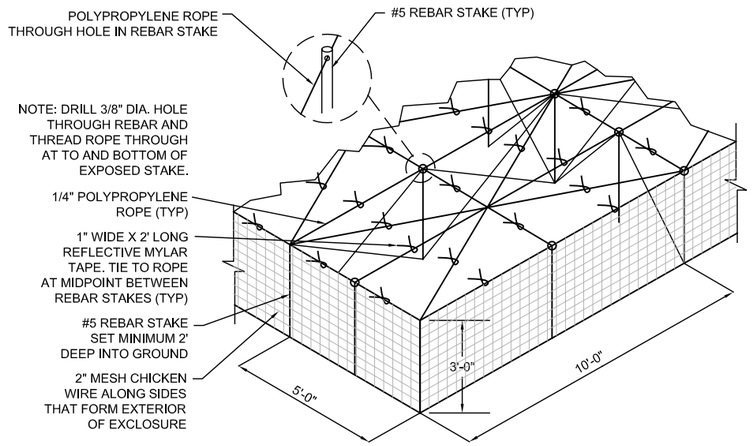
2 L-1 WILLOW LIVE STAKING DETAIL
NOT TO SCALE

NOTES:
1 HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. 6 STAKES PER EACH LOCATION ON PLAN.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION, USE A PILOT BAR IN FIRM SOILS.
4. SOAK CUTTINGS FOR 24 HOUR (MIN.) PRIOR TO INSTALLATION.
5. TAMP THE SOIL AROUND THE STAKE.
6. ONLY NURSERY GROWN STOCK SHALL BE USED, HARVESTING OF WILD PLANTS IS NOT ACCEPTABLE.

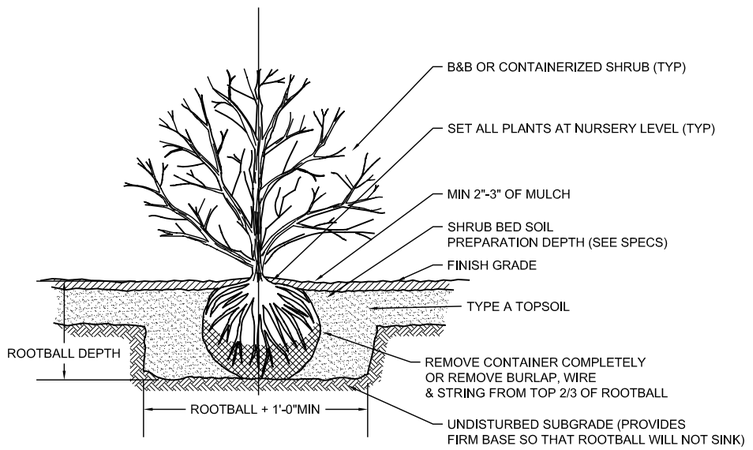


* WIDTH OF LEVEL AREA MAY BE REDUCED AS DIRECTED BY ENGINEER FOR PLANTING INSTALLATIONS ON SLOPES.

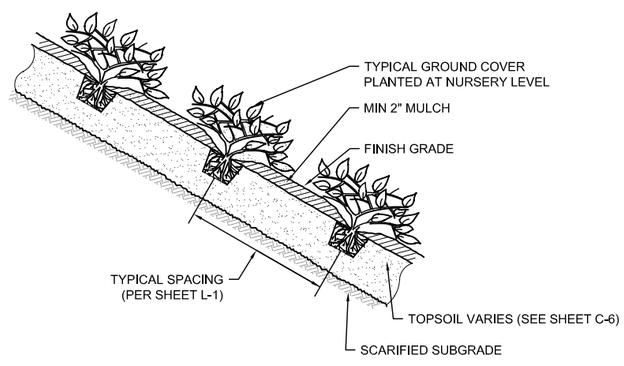
3 L-1 CONIFER TREE PLANTING
NOT TO SCALE



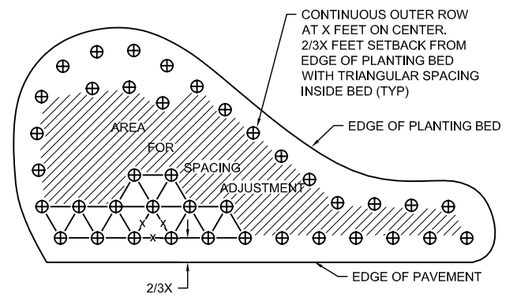
4 L-1 TEMPORARY GOOSE EXCLOSURE DETAIL
NOT TO SCALE



5 L-1 SMALL TREE AND SHRUB PLANTING
NOT TO SCALE



6 L-1 NATIVE GRASS AND GROUNDCOVER PLANTING
NOT TO SCALE



x RECOMMENDED SPACING
(SEE SHEET L-1)

⊕ ACTUAL PLANT LOCATIONS

7 L-1 PLANTING PATTERN
NOT TO SCALE

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& COMMUNITY DEVELOPMENT

HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

PLANTING DETAILS

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT

PETER C. HUMMEL
CERTIFICATE NO. 422

DESIGNED PCH, MPW
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

PAGE 17 OF 19

SHEET L-2

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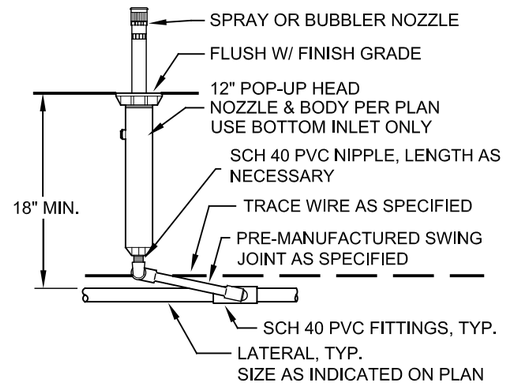
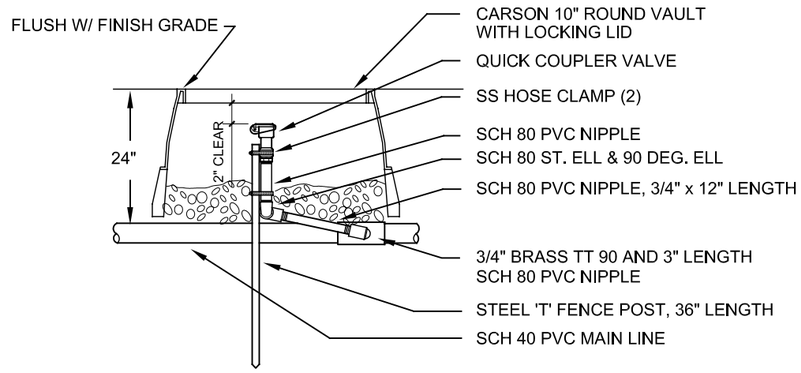
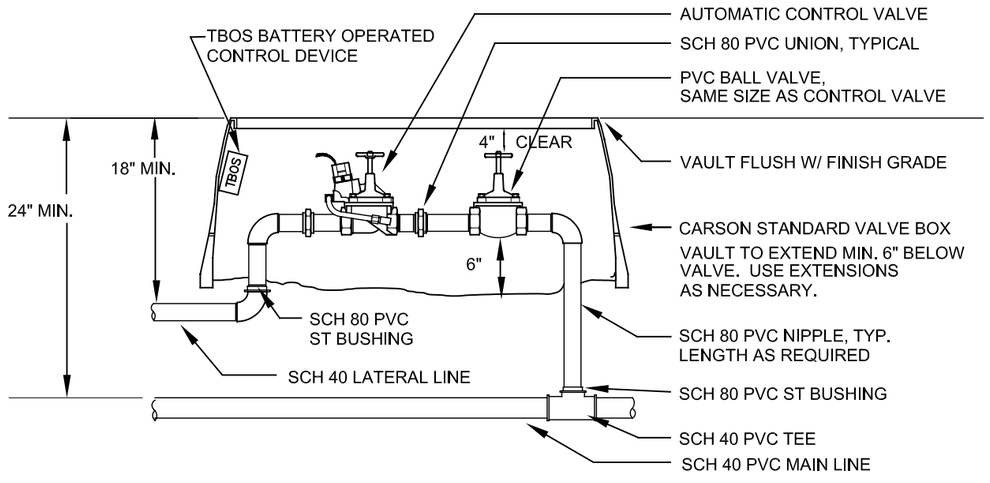


8 L3 L4 POP-UP HEAD , TYP.
NOT TO SCALE



9 L3 L4 QUICK COUPLER VALVE
NOT TO SCALE

NOTES:
1.DO NOT ALLOW VAULT TO REST ON PIPE USE EXTENSIONS AS NECESSARY.
2.VALVE TO BE SET PLUMB & CENTERED IN VALVE BOX.
3. CONTRACTOR TO PROVIDE (2) EACH QCV KEYS AND SWIVEL HOSE ELLS.
4. PROVIDE SURFICIAL GRAVEL AS DRAIN ROCK.



10 L3 L4 CONTROL VALVE
NOT TO SCALE

NOTES:
1. DO NOT ALLOW VAULT TO REST ON PIPE.

2.ALL PIPES WITHIN VAULT TO BE SCH 80 PVC NIPPLES, SAME SIZE AS CONTROL VALVE.

3.ALL BOLT COVERS TO BE LOCKING TYPE, BOLT INSTALLED.

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HOLLY STREET LANDFILL/WHATCOM CREEK ESTUARY RESTORATION

IRRIGATION DETAILS

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

DESIGNED PCH
DRAWN CVD
CHECKED CRP, GEG, EJB
SCALE AS NOTED
DATE FEBRUARY 2004

PAGE 19 OF 19

DRAFT FINAL 100% DESIGN SUBMITTAL NOT FOR CONSTRUCTION

SHEET L-4