

GENERAL NOTES - RETAINING WALLS

Released for Construction
Thomas J Powell, PE
12/08/2021

STANDARD DRAWINGS:

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

NONE

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 9TH EDITION, 2020, AND THE ODOT BRIDGE DESIGN MANUAL, 2020, EXCEPT AS NOTED ELSEWHERE IN THE PLANS.

DESIGN DATA:

CONCRETE CLASS QC5  - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS) (MAXIMUM AGGREGATE SIZE = 1" OR 3/8" NOMINAL)

CONCRETE CLASS QC MISC. - COMPRESSIVE STRENGTH 4.0 KSI (PRECAST LAGGING PANELS & LEVELING PAD)

STRUCTURAL STEEL - MINIMUM YIELD STRENGTH 50 KSI

EPOXY COATED REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

LATERALLY LOADED DRILLED SHAFTS:

THE MAXIMUM FACTORED LATERAL LOAD AND BENDING MOMENT TO BE SUPPORTED BY EACH DRILLED SHAFT ARE 77.18 KIPS, AND 1578.26 KIP-FEET, RESPECTIVELY. THESE LOADS PRODUCE A MAXIMUM FACTORED BENDING MOMENT OF 1095.33 KIP-FEET, AND A MAXIMUM FACTORED SHEAR OF 286.06 KIPS, WITHIN THE DRILLED SHAFT.

ITEM 507 - STEEL PILES, MISC.: SOLDIER PILES

THIS WORK CONSISTS OF FURNISHING AND PLACING STEEL PILES INTO DRILLED HOLES. FURNISH SOLDIER PILES CONSISTING OF STRUCTURAL STEEL MEMBERS THAT MEET THE PLAN REQUIREMENTS AND CONFORM TO ASTM A572, GRADE 50. DO NOT FIELD WELD OR SPLICE STEEL SOLDIER PILES.

ITEM 524 - DRILLED SHAFTS INTO BEDROCK, AS PER PLAN

THIS WORK CONSISTS OF FURNISHING AND INSTALLING DRILLED SHAFTS FOR SOLDIER PILE AND LAGGING WALLS. THE DRILLED SHAFTS ARE REINFORCED WITH SOLDIER PILES INSTEAD OF REINFORCING STEEL CAGES. THE SOLDIER PILES EXTEND ABOVE THE TOP OF THE DRILLED SHAFT. FURNISH AND INSTALL THE DRILLED SHAFTS IN ACCORDANCE WITH C&MS 524 EXCEPT AS MODIFIED AND SUPPLEMENTED BELOW.

EXCAVATE THE HOLE FOR THE DRILLED SHAFT WITHIN 3 INCHES OF THE PLAN LOCATION. PLACE THE SOLDIER PILE WITHIN THE HOLE SO IT IS VERTICAL AND NOT INCLINED MORE THAN 1 INCH BETWEEN TOP TO BOTTOM. PLACE THE SOLDIER PILE SO THAT THE FLANGES ARE PARALLEL TO THE CENTERLINE OF THE ROW OF DRILLED SHAFTS. DO NOT ALLOW THE ORIENTATION OF THE FLANGES TO VARY BY MORE THAN 10 DEGREES. SUPPORT THE SOLDIER PILE SO THAT IT DOES NOT MOVE DURING CONCRETE PLACEMENT.

USE CLASS QC 5 CONCRETE ACCORDING TO C&MS 511. PLACE CONCRETE TO THE ELEVATION FOR THE TOP OF THE DRILLED SHAFT. THE CONTRACTOR MAY PLACE CONCRETE USING THE FREE FALL METHOD PROVIDED THE DEPTH OF WATER IS LESS THAN 6 INCHES AND THE CONCRETE FALLS WITHOUT STRIKING THE SIDES OF THE HOLE. POURING CONCRETE ALONG THE WEB OF THE SOLDIER PILE IS ACCEPTABLE.

CHECK THE POSITION, THE VERTICAL ALIGNMENT AND ORIENTATION OF THE SOLDIER PILE IMMEDIATELY AFTER CONCRETE PLACEMENT. MAKE CORRECTIONS AS NECESSARY TO MEET THE ABOVE TOLERANCES.

PLACE LAGGING SO THAT THE SOLDIER PILE FLANGE OVERLAPS THE END OF THE LAGGING BY AT LEAST 3 INCHES AT BOTH ENDS OF THE LAGGING. WAIT AT LEAST 12 HOURS AFTER PLACING CONCRETE BEFORE PLACING LAGGING.

PROTECTION OF UNATTENDED OPEN SHAFTS: CARE SHALL BE EXERCISED AS TO COVER UNATTENDED OPEN SHAFTS. TEMPORARY COVERS SHALL BE OF ADEQUATE STRENGTH TO PREVENT A PERSON OR ANIMAL FROM FALLING IN.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE DRILLED SHAFTS AND PLACE LAGGING.

ITEM 610 - SPECIAL - RETAINING WALL, MISC.: PRECAST REINFORCED CONCRETE LAGGING PANEL

THIS WORK CONSISTS OF FURNISHING AND PLACING PRECAST REINFORCED CONCRETE PANELS BETWEEN THE SOLDIER PILES TO FUNCTION AS LAGGING FOR THE RETAINING WALL. PROVIDE PRECAST CONCRETE LAGGING FROM A PRECAST CONCRETE MANUFACTURER CERTIFIED UNDER SUPPLEMENT 1073. PROVIDE CLASS QC 1 CONCRETE ACCORDING TO CMS 499. PROVIDE EPOXY COATED REINFORCING STEEL ACCORDING TO CMS 709.00. IN LIEU OF EPOXY COATING, A CORROSION INHIBITING CONCRETE ADMIXTURE MAY BE USED AT THE SPECIFIED DOSAGE RATE. A QUALIFIED PRODUCT LIST OF CORROSION INHIBITING ADMIXTURES IS ON FILE AT THE LABORATORY. MANUFACTURERS SHOULD RECOGNIZE THAT THE CORROSION INHIBITOR MAY AFFECT THE STRENGTH, ENTRAINED AIR CONTENT, WORKABILITY, ETC. OF THEIR CONCRETE MIXES. THE MANUFACTURER'S CHOICE TO USE ONE OF THESE CORROSION INHIBITORS DOES NOT ALLEVIATE MEETING ALL DESIGN REQUIREMENTS. DO NOT ALLOW THE DIMENSIONS OF THE REINFORCING STEEL TO VARY BY MORE THAN 1/4".

- REJECT PANELS HAVING ANY OF THE FOLLOWING:
- DEFECTS THAT INDICATE HONEYCOMBED OR OPEN TEXTURE CONCRETE
 - DEFECTS IN THE PHYSICAL CHARACTERISTICS OF THE CONCRETE
 - CONCRETE CHIPS OR SPALLS THAT EXCEED 4 INCHES WIDE AND 2 INCHES DEEP (**REPAIR ALL CHIPS AND SPALLS OF ANY DIMENSION)
 - SIGNS OF AGGREGATE SEGREGATION
 - CRACKS WIDER THAN 0.01 INCHES, PENETRATING MORE THAN AN INCH OR LONGER THAN 12 INCHES. (REPAIR ALL CRACKS OF ANY DIMENSION)
 - FACE PANELS THAT DO NOT MEET SPECIFIED TOLERANCES
 - EXPOSED REINFORCING STEEL
 - INSUFFICIENT CONCRETE COMPRESSIVE STRENGTH

NOTE: ** THE MANUFACTURER SHALL SUBMIT REPAIR METHODS TO THE ENGINEER

PERMANENTLY MARK EACH PANEL TO INDICATE THE FACE TO BE PLACED AGAINST THE SOIL. PLACE THE PANEL BETWEEN THE FLANGES OF THE SOLDIER PILES AND BEARING AGAINST THE FLANGES ON THE EXPOSED SIDE OF THE WALL.

DO NOT SHIP PANELS UNTIL CONCRETE HAS ATTAINED A 3000 PSI COMPRESSIVE STRENGTH.

SUBMIT SHIPPING DOCUMENTATION TO THE ENGINEER AS THE FACING PANELS ARE DELIVERED TO THE PROJECT. REQUIRED DOCUMENTATION SHALL INCLUDE THE PRECASTER'S RECORD OF FINAL INSPECTION OF ALL PRECAST COMPONENTS, THE MEASUREMENTS OF TOLERANCES, STRENGTH, DIMENSIONS, AND THE TE-24 SHIPPING DOCUMENT.

PANELS DAMAGED BY IMPROPER HANDLING, STORING, TRANSPORTATION OR ERECTION SHALL BE REPAIRED OR REPLACED AT THE DISCRETION OF THE ENGINEER

WHEN INSTALLING THE PRECAST CONCRETE LAGGING PANELS, PLACE WOOD SPACERS AND WEDGES NEAR THE TOP AND BOTTOM ON EACH SIDE TO HOLD THE LAGGING PANELS AGAINST THE FRONT INSIDE FLANGE OF THE STEEL PILES.

BOTTOM ROWS OF PANELS SHALL BY UNIFORMLY SUPPORTED ON LEVEL GROUND. GRANULAR MATERIAL MAY BE USED TO LEVEL SURFACE.

SEE SHEET 3/3 FOR DETAILS AND DIMENSIONS OF PRECAST LAGGING PANELS.

ABBREVIATIONS:

THE FOLLOWING ABBREVIATIONS HAVE BEEN USED THROUGHOUT THESE PLANS TO INDICATE THE DESIGNATIONS CONTAINED IN THE LEGEND BELOW:

- BOT. - BOTTOM
- BRGS. - BEARINGS
- C - CENTERLINE
- CB - CATCH BASIN
- C/C - CENTER TO CENTER
- CIP - CAST-IN-PLACE
- C.J. - CONSTRUCTION JOINT
- CLR. - CLEARANCE
- CMS - CONSTRUCTION AND MATERIAL SPECIFICATIONS
- CONST. - CONSTRUCTION
- CU YD - CUBIC YARD
- DIA. - DIAMETER
- E.F. - EACH FACE
- ELEV., EL. - ELEVATION
- EQ. - EQUAL
- EX. - EXISTING
- EXP. - EXPANSION
- F.F. - FAR FACE
- F.S. - FIELD SPLICE
- FT/FT - FOOT PER FOOT
- FTG. - FOOTING
- LT. - LEFT
- MAX. - MAXIMUM
- MGS - MIDWEST GUARDRAIL SYSTEM
- MIN. - MINIMUM
- MISC. - MISCELLANEOUS
- MOT - MAINTENANCE OF TRAFFIC
- N.F. - NEAR FACE
- NPCPP - NON-PERFORATED CORRUGATED PLASTIC PIPE
- NO./# - NUMBER
- O/O - OUT TO OUT
- OVHD - OVERHEAD
- PCPP - PERFORATED CORRUGATED PLASTIC PIPE
- PEJF - PREFORMED EXPANSION JOINT FILLER
- PG - PROFILE GRADE
- PGL - PROFILE GRADE LINE
- PROP. - PROPOSED
- PT - POINT OF TANGENCY
- PVC - POINT OF VERTICAL CURVATURE
- PVI - POINT OF VERTICAL INTERSECTION
- PVT - POINT OF VERTICAL TANGENCY
- R. - RADIUS
- RCP - ROCK CHANNEL PROTECTION
- RT. - RIGHT
- R/W - RIGHT OF WAY
- SAN. - SANITARY
- SER. - SERIES
- SHT. - SHEET
- S.O. - SERIES OF
- SPA. - SPACES OR SPACING
- SR - STATE ROUTE
- STA. - STATION
- STD. - STANDARD
- TBR - TO BE REMOVED
- T/C - TOP OF COPING
- TEMP. - TEMPORARY
- T.O.S. - TOE OF SLOPE
- T&B- TOP AND BOTTOM
- T/PARAPET - TOE OF PARAPET
- T/T - TOE TO TOE
- TYP. - TYPICAL
- U.N.O. - UNLESS NOTED OTHERWISE
- VAR. - VARIES
- VC - VERTICAL CURVE
- VERT. - VERTICAL
- W/ - WITH
- W/O - WITHOUT

ISSUE RECORD	NO.	DATE	DESCRIPTION
	1	12/07/21	DELETED QA/QC REQUIREMENT

p:\v\ANVA01PWINT01.parsons.com:Ohio State\Documents\B-Akron Beltway Rehab\10 - Design\102329\Structures\BU-18\Sheets\102329-WN001.dgn Sheet 10/25/2021 8:45:09 AM KChristmas

2021-12-07 213000-BU-18.RFC REV01

SUM-76/77/8-
8.24/9.74/0.00
PID No. 102329

1/3
2/4

RETAINING WALL GENERAL NOTES
WALL A
SOLDIER PILE RETAINING WALL ALONG RAMP S

DESIGNED
KDC

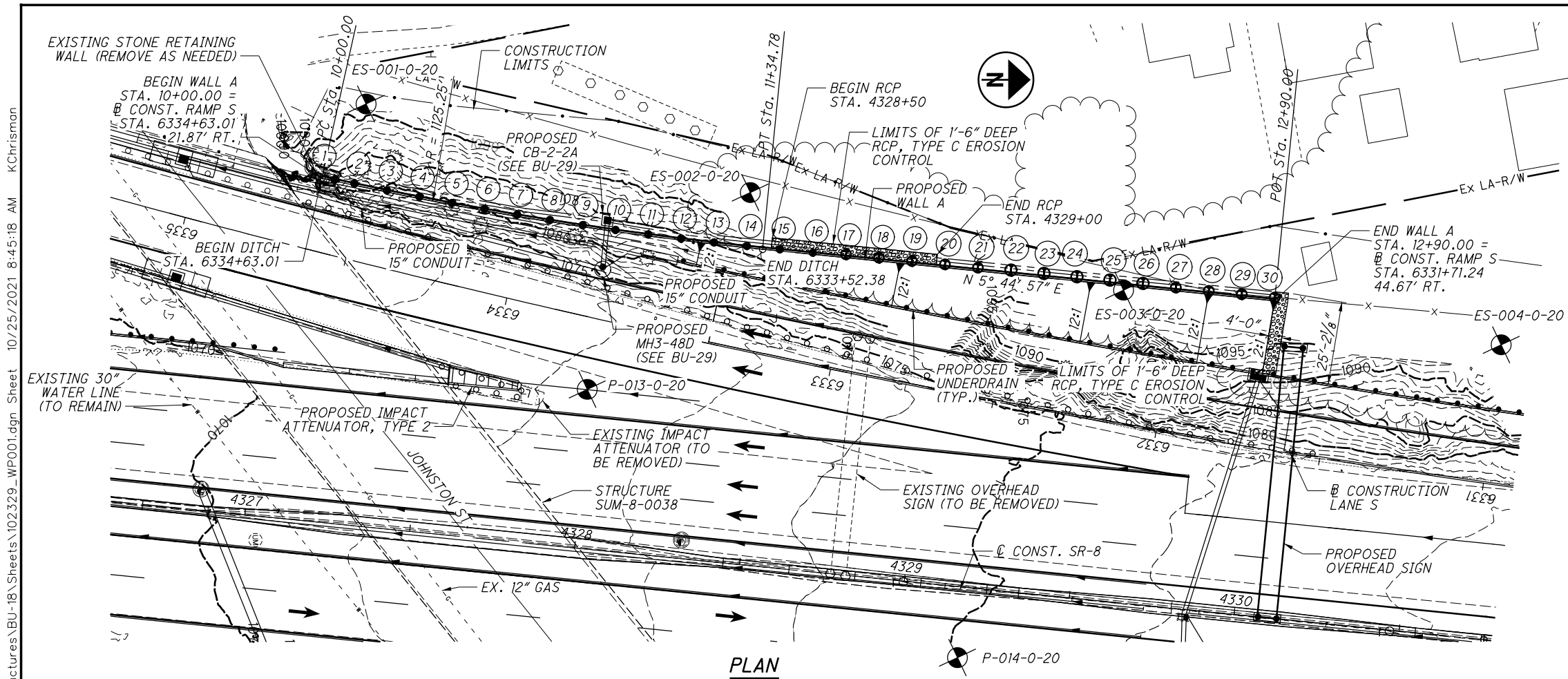
DRAWN
KDC

DATE
9/28/21

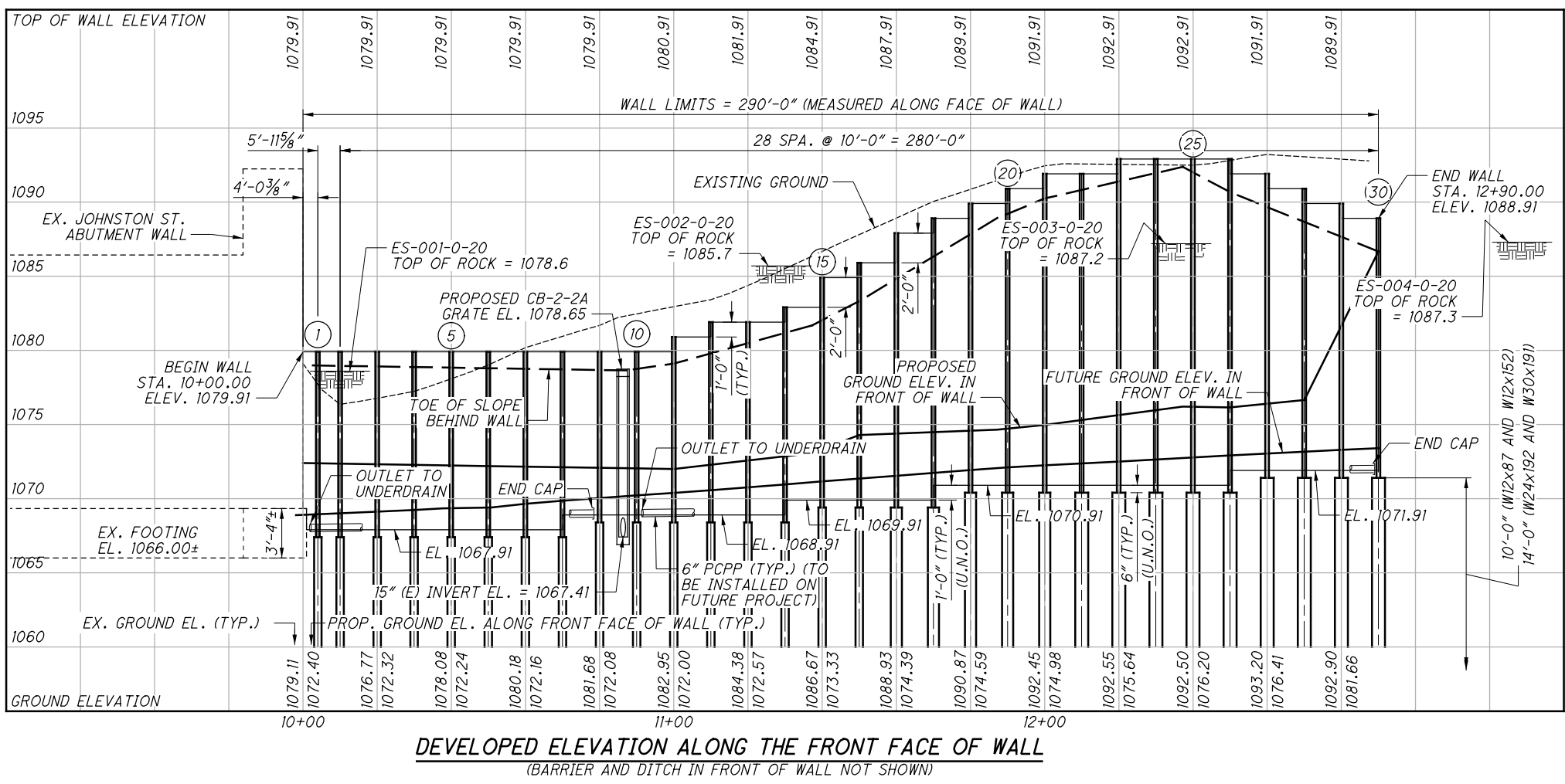
REVIEWED
SAN

STRUCTURE FILE NUMBER

DESIGN AGENCY
PRIME
8415 Atlas Plaza
Columbus, Ohio 43231



PILE INFORMATION				
PILE NO.	STATION	OFFSET (FT) (LT.)	DESIGN HEIGHT (FT)	PILE SECTION
1	10+04.03	0.52	10.00	W12x87
2	10+10.00	0.52	10.00	W12x87
3	10+20.00	0.52	10.00	W12x87
4	10+30.00	0.52	10.00	W12x87
5	10+40.00	0.52	10.00	W12x87
6	10+50.00	0.52	10.00	W12x87
7	10+60.00	0.52	10.00	W12x87
8	10+70.00	0.52	10.00	W12x87
9	10+80.00	0.52	10.00	W12x87
10	10+90.00	0.52	10.00	W12x87
11	11+00.00	0.52	10.00	W12x87
12	11+10.00	0.52	10.00	W12x87
13	11+20.00	0.52	13.00	W12x152
14	11+30.00	0.52	13.00	W12x152
15	11+40.00	0.52	13.00	W12x152
16	11+50.00	0.52	13.00	W12x152
17	11+60.00	1.01	18.00	W24x192
18	11+70.00	1.01	18.00	W24x192
19	11+80.00	1.01	18.00	W24x192
20	11+90.00	1.01	18.00	W24x192
21	12+00.00	1.01	18.00	W24x192
22	12+10.00	1.28	21.00	W30x191
23	12+20.00	1.28	21.00	W30x191
24	12+30.00	1.28	21.00	W30x191
25	12+40.00	1.28	21.00	W30x191
26	12+50.00	1.28	21.00	W30x191
27	12+60.00	1.01	18.00	W24x192
28	12+70.00	1.01	18.00	W24x192
29	12+80.00	1.01	18.00	W24x192
30	12+90.00	1.01	18.00	W24x192



BORING INFORMATION			
BORING	STATION	OFFSET	TOP OF ROCK EL.
ES-001-0-20	4327+24	129' LT.	1078.6
ES-002-0-20	4328+42	112' LT.	1085.7
ES-003-0-20	4329+57	94' LT.	1087.2
ES-004-0-20	4330+72	89' LT.	1087.3
P-013-0-20	4327+97	48' LT.	1068.7
P-014-0-20	4329+22	31' RT.	1071.5

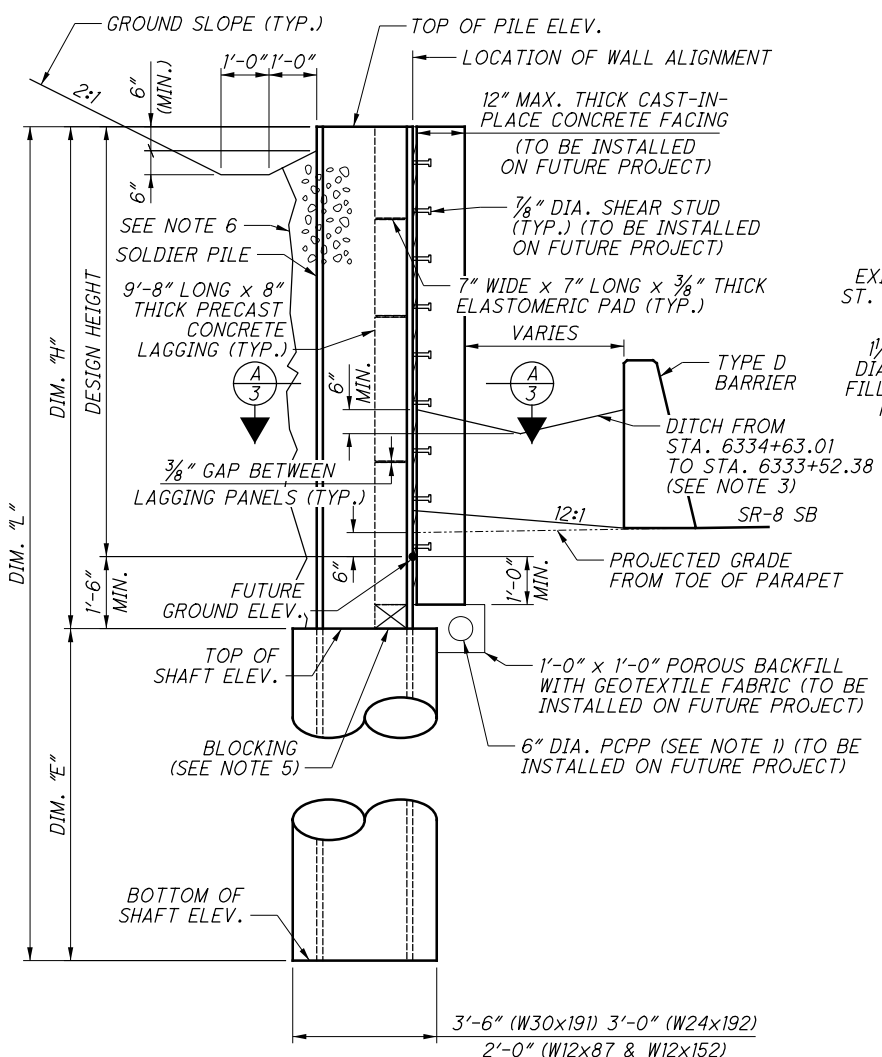
LEGEND:

- - PROJECT BORING LOCATION
- ⑮ - PILE NO.

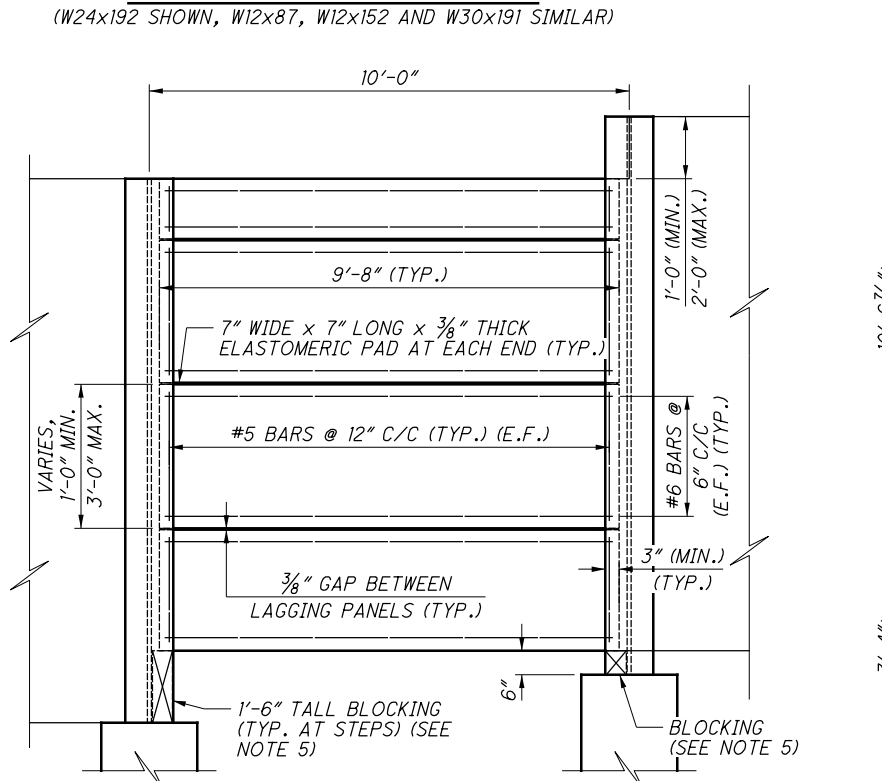
NOTES:

- EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
- WALL ELEVATIONS, DIMENSIONS AND STATIONING ARE MEASURED ALONG THE FRONT OF THE SOLDIER PILE FLANGES.
- FOR CROSS SECTIONS, SEE BU-28B AND BU-29 PLANS.

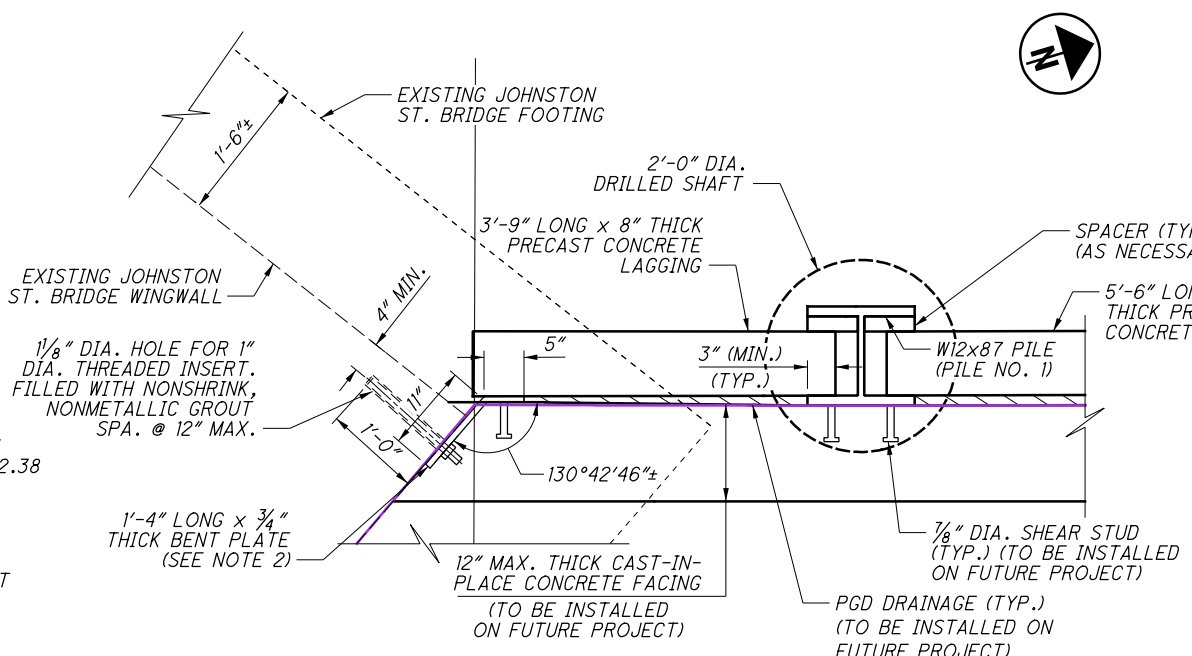
p:\VANVAD1P\WINT01\parsons.com\Ohio State\Documents\DB-Akron Beltway Rehab\10 - Design\102329\Structures\BU-18\Sheets\102329-WP001.dgn Sheet 10/25/2021 8:45:18 AM KChrisman



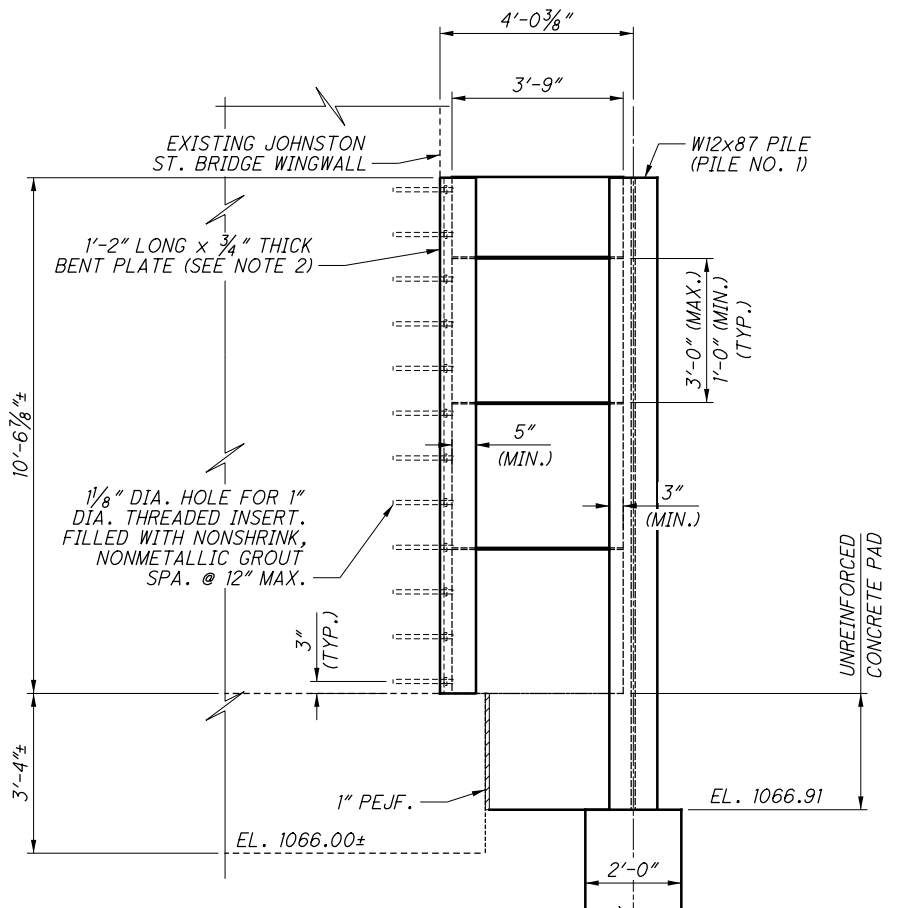
TYPICAL SECTION THRU WALL



TYPICAL PANEL ELEVATION
(9'-8" PANEL SHOWN, OTHERS SIMILAR)



WALL END DETAIL



WALL END ELEVATION

(PANEL REINFORCING AND SHEAR STUDS NOT SHOWN)

PILE INFORMATION							
PILE NO.	TOP OF PILE ELEV.	FUTURE GROUND ELEV.	TOP OF SHAFT ELEV.	BOTTOM OF SHAFT ELEV.	DIM. "H" (FT.)	DIM. "E" (FT.)	DIM. "L" (FT.)
1	1079.91	1068.91	1067.41	1057.41	12.50	10.00	22.50
2	1079.91	1069.01	1067.41	1057.41	12.50	10.00	22.50
3	1079.91	1069.12	1067.41	1057.41	12.50	10.00	22.50
4	1079.91	1069.24	1067.41	1057.41	12.50	10.00	22.50
5	1079.91	1069.35	1067.41	1057.41	12.50	10.00	22.50
6	1079.91	1069.40	1067.41	1057.41	12.50	10.00	22.50
7	1079.91	1069.65	1067.41	1057.41	12.50	10.00	22.50
8	1079.91	1069.87	1067.41	1057.41	12.50	10.00	22.50
9	1079.91	1070.04	1068.41	1058.41	11.50	10.00	21.50
10	1079.91	1070.22	1068.41	1058.41	11.50	10.00	21.50
11	1080.91	1070.39	1068.41	1058.41	12.50	10.00	22.50
12	1081.91	1070.57	1068.41	1058.41	13.50	10.00	23.50
13	1081.91	1070.76	1068.41	1058.41	13.50	10.00	23.50
14	1082.91	1070.92	1068.41	1058.41	14.50	10.00	24.50
15	1084.91	1071.08	1069.41	1059.41	15.50	10.00	25.50
16	1085.91	1071.24	1069.41	1059.41	16.50	10.00	26.50
17	1087.91	1071.39	1069.41	1055.41	18.50	14.00	32.50
18	1088.91	1071.54	1069.41	1055.41	19.50	14.00	33.50
19	1089.91	1071.70	1070.41	1056.41	19.50	14.00	33.50
20	1090.91	1071.86	1070.41	1056.41	20.50	14.00	34.50
21	1091.91	1072.00	1070.41	1056.41	21.50	14.00	35.50
22	1091.91	1072.14	1070.41	1056.41	21.50	14.00	35.50
23	1092.91	1072.25	1070.41	1056.41	22.50	14.00	36.50
24	1092.91	1072.35	1070.41	1056.41	22.50	14.00	36.50
25	1092.91	1072.45	1070.41	1056.41	22.50	14.00	36.50
26	1092.91	1072.56	1070.41	1056.41	22.50	14.00	36.50
27	1091.91	1072.67	1071.41	1057.41	20.50	14.00	34.50
28	1090.91	1072.78	1071.41	1057.41	19.50	14.00	33.50
29	1089.91	1072.89	1071.41	1057.41	18.50	14.00	32.50
30	1088.91	1073.37	1071.41	1057.41	17.50	14.00	31.50

NOTES:

- PLACE PERFORATED, CORRUGATED, POLYETHYLENE PIPE TO BE INSTALLED ON FUTURE PROJECT INSIDE POROUS BACKFILL AND SHALL SLOPE A MINIMUM OF 1.00% TOWARDS THE OUTLET TO THE UNDERDRAIN.
- STEEL PLATE SHALL EXTEND THE HEIGHT OF THE PRECAST LAGGING WALL AT THE EXISTING ABUTMENT WINGWALL.
- FOR LIMITS OF DITCH, SEE SHEET 2/3.
- FOR CROSS SECTIONS, SEE BU-28B AND BU-29 PLANS.
- PLACE TIMBER BLOCKING AS NECESSARY TO ACHIEVE BOTTOM OF PANEL ELEVATIONS. GRANULAR MATERIAL MAY BE USED IN LIEU OF TIMBER BLOCK TO LEVEL SURFACE.
- BACKFILL EXCAVATED AREA BETWEEN IN-SITU BEDROCK AND PRECAST PANEL LAGGING WITH #8 OR #9 GRAVEL.

ISSUE RECORD:	NO.	DATE	DESCRIPTION
	1	11/8/21	Revised Shaft Table

p:\V\ANVA01PWINT01.pars\com:Ohio State\Documents\B-Akron Beltway Rehab\10 - Design\102329\Structures\BU-18\Sheets\102329_WE001.dgn Sheet 11/8/2021 8:04:56 AM KChrisman