Inspection Quality Assurance Program

Drilled Shaft Inspector Plans

Oregon Department of Transportation

2022-2023

Plans

54V-074

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

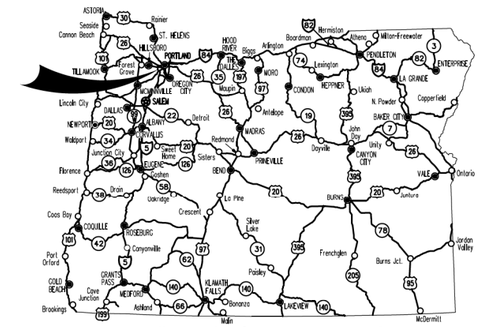
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS, ROADSIDE DEVELOPMENT & INTELLIGENT TRANSPORTATION SYSTEM

OR217: OR10 - OR99W SEC.

BEAVERTON-TIGARD HIGHWAY

WASHINGTON COUNTY
AUGUST 2021

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A01	Title Sheet
A02 Thru A06, Incl.	Index Of Sheets Cont.
A07, A08	Std. Dwg. Nos.
A09 Thru A11, Incl.	Plan Sheet Layout
A12 Thru A18, Incl.	Survey Control Data



Overall Length Of Project – 5.08 Miles

SAFETY FIRST
LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

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 Center Is (503) 232-1987.)

BEGINNING OF CONTRACT
STA. "C" 423+30.00 (M.P. 1.10)

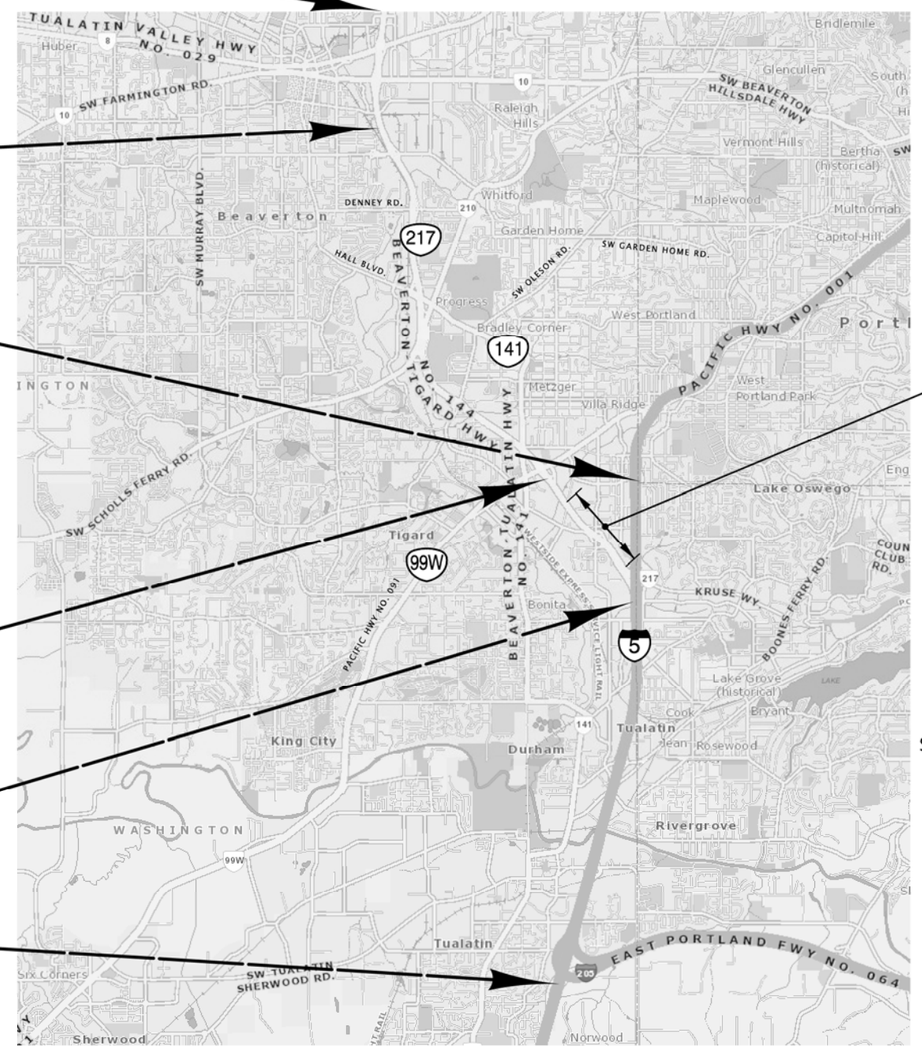
BEGINNING OF PROJECT
STA. "C" 210+81.80 (M.P. 2.20)

PROJECT SITE
HAINES RD. CONN. NO. 2 (001)
M.P. 293.00 TO M.P. 293.10

END OF PROJECT
STA. "C" 423+30.00 (M.P. 6.28)

END OF CONTRACT
STA. "L5N" 109+28.10 (M.P. 7.24)

PROJECT SITE
I-5 PACIFIC HWY. (001)
M.P. 288.25 TO M.P. 288.45



NO WORK ZONE
STA. "C" 431+45.00 TO
STA. "L5N" 105+89.00

N

SEC. 15, 22, 23, 26, 27, 35, 36, T. 1 S., R. 1 W., W.M.
SEC. 6, T. 2 S., R. 1 E., W.M.
SEC. 1, T. 2 S., R. 1 W., W.M.
SEC. 31, T. 1 S., R. 1 E., W.M.

OREGON DEPARTMENT OF TRANSPORTATION

OREGON TRANSPORTATION COMMISSION

Robert Van Brocklin	CHAIR
Alando Simpson	VICE CHAIR
Julie Brown	COMMISSIONER
Sharon Smith	COMMISSIONER
Kristopher W. Strickler	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION

DOWL
WWW.DOWL.COM

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: Eduardo P. Miranda — Digitally signed by Eduardo P. Miranda Date: 2021.06.18 14:27:26 -07'00'
Eduardo Miranda
Technical Center Manager, Region 1

Steven B Cooley — COOLEY Steven B Jun 22 2021 11:55 AM
Concurrence by ODOT Chief Engineer

OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	S144(026)	A01

GENERAL NOTES

DESIGN NOTES:

Bridge widenings are designed in accordance with the 8th edition of the AASHTO LRFD Bridge Design Specifications, 2017 and the October 2020 ODOT Bridge Design Manual with an allowance of 40 psf for future wearing surface and all of the following Live Loads:

Service and Strength I Limit States:
HL-93: Design truck or the design tandems and the design lane load.

Strength II Limit States:
ODOT Type STP-5BW Permit truck
ODOT Type STP-4E Permit truck

Bridge rehabilitations and rail replacements designed in accordance with the 8th edition of the AASHTO LRFD Bridge Design Specifications, 2017 and the October 2020 ODOT Bridge Design Manual.

Bearings are designed using "Method A" in AASHTO LRFD.

No detailed seismic analysis was performed for the widening. Reinforcement in the columns is detailed in accordance to the "AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition" as modified by the "ODOT Bridge Design Manual".

Phase 1 seismic retrofit designed in accordance with the "AASHTO Guide Specifications for LRFD Seismic Bridge Design", "AASHTO LRFD Bridge Design Specifications", as modified by the "ODOT Bridge Design Manual" for M9.0 CSZ and 1000-year criteria.

For Str. 09671, the bridge site is defined as Class D with Site Factor of: Fpga=1.33, Fa=1.33, and Fv=2.16 for 1000 year event.

Siesmic Performance Criteria	Earthquake Return Period (yrs.)	PGA	Ss	S1	Site Class	Design Hazard Values As	Sds	Sd1	Seismic Design Catagory
Life Safety	1000	0.27	0.59	0.22	D	0.36	0.78	0.47	C
Operational	Cascadia				D	0.19	0.48	0.31	C

For all other bridges, the bridge site is defined as Class E with Site Factor of: Fpga=1.68, Fa=1.55, and Fv=3.20 for 1000 year event.

Siesmic Performance Criteria	Earthquake Return Period (yrs.)	PGA	Ss	S1	Site Class	Design Hazard Values As	Sds	Sd1	Seismic Design Catagory
Life Safety	1000	0.27	0.59	0.22	E	0.46	0.92	0.70	D
Operational	Cascadia				E	0.34	0.62	1.24	D

CONSTRUCTION NOTES:

Provide all materials and perform all work according to the Oregon Standard Specifications for Construction 2021.

Provide all column reinforcement according to ASTM Specification A706.

Provide spiral drilled shaft reinforcement according to ASTM Specification A706, AASHTO Specification M31 (ASTM A615) Grade 60.

Provide coated reinforcing steel for all bars extending into the sidewalk and curbs.

Provide all other reinforcing steel according to ASTM Specification A706, or AASHTO M31 (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 f'c = 4.0 ksi, λ_{rc} = 0.4, 2in min. concrete clear cover										
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18
Uncoated	1'-4"	1'-7"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	Not permitted

Reinforcing Splice Lengths (Class B) Grade 60 f'c = 4.5 ksi, λ_{rc} = 0.4, 2in min. concrete clear cover										
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18
Uncoated	1'-4"	1'-6"	1'-11"	2'-3"	2'-7"	3'-0"	3'-4"	3'-9"	4'-2"	Not permitted

Reinforcing Splice Lengths (Class B) Grade 60 f'c = 5.0 ksi, λ_{rc} = 0.4, 2in min. concrete clear cover										
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18
Uncoated	1'-4"	1'-7"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	Not permitted

Increase all splice lengths 30% for horizontal or nearly horizontal bars so placed that more than 12" of fresh concrete is cast below the bar.

Splice reinforcing steel at alternate bars, staggered at least one splice length or as far as possible, unless shown otherwise.

GENERAL NOTES (CONTINUED):

Support the bottom mat reinforcing steel from the forms with precast mortar blocks at 2'-0" maximum centers each way. Support the top mat of reinforcing steel from the bottom mat of reinforcing steel with wire bar supports as shown in Chapter 3 of the CRI Manual of Standard Practice (SBU, BBU, or CHCU). Place wire bar supports at 2'-0" maximum centers.

Use uncoated reinforcing steel in the deck and bridge end panel. This includes top and bottom longitudinal bars, and top and bottom transverse bars. Place bars 2" clear of the nearest face of concrete unless shown otherwise. Do not fabricate reinforcing steel for columns, drilled shafts, and walls until final footing elevations have been determined in the field.

Provide ASTM F1554, Grade 105 anchor rods in signal attachments.

Provide Deck Class HPC4500 - 1½ concrete in deck.

Provide Deck Class HPC4500 - 1½ concrete in reinforced concrete end panels.

Provide General Structural Class 4000 - ¾ concrete in columns and crossbeams, unless shown otherwise.

Provide Class 4000 - ⅜ concrete for all drilled shafts.

Provide Foundation Class 4000 - 1½, 1, or ¾ concrete in footings.

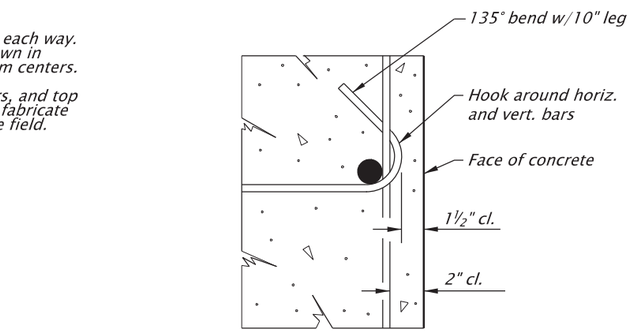
Provide General Structural Class 4000 - 1½, 1, or ¾ concrete for all other concrete.

Provide General Structural Class 3300 - 1½, 1, or ¾ concrete for sidewalk widening on BR16143 and BR13074A.

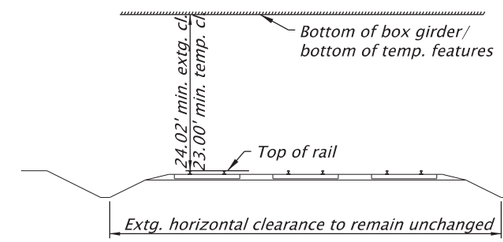
1 *Provide Class 5000 - ¾" concrete in Bent 2 column and cap on Str. 09671.*

FOUNDATION NOTES:

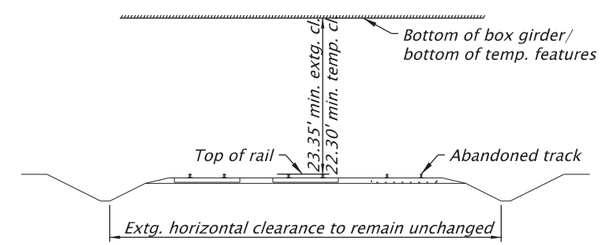
See Footing Plan for Foundation Notes on all structures.



TIE BAR DETAIL
No Scale



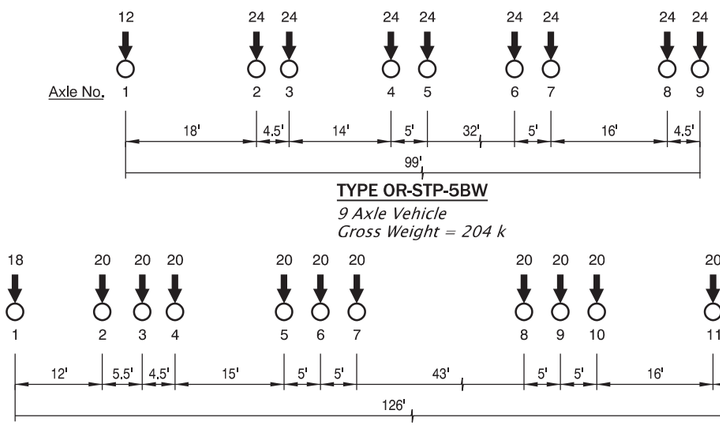
BR16134 - S.W. ALLEN BLVD. OVER HWY. 144
Looking South



BR16143 - S.W. DENNEY RD. OVER HWY. 144
Looking South

RAILROAD CONSTRUCTION CLEARANCES
Scale: None

STRUCTURE NUMBERS:
09671 HWY 141 OVER_HWY 144_MP 2.71
16134 SW ALLEN BLVD OVER HWY 144
23874 HWY144 (CONN 144AP) TO SW ALLEN BLVD
23875 SW ALLEN BLVD TO HWY 144 (CONN 144AR)
16143 SW DENNEY RD OVER HWY 144+RR
23872 HWY144 (CONN 144AW) TO SW DENNEY RD
23873 SW DENNEY RD TO HWY144 (CONN144AY)
13074A FANNO CR_HWY144 (CONN 144AX)(SW DENNEY RD)



OREGON PERMIT LOADS FOR STATE OWNED BRIDGES
Note: Units are kips and feet

No.	DATE	REVISIONS	BY
1	08/04/2021	Deleted HPC4000 concrete	F.M.G.

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO. See left
BDS DWG NO. 106227
CALC. BOOK 7207
HWY: 144
M.P.: Various
COUNTY Washington
DATE AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Aug 13 2021 9:40 AM
OREGON JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2023

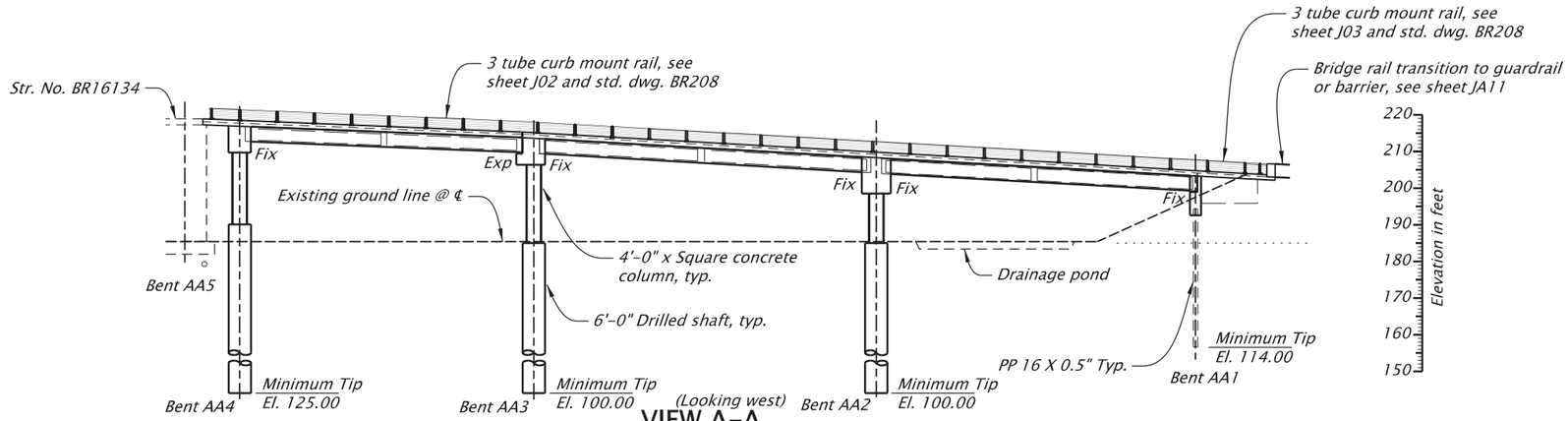
OREGON DEPARTMENT OF TRANSPORTATION

VARIOUS STRUCTURES
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs Reviewer: Zachery T. Beget
Drafter: Troy Wilson/Sandi Gish/Tony Johnson Checker: Eric Bonn, DOWL

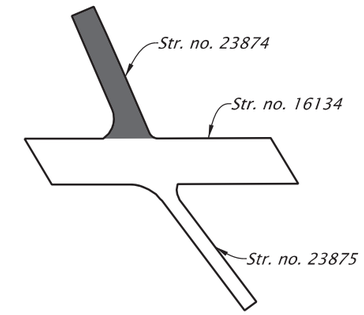
GENERAL NOTES SHEET NO. J03

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

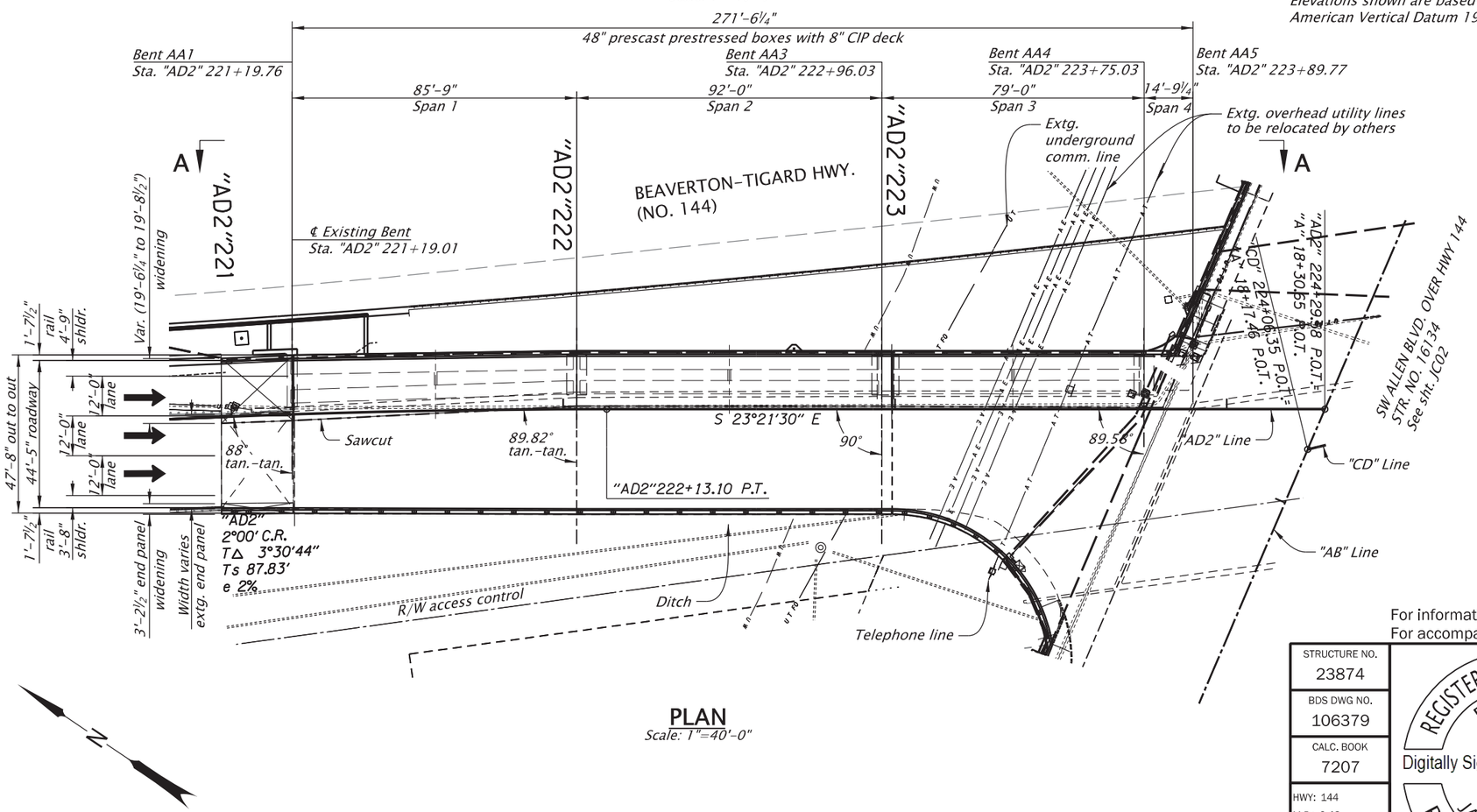


VIEW A-A
Scale: 1"=40'-0"
(Looking west)

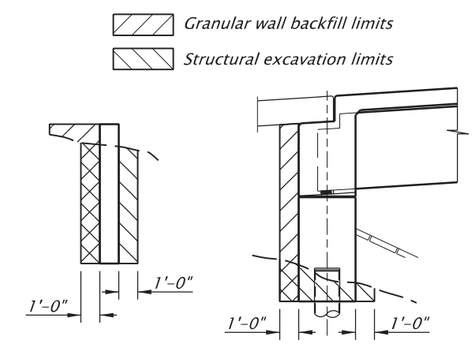
NOTE:
Elevations shown are based on North American Vertical Datum 1988 (NAVD88).



INTERCHANGE DIAGRAM
Scale: None



PLAN
Scale: 1"=40'-0"



WINGWALL BENT

EXCAVATION AND BACKFILL DETAILS
Scale: None

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

For informational drawings, see sht. JA01.
For accompanied by drawings, see sht. JA01

STRUCTURE NO.	23874
BDS DWG NO.	106379
CALC. BOOK	7207
HWY: 144	M.P.: 2.48
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Jun 15 2021 6:28 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

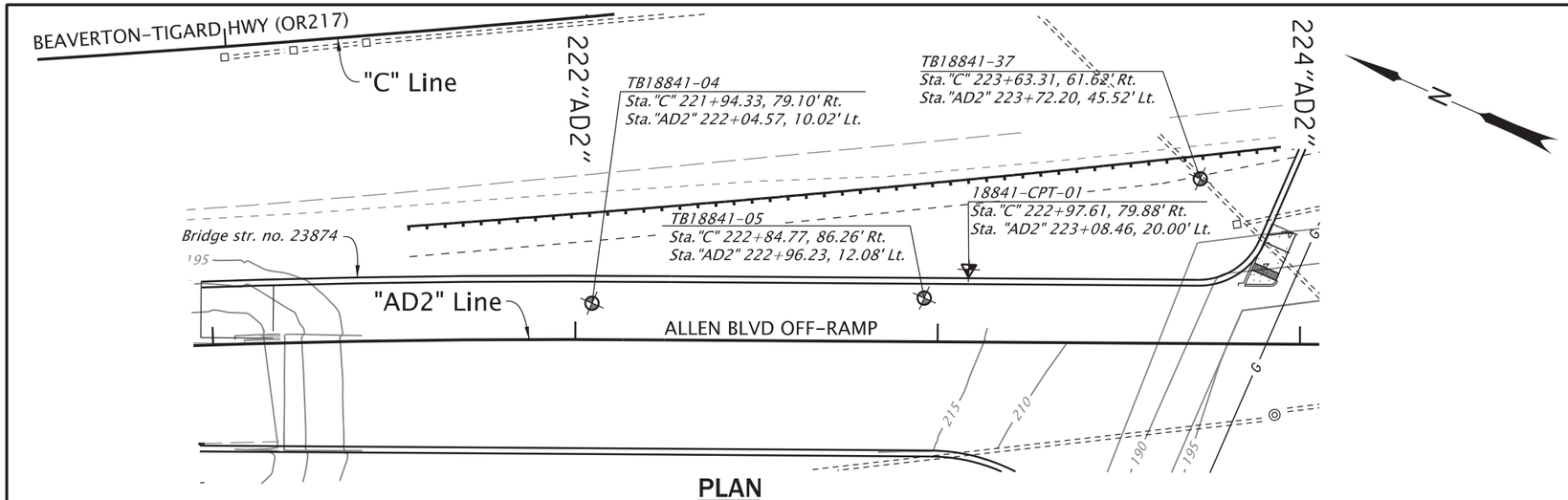
OREGON DEPARTMENT OF TRANSPORTATION

HWY 144 (CONN 144AP) TO SW ALLEN BLVD
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Zachary T. Beget
Drafter: Troy Wilson/SKG/JAT
Checker: Shawn McDyre

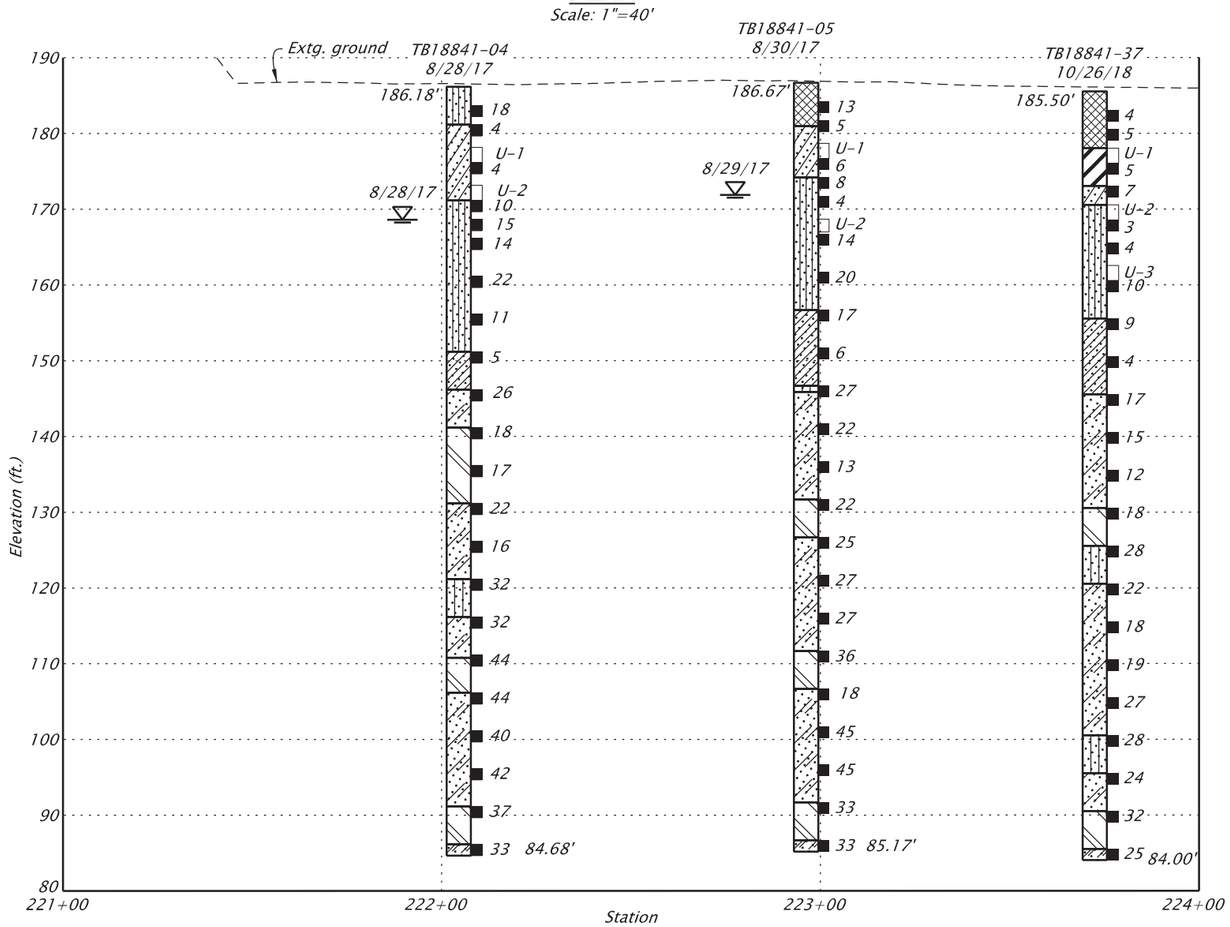
PLAN AND ELEVATION
SHEET NO. JA05

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST



PLAN

Scale: 1"=40'



PROFILE ALONG "AD2" LINE

Horiz. Scale: 1" = 40'
Vert. Scale: 1" = 20'

UNIT DESCRIPTIONS

CLAY with trace gravel and sand; CL; brown to gray with mottling; low to medium plasticity; damp; soft to stiff; fine to coarse gravel and fine to coarse grained sand; noncemented; homogeneous. (Fill)

CLAY with trace sand; CH; gray brown; high plasticity; moist; medium stiff; fine gravel and fine to coarse grained sand; noncemented; lensed. (Alluvium)

SILT to SILT with some sand; ML; gray; nonplastic to low plasticity; moist to wet; soft to very stiff, loose to medium dense where nonplastic; fine to coarse grained sand; noncemented; homogeneous. (Willamette Formation)

CLAY to CLAY with up to trace gravel and some sand; CL; gray; low to medium plasticity; moist to wet; soft to very stiff; fine to medium grained sand and coarse gravel; noncemented; homogeneous. (Willamette Formation)

SILT to Silty SAND; ML to SM; gray, red, black, brown mottled; nonplastic to low plasticity; moist to wet; very stiff to hard/medium dense where nonplastic; fine to coarse grained sand; noncemented; lensed. (Hillsboro Formation)

CLAY to Clayey SAND; CH, CL to SC; gray, brown, green, some red and black mottling; low to high plasticity; damp to wet; stiff to very stiff/medium dense; fine to coarse grained sand; noncemented; lensed. (Hillsboro Formation)

CLAY; CH; gray, blue-gray, brown, yellow-brown, orange mottling; high plasticity; damp to moist; very stiff to hard; noncemented; lensed. (Hillsboro Formation)

LEGEND

■ 24	=	Standard penetration test - N value
□ U-1	=	Undisturbed sample
	=	Bore Hole Location
	=	Goundwater measured in the bore hole
CPT	=	Cone Penetrometer
00.00'	=	Elevation
MM/DD/YY	=	Date of measurement

GENERAL NOTES

1. Elevations are based on North American Vertical Datum (1988).
2. Geotechnical data shown on this drawing are a consolidation of information and/or revision in terminology from the drill logs and CPT logs. More detailed subsurface data is available on the drill logs in the geotechnical report, which is available from the Engineer.
3. In accordance with ASTM D1586-84, N values are reported for an interval of 1 ft. except as noted.
4. 5' Contour interval on plan view.

STRUCTURE NO.	23874
BDS DWG NO.	106381
CALC. BOOK	7207
HWY: 144	M.P.: C2.34
COUNTY	Washington
DATE	04/2021

CERTIFIED OREGON MICHAEL J. ZIMMERMAN Digitally Signed May 25 2021 4:12 PM E1897 ENGINEERING GEOLOGIST

EXPIRES: 12-01-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

SW ALLEN BLVD OVER_ HWY 144_MP C2.43

OR217: OR10 - OR99W SEC.

BEAVERTON-TIGARD HIGHWAY

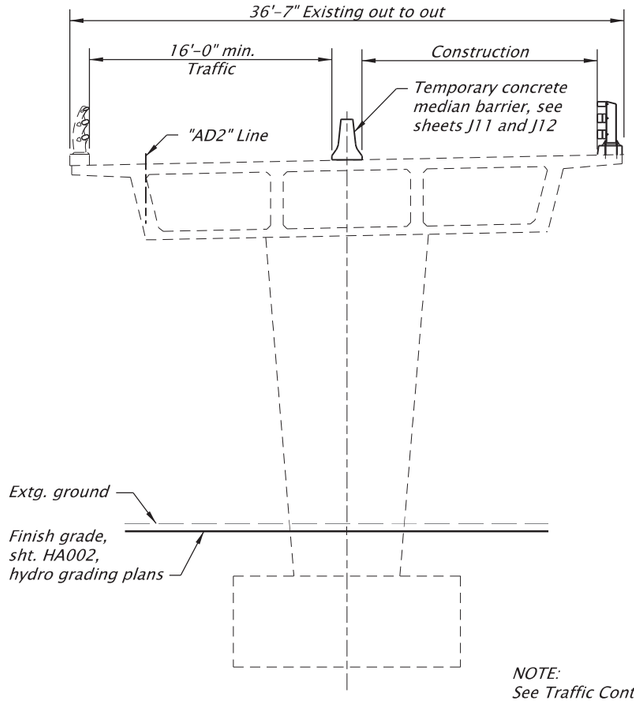
WASHINGTON COUNTY

Designer: Michael Zimmerman | Reviewer: Michael Tardif

Drafter: Julie Rentz | Checker: N/A

GEOTECHNICAL DATA

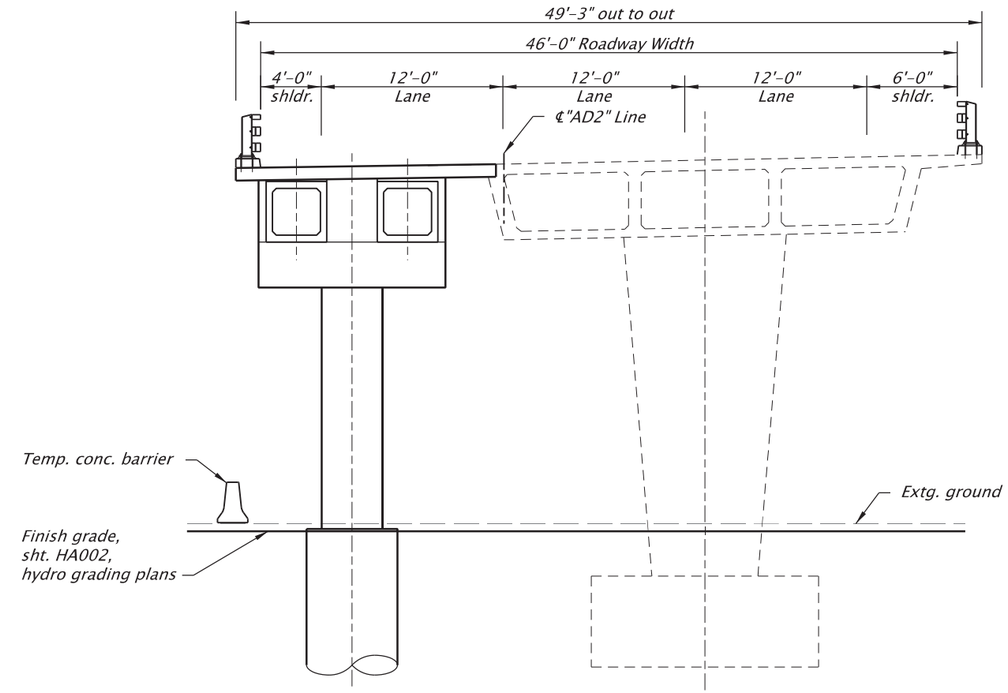
SHEET NO. JA07



NOTE:
See Traffic Control Plans for details

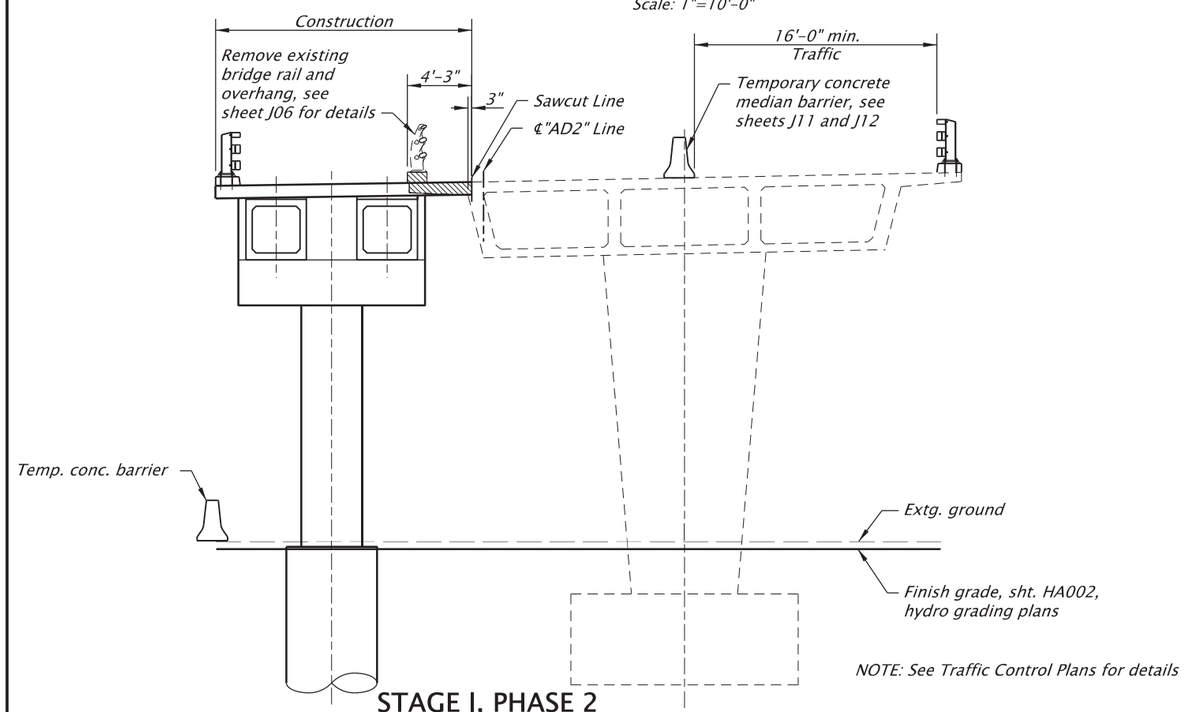
STAGE I, PHASE 1

Scale: 1"=10'-0"



FINISH

Scale: 1"=10'-0"



NOTE: See Traffic Control Plans for details

STAGE I, PHASE 2

Scale: 1"=10'-0"

STAGING NOTES: BENT 2, BENT 3, SPAN 2 & SPAN 3

STAGE I, PHASE 1:

1. *Place traffic in configuration shown.*
2. *Remove existing bridge rail and construct 3 tube curb mount rail, modified, see sheet J09 and standard drawings BR208 and BR209.*

STAGE I, PHASE 2:

1. *Place traffic in configuration shown.*
2. *Construct bridge widening.*

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

For informational drawings, see sht. JA01.
For accompanied by drawings, see sht. JA01

STRUCTURE NO.	23874
BDS DWG NO.	106383
CALC. BOOK	7207
HWY: 144 M.P.: 2.48	
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Jun 15 2021 6:30 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

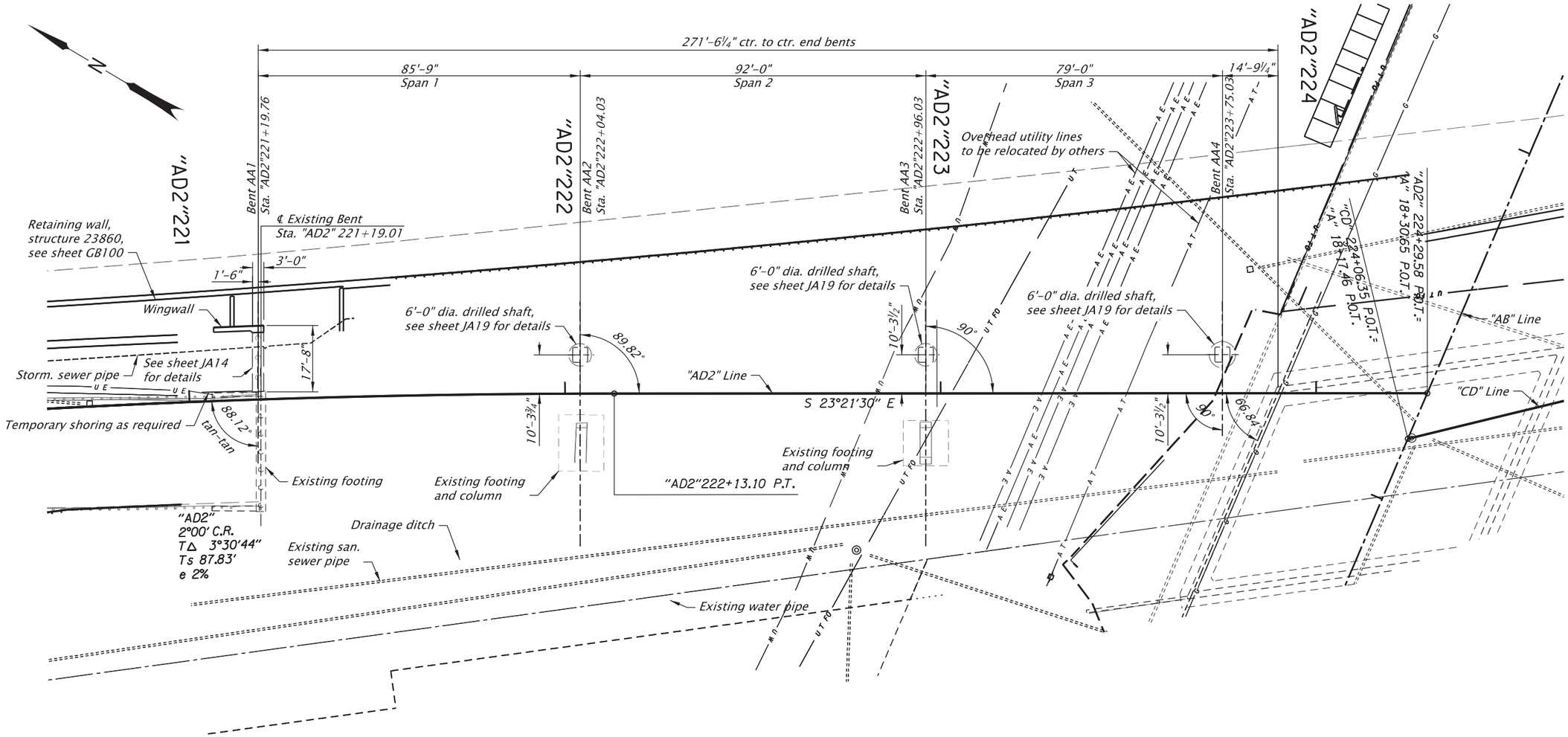
OREGON DEPARTMENT OF TRANSPORTATION

HWY 144 (CONN 144AP) TO SW ALLEN BLVD
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Zachary T. Beget
Drafter: Troy Wilson/SKG/JAT
Checker: Shawn McDyre

STAGING BENT AA2 & AA3

SHEET NO. JA09



PILE TABLE

Location	Minimum Tip Elevation	Estimated Tip Elevation	As-Const. Tip Elevation	Cutoff Elevation	Engineer's Est. Length	Nominal Bearing Resistance Rn	Factored Bearing Resistance
	(ft)	(ft)	(ft)	(ft)	(ft)	(kips)	(kips)
Bent AA1	140.0	113.0		194.8	81.7	430.0	280.0

Provide PP16.00 X0.50 (ASTM A252 Grade 3) driven closed ended to the nominal resistance shown.

Drive piles to the specified nominal bearing resistance using specified minimum tip elevations. Verify pile resistance using a Pile Driving Analyzer and CAPWAP Analysis as specified in the Special Provisions.

FOOTING PLAN

Scale: 1"=30'-0"

For informational drawings, see sht. JA01.
For accompanied by drawings, see sht. JA01

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO.	23874
BDS DWG NO.	106384
CALC. BOOK	7207
HWY: 144	M.P.: 2.48
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Jun 15 2021 6:30 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

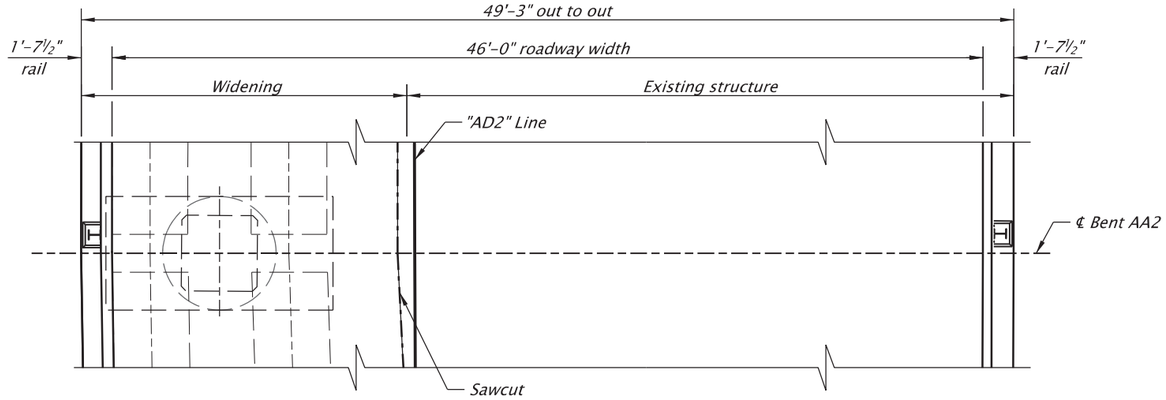
OREGON DEPARTMENT OF TRANSPORTATION

HWY 144 (CONN 144AP) TO SW ALLEN BLVD
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Zachary T. Beget
Drafter: Troy Wilson/SKG/JAT
Checker: Shawn McDyre

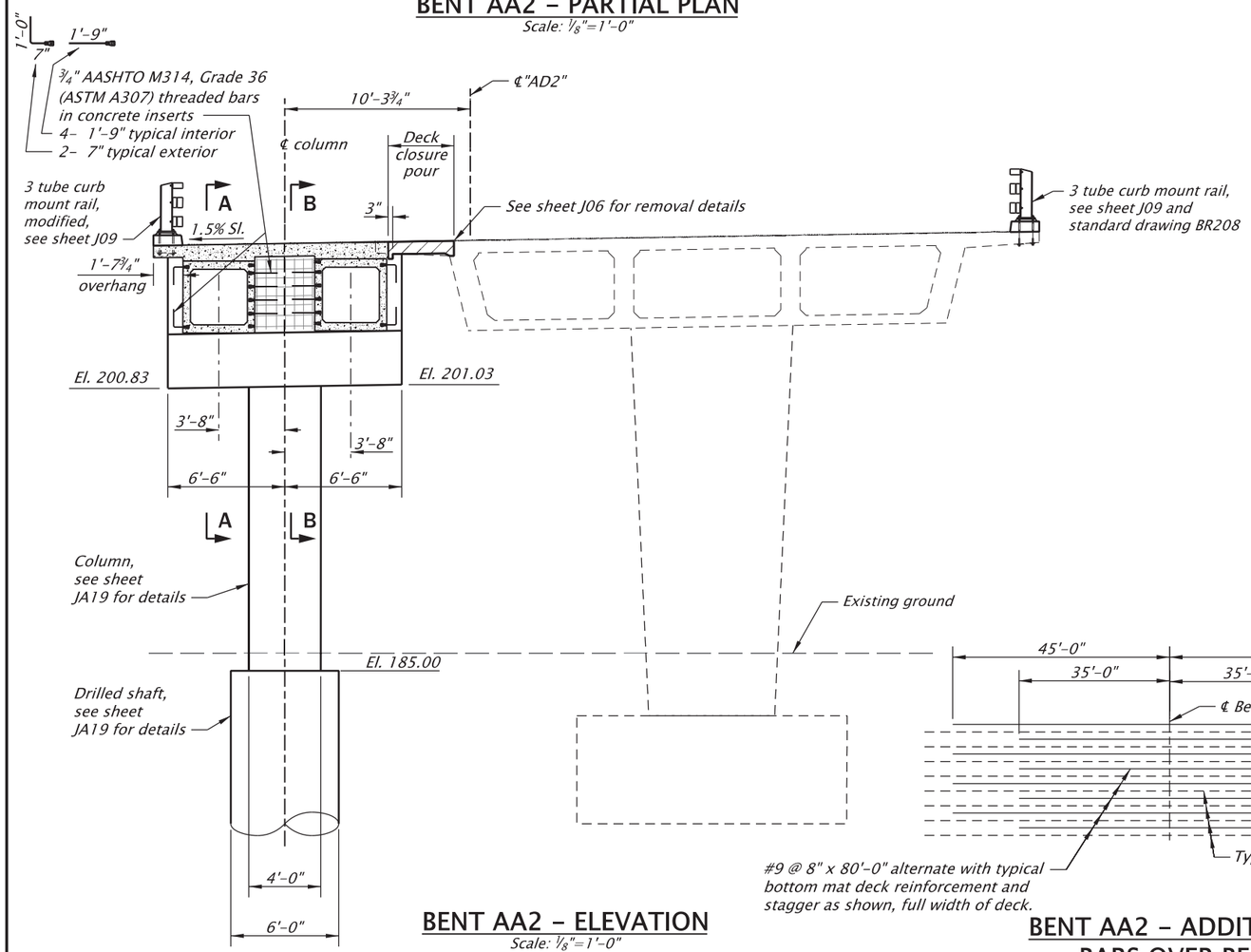
FOOTING PLAN AND DETAILS
SHEET NO. JA10

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST



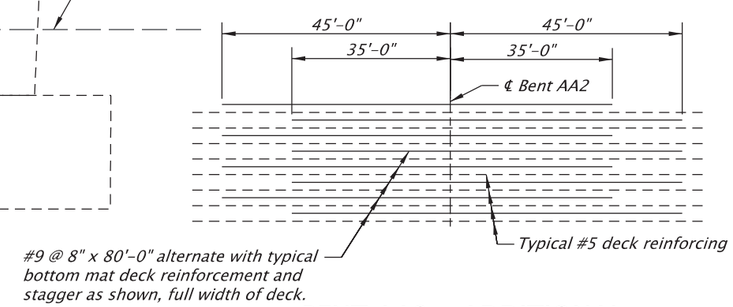
BENT AA2 - PARTIAL PLAN

Scale: ⅛"=1'-0"

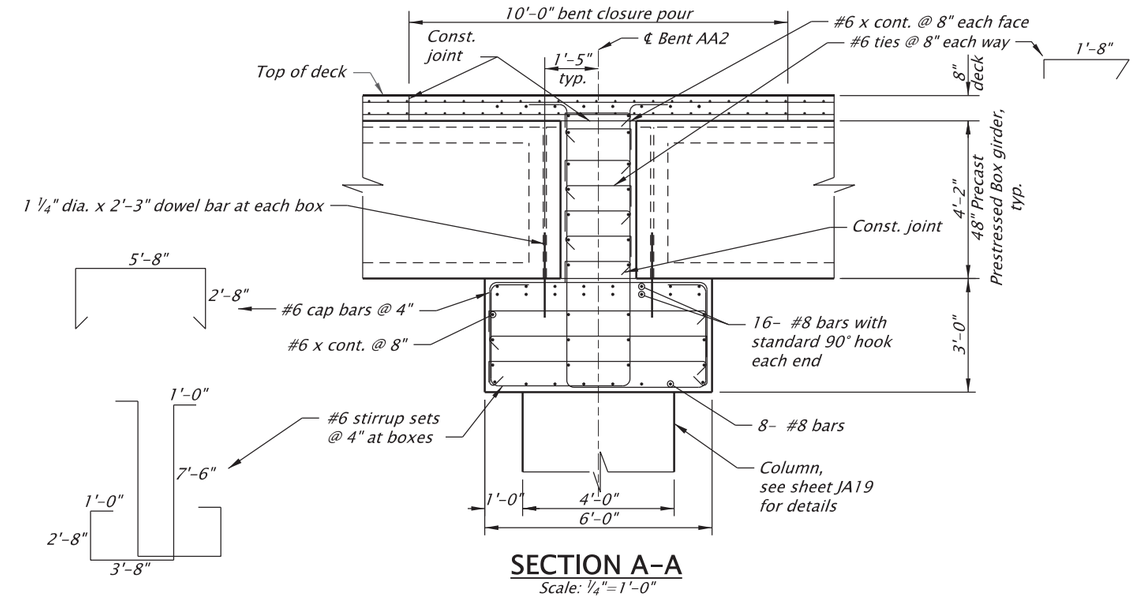


BENT AA2 - ELEVATION

Scale: ⅛"=1'-0"

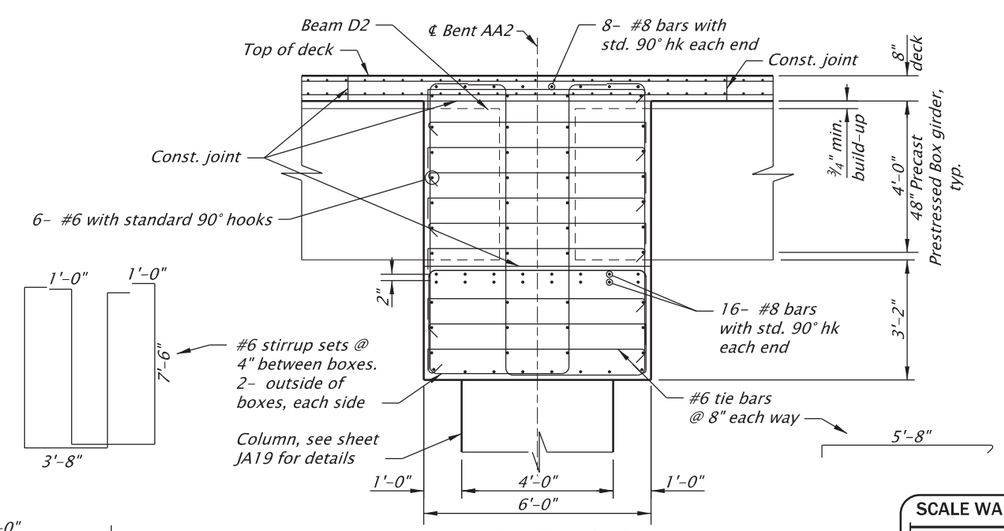


BENT AA2 - ADDITIONAL BARS OVER BENT



SECTION A-A

Scale: ¼"=1'-0"



SECTION B-B

Scale: ¼"=1'-0"

SCALE WARNING

IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO.	23874
BDS DWG NO.	106390
CALC. BOOK	7207
HWY: 144	M.P.: 2.48
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Jun 15 2021 6:34 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

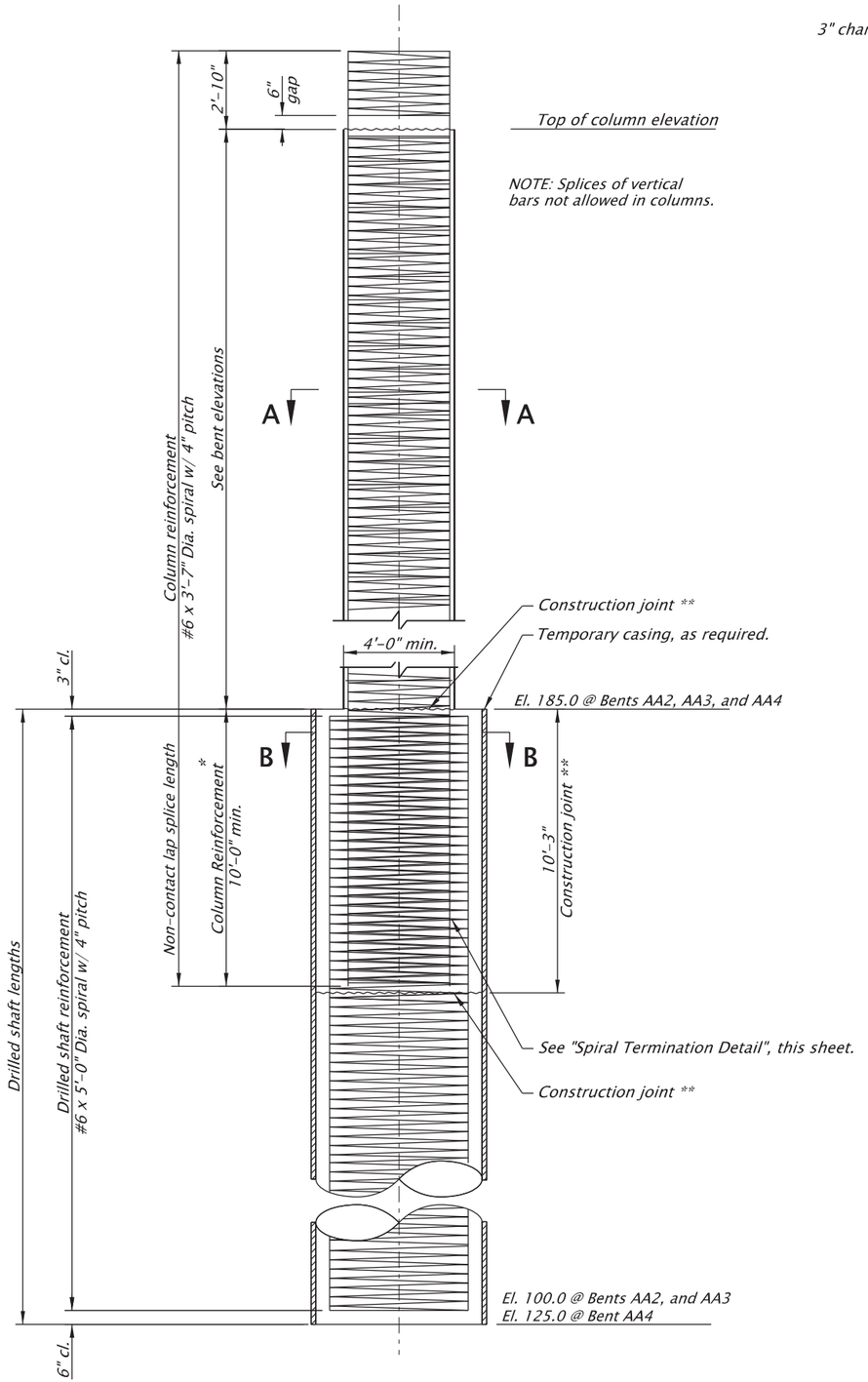
OREGON DEPARTMENT OF TRANSPORTATION

HWY 144 (CONN 144AP) TO SW ALLEN BLVD
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Zachary T. Beget
Drafter: Troy Wilson/SKG/JAT
Checker: Shawn McDyre

BENT AA2 PLAN AND ELEVATION

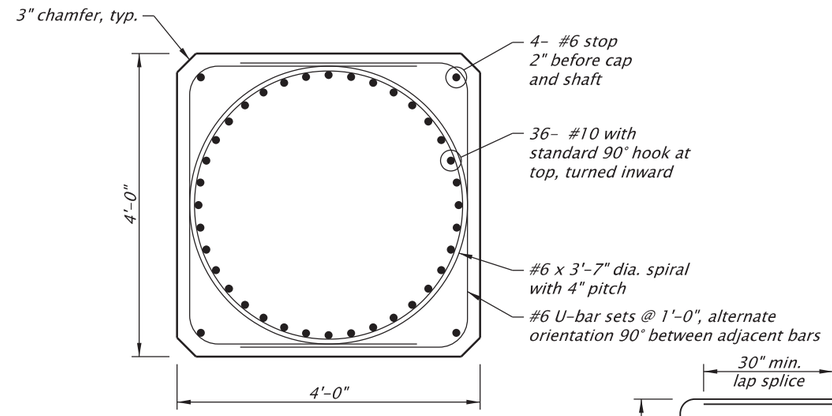
SHEET NO. JA16



DRILLED SHAFT ELEVATION

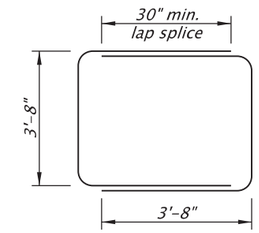
Scale: 3/16"=1'-0"

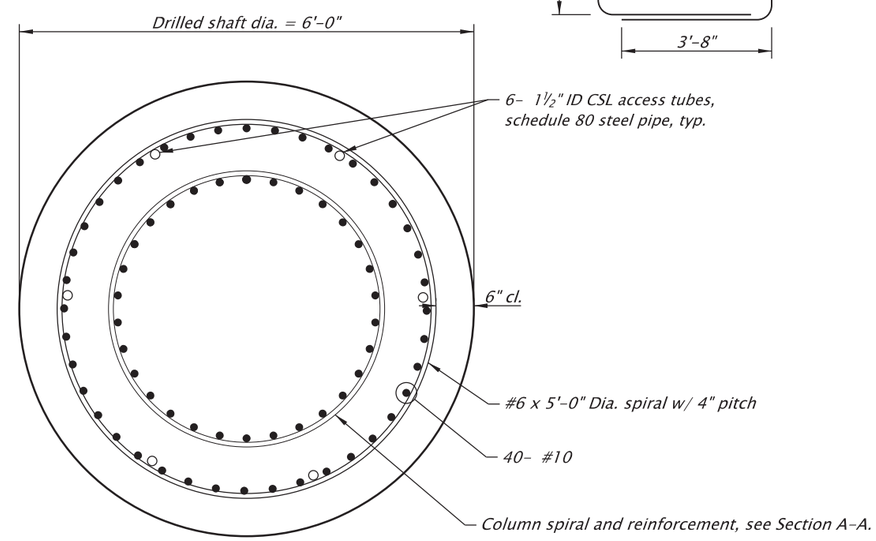
** Construction joint with roughened surface (1/4" minimum deviation from planar surface)



SECTION A-A

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



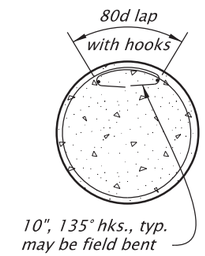


SECTION B-B

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

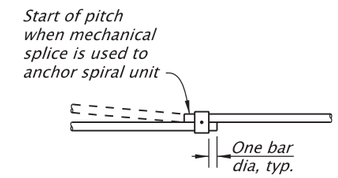
NOTE A

Use ASTM A706 for all welded splices. Anchor spirals at each end or discontinuity with one extra turn and splice to itself as shown. Lapped splice is not allowed within 1/6 column height or max. column cross sectional dimension or 18" from top of footing or bottom of cap beam.

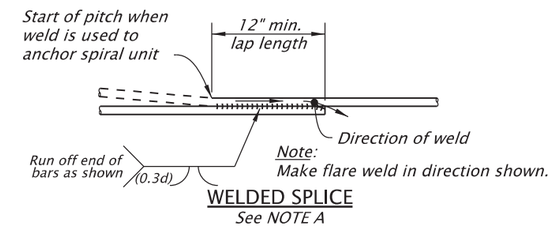


LAPPED SPLICE

See NOTE A



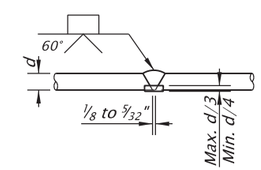
MECHANICAL SPLICE



WELDED SPLICE

See NOTE A

SPIRAL SPLICE/TERMINATION DETAIL



ALTERNATE WELDED SPLICE

Weld reinforcing steel splices in accordance with ANSI/AWS D1.4 "Structural Welding Code Reinforcing Steel"

SCALE WARNING

IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

For informational drawings, see sht. JA01.
For accompanied by drawings, see sht. JA01

STRUCTURE NO.	23874
BDS DWG NO.	106393
CALC. BOOK	7207
HWY: 144	M.P.: 2.48
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed Jun 15 2021 6:36 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

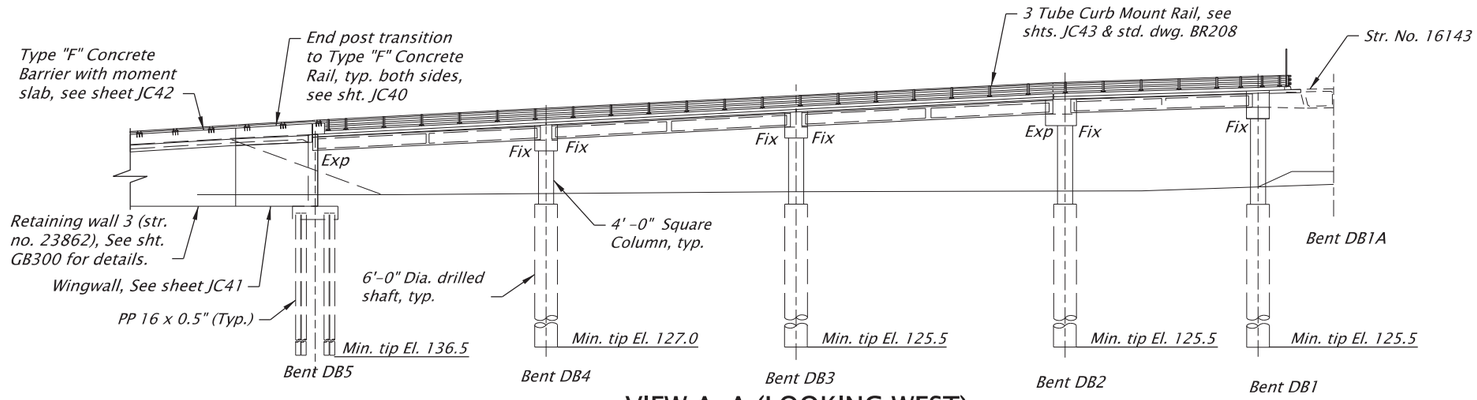
OREGON DEPARTMENT OF TRANSPORTATION

HWY 144 (CONN 144AP) TO SW ALLEN BLVD
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs | Reviewer: Zachary T. Beget
Drafter: Troy Wilson/SKG/JAT | Checker: Shawn McDyre

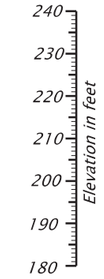
DRILLED SHAFT DETAILS

SHEET NO. JA19

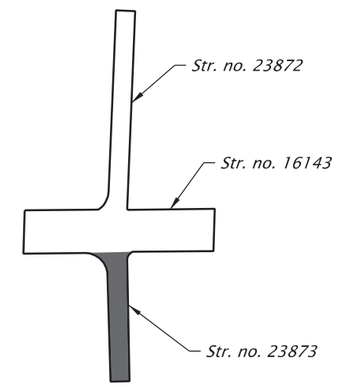


VIEW A-A (LOOKING WEST)

Scale: 1"= 40'-0"

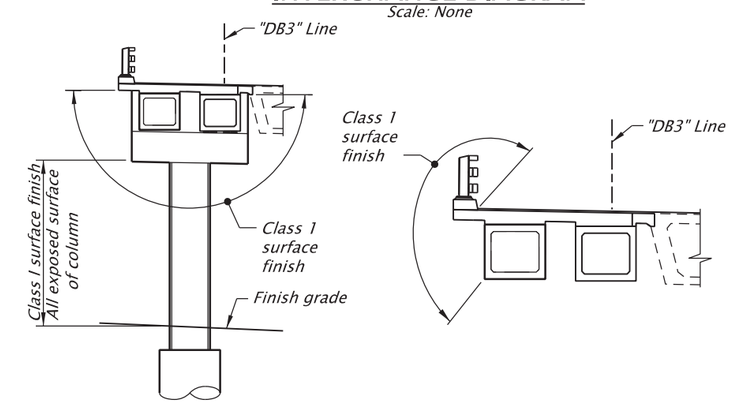


NOTE:
Elevations shown are based on North American Vertical Datum 1988 (NAVD88).



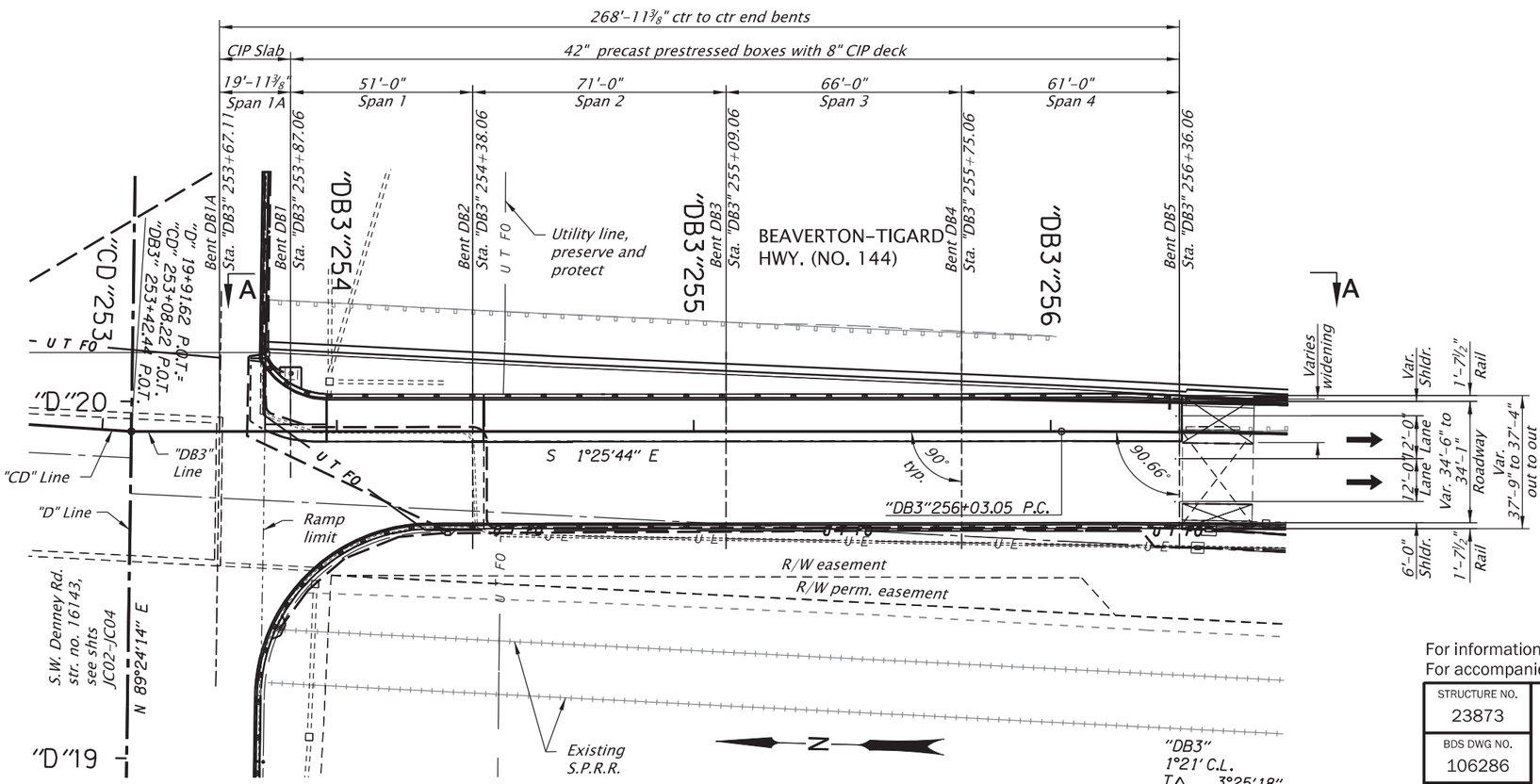
INTERCHANGE DIAGRAM

Scale: None



FINISH DIAGRAMS

Scale: None



PLAN

Scale: 1"= 40'-0"

For informational drawings, see sht. JC01.
For accompanied by drawings, see sht. JC01

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO.	23873
BDS DWG NO.	106286
CALC. BOOK	7157
HWY: 144 M.P.: 3.02	
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed May 28 2021 9:07 AM
OREGON JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

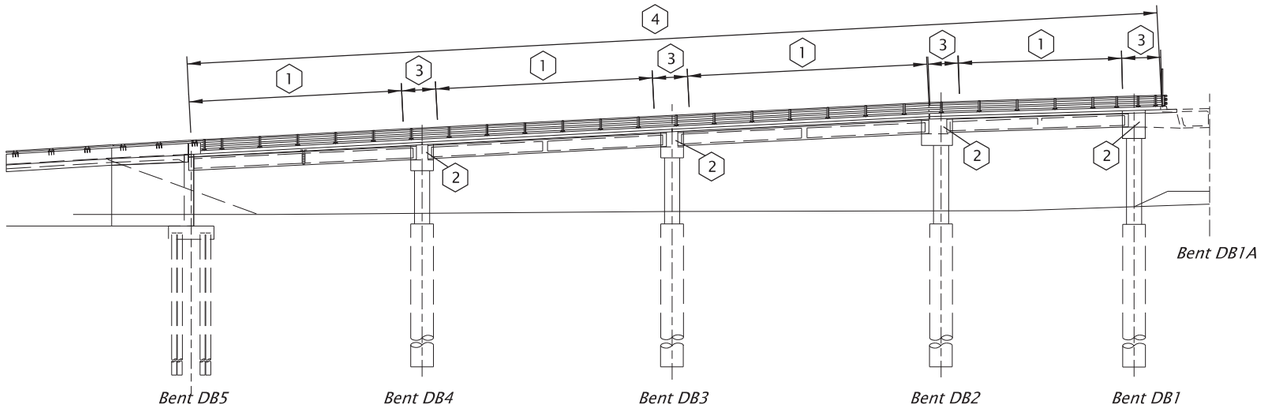
OREGON DEPARTMENT OF TRANSPORTATION

SW DENNEY RD TO HWY 144SB (CONN 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

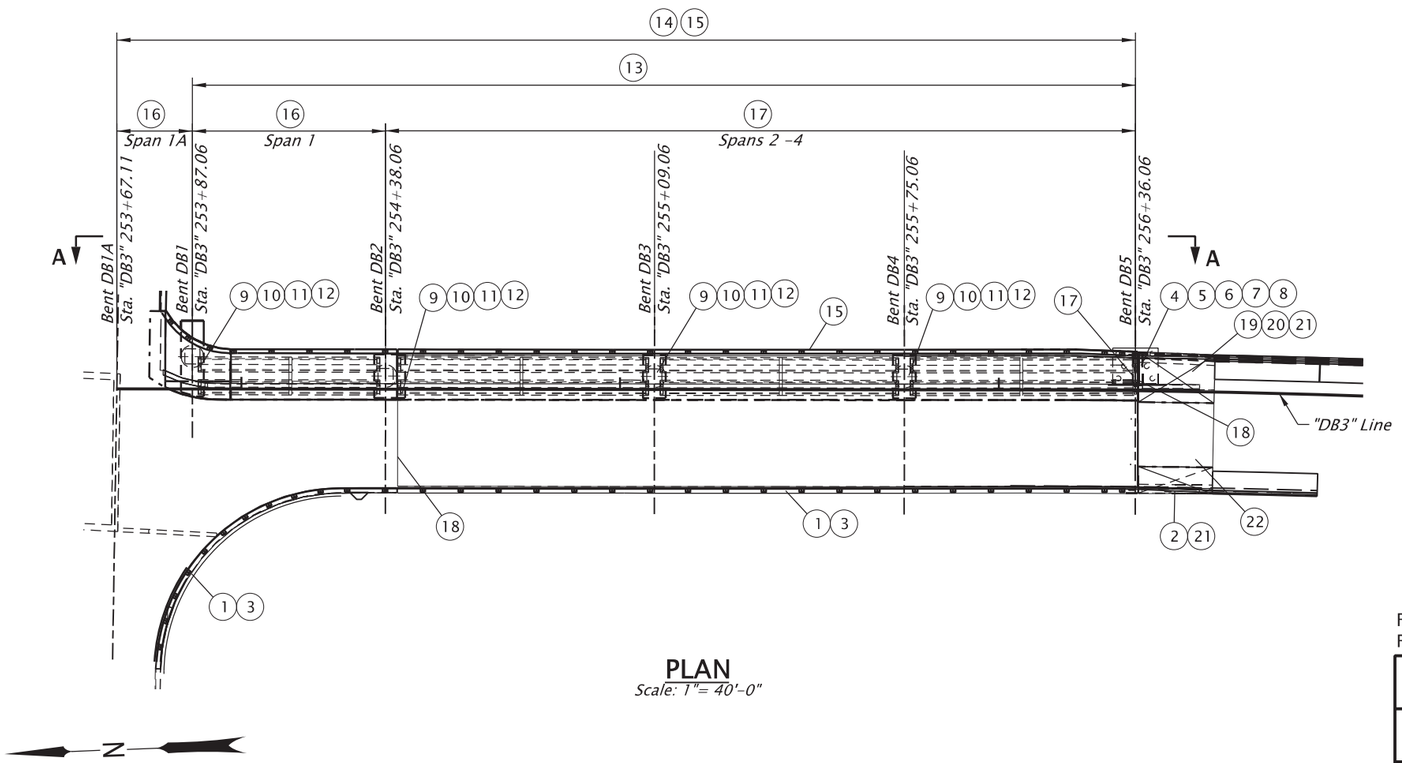
Designer: Robert Grubbs
Reviewer: Liantao Xu
Drafter: Troy Wilson/Sandra Gish
Checker: Eric E. Bonn (DOWL)

PLAN AND ELEVATION

SHEET NO. JC24



VIEW A–A
Scale: 1"= 40'–0"



PLAN
Scale: 1"= 40'–0"

SUPERSTRUCTURE POUR SCHEDULE

1. *Pour deck between bent closure pours.*
2. *Place upper portion of cross beams.*
3. *Place bent closure pours, to limits shown.*
4. *Place deck closure pours.*

CONSTRUCTION SEQUENCE

RAIL RETROFIT CONSTRUCTION

1. *Remove existing rail and curb.*
2. *Construct end panel widening.*
3. *Inst. 3 Tube Curb Mount Rail, Modified. Const. Type "F" concrete rail with moment slab. Const. End Post transition to Type "F" Concrete Rail.*

BENT DB5 CONSTRUCTION

4. *Construct temporary shoring as required*
5. *Remove portions of bent as shown*
6. *Drive piles*
7. *Construct footing*
8. *Construct stem wall and wingwall and Str. No. 23862*

BENT DB1, DB2, DB3 AND DB4 CONSTRUCTION

9. *Remove existing deck as shown*
10. *Construct drilled shafts*
11. *Construct columns*
12. *Construct bottom portion of crossbeams*

PRESTRESSED BOX SUPERSTRUCTURE AND AUXILIARY ITEM CONSTRUCTION

13. *Place prestressed boxes*
14. *Place deck and complete cross beams as detailed in "Superstructure Pour Schedule"*
15. *Install 3 Tube Curb Mount Rail*
16. *Construct multilayer polymer concrete overlay (MPCO), Spans 1A and 1*
17. *Construct PPC overlay, Spans 2–4*
18. *Install precompressed foam silicone joint seal*

END PANEL AND MOMENT SLAB CONSTRUCTION

19. *Place backfill behind bent and wingwall*
20. *Construct end panel widening.*
21. *Inst. 3 Tube Curb Mount Rail. Const. Type "F" concrete rail with moment slab. Const. End Post transition to Type "F" Concrete Rail.*
22. *Place ACP on end panel*

For informational drawings, see sht. JC01.
For accompanied by drawings, see sht. JC01

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO.	23873
BDS DWG NO.	106287
CALC. BOOK	7157
HWY: 144	M.P.: 3.02
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed May 28 2021 9:07 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06–30–2021

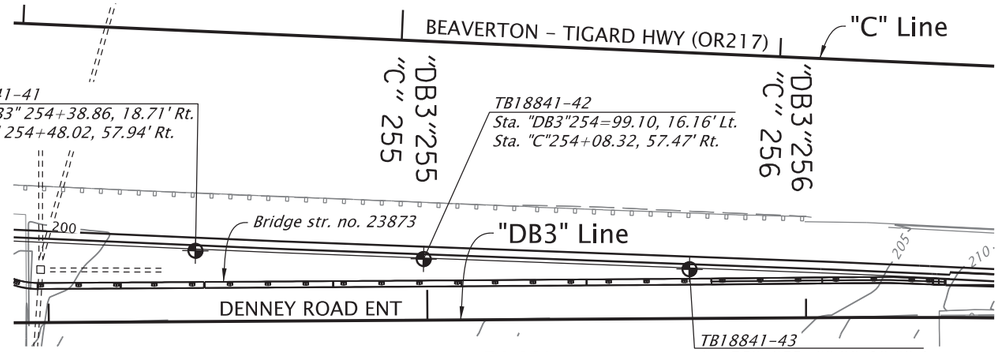
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

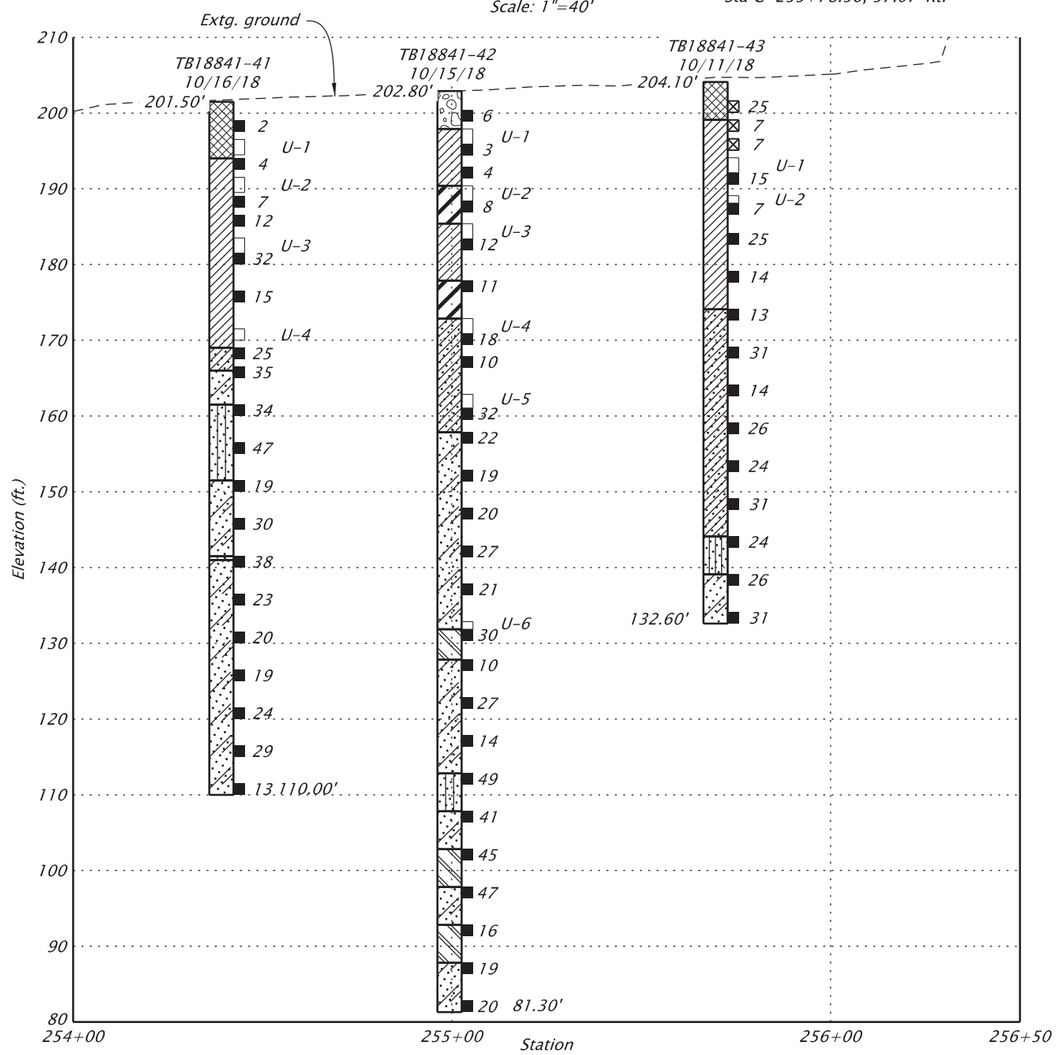
SW DENNEY RD TO HWY 144SB (CONN 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Liantao Xu
Drafter: Troy Wilson/Sandra Gish
Checker: Eric E. Bonn (DOWL)

CONSTRUCTION SEQUENCE AND POUR SCHEDULE
SHEET NO. JC25



PLAN
Scale: 1"=40'



PROFILE ALONG "DB3" LINE
Horiz. Scale: 1" = 40'
Vert. Scale: 1" = 20'

UNIT DESCRIPTIONS

CLAY with up to trace sand; CL; gray and brown, rust mottled; low plasticity; damp; soft to very stiff; fine to coarse grained sand; noncemented; homogeneous. (Fill)

CLAY with up to trace sand; CL; gray and brown, rust mottled; low plasticity; damp; soft to very stiff; fine to coarse grained sand; noncemented; homogeneous. (Fill)

CLAY to CLAY with trace sand; CL; gray, brown with black and rust mottling; low to high plasticity; damp to wet; soft to hard; fine to coarse grained sand; noncemented; lensed. (Alluvium)

CLAY with up to trace sand; CH; brown, gray and rust mottled; medium to high plasticity; damp; medium stiff to stiff; fine to medium grained sand; noncemented; homogeneous. (Alluvium)

SILT with trace sand; ML; dark gray-green; low plasticity; moist; very stiff; fine to medium grained sand; noncemented; homogeneous. (Willamette Formation)

CLAY with trace to some sand; CL; gray, brown, with orange and rust mottling; low to medium plasticity; damp; stiff to hard; fine to coarse grained sand; noncemented; homogeneous. (Willamette Formation)

CLAY to Sandy CLAY to Clayey SAND with trace gravel; CL to SC; gray, green-gray, brown mottled; low to medium plasticity; damp to moist; stiff to hard/dense; fine gravel and fine to coarse grained sand; noncemented; lensed. (Hillsboro Formation)

CLAY; CH; dark gray-green, blue-green; medium to high plasticity; damp; very stiff to hard; noncemented; lensed. (Hillsboro Formation)

SILT to Sandy SILT; ML; gray, brown, orange mottled; low plasticity; damp to moist; hard; fine to coarse grained sand; noncemented; lensed. (Hillsboro Formation)

LEGEND

■ 24	=	Standard penetration test - N value
□ U-1	=	Undisturbed sample
	=	Bore Hole Location
	=	Goundwater measured in the bore hole
⊠	=	Modified California 3" O.D. split spoon sample
00.00'	=	Elevation
MM/DD/YY	=	Date of measurement

GENERAL NOTES

1. Elevations are based on North American Vertical Datum (1988).
2. Geotechnical data shown on this drawing are a consolidation of information and/or revision in terminology from the drill logs and CPT logs. More detailed subsurface data is available on the drill logs in the geotechnical report, which is available from the Engineer.
3. In accordance with ASTM D1586-84, N values are reported for an interval of 1 ft. except as noted.
4. 5' Contour interval on plan view.

STRUCTURE NO.	23873
BDS DWG NO.	106288
CALC. BOOK	7157
HWY: 144 M.P.: 3.02	
COUNTY	Washington
DATE	04/2021

CERTIFIED OREGON MICHAEL J. ZIMMERMAN Digitally Signed May 25 2021 4:15 PM E1897 ENGINEERING GEOLOGIST

EXPIRES: 12-01-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

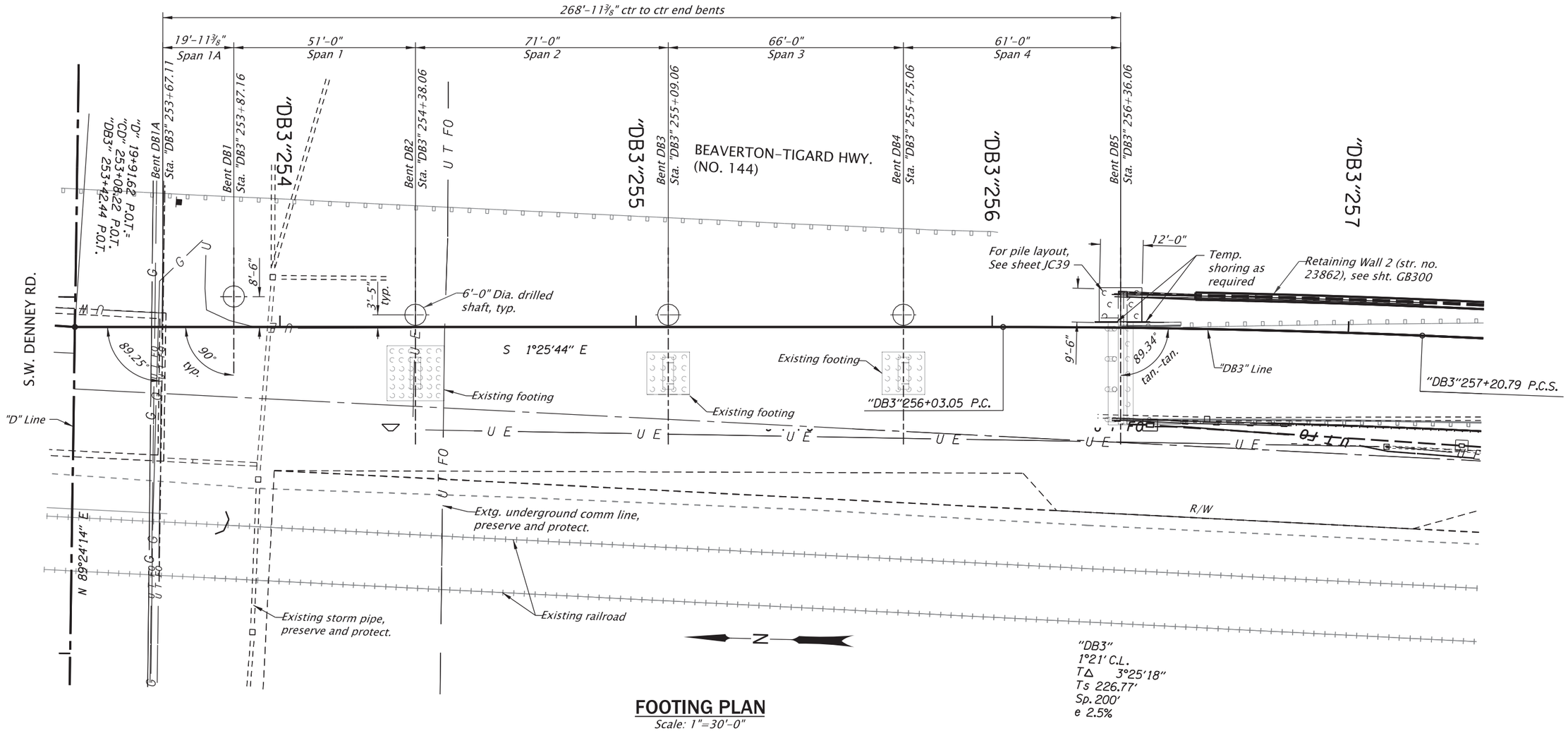
OREGON DEPARTMENT OF TRANSPORTATION

SW DENNEY RD_TO_HWY144SB_(CONN. 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Michael Zimmerman Reviewer: MIchael Tardif
Drafter: Julie Rentz Checker: N/A

GEOTECHNICAL DATA

SHEET NO. JC26



FOOTING PLAN

Scale: 1"=30'-0"

PILE TABLE

Location	Minimum Tip Elevation	Estimated Tip Elevation	As-Const. Tip Elevation	Cutoff Elevation	Engineer's Est. Length	Nominal Bearing Resistance Rn	Factored Bearing Resistance
	(ft)	(ft)	(ft)	(ft)	(ft)	(kips)	(kips)
Bent DB5	156.0	136.5		197.7	65.0	246.2	160.0

Provide PP 16x0.5" (ASTM A252 Grade 3) driven closed ended to the nominal resistance shown. See sht. J06 for details.

Drive piles to the specified nominal bearing resistance using specified minimum tip elevations. Verify pile resistance using a Pile Driving Analyzer and Capwap Analysis as specified in the Special Provisions.

For informational drawings, see sht. JC01.
For accompanied by drawings, see sht. JC01

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO. 23873
BDS DWG NO. 106289
CALC. BOOK 7157
HWY: 144
M.P.: 3.02
COUNTY Washington
DATE AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed May 28 2021 9:11 AM
OREGON JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

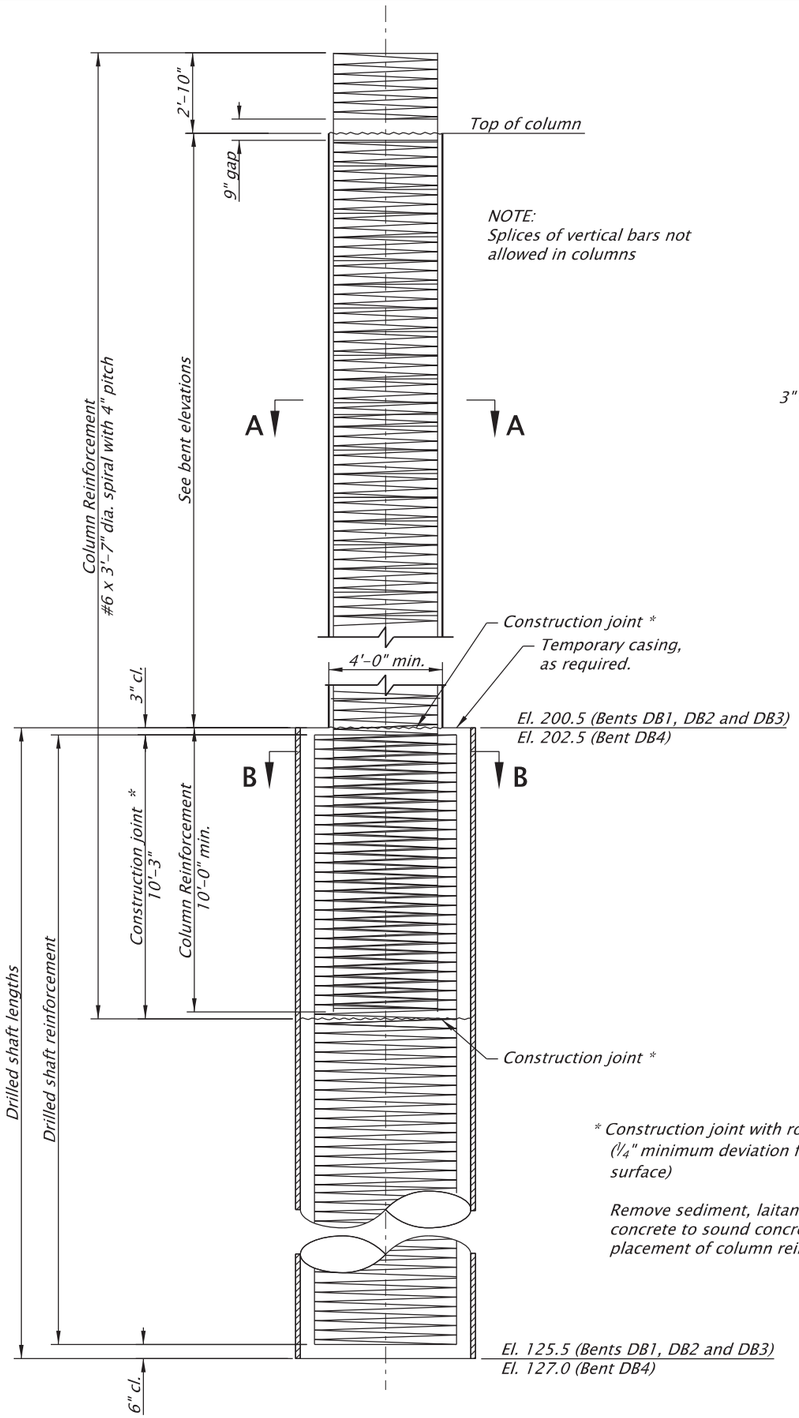
OREGON DEPARTMENT OF TRANSPORTATION

SW DENNEY RD TO HWY 144SB (CONN 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Liantao Xu
Drafter: Troy Wilson/Sandra Gish
Checker: Eric E. Bonn (DOWL)

FOOTING PLAN
SHEET NO. JC27

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

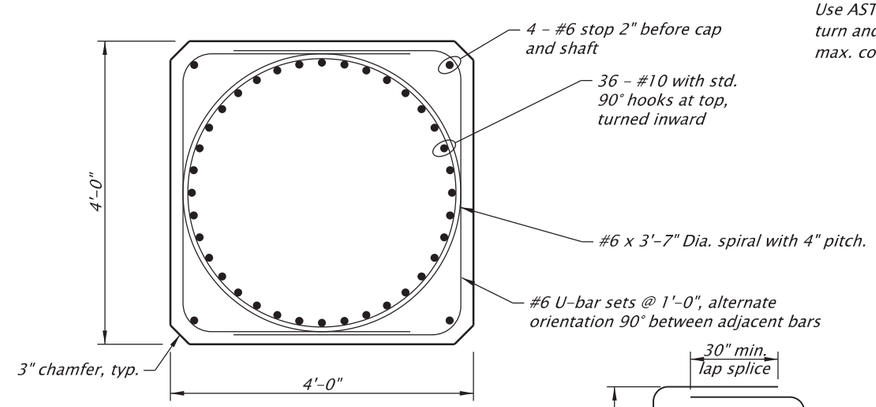


DRILLED SHAFT ELEVATION

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

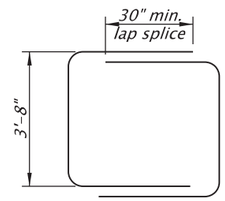
* Construction joint with roughened surface (1/4" minimum deviation from planar surface)

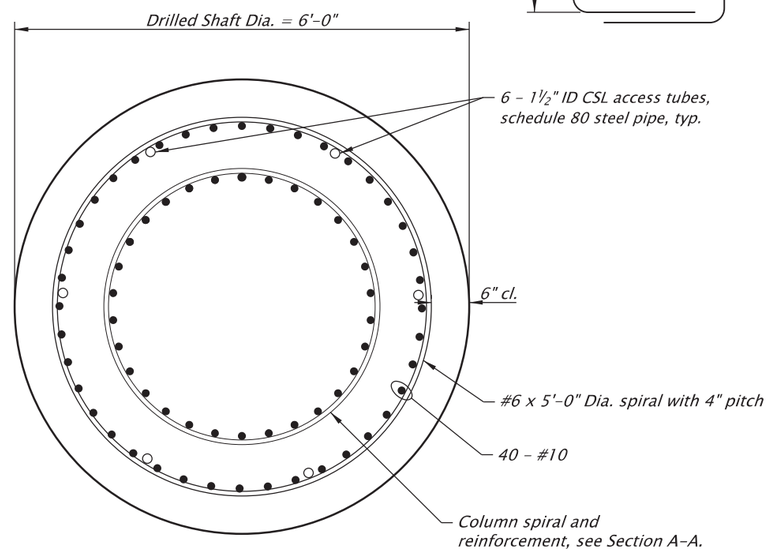
Remove sediment, laitance, and weak concrete to sound concrete prior to placement of column reinforcement.



SECTION A-A

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

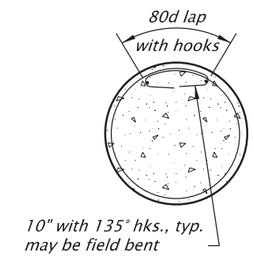




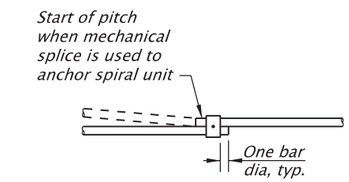
SECTION B-B

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

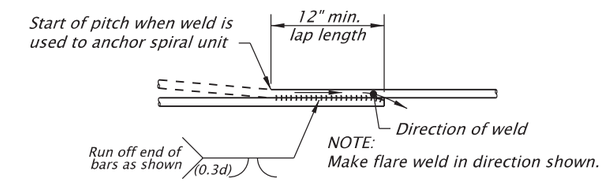
NOTE A:
Use ASTM A706 for all welded splices. Anchor spirals at each end or discontinuity with one extra turn and a splice to itself as shown. Lapped splice is not allowed within 1/6 the column height or max. column cross sectional dimension or 18" from top of footing or bottom of cap beam.



LAPPED SPLICE
See NOTE A

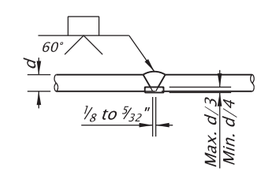


MECHANICAL SPLICE



WELDED SPLICE
See NOTE A

SPIRAL SPLICE/TERMINATION DETAIL



ALTERNATE WELDED SPLICE

Weld reinforcing steel splices in accordance with ANSI/AWS D1.4 "Structural Welding Code Reinforcing Steel"

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

For informational drawings, see sht. JC01.
For accompanied by drawings, see sht. JC01

STRUCTURE NO.	23873
BDS DWG NO.	106290
CALC. BOOK	7157
HWY: 144	M.P.: 3.02
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed May 28 2021 9:20 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

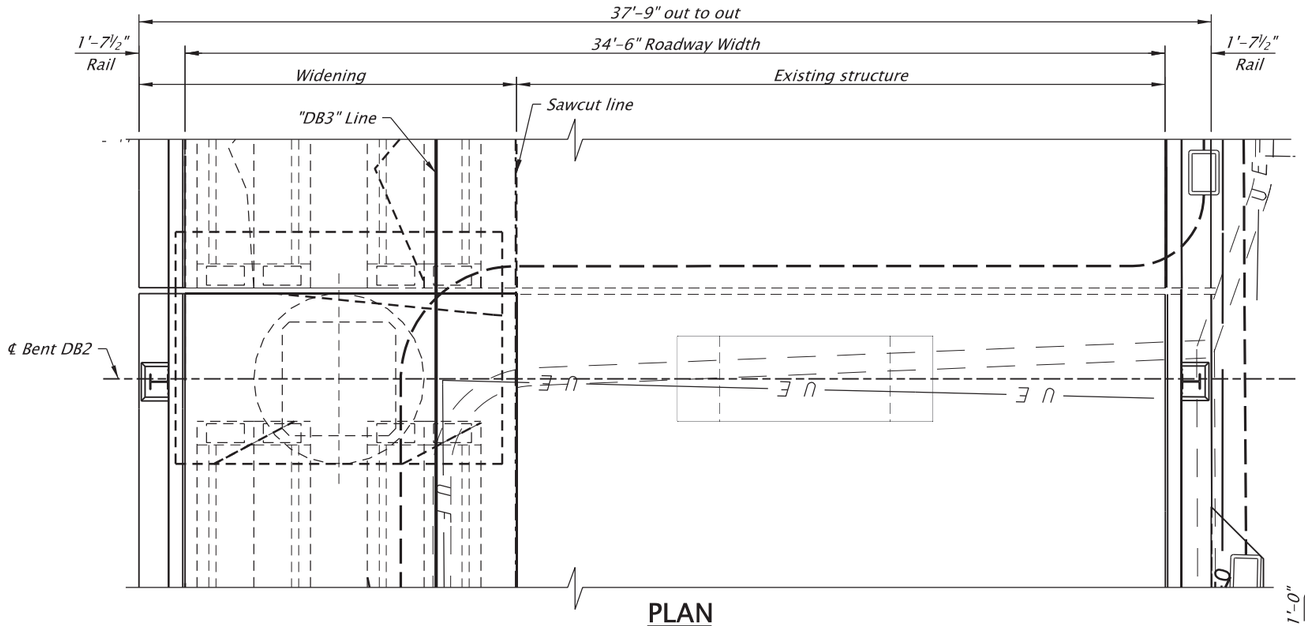
OREGON DEPARTMENT OF TRANSPORTATION

SW DENNEY RD TO HWY 144SB (CONN 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Liantao Xu
Drafter: Troy Wilson/Sandra Gish
Checker: Eric E. Bonn (DOWL)

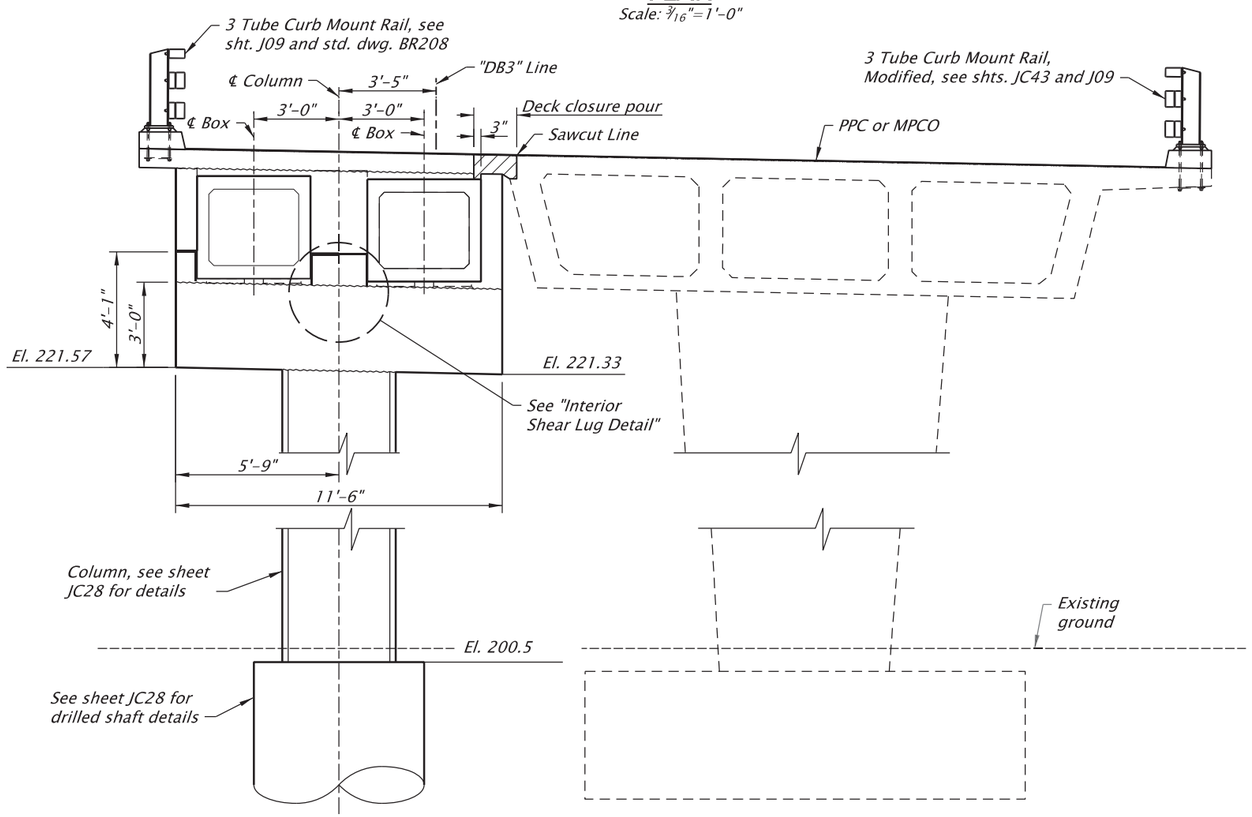
DRILLED SHAFT DETAILS
SHEET NO. JC28

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST



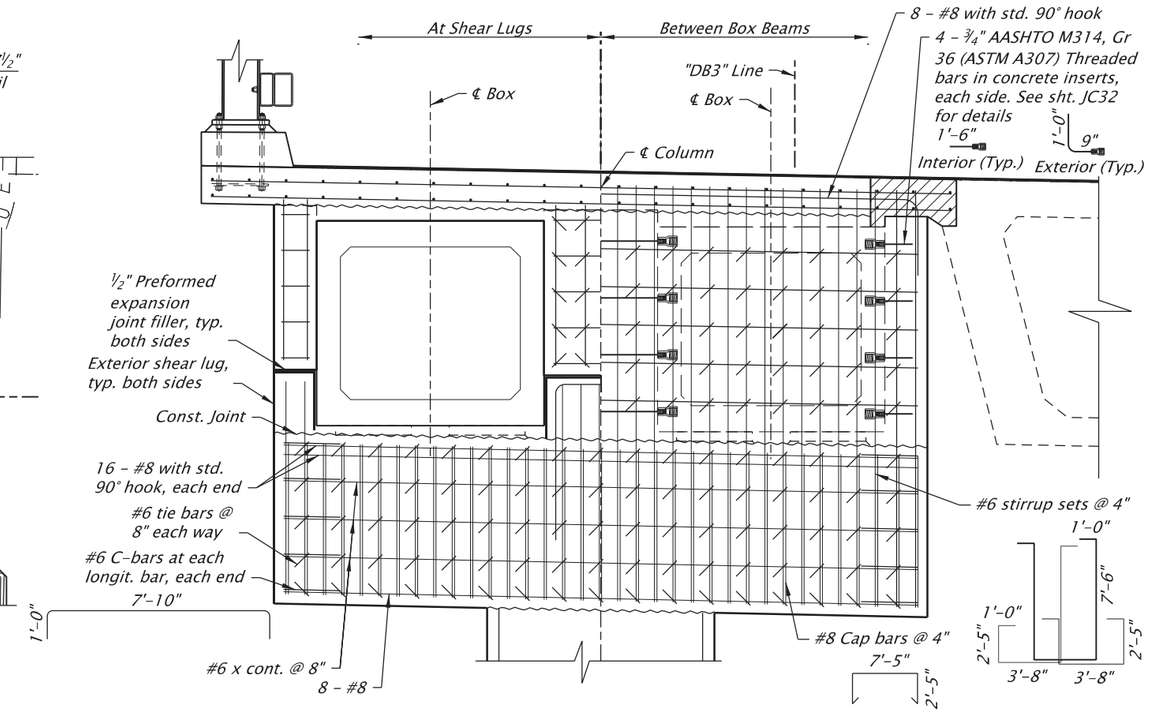
PLAN

Scale: 3/16"=1'-0"



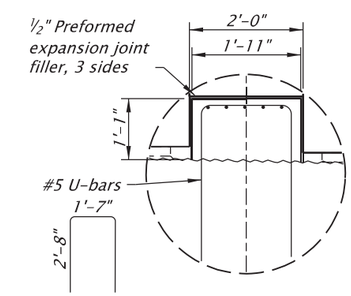
ELEVATION

Scale: 3/16"=1'-0"



BENT CAP REINFORCEMENT DETAIL

Scale: 3/8"=1'-0"



INTERIOR SHEAR LUG DETAIL

Scale: ¾"=1'-0"

SCALE WARNING

IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

For informational drawings, see sht. JC01.
For accompanied by drawings, see sht. JC01

STRUCTURE NO.	23873
BDS DWG NO.	106297
CALC. BOOK	7157
HWY: 144	M.P.: 3.02
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
56148PE
Digitally Signed May 28 2021 9:25 AM
OREGON
JAN. 15, 2002
ROBERT E. GRUBBS
RENEWS: 06-30-2021

OREGON DEPARTMENT OF TRANSPORTATION

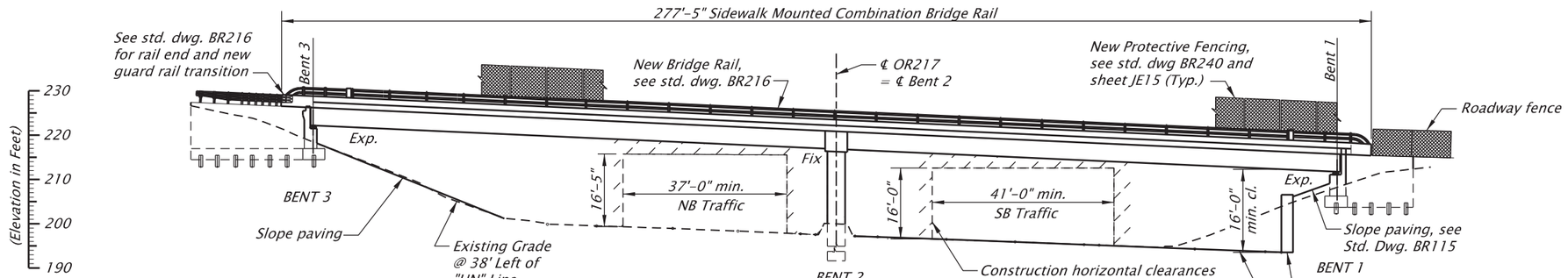
SW DENNEY RD TO HWY 144SB (CONN 144AY)
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Robert Grubbs
Reviewer: Liantao Xu
Drafter: Troy Wilson/Sandra Gish
Checker: Eric E. Bonn (DOWL)

BENT DB2 PLAN AND ELEVATION

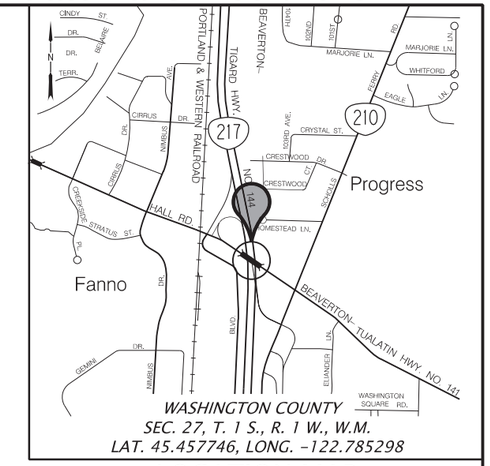
SHEET NO. JC35

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST



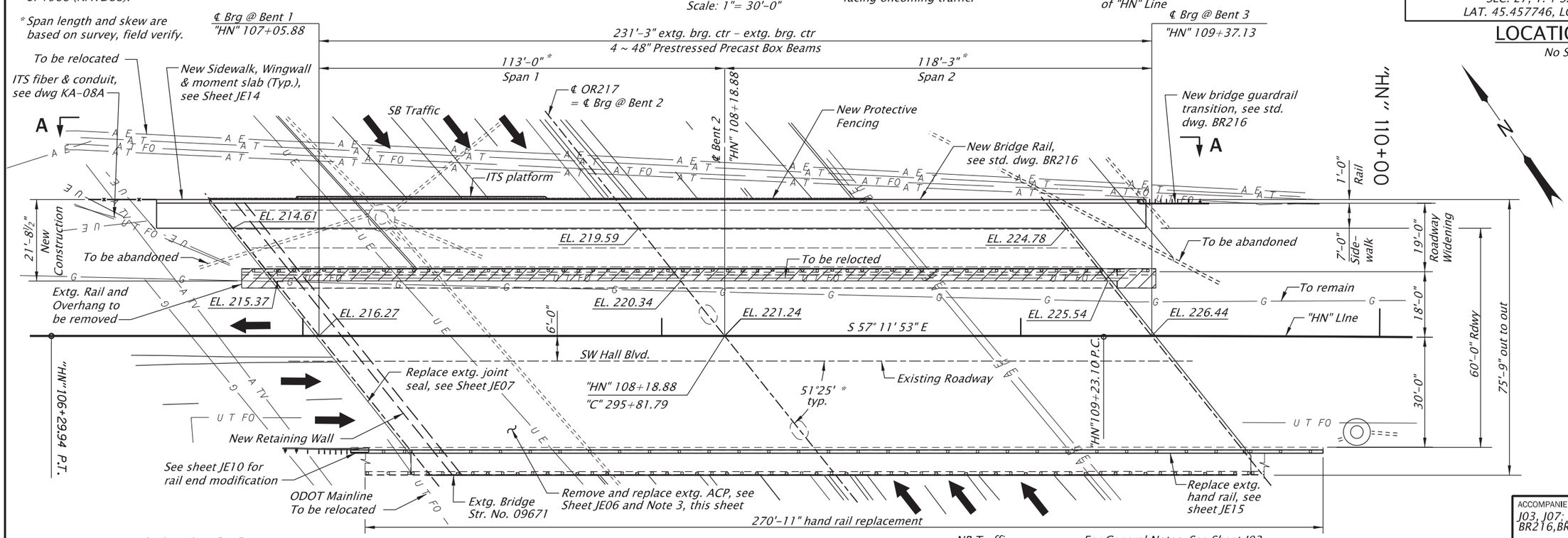
Note:
Elevations shown are based on the North American Vertical Datum of 1988 (NAVD88).

VIEW A-A
(LOOKING SOUTH)
Scale: 1"= 30'-0"



WASHINGTON COUNTY
SEC. 27, T. 1 S., R. 1 W., W.M.
LAT. 45.457746, LONG. -122.785298

LOCATION MAP
No Scale



PLAN
Scale: 1"= 30'-0"

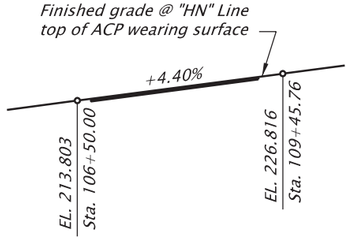
NB Traffic

"C" Line
1°06' C.R.
Δ13°18'51"
Ts 930.03'
Ts2 1054.31'
e = 4%

"HN" Line
0°36' 00" C.R.
TD 1°10'22"
Ts 97.73'

For General Notes, See Sheet J03.

ACCOMPANIED BY DWGS.:
J03, J07; JE02 To JE16; BR115, BR195, BR216,BR240,BR241,BR285 & BR286



GRADE LINE DIAGRAM
No Scale

Note:
1. Right of Way limit is outside the drawing limit.
2. Provide slope paving under the widening section at Bent 3. Place slope paving after retaining wall construction at Bent 1 for entire bridge width.
3. Place new ACP South of HN Line to existing elevations. Survey exisitng deck elevations before ACP removal.

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

STRUCTURE NO.	09671
BDS DWG NO.	106211
CALC. BOOK	7191
HWY: 141 M.P.: 2.71	
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
84,252
Digitally Signed May 28 2021 8:56 AM
OREGON
MAY 11, 2010
LIANTAO XU
RENEWS: 06-30-2022
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

HWY 141 OVER HWY 144_MP 2.71

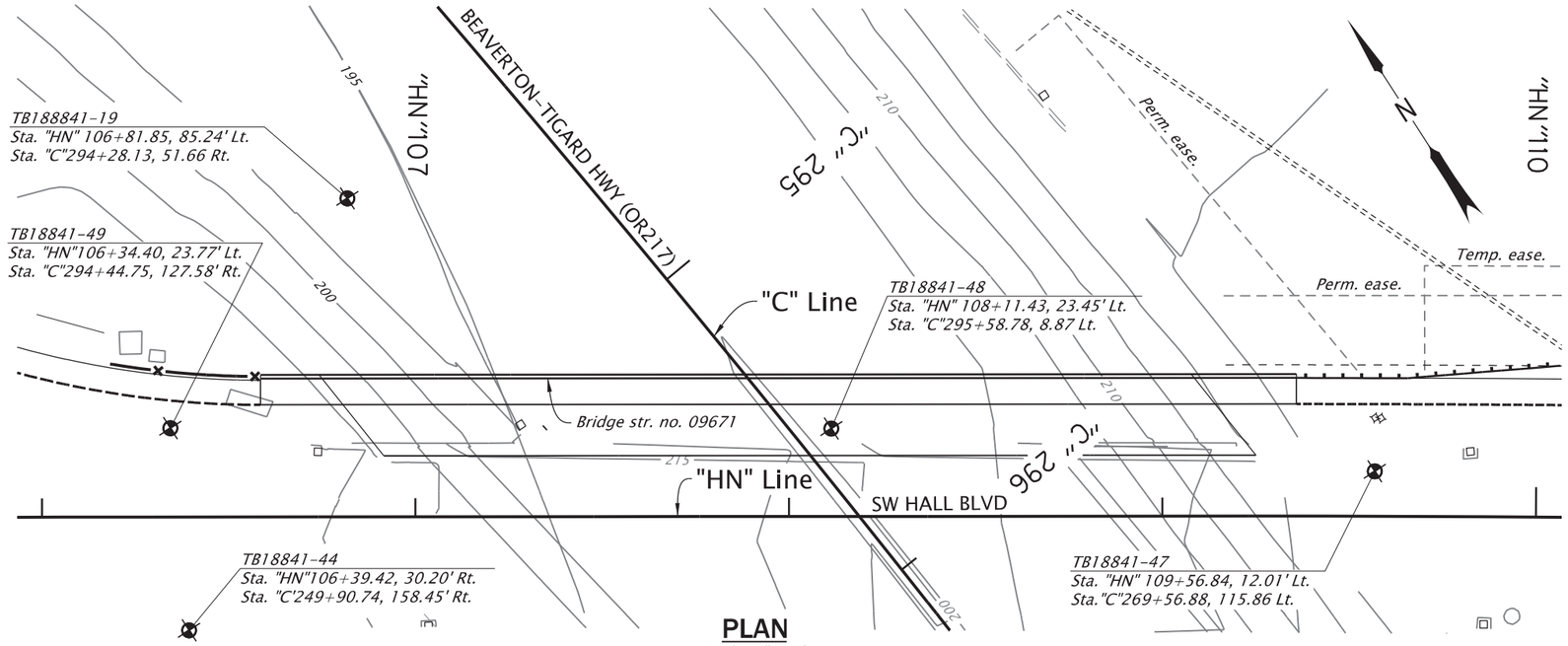
OR217: OR10 - OR99W SEC.

BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

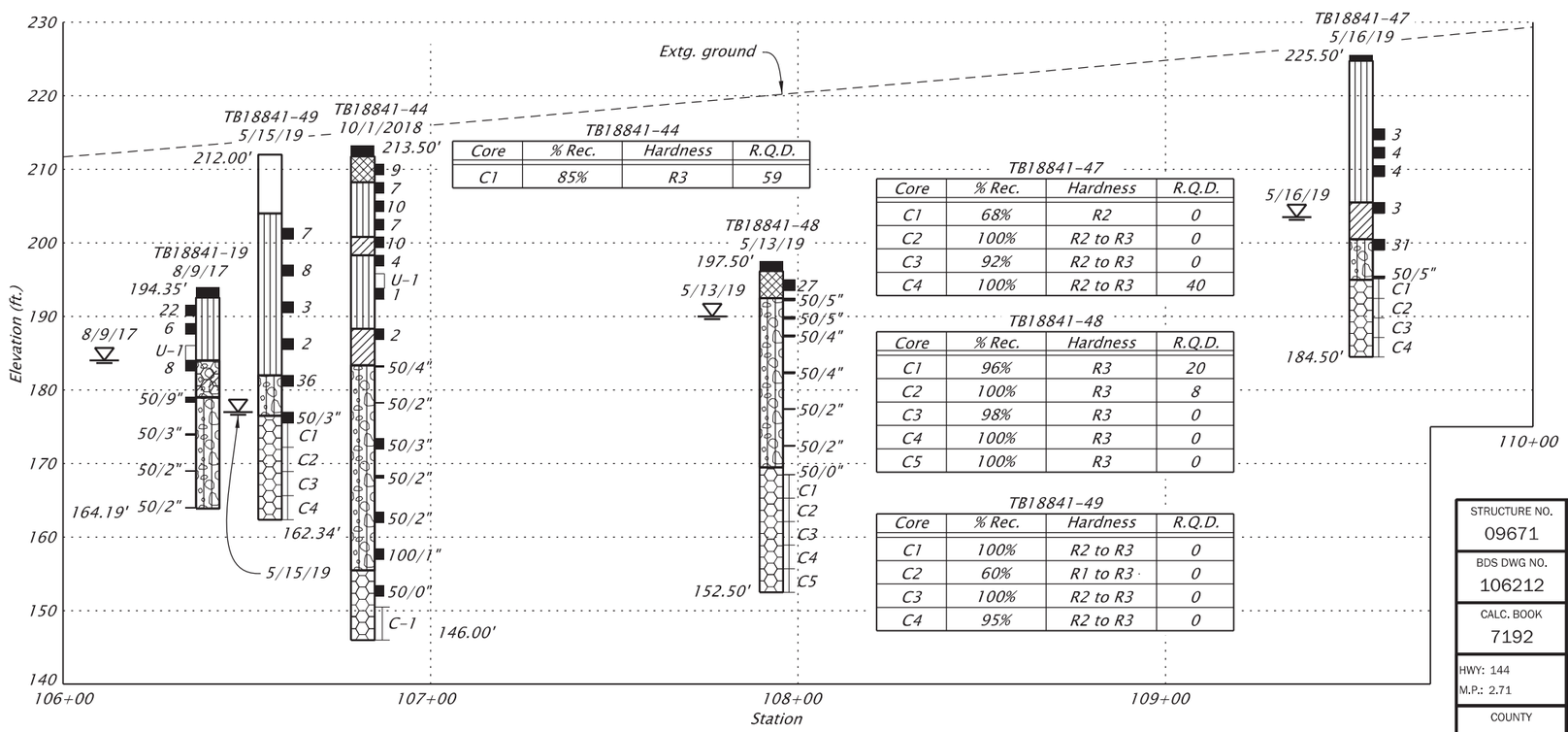
Designer: Liantao Xu
Reviewer: Zachary T. Beget
Drafter: Tony S. Johnson
Checker: Eric Bonn

PLAN AND ELEVATION

SHEET NO. JE01



PLAN
Scale: 1"=40'



TB18841-44			
Core	% Rec.	Hardness	R.Q.D.
C1	85%	R3	59

TB18841-47			
Core	% Rec.	Hardness	R.Q.D.
C1	68%	R2	0
C2	100%	R2 to R3	0
C3	92%	R2 to R3	0
C4	100%	R2 to R3	40

TB18841-48			
Core	% Rec.	Hardness	R.Q.D.
C1	96%	R3	20
C2	100%	R3	8
C3	98%	R3	0
C4	100%	R3	0
C5	100%	R3	0

TB18841-49			
Core	% Rec.	Hardness	R.Q.D.
C1	100%	R2 to R3	0
C2	60%	R1 to R3	0
C3	100%	R2 to R3	0
C4	95%	R2 to R3	0

PROFILE ALONG "HN" LINE
Horiz. Scale: 1" = 40'
Vert. Scale: 1" = 20'

UNIT DESCRIPTIONS

Asphalt Concrete, base aggregate, shoulder aggregate (Pavement)

CLAY with some sand to Sandy CLAY with trace gravel; CL; brown to green-gray; low to medium plasticity; damp to moist; very stiff to stiff; fine to coarse grained sand and fine gravel; noncemented; homogeneous. (Fill)

SILT to Sandy SILT; ML; gray, brown, with orange, black, and rust mottling; nonplastic to low plasticity; damp to wet; very soft to hard/very loose to loose where nonplastic; fine to coarse grained sand; noncemented; lensed. (Willamette Formation)

CLAY with up to trace sand; CL; gray, brown, rust mottled; low to medium plasticity; damp to wet; very soft to stiff; fine to coarse grained sand; noncemented; homogeneous. (Willamette Formation)

Decomposed BASALT, remolds to CLAY; CH; gray; high plasticity; moist; medium stiff; noncemented; homogeneous. (Columbia River Basalt)

Decomposed BASALT, remolds to Silty SAND, silty SAND with some gravel, SAND with some gravel, Sandy GRAVEL; SM, SP, GP; gray with brown, orange, black, and yellow specks (mineral-filled relict vesicles); nonplastic to low plasticity; dry to wet; dense to very dense; fine to coarse gravel, fine to coarse grained sand; weakly cemented; lensed. (Columbia River Basalt)

BASALT; gray to green-gray with orange veins; slightly to moderately weathered; soft to medium hard (R2 to R3); very close to close spaced joints with mineral or clay/silt/sand infilling and staining on joint faces; some vesicles. (Columbia River Basalt)

LEGEND

- 24 = Standard penetration test - N value
- U-1 = Undisturbed sample
- = Bore Hole Location
- = Goundwater measured in the bore hole
- 00.00' = Elevation
- MM/DD/YY = Date of measurement

GENERAL NOTES

1. Elevations are based on North American Vertical Datum (1988).
2. Geotechnical data shown on this drawing are a consolidation of information and/or revision in terminology from the drill logs and CPT logs. More detailed subsurface data is available on the drill logs in the geotechnical report, which is available from the Engineer.
3. In accordance with ASTM D1586-84, N values are reported for an interval of 1 ft. except as noted.
4. 5' Contour interval on plan view.

STRUCTURE NO.	09671
BDS DWG NO.	106212
CALC. BOOK	7192
HWY: 144	M.P.: 2.71
COUNTY	Washington
DATE	04/2021

CERTIFIED OREGON MICHAEL J. ZIMMERMAN Digitally Signed May 25 2021 4:15 PM E1897 ENGINEERING GEOLOGIST

EXPIRES: 12-01-2021

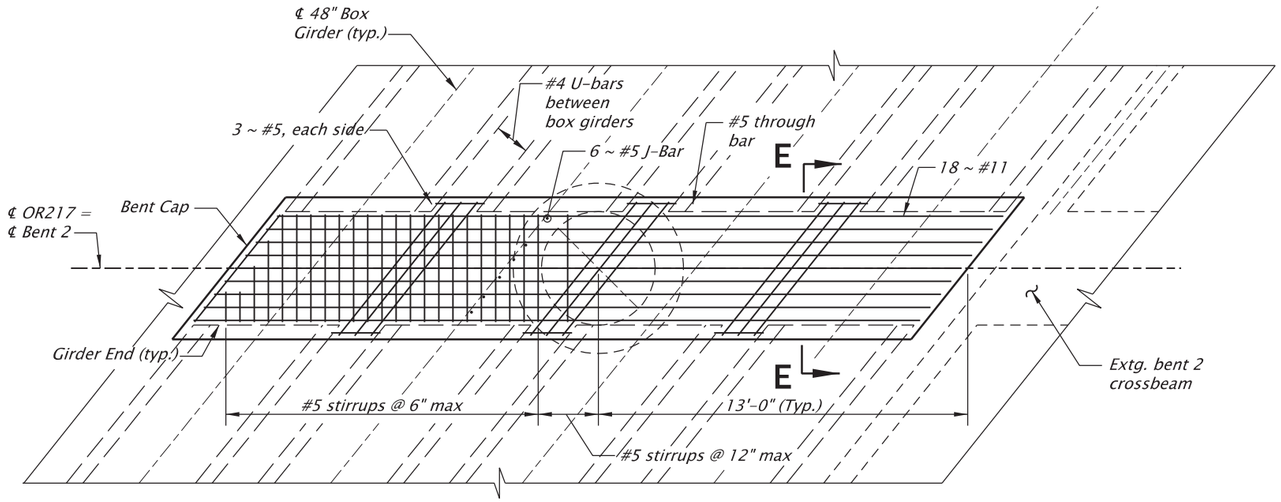
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

HWY 141 OVER_ HWY 144_MP 2.71
OR217: OR10 - OR99W SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

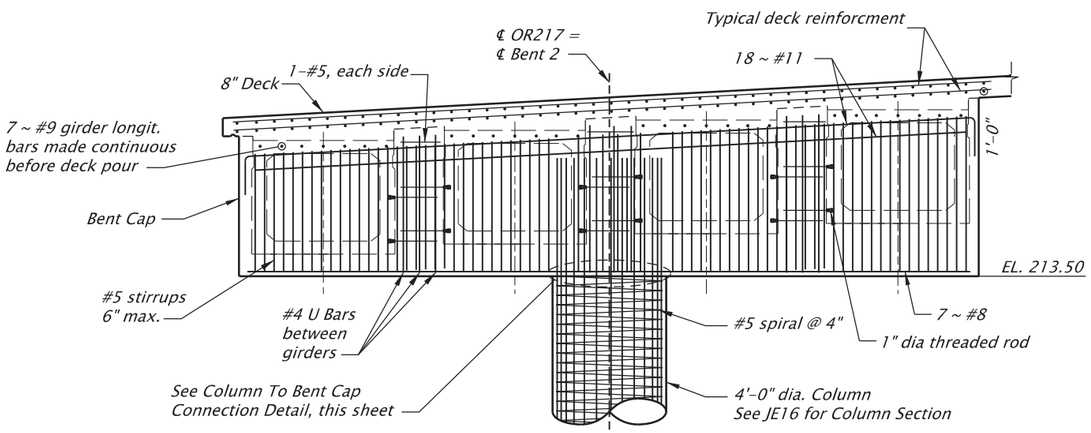
Designer: Michael Zimmerman Reviewer: Michael Tardif
Drafter: Julie Rentz Checker: N/A

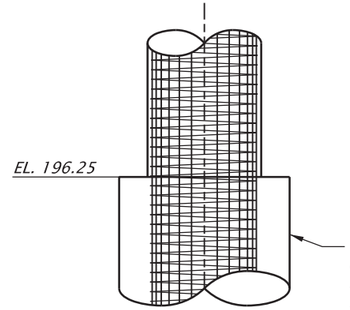
GEOTECHNICAL DATA SHEET NO. JE02



BENT CAP REINFORCEMENT - PLAN VIEW

Scale: 1/8"=1'-0"





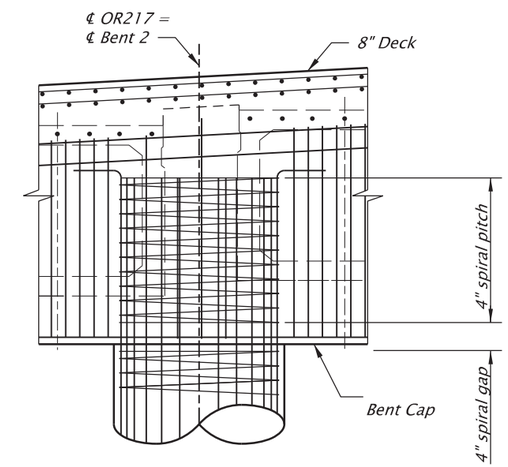
Notes:
4 ~ #6 bent cap side bar and J-bar not shown for clarity, see Section D-D on Sheet JE11.

Sidewalk and rail not shown for clarity.

Extend column bar to a min of 4'-0" into cap

BENT 2 REINFORCEMENT - ELEVATION VIEW

Scale: 1/8"=1'-0"



COLUMN TO BENT CAP CONNECTION

Scale: None

For informational drawings, see sht. JE01.

For accompanied by drawings, see sht. JE01

STRUCTURE NO.	09671
BDS DWG NO.	00000
CALC. BOOK	7191
HWY: 141 M.P.: 2.71	
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER 84,252 OREGON MAY 11, 2010 LIANTAO XU

Digitally Signed May 28 2021 9:18 AM

RENEWS: 06-30-2022

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

SCALE WARNING

IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

OREGON DEPARTMENT OF TRANSPORTATION

HWY 141 OVER_ HWY 144_MP 2.71

OR217: OR10 - OR99W SEC.

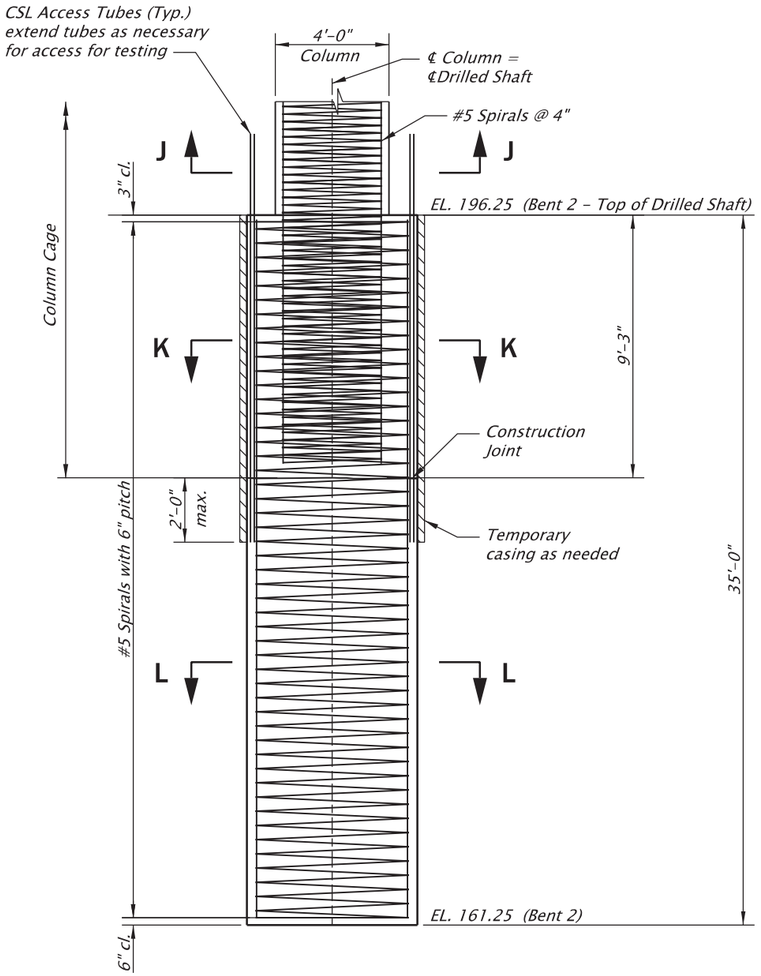
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Liantao Xu | Reviewer: Zachery Beget

Drafter: Tony S. Johnson | Checker: Eric Bonn

BENT 2 - DETAILS

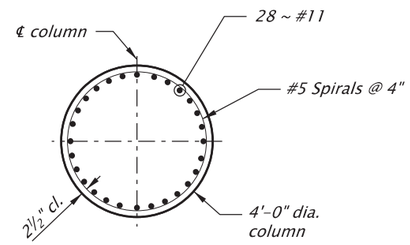
SHEET NO. JE12



Note:
Construction joint shall have roughened surface ($\frac{1}{4}$" min. deviation from planer surface).

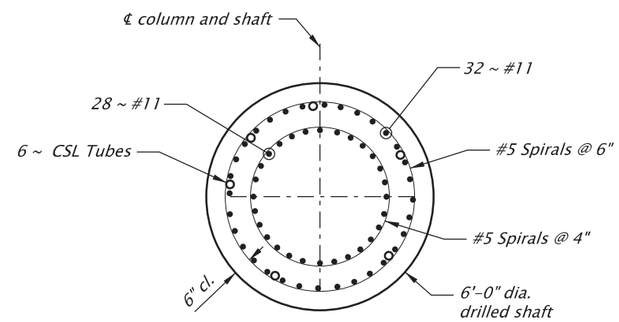
COLUMN AND DRILLED SHAFT TYPICAL SECTION

Scale: $\frac{3}{16}$"=1'-0"



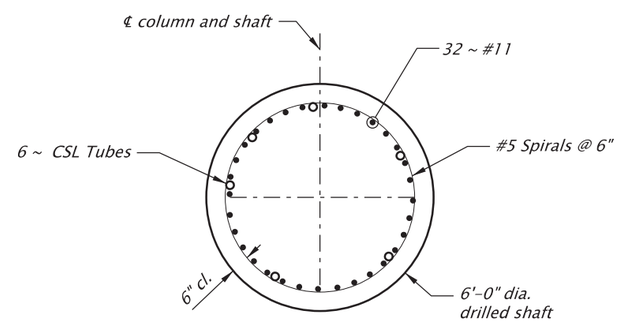
SECTION J-J

Scale: None



SECTION K-K

Scale: None

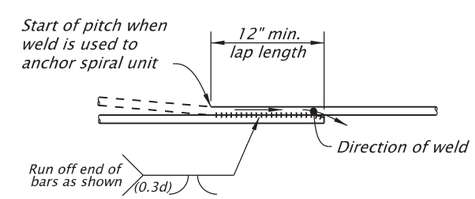


SECTION L-L

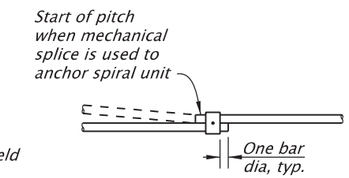
Scale: None

NOTE A
Use ASTM A706 for all welded splices. Anchor spirals at each end or discontinuity with one extra turn and a splice to itself as shown. Where permitted on plans, provide closed hoops conforming to the requirements of this detail. Lapped splice is not allowed within $\frac{1}{6}$ the column height or max. column cross sectional dimension or 18" from top of footing or bottom of cap beam, or in columns with spirals less than 3'-0" in diameter.

Note:
Make flare weld in direction shown.

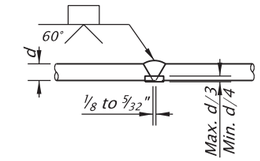


WELDED SPLICE
See NOTE A



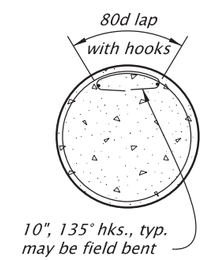
MECHANICAL SPLICE

SPIRAL SPLICE/TERMINATION DETAIL



ALTERNATE WELDED SPLICE (EXCEPT ASTM A1064)

Weld reinforcing steel splices in accordance with ANSI/AWS D1.4 "Structural Welding Code Reinforcing Steel"



LAPPED SPLICE
See NOTE A

For informational drawings, see sht. JE01.
For accompanied by drawings, see sht. JE01

STRUCTURE NO.	09671
BDS DWG NO.	106226
CALC. BOOK	7191
HWY: 141 M.P.: 2.71	
COUNTY	Washington
DATE	AUG. 2021

REGISTERED PROFESSIONAL ENGINEER
84,252
Digitally Signed May 28 2021 9:23 AM
OREGON
MAY 11, 2010
LIANTAO XU
RENEWS: 06-30-2022
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

HWY 141 OVER HWY 144_MP 2.71

OR217: OR10 - OR99W SEC.

BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

Designer: Liantao Xu
Reviewer: Zachery Beget
Drafter: Tony S. Johnson
Checker: Eric Bonn

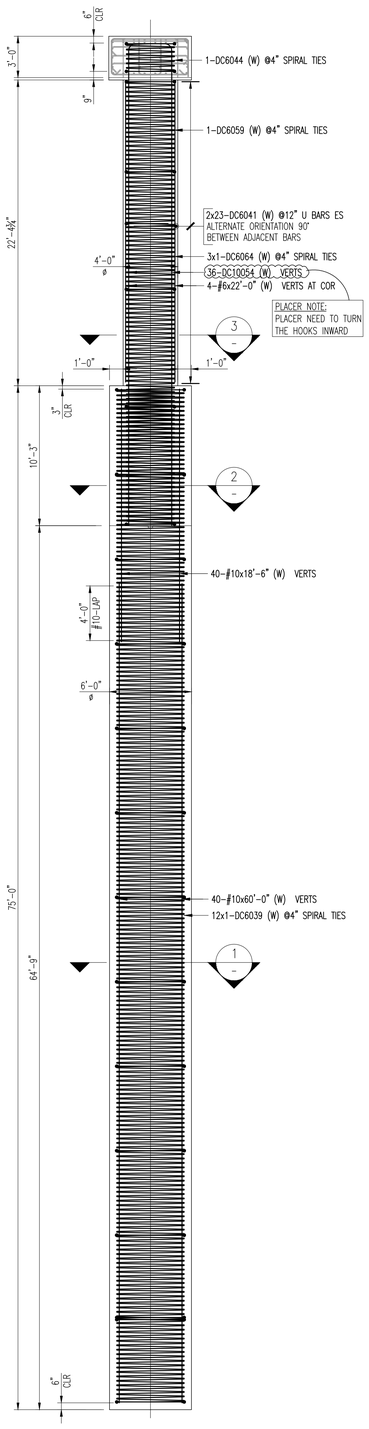
COLUMN AND DRILLED SHAFT DETAILS

SHEET NO. JE16

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

Shop Drawings

Release# DS013A					Release Description: DRILLED SHAFT REINF BR.23873													
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
DC6038	1	#6	345'-7"	X						4"		6'-10"	21.0	1.0	5'-0"	
DC6039	47	#6	314'-2"	X						4"		6'-3"	19.0	1.0	5'-0"	
DC6040	1	#6	146'-4"	X						4"		4'-0"	12.0	1.0	3'-7"	
DC6041	150	#6	9'-10"	17		3'-1"	3'-8"	3'-1"								
DC6044	4	#6	78'-9 $\frac{1}{2}$"	X						4"		2'-1"	6.0	1.0	3'-7"	
DC6052	1	#6	67'-6 $\frac{1}{2}$"	X						4"		1'-6"	5.0	1.0	3'-7"	
DC6059	1	#6	236'-5"	X						4"		6'-8"	20.0	1.0	3'-7"	
DC6060	1	#6	180'-1 $\frac{1}{2}$"	X						4"		5'-1"	15.0	1.0	3'-7"	
DC6063	2	#6	315'-2 $\frac{1}{2}$"	X						4"		9'-0"	27.0	1.0	3'-7"	
DC6064	9	#6	303'-11 $\frac{1}{2}$"	X						4"		8'-8"	26.0	1.0	3'-7"	
DC10042	36	#10	26'-7"	2	1'-10"	24'-9"										
DC10047	36	#10	32'-1"	2	1'-10"	30'-3"										
DC10054	36	#10	37'-2"	2	1'-10"	35'-4"										
DC10063	36	#10	35'-7"	2	1'-10"	33'-9"										

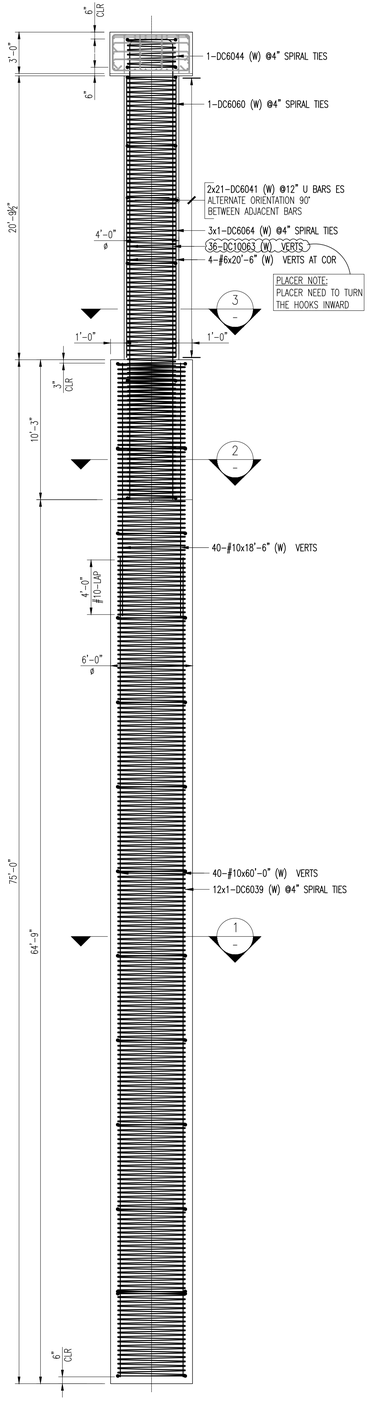


DRILLED SHAFT AT BENT DB1

A ELEVATION

REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)

TOTAL CAGE WEIGHT=27586.12 LBS

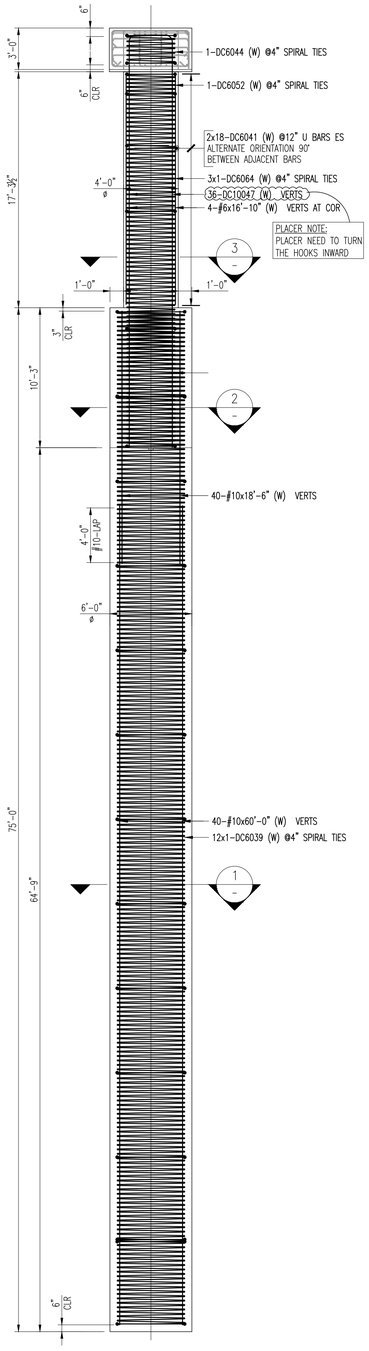


DRILLED SHAFT AT BENT DB2

B ELEVATION

REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)

TOTAL CAGE WEIGHT=27188.19 LBS

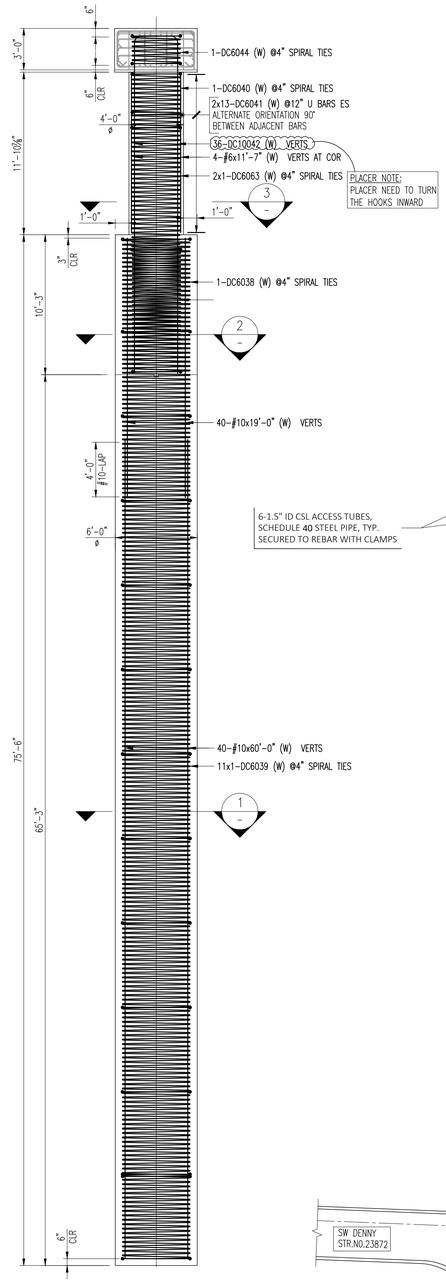


DRILLED SHAFT AT BENT DB3

C ELEVATION

REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)

TOTAL CAGE WEIGHT=26366.56 LBS



DRILLED SHAFT AT BENT DB4

D ELEVATION

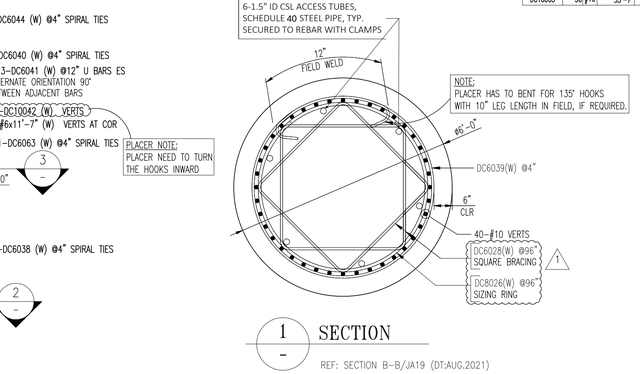
REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)

TOTAL CAGE WEIGHT=25163.33 LBS

1 SECTION

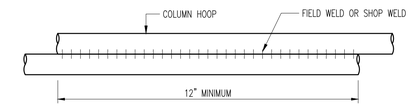
REF: SECTION B-B/JA19 (DT:AUG.2021)

NOTE:
PLACER HAS TO BENT FOR 135° HOOKS
WITH 10" LEG LENGTH IN FIELD, IF REQUIRED.



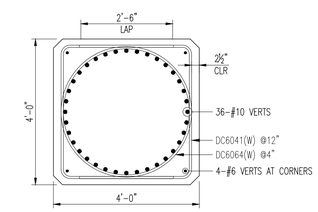
2 SECTION

REF: SECTION B-B/JA19 (DT:AUG.2021)



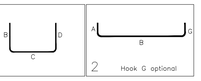
TYPICAL WELDED LAP SPLICE DETAIL

JA19 (DT:AUG.2021)



3 SECTION

REF: SECTION A-A/JA19 (DT:AUG.2021)



NOTES:

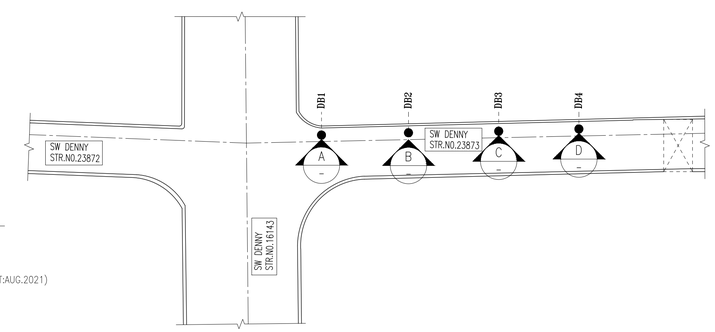
1. TYPICAL CLEARANCE ARE AS FOLLOWS:
   FOR SHAFT:
   ALL SIDES = 6"
   FOR COLUMN:
   SIDES = 2 1/2"
2. BARS TO BE PLACED AT EQUAL SPACING U.O.N

LAP SCHEDULE:

REF: J03 (DT:AUG.2021)

4000 PSI (FOR SHAFT)	
BAR	VERTS
#4	1'-7"
#5	2'-0"
#6	2'-5"
#7	2'-9"
#8	3'-2"
#9	3'-7"
#10	4'-0"
#11	4'-5"

ALL MATERIAL ON THIS DRAWING SHALL BE ASTM A706 GRADE 60 U.N.O.



KEY PLAN

SE22006

No.	Description	Date	By
1	FOR RE-APPROVAL? (SECTION 1 UPDATED)	05/17/2022	NBI
0	FOR APPROVAL	05/13/2022	NBI

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

NUCOR® HARRIS REBAR

Harris Rebar Portland
A Division of Harris Rebar Seattle Inc.
2727 NW 35TH AVENUE
PORTLAND-OR-97210
TEL. (503)-222-1813
FAX. (503)-274-0759

Project: OR217 BEAVERTON-TIGARD HIGHWAY

Drawing: SW DENNY AT STR NO.23873
DRILLED SHAFT REINFORCEMENT (SH 1 OF 2)

Customer: CASCADE BRIDGE LLC

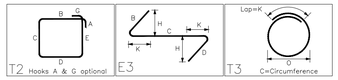
Contractor:

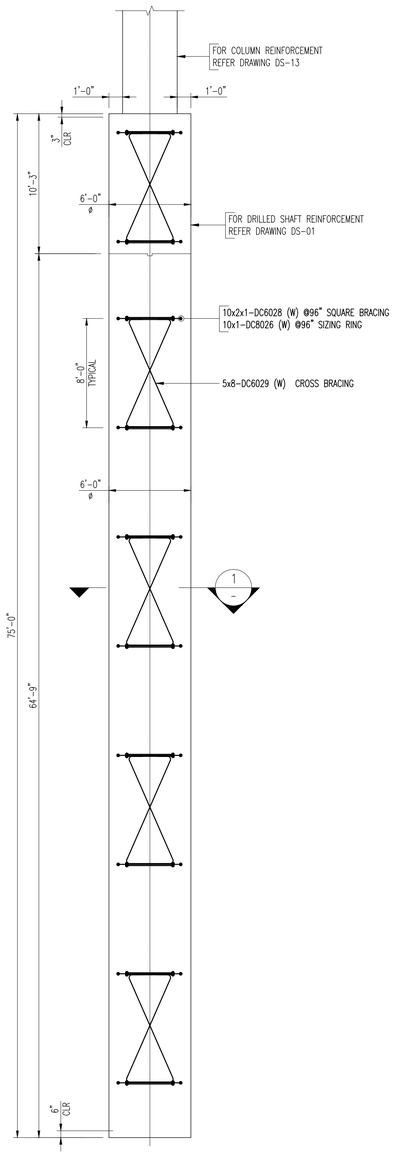
Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
05/13/2022	NBI	SBM	12405846	DS-13

Release# DS014A Release Description: DRILLED SHAFT REINF BR.23873

Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
DC6028	80	#6	15'-9"	T2	1'-0"	3'-5 X"	3'-5 X"	3'-5 X"	3'-5 X"		1'-0"					
DC6029	160	#6	10'-5"	E3		1'-0"	8'-5"	1'-0"				1'-X"		3 X"		
DC8026	40	#8	17'-9 X"	T3			14'-7 X"							3'-2"	4'-8"	

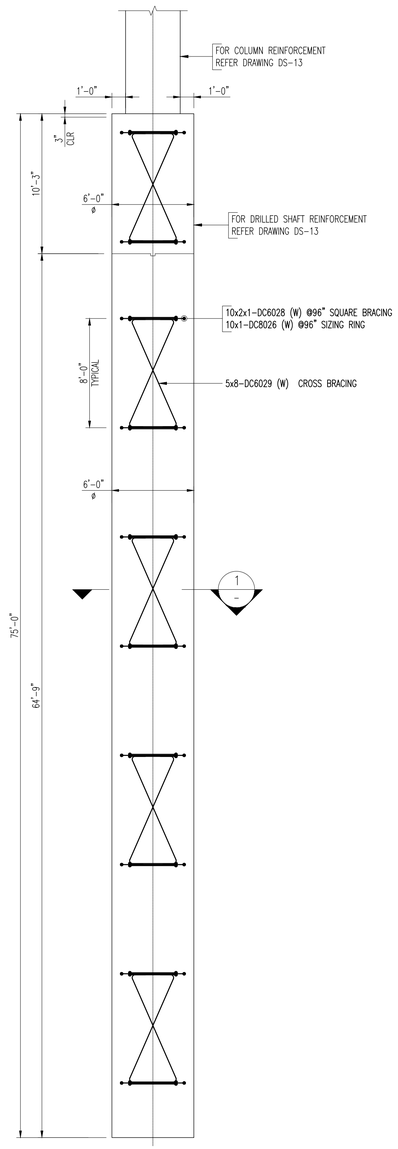




DRILLED SHAFT AT BENT DB1 (BRACING)

A ELEVATION

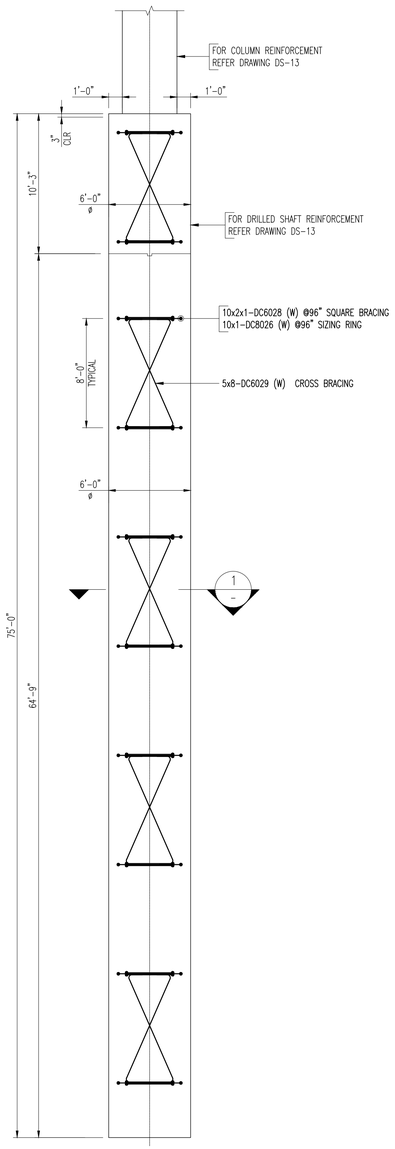
REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)



DRILLED SHAFT AT BENT DB2 (BRACING)

B ELEVATION

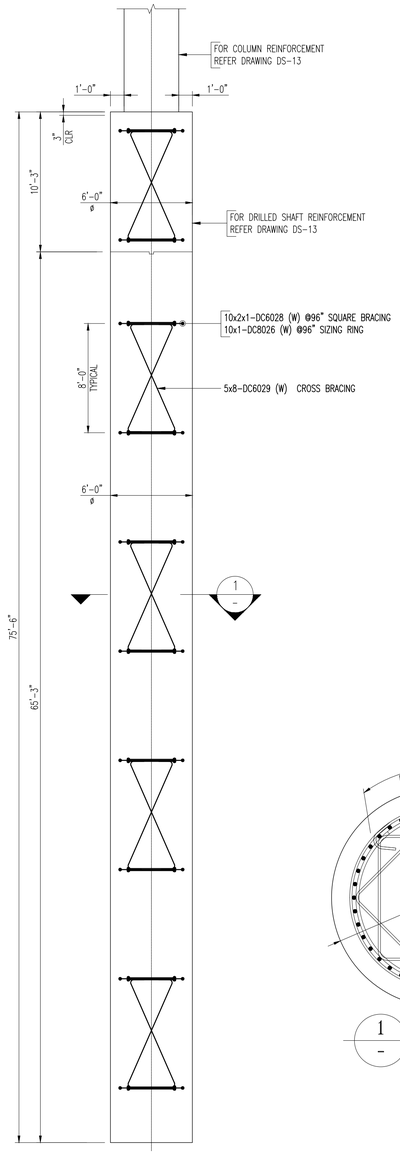
REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)



DRILLED SHAFT AT BENT DB3 (BRACING)

C ELEVATION

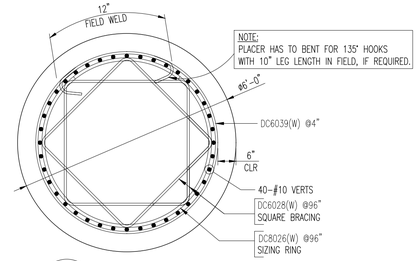
REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)



DRILLED SHAFT AT BENT DB4 (BRACING)

D ELEVATION

REF:JC01, JC28, JC33, JC35, JC36 (DT:AUG.2021)



1 SECTION

REF: SECTION B-B/JA19 (DT:AUG.2021)

NOTES:

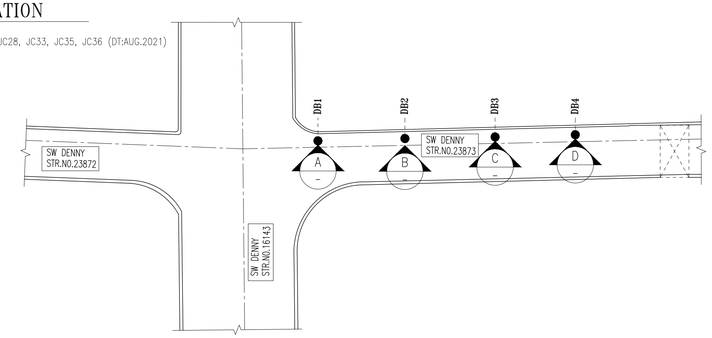
1. TYPICAL CLEARANCE ARE AS FOLLOWS:
   FOR SHAFT:
   ALL SIDES = 6"
   FOR COLUMN:
   SIDES = 2 1/2"
2. BARS TO BE PLACED AT EQUAL SPACING U.O.N

LAP SCHEDULE:

REF: J03 (DT:AUG.2021)

4000 PSI (FOR SHAFT)	
BAR	VERTS
#4	1'-7"
#5	2'-0"
#6	2'-5"
#7	2'-9"
#8	3'-2"
#9	3'-7"
#10	4'-0"
#11	4'-5"

ALL MATERIAL ON THIS DRAWING SHALL BE ASTM A706 GRADE 60 U.N.O.



KEY PLAN

SE22006

No.	Description	Date	By
0	FOR APPROVAL	05/13/2022	NBI

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

NUCOR® HARRIS REBAR

Harris Rebar Portland
A Division of Harris Rebar Seattle Inc.
2727 NW 35TH AVENUE
PORTLAND-OR-97210
TEL. (503)-222-1813
FAX. (503)-274-0759

Project: OR217 BEAVERTON-TIGARD HIGHWAY

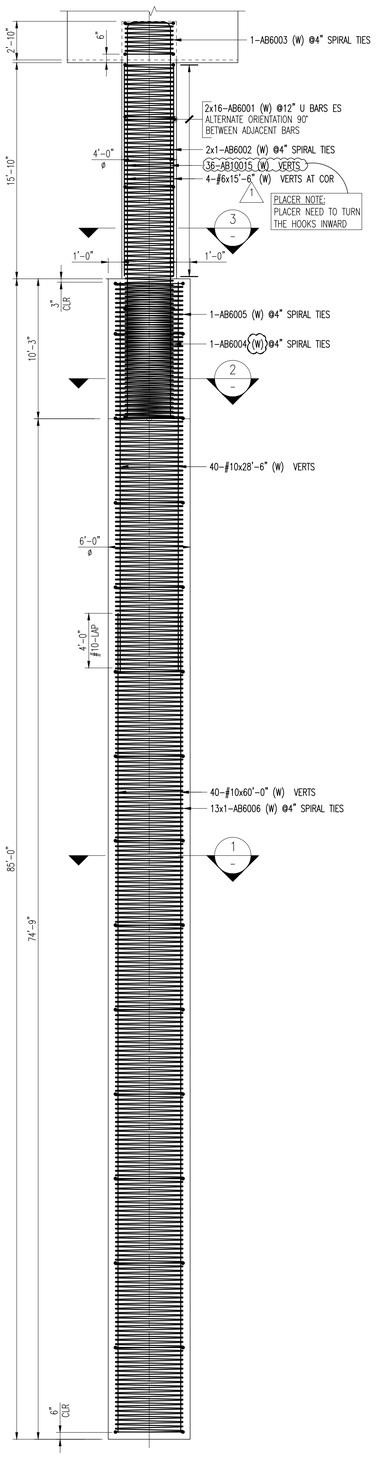
Drawing: SW DENNY AT STR NO.23873
DRILLED SHAFT REINFORCEMENT (SH 2 OF 2)

Customer: CASCADE BRIDGE LLC

Contractor:

Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
05/13/2022	NBI	SBM	12405846	DS-14

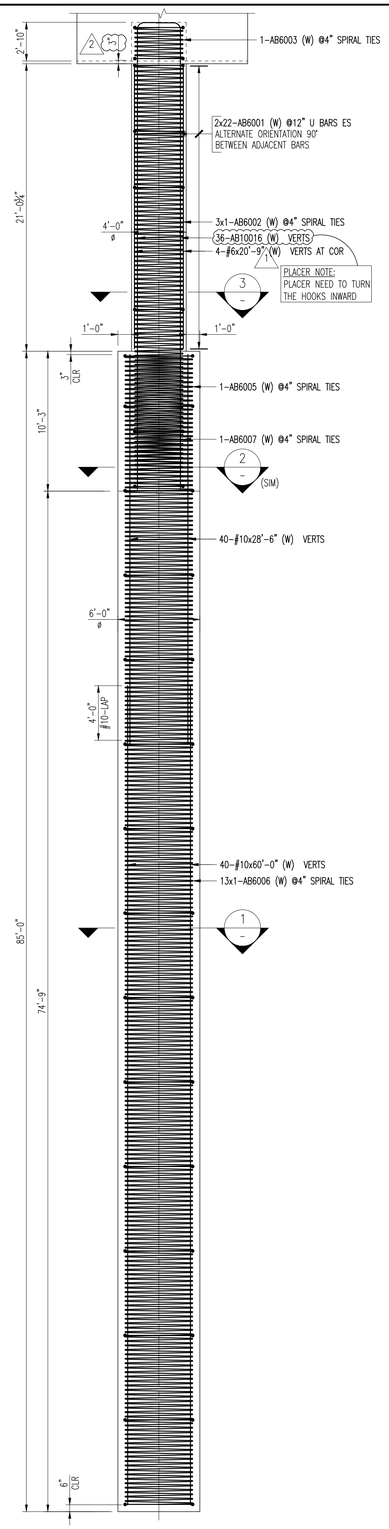


DRILLED SHAFT AT BENT AA2

A ELEVATION

REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)

TOTAL CAGE WEIGHT=28253.12 LBS

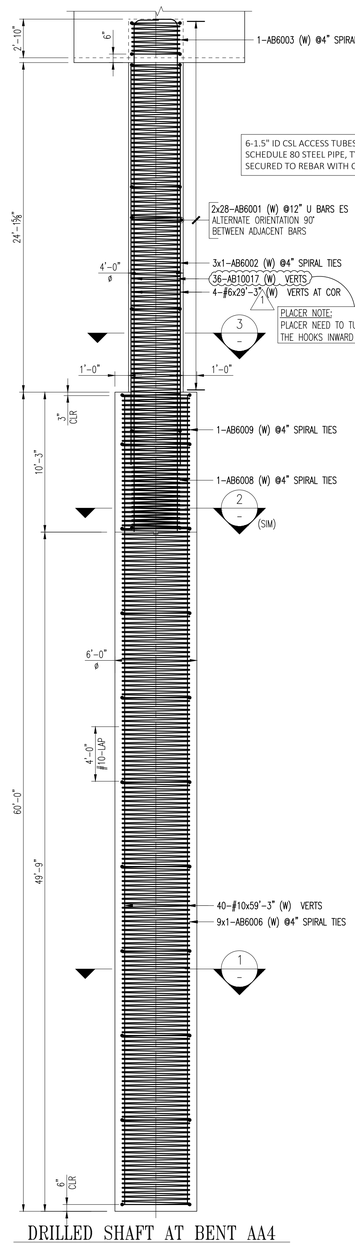


DRILLED SHAFT AT BENT AA3

B ELEVATION

REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)

TOTAL CAGE WEIGHT=29560.73 LBS

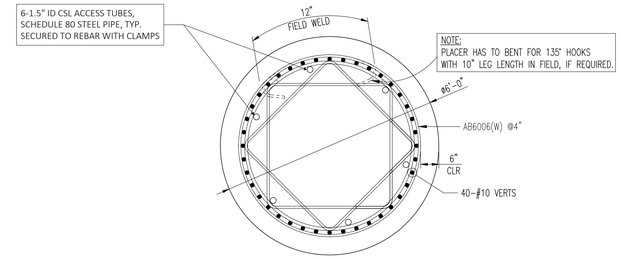


DRILLED SHAFT AT BENT AA4

C ELEVATION

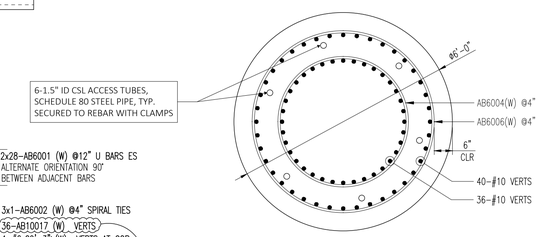
REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)

TOTAL CAGE WEIGHT=23544.58 LBS



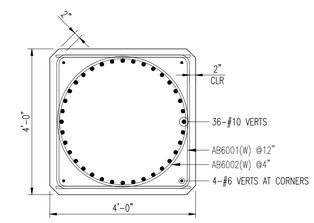
1 SECTION

REF: SECTION B-B/JA19 (DT:AUG.2021)



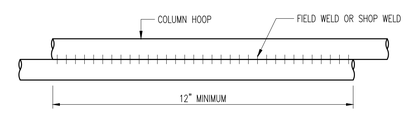
2 SECTION

REF: SECTION B-B/JA19 (DT:AUG.2021)



3 SECTION

REF: SECTION A-A/JA19 (DT:AUG.2021)



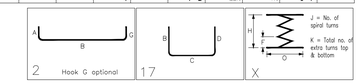
TYPICAL WELDED LAP SPLICE DETAIL

JA19 (DT:AUG.2021)

Release# DS01B					Release Description: 3950 D.SHAFT SPIRALS BR.23874											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
AB6005	2	#6	188'-6"	X						4"		3'-9"	11.0	1.0	5'-0"	
AB6006	35	#6	314'-2"	X						4"		6'-3"	19.0	1.0	5'-0"	
AB6009	1	#6	188'-6"	X						4"		3'-8"	11.0	1.0	5'-0"	

Release# DS01C					Release Description: 4040 COLUMN VERTS BR.23874											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
AB10017	36	#10	39'-4"	2	1'-10"	37'-6"										
AB10016	36	#10	36'-1"	2	1'-10"	34'-3"										
AB10015	36	#10	30'-10"	2	1'-10"	29'-0"										
AB6001	132	#6	11'-0"	17		3'-8"	3'-8"	3'-8"								

Release# DS01D					Release Description: 4040 COLUMN SPIRAL BR.23874											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
AB6003	3	#6	90'-8"	X						4"		2'-4"	7.0	1.0	3'-7"	
AB6002	8	#6	315'-2 ⅛"	X						4"		9'-0"	27.0	1.0	3'-7"	
AB6004	1	#6	281'-5"	X						4"		8'-0"	24.0	1.0	3'-7"	
AB6007	1	#6	146'-4"	X						4"		4'-1"	12.0	1.0	3'-7"	
AB6008	1	#6	258'-11"	X						4"		7'-2"	22.0	1.0	3'-7"	



NOTES:

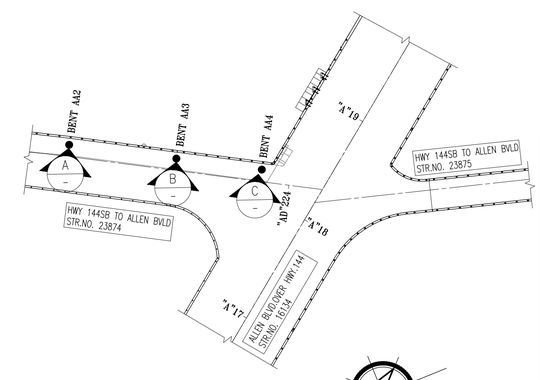
1. TYPICAL CLEARANCE ARE AS FOLLOWS:
   FOR SHAFT:
   ALL SIDES = 6"
   FOR COLUMN:
   SIDES = 2"
2. BARS TO BE PLACED AT EQUAL SPACING U.O.N

LAP SCHEDULE:

REF: J03 (DT:AUG.2021)

4000 PSI (FOR SHAFT)	
BAR	VERTS
#4	1'-7"
#5	2'-0"
#6	2'-5"
#7	2'-9"
#8	3'-2"
#9	3'-7"
#10	4'-0"
#11	4'-5"

ALL MATERIAL ON THIS DRAWING SHALL BE ASTM A706 GRADE 60 U.N.O.



KEY PLAN

REF:J25 (DT:AUG 2021)

USDD JOB NO: SE22-006

No.	Description	Date	By
2	3" GAP UPDATED AT BEND AA3 PER GC COMMENT	04/27/2022	NBI
1	FOR RE-APPROVAL (DT:04/06/2022)	04/26/2022	NBI
0	FOR APPROVAL	02/01/2022	NBI

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

NUCOR HARRIS REBAR

Harris Rebar Portland
A Division of Harris Rebar Seattle Inc.
2727 NW 35TH AVENUE
PORTLAND-OR-97210
TEL. (503)-222-1813
FAX. (503)-274-0759

Project: OR217 BEAVERTON-TIGARD HIGHWAY

Drawing: ALLEN BOULEVARD AREA
DRILLED SHAFT REINFORCEMENT (SH 1 OF 2)

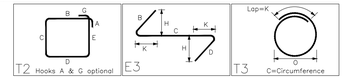
Customer: CASCADE BRIDGE LLC

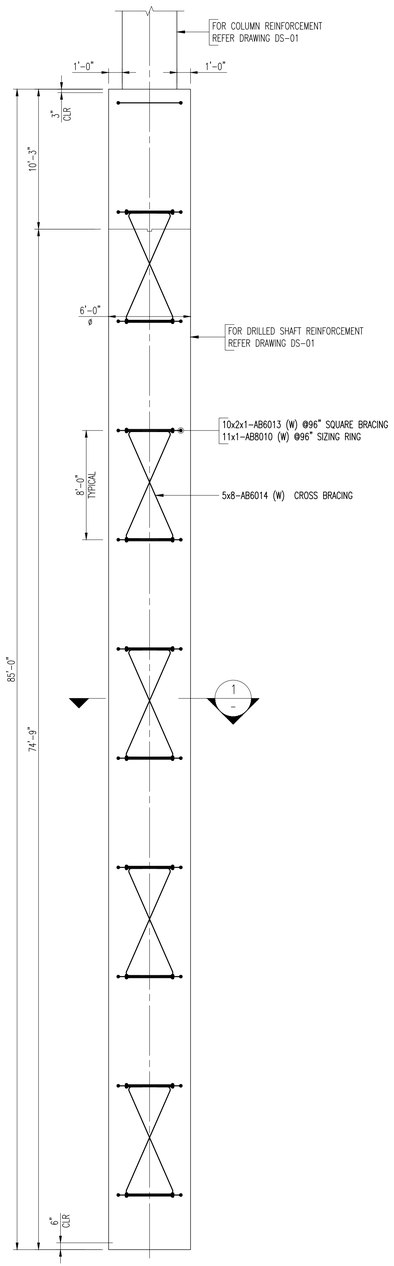
Contractor:

Refer to Release: DS01A & DS01B

Date	Drawn	Chkd.	JOB No.	Dwg. No.
01/27/2022	NBI	SBM	12405846	DS-01

Release# DS02A					Release Description: 3950 D.SHAFT BRACING BR.23874													
Bar Mark	Qty	Size	Total Length	Type	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"O"	"R"
AB6013	56	#6	15'-9"	T2	1'-0"	3'-5 X"	3'-5 X"	3'-5 X"	3'-5 X"		1'-0"					
AB6014	112	#6	10'-5"	E3		1'-0"	8'-5"	1'-0"				1'-8"		3 X"		
AB8010	30	#8	17'-9 X"	T3			14'-7 X"							3'-2"	4'-8"	

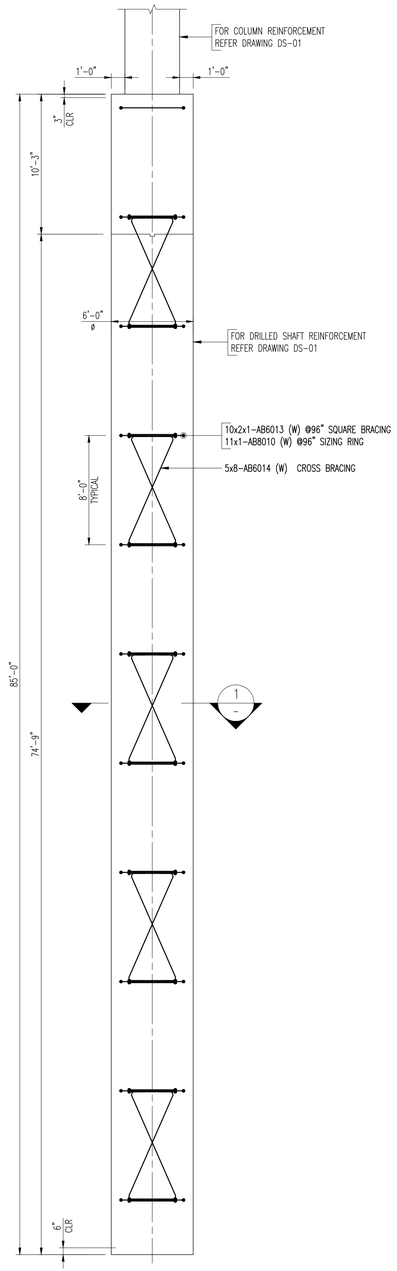




DRILLED SHAFT AT BENT AA2 (BRACING)

A ELEVATION

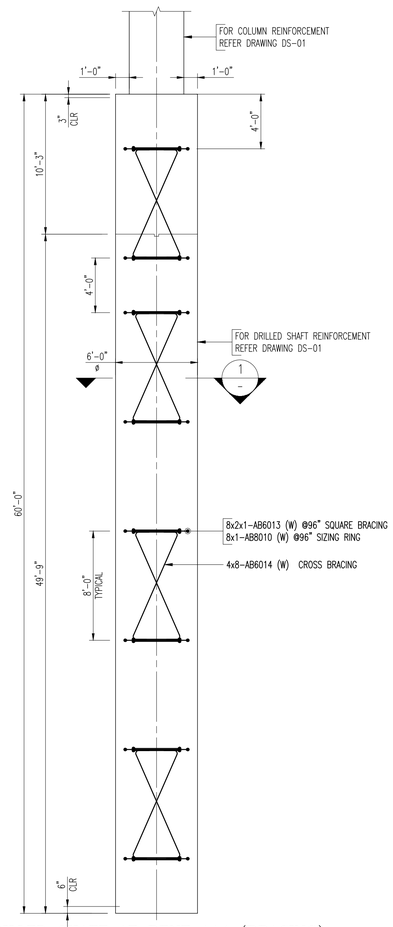
REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)



DRILLED SHAFT AT BENT AA3 (BRACING)

B ELEVATION

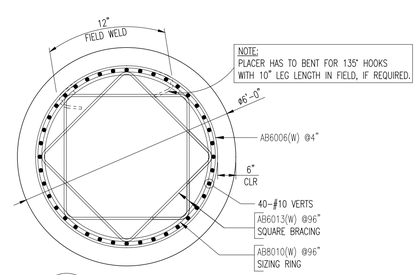
REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)



DRILLED SHAFT AT BENT AA4 (BRACING)

C ELEVATION

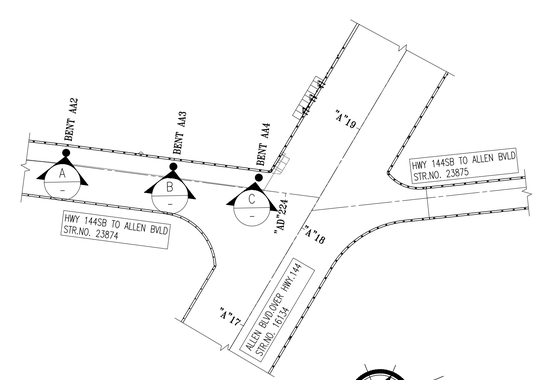
REF:J01, J03, JA06, JA16, JA19 (DT:AUG.2021)



1 SECTION

REF: SECTION B-B/JA19 (DT:AUG.2021)

CSL access tubes not shown for clarity



KEY PLAN

REF:J25 (DT:AUG 2021)

ALL MATERIAL ON THIS DRAWING SHALL BE ASTM A706 GRADE 60 U.N.O.

USDD JOB NO: SE22-006

No.	Description	Date	By
1	FOR RE-APPROVAL (DT:04/06/2022)	04/26/2022	NBI
0	FOR APPROVAL	04/05/2022	NBI

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

NUCOR HARRIS REBAR

Harris Rebar Portland
A Division of Harris Rebar Seattle Inc.
2727 NW 35TH AVENUE
PORTLAND-OR-97210
TEL: (503)-222-1813
FAX: (503)-274-0759

Project: OR217 BEAVERTON-TIGARD HIGHWAY

Drawing: ALLEN BOULEVARD AREA
DRILLED SHAFT REINFORCEMENT (SH 2 OF 2)

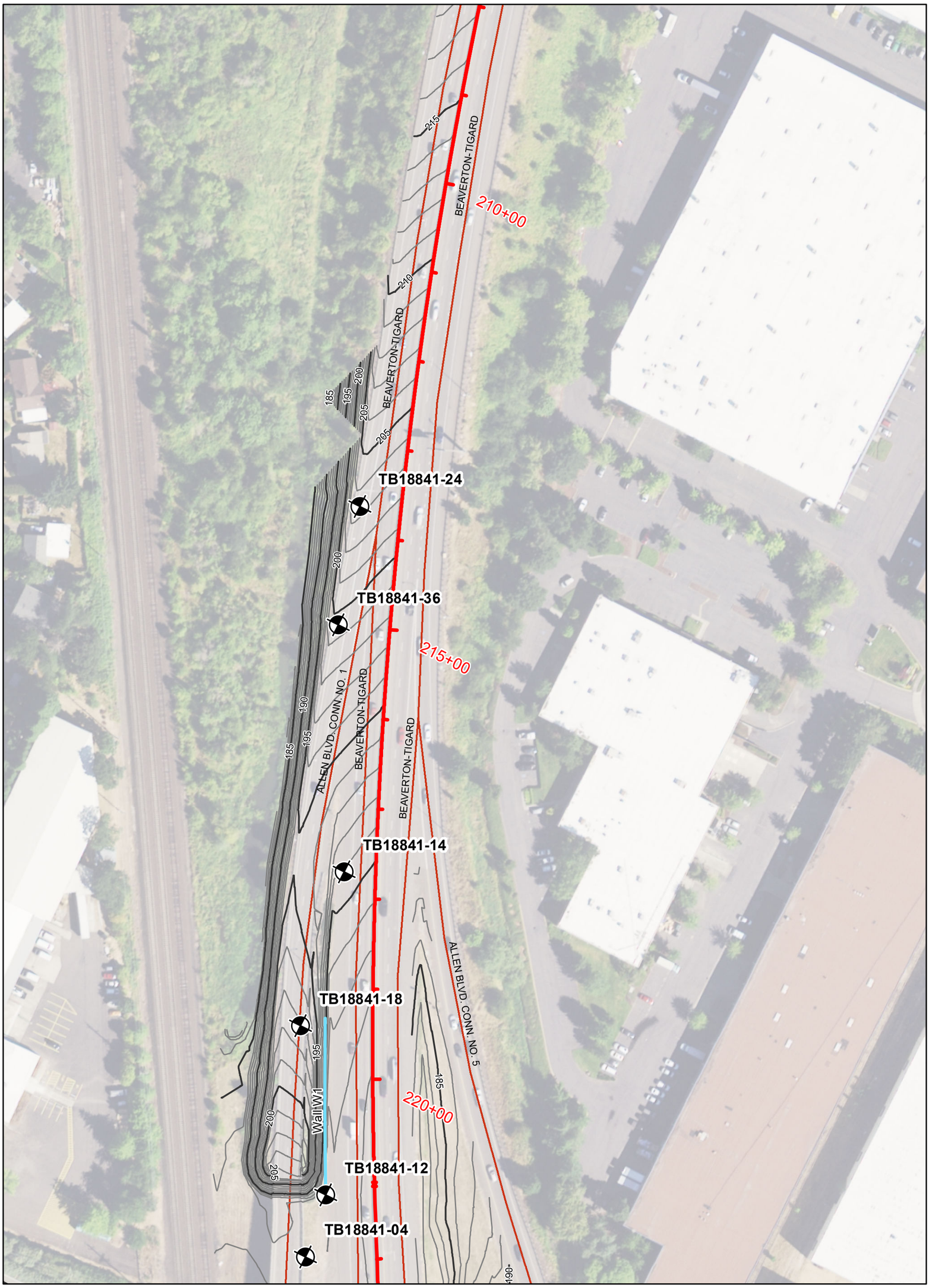
Customer: CASCADE BRIDGE LLC

Contractor:

Refer to Release: DS02A

Date	Drawn	Chkd.	JOB No.	Dwg. No.
04/05/2022	NBI	SBM	12405846	DS-02

GDR Site Plan



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

Proposed Retaining Wall

N

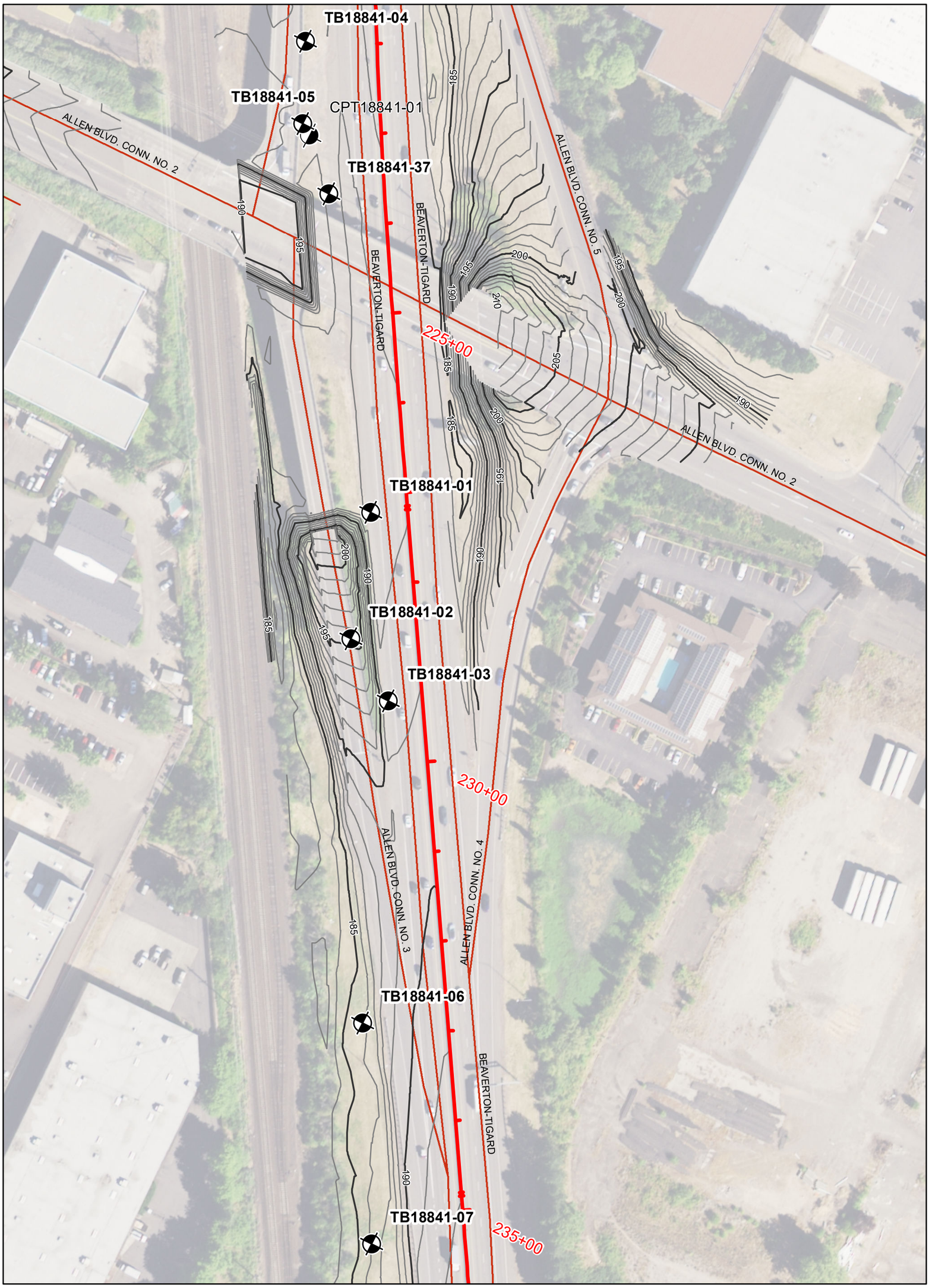
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 2 : SITE PLAN, STA. 208+00 to 222+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

CPT

N

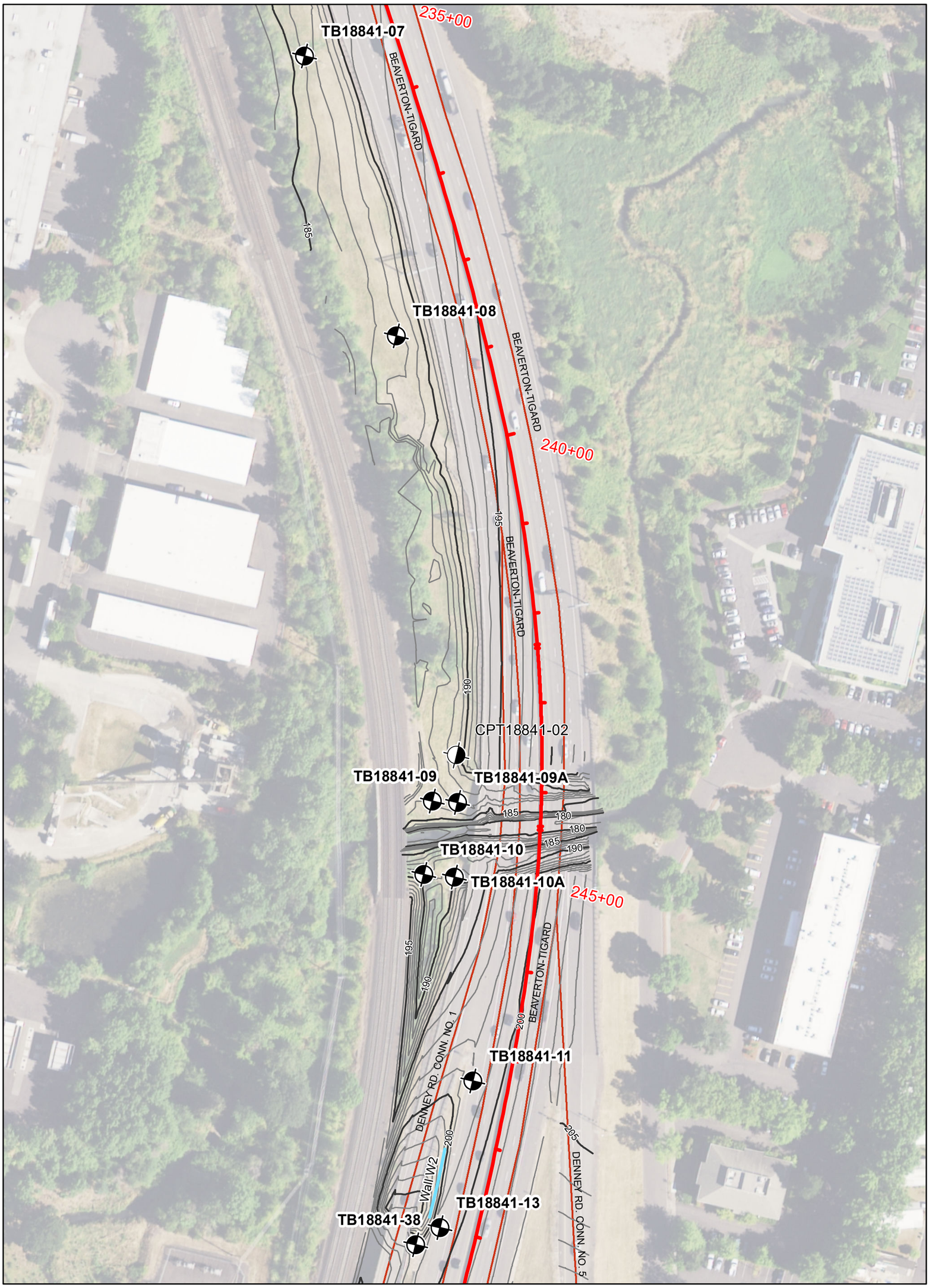
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 3 : SITE PLAN, STA. 222+00 to 236+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

N

100 0 100 200 Feet

Legend

Boring

CPT

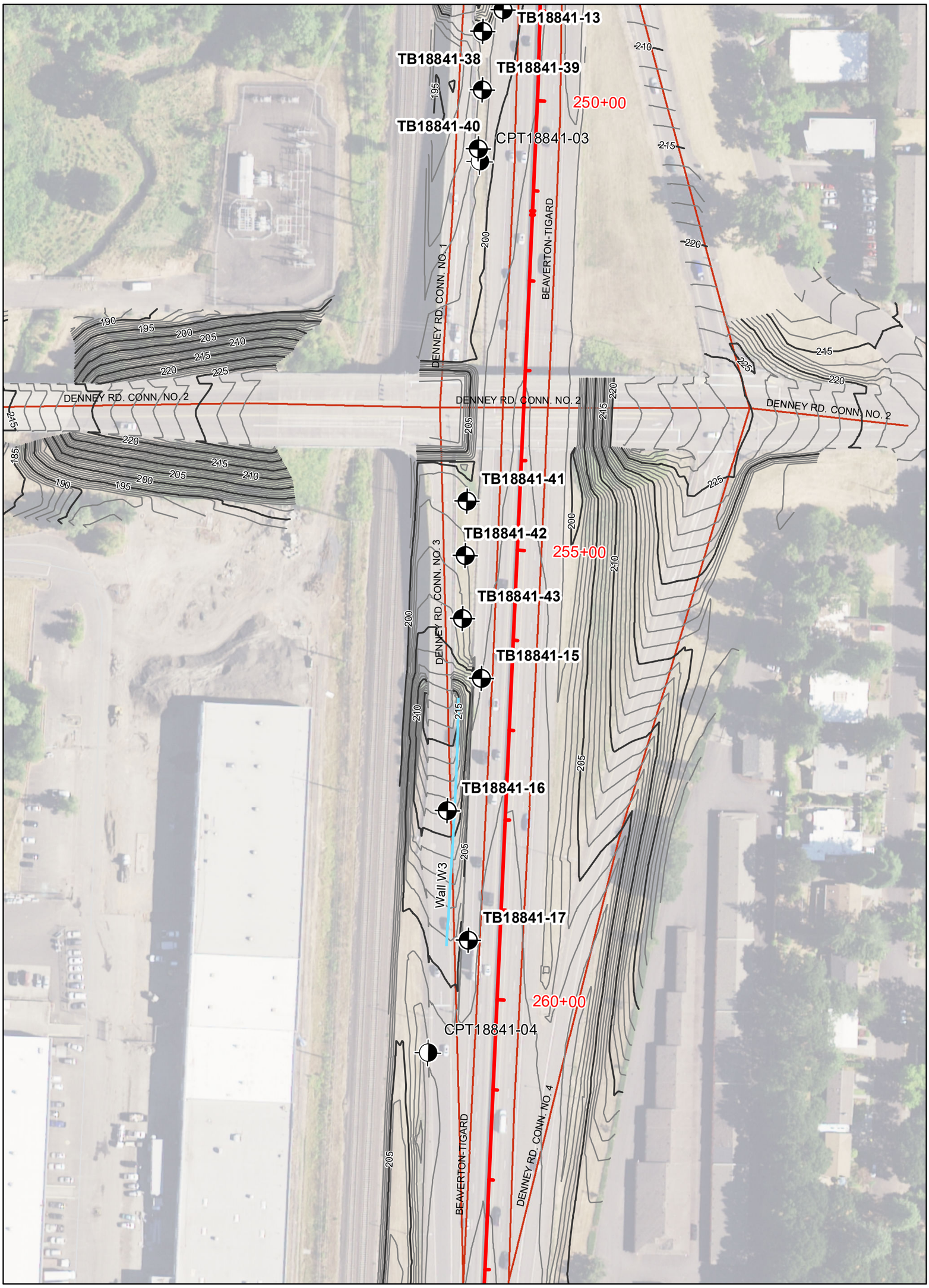
Proposed Retaining Wall

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 4 : SITE PLAN, STA. 236+00 to 249+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

N

100 0 100 200 Feet

Legend

Boring

CPT

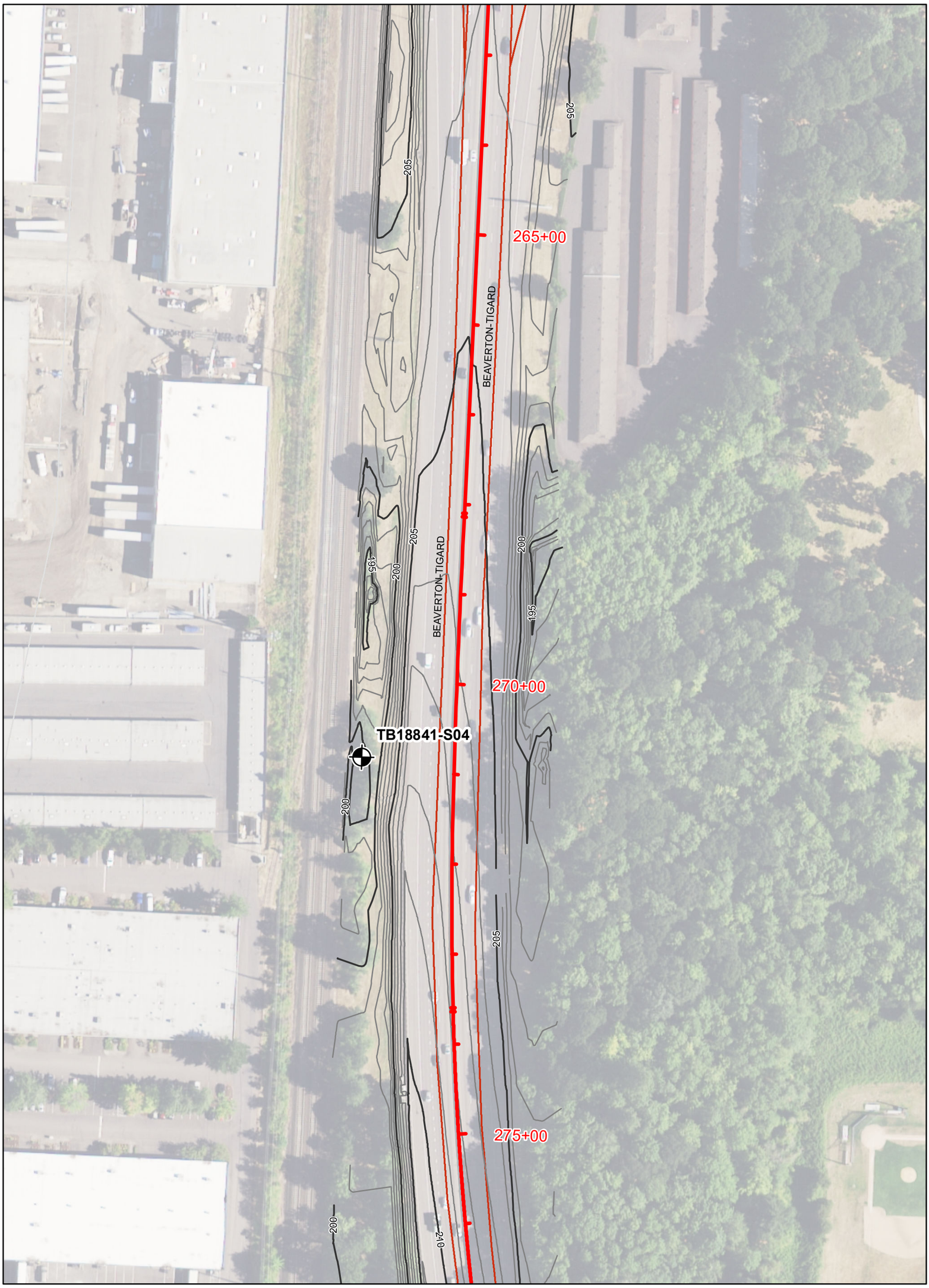
Proposed Retaining Wall

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 5: SITE PLAN, STA. 249+00 to 263+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

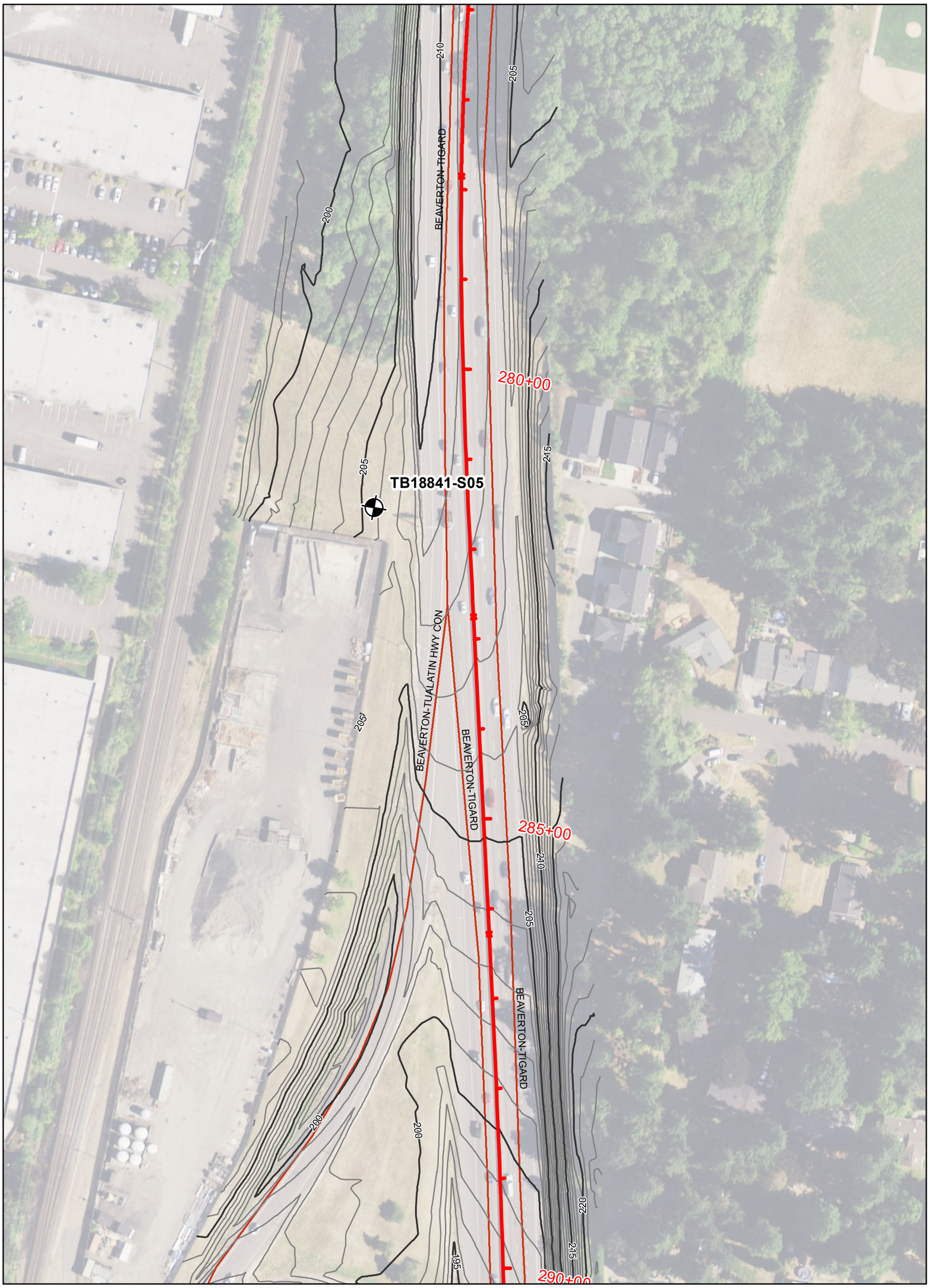
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 6 : SITE PLAN, STA. 263+00 to 276+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

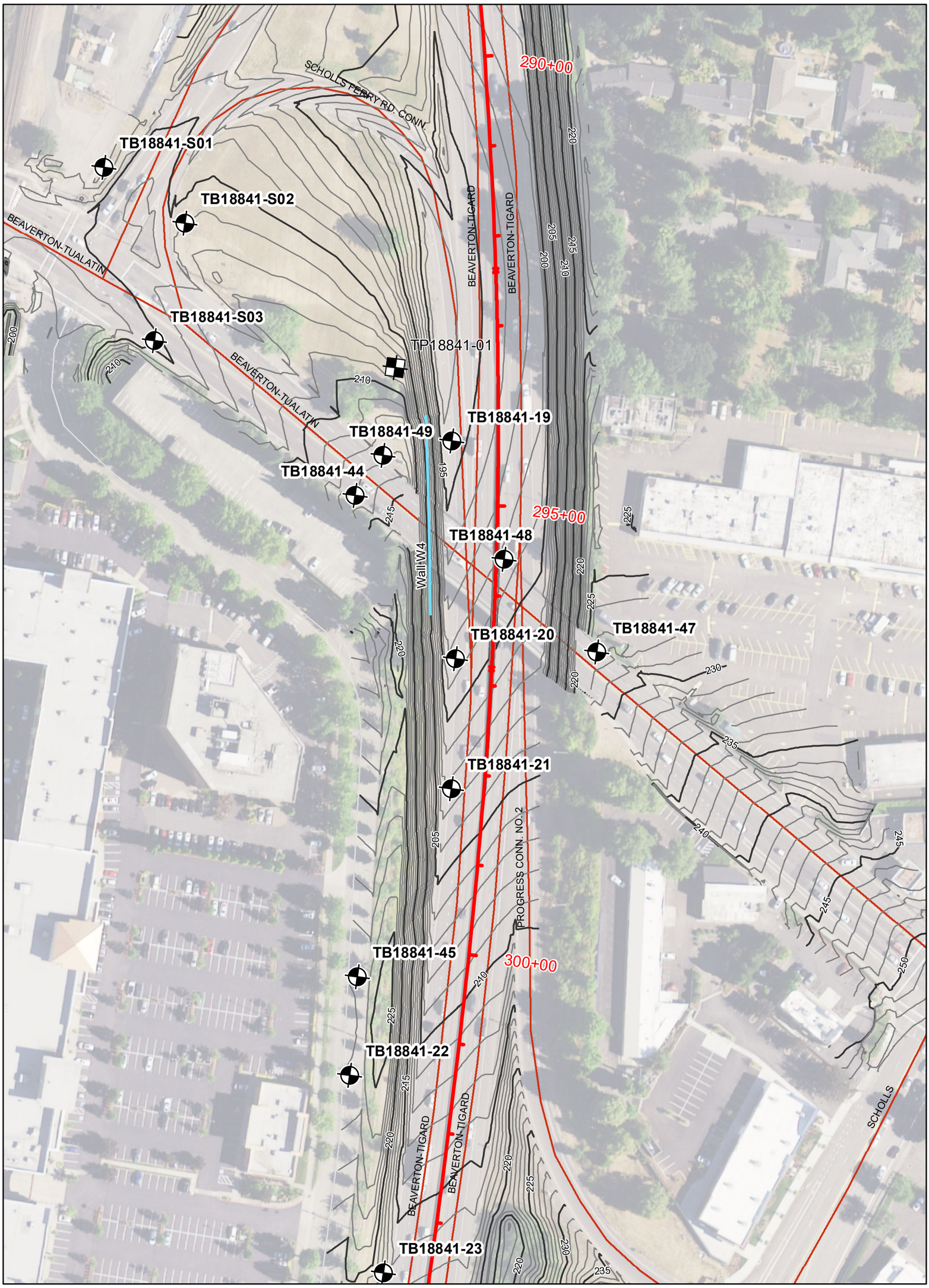
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 7 : SITE PLAN, STA. 276+00 to 290+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

N

100 0 100 200 Feet

Legend

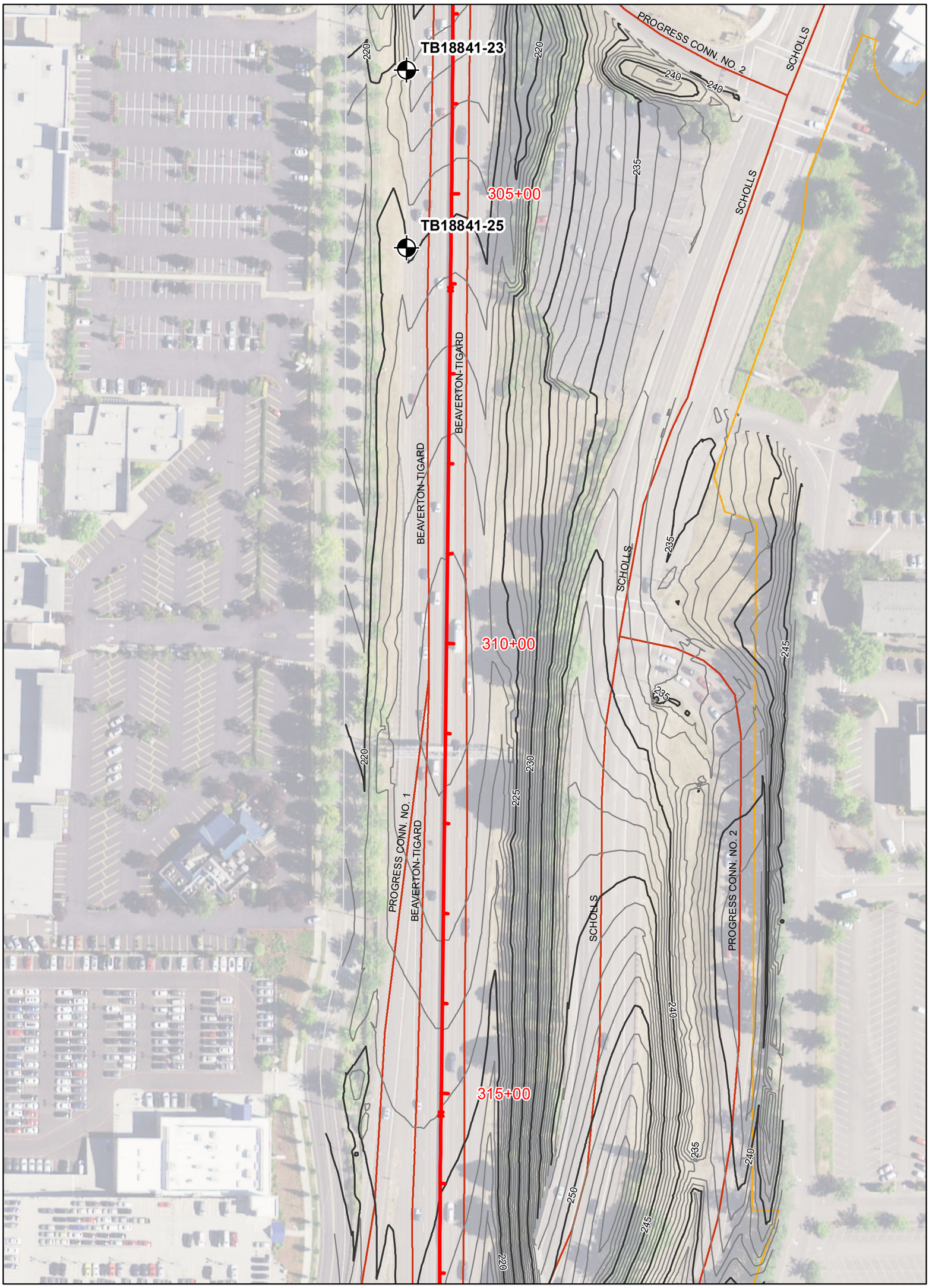
- Boring
- Test Pit
- Proposed Retaining Wall

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 8 : SITE PLAN, STA. 290+00 to 303+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

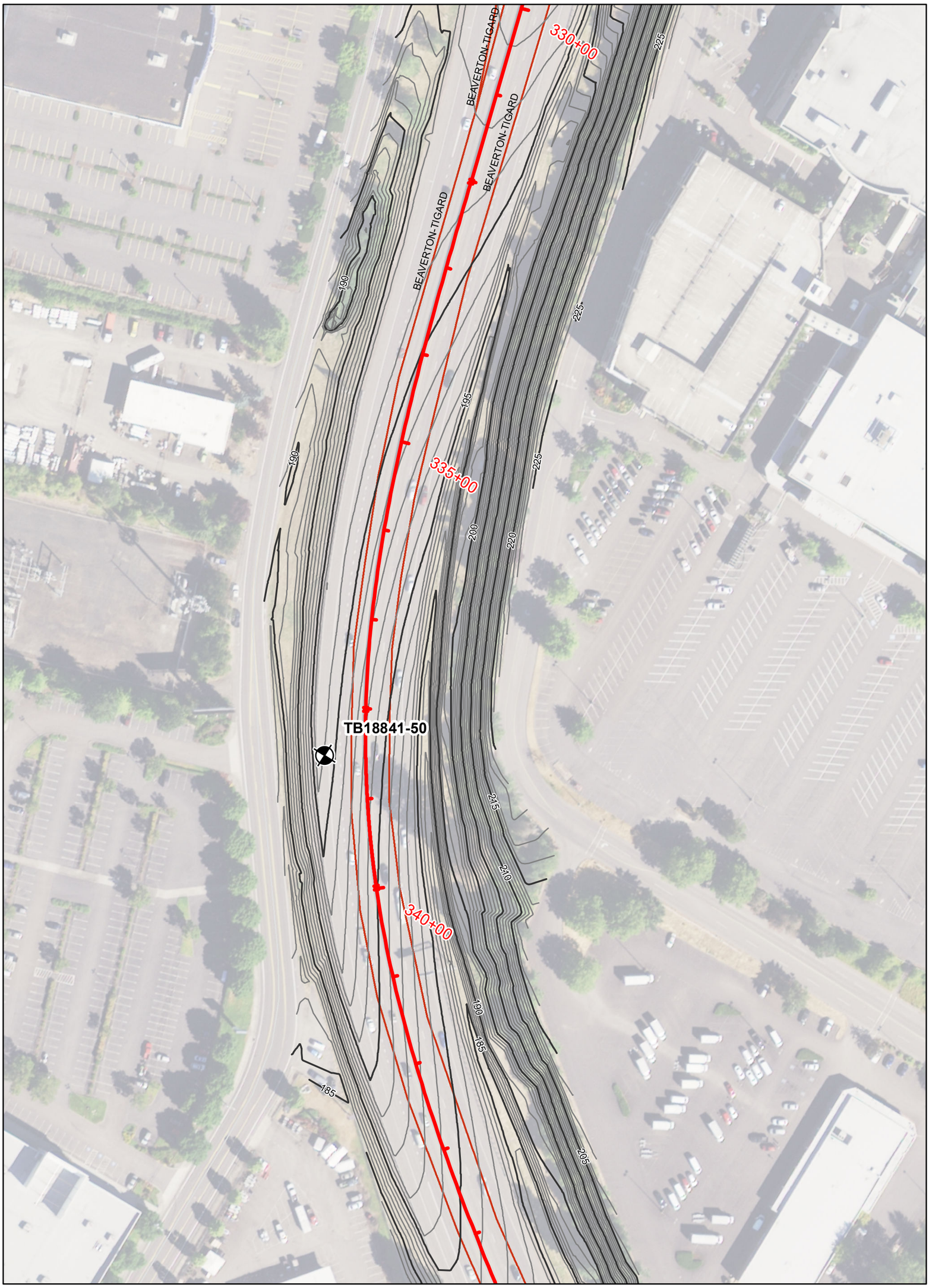
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 9 : SITE PLAN, STA. 303+00 to 317+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

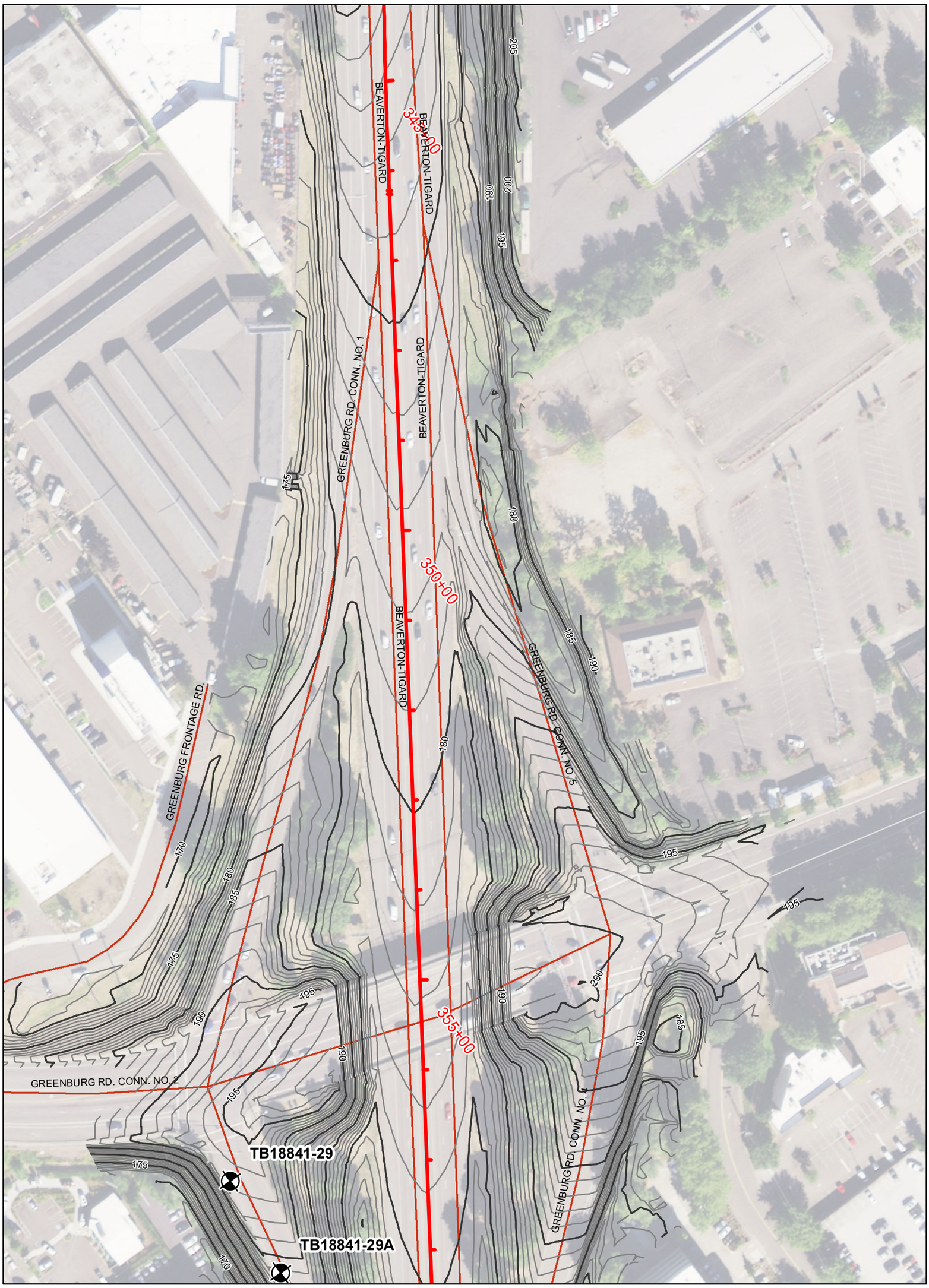
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 10: SITE PLAN, STA. 330+00 to 344+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

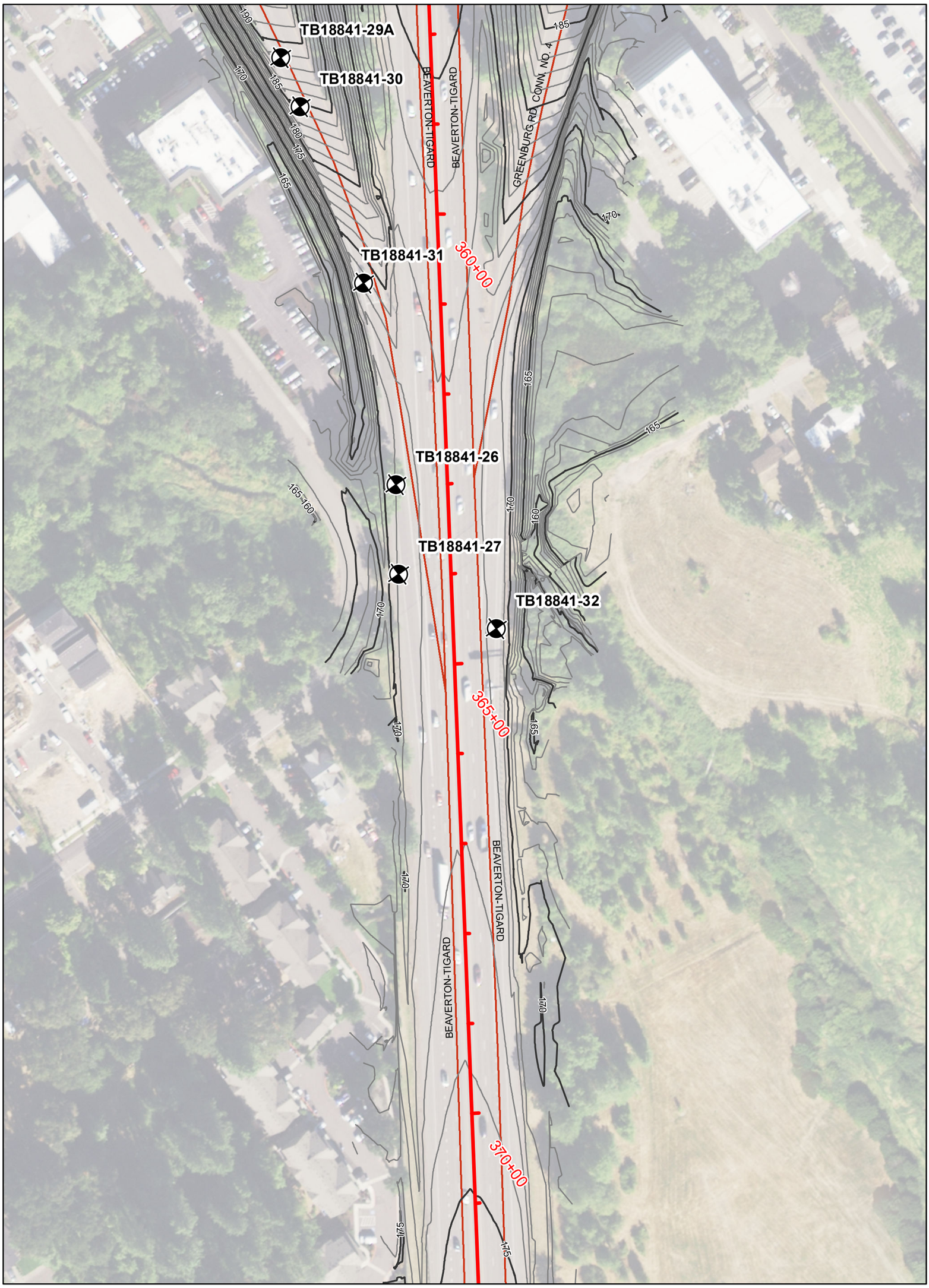
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 11: SITE PLAN, STA. 344+00 to 358+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

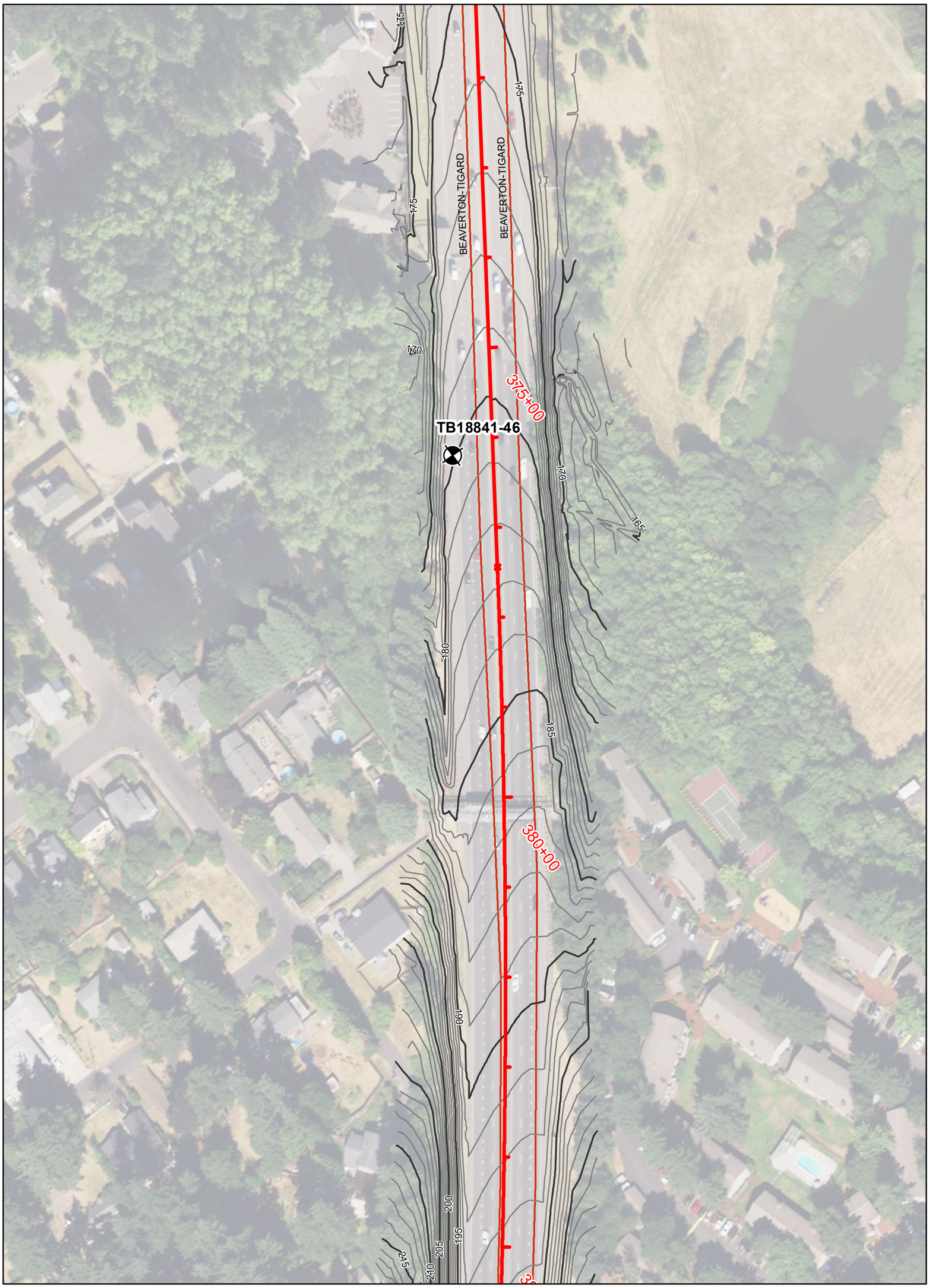
100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 12: SITE PLAN, STA. 358+00 to 372+00



Service Layer Oregon Statewide Imagery Program (OSIP) - Oregon Imagery

Legend

Boring

N

100 0 100 200 Feet

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 GEO-HYDRO-HAZMAT

OR217: OR10 – OR99W Sec.
Multnomah/Washington County
Key 18841

FIGURE 13: SITE PLAN, STA. 372+00 to 385+00

Analysis Results

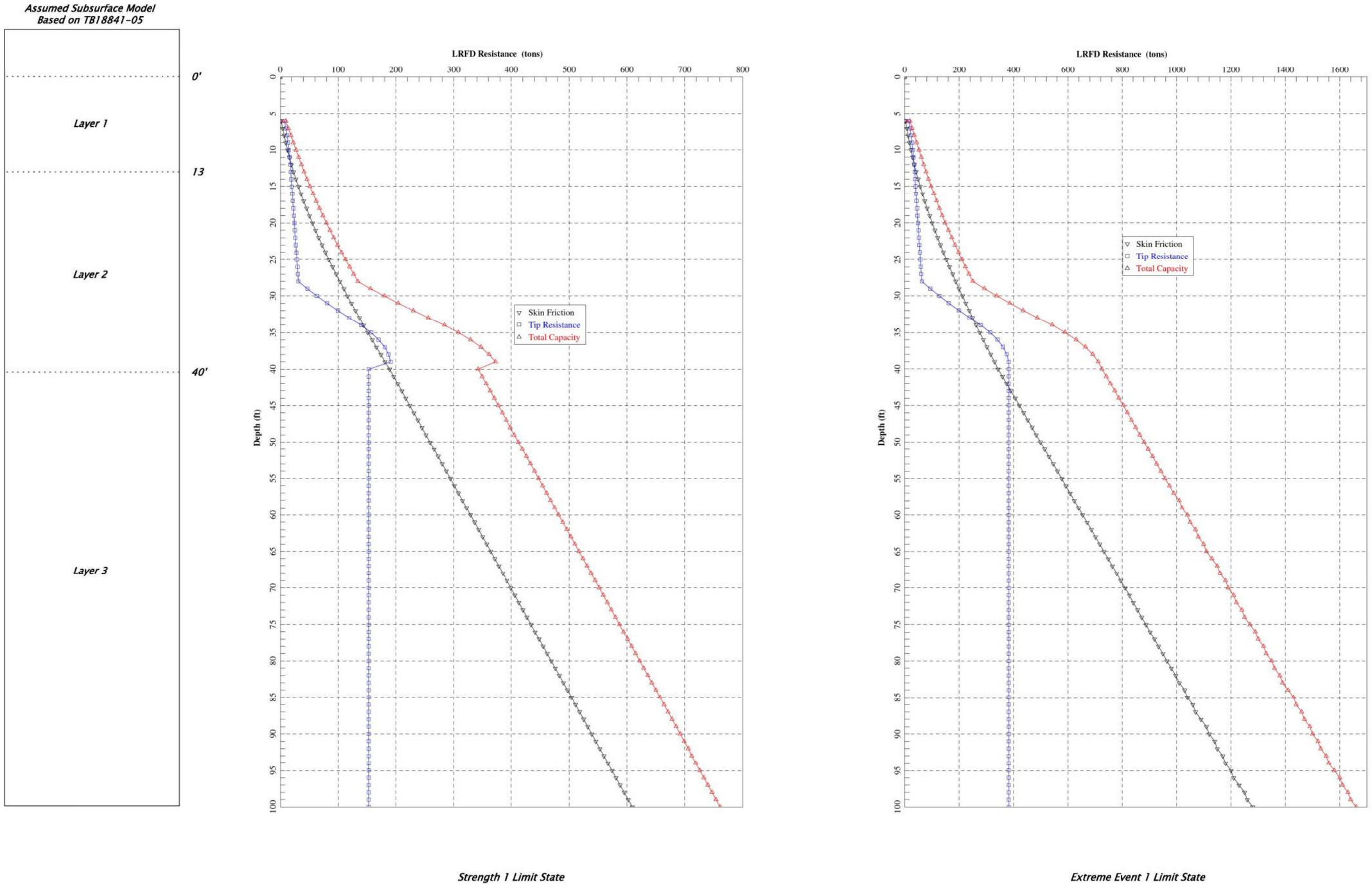
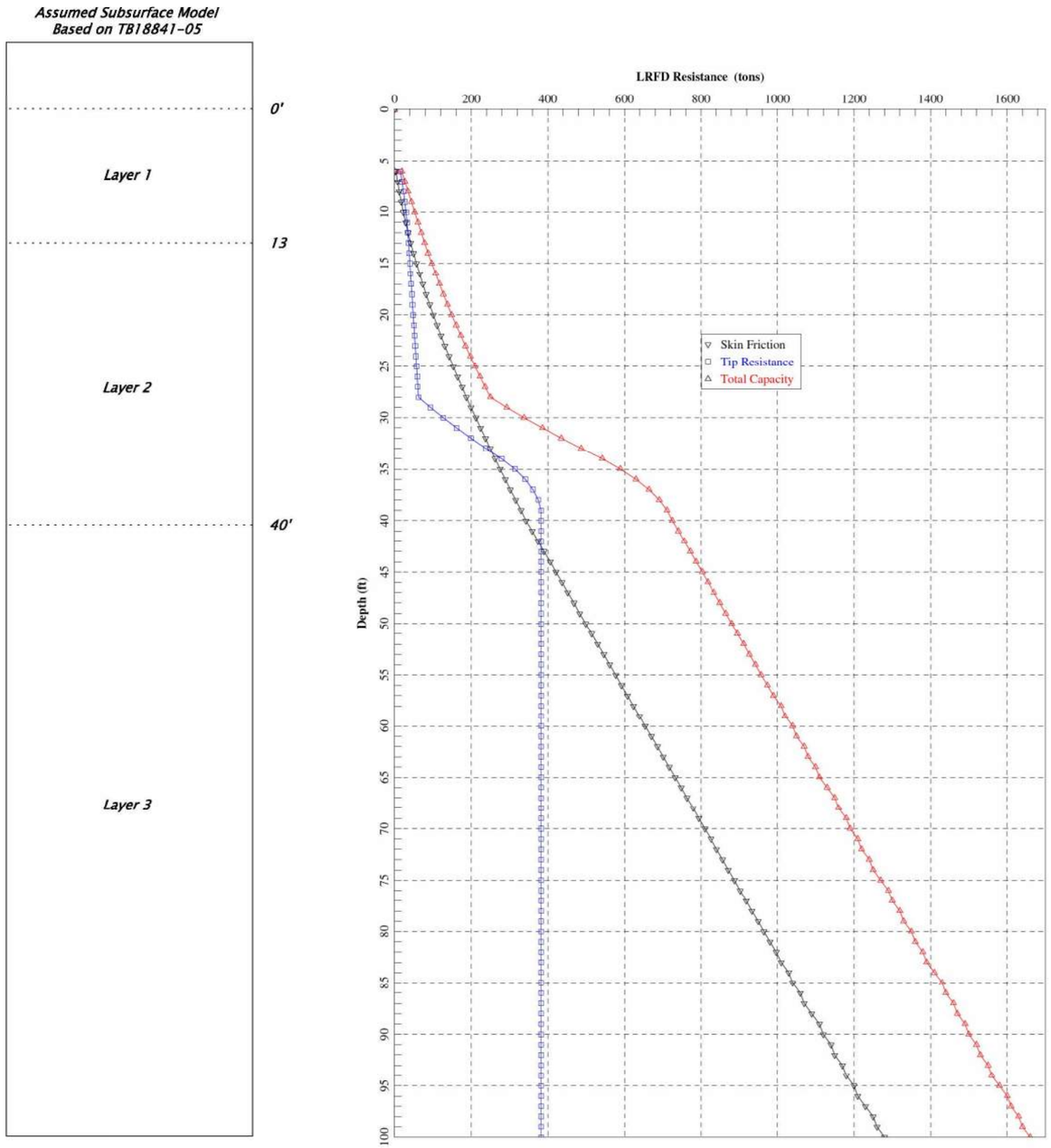


Figure F- 17 Factored Axial Capacity with Depth Str. #23874 – Interior Bent

Region 1 Geo/Hydro/Hazmat K18841
Str.#23874 Foundation Capacity Interior Bent 6' Dia. Shaft

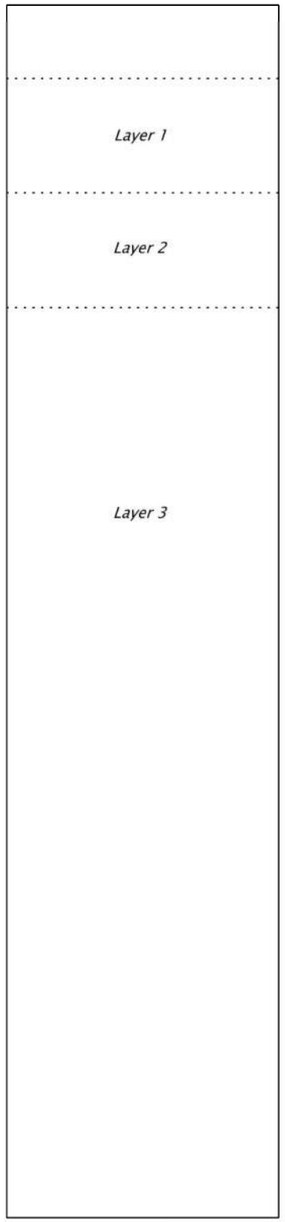


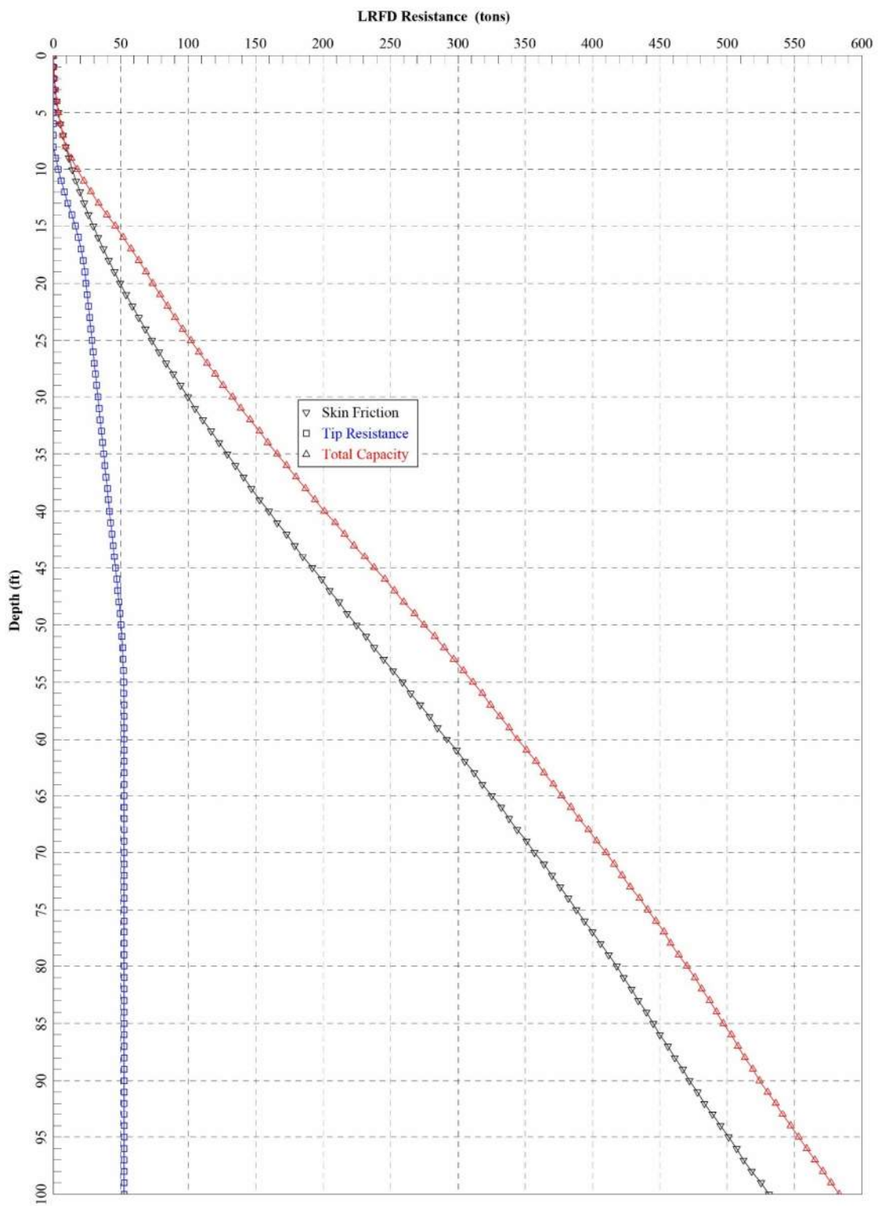
Service 1 Limit State

Figure F- 18 Factored Axial Capacity with Depth Str. #23874 – Interior Bent

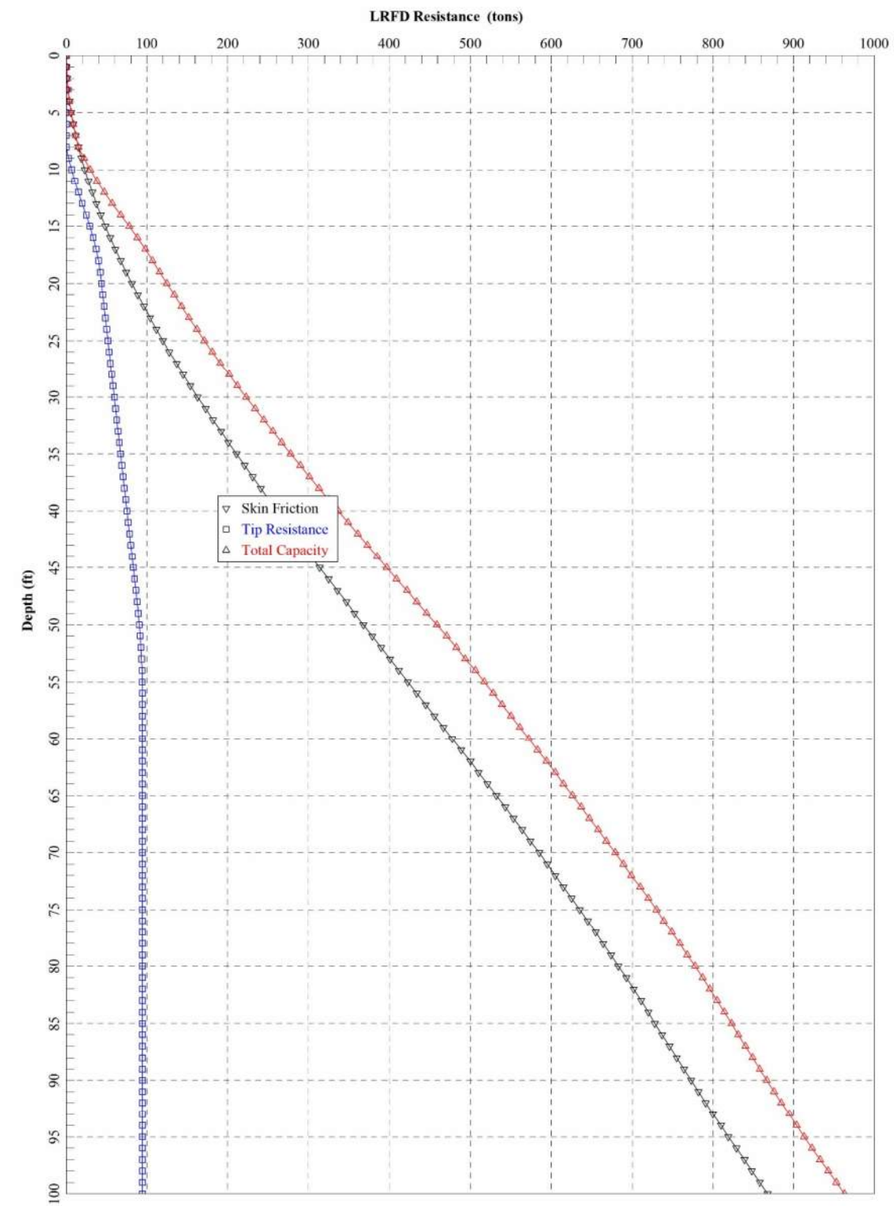
Region 1 Geo/Hydro/Hazmat K18841
Str.#23874 Foundation Capacity Interior Bent 6' Dia. Shaft

Assumed Subsurface Model
Based on TB18841-41, -42, -43





Strength 1 Limit State

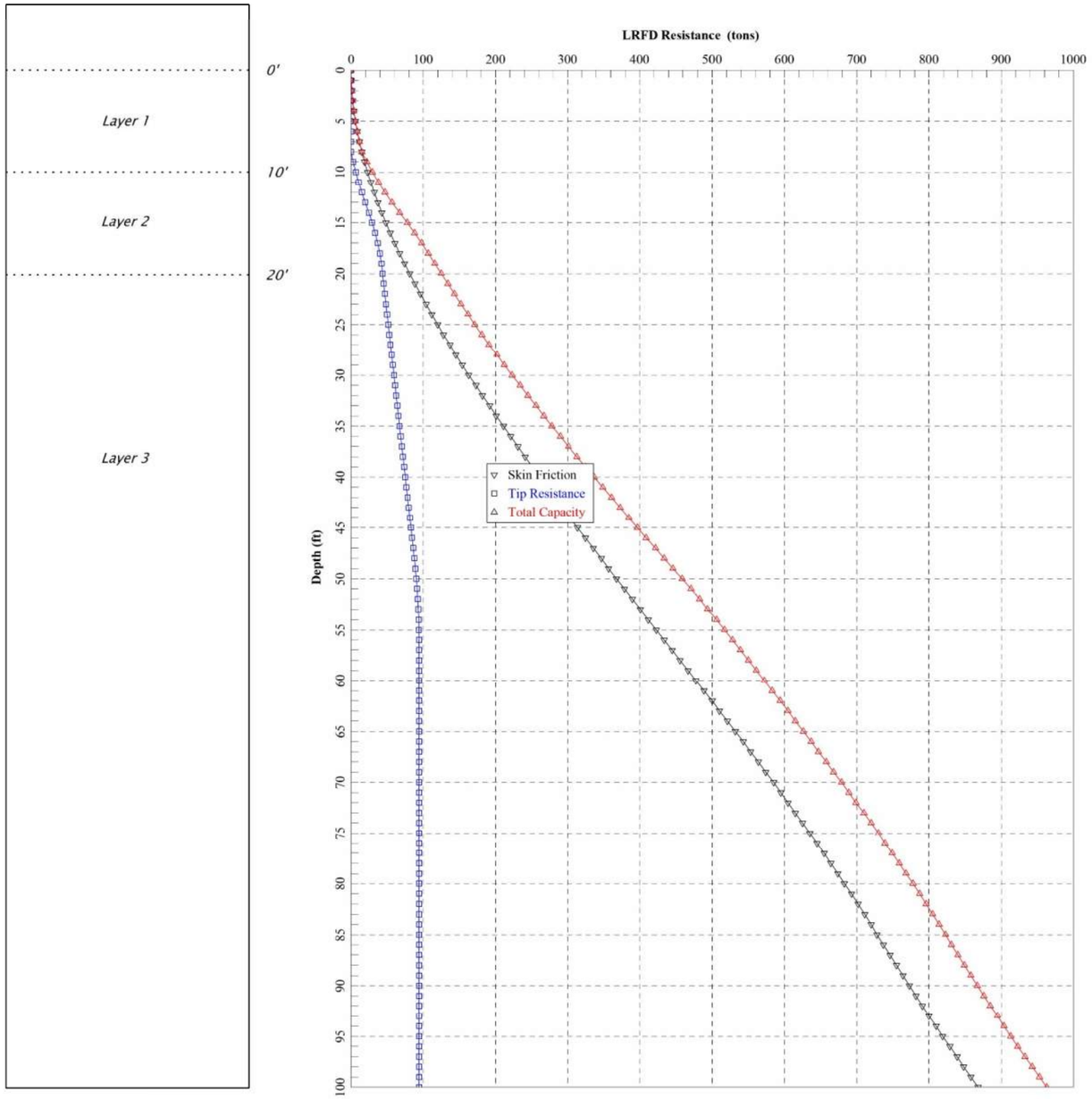


Extreme Event 1 Limit State

Figure F- 26 Factored Axial Capacity with Depth Str. #23873 – Interior Shaft

Region 1 Geo/Hydro/Hazmat K18841
Str.#23873 Foundation Capacity Interior Bent 6' Dia. Shaft

Assumed Subsurface Model
Based on TB18841-41, -42, -43

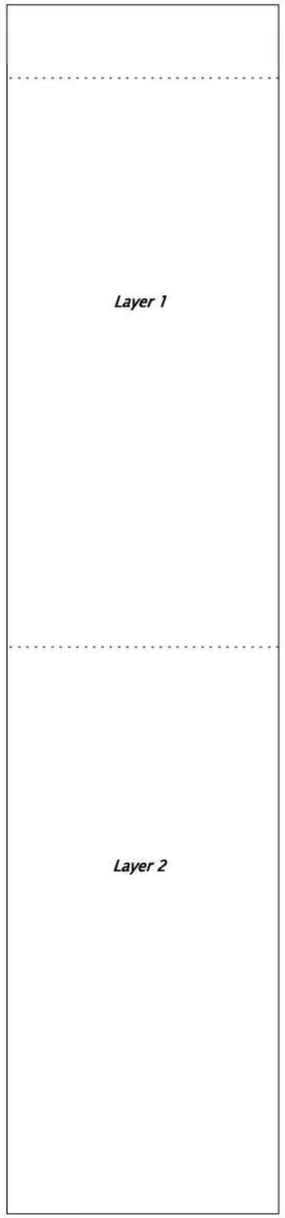


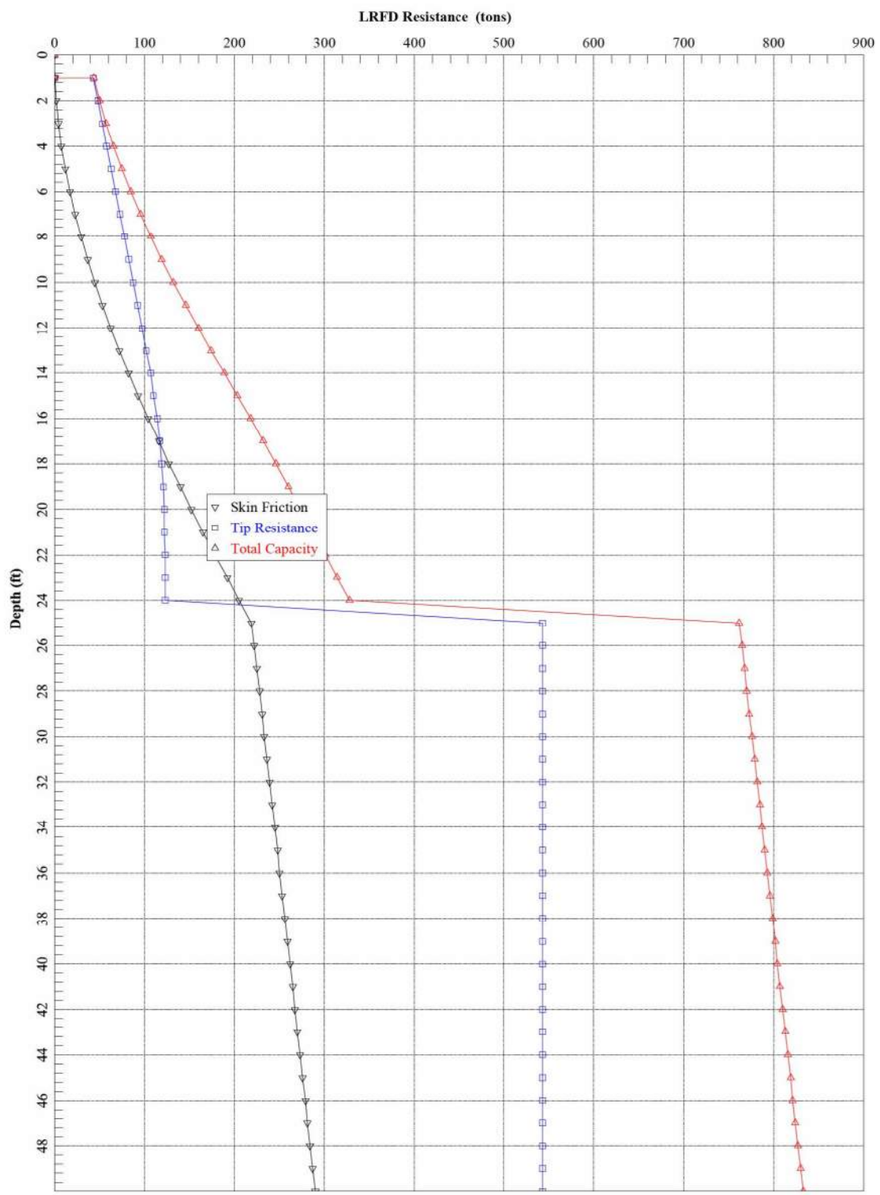
Service 1 Limit State

Figure F- 27 Factored Axial Capacity with Depth Str. #23873 – Interior Shaft

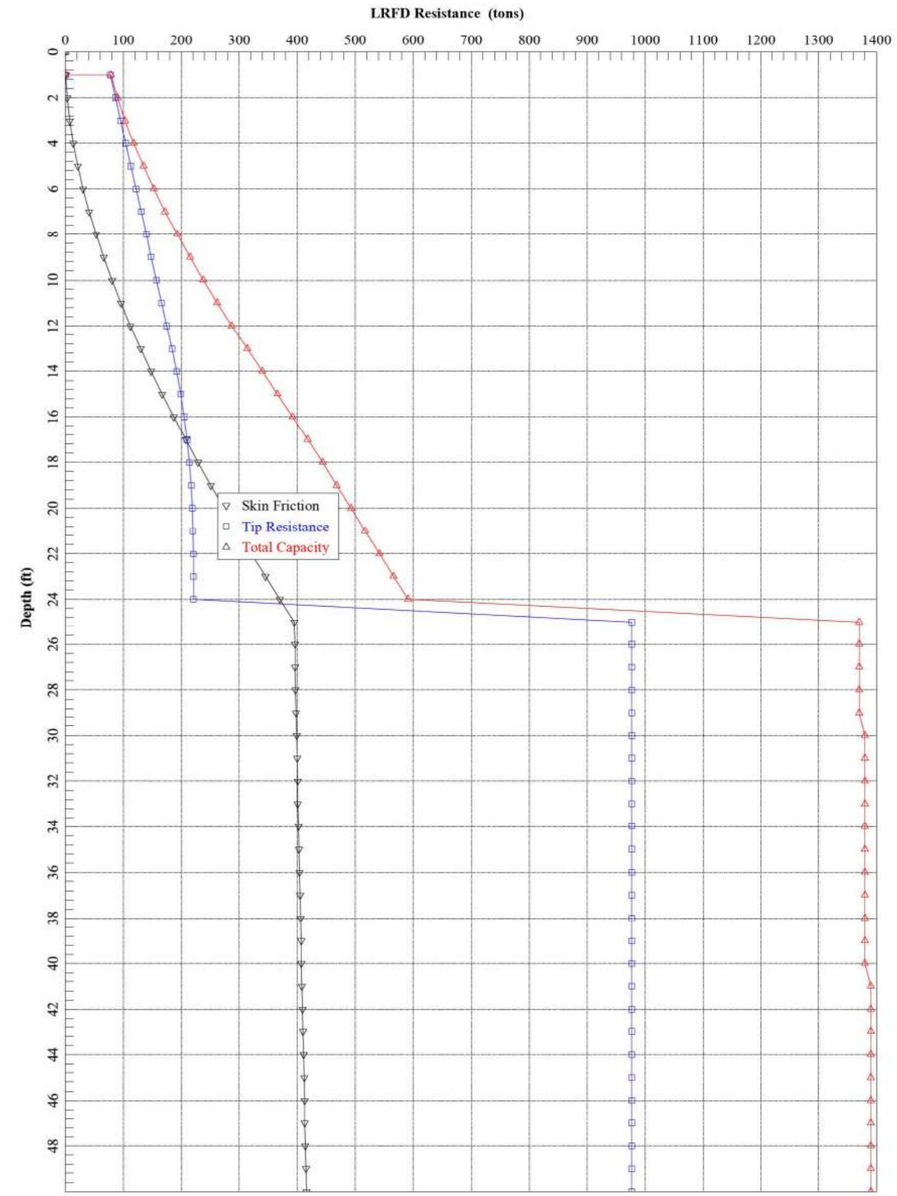
Region 1 Geo/Hydro/Hazmat K18841
Str.#23873 Foundation Capacity Interior Bent 6' Dia. Shaft

Assumed Subsurface Model
Based on TB18841-48





Strength 1 Limit State

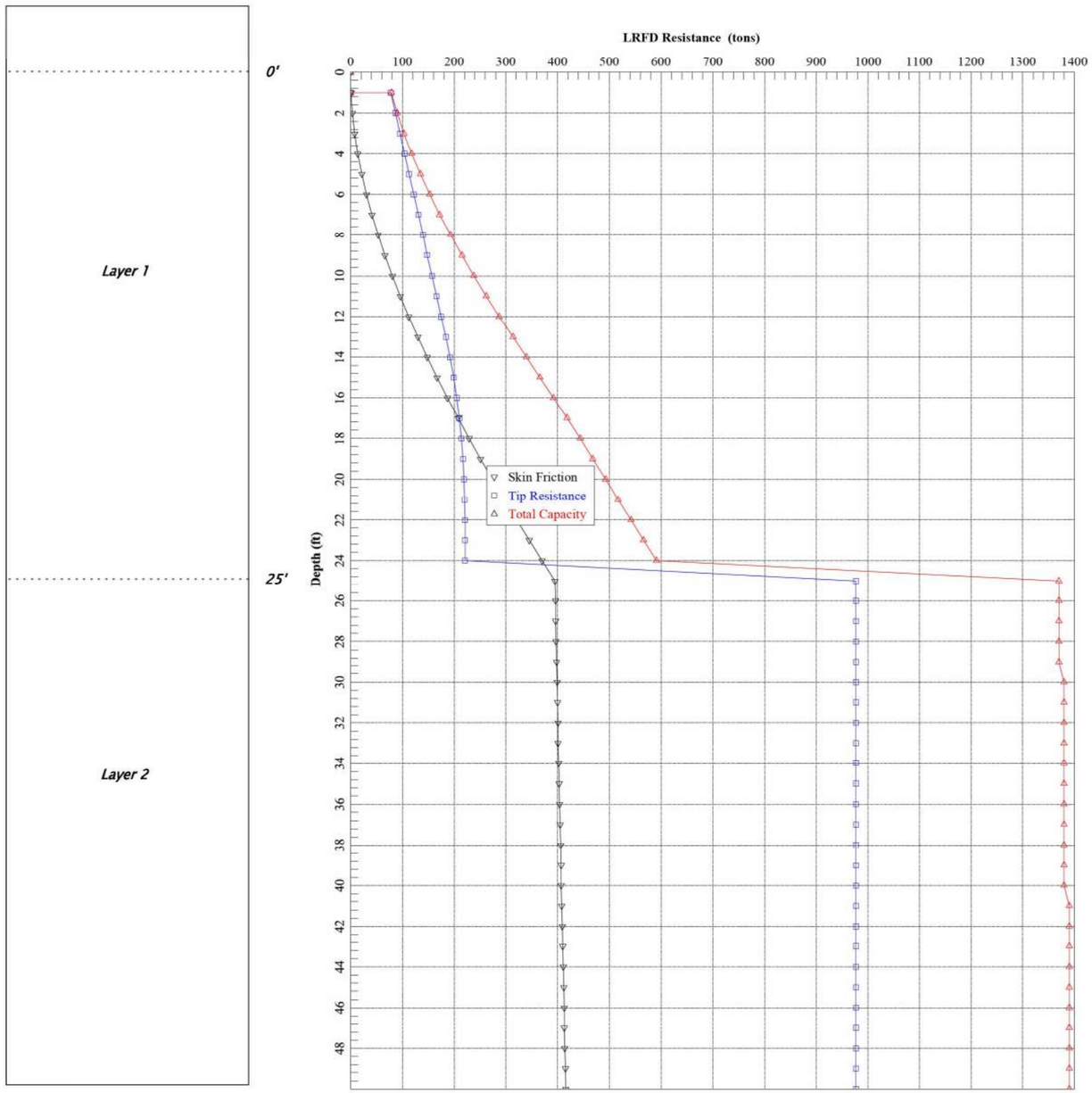


Extreme Event 1 Limit State

Figure F- 30 Factored Axial Capacity with Depth Str. #09671 - Interior Shaft

Region 1 Geo/Hydro/Hazmat K18841
Str.#09671 Foundation Capacity Interior Bent 6' Dia. Shaft

Assumed Subsurface Model
Based on TB18841-48



Service 1 Limit State

Figure F- 31 Factored Axial Capacity with Depth Str. #09671 - Interior Shaft

Region 1 Geo/Hydro/Hazmat K18841	
Str.#09671 Foundation Capacity Interior Bent 6' Dia. Shaft	