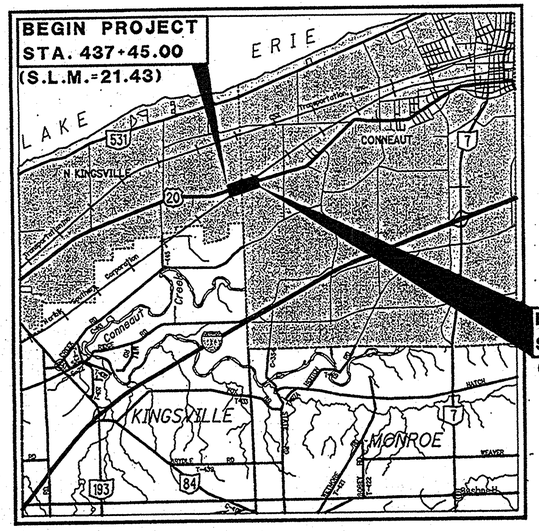


LOCATION MAP

LATITUDE: 41°55'30" N LONGITUDE: 80°37'33"W

SCALE IN MILES

0 1 2 3 4

PORTION TO BE IMPROVED

INTERSTATE HIGHWAY

STATE & FEDERAL ROUTES

COUNTY & TOWNSHIP ROADS

OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2010)	9980
DESIGN YEAR ADT (2030)	10,900
DESIGN HOURLY VOLUME (2030)	1090
DIRECTIONAL DISTRIBUTION	0.56
TRUCKS (24 HOUR B&C)	0.02
DESIGN SPEED	40
LEGAL SPEED	35
DESIGN FUNCTIONAL CLASSIFICATION: ARTERIAL (URBAN)	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS PROTECTIVE SERVICE CALL: **1-800-925-0988**

PLAN PREPARED BY:

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
WINCHESTER • NASHVILLE • LOUISVILLE • CINCINNATI • AKRON • ORLANDO

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

ATB-20-21.43

RECONSTRUCTION OF THE EXISTING SEPARATED CROSSING WITH THE NORFOLK SOUTHERN RAILWAY COMPANY

ASHTABULA COUNTY

VILLAGE OF N. KINGSVILLE
CITY OF CONNEAUT

PROJECT DESCRIPTION

REPLACEMENT OF EXISTING MULTIPLE SPAN BRIDGE STRUCTURE (ATB-20-21.60) WITH A SINGLE SPAN CONCRETE BRIDGE OVER NORFOLK SOUTHERN RAILWAY TRACKS. PROJECT INCLUDES RETAINING WALL CONSTRUCTION, FULL-DEPTH ROADWAY AND ASSOCIATED INCIDENTAL CONSTRUCTION.

PROJECT EARTH DISTURBED AREA:	7.8 ACRES
ESTIMATED CONTRACTOR EARTH DISTRUBED AREA:	2.9 ACRES
NOTICE OF INTENT(NOI) EARTH DISTURBED AREA	10.7 ACRES

INDEX OF SHEETS:

2013 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

CONVENTIONAL SYMBOLS

County Line
Township Line
Section Line
Corporation Line
Fence Line (Ex) (Pr)
Center Line
Right of Way (Ex) Ex R/W
Right of Way (Pr) R/W
Standard Highway Ease. (Ex) Ex SH
Temporary Right of Way TMP
Channel Ease. (Pr) CH
Utility Ease. (Ex) Ex U
Railroad
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)
Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol, Example
Property Line Symbol, Example
Break Line Symbol, Example
Tree (Pr), Tree (Ex), Shrub (Ex)
Tree (Remove), Shrub (Remove)
Evergreen (Ex), Stump
Evergreen (Remove), Stump (Remove)
Wetland (Pr), Grass (Pr), Aerial Target
Post (Ex), Mailbox (Ex), Mailbox (Pr)
Light (Ex), Telephone Marker (Ex) TEL
Fire Hydrant (Ex), Water Meter (Ex)
Water Valve (Ex), Utility Valve Unknown (Ex.)
Telephone Pole (Ex), Power Pole (Ex)
Light Pole (Ex)

ENGINEERS SEAL:
SHTS: 1-84&105-121,167

STATE OF OHIO
DANIEL P FICKER
E-63916
REGISTERED
PROFESSIONAL ENGINEER

SIGNED
DATE: 7/2/14

ENGINEERS SEAL:
SHTS: 88-104 & 122-166

STATE OF OHIO
MATTHEW LEWIS JOHNSON
E-69519
REGISTERED
PROFESSIONAL ENGINEER

SIGNED: Matthew L. Johnson
DATE: 7/2/14

STANDARD CONSTRUCTION DRAWINGS

BP-1.1	7/28/00	DM-1.1	1/18/13	AS-1-81	1/18/13	TC-41.20	10/18/13
BP-2.1	7/19/13	DM-1.2	1/18/13			TC-41.30	10/18/13
BP-2.2	7/18/08	DM-1.4	1/18/13	BR-2-98	7/20/12	TC-41.40	10/18/13
BP-3.1	4/20/12	DM-2.1	1/18/13	EXJ-6-06	1/18/13	TC-42.20	10/18/13
BP-4.1	7/19/13	DM-4.2	7/20/12	PSID-1-13	10/18/13	TC-52.10	10/18/13
BP-5.1	7/19/13	DM-4.3	7/19/13	SBR-1-13	1/17/14	TC-52.20	1/17/14
BP-7.1	10/15/10	DM-4.4	7/20/12	SICD-1-96	7/19/02	TC-61.30	1/17/14
				VPF-1-90	4/15/11	TC-65.10	1/17/14
CB-1.1	1/18/13	MGS-1.1	7/19/13			TC-65.11	1/17/14
CB-2.1	1/18/13	MGS-2.1	7/19/13	MT-95.31	7/19/13		
CB-2.2	1/17/14	MGS-3.1	7/19/13	MT-97.10	7/19/13		
CB-2.3	1/18/13	MGS-4.2	7/19/13	MT-101.60	7/19/13		
				MT-101.70	1/17/14		
MH-1.1	1/18/13	RM-1.1	1/18/13	MT-101.90	7/19/13		
MH-1.2	1/18/13	RM-4.2	4/18/14				

SUPPLEMENTAL SPECIFICATIONS

800-2013	7/18/14
821	4/20/12
832	1/17/14
840	1/17/14
878	10/18/13
895	4/18/14
902	12/31/12
921	4/20/12
995	1/20/12

SPECIAL PROVISIONS

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT DETOURS WILL BE PROVIDED AS INDICATED ON SHEET 14.

APPROVED
DATE 7-8-14 DISTRICT DEPUTY DIRECTOR

APPROVED Jerry Wray Jr.
DATE 7-21-14 DIRECTOR, DEPARTMENT OF TRANSPORTATION

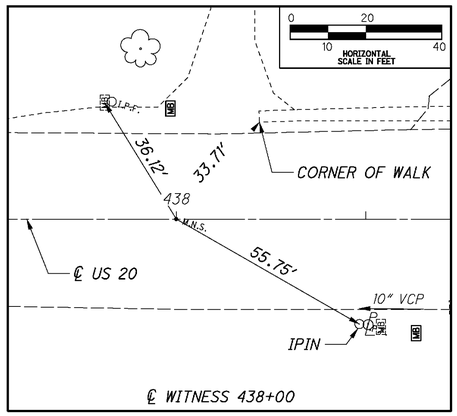
FEDERAL PROJECT NO. E081(125)

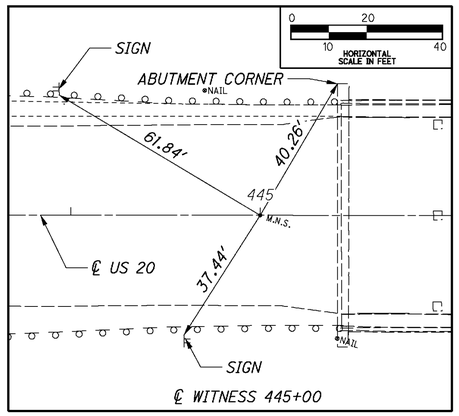
PID NO. 83599

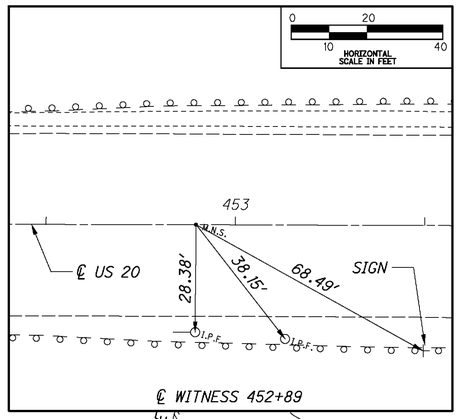
CONSTRUCTION PROJECT NO.

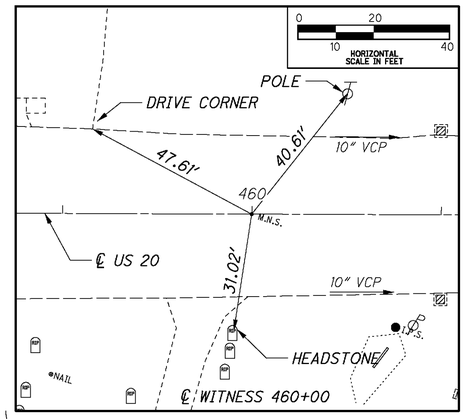
RAILROAD INVOLVEMENT NORFOLK SOUTHERN

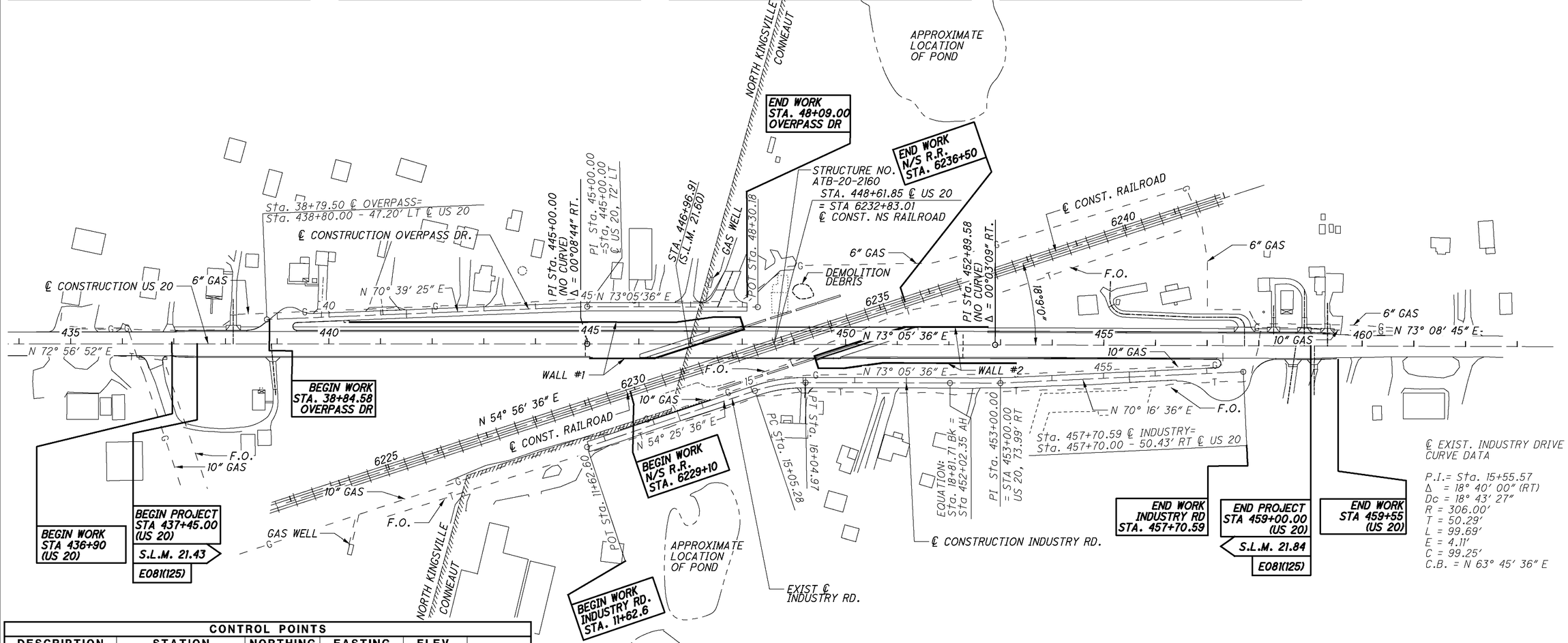
ATB-20-21.43











CONTROL POINTS						
DESCRIPTION	STATION		NORTHING	EASTING	ELEV.	
SET MAG. NAIL	438+00.00		827,979.951	2,477,470.522	704.89	P.O.T.
SET MAG. NAIL	445+00.00		828,185.173	2,478,139.759	724.21	P.I
SET MAG. NAIL	452+89.58		828,414.832	2,478,895.217	722.95	P.I
SET MAG. NAIL	460+00.00		828,620.786	2,479,575.098	704.22	P.O.T.
DESCRIPTION	STATION	OFFSET	NORTHING	EASTING	ELEV.	
MONUMENT BOX	478+12.25	℄	829,146.245	2,481,309.532	497.69	FOUND
IRON PIN	465+22.57	33.39 LT	828,804.279	2,480,065.571	500.50	SET
IRON PIN	464+73.03	33.29 RT	828,726.101	2,480,037.496	498.71	SET
IRON PIN	460+38.05	29.76 RT	828,603.356	2,479,620.178	505.46	SET
IRON PIN	459+25.29	32.95 RT	828,567.613	2,479,513.181	503.60	SET

NOTE: STATIONING SHOWN FOR ℄ CONST. NORFOLK SOUTHERN R.R. (℄ R.R. R/W STATIONING REVERSED - SEE R/W PLANS)

BENCHMARK LOCATIONS										
				FROM C/L US 20			FROM C/L RAILROAD			ELEV
NO#	DESCRIPTION	NORTHING	EASTING	STATION	OFFSET		STATION	OFFSET		
BM1	CHISELED SQUARE IN SIDEWALK	828072.577	2478290.914	439+11.42	29.85'	LT	6223+88.62	9.81'	LT	706.76
BM2	CHISELED SQUARE IN CONCRETE DRIVE	828628.224	2479495.815	447+51.03	71.86'	LT	6232+00.08	71.86	LT	712.35
BM3	CHISELED SQUARE IN PAVEMENT	828041.148	2477568.316	446+11.85	151.72'	RT	6229+98.18	66.29'	RT	710.44
BM4	CHISELED SQUARE IN SIDEWALK	828326.967	2478359.056	459+26.24	30.09'	LT	NA	NA	NA	704.44

HORIZONTAL SCALE IN FEET 0 50 100 200

CALCULATED DPF CHECKED MAM

SCHEMATIC PLAN

ATB-20-21.43

2 / 189

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AKRON, OHIO 44320

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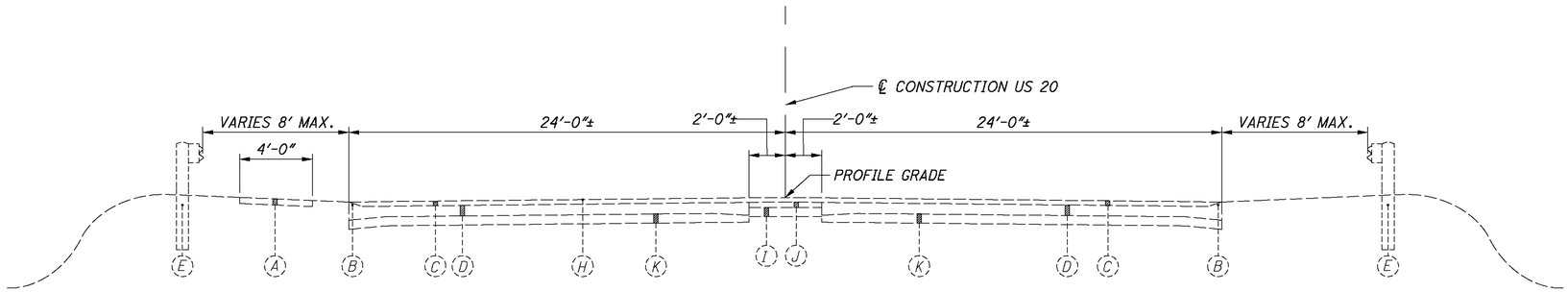
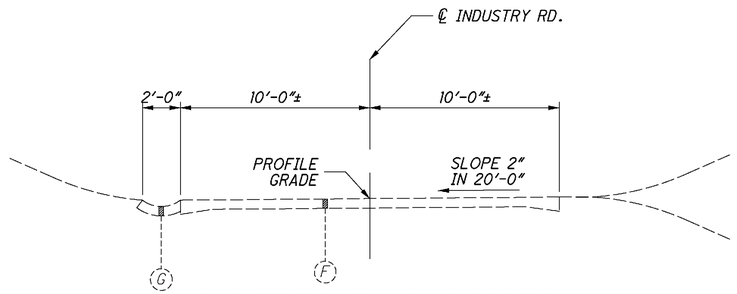
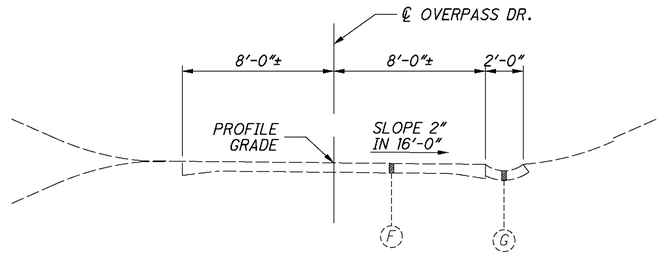


EXISTING SECTION - US 20



EXISTING SECTION - INDUSTRY ROAD



EXISTING SECTION - OVERPASS DRIVE

EXISTING ITEM LEGEND

- (A) 4" CONCRETE SIDEWALK
- (B) INTEGRAL CONCRETE CURB
- (C) ASPHALT CONCRETE RESURFACING (4"±)
- (D) 7" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT (9" THICK AT EDGES)
- (E) GUARDRAIL
- (F) 6" PORTLAND CEMENT CONCRETE PAVEMENT (9" THICK AT EDGES)
- (G) CONCRETE GUTTER
- (H) ¾" FINE GRADED POLYMER ASPHALT CONCRETE (2010) (FORWARD APPROACH ONLY)
- (I) 6" AGGREGATE BASE
- (J) 4" BITUMINOUS AGGREGATE BASE
- (K) 6"± SUBGRADE
- (L) BALLAST

TYPICAL SECTIONS - EXISTING

ATB-20-21.43

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AKRON, OHIO 44320

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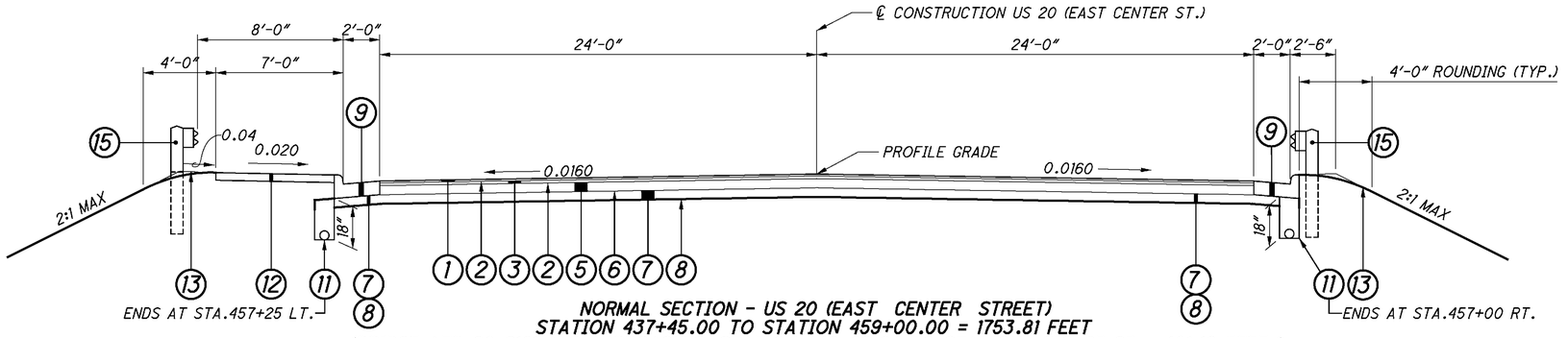
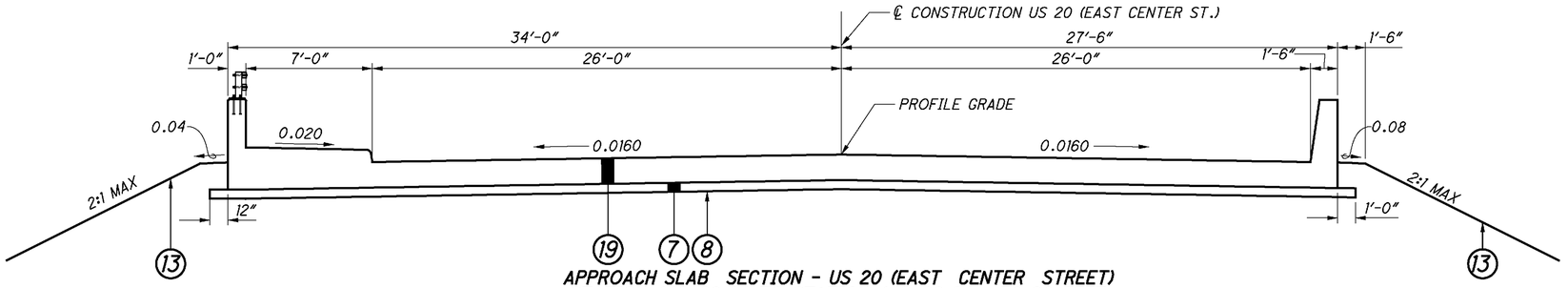
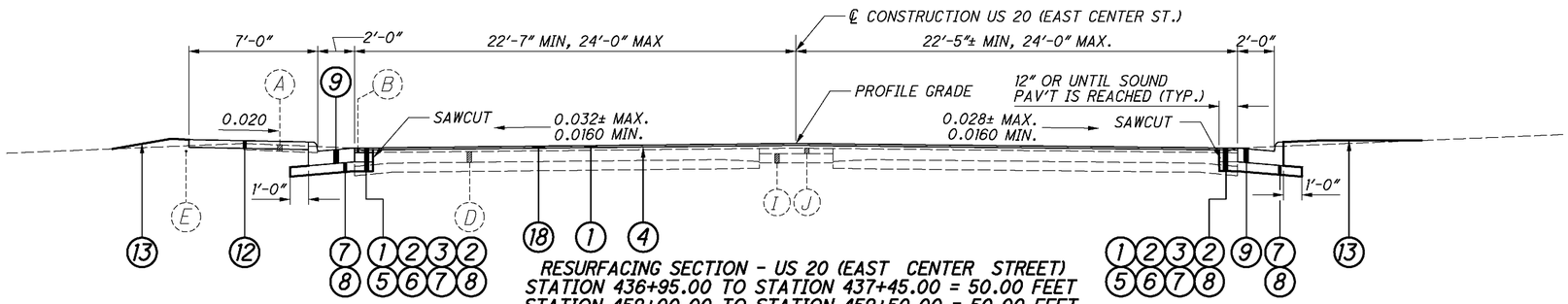


NORMAL SECTION - US 20 (EAST CENTER STREET)
STATION 437+45.00 TO STATION 459+00.00 = 1753.81 FEET
(BRIDGE ATB-20-2161 AND APPROACHES: STATION 446+62.64 TO STATION 450+63.83 = 401.19 FEET)

PARTIAL SECTION - MSE WALL (SHEET 6) APPLIES:
STATION 445+05.00 TO STATION 446+01.63 - RIGHT
STATION 449+47.38 TO STATION 453+30.00 - RIGHT
STATION 440+40.00 TO STATION 447+96.15 - LEFT
STATION 451+40.53 TO STATION 452+75.00 - LEFT



APPROACH SLAB SECTION - US 20 (EAST CENTER STREET)
STATION 446+62.64 TO STATION 446+92.64 = 30.00 FEET
STATION 450+33.83 TO STATION 450+63.83 = 30.00 FEET



RESURFACING SECTION - US 20 (EAST CENTER STREET)
STATION 436+95.00 TO STATION 437+45.00 = 50.00 FEET
STATION 459+00.00 TO STATION 459+50.00 = 50.00 FEET

WIDENING, SIDEWALK AND CURB AND GUTTER BEGINS AT STA. 437+04.0± LT.

SLOPE TABLE		
STATION	LT	RT
436+95.00	-0.032±	-0.028±
437+45.00	-0.0228	-0.0170
437+75.00	-0.0160	-0.0160

WIDTH TABLE		
STATION	LT	RT
436+95.00	23'-0"±	22'-8"±
437+45.00	24'-0"	24'-0"
437+75.00	24'-0"	24'-0"

SLOPE TABLE		
STATION	LT	RT
458+75.00	-0.0160	-0.0160
459+00.00	-0.0249	-0.0196
459+50.00	-0.024±	-0.021±

WIDTH TABLE		
STATION	LT	RT
458+75.00	24'-0"	24'-0"
459+00.00	24'-0"	24'-0"
459+50.00	22'-7"±	22'-5"±

NOTES:
1. SEE SHEET 3 FOR EXISTING ITEM LEGEND
2. SEE SHEET 6 FOR PARTIAL SECTION - MSE WALL

PROPOSED ITEM LEGEND

(1)	ITEM 441	1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN	(8)	ITEM 204	SUBGRADE COMPACTION	(15)	ITEM 606	GUARDRAIL, TYPE MGS
(2)	ITEM SPECIAL	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE	(9)	ITEM 609	COMBINATION CURB AND GUTTER, TYPE 2	(16)	ITEM 452	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1, AS PER PLAN
(3)	ITEM 441	1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	(10)	ITEM 304	8" AGGREGATE BASE, AS PER PLAN	(17)	ITEM 601	PAVED GUTTER, TYPE 1-2, AS PER PLAN
(4)	ITEM SPECIAL	TACK COAT, TRACKLESS TACK	(11)	ITEM 605	6" BASE PIPE UNDERDRAIN, WITH FABRIC WRAP, 707.31	(18)	ITEM 254	PAVEMENT PLANING, ASPHALT CONCRETE (1½")
(5)	ITEM 302	6" ASPHALT CONCRETE BASE, PG64-22	(12)	ITEM 608	5" CONCRETE WALK	(19)	ITEM 526	REINFORCED CONCRETE APPROACH SLAB (T=17")
(6)	ITEM 408	PRIME COAT	(13)	ITEM 659	SEEDING AND MULCHING	(20)	SPECIAL	12" MISC. RAILROAD BALLAST
(7)	ITEM 304	6" AGGREGATE BASE, AS PER PLAN	(14)	ITEM 609	CURB, TYPE 6	(21)	ITEM 601	12" CRUSHED AGGREGATE SLOPE PROTECTION
						(22)	ITEM 411	STABILIZED CRUSHED AGGREGATE, AS PER PLAN

US 20 (CENTER ST) TYPICAL SECTIONS - PROPOSED

ATB-20-21.43

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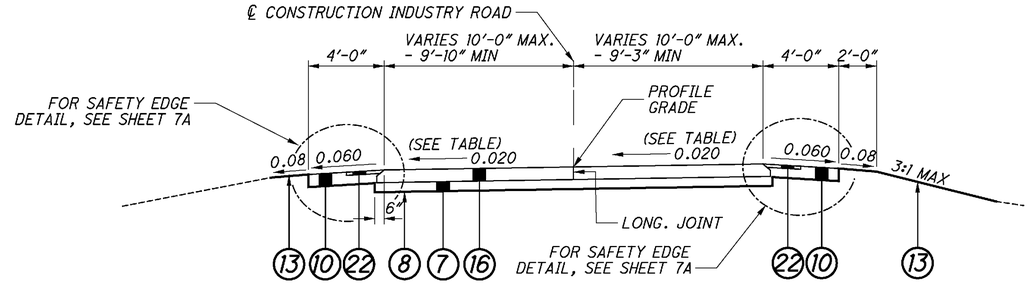
AKRON, OHIO 44320

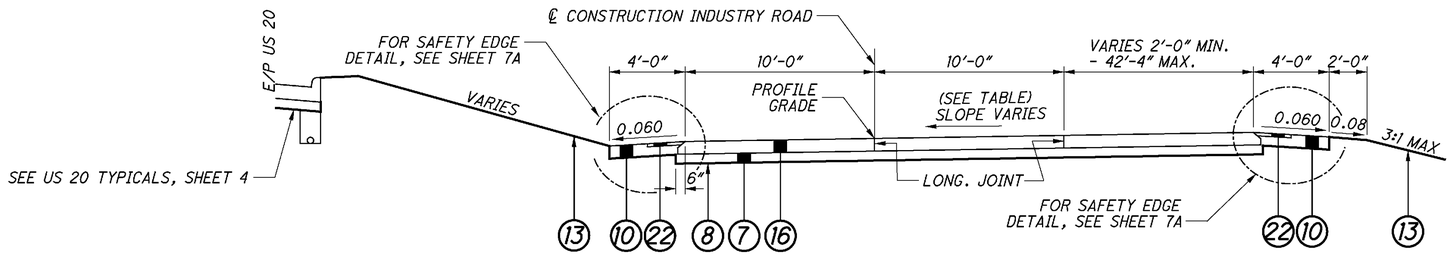


NORMAL SECTION - INDUSTRY ROAD
STATION 13+50.00 TO STATION 16+04.97 = 254.97 FEET
STATION 455+50.00 TO STATION 456+41.13 = 91.13 FEET

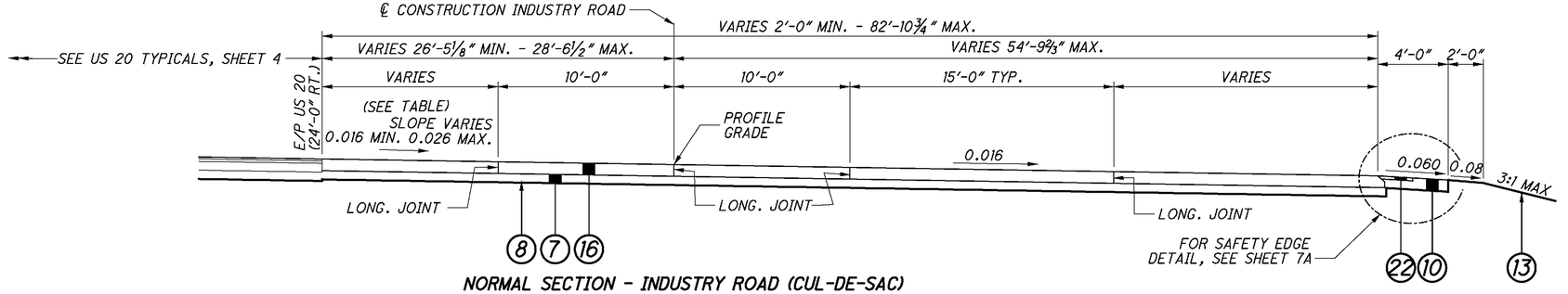
SLOPE TABLE		
STATION	LT	RT
13+50.00	-0.0142±	0.0115±
13+75.00	-0.0200	0.0200
15+75.00	-0.0200	0.0200
16+04.97	-0.0065±	0.0129±

WIDTH TABLE		
STATION	LT	RT
13+50.00	9'-11"	9'-3"
13+75.00	10'-0"	10'-0"
15+75.00	10'-0"	10'-0"
16+04.97	9'-10"	10'-0"

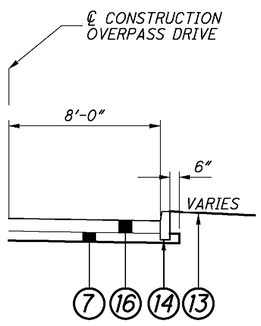
SLOPE TABLE		
STATION	LT	RT
455+50.00	-0.003±	0.004±
456+00.00	-0.0160	-0.0040
456+25.00	↕	-0.0160
456+75.00	-0.0160	↕
457+00.00	-0.0050	↕
457+75.00	0.0260	↕
457+70.59	0.0160	-0.0160



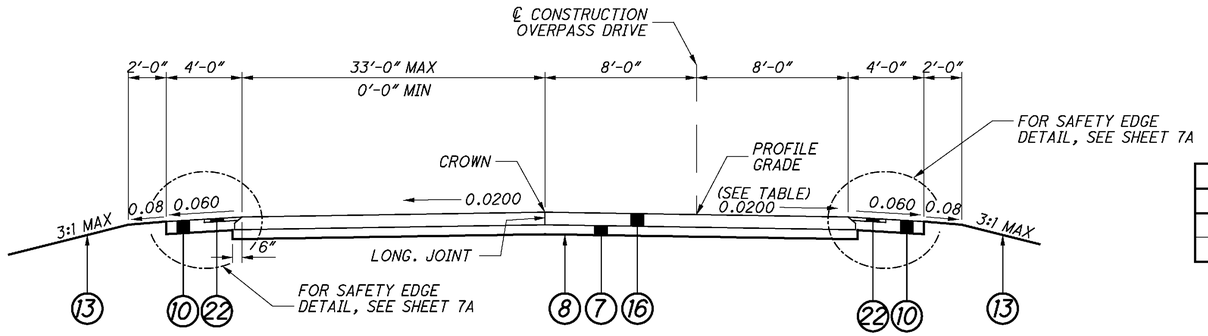
NORMAL SECTION - INDUSTRY ROAD (CUL-DE-SAC)
STATION 456+41.13 TO STATION 457+19.80 = 78.67 FEET
(FOR SLOPE AND WIDTH VARIATIONS, SEE INTERSECTION DETAIL, SHEET 82)



NORMAL SECTION - INDUSTRY ROAD (CUL-DE-SAC)
STATION 457+19.80 TO STATION 457+70.59 (US 20) = 50.79 FEET
(FOR SLOPE AND WIDTH VARIATIONS, SEE INTERSECTION DETAIL, SHEET 82)



PARTIAL SECTION - OVERPASS DRIVE
STATION 39+69.44 TO STATION 40+40.00 RT.



NORMAL SECTION - OVERPASS DRIVE (CUL-DE-SAC)
STATION 38+84.58 TO STATION 39+69.44 = 84.86 FEET

NORMAL SECTION - OVERPASS DRIVE
STATION 39+69.44 TO STATION 41+50.00 = 180.56 FEET
STATION 47+20.00 TO STATION 48+09.00 = 89.00 FEET

SLOPE TABLE		
STATION	LT	RT
47+35.00	0.0107±	-0.0138±
47+50.00	0.0200	-0.0200

SLOPE TABLE		
STATION	LT	RT
38+84.58	-0.0200	0.0200
40+00.00	-0.0200	0.0200
40+50.00	0.0000	0.0000
41+00.00	0.0200	-0.0200
41+50.00	0.0117±	-0.0067±

SEE SHEET 3 FOR EXISTING ITEM LEGEND
SEE SHEET 4 FOR PROPOSED ITEM LEGEND
SEE SHEET 7A FOR SAFETY EDGE DETAIL

TYPICAL SECTIONS - PROPOSED SIDE ROAD TYP

ATB-20-21.43

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PALMER ENGINEERING
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AKRON, OHIO 44320

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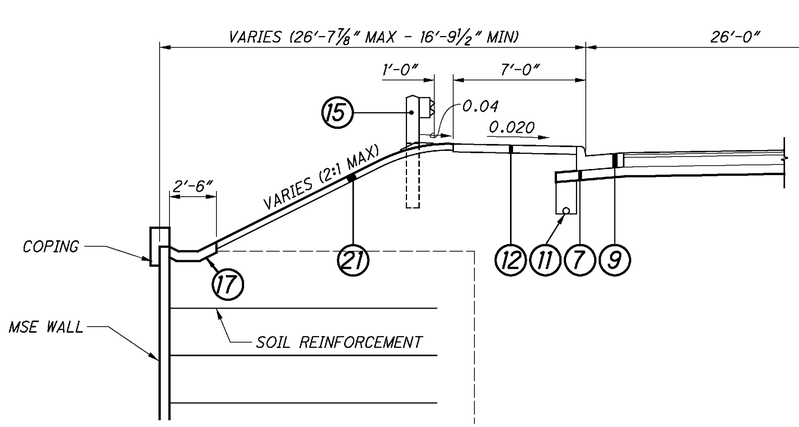
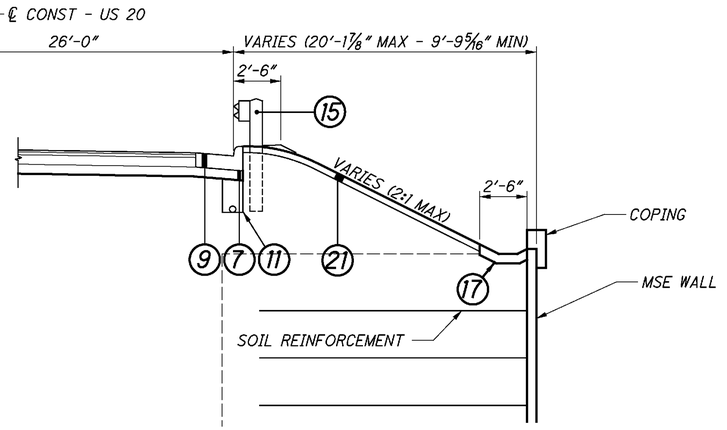
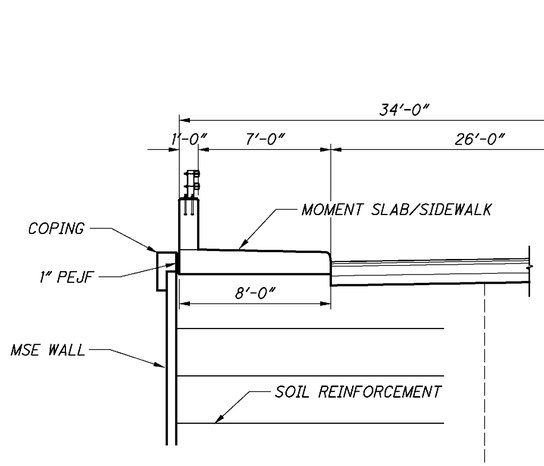


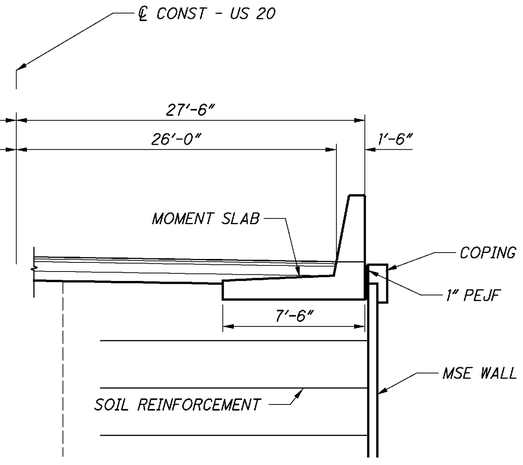
PARTIAL SECTION LEFT - MSE WALL
STATION 440+40.00 TO STATION 447+96.15



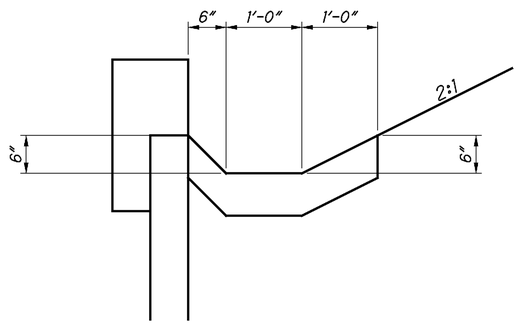
PARTIAL SECTION RIGHT - MSE WALL
STATION 449+47.38 TO STATION 453+30.00



PARTIAL SECTION LEFT - MSE WALL/MOMENT SLAB
STATION 451+40.53 TO STATION 452+75.00



PARTIAL SECTION RIGHT - MSE WALL/MOMENT SLAB
STATION 445+05.00 TO STATION 446+01.63



DETAIL - PAVED GUTTER
STATION 440+40.00 TO STATION 447+96.15 (LEFT)
STATION 449+47.38 TO STATION 453+30.00 (RIGHT)

SEE SHEET 3 FOR EXISTING ITEM LEGEND
SEE SHEET 4 FOR PROPOSED ITEM LEGEND

TYPICAL SECTIONS - RETAINING WALLS

ATB-20-21.43

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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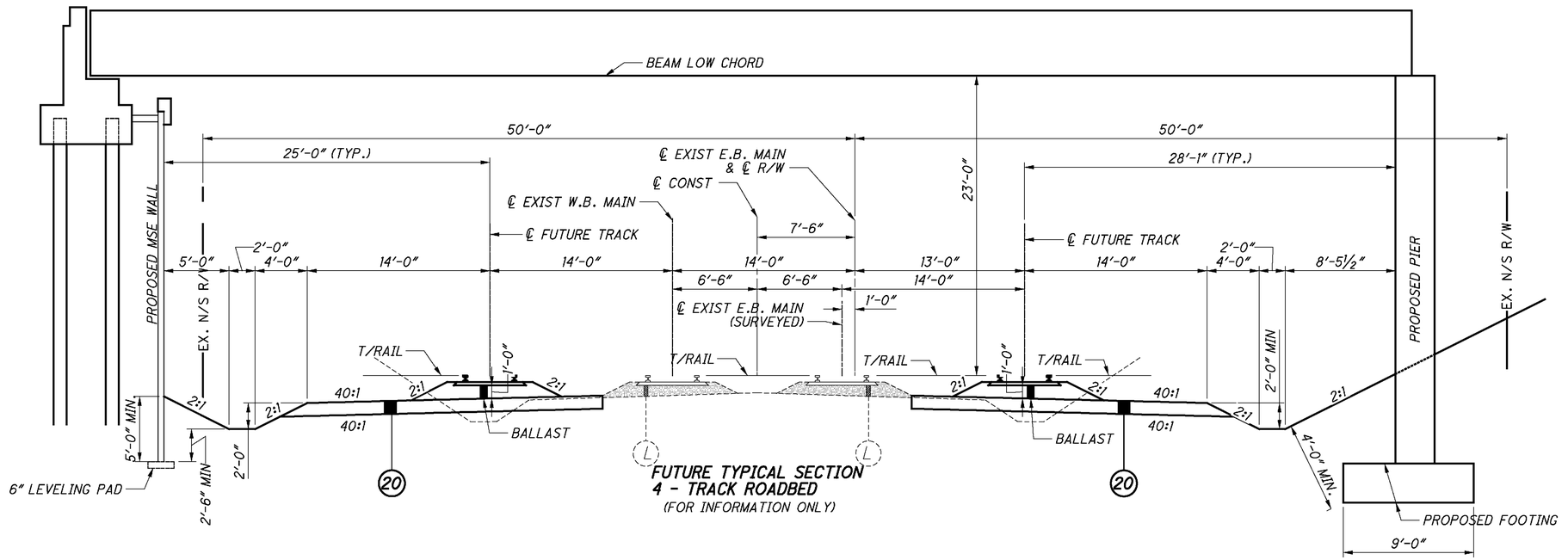
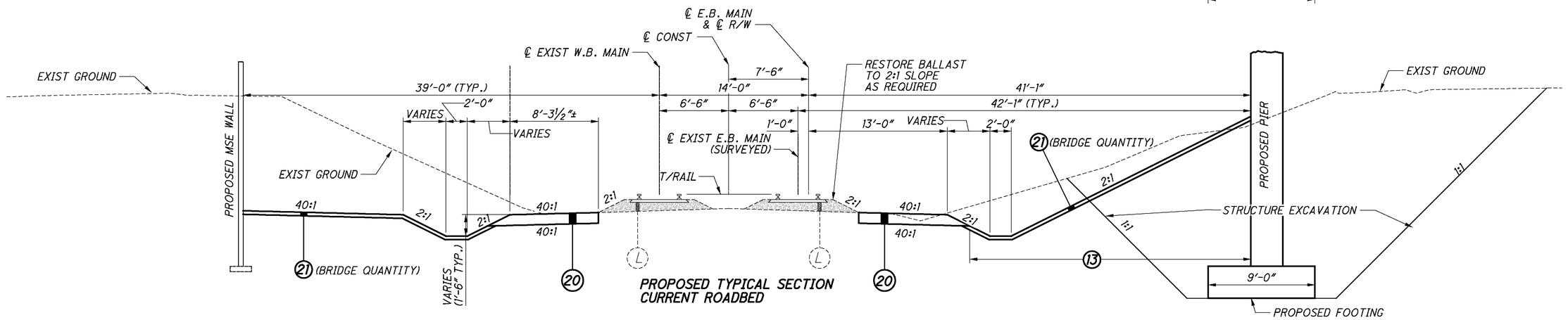
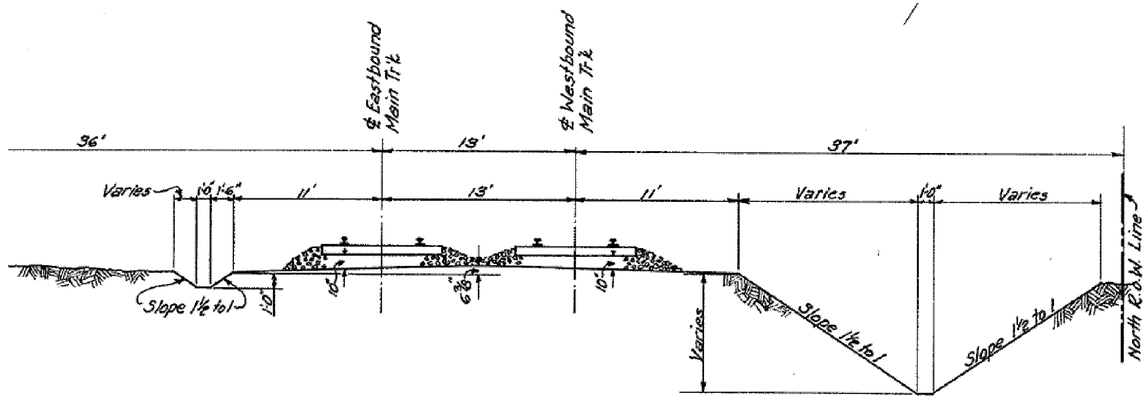
TYPICAL SECTIONS - RAILROAD



FUTURE TYPICAL SECTION
4 - TRACK ROADBED
(FOR INFORMATION ONLY)



PROPOSED TYPICAL SECTION
CURRENT ROADBED



EXISTING TYPICAL SECTION
CURRENT ROADBED

REQUIRED MINIMUM CONSTRUCTION CLEARANCES:

13'-0" HORIZONTAL (MEASURED FROM ℄ OF TRACK)
22'-0" VERTICAL (MEASURED FROM TOP OF RAIL)

SEE SHEET 3 FOR EXISTING ITEM LEGEND
SEE SHEET 4 FOR PROPOSED ITEM LEGEND

ATB-20-21.43

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

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ITEM 451, REINFORCED CONCRETE PAVEMENT, AS PER PLAN
ITEM 452, NON-REINFORCED CONCRETE PAVEMENT, AS PER PLAN

THE SAFETY EDGE SHALL BE INCIDENTIAL TO THE 451 OR 452 CONCRETE PAVEMENT PAY ITEM. ALL ADDITIONAL MATERIAL, LABOR, EQUIPEMENT, AND INCIDENTIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED.

ITEM 411 - STABILIZED CRUSHED AGGREGATE, AS PER PLAN

IN LOW SHOULDER AREAS EXCEEDING 1", AND ADJACENT TO THE SAFETY EDGE, OR AS DIRECTED BY THE ENGINEER, RECYCLED ASPHALT PAVEMENT (RAP) SHALL BE USED IN AREAS ADJACENT TO THE PAVED BERM. THE RAP SHALL HAVE A MINIMUM PG CONTENT OF 4.5% AND MEET THE FOLLOWING GRADATION. ONCE THE STOCKPILE MEETS THE GRADATION, THE PG CONTENT OF THE RAP SHALL BE DETERMINED PER 441.03. THE RAP ANALYSIS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO USE. METHOD OF MEASUREMENT SHALL BE AS PER 617.06. PLACEMENT AND COMPACTION SHALL MEET THE REQUIREMENTS OF ITEM 617. ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 617 COMPACTED AGGREGATE, AS PER PLAN.

MODIFIED GRADATION SHALL APPLY:

SIEVE	TOTAL PERCENT PASSING
1-½"	100
¾"	50-100
NO. 4	35-70
NO. 30	9-33
NO. 200	0-13

AN ESTIMATED QUANTITY HAS BEEN INCLUDED WITH THE OFFICE COMPUTATIONS AND CARRIED TO THE GENERAL SUMMARY FOR THIS WORK.

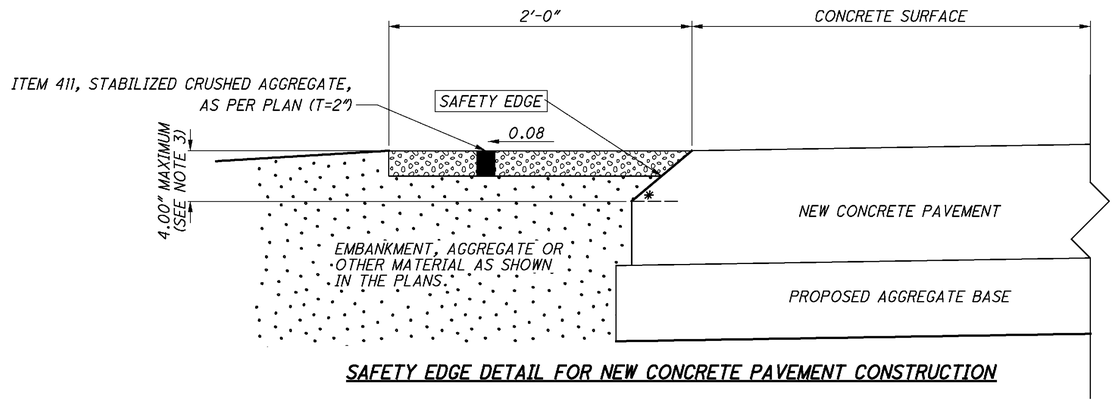
NOTES:

1.) SAFETY EDGES ARE REQUIRED AT THE OUTSIDE EDGES OF THE PAVED ROADWAY (EDGE OF TRAVEL LANE OR EDGE OF PAVED SHOULDER).

2.) FOR NEW ASPHALT CONCRETE PAVEMENT, CONSTRUCT THE SAFETY EDGE THE FULL THICKNESS OF THE SURFACE AND INTERMEDIATE COURSES, NOT TO EXCEED 3.25".

3.) FOR NEW CONCRETE PAVEMENT, CONSTRUCT THE SAFETY EDGE 4" THICK. CONSTRUCT A NEAR-VERTICAL FACE BELOW THE SAFETY EDGE.

* 40° MAX



SAFETY EDGE DETAIL FOR NEW CONCRETE PAVEMENT CONSTRUCTION

REVISED: 6/25/12

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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DISTRICT 4 - PLANNING & ENGINEERING

DESIGNED MAC | REVIEWED TJP

REVISION DATE 06/25/12 | CHECKED TJP

SAFETY EDGE DETAIL (NEW CONSTRUCTION)

ATB-20-21.43

SAFETY EDGE DETAIL

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

ELECTRIC:
C.E.I.
ATTN: MARK ROBINSON
6896 MILLER ROAD
BRECKSVILLE, OH 44141
(440) 717-6845

SEWER:
CITY OF CONNEAUT
ATTN: BOB DEMARCO
294 MAIN STREET
CONNEAUT, OH 44030
(440) 593-7434

TELEPHONE:
ATTN: JIM SUPPLEE
CONNEAUT TELEPHONE
224 STATE STREET
CONNEAUT, OH 44030
(440) 969-4855

CATV:
TIME WARNER CABLE
ATTN: DAVE DETORE
2904 STATE ROAD
ASHTABULA, OH 44004
(866) 679-2631 EXT. 5739

GAS:
DOMINION EAST OHIO
ATTN: MARY LONG
320 SPRINGSIDE DRIVE
AKRON, OH 44333
(330) 664-2409

WATER:
CITY OF CONNEAUT
ATTN: BOB MANNION
294 MAIN STREET
CONNEAUT, OH 44030
(440) 593-7420

WATER:
AQUA OHIO
ATTN: LORI MCCLARY
6650 SOUTH AVE.
BOARDMAN, OHIO 44512
(330) 397-0795

THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN IN THE HIGHWAY PLANS, WITHIN THE PROJECT LIMITS, WERE LOCATED BY SO-DEEP, A SUBSURFACE UTILITY ENGINEERING CONSULTANT. IF THERE ARE ANY DISCREPANCIES BETWEEN FIELD MARKINGS AND WHAT THE HIGHWAY PLAN INDICATES, PLEASE CONTACT STEVE JONES, ODOT DISTRICT 4 UTILITIES COORDINATOR 330-786-4818 PRIOR TO ANY SUBSURFACE WORK BEING INITIATED. IF APPLICABLE, TEST HOLE DATA SHEETS WILL BE PROVIDED TO ODOT'S PROJECT ENGINEER AND THE STATE'S HIGHWAY CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.

ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

EXISTING PLANS

EXISTING PLANS ENTITLED SH 2 - SEC. P (Pt.) & N. KINGSVILLE (Pt.) MAY BE INSPECTED IN THE ODOT DISTRICT 4 OFFICE IN AKRON.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. BENCH ALL OTHER SLOPED EMBANKMENT AREAS AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05.

SURVEYING PARAMETERS

USE THE FOLLOWING VERTICAL POSITIONING AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: GEOID03

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83/CORS96
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONIC CONFORMAL
COORDINATE SYSTEM: OHIO STATE PLANE (NORTH ZONE)
COMBINED SCALE FACTOR: 1.00002287383

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

CLEARING AND GRUBBING

REMOVE ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED.

SIZES	NO. TREES	NO. STUMPS	TOTAL
18"	31	0	31
30"	7	0	7
48"	2	0	2
60"	0	0	0

SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

STORM WATER POLLUTION PLAN

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR STORM WATER POLLUTION PREVENTION AND EROSION CONTROL:

ITEM 832, STORM WATER POLLUTION PLAN, LS
ITEM 832, EROSION CONTROL 46,000 EACH

UNSUITABLE SUBGRADE

THE FOLLOWING QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IF THERE IS UNSUITABLE SUBGRADE ENCOUNTERED PER CMS 204.03 AND 204.06. EXCAVATE AND REPLACE THE UNSUITABLE SUBGRADE AS DIRECTED.

204, EXCAVATION OF SUBGRADE, 150 CY
204, GRANULAR MATERIAL, TYPE B, 150 CY

UNRECORDED UNTREATED NON-STORMWATER DRAINAGE

FURNISH NO CONTINUANCE FOR ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE SUCH AS UNTREATED SEPTIC, UNTREATED WASTEWATER, UNTREATED CURTAIN/GRADIENT DRAINS, AND UNTREATED FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. PLUG ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE WITH CLASS C CONCRETE AT THE RIGHT OF WAY LINE. PAYMENT FOR PLUGGING SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 202 OR 203 ITEM.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS AS DIRECTED BY THE ENGINEER. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

SPECIAL, PIPE CLEANOUT 200 FT.

MANUFACTURED WATER QUALITY STRUCTURE

THIS PLAN UTILIZES MANUFACTURED WATER QUALITY STRUCTURES FOR WATER QUALITY TREATMENT. AREAS HAVE BEEN SHOWN IN THE PLANS FOR PLACEMENT OF AN OFF-LINE SYSTEM. PAYMENT FOR THESE DEVICES SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR ITEM 895, MANUFACTURED WATER QUALITY STRUCTURE, TYPE 2.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

UNRECORDED TREATED NON-STORMWATER DRAINAGE

FURNISH A CONTINUANCE FOR ALL UNRECORDED TREATED NON-STORMWATER DRAINAGE, SUCH AS TREATED SEPTIC, TREATED WASTEWATER, TREATED CURTAIN/GRADIENT DRAINS, AND TREATED FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. FURNISH EITHER AN OPEN CONTINUANCE OR AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT. A CONTINUANCE MAY ALSO REQUIRE A NPDES PERMIT FROM THE OHIO ENVIRONMENTAL PROTECTION AGENCY. REPORT ALL CONTINUANCE TO THE LOCAL HEALTH DEPARTMENT.

WHERE MAKING A CONNECTION INTO A HIGHWAY DRAINAGE CONDUIT, AN INSPECTION WELL SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING DM-3.1.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IN MAKING THE ABOVE CONTINUANCE:

611, 4" CONDUIT, TYPE C 50 FT.

611, INSPECTION WELL 2 EACH

CALCULATED DPF CHECKED MAM

GENERAL NOTES

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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UNRECORDED STORM WATER DRAINAGE

FURNISH A CONTINUANCE FOR ALL UNRECORDED STORM WATER DRAINAGE, SUCH AS ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK. FURNISH EITHER AN OPEN CONTINUANCE OR AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT.

THE FOLLOWING CONDUIT TYPES MAY BE USED: 707.33, 707.41 NON-PERFORATED, 707.42, 707.43, 707.45, 707.46, 707.47, 707.51, 707.52 SDR35.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE:

611, 6" CONDUIT, TYPE B, FOR DRAINAGE CONNECTION
100 FT.

611, 6" CONDUIT, TYPE C, FOR DRAINAGE CONNECTION
100 FT.

611, 6" CONDUIT, TYPE E, FOR DRAINAGE CONNECTION
100 FT.

611, 6" CONDUIT, TYPE F, FOR DRAINAGE CONNECTION
100 FT.

ITEM 601 PAVED GUTTER, TYPE 1-2 AS PER PLAN

CONSTRUCT ITEM 601, PAVED GUTTER PER THE DIMENSIONS AND DETAILS ON SHEET 6 AND SHEET 87. ALL OTHER REQUIREMENTS OF CMS 601 SHALL APPLY.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

ITEM SPECIAL - MAILBOX SUPPORT

THIS WORK SHALL CONSIST OF FURNISHING AND ERECTING MAILBOX SUPPORTS AND ANY ASSOCIATED MOUNTING HARDWARE IN ACCORDANCE WITH PLAN DETAILS, AND ATTACHING AN OWNER-SUPPLIED MAILBOX AT LOCATIONS SPECIFIED IN THE PLAN, OR OTHERWISE ESTABLISHED BY THE ENGINEER.

WOOD POSTS SHALL BE NOMINAL 4 INCHES BY 4 INCHES SQUARE OR 4.5 INCHES DIAMETER ROUND, AND CONFORM TO 710.14.

STEEL POSTS SHALL BE NOMINAL PIPE SIZE 2 INCHES I.D., AND CONFORM TO AASHTO M 181.

ALL HARDWARE INCLUDING BUT NOT LIMITED TO PLATES, SCREWS, BOLTS, AND ETC. SHALL BE COMMERCIAL-GRADE GALVANIZED STEEL.

POSTS SHALL BE SET PER THE FIRST PARAGRAPH OF 606.03, AND SHALL IN NO INSTANCE BE ENCASED IN CONCRETE.

SUPPORT HARDWARE SHALL ACCOMMODATE EITHER A SINGLE OR A DOUBLE MAILBOX INSTALLATION, AND NO MORE THAN TWO BOXES MAY BE MOUNTED ON A SINGLE POST.

THE MAILBOX SHALL BE SECURELY AND NEATLY ATTACHED BY THE CONTRACTOR TO THE NEW SUPPORT. THE CONTRACTOR SHALL FURNISH ALL NECESSARY ATTACHMENT HARDWARE (NUTS, BOLTS, PLATES, SPACERS, AND WASHERS) AS NECESSARY TO ACCOMMODATE THE COMPLETE INSTALLATION.

IN THE ABSENCE OF A NEW BOX SUPPLIED BY THE OWNER, THE CONTRACTOR SHALL SALVAGE THE EXISTING BOX AND PLACE IT ON THE NEW SUPPORT. DUE CARE SHALL BE EXERCISED IN SUCH AN OPERATION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY BOX DAMAGED BY IMPROPER HANDLING ON HIS PART, AS JUDGED AND DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POST MASTER REGARDING THE TIMING OF THE MOVEMENT OF ANY MAILBOX TO A NEW LOCATION.

PAYMENT UNDER THIS ITEM SHALL BE LIMITED TO FINAL PERMANENT INSTALLATIONS. TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH 107.10. HOWEVER, THE SAME MATERIAL AND SIZE LIMITATIONS AS FOR PERMANENT INSTALLATIONS SHALL APPLY.

MAILBOX SUPPORTS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, FOR ITEM SPECIAL MAILBOX SUPPORT SYSTEM, SINGLE.

CONTRACTION AND/OR EXPANSION JOINTS

ALTHOUGH SPECIFIC LOCATIONS OF CERTAIN CONTRACTION AND EXPANSION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. IN ALL CASES, THE PROVISION OF EXPANSION JOINTS AT ALL MAJOR STRUCTURES INCLUDING THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS IS IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-2.2 AND THE SPECIFICATIONS.

MEDIAN AND/OR CURBING ON APPROACH SLABS

WITHIN THE LIMITS OF THE APPROACH SLAB, TRANSITION THE SHAPE OF THE MEDIAN AND/OR CURBING ON APPROACH SLABS FROM THE STANDARD SECTION ON THE APPROACHES TO THE SECTION USED ON THE BRIDGE.

ITEM 304 - AGGREGATE BASE, AS PER PLAN

GRANULATED SLAG (GS) SHALL NOT BE PERMITTED FOR THIS ITEM. ALL OTHER REQUIREMENTS OF SECTIONS 304 AND 703.17 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL STILL BE APPLICABLE.

ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN

703.05 DO NOT USE COARSE AGGREGATE FROM A SOURCE DESIGNATED 'SR' OR 'SRH' ACCORDING TO THE OFFICE OF MATERIALS MANAGEMENT (OMM) IN ANY JOB MIX FORMULA (JMF) FOR THIS ITEM.

ITEM 202 - REMOVAL, MISC.: BIN WALL

THIS ITEM INCLUDES THE REMOVAL OF AN EXISTING CONCRETE BIN WALL AT THE LOCATIONS SHOWN IN THE PLANS. THE EXISTING BIN WALL SHALL BE REMOVED AT AND DISPOSED OF IN ACCORDANCE WITH 202. BACKFILL SHALL BE IN ACCORDANCE WITH 202.02.

THIS ITEM SHALL BE PAID AT THE UNIT BID PRICE FOR LUMP SUM, REMOVAL, MISC.: BIN WALL

ITEM 611 - 12" CONDUIT, TYPE B, 706.02, WITH JOINTS PER 706.11, AS PER PLAN

AT THE LOCATIONS IN THE S.G.B. MSE WALL FILL SHOWN IN THE PLANS, CONSTRUCT STORM SEWERS USING CMS 706.02 WITH RESILIANT AND FLEXIBLE GASKET JOINTS PER CMS 706.11. ALL OTHER REQUIREMENTS OF CMS 611 SHALL APPLY.

ITEM 609 CURB, TYPE 7, AS PER PLAN

CONSTRUCT CONCRETE CURB TYPE 7 AROUND CB-2-2B AS DETAILED ON SHEET 87. ALL OTHER REQUIREMENTS OF CMS 609 SHALL APPLY

ITEM SPECIAL - MISC.: RAILROAD BALLAST

PROVIDE AND PLACE SUB-BALLAST MATERIAL AT THE LOCATIONS SHOWN ON THE PLANS. MATERIAL TO MEET NORFOLK SOUTHERN MATERIAL SPECIFICATION SECTION - 7.01 SUBBALLAST:

7.01 SUBBALLAST
SUBBALLAST SHALL BE CRUSHER-RUN STONE (DENSE GRADED AGGREGATE), PREFERABLY LIMESTONE OR GRANITE MATERIAL AND SHALL MEET THE REQUIREMENTS AS SET OUT IN CHAPTER 1, PART 2, ARTICLE 2.11, "SPECIFICATIONS FOR SUBBALLAST" OF THE AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION (AREMA) MANUAL. GRADATION AS FOLLOWS:

Sieve Size	2"	1"	3/8"	No. 10	No. 40	No. 200
% Passing Size (optimum)	100	95	67	38	21	7
Permissible Range % Passing	100	90-100	50-84	26-50	12-30	0-10

SUBBALLAST SHALL BE SPREAD ON A GRADED ROADBED AS A BASE, WITH SUFFICIENT WIDTH TO ACCOMMODATE THE DESIRED NUMBER OF TRACKS (SEE PLANS NOS. 1-21 AND 1-22, ATTACHED TO THESE GUIDELINES.) THE SUBBALLAST SHALL BE COMPACTED TO 95 PERCENT OF ITS MAXIMUM DRY DENSITY AND HAVE A MINIMUM DEPTH OF 6 INCHES. (FOR 6 INCHES OF COMPACTED SUBBALLAST ON A SINGLE INDUSTRY TRACK ROADBED AS PER PLAN NO. 1-22, USE APPROXIMATELY 0.83 TON PER FOOT OF TRACK.)

RAILROAD COORDINATION

IF AT ANY TIME THE CONTRACTOR DESIRES A TEMPORARY CROSSING OF THE RAILROAD'S TRACKS, HE SHALL MAKE A REQUEST FOR A TEMPORARY CROSSING FROM THE RAILROAD. IF APPROVED, HE SHALL ARRANGE WITH THE RAILROAD COMPANY, EXECUTE ITS REGULAR FORM OF PRIVATE GRADE CROSSING AGREEMENT COVERING THE CROSSING DESIRED, PAYING ALL CONSTRUCTION, MAINTENANCE, REMOVAL, PROTECTION, AND OTHER COSTS.

CONTRACTOR SHOULD BE AWARE THAT SUBMITTAL, REVIEW, AND APPROVAL OF A TEMPORARY CROSSING APPLICATION MAY TAKE ANYWHERE FROM 8-12 WEEKS AFTER SUBMITTAL OF THE APPLICATION TO THE RAILROAD, AND THE CONTRACTOR SHOULD ACCOUNT FOR THIS IN HIS CONSTRUCTION SCHEDULE.

ENVIRONMENTAL COMMITMENT NOTES

BEST MANAGEMENT PRACTICES

WATER COLUMN AND SEDIMENTATION IMPACTS SHALL BE KEPT TO A MINIMUM THROUGH THE USE OF BEST MANAGEMENT PRACTICES FOR SOIL EROSION AND SEDIMENTATION CONTROL. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY EXCAVATION, GRADING OR FILLING OPERATIONS AND INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. THEY SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND THE AREA IS STABILIZED AS ACCEPTED BY THE ENGINEER.

AREAS DISTURBED BY EQUIPMENT ACTIVITIES

ANY AREAS DISTURBED BY EQUIPMENT ACTIVITIES MUST BE SEEDED WITH NATIVE PLANT SPECIES AND MULCHED TO PREVENT EROSION OF SEDIMENTS INTO WATERS OF THE UNITED STATES.

ENDANGERED SPECIES HABITAT/ INDIANA BAT

PRIOR TO THE REMOVAL OF THE EXISTING BRIDGE, THE UNDERSIDE OF THE U.S. 20 OVER THE NORFOLK SOUTHERN RAILROAD TRACKS SHALL BE CAREFULLY EXAMINED FOR THE PRESENCE OF BATS, ESPECIALLY FROM APRIL 1 TO SEPTEMBER 30. IF ANY BATS ARE FOUND ROOSTING ON THE UNDERSIDE OF THIS BRIDGE, THE UNITED STATES FISH AND WILDLIFE SERVICES, ECOLOGICAL SERVICE DIVISION (614-416-8993), THE ODOT OFFICE OF ENVIRONMENTAL SERVICES (614-466-7880) AND THE ODOT DISTRICT 4 ENVIRONMENTAL SECTION (330-786-4930) SHALL BE CONTACTED AND PROVIDED THIS INFORMATION.

CALCULATED DPF CHECKED MAM

GENERAL NOTES

ATB-20-21.43

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189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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ITEM SPECIAL - TACK COAT, TRACKLESS TACK

ITEM SPECIAL - TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE

DESCRIPTION: THIS WORK CONSISTS OF PREPARING AND TREATING A PAVED SURFACE WITH A TRACKLESS TACK ASPHALT EMULSION.

FURNISH MATERIALS ACCORDING TO THE DEPARTMENT'S APPROVED LIST.

MEET ALL REQUIREMENTS OF ITEM 407 TACK COAT IN THE CONSTRUCTION AND MATERIALS SPECIFICATIONS REQUIRED BY THE CONTRACT, EXCEPT AS NOTED BELOW.

MATERIAL: MEET ALL PROPERTIES OF THE APPROVED MANUFACTURER'S TRACKLESS TACK SPECIFICATION REQUIREMENTS ON FILE WITH THE LABORATORY AT TIME OF PLACEMENT.

ACCEPTANCE AND SAMPLING OF MATERIALS: SUPPLY CERTIFIED TEST DATA TO THE ENGINEER AND TO THE DISTRICT LABORATORY DEMONSTRATING THE TRACKLESS TACK SUPPLIED WAS TESTED FOR AND MEETS ALL MATERIAL PROPERTIES SHOWN ON THE DEPARTMENT'S APPROVED LIST.

DURING CONSTRUCTION, ODOT PERSONNEL WILL SAMPLE FROM THE DISTRIBUTOR AND SUPPLY TO THE DISTRICT TEST LAB A MINIMUM OF ONE QUART OF TRACKLESS TACK FOR EVERY 25,000 GALLONS USED ON THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING THE PROPER PLASTIC QUART SAMPLING CONTAINER. CLEARLY MARK ON THE SAMPLE WITH THE MANUFACTURER'S NAME, PROJECT NUMBER, AND THE WORDS "TRACKLESS TACK".

EQUIPMENT: FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR CORRECT DISTRIBUTOR SETTINGS. THOROUGHLY CLEAN ALL EQUIPMENT IF PREVIOUSLY USED MATERIAL CHARGE IS DIFFERENT THAN THE PROPOSED MATERIAL.

APPLICATION OF ASPHALT MATERIAL: UNIFORMLY APPLY THE TRACKLESS TACK WITH A DISTRIBUTOR ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. IF TRACKLESS TACK IS STORED FOR AN EXTENDED PERIOD OF TIME, PRIOR TO APPLICATION, AGITATE OR GENTLY CIRCULATE THE MATERIAL.

ENSURE ALL NOZZLES AND SPRAY PATTERNS ARE IDENTICAL TO ONE ANOTHER ALONG THE DISTRIBUTOR SPRAY BAR. PLACE THE ANGLE OF THE NOZZLE AT A 15 TO 30 DEGREE ANGLE TO THE SPRAY BAR AXIS TO MAXIMIZE OVERLAP OR AS RECOMMENDED BY THE NOZZLE MANUFACTURER. CONTACT THE MANUFACTURER'S REPRESENTATIVE FOR REQUIRED SPRAY NOZZLE SIZE AND DISTRIBUTOR AND NOZZLE SETTINGS.

APPLY AT A RATE OF 0.04 TO 0.1 GALLONS PER SQUARE YARD. DO NOT DILUTE TRACKLESS TACK. RECOMMENDED APPLICATION TEMPERATURE IS 160 °F TO 180 °F. DO NOT EXCEED 180 °F. THE ENGINEER WILL APPROVE THE QUANTITY, RATE OF APPLICATION, TEMPERATURE, DISTRIBUTOR SETTINGS, AND AREAS TO BE TREATED BEFORE APPLICATION OF THE TRACKLESS TACK COAT. THE ENGINEER WILL DETERMINE THE ACTUAL APPLICATION IN GALLONS PER SQUARE YARD BY A CHECK ON THE PROJECT.

PERFORMANCE OF TRACKLESS TACK: DETERMINE THE TIME TO SET FOR THE MATERIAL TO BECOME TRACKLESS. THE ENGINEER WILL REPORT ANY ISSUES WITH EXCESSIVE TIME TO SET, OR AFTER SET ISSUES WITH STICKINESS, OR PICKUP OF THE TACK TO THE DISTRICT TESTING ENGINEER AND NEW PRODUCT ENGINEER, BRAD YOUNG 614-351-2882.

IF THE CERTIFIED TEST DATA FAILS TO MEET THE LAB TESTING CRITERIA, OR FIELD SAMPLES FAIL TO MEET THE LAB TEST CRITERIA, OR THE TRACKLESS TACK FAILS TO PERFORM SATISFACTORILY IN THE FIELD, AS NOTED ABOVE, THE CONTRACTOR WILL BE REQUIRED TO REPLACE AND SUPPLY ANOTHER APPROVED TRACKLESS TACK PRODUCT FOR THE REMAINDER OF THE PROJECT AT NO ADDITIONAL COST TO THE DEPARTMENT.

ANY FAILING TRACKLESS TACK PRODUCT WILL BE REMOVED FROM THE DEPARTMENT'S APPROVED LIST.

ASBESTOS NOTIFICATION

AN ASBESTOS SURVEY OF BRIDGE NO. ATB-20-21.60 OVER N.S. RAILROAD (STRUCTURE FILE NUMBER 402257) SCHEDULED FOR DEMOLITION WAS CONDUCTED IN 2006 BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST (CAHES). THE SURVEY DETERMINED THAT ASBESTOS CONTAINING MATERIAL (ACM) IS PRESENT ON THE BRIDGE.

TWO MATERIALS SUSPECTED OF CONTAINING NON FRIABLE ASBESTOS WERE NOTED; ½ INCH PREMOLDED EXPANSION JOINT FILLER LOCATED AT THE TOP OF THE SUPPORT COLUMNS AND THE DECK (370 S.F. +/- IN TOTAL); AND ¾ INCH PREMOLDED EXPANSION JOINT FILLER LOCATED AT THE TOP OF THE SUPPORT COLUMNS AND THE DECK (66 S.F. +/- IN TOTAL).

THE CONTRACTOR SHALL TAKE WHATEVER PRECAUTIONS ARE POSSIBLE TO ENSURE THAT THE ASBESTOS CONTAINING MATERIAL (ACM) DOES NOT BECOME FRIABLE. TO ENSURE THAT THE NON-FRIABLE ASBESTOS MATERIAL DOES NOT BECOME FRIABLE, OR IN THE EVENT THAT THE NON-FRIABLE MATERIAL BECOMES FRIABLE, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL TRAINED IN THE PROVISIONS OF NESHAP THAT WILL BE ON-SITE DURING THE DEMOLITION AND/OR REMOVAL OF THE ACM CONDUIT. ALL ACMS SHALL BE PROPERLY CONTAINERIZED, TRANSPORTED, AND DISPOSED OF IN ACCORDANCE WITH THE STATE AND FEDERAL REGULATIONS.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OHIO EPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORM, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, WILL BE PROVIDED TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO:

OHIO EPA - NEDO
ATTENTION: MR. BOB PRINCIC
2110 E. AURORA ROAD
TWINSBURG, OHIO 44087
TELEPHONE NUMBER: 330-425-9171 OR 800-686-6330
FAX NUMBER: 330-487-0769

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF THE REHABILITATION OF THE BRIDGE. THE CONTRACTOR SHALL PROVIDE ONE (1) COPY OF THE COMPLETED FORM TO THE ENGINEER.

INFORMATION REQUIRED ON THE FORM WILL INCLUDE:
1) THE CONTRACTOR'S NAME, ADDRESS, CONTACT PERSON, TELEPHONE NUMBER AND FAX NUMBER,
2) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REHABILITATION AND
3) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED.

A COPY OF THE PARTIALLY COMPLETED OHIO EPA FORM IS AVAILABLE FOR REVIEW AT THE ODOT DISTRICT 4 OFFICES, 2088 SOUTH ARLINGTON ROAD, AKRON, OHIO 44306.

BASIS FOR PAYMENT - THE CONTRACTOR SHALL FURNISH ALL THE LABOR (INCLUDING A CAHES), EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE, SUBMIT, AND COMPLY WITH THE OEPA NOTIFICATION FOR AND TO REMOVE, TRANSPORT AND DISPOSE OF ASBESTOS CONTAINING MATERIALS IN A LICENSED (BY THE LOCAL HEALTH DEPARTMENT) AND PERMITTED (BY THE OEPA) SOLID WASTE FACILITY. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20' SPAN, AS PER PLAN.

ITEM 202, BUILDING DEMOLISHED (PARCEL 17)

AT THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR WILL DEMOLISH A GARAGE STRUCTURE PER CMS 202.06. THE FOLLOWING BUILDING IS TO BE DEMOLISHED:

PARCEL NO. 17: 1 STORY FRAME GARAGE

AFTER ALL REMOVALS AND BACKFILLING OPERATIONS ARE COMPLETE, DISTURBED AREAS SHALL BE SEEDED AND MULCHED PER ITEM 659 OF CMS.

ALL REMOVAL, EMBANKMENT MATERIAL, SEEDING AND MULCHING, AND ALL OTHER INCIDENTALS REQUIRED TO COMPLETE THIS WORK WILL BE INCLUDED IN ITEM 202, BUILDING DEMOLISHED. PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR LUMP SUM BUILDING DEMOLISHED.

CALCULATED DPF CHECKED BJF

GENERAL NOTES

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

MAINTENANCE OF TRAFFIC

THIS ITEM SHALL CONSIST OF MAINTENANCE OF TRAFFIC ON EXISTING ROADWAYS AND RAMPS IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION, LATEST REVISION, THE SPECIFICATIONS AND THE FOLLOWING:

1. THE CONTRACTOR SHALL INFORM THE DISTRICT OFFICE (330) 786-2208, EIGHTEEN (18) DAYS PRIOR TO THE BEGINNING OF WORK.

2. ALL FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT OPERATIONS SHALL BE COMPLETED THE SAME DAY THE EXCAVATION IS MADE. IF THE CONTRACTOR CANNOT COMPLETE THE WORK, THE EXCAVATION SHALL BE BACKFILLED OR PROTECTED AS PER STANDARD CONSTRUCTION DRAWING MT-101.90.

3. TRUCK MOUNTED ATTENUATORS [TMA'S] SHALL BE USED AS SHOWN IN THE STANDARD CONSTRUCTION DRAWINGS.

4. ONLY DURING OFF-PEAK PERIODS (ie ANY PERIOD OTHER THAN 6-8AM AND 3-6PM) SHALL THE CONTRACTOR INSTALL AND SUBSEQUENTLY RESET ALL TRAFFIC CONTROL NECESSARY FOR THE WORK ZONE FOR EACH CONSTRUCTION PHASE.

5. A QUANTITY OF 50 CU. YDS. OF ITEM 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC SHALL BE PROVIDED FOR USE IN MAINTAINING PAVEMENT, SHOULDERS AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER.

6. PRIOR TO OPENING TO TRAFFIC EACH LANE SHALL BE IN A SAFE, PASSABLE CONDITION. ALL TRANSVERSE JOINTS SHALL EXTEND ACROSS THE FULL LANE AND SHOULDER WIDTH AND EACH LANE SHALL BE FREE FROM UNEVEN LONGITUDINAL JOINTS. THE CONTRACTOR SHALL PROVIDE ASPHALT WEDGES FOR TRANSVERSE JOINTS WHEREVER THERE ARE PAVEMENT ELEVATION DIFFERENCES.

A MINIMUM OF ONE TEN FOOT LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 270 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET 14. A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF $8,000 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

A MINIMUM OF ONE TEN FOOT LANE IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES THRU THE WORK ZONE FROM THE BEGINNING OF THE PROJECT UP TO APPROXIMATELY STATION 439+50; AND FROM APPROXIMATELY STATION 458+00 TO THE END OF THE PROJECT. ACCESS AND TWO WAY TRAFFIC MUST BE MAINTAINED ON OVERPASS DRIVE AND INDUSTRY ROAD AT ALL TIMES DURING THE PROJECT DURATION, AS PER THE NOTES AND DETAILS. MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES USING ITEM 411.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

DETOUR NOTIFICATION [CITY/COUNTY]

THE CONTRACTOR SHALL ADVISE THE ODOT DISTRICT OFFICE (330-786-3148), THE CITY OF CONNEAUT (440-593-7401) AND THE VILLAGE OF NORTH KINGSVILLE (440-224-1074) EIGHTEEN (18) DAYS IN ADVANCE OF WHEN THE DETOUR ROUTE SHOULD BE IN EFFECT. ALL WORK ZONE DEVICES REQUIRED SHALL BE FURNISHED, ERECTED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. PAYMENT FOR ALL WORK ASSOCIATED WITH THE DETOUR SHALL BE INCLUDED UNDER THE LUMP SUM BID FOR ITEM 614, DETOUR SIGNING.

SEQUENCE OF CONSTRUCTION

US 20 SHALL BE CLOSED BETWEEN APPROXIMATE STATION 439+50 AND APPROXIMATE STATION 458+00 FOR BRIDGE REMOVAL AND CONSTRUCTION, MSE WALL CONSTRUCTION, APPROACH ROADWAY, DRAINAGE AND EMBANKMENT CONSTRUCTION.

INDUSTRY ROAD (SUBSTRUCTURE CONSTRUCTION)

FROM STATION 11+40± TO STATION 17+00± ON INDUSTRY ROAD, CONSTRUCT PAVEMENT FOR MAINTENANCE OF TRAFFIC TO ALLOW TRAFFIC TO BE SHIFTED SOUTH TO PROVIDE ROOM FOR SUBSTRUCTURE EXCAVATION AND CONSTRUCTION. PAVEMENT FOR M.O.T. SHALL BE CONSTRUCTED USING FLAGGERS PER STANDARD CONSTRUCTION DRAWING MT-97.10. SHIFT TRAFFIC TO THE PAVEMENT FOR M.O.T. PER THE DETAILS ON SHEET 15.

INDUSTRY ROAD : CUL-DE-SAC & US 20
(STATION 456+40± TO END PROJECT)

FROM INDUSTRY ROAD STATION 455+50 TO END PROJECT AND ON US 20 FROM STATION 456+40± TO END PROJECT; CONSTRUCT THE CUL-DE-SAC AND NEW FULL DEPTH PAVEMENT UNDER TRAFFIC MAINTAIN TRAFFIC TO DRIVEWAYS AT ALL TIMES. PHASING DETAILS SHOW PORTABLE BARRIER, CONTRACTOR MAY UTILIZE DRUMS IF THE REQUIREMENTS FOR USE OF DRUM IN S.C.D. MT-101.90 CAN BE MET.

PHASE 1: CONSTRUCT PAVEMENT FOR MAINTENANCE OF TRAFFIC TO ALLOW TRAFFIC TO BE SHIFTED FROM THE EXISTING INTERSECTION OF US20/INDUSTRY ROAD. SHIFT TRAFFIC TO THE PAVEMENT FOR M.O.T. AND THE NORTH HALF OF US 20. LANE CLOSURES AND LEAD IN SIGNAGE ON US 20 TO BE AS PER S.C.D. MT-95.31. CONSTRUCT THE MAJORITY OF THE INDUSTRY ROAD CUL-DE-SAC, AND THE SOUTH PORTION OF US 20. SEE SHEETS 16-17 FOR PHASING DETAILS.

PHASE 2: SHIFT TRAFFIC TO THE PAVEMENT CONSTRUCTED IN PHASE 1. CONSTRUCT THE REMAINDER OF THE INDUSTRY ROAD CUL-DE-SAC, THE NORTH HALF OF INDUSTRY ROAD AND THE NORTH HALF OF US 20. LANE CLOSURES AND LEAD IN SIGNAGE ON US 20 TO BE AS PER S.C.D. MT-95.31. UTILIZE PAVEMENT FOR M.O.T. ON THE SOUTH SIDE OF INDUSTRY TO MAINTAIN TWO-WAY TRAFFIC. SEE SHEETS 18-19 FOR PHASING DETAILS.

PHASE 3: SHIFT TRAFFIC TO THE PERMANENT PAVEMENT AND PAVEMENT FOR M.O.T. CONSTRUCTED ON INDUSTRY IN PHASE 2. CONSTRUCT THE REMAINDER OF THE INDUSTRY ROAD ON THE SOUTH HALF USING FLAGGERS PER SCD MT 97.10, SEE SHEET 20 FOR PHASING DETAILS.

OVERPASS DRIVE : CUL- DE-SAC & US 20
(BEGIN PROJECT TO STATION 439+50)

ON US 20 FROM BEGINNING OF THE PROJECT TO STATION 439+50 CONSTRUCT THE NEW FULL DEPTH PAVEMENT AND THE OVERPASS DRIVE CUL-DE-SAC WHILE MAINTAINING TRAFFIC TO OVERPASS DRIVE USING PART WIDTH CONSTRUCTION. CONTRACTOR MAY UTILIZE DRUMS IF THE REQUIREMENTS FOR USE OF DRUMS IN S.C.D. MT-101.90 CAN BE MET. RIGHT LANE CLOSURES AND LEAD IN SIGNAGE ON US 20 TO BE AS PER S.C.D. MT-95.31. TWO WAY TRAFFIC ON OVERPASS DRIVE SHALL BE MAINTAINED WITH THE EXISTING PAVEMENT, COMPLETED PAVEMENT AND TEMPORARY SURFACES USING ITEMS 410, OR 614.

TRAFFIC CONTROL INSPECTOR

THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL OTHER THAN THE SUPERINTENDENT AND SUBJECT TO THE APPROVAL OF THE ENGINEER, TO CONTINUOUSLY INSPECT ALL TRAFFIC CONTROL DEVICES WHENEVER CONSTRUCTION WORK IS BEING PERFORMED WITHIN THE WORK LIMITS OF THE PROJECT. THE DESIGNATED INDIVIDUAL SHALL ALSO INSPECT ALL TRAFFIC DEVICES AT THE BEGINNING AND AT THE END OF EACH WORK DAY. THE DESIGNATED INDIVIDUAL OR A QUALIFIED REPRESENTATIVE SHALL ALSO BE AVAILABLE ON AN AROUND THE CLOCK BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. THESE INDIVIDUALS SHALL BE EQUIPPED WITH CELLULAR PHONES AND THEIR NAMES AND PHONE NUMBERS SHALL BE GIVEN TO THE PROJECT ENGINEER AT THE PRE-CONSTRUCTION MEETING. THE DESIGNATED INDIVIDUAL MAY HAVE OTHER CONSTRUCTION RELATED DUTIES AS LONG AS IMMEDIATE ATTENTION IS GIVEN TO TRAFFIC CONTROL. PAYMENT FOR THE SERVICES OF THE TRAFFIC CONTROL INSPECTOR SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

- DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

- FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP). IN GENERAL, LEOS SHOULD BE POSITIONED AT THE POINT OF LANE RESTRICTION OR ROAD CLOSURE AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH INTERSECTIONS IN WORK ZONES.

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. ONCE THE LEO HAS COMPLETED THE DUTIES DESCRIBED ABOVE AND STILL HAS TIME REMAINING ON HIS/HER SHIFT, THE LEO MAY BE ASKED TO PATROL THROUGH THE WORK ZONE (WITH FLASHING LIGHTS OFF) OR BE PLACED AT A LOCATION TO DETER MOTORISTS FROM SPEEDING. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 50 HOURS

THE HOURS PAID SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

ADVANCED NOTICE TO PAVE

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL TO THE DISTRICT CONSTRUCTION ENGINEER A DETAILED SCHEDULE 15 DAYS PRIOR TO THE PLACEMENT OF THE OVERLAY COURSES, ON HOW THEY PROPOSE TO PROSECUTE THE PAVING OPERATIONS. THE DETAILS SHALL SHOW THE ORDER OF PERFORMANCE OF EACH STAGE (START TO FINISH) OF THE WORK INCLUDING THE MAINTENANCE OF TRAFFIC THAT WILL BE USED.

ITEM 614, BARRIER REFLECTORS AND/OR OBJECT MARKERS

BARRIER REFLECTORS AND/OR OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO CMS 626, EXCEPT THAT THE SPACING SHALL BE 50 FEET. AN ESTIMATED QUANTITY OF 20 EACH OF ITEM 614 BARRIER REFLECTOR, TYPE B AND 20 EACH OF ITEM 614 OBJECT MARKER, 1-WAY HAVE BEEN PROVIDED AND CARRIED TO THE GENERAL SUMMARY.

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616, WATER 168 M. GAL

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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MAINTENANCE OF TRAFFIC (ROAD CLOSURE)

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP. ON ENTRANCE RAMPS, THE SIGN SHALL BE ERECTED WELL IN ADVANCE OF THE MERGE AREA TO AVOID DISTRACTING MOTORISTS.

W20-H14

ROAD WILL BE
CLOSED _____
FOR 270 DAYS
OHIO DEPARTMENT
OF TRANSPORTATION

MMM = MONTH (3 LTR)
DD = DATE (1 OR 2 DIGIT)

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN SIGNS AND SIGN SUPPORTS, AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND TYPE III BARRICADES OF THE TYPE AND LOCATION AS FOLLOWS:

US20 - STATION 439+50 AND STATION 456+75
INDUSTRY ROAD - STATION 13+25 AND STATION 16+75

ITEM 614, MAINTAINING TRAFFIC (ROAD CLOSED SIGN)

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN STANDARD 48 X 30 INCH ROAD CLOSED SIGNS, SIGN SUPPORTS, BARRICADES AND LIGHTS, AS DETAILED IN SCD MT-101.60 AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC.

FOR US 20 EASTBOUND - AT THE REED ROAD INTERSECTION
FOR US 20 WESTBOUND - AT THE AMBOY ROAD INTERSECTION

DESIGNATED LOCAL DETOUR ROUTE

IN ADDITION TO THE OFFICIAL, SIGNED DETOUR ROUTE, A LOCAL ROUTE HAS BEEN DETERMINED TO BE THE SECONDARY, UNSIGNED DETOUR ROUTE OR "DESIGNATED LOCAL DETOUR ROUTE." THIS ROUTE IS SHOWN ON SHEET NO. 14. DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THIS ROUTE IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST AND STANDING WATER. ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DETERMINED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR USE AS DETERMINED BY THE ENGINEER TO MAINTAIN AND SUBSEQUENTLY RESTORE THE DESIGNATED LOCAL DETOUR ROUTE.

ITEM 301, ASPHALT CONCRETE BASE, PG 64-22	100 CU. YD.
ITEM 304, AGGREGATE BASE	100 CU. YD.
ITEM 441, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448) PG 64-22	600 CU. YD.
ITEM 407, TACK COAT, TRACKLESS TACK	270 GAL.
ITEM 617, COMPACTED AGGREGATE	200 CU. YD.

ITEM 614, WORK ZONE IMPACT ATTENUATOR FOR 24" WIDE HAZARDS (UNIDIRECTIONAL OR BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A NON-GATING IMPACT ATTENUATOR. FURNISH AN IMPACT ATTENUATOR FROM THE OFFICE OF ROADWAY ENGINEERING'S APPROVED LIST FOR WORK ZONE IMPACT ATTENUATORS, FROM THE ROADWAY STANDARDS WEB PAGE FOR ROADWAY STANDARDS APPROVED PRODUCTS.

INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE CONTRACTOR SHALL REPAIR OR REPLACE A DAMAGED UNIT WITHIN 24 HOURS OF A DAMAGING IMPACT.

WHEN BIDIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS.

WHEN GATING IMPACT ATTENUATORS ARE DESIRED, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER FOR ACCEPTANCE.

THE COST FOR THE ADDITIONAL BARRIER REQUIRED FOR A GATING IMPACT ATTENUATOR SHALL BE INCLUDED IN THE COST OF THE GATING IMPACT ATTENUATOR.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT AND MAINTAIN A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS, TRANSITIONS, LEVELING PADS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

BARRIER DELINEATION AS PER PLAN

INCREASED DELINEATION, AS SPECIFIED HEREIN, SHALL BE INSTALLED ON ALL PORTABLE BARRIER AND CONCRETE PERMANENT BARRIER LOCATED WITHIN 5-FEET OF THE EDGE OF THE TRAVELED LANE UNDER EITHER OF THE FOLLOWING CONDITIONS:

ALONG TAPERS AND TRANSITION AREAS

ALONG CURVES (OUTSIDE ONLY) WITH DEGREE OF CURVATURE GREATER THAN OR EQUAL TO 3 DEGREES

THE INCREASED DELINEATION SHALL CONSIST OF EITHER LINEAR DELINEATION PANELS OR THE TRIPLE STACKING OF WORK ZONE BARRIER REFLECTORS.

THE LINEAR DELINEATION PANELS SHALL CONSIST OF PANELS OF DELINEATION, APPROXIMATELY 34 INCHES LONG AND 6-INCHES WIDE AND SHALL BE "CRIMPED". PANELS SHALL BE PROVIDED AT THE RATE OF ONE PANEL EVERY 10 FEET ON PORTABLE BARRIER AND PERMANENT CONCRETE BARRIER, SPACED EVENLY ALONG THE LENGTH OF THE RUN. THE PANELS SHALL BE MOUNTED SUCH THAT THE TOPS OF THE PANELS ARE 26 INCHES ABOVE THE PAVEMENT.

TRIPLE STACKED BARRIER REFLECTORS SHALL CONSIST OF THREE BARRIER REFLECTORS STACKED VERTICALLY IN THEIR ATTACHMENT TO PORTABLE BARRIER. THERE SHALL BE NO OPEN SPACE BETWEEN THE ADJACENT BARRIER REFLECTORS. THE TOP OF THE MIDDLE BARRIER REFLECTOR SHALL BE LOCATED 26 IN ABOVE THE PAVEMENT.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING LINEAR DELINEATION.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS:

614	LINEAR DELINEATION	200 FOOT

ALONG RUNS OF PORTABLE CONCRETE BARRIER WHERE THIS ITEM IS PROVIDED, THE QUANTITY SHALL BE MEASURED AS THE ENTIRE LENGTH OF THE RUN BEING DELINEATED, INCLUDING THE SPACES BETWEEN THE INDIVIDUAL PANELS OR STACKS OF BARRIER REFLECTORS.

EARTHWORK FOR MAINTAINING TRAFFIC

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE PLAN FOR INFORMATION ONLY:

EXCAVATION FOR MAINTAINING TRAFFIC	317 CU. YD.
EMBANKMENT FOR MAINTAINING TRAFFIC	100 CU. YD.

WHEN UNDERCUTS ARE NECESSARY FOR MAINLINE PAVEMENT OR EMBANKMENT CONSTRUCTION, EVALUATE THE NEED FOR TEMPORARY ROAD UNDERCUTS IF WITHIN A CLOSE PROXIMITY TO THE MAINLINE UNDERCUTS. A GEOTECHNICAL EVALUATION SHOULD BE CONSIDERED TO DETERMINE IF THE EXISTING SOIL CONDITIONS ARE ADEQUATE TO SUPPORT THE TEMPORARY ROAD. ADDITIONAL SOIL BORINGS ALONG THE TEMPORARY ROAD ARE NOT NORMALLY REQUIRED.

CALCULATED DPF CHECKED MAM

MAINTENANCE OF TRAFFIC GENERAL NOTES

MAINTENANCE

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SHEET NO.	REF NO.	PHASE	LOCATION		SIDE	614					622
						WORK ZONE CENTERLINE, DOUBLE SOLID, CLASS I (Y)	WORK ZONE EDGE LINE, CLASS I (Y)	WORK ZONE EDGE LINE, CLASS I (W)	OBJECT MARKER, ONE-WAY	BARRIER REFLECTOR, TYPE B	PORTABLE BARRIER, 32"
			FROM	TO		MILE	MILE	MILE	EACH	EACH	FEET
15	PB1	INDUSTRY	11+88.0	16+70.0	LT/RT				11	11	490
15	WE1	INDUSTRY	11+62.0	17+00.0	RT			0.102			
15	DY1	INDUSTRY	11+65.0	17+00.0	℄	0.101					
15	WE2	INDUSTRY	11+68.0	17+00.0	LT			0.101			
16	PB2	1	455+83.0	457+31.0	RT				4	4	150
16	WE3	1	456+27.0	463+25.0	RT			0.136			
16-17	WE4	1	456+27.0	467+40.0	LT			0.215			
16-17	DY2	1	456+27.0	464+90.0	℄	0.167					
18	PB3	2	455+50.0	457+80.0	RT				6	6	250
18	WE5	2	454+25.0	459+50.0	LT			0.103			
18-19	WE6	2	454+25.0	467+80.0	RT			0.257			
18-19	DY3	2	454+25.0	465+30.0	℄	0.213					
TOTALS CARRIED TO GENERAL SUMMARY						0.48	0.91		21	21	890

CALCULATED CML
CHECKED DPF

MAINTENANCE OF TRAFFIC SUBSUMMARY

ATB-20-21.43

13
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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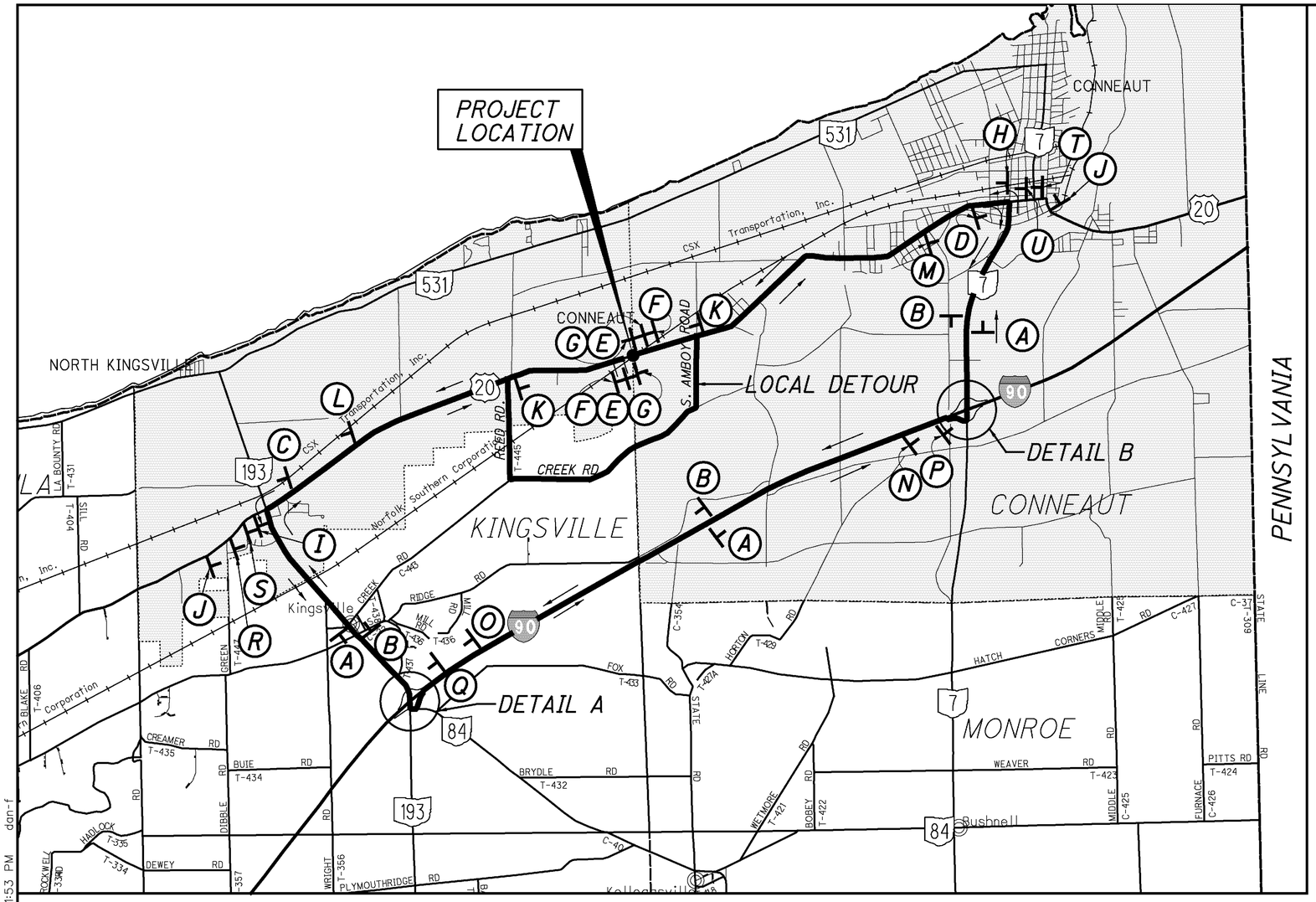
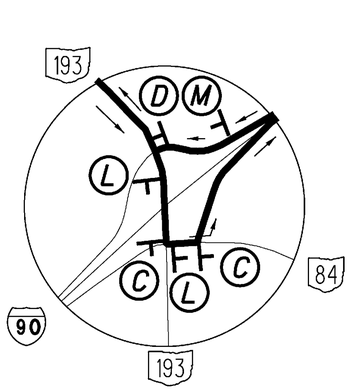
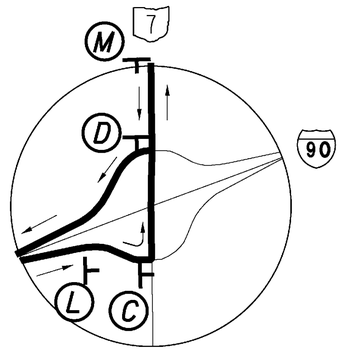




DETAIL A



DETAIL B

A

DETOUR EAST 20

M4-8
M3-2
M1-4-2
M6-3

B

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M6-3

C

DETOUR EAST 20

M4-8
M3-2
M1-4-2
M6-1L

D

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M6-1R

E

ROAD CLOSED 500 FT

W20-3-48

F

ROAD CLOSED 1000 FT

W20-3-48

G

ROAD CLOSED

R11-2-48
TYPE III BARRICADES
PER MT 101.60

H

ROAD CLOSED
3.6 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR

R11-3A-60
M4-10R-48

I

ROAD CLOSED
3.5 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR

R11-3A-60
M4-10R-48

J

DETOUR AHEAD

W20-2-36

K

ROAD CLOSED
(0.5/1.2) MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3A

L

DETOUR EAST 20

M4-8
M3-2
M1-4-2
M5-1L

M

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M5-1R

N

DETOUR EAST 20

M4-8
M3-2
M1-4-2
M5-2R

O

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M5-2R

R

DETOUR EAST 20

M4-8
M3-4
M1-4-2
M5-1R

S

DETOUR EAST 20

M4-8
M3-4
M1-4-2
M6-1R

T

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M5-1L

U

DETOUR WEST 20

M4-8
M3-4
M1-4-2
M6-1L

P

DETOUR EAST 20

M4-8
M3-2
M1-4-2

EXISTING EXTRU-SHEET GUIDE SIGN

MOUNT ABOVE EXISTING EXTRU-SHEET SIGNS IN EXIT SIGN SEQUENCE (3 LOCATIONS)

Q

DETOUR WEST 20

M4-8
M3-4
M1-4-2

EXISTING EXTRU-SHEET GUIDE SIGN

MOUNT ABOVE EXISTING EXTRU-SHEET SIGNS IN EXIT SIGN SEQUENCE (3 LOCATIONS)

N

HORIZONTAL SCALE IN FEET
0 3000 6000

CALCULATED DPF
CHECKED MAM

MAINTENANCE OF TRAFFIC - DETOUR

ATB-20-21.43

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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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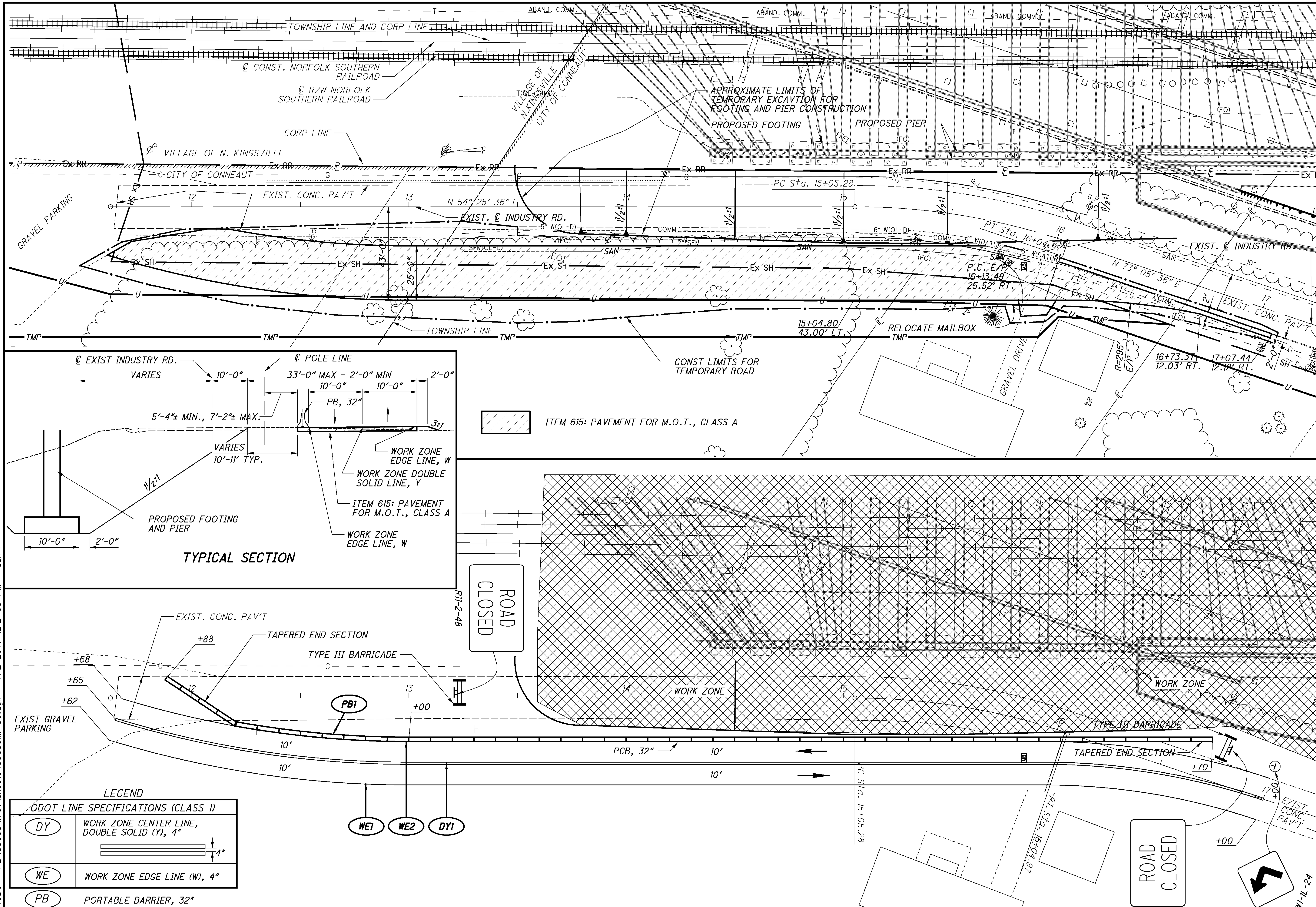
TOWNSHIP LINE AND CORP LINE
ABAND. COMM.
℄ CONST. NORFOLK SOUTHERN RAILROAD
℄ R/W NORFOLK SOUTHERN RAILROAD
VILLAGE OF N. KINGSVILLE CITY OF CONNEAUT
APPROXIMATE LIMITS OF TEMPORARY EXCAVTION FOR FOOTING AND PIER CONSTRUCTION
PROPOSED FOOTING
PROPOSED PIER
CORP LINE
VILLAGE OF N. KINGSVILLE
CITY OF CONNEAUT
GRAVEL PARKING
EXIST. CONC. PAV'T
N 54° 25' 36" E
EXIST. ℄ INDUSTRY RD.
PC Sta. 15+05.28
PT Sta. 16+04.97
N 73° 05' 36" E
EXIST. ℄ INDUSTRY RD.
EXIST. CONC. PAV'T
P.C. E/P 16+13.49 25.52' RT.
15+04.80 43.00' LT.
RELOCATE MAILBOX
TOWNSHIP LINE
CONST LIMITS FOR TEMPORARY ROAD
GRAVEL DRIVE
R=295' E/P
16+73.31 12.03' RT.
17+07.44 12.12' RT.
ITEM 615: PAVEMENT FOR M.O.T., CLASS A
℄ EXIST INDUSTRY RD.
℄ POLE LINE
VARIES
10'-0"
33'-0" MAX - 2'-0" MIN
2'-0"
PB, 32"
5'-4"± MIN., 7'-2"± MAX.
VARIES 10'-11' TYP.
WORK ZONE EDGE LINE, W
WORK ZONE DOUBLE SOLID LINE, Y
ITEM 615: PAVEMENT FOR M.O.T., CLASS A
WORK ZONE EDGE LINE, W
PROPOSED FOOTING AND PIER
TYPICAL SECTION
ROAD CLOSED
R11-2-48
EXIST. CONC. PAV'T
TAPERED END SECTION
TYPE III BARRICADE
EXIST GRAVEL PARKING
PB1
WORK ZONE
PCB, 32"
TYPE III BARRICADE
TAPERED END SECTION
PC Sta. 15+05.28
PT Sta. 16+04.97
EXIST. CONC. PAV'T
ROAD CLOSED
W1-1L-24
WE1
WE2
DY1
HORIZONTAL SCALE IN FEET

LEGEND

ODOT LINE SPECIFICATIONS (CLASS 1)	
DY	WORK ZONE CENTER LINE, DOUBLE SOLID (Y), 4"
WE	WORK ZONE EDGE LINE (W), 4"
PB	PORTABLE BARRIER, 32"

CALCULATED DPF
CHECKED MAM

MAINTENANCE OF TRAFFIC
INDUSTRY ROAD - PIER CONSTRUCTION

ATB-20-21.43

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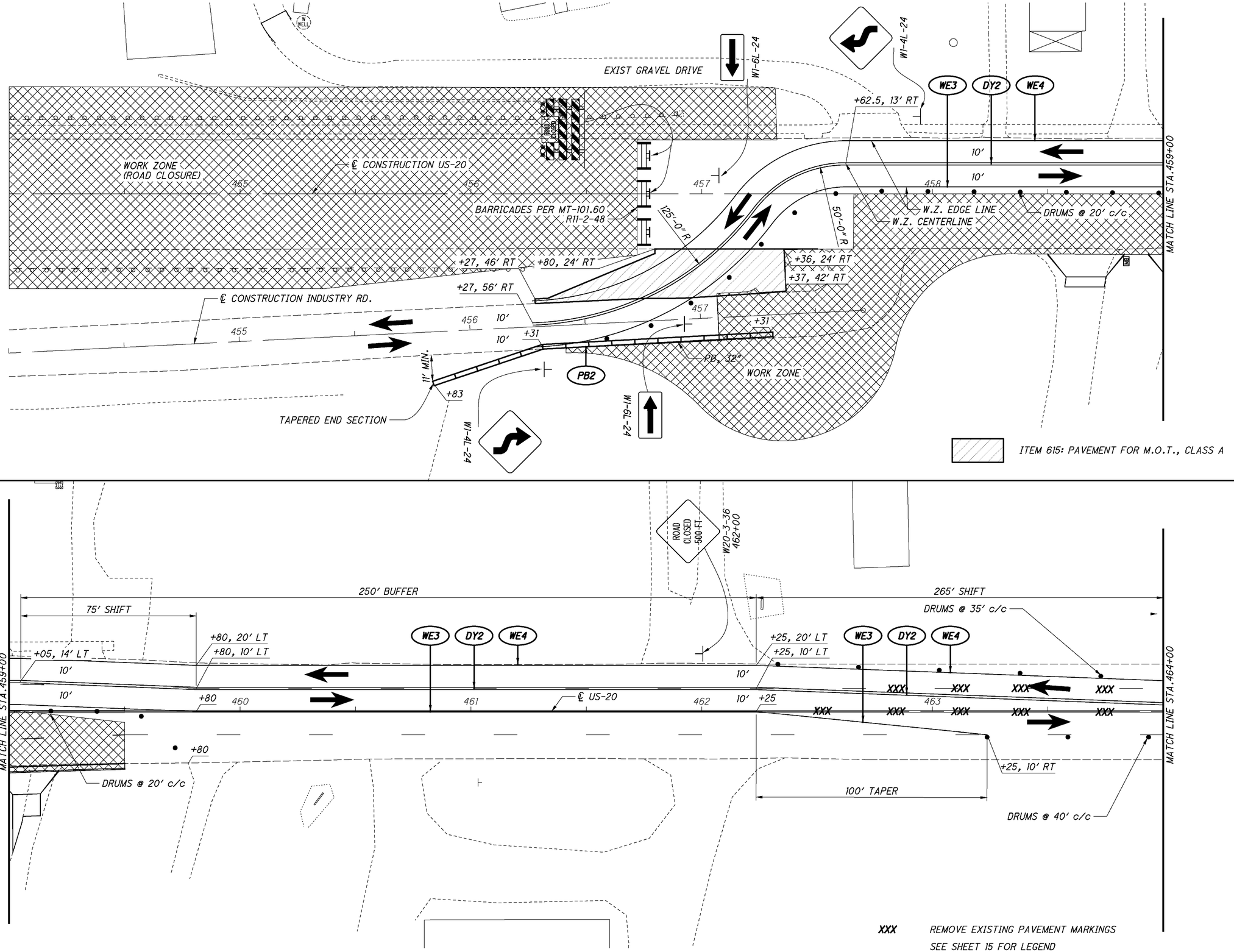

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED MAM

MAINTENANCE OF TRAFFIC - PHASE 1
STA. 454+00.00 - STA. 464+00.00

ATB-20-21.43

16
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460 WHITE POND DR - SUITE 300
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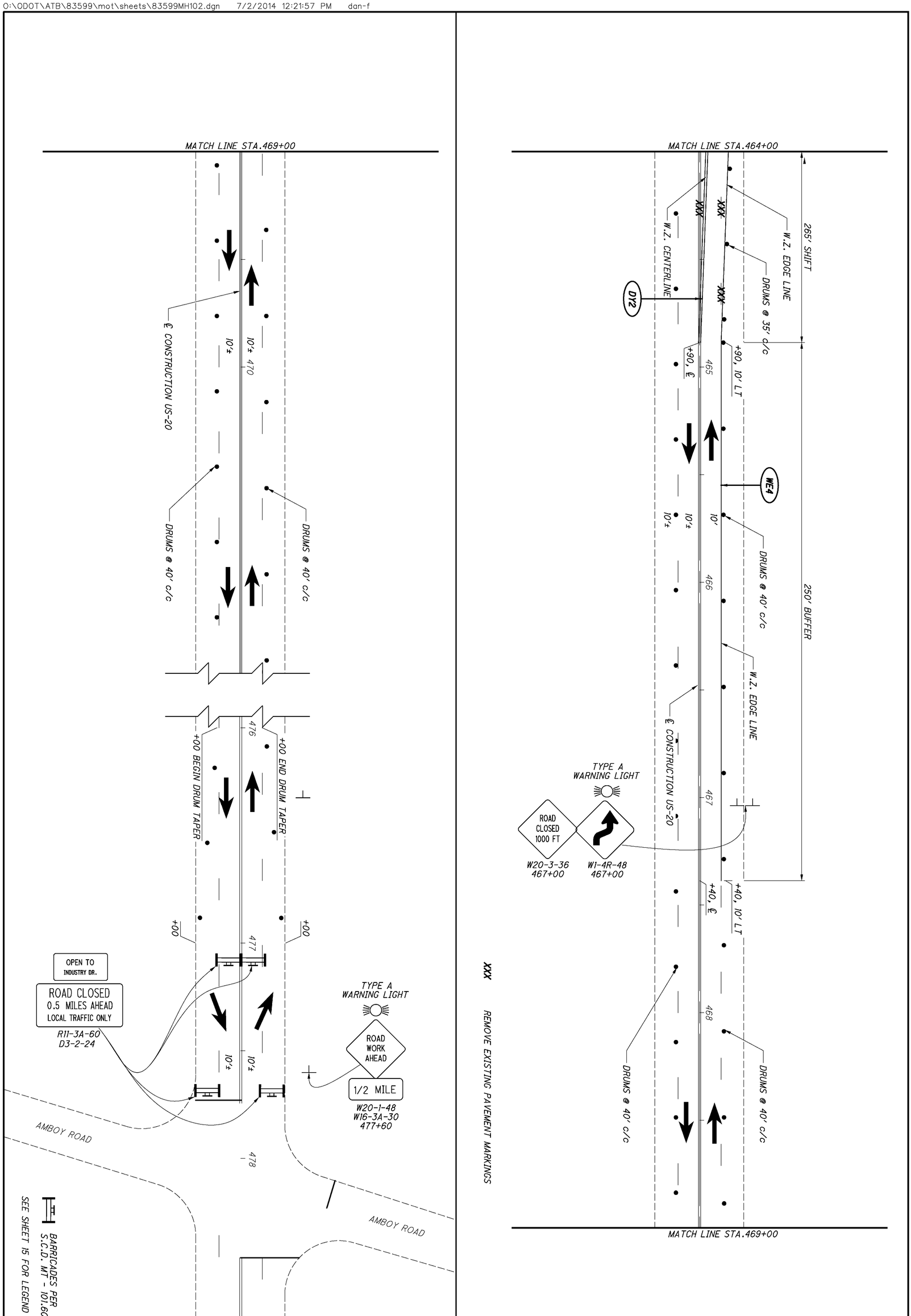


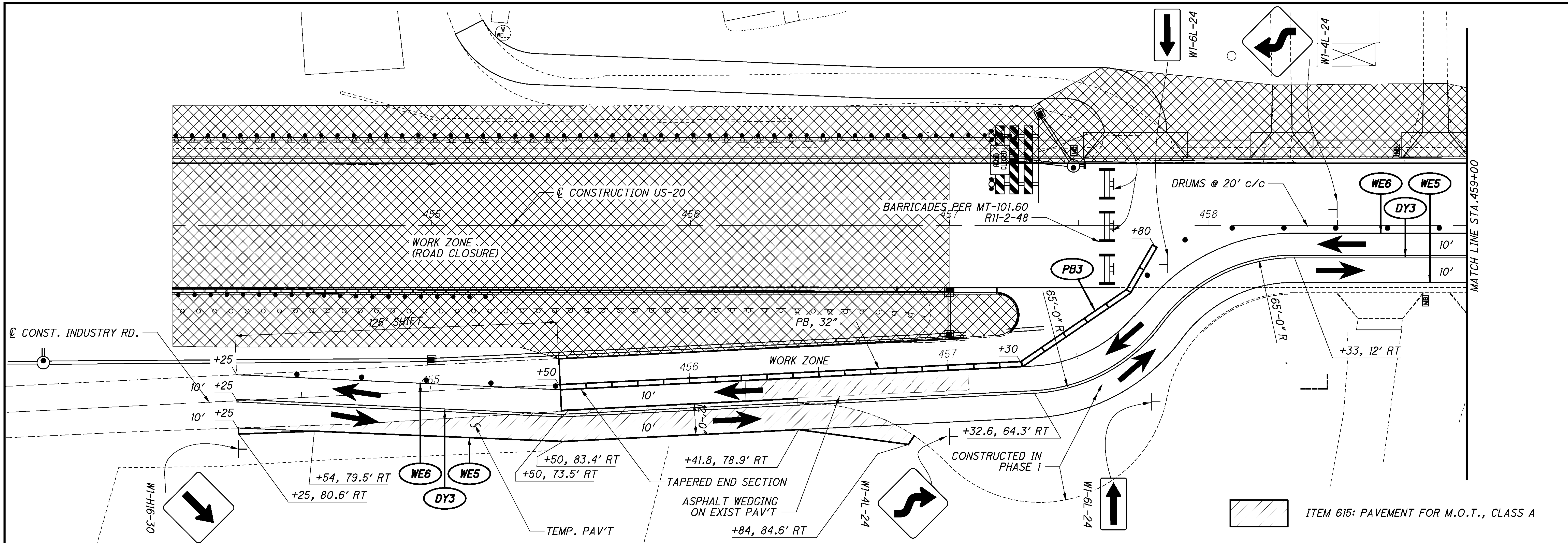
ATB-20-21.43

MAINTENANCE OF TRAFFIC - PHASE 1
STA. 464+00.00 - STA. 478+00.00

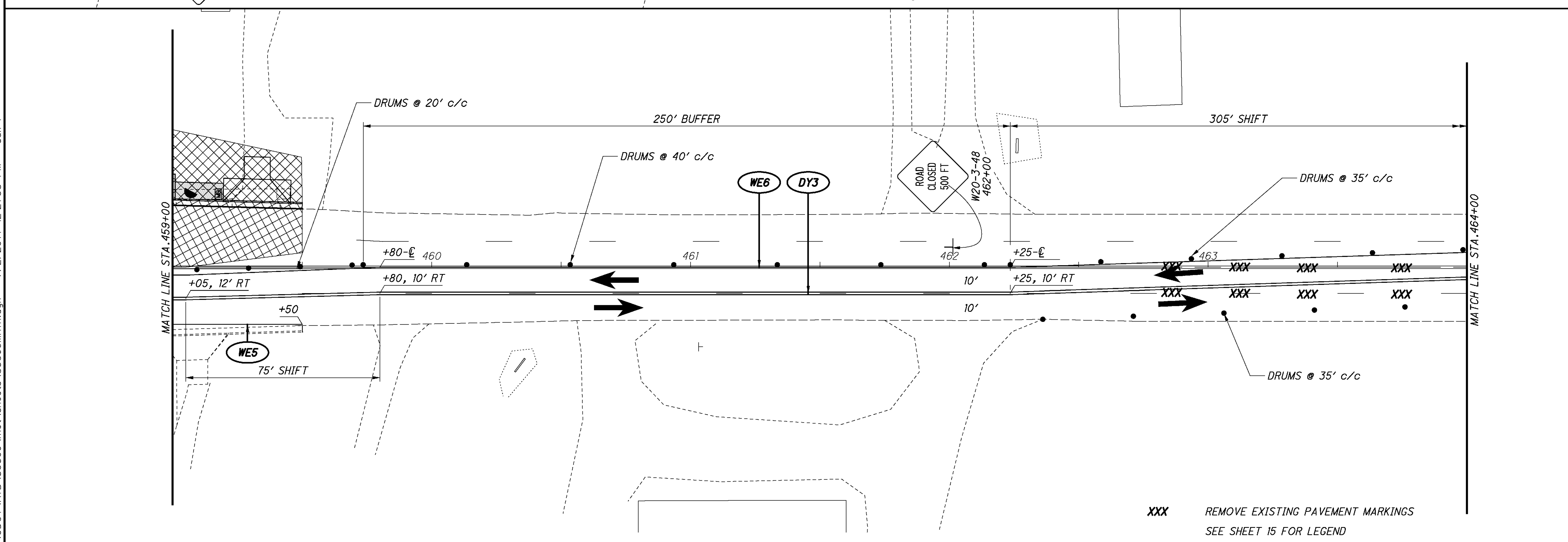
CALCULATED DPF
CHECKED MAM

0 20 40
HORIZONTAL SCALE IN FEET

N



℄ CONSTRUCTION US-20
WORK ZONE (ROAD CLOSURE)
BARRICADES PER MT-101.60
R11-2-48
W1-6L-24
W1-4L-24
DRUMS @ 20' c/c
WE6
WE5
DY3
PB3
+80
65'-0" R
+33, 12' RT
MATCH LINE STA.459+00
℄ CONST. INDUSTRY RD.
125' SHIFT
PB, 32"
WORK ZONE
+25
+50
+30
10'
+54, 79.5' RT
+25, 80.6' RT
+50, 83.4' RT
+50, 73.5' RT
+41.8, 78.9' RT
+32.6, 64.3' RT
CONSTRUCTED IN PHASE 1
TAPERED END SECTION
ASPHALT WEDGING ON EXIST PAV'T
TEMP. PAV'T
+84, 84.6' RT
W1-H16-30
ITEM 615: PAVEMENT FOR M.O.T., CLASS A



XXX REMOVE EXISTING PAVEMENT MARKINGS

SEE SHEET 15 FOR LEGEND

HORIZONTAL SCALE IN FEET 0 20 40

CALCULATED DPF

CHECKED MAM

MAINTENANCE OF TRAFFIC - PHASE 2

STA. 454+00.00 - STA. 464+00.00

ATB-20-21.43

18 / 189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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AKRON, OHIO 44320

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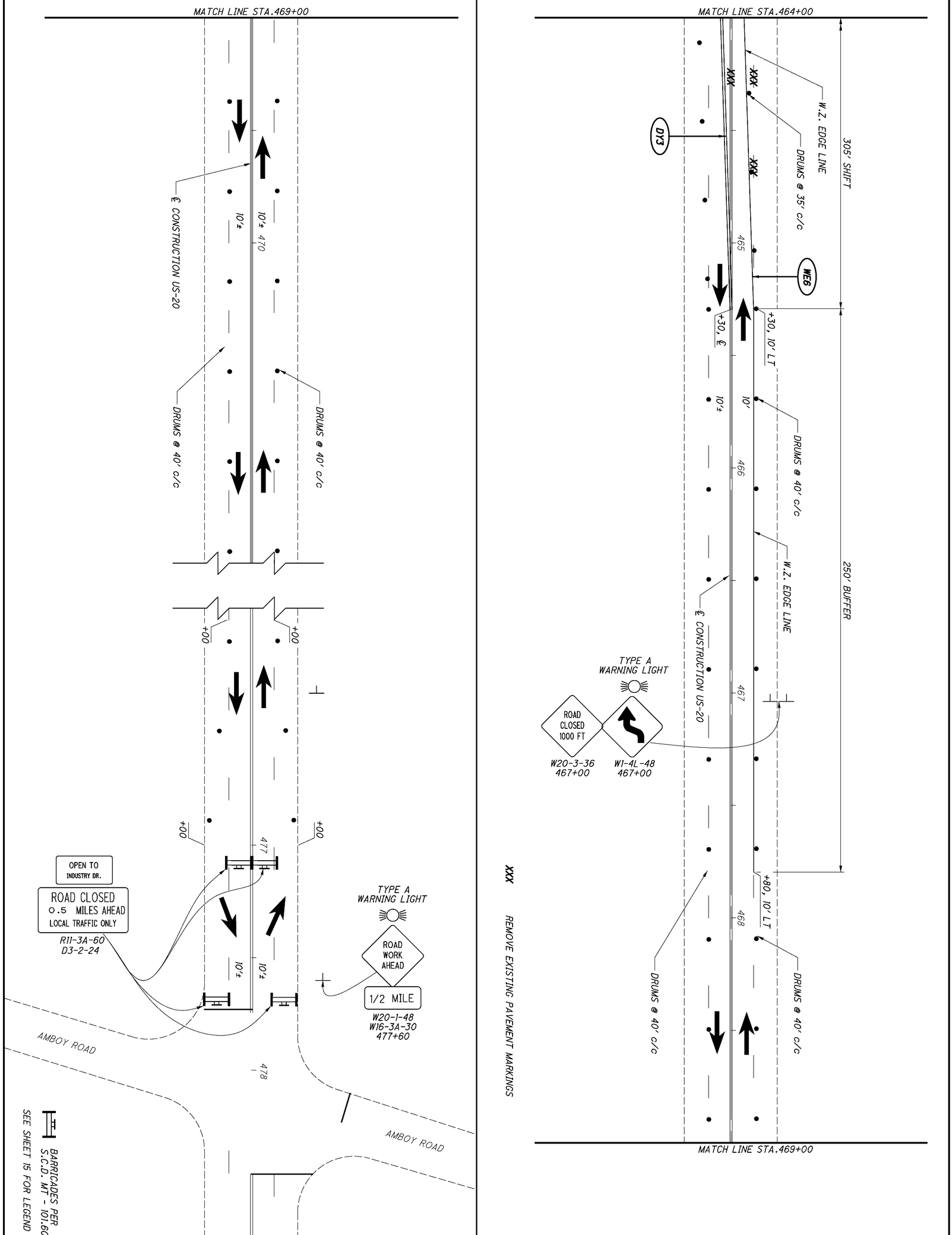

19 / 189	ATB-20-21.43	MAINTENANCE OF TRAFFIC - PHASE 2 STA. 464+00.00 - STA. 478+00.00	CALCULATED DPF CHECKED MAM	0 20 40 HORIZONTAL SCALE IN FEET

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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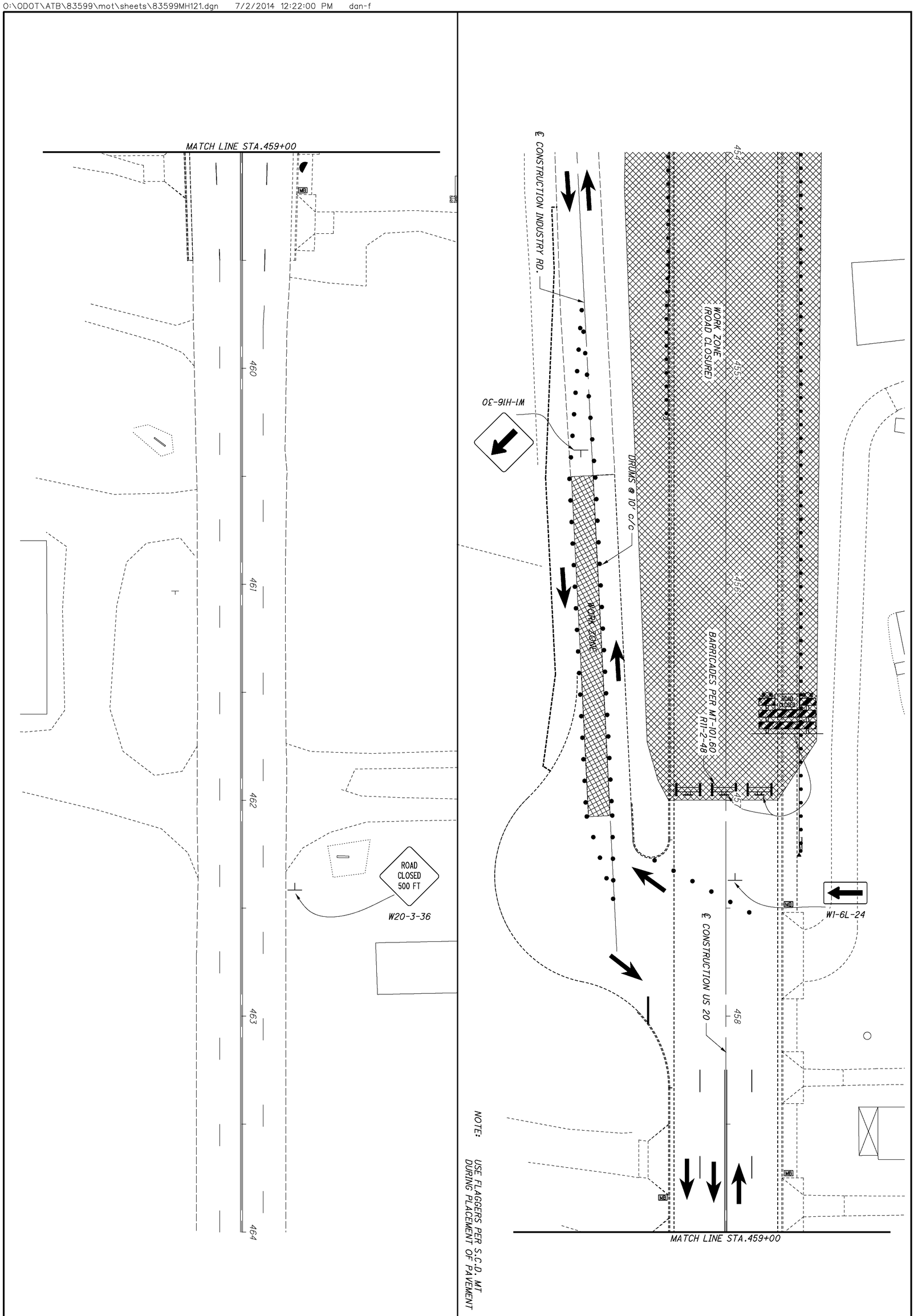

ATB-20-21.43

MAINTENANCE OF TRAFFIC
PHASE 3

CALCULATED DPF
CHECKED MAM

0 20 40
HORIZONTAL SCALE IN FEET

SHEET NUMBER						PARTICI-PATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
8	9	24	25	26	OFFICE CALC	01/BRO/BR						
											ROADWAY	
LS						LS	201	11000	LS		CLEARING AND GRUBBING	
		9520				9520	202	23000	9520	SY	PAVEMENT REMOVED	
		5226				5226	202	30000	5226	SF	WALK REMOVED	
		1092				1092	202	35100	1092	FT	PIPE REMOVED, 24" AND UNDER	
		2052				2052	202	38000	2052	FT	GUARDRAIL REMOVED	
		2				2	202	58000	2	EACH	MANHOLE REMOVED	
		16				16	202	58100	16	EACH	CATCH BASIN REMOVED	
200						200	SPECIAL	20270100	200	FT	PIPE CLEANOUT	8
		LS				LS	202	98000	LS		REMOVAL, MISC.: BIN WALL	9
				9173		9173	203	10000	9173	CY	EXCAVATION	
				17185		17185	203	20000	17185	CY	EMBANKMENT	
				1027	13637	14664	204	10000	14664	SY	SUBGRADE COMPACTION	
150						150	204	13000	150	CY	EXCAVATION OF SUBGRADE	
150						150	204	30010	150	CY	GRANULAR MATERIAL, TYPE B	
		2075				2075	606	15050	2075	FT	GUARDRAIL, TYPE MGS	
		2				2	606	26150	2	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
		2				2	606	26550	2	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
		4				4	606	35002	4	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
		9540				9540	608	12000	9540	SF	5" CONCRETE WALK	
		122				122	608	52000	122	SF	CURB RAMP	
		8				8	SPECIAL	69050100	8	EACH	MAILBOX SUPPORT SYSTEM, SINGLE	
					452	452	SPECIAL	69098700	452	CY	MISC.: RAILROAD BALLAST	
											EROSION CONTROL	
				1024		1024	601	20000	1024	SY	CRUSHED AGGREGATE SLOPE PROTECTION	
		1141				1141	601	37501	1141	FT	PAVED GUTTER, TYPE 1-2, AS PER PLAN	9
				2		2	659	00100	2	EACH	SOIL ANALYSIS TEST	
				1785		1785	659	00300	1785	CY	TOPSOIL	
				16082		16082	659	10000	16082	SY	SEEDING AND MULCHING	
				804		804	659	14000	804	SY	REPAIR SEEDING AND MULCHING	
				804		804	659	15000	804	SY	INTER-SEEDING	
				2.17		2.17	659	20000	2.17	TON	COMMERCIAL FERTILIZER	
				3.32		3.32	659	31000	3.32	ACRE	LIME	
				87		87	659	35000	87	MGAL	WATER	
LS						LS	832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
46000						46000	832	30000	46000	EACH	EROSION CONTROL	
											DRAINAGE	
			150			150	605	13410	150	FT	6" UNCLASSIFIED PIPE UNDERDRAINS WITH FABRIC WRAP, 707.31	
			2515			2515	605	14020	2515	FT	6" BASE PIPE UNDERDRAINS WITH FABRIC WRAP, 707.31	
50						50	611	00200	50	FT	4" CONDUIT, TYPE C	
			90			90	611	00510	90	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS	
	100					100	611	00900	100	FT	6" CONDUIT, TYPE B	
	100					100	611	01100	100	FT	6" CONDUIT, TYPE C	
	100					100	611	01400	100	FT	6" CONDUIT, TYPE E	
	100					100	611	01500	100	FT	6" CONDUIT, TYPE F	
			117			117	611	03100	117	FT	10" CONDUIT, TYPE B, 706.08	
			404			404	611	04400	404	FT	12" CONDUIT, TYPE B	
			1026			1026	611	04401	1026	FT	12" CONDUIT, TYPE B, 706.02, AS PER PLAN WITH JOINTS PER 706.11	9
			251			251	611	04600	251	FT	12" CONDUIT, TYPE C	
			30			30	611	04900	30	FT	12" CONDUIT, TYPE D	
			330			330	611	05900	330	FT	15" CONDUIT, TYPE B	
			412			412	611	06100	412	FT	15" CONDUIT, TYPE C	
			13			13	611	98180	13	EACH	CATCH BASIN, NO. 3A	
			1			1	611	98370	1	EACH	CATCH BASIN, NO. 6	
			1			1	611	98450	1	EACH	CATCH BASIN, NO. 2-2A	
			8			8	611	98470	8	EACH	CATCH BASIN, NO. 2-2B	
			4			4	611	99574	4	EACH	MANHOLE, NO. 3	
			1			1	611	99582	1	EACH	MANHOLE, NO. 3 WITH 90" BASE I.D. AND 8" WEIR	
2						2	611	99720	2	EACH	INSPECTION WELL	
			1			1	895	10020	1	EACH	MANUFACTURED WATER QUALITY STRUCTURE, TYPE 2	

CALCULATED CML
CHECKED DPF

GENERAL SUMMARY

ATB-20-21.43

21
189

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

SHEET NUMBER						PARTICI-PATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
24	25	26	105	111	OFFICE CALC	01/BRO/BR						
											PAVEMENT	
					496	496	254	01000	496	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
		12			1577	1589	302	46000	1589	CY	ASPHALT CONCRETE BASE, PG64-22	
		148				148	304	20000	148	CY	AGGREGATE BASE	
					2422	2422	304	20001	2422	CY	AGGREGATE BASE, AS PER PLAN	9
					38	38	SPECIAL	40720500	38	GAL	TACK COAT, TRACKLESS TACK	10
					757	757	SPECIAL	40720510	757	GAL	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE	10
					3781	3781	408	10000	3781	GAL	PRIME COAT	
					22	22	411	10001	22	CY	STABILIZED CRUSHED AGGREGATE, AS PER PLAN	7A
					346	346	441	50101	346	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448) AS PER PLAN	9
					460	460	441	50300	460	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	
		4				4	441	50400	4	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS)	
					2632	2632	452	12011	2632	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1, AS PER PLAN	7A
		283				283	452	12050	283	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC MS	
3266						3266	609	12000	3266	FT	COMBINATION CURB AND GUTTER, TYPE 2	
137						137	609	14000	137	FT	CURB, TYPE 2-A	
102						102	609	26000	102	FT	CURB, TYPE 6	
4						4	609	28001	4	FT	CURB, TYPE 7, AS PER PLAN	9
											WATER WORK	
			1472			1472	202	35700	1472	FT	ASBESTOS PIPE REMOVED	
			1563			1563	638	01101	1563	FT	6" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS, AWWA CLASS 150, AS PER PLAN	105
			125			125	638	04900	125	FT	1" COPPER SERVICE BRANCH	
			80			80	638	04901	80	FT	1" COPPER SERVICE BRANCH, AS PER PLAN	105
			3			3	638	07801	3	EACH	6" GATE VALVE AND VALVE BOX, AS PER PLAN	105
			2			2	638	10201	2	EACH	6" FIRE HYDRANT, AS PER PLAN	105
			1			1	638	10480	1	EACH	FIRE HYDRANT REMOVED	
			5			5	638	10800	5	EACH	VALVE BOX ADJUSTED TO GRADE	
											SANITARY SEWER	
	3					3	611	99654	3	EACH	MANHOLE ADJUSTED TO GRADE, SANITARY	
											TRAFFIC CONTROL	
				150		150	630	02100	150	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
				44		44	630	03100	44	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
				118		118	630	04100	118	FT	GROUND MOUNTED SUPPORT, NO. 4 POST	
				2		2	630	08600	2	EACH	SIGN POST REFLECTOR	
				67		67	630	80100	67	SF	SIGN, FLAT SHEET	
				6		6	630	84900	6	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
				13		13	630	85100	13	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
				18		18	630	86002	18	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
				0.70		0.70	644	00200	0.70	MILE	LANE LINE, 4"	
				0.41		0.41	644	00300	0.41	MILE	CENTER LINE	
				68		68	644	00500	68	FT	STOP LINE	
				0.19		0.19	646	10000	0.19	MILE	EDGE LINE, 4"	
				0.15		0.15	646	10100	0.15	MILE	LANE LINE, 4"	
				0.08		0.08	646	10200	0.08	MILE	CENTER LINE	

CALCULATED CML CHECKED DPF

GENERAL SUMMARY

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR * SUITE 300
AKRON, OHIO 44320

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SHEET NUMBER						PARTICI-PATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
10	11	12	13	89	OFFICE CALC	01/BRO/BR						
											RETAINING WALLS	
				1809		1809	203	20001	1809	CY	EMBANKMENT, AS PER PLAN	88
				2584		2584	203	35110	2584	CY	GRANULAR MATERIAL, TYPE B	
				1181		1181	203	35120	1181	CY	GRANULAR MATERIAL, TYPE C	
				4		4	SPECIAL	20365000	4	EACH	SETTLEMENT PLATFORM	89
				LS		LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
				11968		11968	509	10000	11968	LB	EPOXY COATED REINFORCING STEEL	
				86		86	511	53012	86	CY	CLASS QC2 CONCRETE, MISC.: MOMENT SLAB	88
				15		15	511	53012	15	CY	CLASS QC2 CONCRETE, MISC.: PARAPET ON MOMENT SLAB	88
				3606		3606	512	10100	3606	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
				228		228	516	13600	228	SF	1" PREFORMED EXPANSION JOINT FILLER	
				134		134	517	75121	134	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN	88
				5		5	611	99710	5	EACH	PRECAST REINFORCED CONCRETE OUTLET	
				33156		33156	840	20000	33156	SF	MECHANICALLY STABILIZED EARTH WALL	
				11075		11075	840	21000	11075	CY	WALL EXCAVATION	
				3541		3541	840	22000	3541	SY	FOUNDATION PREPARATION	
				20306		20306	840	23000	20306	CY	SELECT GRANULAR BACKFILL	
				957		957	840	23050	957	CY	NATURAL SOIL	
				3592		3592	840	25010	3592	FT	6" DRAINAGE PIPE, PERFORATED	
				208		208	840	25020	208	FT	6" DRAINAGE PIPE, NON-PERFORATED	
				1885		1885	840	26000	1885	FT	CONCRETE COPING	
				5		5	840	27000	5	DAY	ON-SITE ASSISTANCE	
				LS		LS	840	28000	LS		SGB INSPECTION AND COMPACTION TESTING	
											BUILDING DEMOLITION	
LS						LS	202	56000	LS		BUILDING DEMOLISHED (PARCEL 17) 1 STORY FRAME GARAGE	10
											STRUCTURES (20' AND OVER)	
											FOR STRUCTURE ATB-20-2161 GENERAL SUMMARY	126
											MAINTENANCE OF TRAFFIC	
		100				100	301	46000	100	CY	ASPHALT CONCRETE BASE, PG64-22	
		100				100	304	20000	100	CY	AGGREGATE BASE	
		270				270	SPECIAL	40720500	270	GAL	TACK COAT, TRACKLESS TACK	
		600				600	441	50000	600	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
	50					50	614	11110	50	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
		200				200	614	11620	200	FT	LINEAR DELINEATION	
	LS					LS	614	12420	LS		DETOUR SIGNING	
	50						614	13000	50	CY	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
			21			21	614	13300	21	EACH	BARRIER REFLECTOR, TYPE B	
			21			21	614	13350	21	EACH	OBJECT MARKER, ONE WAY	
			0.48			0.48	614	21000	0.48	MILE	WORK ZONE CENTER LINE, CLASS I	
			0.91			0.91	614	22000	0.91	MILE	WORK ZONE EDGE LINE, CLASS I	
		LS				LS	615	10000	LS		ROADS FOR MAINTAINING TRAFFIC	
					1725	1725	615	20000	1725	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
	168					168	616	10000	168	MGAL	WATER	
		200				200	617	10100	200	CY	COMPACTED AGGREGATE	
			890			890	622	41000	890	FT	PORTABLE BARRIER, 32"	
						LS	SPECIAL	10810000	LS		CPM PROGRESS SCHEDULE	
						LS	614	11000	LS		MAINTAINING TRAFFIC	
						18	619	16010	18	MNTH	FIELD OFFICE, TYPE B	
						LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
						LS	624	10000	LS		MOBILIZATION	

CALCULATED CML CHECKED DPF

GENERAL SUMMARY

ATB-20-21.43

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

REMOVALS

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	202 WALK	202 GUARDRAIL	202 PAVEMENT (CONCRETE)	202 CATCH BASIN	202 MANHOLE	202 PIPE, 24" AND UNDER	202 MISC.; BIN WALL
		FROM	TO		SF	FT	SY	EACH	EACH	FT	LS
R1	31-33	437+00.0	439+50.0	RT				1		250	
R2	31-33	437+05.0	440+40.0 ±	LT				1		335	
R3	31-35	437+45.0	444+96.4	℄			4007				
R4	31-35	438+22.0	445+22.0	LT	2800						
R5	31-33	38+79.5	41+50.0	OVRPS			540				
R6	33	439+03.0	439+12.0	LT				1		15	
R7	33	441+07.0		RT					1		
R8	33-35	439+83.0	445+21.0	RT		538					
R9	33-35	439+83.0	445+21.0	LT		538					
R10	33	441+07.0	442+01.0	LT				1	1	28	
R11	33	442+01.0		RT				1			
R12	33	442+01.0		LT				1		16	
R13	35	47+20.0	48+09.0	OVRPS			157				
R14	35	13+50.0	16+05.0	INDSRY			552				
R15	37-39	452+02.0	456+90.6	RT		488					
R16	37-39	452+02.0	456+90.7	LT		488					
R17	37-39	452+02.8	457+58.9	LT	2002						
R18	37-39	452+27.4	459+00.0	℄			3625				
R19	39	454+64.7	456+39.1	LT							LS
R20	39	455+00.0		RT				1			
R21	39	455+00.0		LT				1			
R22	39	455+00.0	457+35.0	INDSRY				1		235	
R23	39	455+49.2	457+93.0	INDSRY			569				
R24	39	457+24.7	457+60.9	INDSRY				1		36	
R25	39	457+35.0	457+47.9	INDSRY				1		19	
R26	39	457+35.2	457+48.3	LT				1		20	
R27	39	457+48.0	458+58.0	RT				1		110	
R28	39	457+20.0	457+48.3	LT				1		28	
R29	39	457+52.2	457+90.8	LT			35				
R30	39	457+60.9		INDSRY				1			
R31	39	457+86.5	458+22.1	LT	139						
R32	39	458+21.2	458+33.4	LT			6				
R33	39	458+33.4	458+75.8	LT	170						
R34	39-41	458+75.8	459+01.3	LT			16				
R35	39-41	458+98.3	459+27.0	LT	115						
R36	41	459+22.9	459+41.8	LT			13				
R37	39	458+00.0		RT				1			
TOTALS CARRIED TO GENERAL SUMMARY					5226	2052	9520	16	2	1092	LS

CURBING / GUARDRAIL / MAILBOXES

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	606 GUARDRAIL, TYPE MGS	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	606 ANCHOR ASSEMBLY, MGS TYPE E	606 ANCHOR ASSEMBLY, MGS TYPE T	601 PAVED GUTTER TYPE 1-2, AS PER PLAN	609 COMBINATION CURB AND GUTTER, TYPE 2	609 CURB, TYPE 7, AS PER PLAN	609 CURB, TYPE 2-A	609 CURB, TYPE 6	SPL MAILBOX SUPPORT SYSTEM, SINGLE
		FROM	TO		FT	EACH	EACH	EACH	FT	FT	FT	FT	FT	EACH
C1	31-35	436+95.00	445+05.00	RT						810				
C2	31	437+03.00	438+40.84	LT						138				
C3	31	438+40.84	438+76.70	LT								34		
C4	33	439+30.07	439+37.81	LT								17		
C5	33	39+32.62	40+40.00	OVRPS							4		102	
C6	33-35	439+37.81	447+35.86	LT						798				
C7	37-39	449+90.62	457+18.34	RT						728				
C8	37-41	452+75.00	459+50.00	LT						675				
C9	39	457+02.70	457+18.34	INDSTY								42		
C10	39	457+97.96	458+33.18	INDSTY								44		
C11	39-41	458+33.18	459+50.00	RT						117				
EC1	33-35	40+40.00	47+96.64	OVRPS					757					
EC2	37	16+29.50	453+30.00	INDSTY					384					
GR1	33-35	439+55.60	445+05.60	RT	475	1	1							
GR2	33-35	440+31.44	447+93.94	LT	725	1		1						
GR3	37-39	449+90.00	455+27.50	RT	500	1		1						
GR4	37-39	452+74.40	457+24.40	LT	375	1	1							
MB1	31	437+98.00		LT										1
MB2	31	438+65.00		RT										1
MB3	33	39+70.00		OVRPS										1
MB4	37	15+90.00		INDSTY										1
MB5	39	457+50.00		LT										1
MB6	39	458+70.00		LT										1
MB7	39	458+85.00		RT										1
MB8	41	459+15.00		LT										1
TOTALS CARRIED TO GENERAL SUMMARY					2075	4	2	2	1141	3266	4	137	102	8

SIDEWALK

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	WIDTH	608 5" CONCRETE SIDEWALK	608 CURB RAMP
		FROM	TO			SF	SF
W1	31	437+01.43	438+00.80	LT	6.5	646	
W2	31	438+28.79	438+65.36	LT	6.5	117	68
W3	33-35	439+30.10	447+35.86	LT	6.5	5171	54
W4	37-39	452+75.00	457+52.00	LT	6.5	3101	
W5	39	457+92.00	458+16.50	LT	6.5	159	
W6	39	458+40.50	458+74.90	LT	6.5	224	
W7	41	459+00.90	459+19.64	LT	6.5	122	
SUBTOTALS						9540	122

CALCULATED CML CHECKED DPF

ESTIMATED QUANTITIES

ATB-20-21.43

Palmer ENGINEERING
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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

DRAINAGE

REF. NO.	SHEET NO.	STATION	SIDE	611													895
				10", TYPE B, 706.08	12", TYPE B	12", TYPE B, 706.02, AS PER PLAN, WITH JOINTS PER 706.11	12", TYPE C	12", TYPE D	15", TYPE B	15", TYPE C	CB-3A	CB-6	CB 2-2B	CB 2-2A	MH-3	MANHOLE, NO. 3 WITH 90° BASE I.D. AND 8" WEIR	MANUFACTURED WATER QUALITY STRUCTURE, TYPE 2
				FEET	FEET	FEET	FEET	FEET	FEET	FEET	EACH	EACH	EACH	EACH	EACH	EACH	EACH
D1	31	437+50.00	RT	50							1						
D2	31	437+50.00	LT	45							1						
D3	33	439+50.00	RT		200						1						
D4	33	439+50.00	LT						200		1						
D5	33	439+50.00	LT		50								1				
D6	33	39+85.00	OVRPS					30									
D7	33	440+30.00	LT		80										1		
D8	33	440+31.00	LT				14						1				
D9	33	441+00.00	LT				69						1				
D10	35	444+90.00	RT		51						1						
D11	35	444+90.00	LT			460					1						
D12	35	446+90.00	LT			200					1						
D13	37	450+35.00	RT			165					1						
D14	37	452+00.00	RT			150					1						
D15	37	452+00.00	LT			51						1					
D16	37	453+00.00	RT				50						1				
D17	37	453+23.33	RT				27							1			
D18	37	453+50.00	RT				9				1						
D19	37	453+50.00	RT							150					1		
D20	37	453+50.00	RT				18								1		
D21	39	455+00.00	RT							200			1				
D22	39	457+00.00	RT						130				1				
D23	39	457+00.00	RT				17				1						
D24	39	457+25.00	LT		23						1						
D25	39	457+35.00	LT				24						1				
D26	39	457+48.00	LT	4											1		
D27	39	458+10.00	RT				23						1				
D28	39	458+30.00	RT							12						1	
D29	39	458+40.00	RT	18							1						
WQ1	39	458+30.00	RT							50							1
TOTALS CARRIED TO GENERAL SUMMARY				117	404	1026	251	30	330	412	13	1	8	1	4	1	1

UNDERDRAINS

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	611	605	
					6", TYPE F, FOR UNDERDRAIN OUTLETS	6" BASE PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31	6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31
					FEET	FEET	FEET
UD1	31-33	437+50.00	439+45.00	RT	10	185	
UD2	31-33	437+50.00	439+45.00	LT	10	185	
UD3	33-35	439+50.00	444+85.00	RT	10	525	
UD4	33-35	439+50.00	444+85.00	LT	10	525	
UD5	35	444+90.00	446+85.00	LT	10	185	
UD6	37	450+40.00	452+00.00	RT	10		150
UD7	37	452+05.00	453+50.00	RT	10	135	
UD8	37-39	452+75.00	457+25.00	LT	10	440	
UD9	37-39	453+55.00	457+00.00	RT	10	335	
TOTALS CARRIED TO GENERAL SUMMARY					90	2515	150

SANITARY SEWER

REF. NO.	SHEET NO.	STATION	SIDE	611
				MANHOLE ADJUSTED TO GRADE, SANITARY
				EACH
S1	39	457+27.26	RT	1
S2	39	458+51.04	RT	1
S3	41	459+07.13	LT	1
TOTALS CARRIED TO GENERAL SUMMARY				3

CALCULATED CML CHECKED DPF

ESTIMATED QUANTITIES

ATB-20-21.43

Palmer ENGINEERING
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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

DRIVEWAY SUBSUMMARY

REFERENCE NO.	SHEET NO.	STATION	REFERENCE	SIDE	COMPOSITION	APRON AVG. WIDTH	APRON LENGTH	CADD GENERATED AREA - APRON	DRIVE AVG. WIDTH	DRIVE LENGTH	CADD GENERATED AREA - DRIVE	APRON	C1	R1		R2	204
												452	304	441	302	304	
												8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC MS	AGGREGATE BASE (10") [10*A/12*27]	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS) (1 1/4") [1.25*A/12*27]	ASPHALT CONCRETE BASE (3 1/2") [3.5*A /12*27]	AGGREGATE BASE (8") [8*A/12*27]	SUBGRADE COMPACTION
						FT.	FT.	SF	FT.	FT.	SF	SY	CY	CY	CY	CY	SY
DR1	31	438+14.80	US-20	LT	R2	28	10		12.0	20.0		31.1				5.9	58
DR2	31	438+88.50	US-20	RT	R1	20	10		10.2	52.6		22.2		2.1	5.8		82
DR3	33	39+85.00	OVERPASS	LT	R1	24	10		16.0	12.5		26.7		0.8	2.2		49
DR4	33	41+08.00	OVERPASS	LT	R2				60.5	7.0						10.5	47
DR5	35	47+75.00	OVERPASS	LT	C1				31.5	36.0			35.0				126
DR6	37	16+04.00	INDUSTRY	RT	R2	21.8	10					24.2					24
DR7	39	457+72.00	US-20	LT	R2	40	10				3533	44.4				87.2	437
DR8	39	458+28.50	US-20	LT	R1	24	10		7.7	18.3		26.7		0.5	1.5		42
DR9	39	458+71.60	US-20	RT	C1	25.2	10		17.2	4.3		28.0	2.3				36
DR10	39	458+87.90	US-20	LT	R1	26	10		9.7	18.8		28.9		0.7	2.0		49
DR11	41	459+07.50	US-20	RT	C1	20	10				151	22.2	4.7				39
DR12	41	459+32.70	US-20	LT	R2	26	10		10.00	8.6		28.9				2.1	38
					SUBTOTALS							283	42	4.1	12	106	1027

TOTALS CARRIED TO GENERAL SUMMARY

TOTAL	ITEM	UNIT	DESCRIPTION
1027	204	SY	SUBGRADE COMPACTION
12	302	CY	ASPHALT CONCRETE BASE, PG64-22
148	304	CY	AGGREGATE BASE
4	441	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS)
283	452	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC MS

MSE WALL SLOPE EROSION CONTROL

SIDE	STATION FROM	STATION TO	LENGTH	AVERAGE WIDTH	601 CRUSHED AGGREGATE SLOPE PROTECTION
			FT	FT	SY
LT	440+40.00	446+71.87	632	6.4	449
LT	446+71.87	447+46.15	74	11.5	95
LT	447+46.15	448+01.00	55	16.7	102
RT	449+44.00	449+97.38	53	16.7	99
RT	449+97.38	450+71.66	74	11.5	95
RT	450+71.66	453+30.00	258	6.4	184
TOTALS CARRIED TO GENERAL SUMMARY					1024

EARTHWORK & SEEDING

SHEET NO.	STATION FROM	STATION TO	203 EXCAVATION	203 EMBANKMENT	659 SEEDING AND MULCHING
			CY	CY	SY
	US20				
45	435+50.00	437+00.00	1	0	6
46	437+45.00	439+00.00	55	173	449
47	439+50.00	441+00.00	4	883	680
48	441+50.00	442+50.00	69	708	603
49	443+00.00	444+00.00	455	1282	830
50	444+50.00	445+50.00	797	2615	1101
51	446+00.00	446+50.00	10	2277	356
52	447+00.00	447+50.00	3	891	350
53	448+00.00	449+50.00	46	2	234
54	450+00.00	450+50.00	3	217	344
55	451+00.00	451+50.00	13	1714	320
56	452+00.00	452+50.00	445	1302	531
57	453+00.00	454+00.00	875	2566	1211
58	454+50.00	455+50.00	409	1570	836
59	456+00.00	457+50.00	229	784	1214
60	458+00.00	459+25.00	130	86	465
61	459+50.00	461+00.00	12	3	57
	NS RAILROAD				
62	6229+00.00	6230+00.00	232	3	390
63	6230+50.00	6231+00.00	684	3	570
64	6231+50.00	6232+00.00	677	0	605
65	6232+50.00	6233+00.00	700	0	786
66	6233+50.00	6234+00.00	974	0	708
67	6234+50.00	6235+00.00	871	0	650
68	6235+50.00	6236+00.00	442	11	633
69	6236+50.00	6237+50.00	41	0	51
	INDUSTRY RD.				
70	11+75.00	13+00.00	0	0	0
71	13+50.00	14+00.00	46	0	109
72	14+50.00	15+00.00	66	0	164
73	15+50.00	16+25.00	67	3	161
74	16+50.00	17+50.00	0	0	0
75	454+00.00	455+00.00	19	0	42
76	456+00.00	457+70.59	494	4	789
	OVERPASS DR.				
77	39+00.00	40+00.00	80	72	372
78	40+50.00	42+00.00	115	14	337
79	46+50.00	47+50.00	37	1	39
80	48+00.00	48+15.00	72	1	89
COLUMN TOTALS			9173	17185	16082

TOTALS CARRIED TO GENERAL SUMMARY

203 - EXCAVATION	9173	CY
203 - EMBANKMENT	17185	CY
659 - SEEDING AND MULCHING	16082	SY
659- REPAIR SEEDING AND MULCHING	804	SY
659- INTER-SEEDING	804	SY
659 - TOPSOIL	1785	CY
659 - SOIL ANALYSIS TEST	2	EACH
659 -COMMERCIAL FERTILIZER	2.17	TON
659 - LIME	3.32	ACRE
659 - WATER	87	MGAL

CALCULATED CML CHECKED DPF

ESTIMATED QUANTITIES

ATB-20-21.43

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POST CONSTRUCTION STORMWATER MANAGEMENT

BMP TYPE	STATION	LATITUDE	LONGITUDE
MANUFACTURED SYSTEM, TYPE 2	458+30 - RT.	41.925641	-80.622269

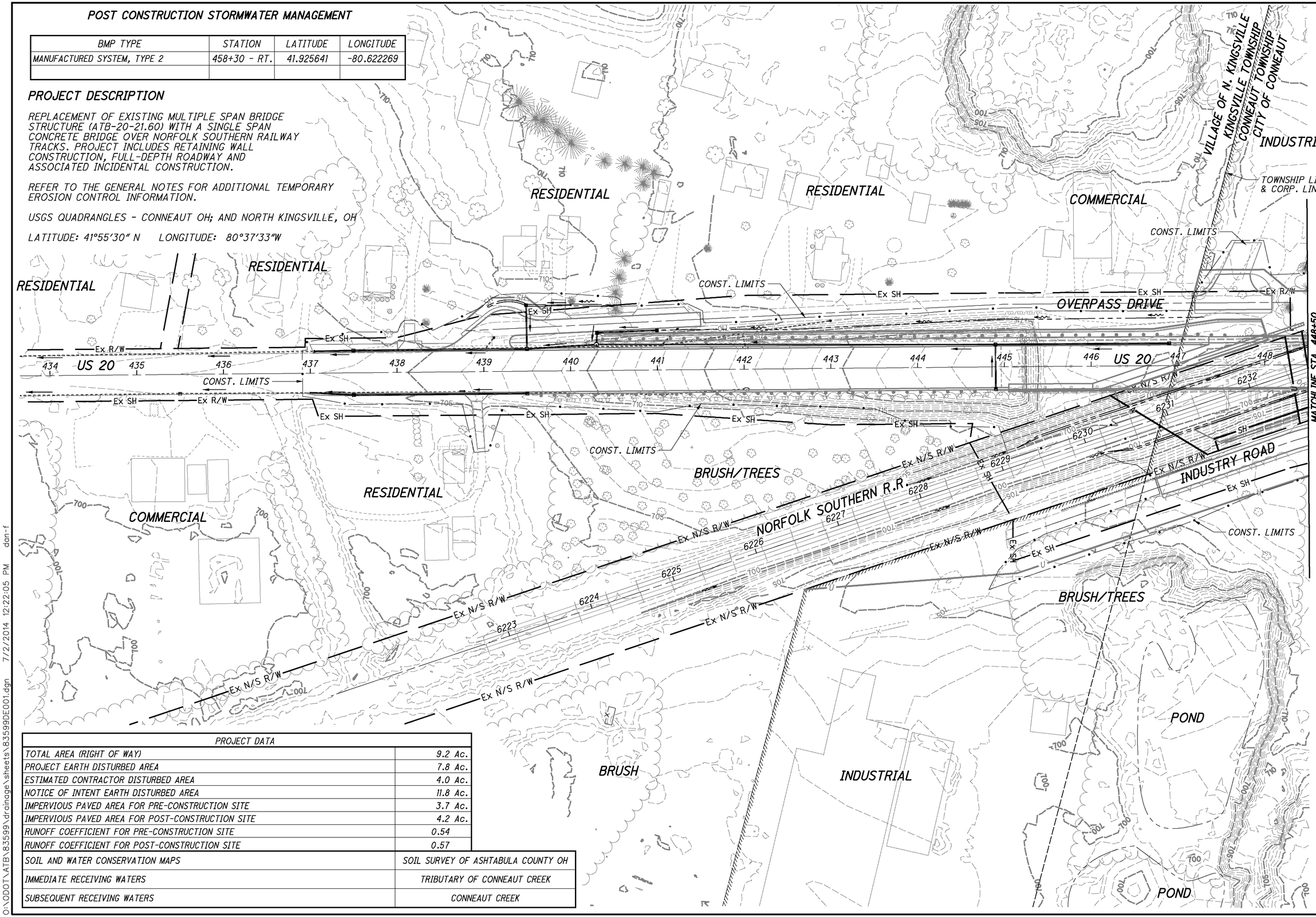
PROJECT DESCRIPTION

REPLACEMENT OF EXISTING MULTIPLE SPAN BRIDGE STRUCTURE (ATB-20-21.60) WITH A SINGLE SPAN CONCRETE BRIDGE OVER NORFOLK SOUTHERN RAILWAY TRACKS. PROJECT INCLUDES RETAINING WALL CONSTRUCTION, FULL-DEPTH ROADWAY AND ASSOCIATED INCIDENTAL CONSTRUCTION.

REFER TO THE GENERAL NOTES FOR ADDITIONAL TEMPORARY EROSION CONTROL INFORMATION.

USGS QUADRANGLES - CONNEAUT OH; AND NORTH KINGSVILLE, OH

LATITUDE: 41°55'30" N LONGITUDE: 80°37'33"W



PROJECT DATA	
TOTAL AREA (RIGHT OF WAY)	9.2 Ac.
PROJECT EARTH DISTURBED AREA	7.8 Ac.
ESTIMATED CONTRACTOR DISTURBED AREA	4.0 Ac.
NOTICE OF INTENT EARTH DISTURBED AREA	11.8 Ac.
IMPERVIOUS PAVED AREA FOR PRE-CONSTRUCTION SITE	3.7 Ac.
IMPERVIOUS PAVED AREA FOR POST-CONSTRUCTION SITE	4.2 Ac.
RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE	0.54
RUNOFF COEFFICIENT FOR POST-CONSTRUCTION SITE	0.57

SOIL AND WATER CONSERVATION MAPS	SOIL SURVEY OF ASHTABULA COUNTY OH
IMMEDIATE RECEIVING WATERS	TRIBUTARY OF CONNEAUT CREEK
SUBSEQUENT RECEIVING WATERS	CONNEAUT CREEK

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED DPF CHECKED BJF

PROJECT SITE PLAN
BEGIN PROJECT TO STA. 448+50

ATB-20-21.43

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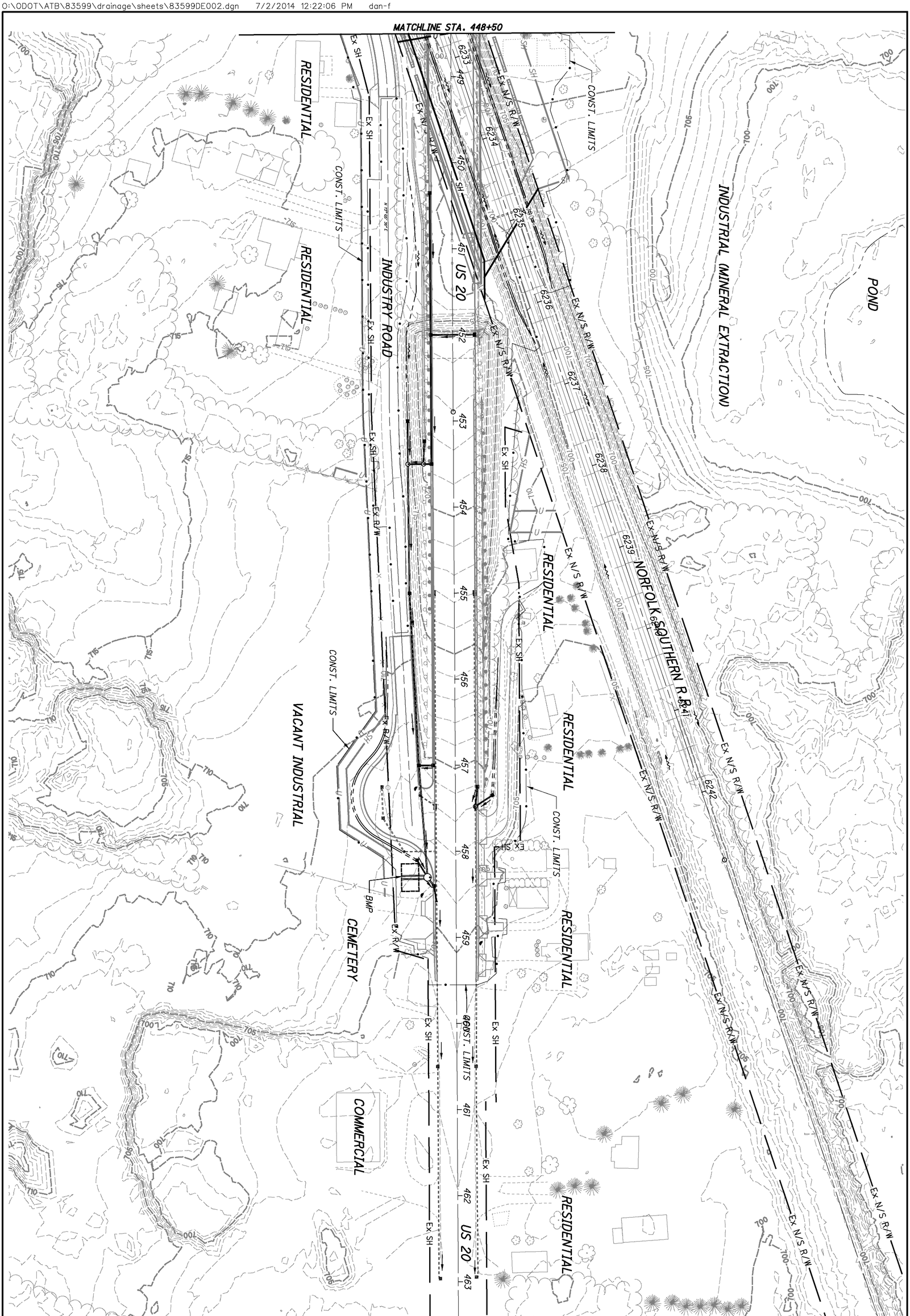

28 / 189	ATB-20-21.43	PROJECT SITE PLAN STA.448+50 TO END PROJECT	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET

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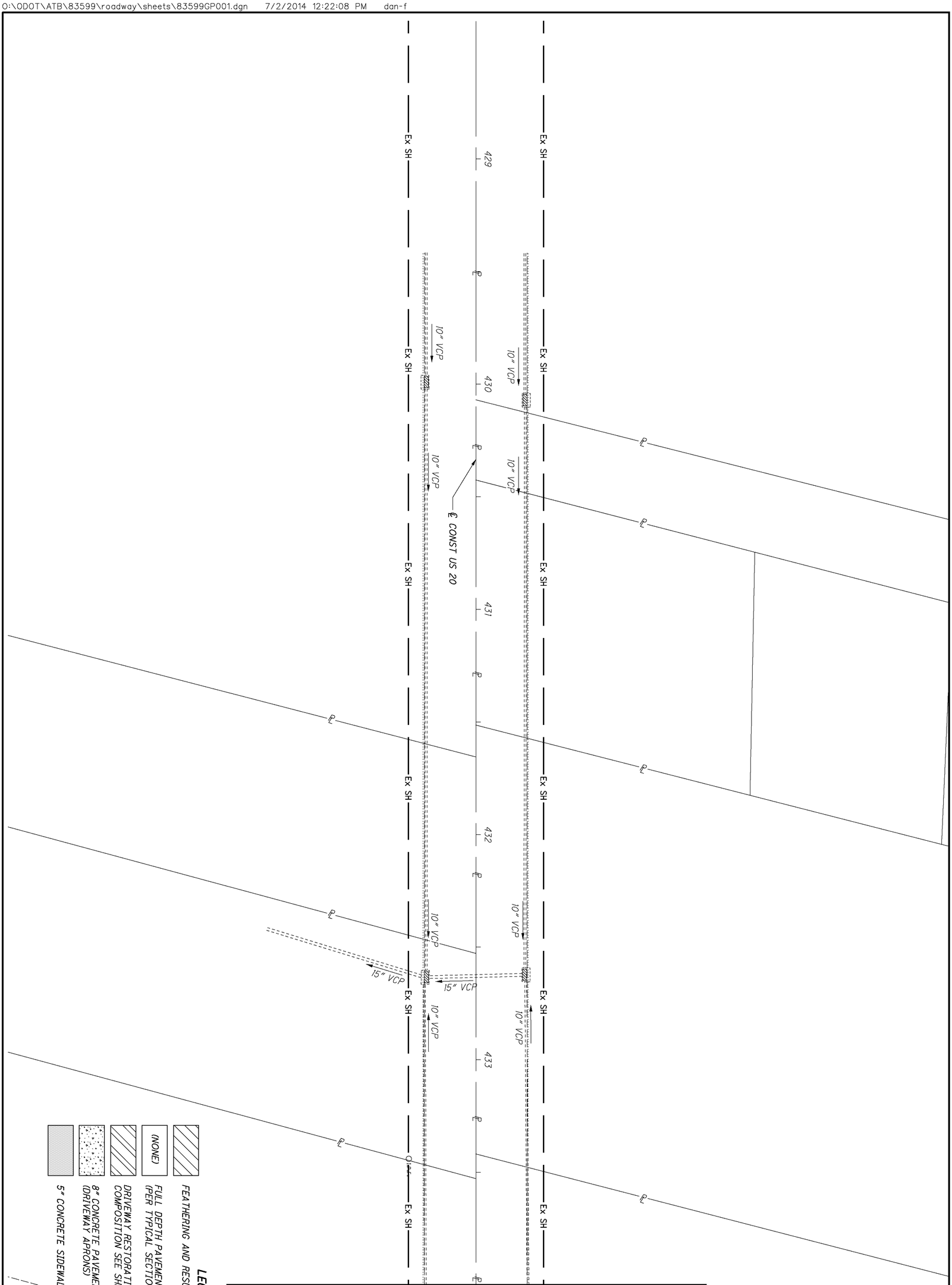

ATB-20-21.43

PLAN - US 20
STA 428+50.00 TO STA 434.00.00

CALCULATED DPF
CHECKED MAM

0 20 40
HORIZONTAL SCALE IN FEET

N

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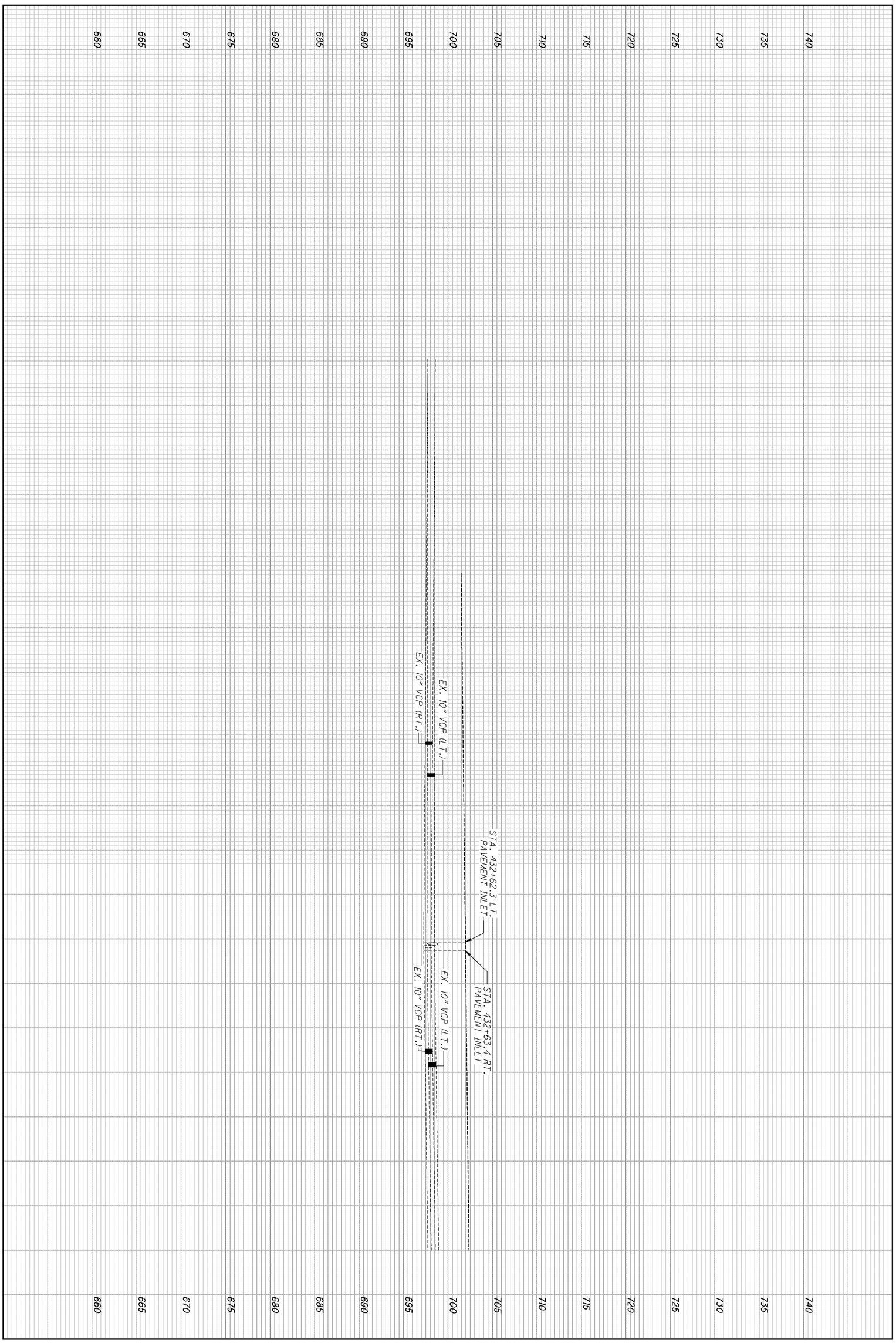

30
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ATB-20-21.43

PROFILE

STA 428+50.00 TO STA 434.00.00

CALCULATED DPF
CHECKED MAM

SHEET CROSS REFERENCES

SHEET	ITEM
29	LEGEND
32	PROFILE
24-26	ESTIMATED QUANTITIES
83	MISCELLANEOUS DETAILS
87	DRAINAGE DETAILS
85	DRIVE PROFILES
81	INTERSECTION DETAILS

BEGIN WORK
STA. 38+84.58
OVERPASS DR
Sta. 38+79.50 ℄ OVERPASS=
Sta. 438+80.00 - 47.20' LT ℄ US 20
MATCH LINE STA.434+00 (SEE SHEET 29)
MATCH LINE STA.439+00 (SEE SHEET 33)
N 72° 56' 52" E
℄ CONST. US 20
TRANSITION CURB & GUTTER TO MEET DRIVE
TRANSITION CURB & GUTTER TO EXIST CURB IN 10'-0"
10", B 706.08
12", B
15", B
EXIST 10" VCP (APPROX. LOC.) (REMOVE)
6" BASE PIPE U.D.
6" TRANSITE W.M.
CONST. LIMITS
CB-3A
BEGIN WORK
STA 436+90
(US 20)
BEGIN PROJECT
STA 437+45.00
(US 20)
S.L.M. 21.43
1½ STORY FRAME
32" MAPLE
20" MAPLE
18" MAPLE
RED MAPLE
3" MAPLE
24" MAPLE
8" SPRUCE
4" SPRUCE
12" MULBERRY
GRAVEL
ASPHALT
EXIST CB (PAVED OVER)
EXIST. WALK
CONC.
* REFER TO WATER WORK SHEET 105

HORIZONTAL SCALE IN FEET 0 20 40

CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 434+00.00 - STA. 439+00.00

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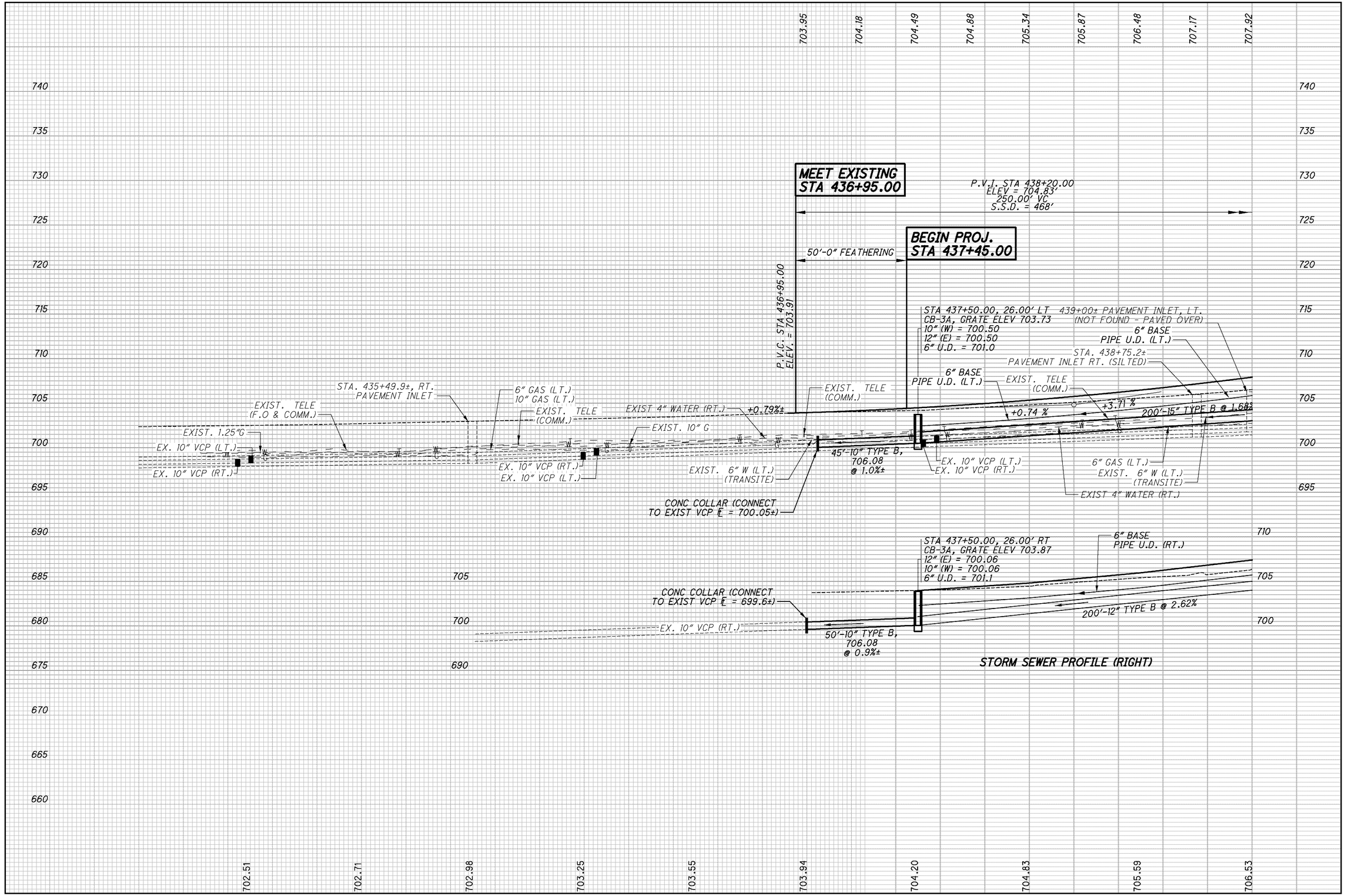

CALCULATED DPF
CHECKED MAM

PROFILE
STA. 434+00.00 - STA. 439+00.00

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SHEET CROSS REFERENCES	
SHEET	ITEM
29	LEGEND
34	PROFILE
24-26	ESTIMATED QUANTITIES
44	OVERPASS DRIVE PROFILE
83	MISCELLANEOUS DETAILS
87	DRAINAGE DETAILS
81	INTERSECTION DETAILS

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 439+00.00 TO STA. 444+00.00

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PROFILE
STA. 439+00.00 TO STA. 444+00.00

CALCULATED DPF | CHECKED MAM

707.92 708.76 709.66 710.59 711.52 712.44 713.37 714.30 715.23 716.16 717.09 718.01 718.94 719.87 720.80 721.73 722.65 723.58 724.51 725.44 726.37

760 755 750 745 740 735 730 725 720 715 710 705 700

STA 441+00.00, 45.75' LT
CB-2-2B, GRATE ELEV 707.90
12" (W) 706.20

STA 440+31.00, 43.55' LT
CB-2-2B, GRATE ELEV 708.30
12" (E/S) = 705.60

69'-12" TYPE C @ 0.87%

FOR PROFILE SEE SHEET 44

STORM SEWER PROFILE (LEFT)

P.V.I. STA 438+20.00
ELEV = 704.83'
250.00' VC
S.S.D. = 468'

STA 440+30.00, 30.00' LT
MH-3, RIM ELEV 712.65
12" (N) 705.45
12" (W) 705.45
12" (E) 705.45

6" BASE
PIPE U.D. (RT/LT.)

STA 439+50.00, 26.00' LT
CB-3A, GRATE ELEV 709.07
15" (W) = 703.85
12" (N) = 704.10
12" (E) = 704.10
6" U.D. = 706.3

P.V.I. STA 439+45.00
ELEV. = 709.47'

(REMOVE)
10" VCP., LT.
(APPROX.
LOCATION)

ROUND INLET
(NOT FOUND)

200'-15"
TYPE B
@1.68%

EX. 10" VCP (LT.)
(APPROX LOCATION)

80'-12" TYPE B @ 1.68%

EX. 10" VCP (RT.)
(APPROX LOCATION)

6" BASE
PIPE U.D. (LT.)

EXIST. 6" W (LT.)
(TRANSITE)

EXIST. TELE
(COMM.) LT.

REMOVE EXIST.
10" VCP (LT)

PLUG & ABANDON EXIST.
10" VCP (LT)

MH STA. 441+07.1±-28'± RT & LT
FILLED IN WITH SILT
(REMOVE)

MH LT. (NOT FOUND)

EXIST. 6" W (LT.)
(TRANSITE)

6" GAS (LT.)

10" VCP. LT
(REMOVE)

STA. 441+23.8±-47.9'± LT.
ROUND PAVED GUTTER INLET

STA 442+00± RT/LT
PAVEMENT INLETS
(NOT FOUND - PAVED OVER)

6" BASE
PIPE U.D. (RT/LT.)

+3.71 %

460'-12" TYPE B @ 4.25%, 706.02, AS PER PLAN, WITH JOINTS PER 706.11

(REMOVE)

10" VCP, LT
(PAVEMENT INLET
TO PIPE TEE)

(REMOVE)

10" VCP. LT
(ABANDON)

10" VCP., RT.
(APPROX LOCATION)

EXIST. 6" W (LT.)
(TRANSITE)

EXIST. TELE
(COMM.) LT.

6" GAS (LT.)

STA. 441+75±-LT.
ROUND PAVED GUTTER INLET
(NOT FOUND)

6" BASE
PIPE U.D. (RT.)

200'-12" TYPE B
@ 2.62%

STA 439+50.00, 26.00' RT
CB-3A, GRATE ELEV 709.07
12" (W) = 705.30
6" U.D. = 706.3

STORM SEWER PROFILE (RIGHT)

760 755 750 745 740 735 730 725 720 715 710 705 700 695 690 685 680

706.53 707.83 709.36 711.09 712.99 714.85 716.58 718.16 719.62 720.95 722.16

439+00 440+00 441+00 442+00 443+00 444+00

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SHEET CROSS REFERENCES	
SHEET	ITEM
29	LEGEND
36	PROFILE
24-26	ESTIMATED QUANTITIES
83	MISCELLANEOUS DETAILS
87	DRAINAGE DETAILS
81	INTERSECTION DETAILS

END WORK
STA. 48+09.00
OVERPASS DR

16" PINES
14" MAPLE
6" TRANSITE W.M.
APPLE
℄ OVERPASS DR.
PI Sta. 45+00.00
= STA 445+00.00
℄ US 20, 72.00' RT
CORP. LINE & TOWNSHIP LINE
N. KINGSVILLE CONNEAUT
GAS PRODUCER WELL (DND)
GRAVEL
METAL FENCE
CONST. LIMITS
EDGE OF SHOULDER
25' LOCUST
OLD HOUSE FOUNDATION (APPROX LIMITS)
N 70° 39' 25" E
N 73° 05' 36" E
CONCRETE
BLOW OFF VALVE
BM#2 CONCRETE
+52.5
+20
PAVED GUTTER, AS PER PLAN
MSE WALL #1
6" BASE PIPE U.D.
REMOVE EXIST. CONC. PAV'T
PROP SWALE
PAVED GUTTER AS PER PLAN
MGS B.T.A., TYPE 1 - STA.447+93.94
STA. 448+61.85 ℄ US 20
= STA 6232+83.00
℄ CONST. NS RAILROAD
12", B, 706.02, APP
12", B, 706.02, APP, JOINTS PER 706.11
PI Sta. 445+00.00
(NO CURVE)
Δ = 00°03'44" RT.
EXIST PIERS (TYP.) (TO BE REMOVED)
STA. 446+62.64
BEGIN APPROACH SLAB
WALL DRAINAGE OUTLET (SEE SHEET 92)
℄ CONST. US 20
N 72° 56' 52" E
MGS B.T.A., TYPE 1
STA. 445+05.60
CORP. LINE
STA. 446+96.91
STRUCTURE ATB-20-2160
(TO BE REMOVED)
BRIDGE ATB-20-2160
MATCH LINE STA.444+00 (SEE SHEET 33)
MATCH LINE STA.449+00 (SEE SHEET 37)
+05 BEGIN WALL #1
& MOMENT SLAB, RT.
20" LOCUST
WOVEN WIRE FENCE
24" LOCUST
18" LOCUST
CONCRETE ENCASED STEEL BEAM PIER CAPS (TO BE REMOVED) (TYP)
℄ FUTURE TRACK
℄ W.B. MAIN
℄ E.B. MAIN & ℄ R/W
℄ CONST. NORFOLK SOUTHERN RR
CONST. LIMITS
BEGIN WORK N/S R.R. STA. 6229+10
BEGIN WORK INDUSTRY RD. STA. 11+62.6
N 54° 56' 36" E
PC Sta. 15+05.28
℄ EXIST. INDUSTRY RD
PROP 6" WATER
1 STORY FRAME
24" CHERRY
16" CHERRY
18" CHERRY
20" LOCUST
14" LOCUST
16" LOCUST
32" MAPLE
EXIST. ℄ INDUSTRY DRIVE CURVE DATA
P.I.= Sta. 15+55.57
Δ = 18° 40' 00" (RT)
Dc = 18° 43' 27"
R = 306.00'
T = 50.29'
L = 99.69'
E = 4.11'
C = 99.25'
C.B. = N 63° 45' 36" E

NOTE: STATIONING SHOWN FOR ℄ CONST. NORFOLK SOUTHERN R.R.
(℄ R.R. R/W STATIONING REVERSED - SEE R/W PLANS)

N
HORIZONTAL SCALE IN FEET
0 20 40
CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 444+00.00 TO STA. 449+00.00
ATB-20-21.43
35
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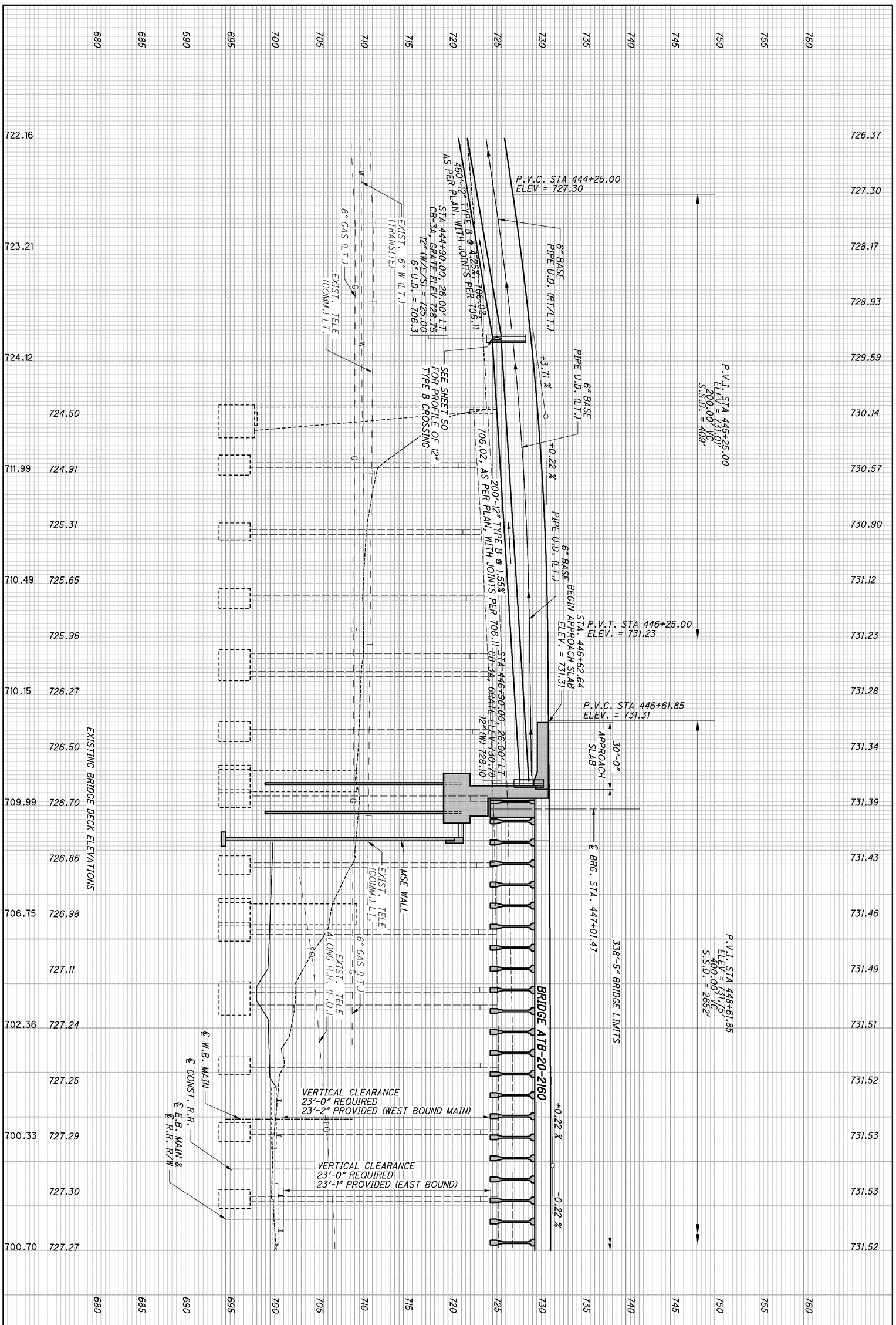

36 / 189	ATB-20-21.43	PROFILE STA. 444+00.00 TO STA. 449+00.00	CALCULATED DPF CHECKED MAM

NOTE: STATIONING SHOWN FOR ℄ CONST. NORFOLK SOUTHERN R.R.
(℄ R.R. R/W STATIONING REVERSED - SEE R/W PLANS)

END WORK N/S R.R. STA. 6236+50

14" MAPLE TMP
TMP 24" BOX ELDER
12" CHERRY
6" GAS
Ex N/S R/W
18" CHERRY
℄ FUTURE TRACK
24" CHERRY
℄ W.B. MAIN
6238
℄ CONST. NORFOLK SOUTHERN RR
℄ E.B. MAIN & ℄ R/W
6237
TMP 20" MAPLE
CONST. LIMITS
14" CHERRY
48" MAPLE
16" MAPLE
DEMOLITION DEBRIS PILE
(TAKE)
24" WILD CHERRY
36" WILD CHERRY
20" MAPLE
60" BOX ELDER
ABAND. COMM.
6236
6235
18" TMP
WALL DRAINAGE OUTLET (SEE SHEET 95)
CONCRETE ENCASED STEEL BEAM PIER CAPS (TO BE REMOVED)
6234
MSE WALL #2
PI Sta. 452+89.58
(NO CURVE)
Δ = 00°03'09" RT.
W4 GR4 R16 R17
6" BASE PIPE U.D.
MATCH LINE STA. 449+00 (SEE SHEET 35)
WALL DRAINAGE OUTLET (SEE SHEET 95)
℄ CONST. US 20
N 73° 05' 36" E
450
451
452
453
CB-6 D15
EXIST PIERS (TYP.) (TO BE REMOVED)
+75 END WALL #2, LT.
MGS B.T.A., TYPE 1 STA. 452+74.40
C8 UD8
R18
℄ CONST. US 20
N 73° 08' 45" E
BRIDGE ATB-20-2160
STA. 450+63.83 END APPROACH SLAB
6" UNCL. PIPE U.D.
STRUCTURE ATB-20-2160 (TO BE REMOVED)
UD6 C7 UD7
6" BASE PIPE U.D.
R15 UD9
MATCH LINE STA. 454+00 (SEE SHEET 39)
CB-3A
D13
MGS B.T.A., TYPE 1 STA. 449+90.00
D18
D14 CB-3A MSE WALL #2
GR3 CB-2-2A D17 +30 END WALL #2, RT.
D20 MH-3
6" BASE PIPE U.D.
PAVED GUTTER, AS PER PLAN EC2 PROP SWALE
CB-2-2B D16 12" PVC MH-3 D19
MB4 DR6
CONCRETE
CONST. LIMITS
SAN. F.M.
6" TRANSITE W.M.
℄ EXIST. INDUSTRY RD
N 73° 05' 36" E
N 70° 16' 36" E
WALL DRAINAGE OUTLET (SEE SHEET 95)
+90-M.B.
Ex SH
40" MAPLE
48" OAK
PROP 6" WATER
18" MAPLE
30" MAPLE
14" PINE
GARAGE
GRAVEL
14" MAPLE
22" CHERRY
14" CHERRY
PROP 6" WATER
CONST LIMITS
EQUATION: Sta. 18+81.71 Bk = Sta 452+02.35 AH
PI Sta. 453+00.00 = STA 453+00.00 US 20, 73.99' RT
1 STORY FRAME
1½ STORY FRAME
32" MAPLE

EXIST. ℄ INDUSTRY DRIVE
CURVE DATA
P.I.= Sta. 15+55.57
Δ = 18° 40' 00" (RT)
Dc = 18° 43' 27"
R = 306.00'
T = 50.29'
L = 99.69'
E = 4.11'
C = 99.25'
C.B. = N 63° 45' 36" E

SHEET CROSS REFERENCES	
SHEET	ITEM
29	LEGEND
38	PROFILE
24-26	ESTIMATED QUANTITIES
83	MISCELLANEOUS DETAILS
87	DRAINAGE DETAILS

* CONDUIT, 706.02 AS PER PLAN WITH JOINTS PER 706.11

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 449+00.00 TO STA. 454+00.00

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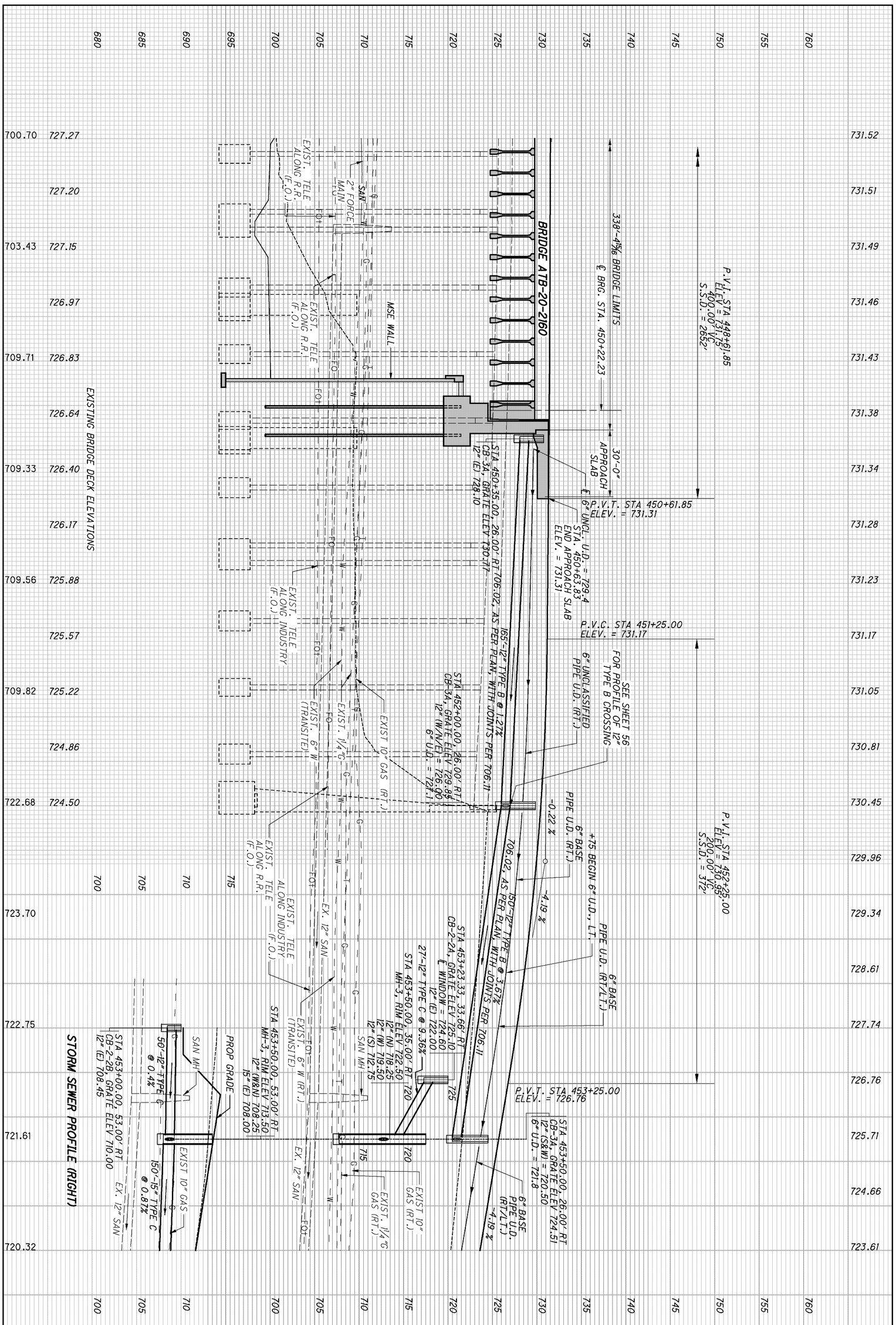
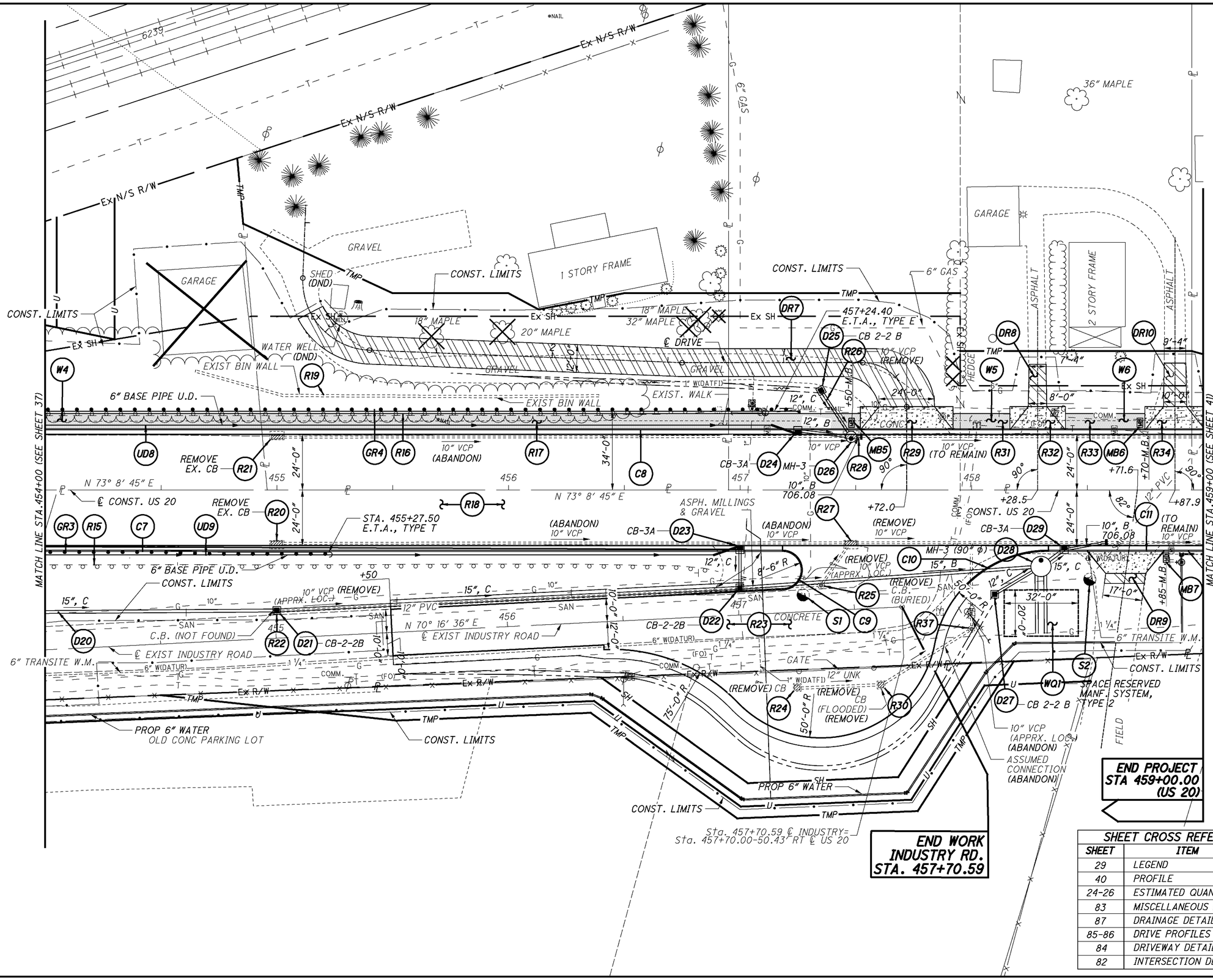


38 / 189	ATB-20-21.43	PROFILE STA. 449+00.00 TO STA. 454+00.00	CALCULATED DPF CHECKED MAM



SHEET CROSS REFERENCES	
SHEET	ITEM
29	LEGEND
40	PROFILE
24-26	ESTIMATED QUANTITIES
83	MISCELLANEOUS DETAILS
87	DRAINAGE DETAILS
85-86	DRIVE PROFILES
84	DRIVEWAY DETAILS
82	INTERSECTION DETAILS

N

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 454+00.00 TO STA. 459+00.00

ATB-20-21.43

39
189

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ENGINEERING AKRON, OHIO 44320

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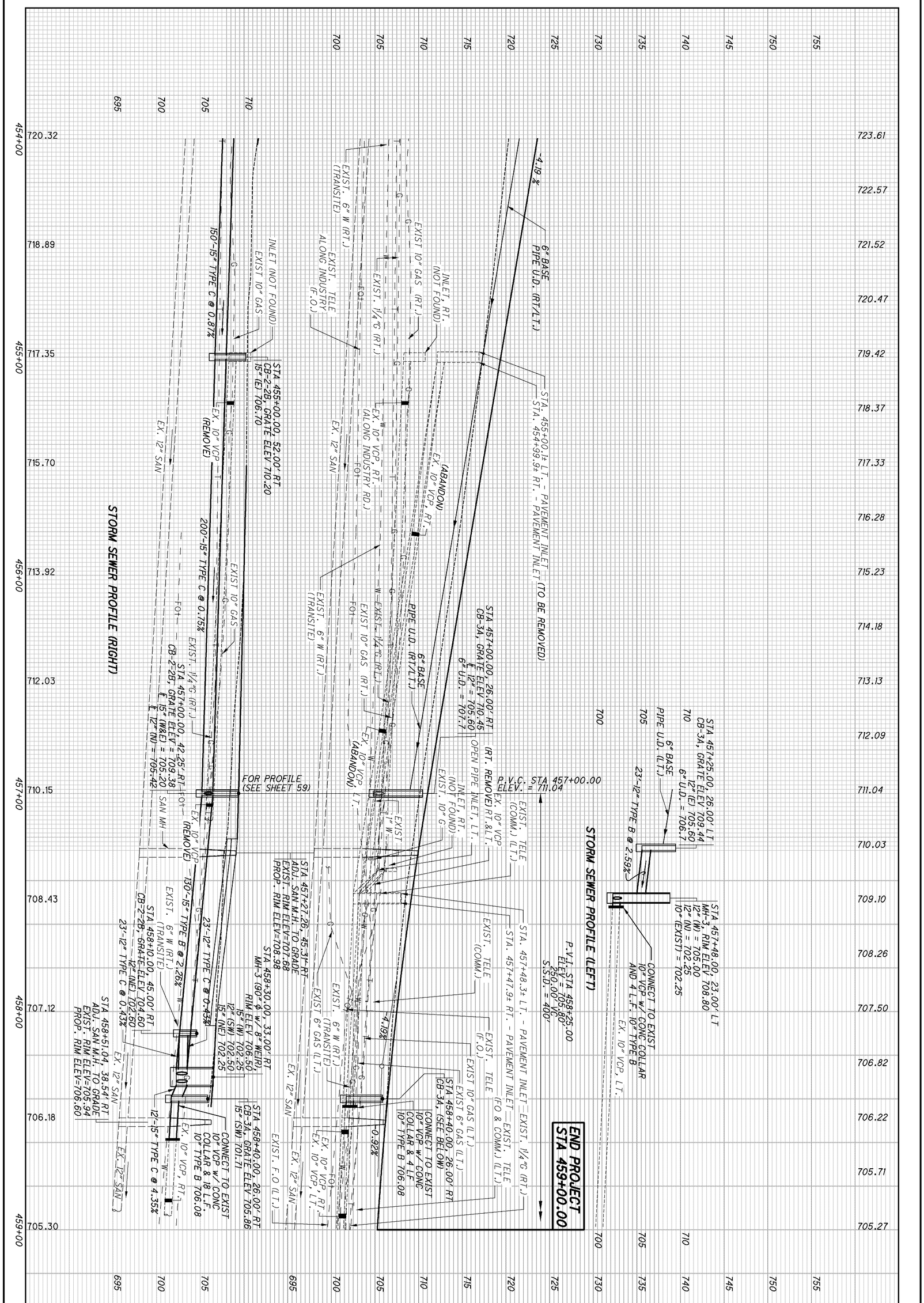
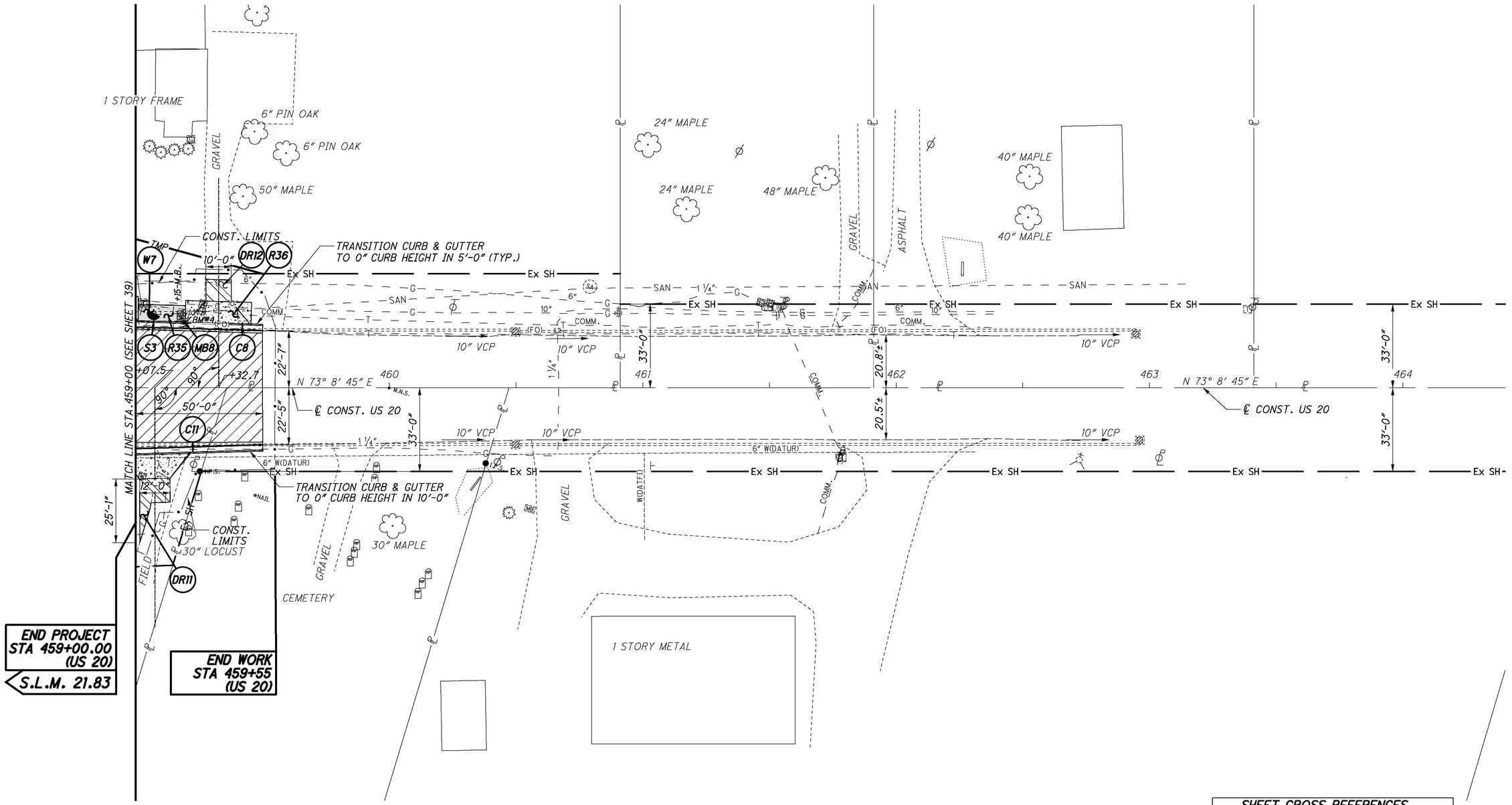


40 / 189	ATB-20-21.43	PROFILE STA. 454+00.00 TO STA. 459+00.00	CALCULATED DPF CHECKED MAM



SHEET CROSS REFERENCES	
SHEET	ITEM
29	LEGEND
42	PROFILE
24-26	ESTIMATED QUANTITIES
83	MISCELLANEOUS DETAILS
86	DRIVE PROFILES

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED MAM

PLAN - US 20
STA. 459+00.00 TO STA. 464+00.00

ATB-20-21.43

41
189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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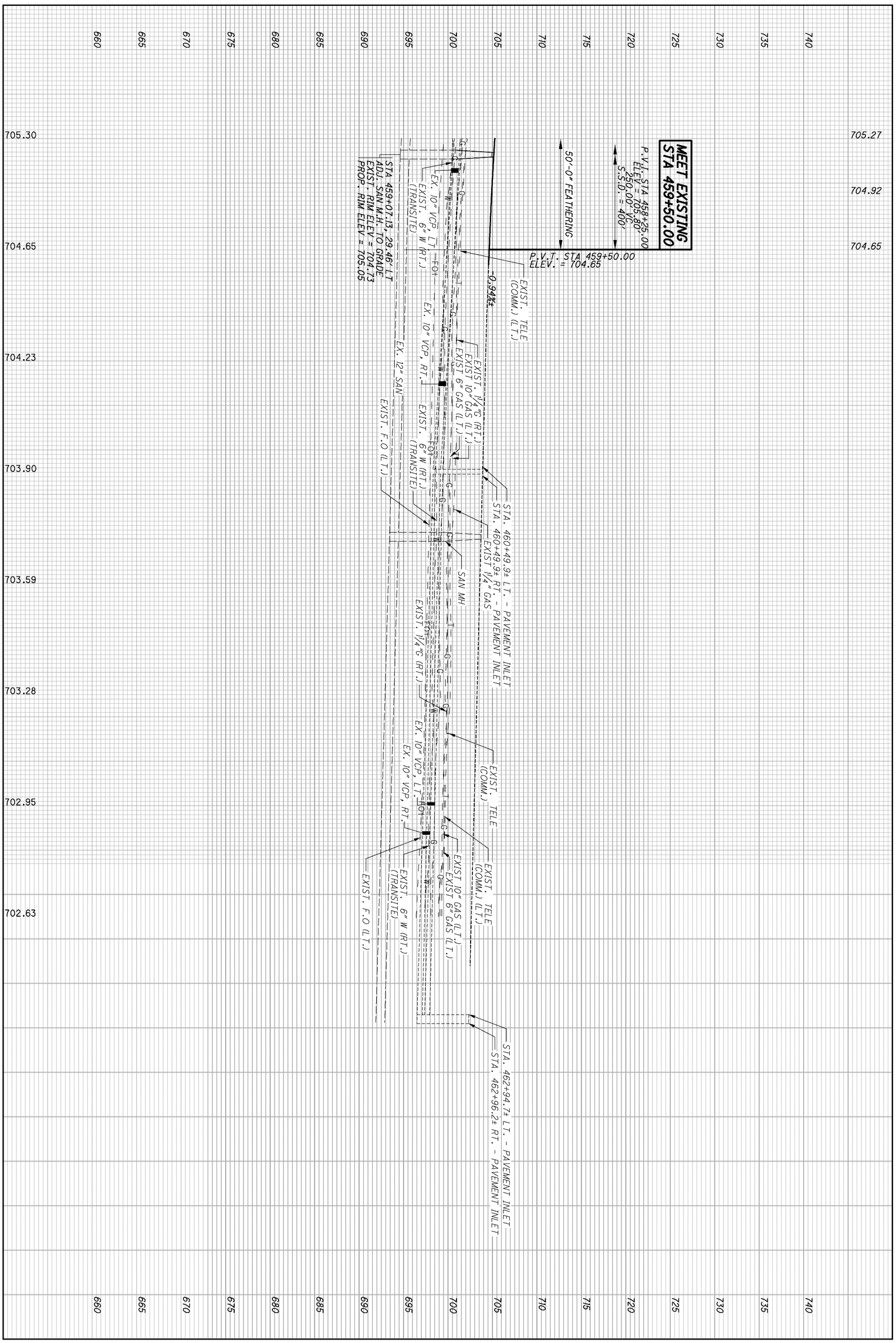
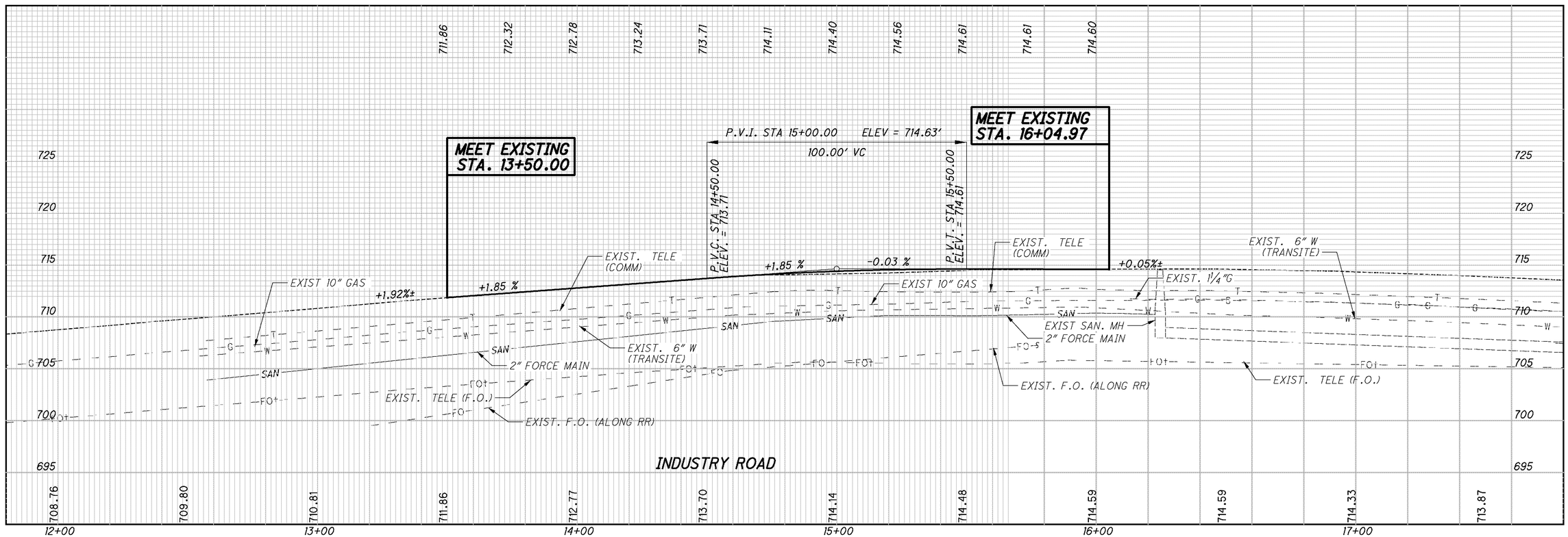
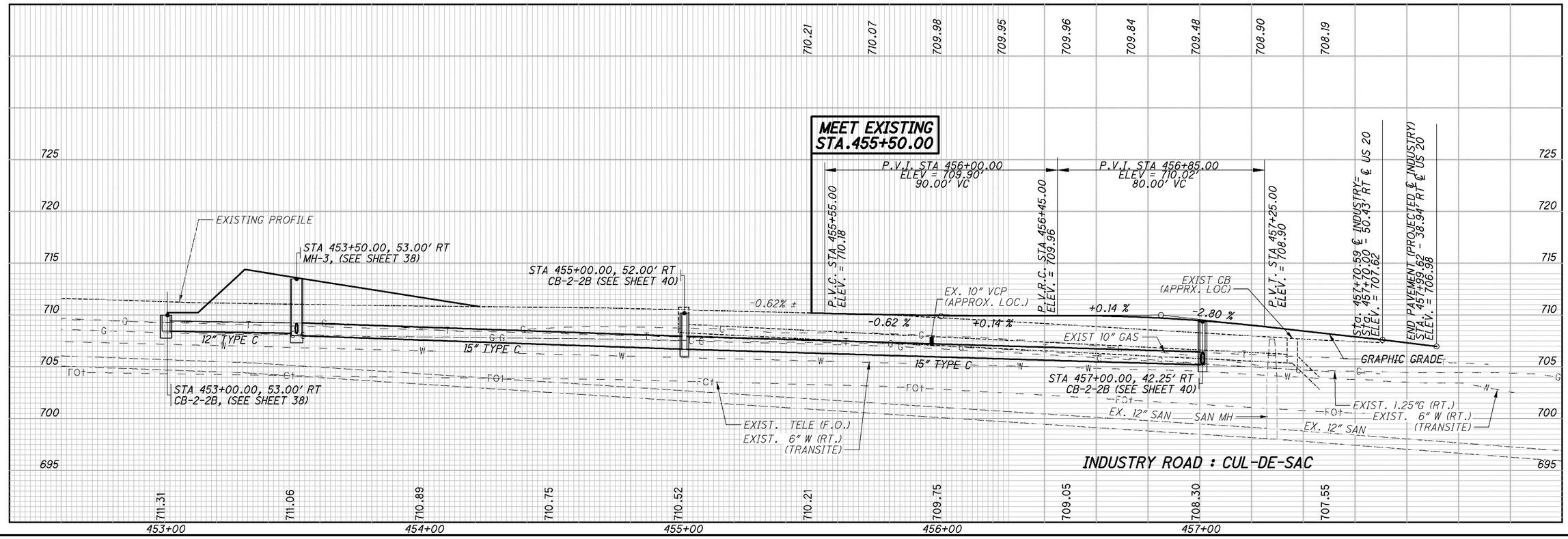


ATB-20-21.43

PROFILE
STA. 459+00.00 TO STA. 464+00.00

CALCULATED DPF
CHECKED MAM





CALCULATED DPF
CHECKED MAM

PROFILE
INDUSTRY ROAD

ATB-20-21.43

43
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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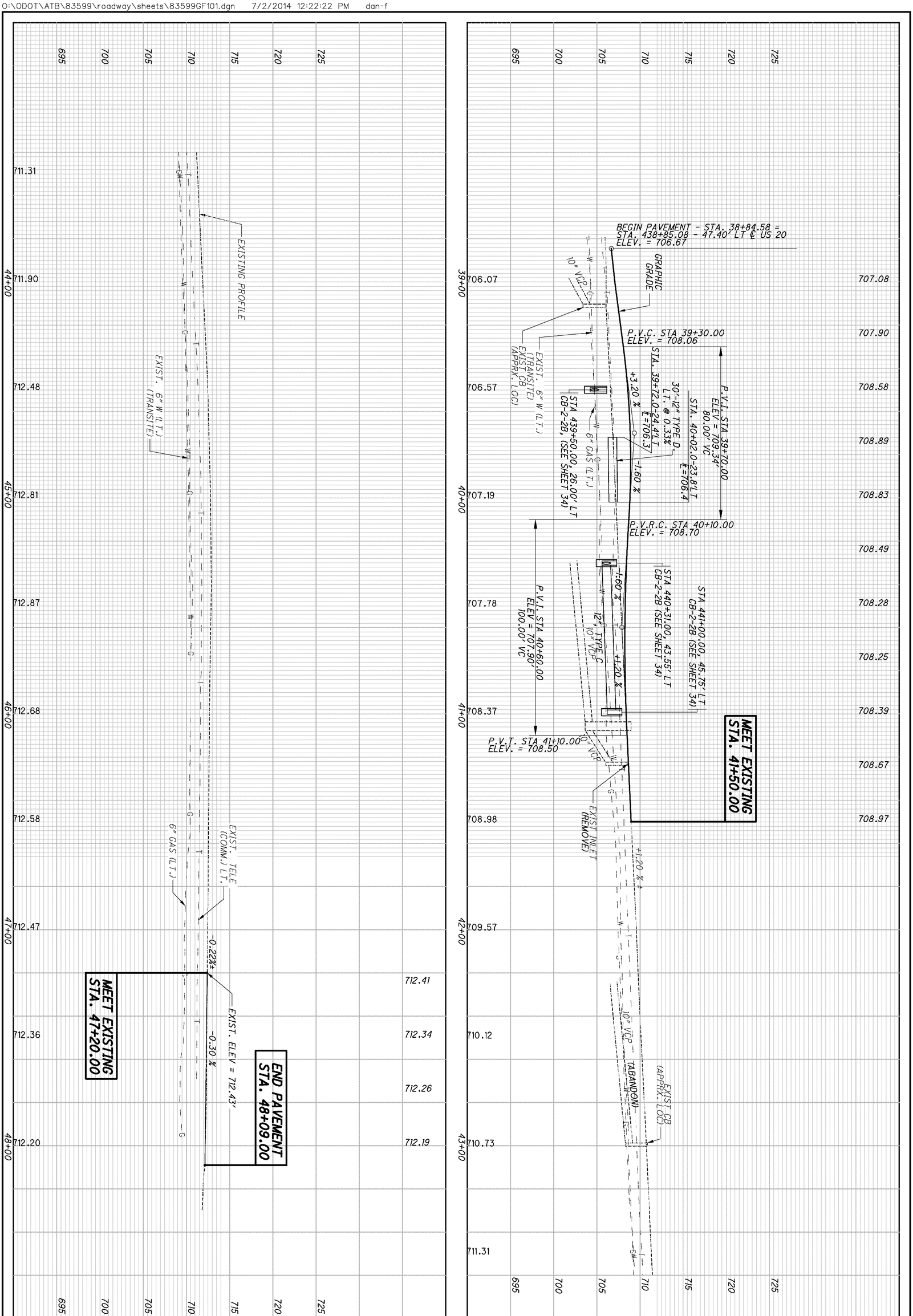


ATB-20-21.43

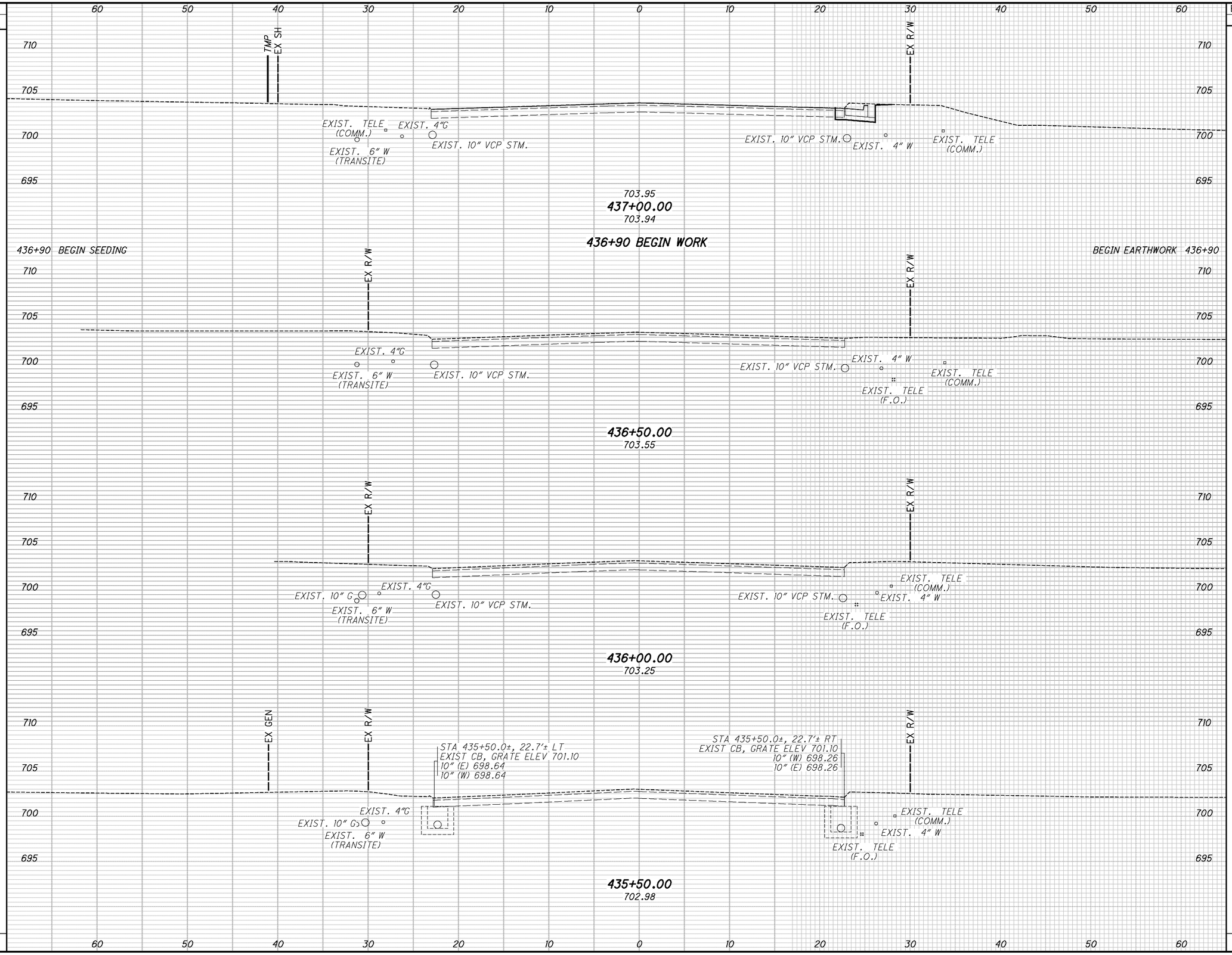
PROFILE
OVERPASS DRIVE

CALCULATED DPF
CHECKED MAM

SEEDING END WIDTH	SEEDING SQ. YDS.
11	6
0	

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
8	0		
0	0	1	0

CALCULATED DPF
CHECKED MAM



CROSS SECTIONS US20
STA. 435+50.00 TO STA. 437+00.00

ATB-20-21.43

45
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
	103
	117
	141
	88
	449

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
1	57	6	90
5	40	12	56
8	21	20	24
12	3	17	3
		55	173

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 437+45.00 TO STA. 439+00.00

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189

SEE OVERPASS DRIVE XS

(REMOVE
STA 439+00.0±, 24.0'± LT
EXIST CB, GRATE ELEV 706.27
10" (E) 701.79
10" (W) 701.79
10" (N) 701.79

STA 439+12±, 39.0'± LT
EXIST CB, GRATE ELEV 706.00
10" (S) 703.40
(REMOVE)

(REMOVE)
STA 438+75.2±, 24.2'± RT
EXIST CB, GRATE ELEV 705.75
10" (W) 701.20
10" (E) 701.20

EXIST. TELE (COMM.)
EXIST. 6" W (TRANSITE)
EXIST. 6" G
EXIST. 10" VCP STM. (REMOVE)
15" TYPE B
12" TYPE B
4:1
EX SH

707.92
439+00.00
706.53

38+84.58 BEGIN WORK OVERPASS DR.

TMP
EX SH
6:1
4:1
15" TYPE B
12" TYPE B
EXIST. 6" G
EXIST. 6" W (TRANSITE)
EXIST. TELE (COMM.)
EXIST. 10" VCP STM. (REMOVE)
EXIST. 4" W

706.48
438+50.00
705.59

TMP
EX SH
VARIES
6:1
15" TYPE B
12" TYPE B
EXIST. 6" G
EXIST. TELE (COMM.)
EXIST. 6" W (TRANSITE)
EXIST. 10" VCP STM. (REMOVE)
EXIST. 4" W

705.34
438+00.00
704.83

TMP
EX SH
VARIES
6:1
STA 437+50.00, 26.00' LT
CB-3A (SEE SHEET 32)
STA 437+50.00, 26.00' RT
CB-3A (SEE SHEET 32)
EXIST. TELE (COMM.)
EXIST. 6" W (TRANSITE)
EXIST. 10" VCP STM.
EXIST. 6" G
EXIST. 4" W

704.43
437+45.00 - BEGIN PROJECT
704.17

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
40	211
36	186
31	161
27	122
	680

60 50 40 30 20 10 0 10 20 30 40 50 60

STA 441+00.00, 45.75' LT
CB-2-2B (SEE SHEET 34)
712.71
STA 441+23.8±, 47.9'± LT
EXIST CB, GRATE ELEV 708.60
10" (SW) 706.00
2:1
12:1 12:1
708.1
EXIST. TELE (COMM.)
705
EXIST. 6" G
E/P OVERPASS DR.
EXIST. 10" VCP STM.
(REMOVE)
12" TYPE B
(REMOVE)
EXIST. BURIED MANHOLE
10" (NE) 703.65
10" (W) 703.65
10" (NE) 703.65
715.23
441+00.00
712.99
2½:1
EX SH
(REMOVE)
STA 441+07.1±, 28.3'± RT
EXIST MH,
10" (W) 703.65
10" (E) 703.65

STA 440+30.00, 30.00' LT
MH-3 (SEE SHEET 34)
BEGIN MSE WALL
STA 440+40 LT
710.86
2:1
SEE OVERPASS DRIVE XS
12:1 12:1
E/P OVERPASS DR.
705
EXIST. 6" G
EXIST. 6" W
(TRANSITE)
STA 440+31.00, 43.55' LT
CB-2-2B (SEE SHEET 34)
14'-12" TYPE C @ 1.1%
EXIST. 10" VCP STM.
(ABANDON)
713.37
440+50.00
711.09
3:1
EX SH
(ABANDON)
EXIST. 10" VCP STM.

E/P OVERPASS DR.
SEE OVERPASS DRIVE XS
4:1
705
EXIST. 6" G
EXIST. 6" W
(TRANSITE)
12" TYPE B
EXIST. 10" VCP STM.
(REMOVE)
711.52
440+00.00
709.36
3:1
EX SH
EXIST. 10" VCP STM.
(ABANDON)

EX SH
SEE OVERPASS DRIVE XS
E/P OVERPASS DR.
STA 439+50.00, 26.00' LT
CB-3A (SEE SHEET 34)
EXIST. TELE
(COMM.)
705
EXIST. 6" G
50'-12" TYPE B @ 0.26%
EXIST. 6" W
(TRANSITE)
EXIST. 10" VCP STM.
(REMOVE)
709.66
439+50.00
707.83
STA 439+50.00, 26.00' RT
CB-3A (SEE SHEET 34)
3:1
EX SH
EXIST. 10" VCP STM.
(ABANDON)

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3	126		
		3	235
0	128		
		0	254
0	146		
		0	238
0	111		
		1	156
		4	883

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 439+50.00 TO STA. 441+00.00

ATB-20-21.43

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
	603
	203
	33
	189
	35
	211
	41

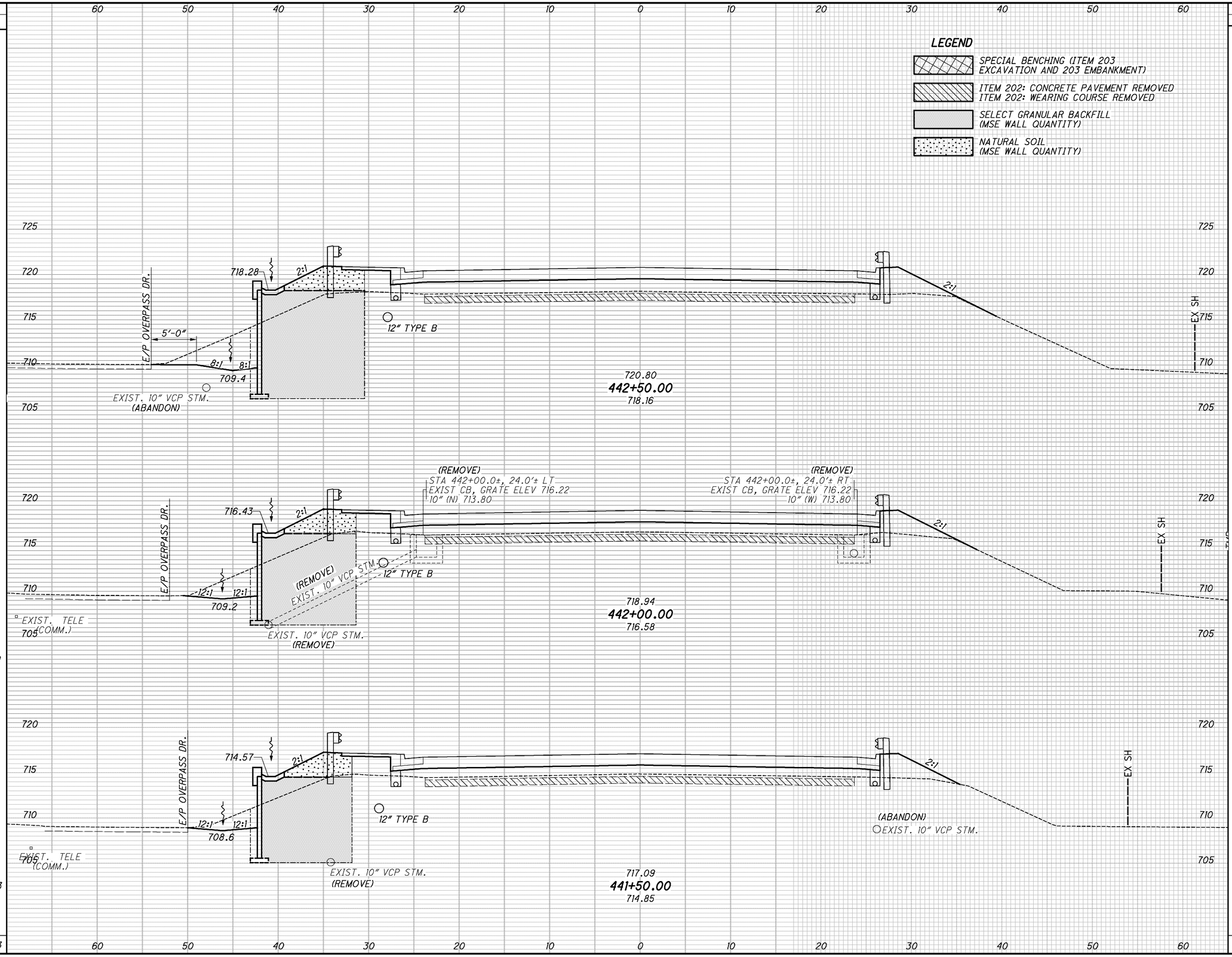
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		69	708
		11	229
9	121		
		21	230
14	127		
		37	249
26	142		

CALCULATED DPF

CHECKED MAM

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)



CROSS SECTIONS US20
STA. 441+50.00 TO STA. 442+50.00

ATB-20-21.43

48
189

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460 WHITE POND DR • SUITE 300
AKRON, OHIO 44320

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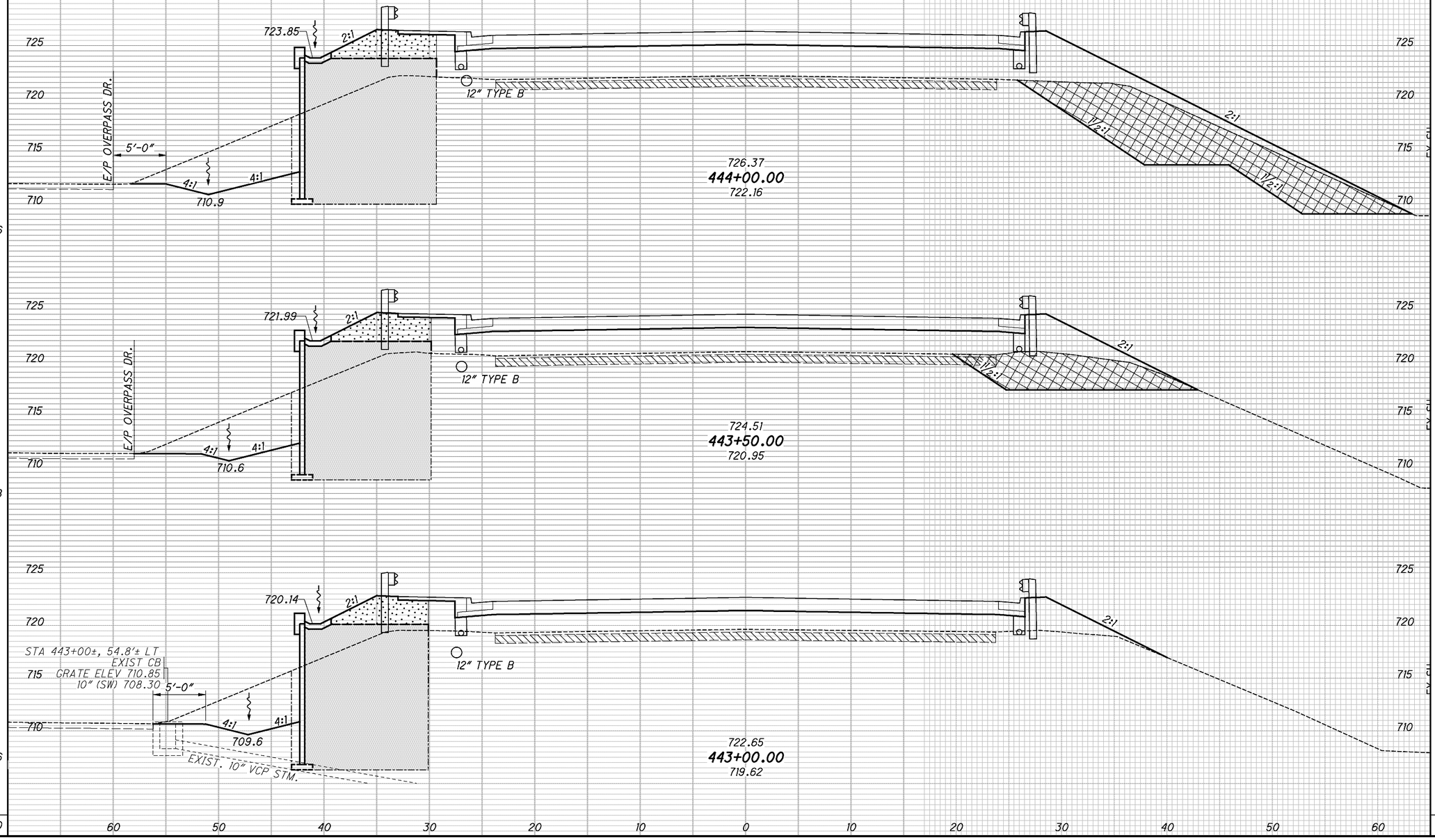
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
72	336	191	400	268	606
49	258	98	254	127	390
44	236	39	167	60	286
	830			455	1,282

60 50 40 30 20 10 0 10 20 30 40 50 60

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)



CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
443+00.00 TO STA. 444+00.00

ATB-20-21.43

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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
32	281
69	406
77	414
	1,101

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4	677	150	1023
158	428	308	809
175	446	339	783
		797	2,615

CALCULATED DPF
CHECKED MAM

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

60 50 40 30 20 10 0 10 20 30 40 50 60

735 730 725 720 715 710 705

728.06 2:1 12" TYPE B E/P OVERPASS DR. 5'-0" 4:1 4:1 4:1 711.6 EX RR SEE R.R. CROSS SECTIONS

730.57
445+50.00
711.99

STA 444+90.00, 26.00' LT
CB-3A (SEE SHEET 36)

STA 444+90.00, 26.00' RT
CB-3A, GRATE ELEV 728.75
12" (N) 726.10

727.07 2:1 51'-12" TYPE B @ 2.15% 2:1 1½:1 E/P OVERPASS DR. 5'-0" 4:1 4:1 4:1 711.5

729.59
445+00.00
724.12

725.65 2:1 12" TYPE B 2:1 1½:1 1½:1 E/P OVERPASS DR. 5'-0" 4:1 4:1 4:1 711.4

728.17
444+50.00
723.21

CROSS SECTIONS US20
STA. 444+50.00 TO STA. 445+50.00

ATB-20-21.43

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
32	178
32	178
	356

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
1	506		
3	638		
4	1059		
6	1218		
10	2,277		

CALCULATED DPF

CHECKED MAM

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

BEGIN BRIDGE ATB-20-2161 - STA. 446+92.64

60 50 40 30 20 10 0 10 20 30 40 50 60

735 730 725 720 715 710 705

728.77 2:1 12" TYPE B E/P OVERPASS DR. 5'-0" 6:1 4:1 711.8 EX RR

731.28
446+50.00
710.15

SEE R.R. CROSS SECTIONS

728.60 2:1 12" TYPE B E/P OVERPASS DR. 5'-0" 4:1 4:1 711.7 EX RR

731.12
446+00.00
710.49

SEE R.R. CROSS SECTIONS

CROSS SECTIONS US20
STA. 446+00.00 TO STA. 446+50.00

ATB-20-21.43

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189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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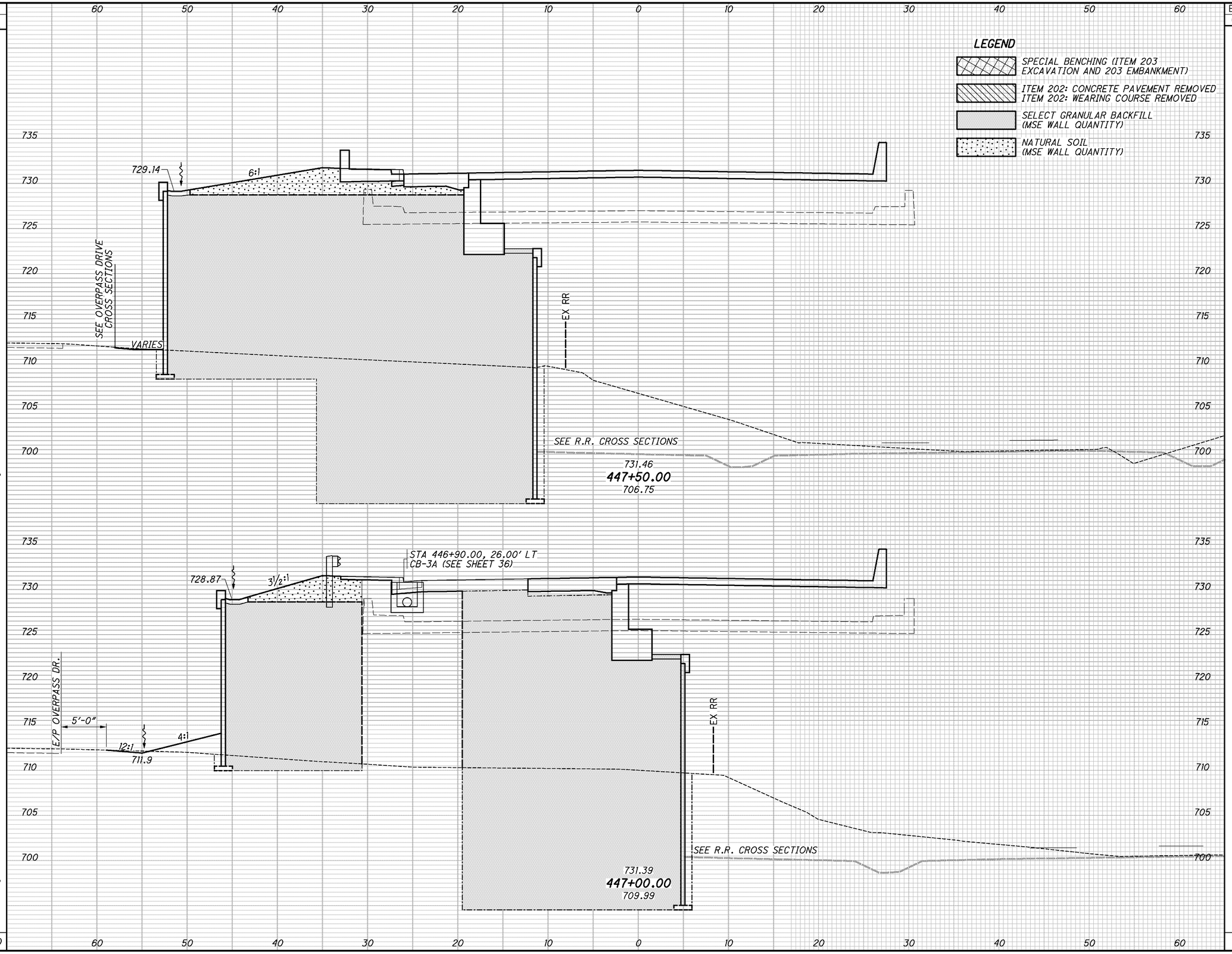
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
30	172	0	0	1	211
32	178	1	228	2	680
	350			3	891

CALCULATED DPF
CHECKED MAM

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)



CROSS SECTIONS US20
STA. 447+00.00 TO STA. 447+50.00

ATB-20-21.43

52
189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
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SEEDING	
END WIDTH	SQ. YDS.
30	
	42
0	
0	
	36
26	
	156
	234

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

60 50 40 30 20 10 0 10 20 30 40 50 60

735 730 725 720 715 710 705 700

449+25± 448+25±

7:1 729.05 12:1 SH EX RR EXIST. 10" G EXIST. TELE (F.O.)

731.49
449+50.00
703.43

6:1 SEE OVERPASS DRIVE CROSS SECTIONS 2:1 2'-0" EX RR SEE R.R. CROSS SECTIONS EXI

731.51
448+00.00
702.36

END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	4		
		0	2
0	0		
0	0		
		15	0
33	0		
		31	0
		46	2

CALCULATED DPF CHECKED MAM

CROSS SECTIONS US20
448+00.00 TO STA. 449+50.00

ATB-20-21.43

53
189

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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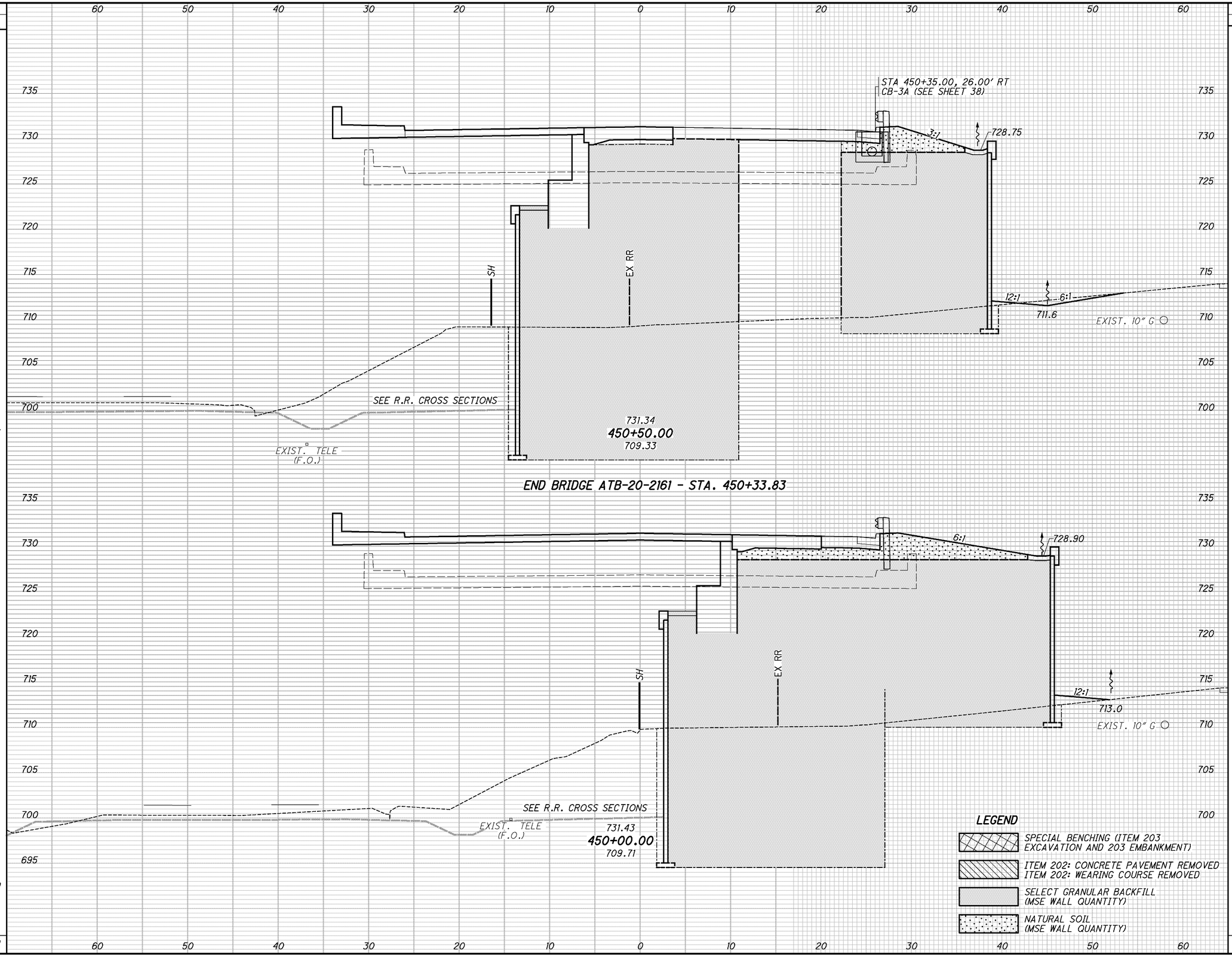
SEEDING	
END WIDTH	SQ. YDS.
32	175
31	169
	344



END AREA		VOLUME	
CUT	FILL	CUT	FILL
3	225		
0	3		
		3	211
		0	6
		3	217

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 450+00.00 TO STA. 450+50.00

ATB-20-21.43

54
189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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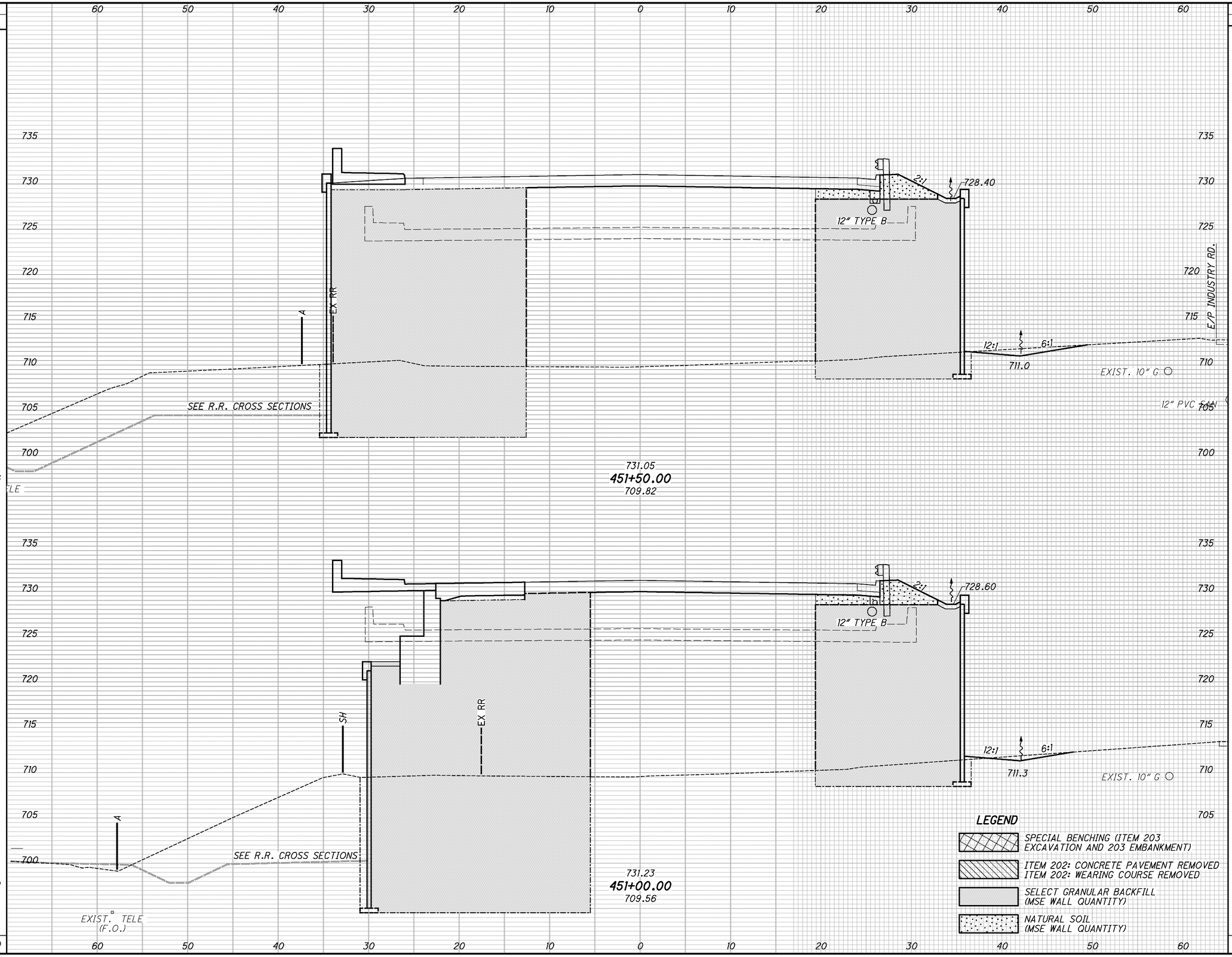
SEEDING END WIDTH	SEEDING SQ. YDS.
29	
156	
27	
164	
	320



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
5	628		
7	1044		
3	499		
6	670		
13	1,714		

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 451+00.00 TO STA. 451+50.00

ATB-20-21.43

55
189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING	
END WIDTH	SQ. YDS.
56	303
53	228
	531

60 50 40 30 20 10 0 10 20 30 40 50 60

735 730 725 720 715 710 705 700

EX RR

VARIES (2:1 NORMAL TO WALL END)

729.34
452+50.00
723.70

2:1 726.70

12" TYPE B

6:1 6:1 710.5

EXIST. 10" G

12" PVC SAN

E/P INDUSTRY RD.

STA 452+00.00, 26.00' LT
CB-6, GRATE ELEV 729.86
12" (S) 727.20

STA 452+00.00, 26.00' RT
CB-3A (SEE SHEET 38)

2:1 727.80

51'-12" TYPE B @ 2.36%
706.02, AS PER PLAN, WITH JOINTS PER 706.11

24:1

730.45
452+00.00
722.68

6:1 6:1 710.9

EXIST. 10" G

705 12" PVC SAN

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
151	246		
162	266		
		290	474
		155	828
		445	1,302

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 452+00.00 TO STA. 452+50.00

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
68	406
78	433
78	372
	1,211

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
138	434	272	917
156	556	304	968
172	489	299	681
		875	2,566

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 453+00.00 TO STA. 454+00.00

ATB-20-21.43

57
189

60 50 40 30 20 10 0 10 20 30 40 50 60

730 725 720 715 710 735

EX SH

2:1 1½:1

E/P INDUSTRY RD.

723.61
454+00.00
720.32

EXIST. 10" G
15" TYPE C

STA 453+50.00, 26.00' RT
CB-3A, GRATE ELEV 724.51
12" (W) 720.50
12" (S) 720.50

STA 453+50.00, 35.00' RT
MH-3, RIM ELEV 722.50
12" (N) 718.25
12" (W) 719.50
12" (S) 712.75

STA 453+50.00, 53.00' RT
MH-3, RIM ELEV 713.50
12" (W&N) 708.25
15" (E) 708.00

9'-12" TYPE C @ 25.00%

725.71
453+50.00
721.61

18'-12" TYPE C @ 25%

EXIST. 10" G

STA 453+23.33, 33.66' RT
CB-2-2A, GRATE ELEV 725.10
E WINDOW = 724.60
12" (E) 722.00

725.41

12" TYPE B

727.74
453+00.00
722.75

710.2
6:1 6:1

12" TYPE C

EXIST. 10" G

STA 453+00.00, 53.00' RT
CB-2-2B (SEE SHEET 38)

12" PVC SAN

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)
- NATURAL SOIL (MSE WALL QUANTITY)

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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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SEEDING	
END WIDTH	SQ. YDS.
49	258
44	258
48	322
	836

60 50 40 30 20 10 0 10 20 30 40 50 60

PROP DRIVE

MATCHLINE 65' LT
STA. 455+50.00

2:1

1½:1

708.8

EXIST. 10" VCP STM.
(ABANDON)

717.33
455+50.00
715.70

EXIST. 10" VCP STM.
(ABANDON)

EXIST. 10" G

EXIST. 10" VCP STM.
(REMOVE)

15" TYPE C

12" PVC SAN

2½:1

E/P INDUSTRY RD.

TMP

EX SIGN

3:1

MATCHLINE 65' LT
STA. 455+50.00

(REMOVE)
STA 455+00.1±, 23.9'± LT
EXIST CB., GRATE ELEV 716.93
10" (E) 712.12

(REMOVE)
STA 454+50.0±, 24.0'± RT
EXIST CB, GRATE ELEV 716.90
10" (E) 712.12

STA 455+00.00, 52.00' RT
CB-2-2B, (SEE SHEET 40)

(REMOVE)
STA 455+00.0±, 52.4'±
EXIST CB,
GRATE ELEV 710.30
10" (E) 708.30

719.42
455+00.00
717.35

EXIST. 10" G

15" TYPE C

12" PVC SAN

EX SH

721.52
454+50.00
718.89

EXIST. 10" G

15" TYPE C

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
57	197		
70	263	118	426
53	269	114	493
		177	651
		409	1,570

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 454+50.00 TO STA. 455+50.00

ATB-20-21.43

58
189

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SEEDING END WIDTH	SEEDING SQ. YDS.
42	286
61	342
62	311
50	275
	1,214

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
27	53		
		34	104
10	59		
		32	143
25	95		
		67	221
47	144		
		96	316
		229	784

CALCULATED DPF

CHECKED MAM

457+70.59 END WORK INDUSTRY RD.

SEE INDUSTRY ROAD XS

STA 457+47.9± 23.9'± RT
EXIST CB, GRATE ELEV 707.95
10" (S) 703.18
10" (W) 703.18
10" (E) 703.18
(REMOVE)

STA 457+35.0±, 41.2'± RT
EXIST CB, GRATE ELEV 707.50
10" (W) 705.30
10" (N) 705.30
(REMOVE)

STA 457+35.00, 43.00' LT
CB-2-2B, GRATE ELEV 707.60
12" (SE) 705.25

STA 457+48.3, 24.2'± LT
EXIST CB., GRATE ELEV 708.05
10" (W) 702.52
10" (NW) 702.52
10" (E) 702.52

PROP DRIVE

MATCHLINE 65' LT
STA. 457+50.00

EXIST. TELE

EXIST. 10" G (COMM.)

EXIST. 10" G

EXIST. 10" VCP STM.
24'-12" TYPE C @ 12.58%

STA 457+35.2, 42.9'± LT
EXIST CB, GRATE ELEV 707.63
10" (SE) 705.37
(REMOVE)

EXIST. 10" VCP STM.
(REMOVE)

15" TYPE B

EXIST. 6" W
(TRANSITE)

12" PVC SAN

STA 457+48.00, 23.00' LT
MH-3 (SEE SHEET 40)

709.10
457+50.00
708.43

TMP

EX SH 42

3:1

EXIST. 6" G

STA 457+00.00, 26.00' RT
CB-3A, (SEE SHEET 40)

STA 457+00.00, 42.25' RT
CB-2-2B, (SEE SHEET 40)

SEE INDUSTRY ROAD XS

STA 457+25.00, 26.00' LT
CB-3A, GRATE ELEV 709.44
12" (E) 705.60

PROP DRIVE

286

MATCHLINE 65' LT
STA. 457+00.00

4:1

2:1

2½:1

707.7

EXIST. 1" WATER

17'-12" TYPE C @ 0.9%

EXIST. 10" VCP STM.
(REMOVE)

EXIST. 10" G

EXIST. 10" VCP STM.
(REMOVE)

EXIST. 6" W
(TRANSITE)

EXIST. 10" VCP STM.
(ABANDON)

711.04
457+00.00
710.15

TMP

EX SH 61

3:1

MATCHLINE 65' LT
STA. 457+00.00

342

W

PROP DRIVE

MATCHLINE 65' LT
STA. 456+50.00

2:1

2½:1

707.9

EXIST. 10" VCP STM.
(ABANDON)

EXIST. 10" G

EXIST. 10" VCP STM.
(ABANDON)

EXIST. 10" VCP STM.
(REMOVE)

15" TYPE C

E/P INDUSTRY RD.

SEE INDUSTRY ROAD XS

HOUSE

TMP

EX SH 62

3:1

311

713.13
456+50.00
712.03

12" PVC SAN

PROP DRIVE

MATCHLINE 65' LT
STA. 456+00.00

708.2

EXIST. 10" VCP STM.
(REMOVE)

EXIST. 10" VCP STM.
(ABANDON)

EXIST. 10" G

EXIST. 10" VCP STM.
(REMOVE)

15" TYPE C

715.23
456+00.00
713.92

12" PVC SAN

TMP

EX SH 50

3:1

LEGEND

- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)

CROSS SECTIONS US20 STA. 456+00.00 TO STA. 457+50.00

ATB-20-21.43

59
189

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SEEDING END WIDTH	SEEDING SQ. YDS.
17	43
14	106
24	133
24	183
	465

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
12	3	17	2
25	1	39	5
17	4	32	17
18	14	42	62
		130	86

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS US20
STA. 458+00.00 TO STA. 459+25.00

ATB-20-21.43

60
189

LEGEND
- SPECIAL BENCHING (ITEM 203 EXCAVATION AND 203 EMBANKMENT)
- ITEM 202: CONCRETE PAVEMENT REMOVED
  ITEM 202: WEARING COURSE REMOVED
- SELECT GRANULAR BACKFILL (MSE WALL QUANTITY)

704.92
459+25.00
704.88

705.27
459+00.00 END PROJECT
705.30

706.22
458+50.00
706.18

707.50
458+00.00
707.12

STA 458+40.00, 26.00' RT
CB-3A (SEE SHEET 40)

STA 458+30.00, 33.00' RT
MH-3 (SEE SHEET 40)

STA 458+10.00, 45.00' RT
CB-2-2B (SEE SHEET 40)

INDUSTRY RD. CUL-DE-SAC

DITCH FROM INDUSTRY ROAD (0.5% MIN SLOPE)

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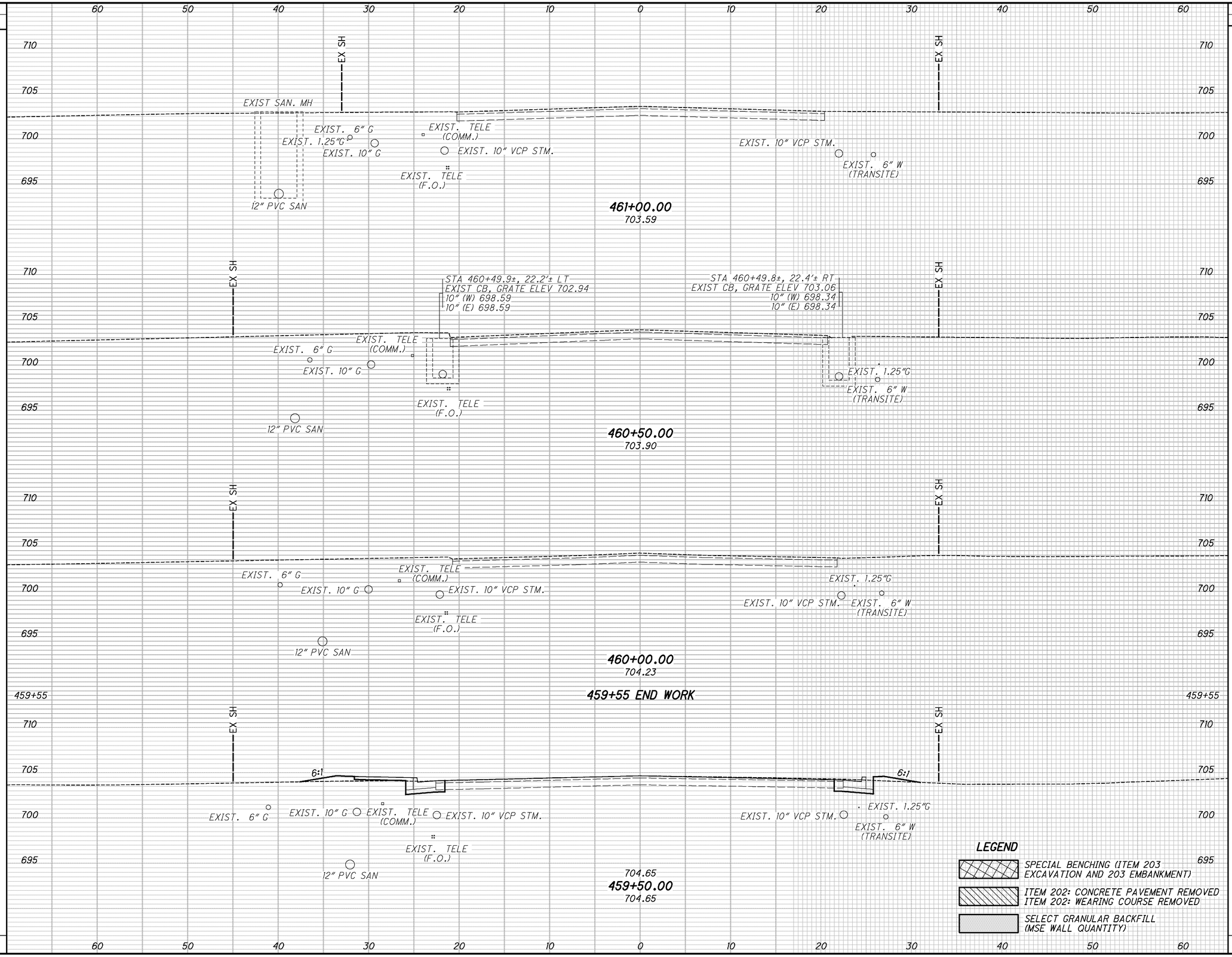
SEEDING	
END WIDTH	SQ. YDS.
0	6
20	51
	57

END AREA	
CUT	FILL
0	0
12	4

VOLUME	
CUT	FILL
1	0
11	3
12	3

CALCULATED DPF

CHECKED MAM



CROSS SECTIONS US20 STA. 459+50.00 TO STA. 461+00.00

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SEEDING	
END WIDTH	SQ. YDS.
52	
	308
59	
	82
0	
	390

END AREA	
CUT	FILL
92	3
106	0
0	0

VOLUME	
CUT	FILL
183	3
49	0
232	3

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6229+00.00 TO STA. 6230+00.00

ATB-20-21.43

62
189

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6230+00.00
701.77 (EXIST TOP/RAIL E.B. MAIN)
700.85
MSE WALL
EX N/S R/W
℄ CONST. N/S RAILROAD
℄ W.B. MAIN
℄ FUTURE TRACK
℄ E.B. MAIN
(℄ RR R/W)
℄ FUTURE TRACK
EXIST. 10" G
FUTURE R.R. GRADING
2:1
2:1
40:1
699.0
699.4
R.R. COMM.
(DEPTH UNK.)

6229+50.00
701.90 (EXIST TOP/RAIL E.B. MAIN)
700.95
TMP
699.5
699.6

6229+25 BEGIN SEEDING
BEGIN EARTHWORK 6229+25

6229+00.00
702.04 (EXIST TOP/RAIL E.B. MAIN)
701.09
699.6
699.5

720 715 710 705 700 695

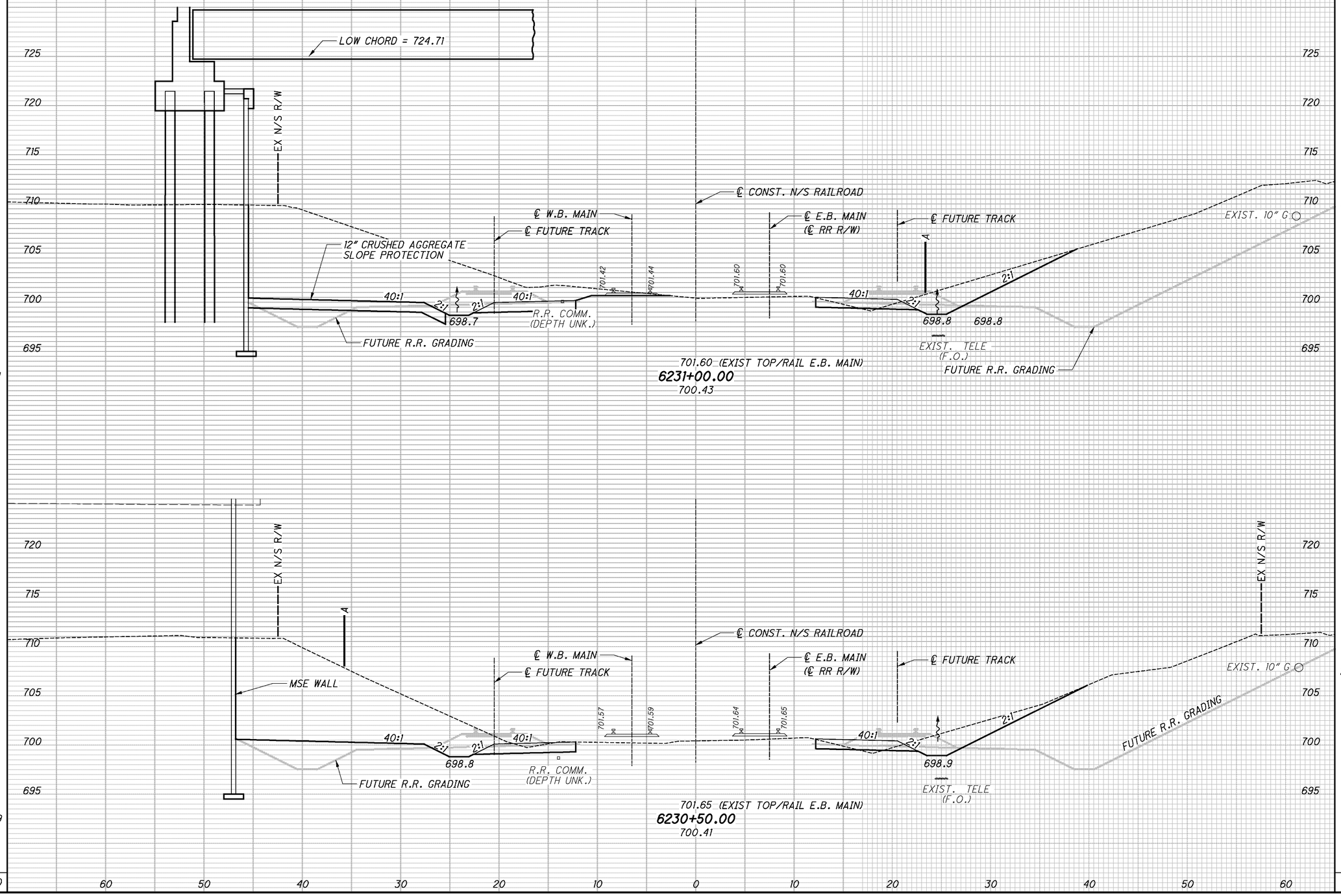
60 50 40 30 20 10 0 10 20 30 40 50 60

SEEDING	
END WIDTH	SQ. YDS.
49	281
	570

END AREA		VOLUME	
CUT	FILL	CUT	FILL
231	0		
		406	0
208	0		
		278	3
		684	3

CALCULATED DPF

CHECKED MAM



CROSS SECTIONS NORFOLK SOUTHERN RAILROAD STA. 6230+50.00 TO STA. 6231+00.00

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63
189

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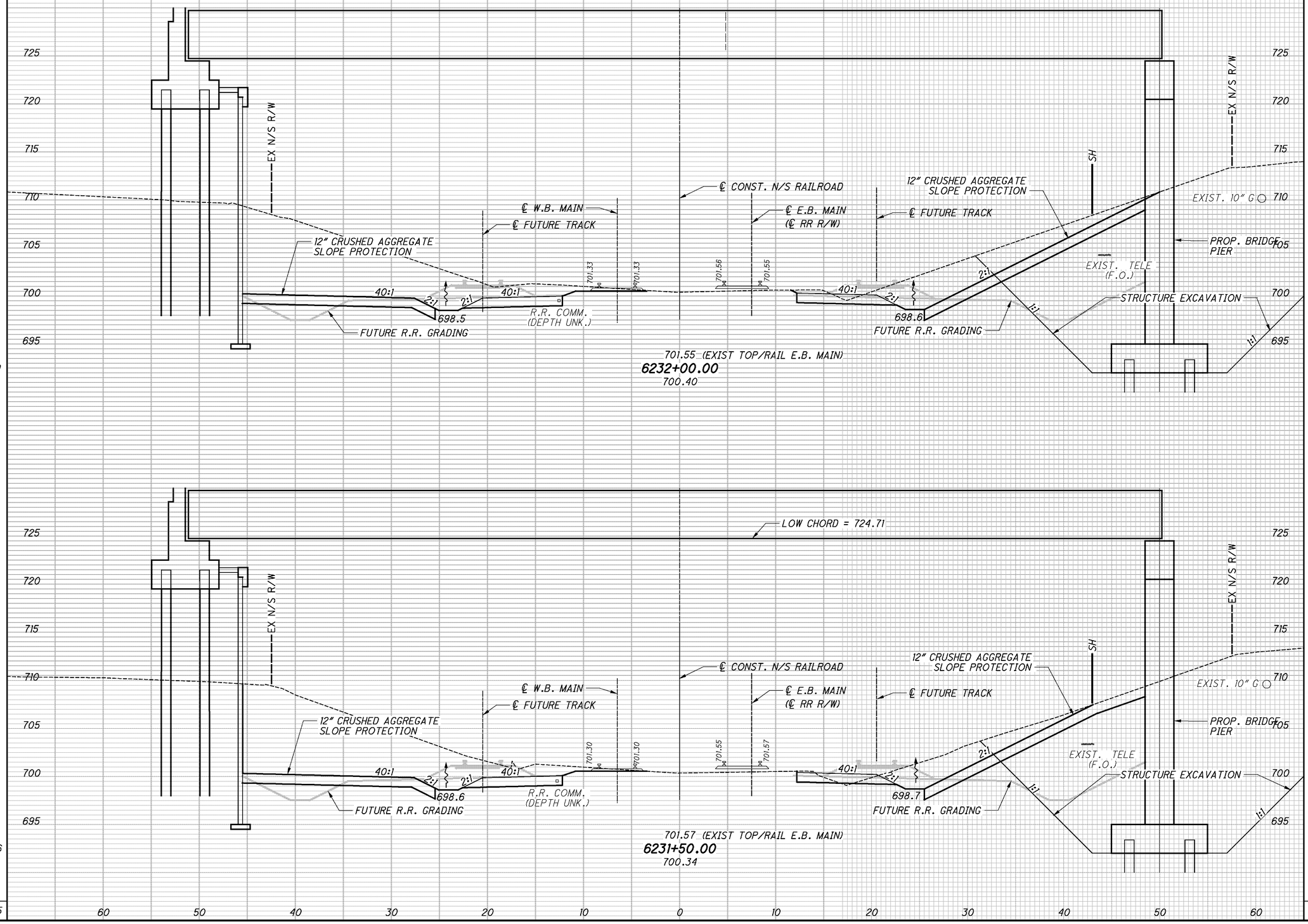
SEEDING	
END WIDTH	SQ. YDS.
61	319
54	286
	605



END AREA		VOLUME	
CUT	FILL	CUT	FILL
68	0	263	0
216	0	414	0
		677	0

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6231+50.00 TO STA. 6232+00.00

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64
189

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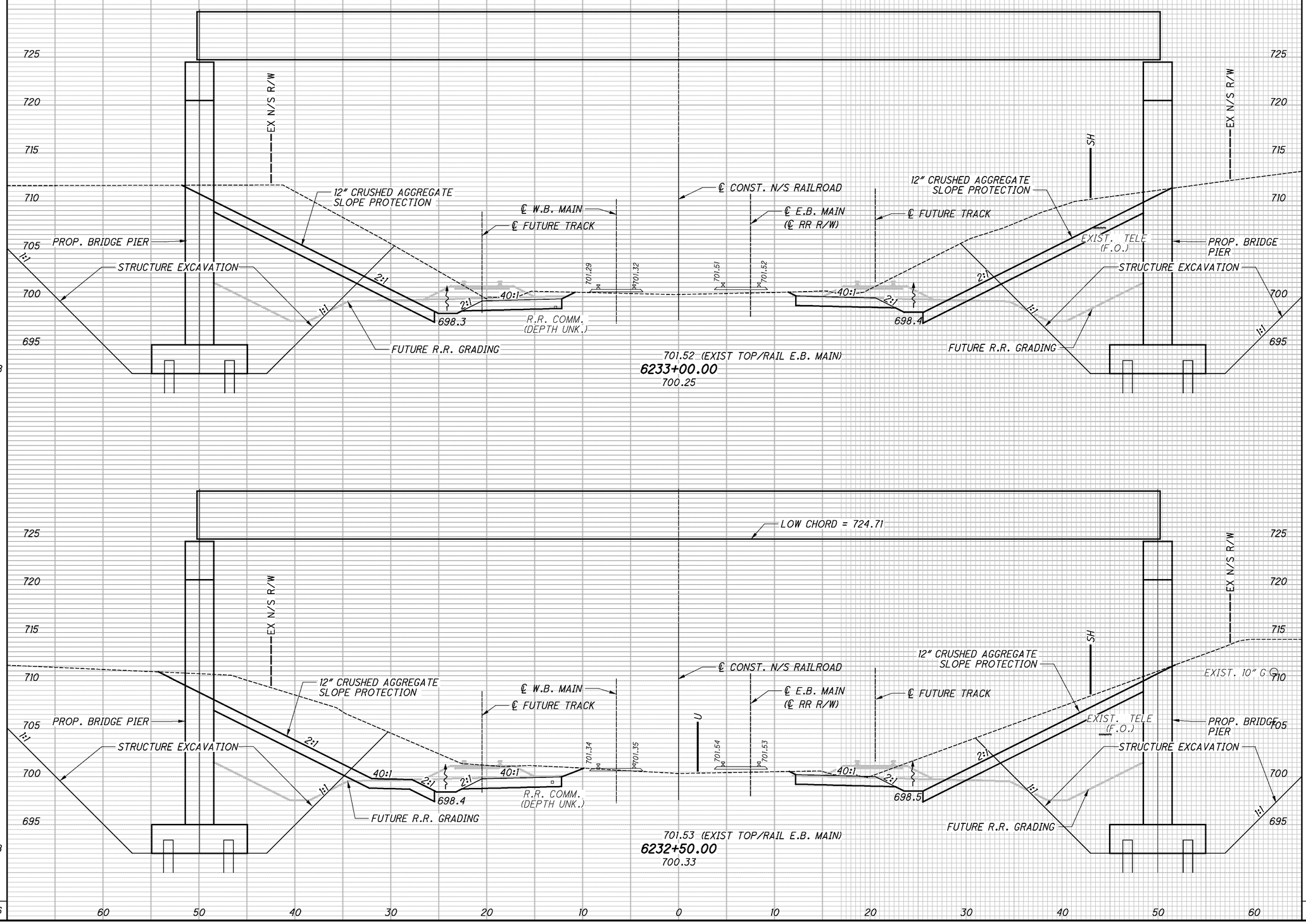
SEEDING	
END WIDTH	SQ. YDS.
72	408
75	378
	786



END AREA		VOLUME	
CUT	FILL	CUT	FILL
258	0		
		438	0
215	0		
		262	0
		700	0

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD STA. 6232+50.00 TO STA. 6233+00.00

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65
189

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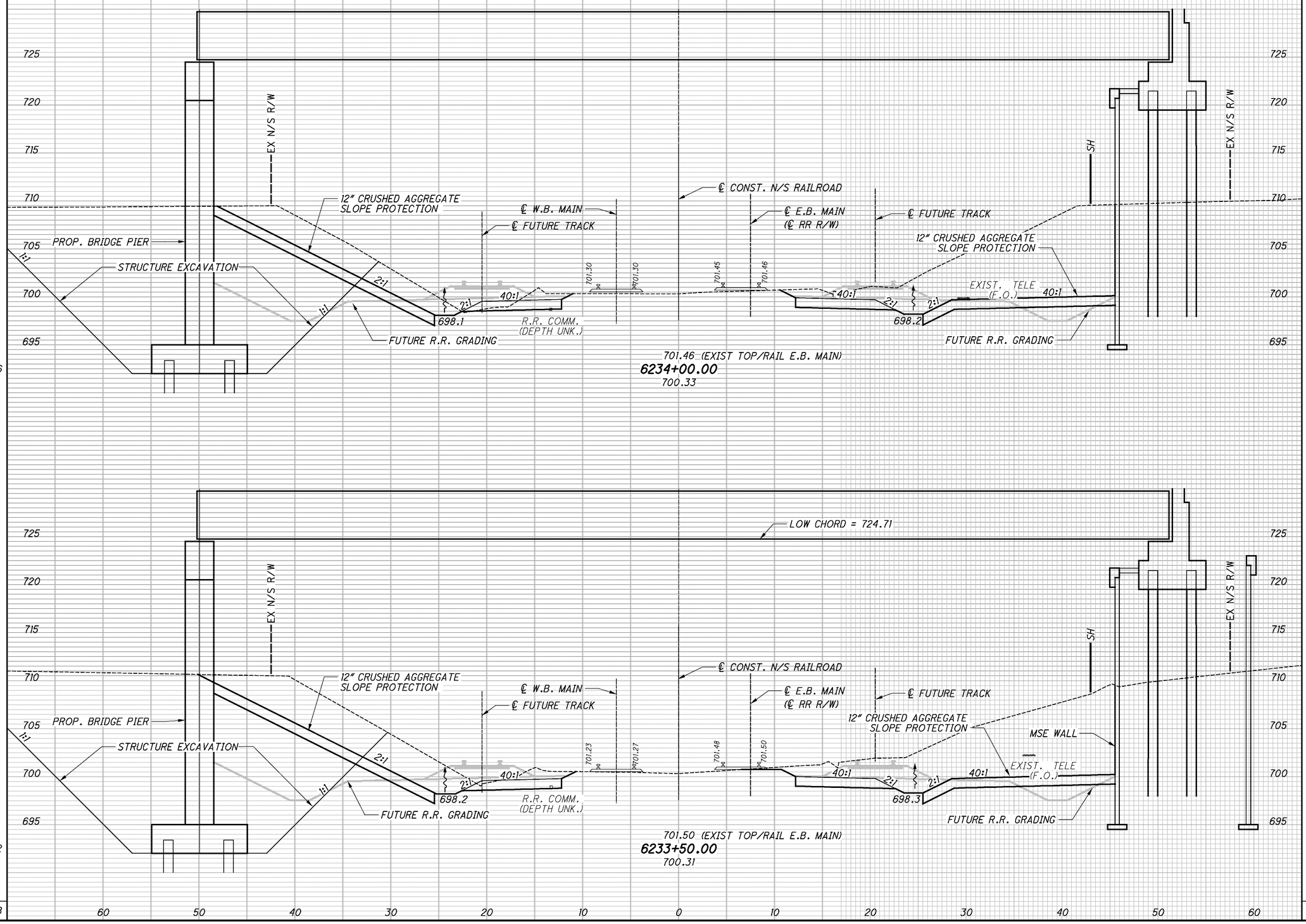
SEEDING	
END WIDTH	SQ. YDS.
59	336
62	372
	708



END AREA		VOLUME	
CUT	FILL	CUT	FILL
238	0	478	0
278	0	496	0
		974	0

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6233+50.00 TO STA. 6234+00.00

ATB-20-21.43

66
189

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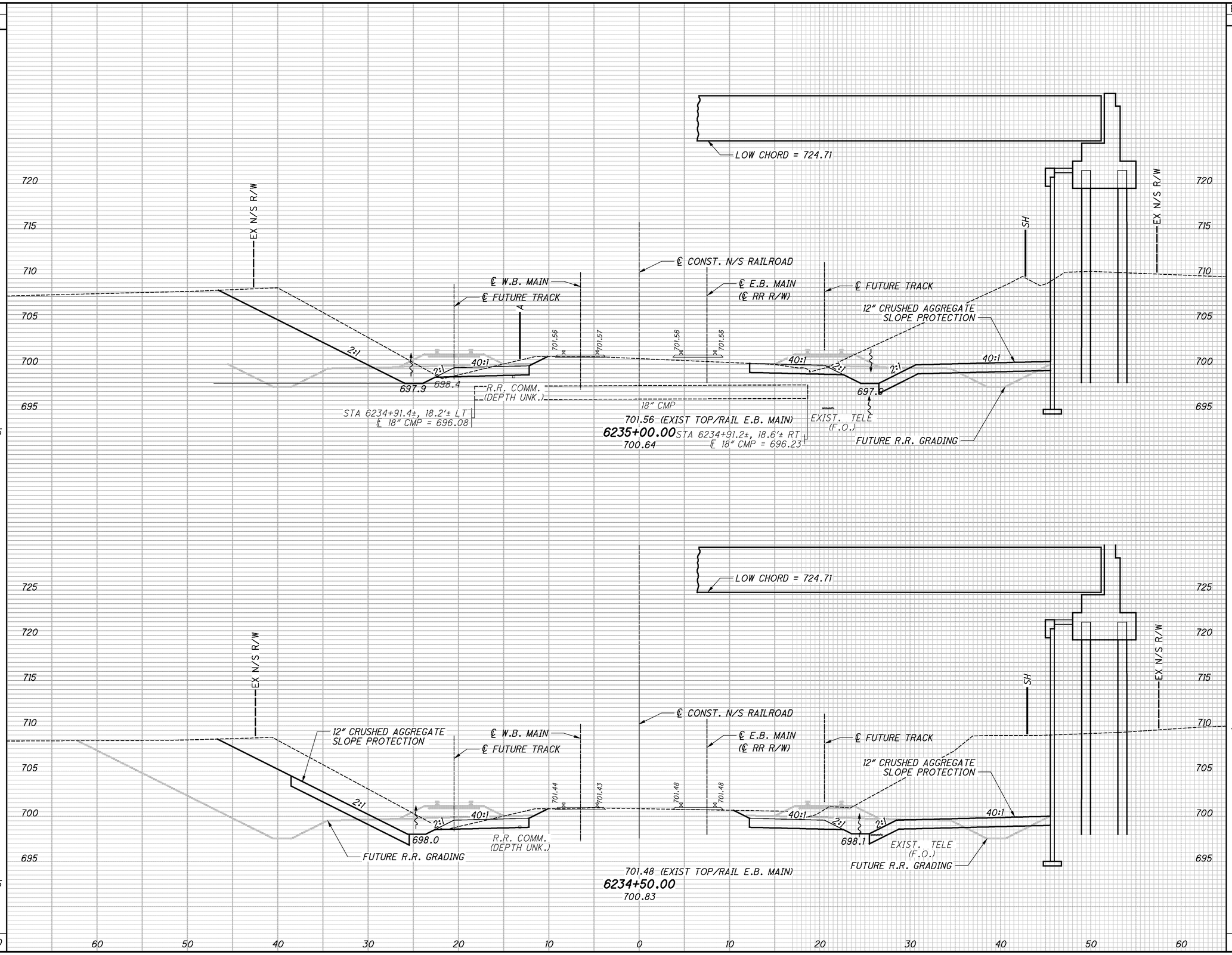
SEEDING	
END WIDTH	SQ. YDS.
59	325
58	650



END AREA		VOLUME	
CUT	FILL	CUT	FILL
219	0		
242	0		
		427	0
		444	0
		871	0

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6234+50.00 TO STA. 6235+00.00

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67
189

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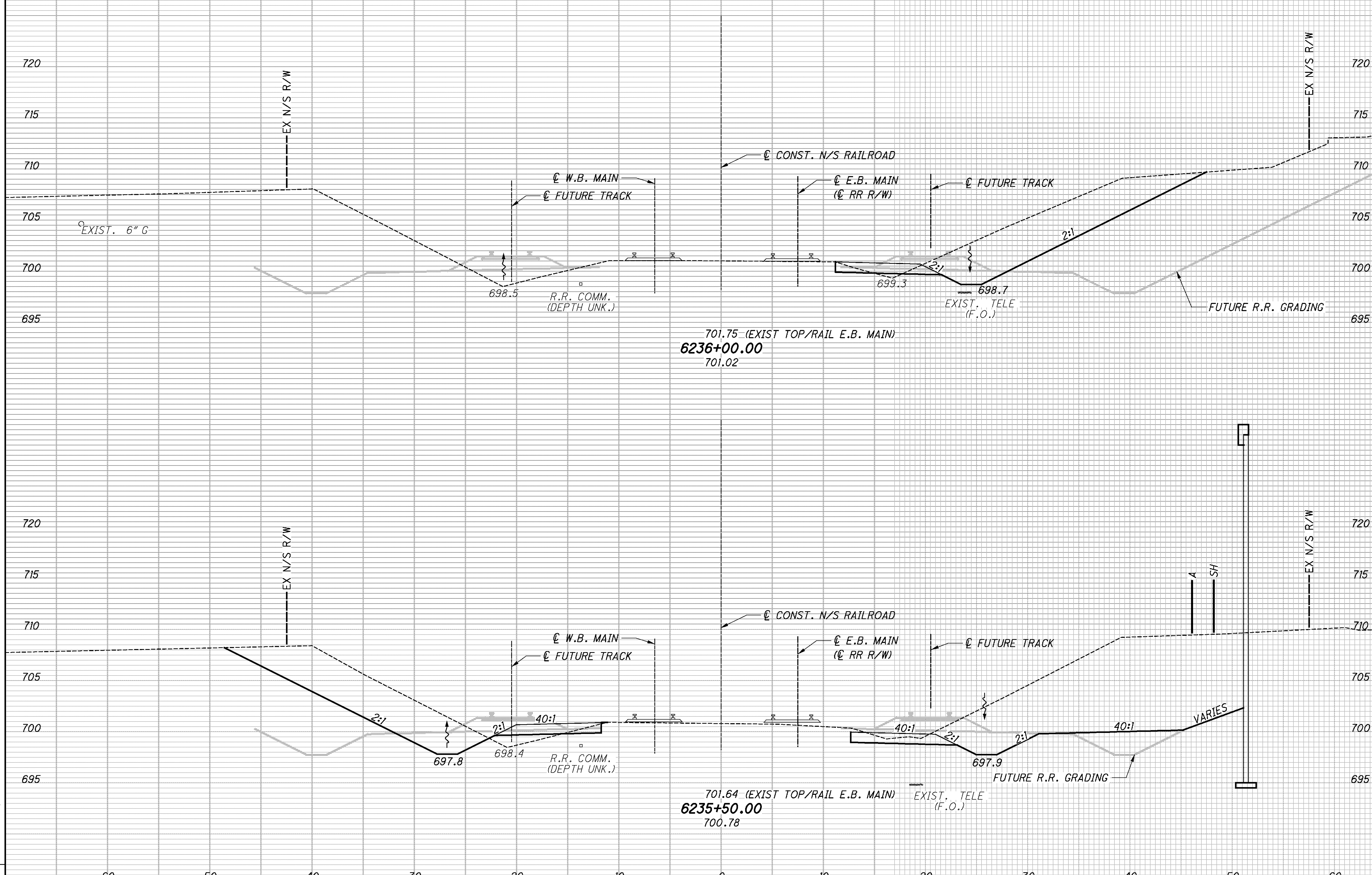
CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6235+50.00 TO STA. 6236+00.00



SEEDING END WIDTH	SEEDING SQ. YDS.
37	
	286
66	
	347
	633

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
89	1		
		161	6
85	5		
		281	5
		442	11

CALCULATED DPF
CHECKED MAM

ATB-20-21.43

68
189

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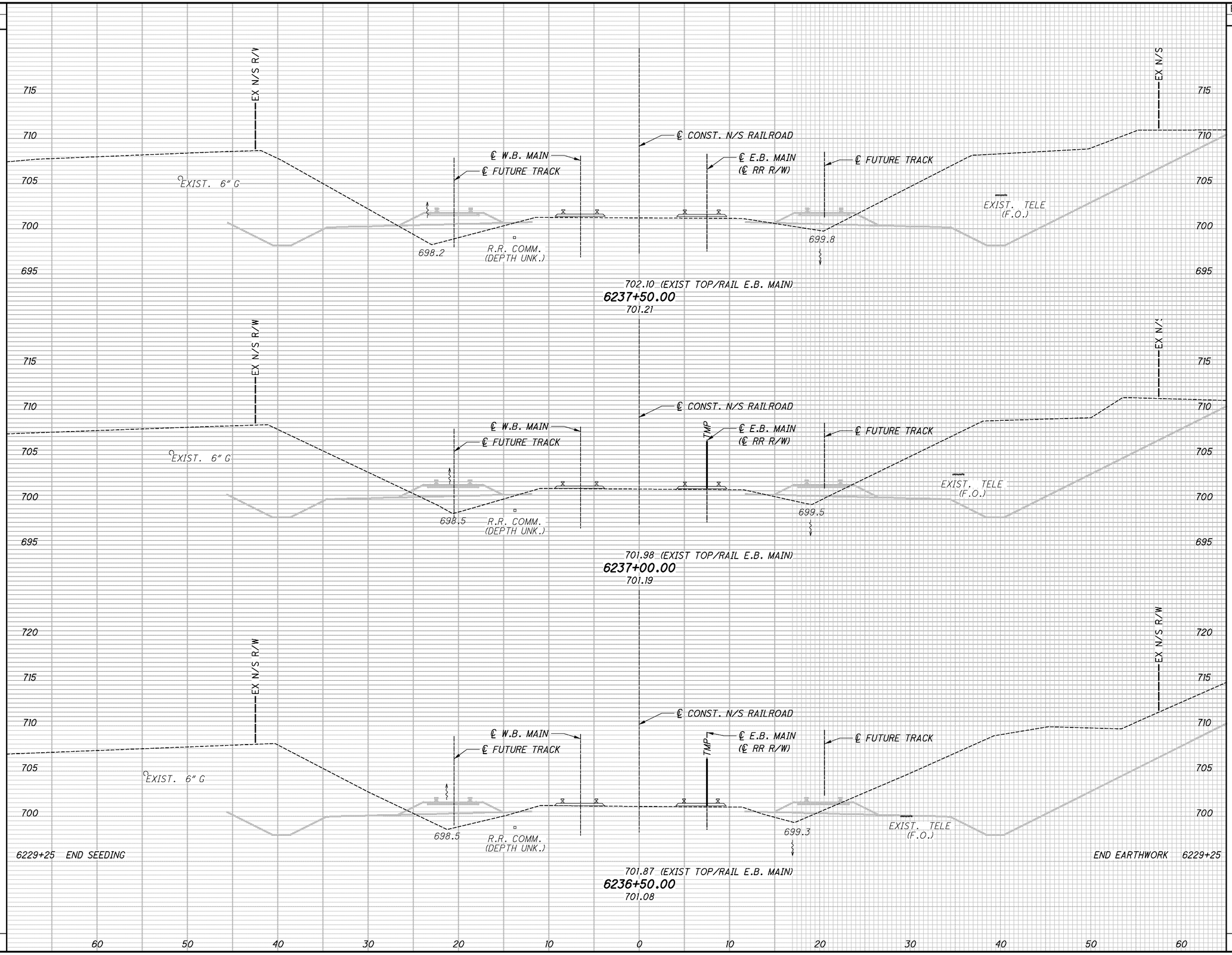
SEEDING	
END WIDTH	SQ. YDS.
0	
	51
	51



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		41	0
		41	0

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS NORFOLK SOUTHERN RAILROAD
STA. 6236+50.00 TO STA. 6237+50.00

ATB-20-21.43

69
189

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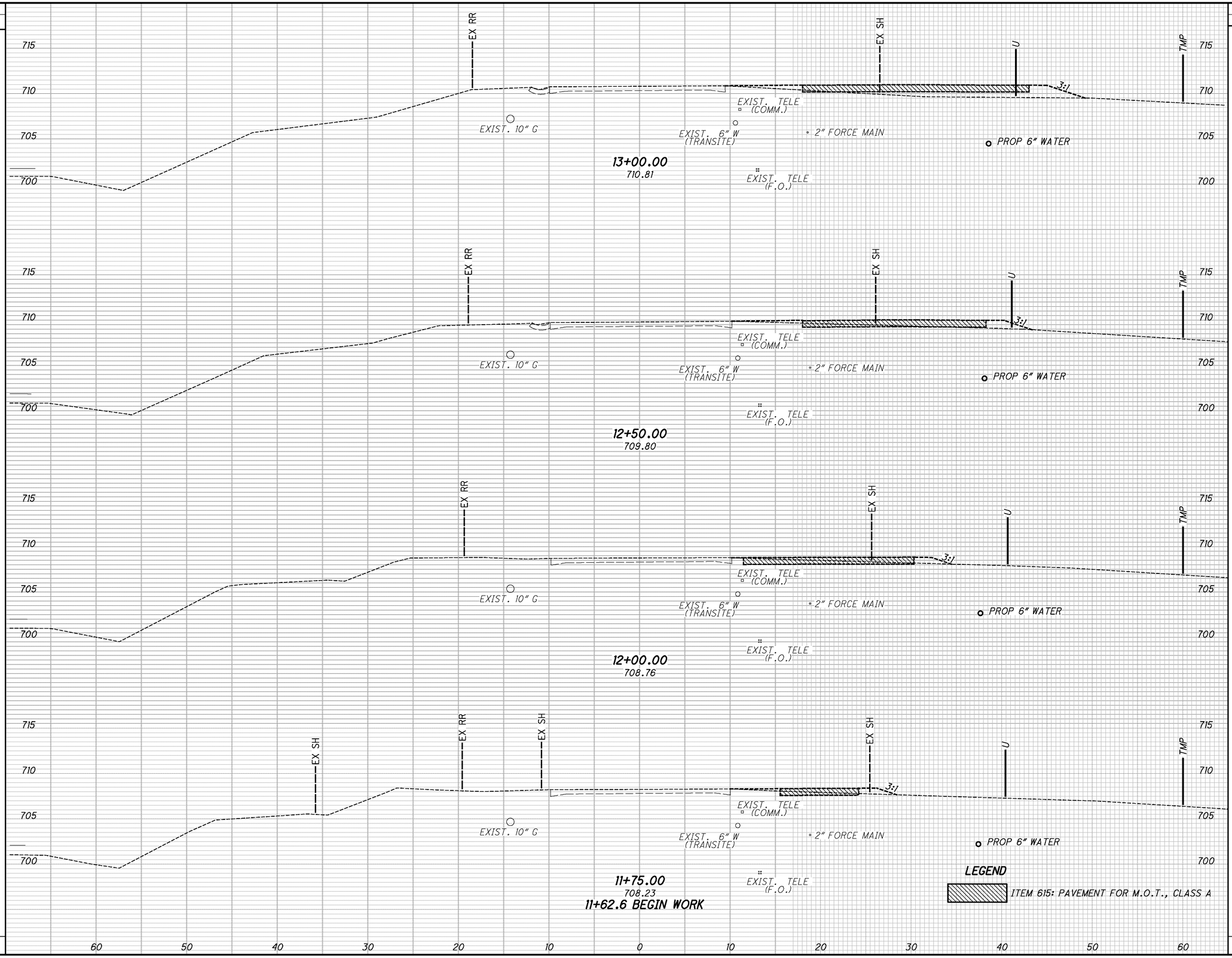
SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL
0	0

CALCULATED DPF

CHECKED MAM



CROSS SECTIONS INDUSTRY ROAD
STA. 11+75.00 TO STA. 13+00.00

ATB-20-21.43

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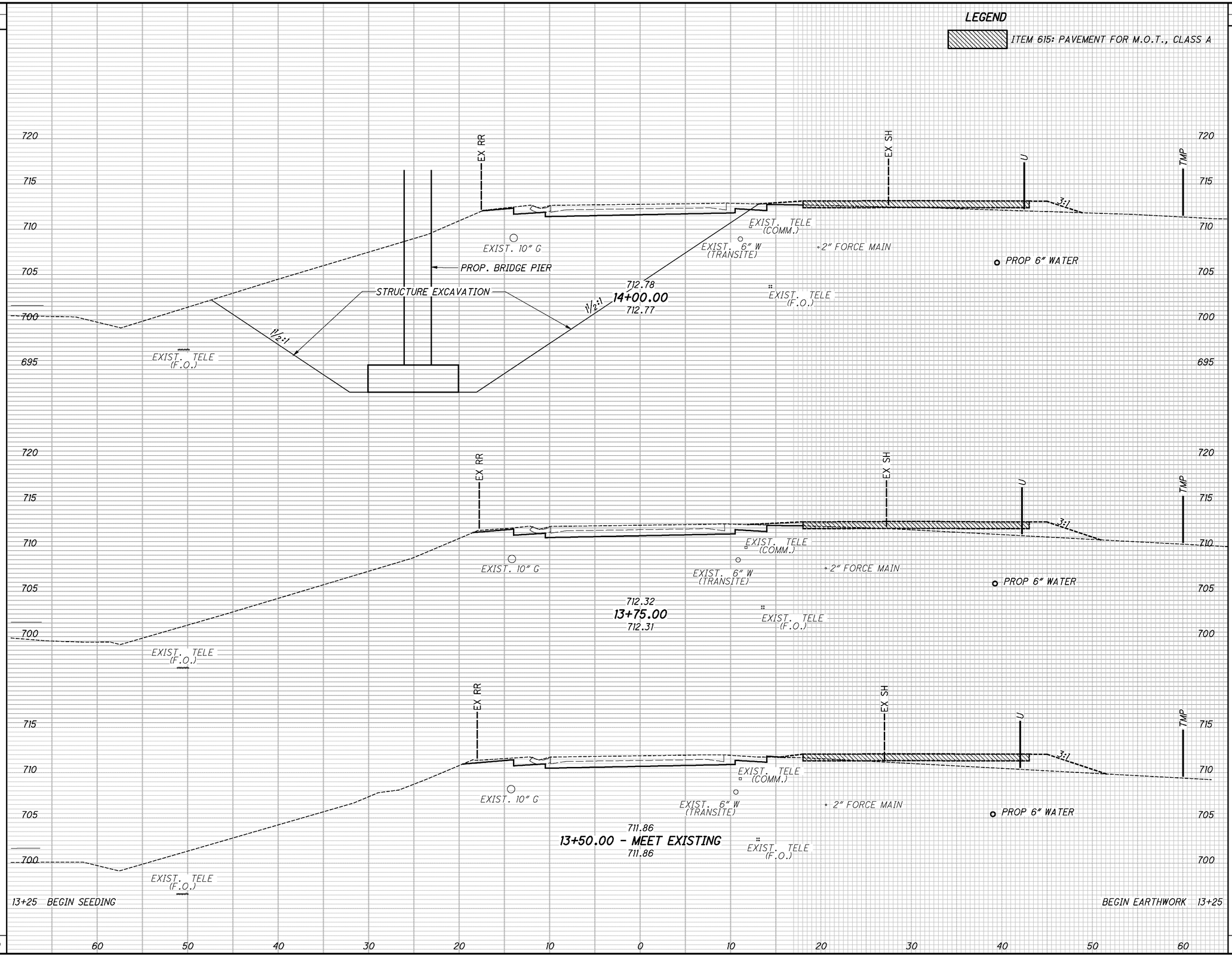
SEEDING END WIDTH	SEEDING SQ. YDS.
15	43
16	44
16	22
0	
	109

LEGEND

ITEM 615: PAVEMENT FOR M.O.T., CLASS A



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
19	0		
		18	0
20	0		
		19	0
20	0		
		9	0
0	0		
		46	0

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS INDUSTRY ROAD
STA. 13+50.00 TO STA. 14+00.00

ATB-20-21.43

71
189

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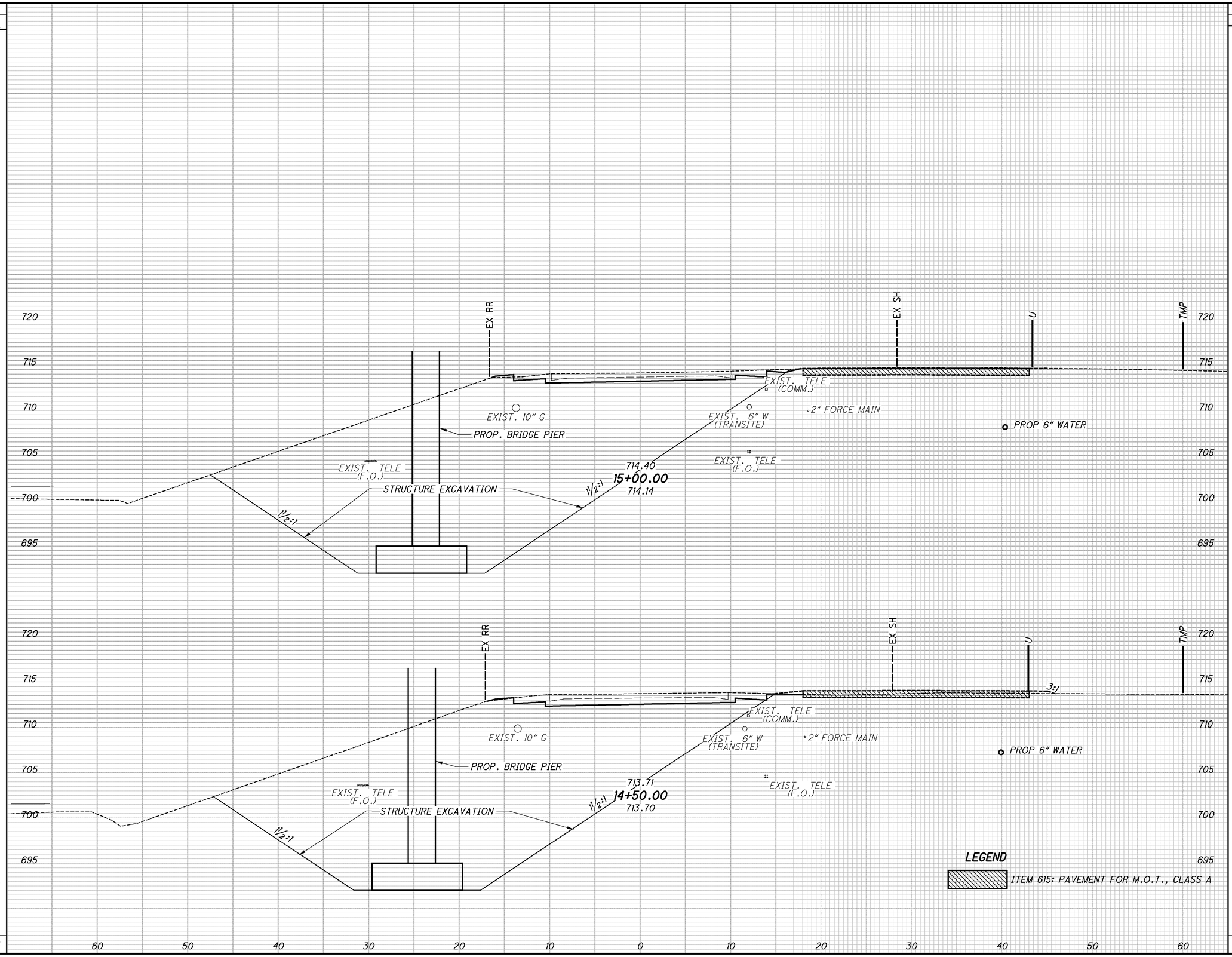
SEEDING	
END WIDTH	SQ. YDS.
14	81
15	83
	164



END AREA		VOLUME	
CUT	FILL	CUT	FILL
14	0		
		31	0
19	0		
		35	0
		66	0

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS INDUSTRY ROAD
STA. 14+50.00 TO STA. 15+00.00

ATB-20-21.43

72
189

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SEEDING	
END WIDTH	SQ. YDS.
0	
	17
12	
	69
13	
	75
	161

END AREA	
CUT	FILL
0	0
17	1
16	1

VOLUME	
CUT	FILL
8	0
31	2
28	1
67	3

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS INDUSTRY ROAD
STA. 15+50.00 TO STA. 16+25.00

ATB-20-21.43

73
189

16+25 SUSPEND SEEDING

EX RR — MSE WALL — EXIST. TELE (F.O.) — EXIST. 10" G — EXIST. TELE (COMM.) — EXIST. 6" W (TRANSITE) — EXIST. 1¼"G — EX SH — TMP — PROP 6" WATER — EXIST. TELE (F.O.)

16+25.00
714.61

16+04.97 - MEET EXISTING

EX RR — PROP. BRIDGE PIER — EXIST. 10" G — 2" FORCE MAIN — EXIST. 6" W (TRANSITE) — EXIST. TELE (COMM.) — 10'-0" DRIVE APRON — 0.50% — EX SH — U — TMP — PROP 6" WATER — EXIST. TELE (F.O.) — EXIST. TELE (F.O.) — STRUCTURE EXCAVATION — 1½:1 — 1½:1

714.60
16+00.00
714.59

16+04.7 DRIVE RT.

EX RR — PROP. BRIDGE PIER — EXIST. 10" G — EXIST. TELE (COMM.) — 2" FORCE MAIN — EXIST. 6" W (TRANSITE) — EX SH — U — 3:1 — TMP — PROP 6" WATER — EXIST. TELE (F.O.) — EXIST. TELE (F.O.) — STRUCTURE EXCAVATION — 1½:1 — 1½:1

714.61
15+50.00
714.48

LEGEND

ITEM 615: PAVEMENT FOR M.O.T., CLASS A

720 715 710 705 700 695

60 50 40 30 20 10 0 10 20 30 40 50 60

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SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED DPF

CHECKED MAM

EQUATION Sta 18+84.40 BACK = Sta 452+02.35 AHEAD

720 715 710 705

MSE WALL

EXIST. 10" G

EXIST. 1¼"G

EXIST. 6" W (TRANSITE)

EXIST. TELE (COMM.)

EXIST. TELE (F.O.)

PROP 6" WATER

EX SH

U

17+50.00
713.87

STA 17+07.4 SUSPEND EARTHWORK

EX RR

17+00.00
714.33

TMP

16+50.00
714.59

LEGEND

ITEM 615: PAVEMENT FOR M.O.T., CLASS A

60 50 40 30 20 10 0 10 20 30 40 50 60

0 0

CROSS SECTIONS INDUSTRY ROAD
STA. 16+50.00 TO STA. 17+50.00

ATB-20-21.43

74
189

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SEEDING	
END WIDTH	SQ. YDS.
30	42
0	
	42

END AREA	
CUT	FILL
40	0
0	0

VOLUME	
CUT	FILL
19	0
19	0

CALCULATED DPF

CHECKED MAM

40 30 20 10 0 10 20 30 40 50 60 70

715 710 705 720

2:1 4:1 4:1 3:1

EX R/W U TMP

709.4

EXIST. 10" G
15" TYPE C
EXIST. 1¼" G
EXIST. 6" W (TRANSITE)
EXIST. TELE (COMM.)
EXIST. TELE (F.O.)
PROP 6" WATER

710.21
455+50.00 MEET EXISTING
710.21
12" PVC SAN.

455+25 RESUME SEEDING

RESUME EARTHWORK 455+25

STA 455+00.00, 52.00' RT
CB-2-2B, GRATE ELEV 710.20
12" (W) 706.95
15" (E) 706.70

455+00.00
12" PVC SAN. 710.52

454+50.00
710.75

454+00.00
710.89

LEGEND

ITEM 615: PAVEMENT FOR M.O.T., CLASS A

CROSS SECTIONS INDUSTRY ROAD
STA. 454+00.00 TO STA. 455+50.00

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75
189

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SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
40	108	45	0	84	0
26	59	109	0	85	0
26	144	115	0	146	2
26	150	43	2	56	2
28	161	17	0	51	0
30	167	38	0	72	0
	789			494	4

458+00 END SEEDING

END EARTHWORK 458+00

EX R/W

SH

U

TMP

PROP 6" WATER

15" TYPE B

707.62
457+70.59
707.33
END WORK

12" PVC SAN.

EXIST. TELE (COMM.)

EXIST. 1¼" G

EXIST. TELE (F.O.)

EXIST. 6" W (TRANSITE)

4:1

2:1

705.1

15" TYPE B

708.19
457+50.00
707.55

SAN MH

EXIST. 1¼" G

EXIST. TELE (COMM.)

EXIST. 6" W (TRANSITE)

EXIST. TELE (F.O.)

705.5

STA 457+00.00, 42.75' RT
CB-2-2B, GRATE ELEV 708.25
15" (W) 705.20
15" (N) 705.20

15" TYPE C

EXIST. 10" G

15" TYPE C

615: PAV'T FOR M.O.T.

709.48
457+00.00
708.30

12" PVC SAN.

EXIST. 1¼" G

EXIST. 6" W (TRANSITE)

EXIST. TELE (F.O.)

EXIST. TELE (COMM.)

707.1

3:1

2:1

708.4

EXIST. 10" G

15" TYPE C

709.96
456+50.00
709.05

12" PVC SAN.

EXIST. 1¼" G

EXIST. 6" W (TRANSITE)

EXIST. TELE (F.O.)

EXIST. TELE (COMM.)

PROP 6" WATER

2:1

3:1

708.8

EXIST. 10" G

15" TYPE C

709.98
456+00.00
709.75

12" PVC SAN.

EXIST. 1¼" G

EXIST. 6" W (TRANSITE)

EXIST. TELE (F.O.)

EXIST. TELE (COMM.)

PROP 6" WATER

LEGEND

ITEM 615: PAVEMENT FOR M.O.T., CLASS A

40 30 20 10 0 10 20 30 40 50 60 70

CALCULATED DPF

CHECKED MAM

CROSS SECTIONS INDUSTRY ROAD
STA. 456+00.00 TO STA. 457+70.59

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76
189

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SEEDING END WIDTH	SEEDING SQ. YDS.
33	189
35	136
14	47
20	
	372

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
20	13	39	42
22	32	31	30
12	0	10	0
10	0		
		80	72

CALCULATED DPF
CHECKED MAM

SECTIONS OVERPASS DRIVE
CROSS SECTIONS 39+00.00 TO STA. 40+00.00

ATB-20-21.43

77
189

60 50 40 30 20 10 0 10 20 30 40 50 60

715 710 705 700

TMP
EX SH
4.0'
3:1
4:1
12", TYPE D
706.4
EXIST. TELE (COMM.)
EXIST. 6" G
EXIST. 6" W (TRANSITE)

708.83
40+00.00
707.19

TMP
2.5'
EX SH
10.0' RNDG.
10.0'
20.5 LT
708.50
18.00' LT
708.55
5.6%
-2.00%
12", TYPE D
EXIST. TELE (COMM.)
EXIST. 6" G
EXIST. 6" W (TRANSITE)

707.02
39+85.00
707.02

RESIDENTIAL DRIVE - LEFT

TMP
SH
EX SH
EXIST. TELE (COMM.)
3:1
3:1
706.2
EXIST. 6" G
EXIST. 6" W (TRANSITE)
STA 439+50.00, 26.00' LT
CB-2-2B, GRATE ELEV 706.15
12" (S) 704.23
STA 439+50.00, 26.00' LT
CB-3A, (SEE SHEET 34)
50'-12" TYPE B @ 0.26%

708.58
39+50.00
706.57

TMP
SH
EX SH
3:1
706.6
EXIST. TELE (COMM.)
EXIST. 6" G
EXIST. 6" W (TRANSITE)

707.08
39+00.00
706.07

438+75± BEGIN SEEDING

38+84.58 BEGIN WORK

BEGIN EARTHWORK 438+75±

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SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0		0	0		
	6			5	0
4		10	0		
	50			31	0
14		23	0		
	114			41	1
27		21	1		
	167			38	13
	337			115	14

441+75 SUSPEND SEEDING

SUSPEND EARTHWORK 441+75

42+00.00
709.57

41+50.00 MEET EXISTING
708.98

COMMERICAL DRIVE - LEFT 41+00.00
708.39

40+50.00
708.28

EX SH

TMP

BACK

MSE WALL

EXIST. 6" G
EXIST. 6" W (TRANSITE)
EXIST. TELE (COMM.)

7.0'
3.1%±
4.0'
3:1
4:1

12", TYPE C

STA 441+00.00, 45.75' LT
CB-2-2B, (SEE SHEET 34)

STA 440+31.00, 43.55' LT
CB-2-2A, (SEE SHEET 34)

STA 440+30.00, 30.00' LT
MH-3, (SEE SHEET 34)

14'-12" TYPE C @ 1.1%

706.6

707.78

715
710
705
700

60 50 40 30 20 10 0 10 20 30 40 50 60

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS OVERPASS DRIVE
STA. 40+50.00 TO STA. 42+00.00

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78
189

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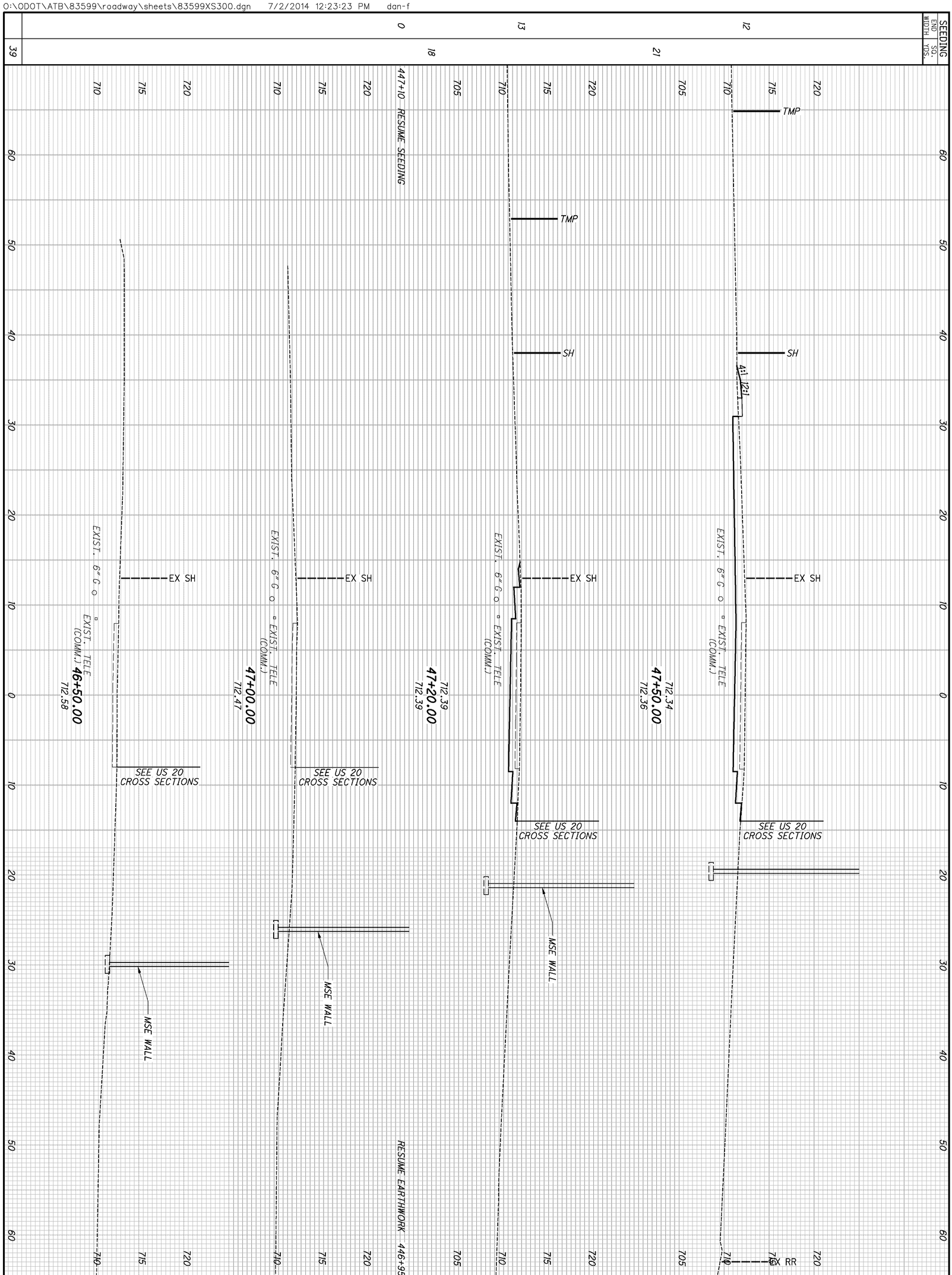

79
189

ATB-20-21.43

CROSS SECTIONS OVERPASS DRIVE
STA. 46+50.00 TO STA. 47+50.00

CALCULATED DPF
CHECKED MAM

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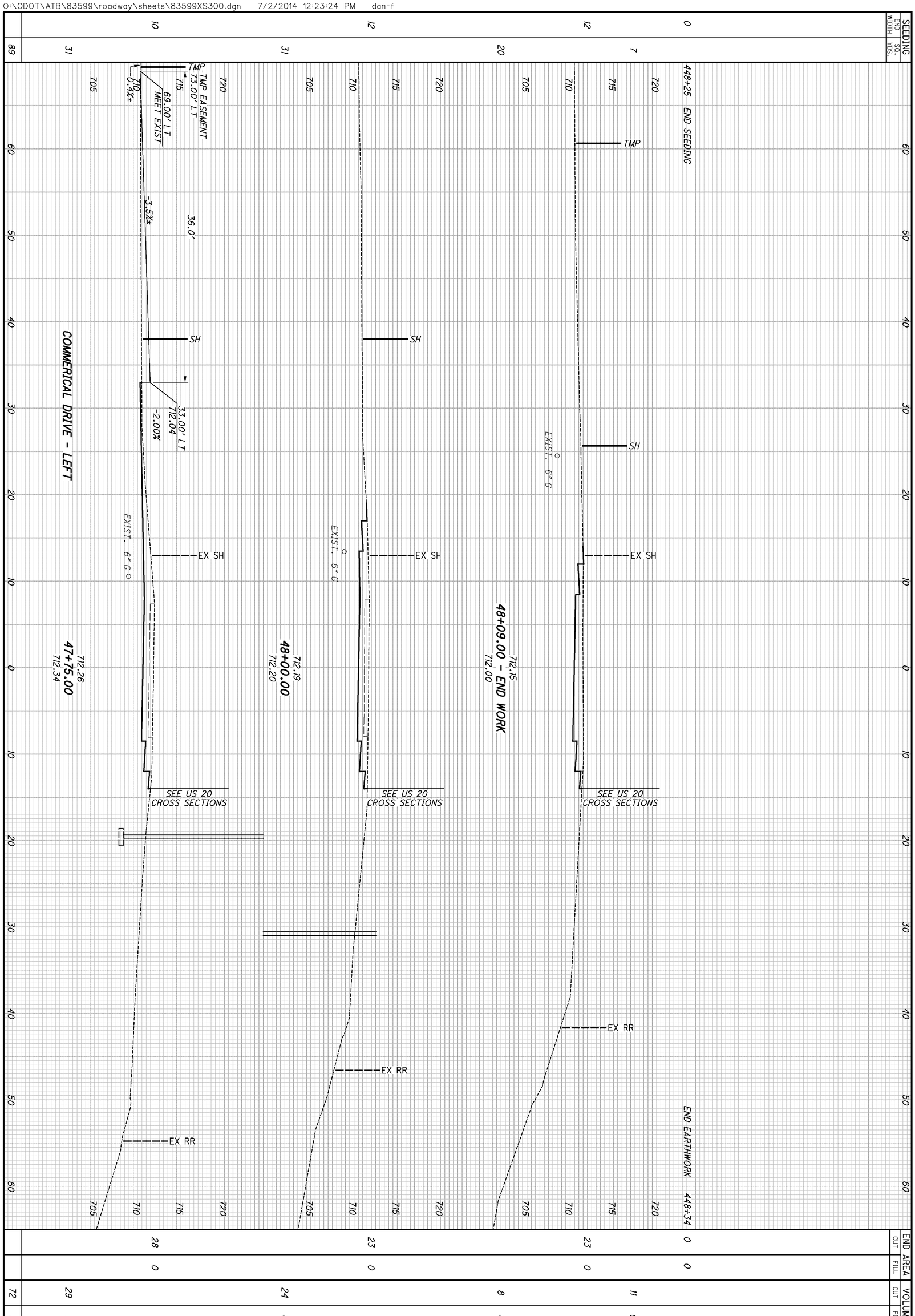
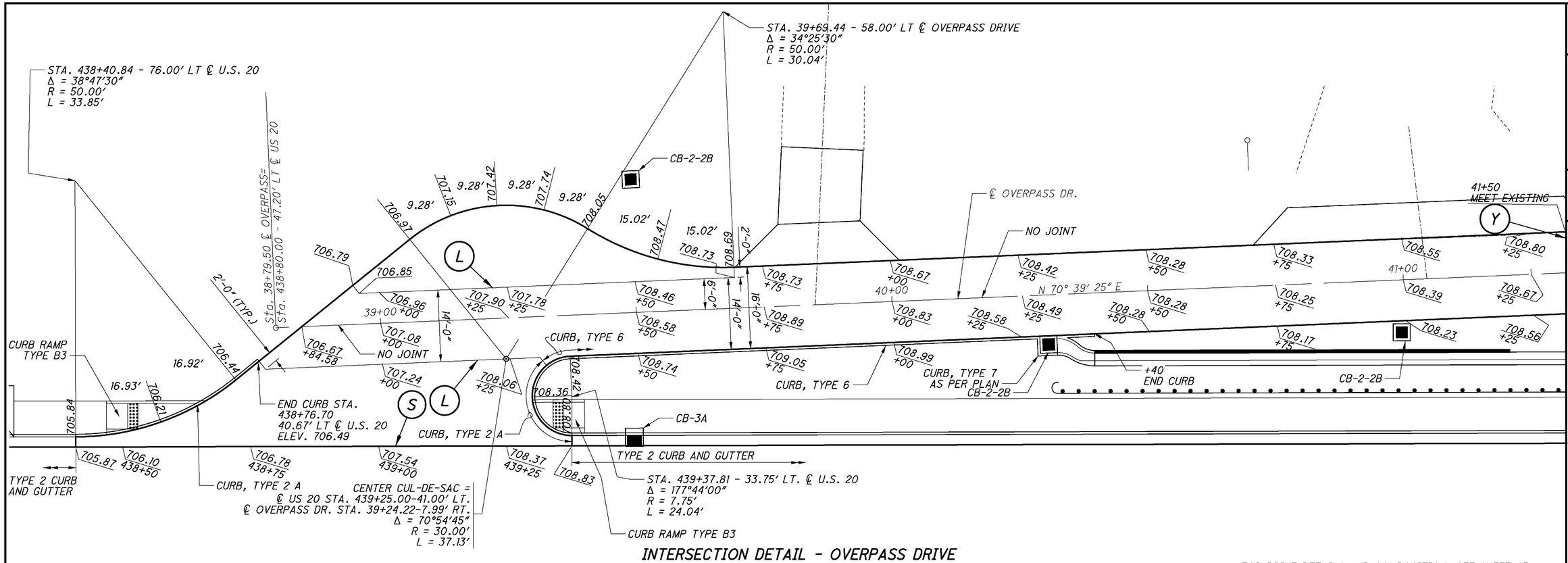


ATB-20-21.43	CROSS SECTIONS OVERPASS DRIVE STA. 47+75.00 TO STA. 48+15.00	CALCULATED DPF CHECKED MAM



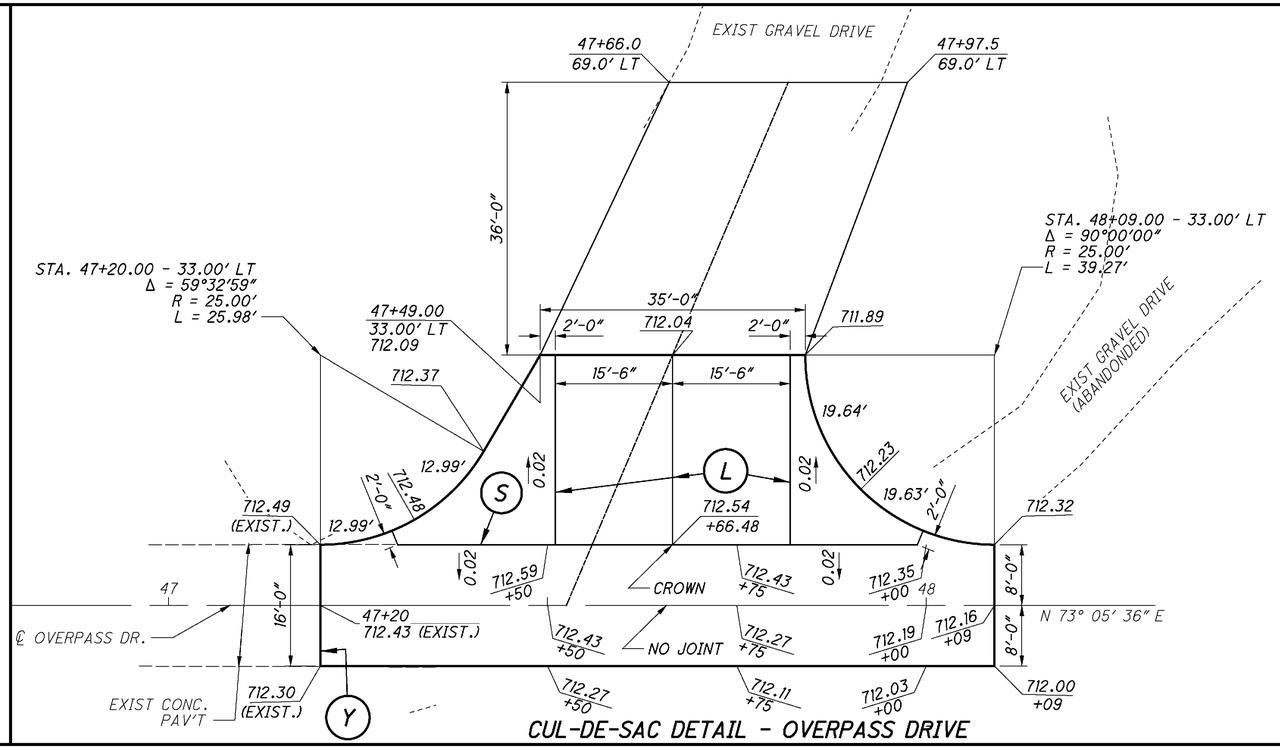
INTERSECTION DETAIL - OVERPASS DRIVE

FOR DRIVE DETAILS AND COMPOSITION, SEE SHEET 83

JOINT LEGEND

- (L) STANDARD LONGITUDINAL JOINT AS PER BP-2.1
- (S) STANDARD LONGITUDINAL JOINT AS PER BP-2.1 WITHOUT TIE BARS
- (Y) BUTT JOINT BETWEEN EXISTING PAVEMENT AND PROPOSED PAVEMENT, A DOWELLED TYPE Y JOINT AS PER BP-2.5 SHALL BE PROVIDED

(CONTRACTION JOINTS NOT SHOWN)



CUL-DE-SAC DETAIL - OVERPASS DRIVE

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HORIZONTAL SCALE IN FEET

CALCULATED DPF CHECKED MAM

INTERSECTION DETAILS OVERPASS DRIVE

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INTERSECTION DETAILS
INDUSTRY ROAD

ATB-20-21.43

82
189

HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED DPF
CHECKED MAM

℄ U.S. 20

456 457 458

TYPE 2 CURB AND GUTTER
10'-0" TRANSISTION TO NORMAL GUTTER SLOPE (TYP.)
CB-3A
STA. 457+18.34 - 34.50' RT. ℄ U.S. 20
Δ = 177°09'00"
R = 8.50'
L = 26.28'
+02.7 BEGIN CURB
CB-2-2B
℄ INDUSTRY DRIVE
CURB, TYPE 2 A
℄ INDUSTRY STA. 457+70.59 = ℄ US 20 STA. 457+70.00 - 50.43' RT.
TYPE 2 CURB & GUTTER
EXIST CONC. PAV'T
N 70° 16' 36" E
455+50 MEET EXISTING
BEGIN CURB
STA. 457+97.96
40.51' RT ℄ U.S. 20
ELEV=706.91
STA. 458+33.18
76.00' RT. ℄ U.S. 20
Δ = 79°03'00"
R = 50.00'
L = 68.98'
CENTER CUL-DE-SAC =
℄ US 20 STA. 457+35.00-57.00' RT
℄ INDUSTRY STA. 457+35.00-4.81' RT.
Δ = 125°03'55"
R = 50.00'
L = 109.14'
STA. 456+41.13-87.00' RT. ℄ INDUSTRY RD.
Δ = 48°53'00"
R = 75.00'
L = 63.99'

JOINT LEGEND

(L) STANDARD LONGITUDINAL JOINT AS PER BP-2.1

(S) STANDARD LONGITUDINAL JOINT AS PER BP-2.1 WITHOUT TIE BARS

(Y) BUTT JOINT BETWEEN EXISTING PAVEMENT AND PROPOSED PAVEMENT, A DOWELLED TYPE Y JOINT AS PER BP-2.5 SHALL BE PROVIDED

(CONTRACTION JOINTS NOT SHOWN)

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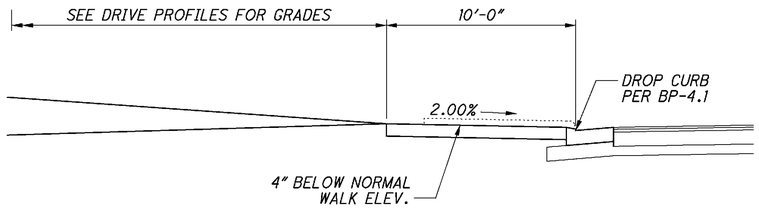
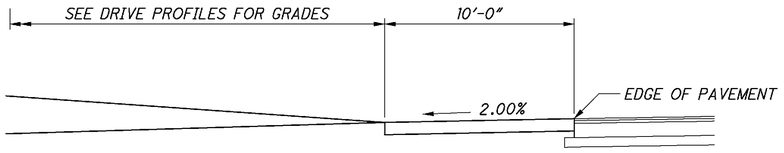
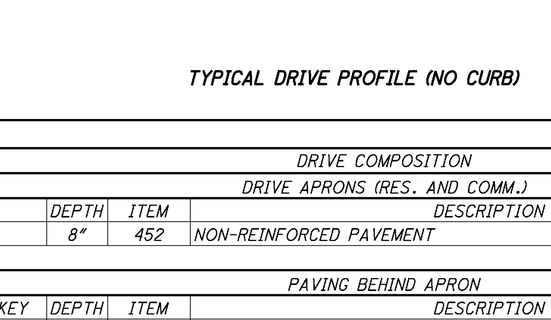


TYPICAL DRIVE PROFILE (CURB AND GUTTER)

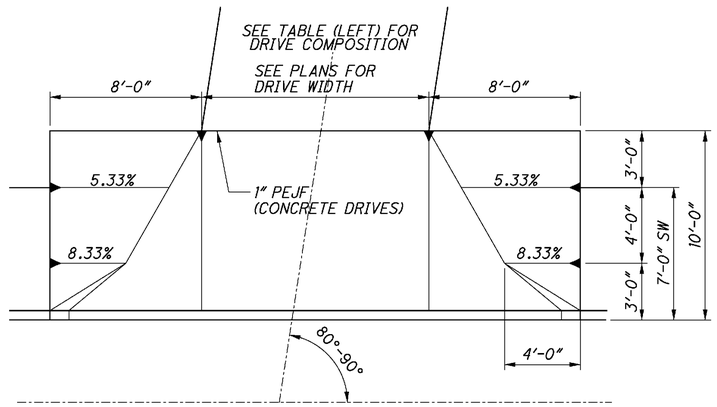


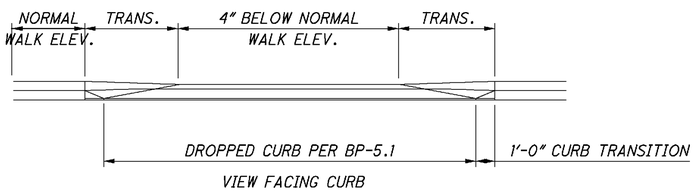
TYPICAL DRIVE PROFILE (NO CURB)

DRIVE COMPOSITION			
DRIVE APRONS (RES. AND COMM.)			
	DEPTH	ITEM	DESCRIPTION
	8"	452	NON-REINFORCED PAVEMENT
PAVING BEHIND APRON			
KEY	DEPTH	ITEM	DESCRIPTION
C1	10"	304	AGGREGATE BASE
R1	1-1/4"	441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS)
	-	407	TACK COAT
	3-1/2"	301	ASPHALT CONCRETE BASE, PG64-22, FOR DRIVEWAYS
R2	8"	304	AGGREGATE BASE

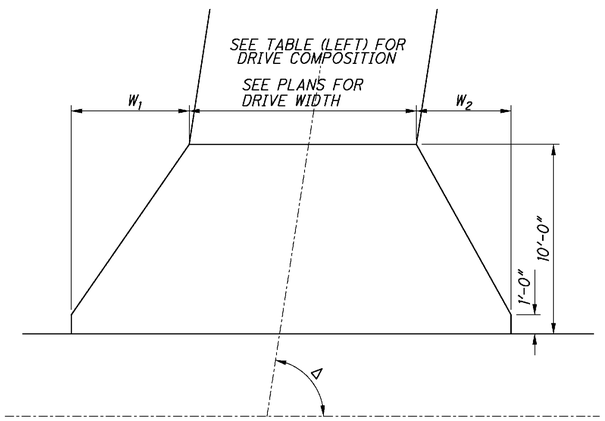


DETAIL FOR SETTING MAILBOXES

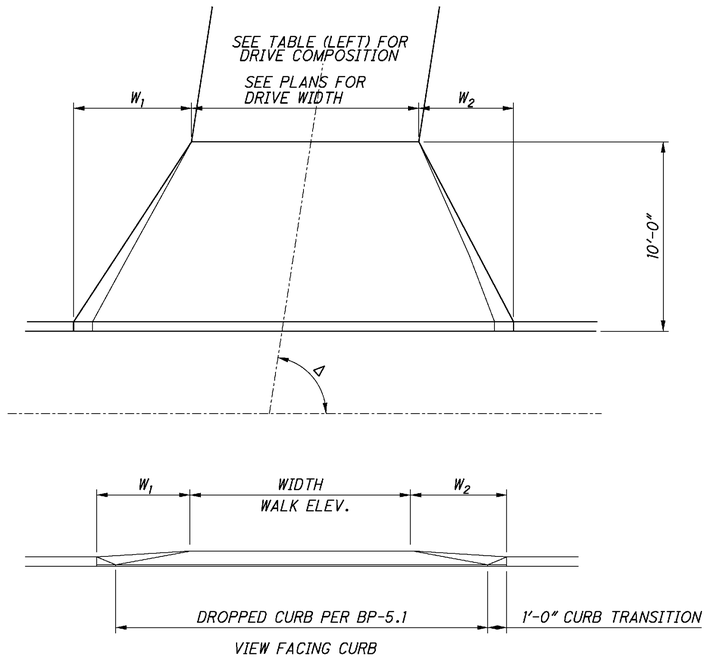




APRON DETAILS (SIDEWALK)
USE TYPICAL DRIVE PROFILE (CURB AND GUTTER)



APRON DETAILS (NO CURB)
USE TYPICAL DRIVE PROFILE (NO CURB)



APRON DETAILS (NO SIDEWALK)
USE TYPICAL DRIVE PROFILE (CURB AND GUTTER)

DELTA	W1	W2
50°-60°	9.5	6.5
60°-70°	9.0	7.0
70°-80°	8.5	7.5
80°-90°	8.0	8.0

CALCULATED DPF
CHECKED MAM

MISCELLANEOUS DETAILS

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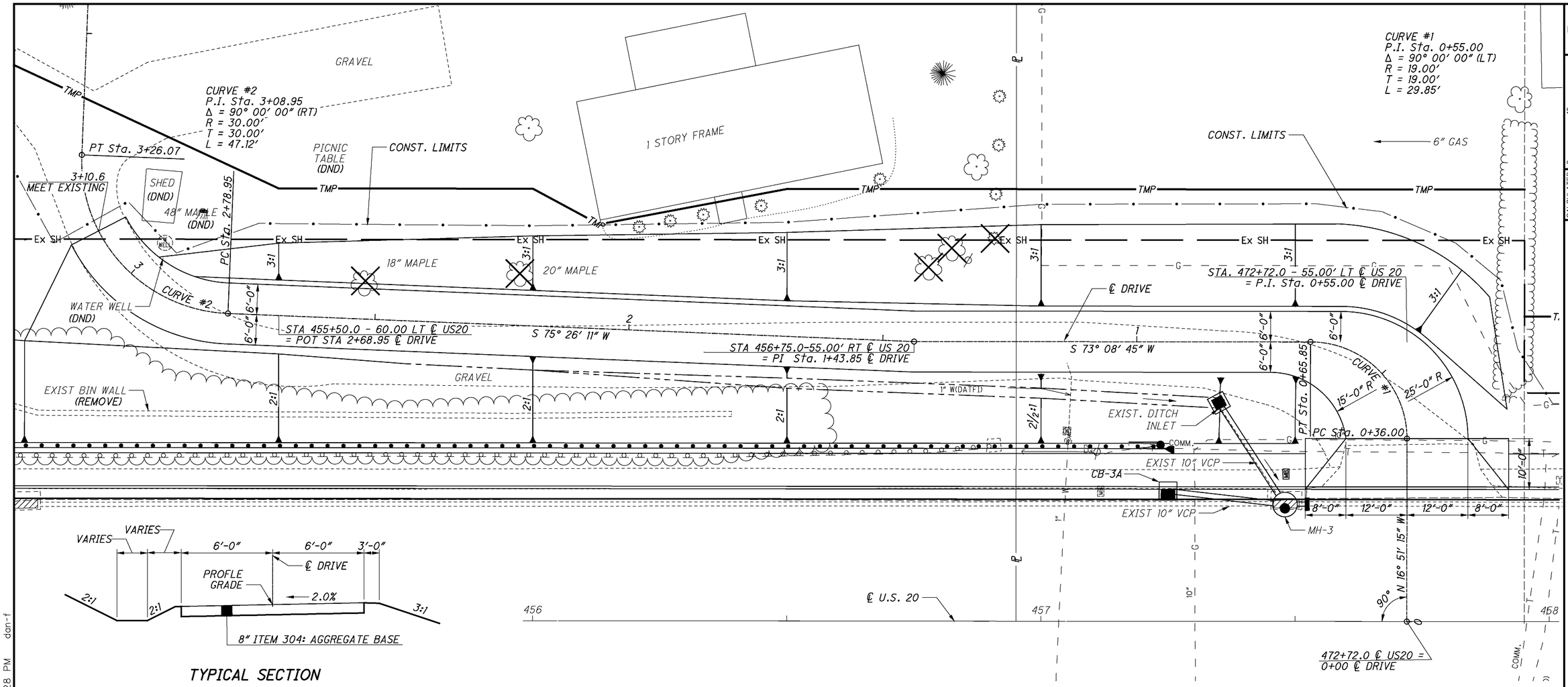
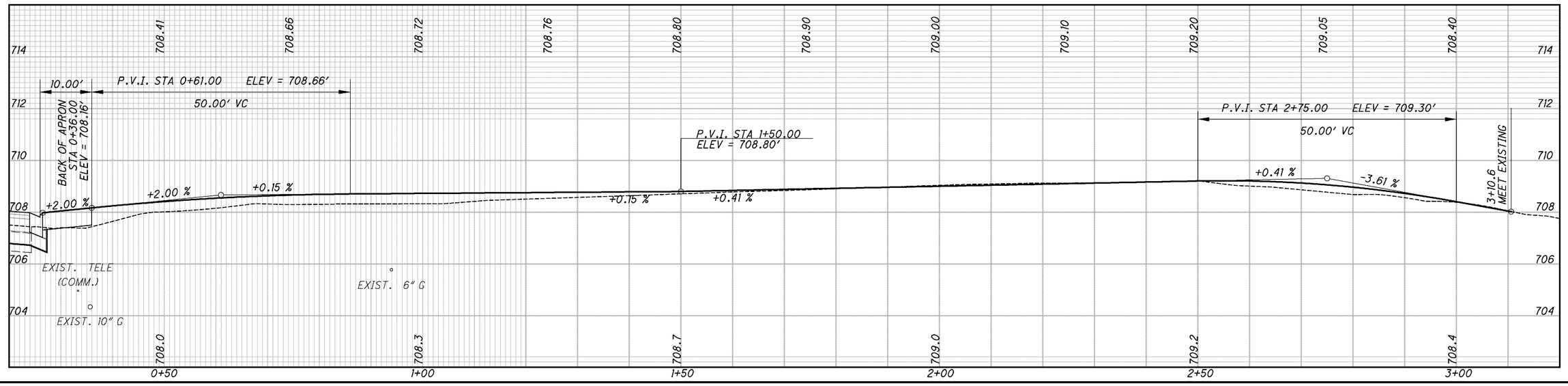


TYPICAL SECTION



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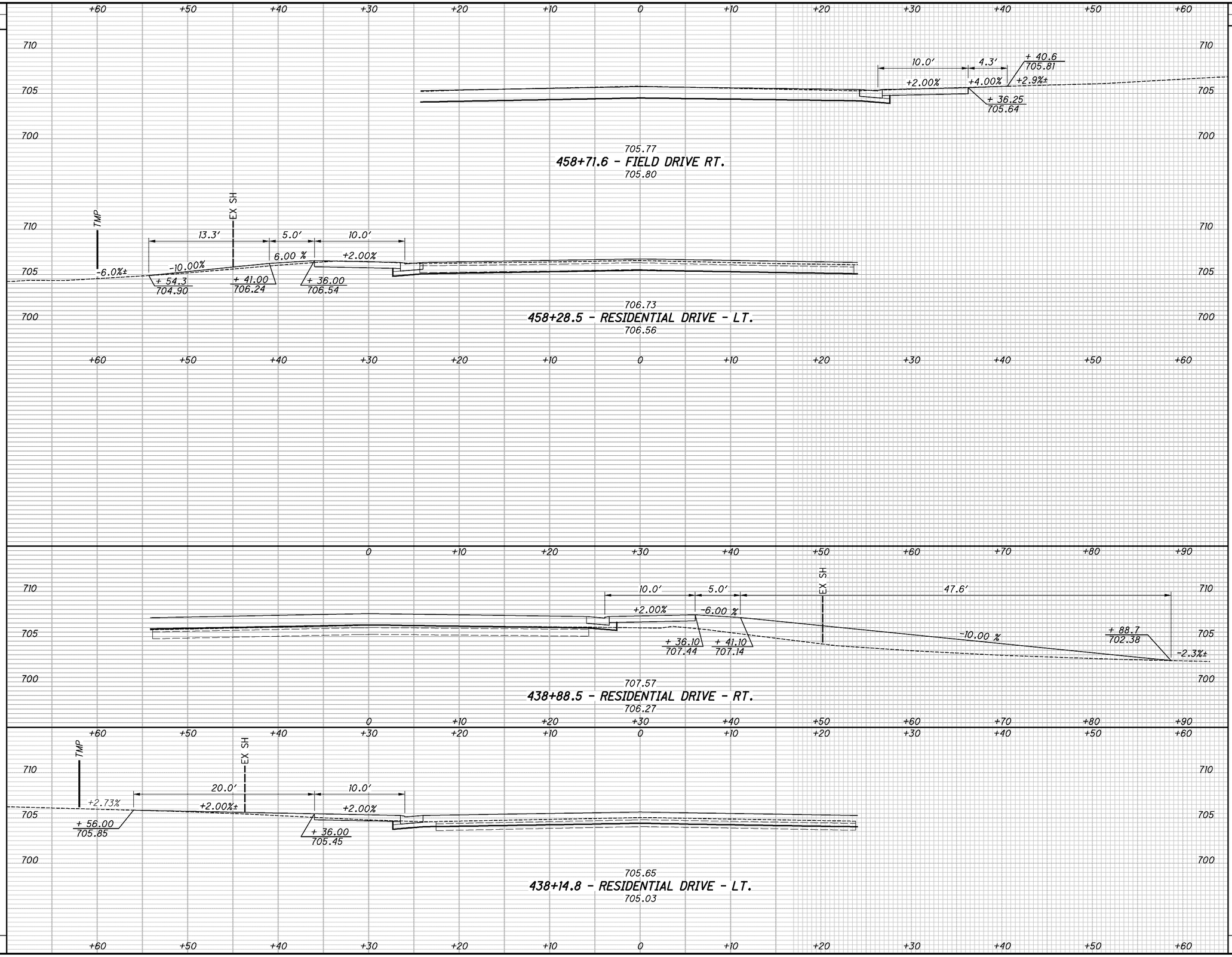
HORIZONTAL SCALE IN FEET
0 5 10 20
CALCULATED DPF
CHECKED MAM

DRIVEWAY DETAILS STA. 472+72.0 LEFT

ATB-20-21.43

SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED	CHECKED
DPF	MAM

DRIVE PROFILES US 20
STA. 438+14.80 TO STA. 458+71.60

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SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED DPF

CHECKED MAM

+60 +50 +40 +30 +20 +10 0 +10 +20 +30 +40 +50 +60

710 705 700

TMP EX SH

8.6′ 10.0′

-1.8%± -6.00% 2.00%

+ 43.7 / 703.94

+ 35.08 / 704.45

704.83

459+32.7 - RESIDENTIAL DRIVE - LT.

704.81

10.0′ 9.4′

+2.00% +6.00% +2.7%±

+ 35.77 / 704.87

+ 45.2 / 705.44

705.16

459+07.5 - FIELD DRIVE RT.

705.17

TMP EX SH

18.8′ 10.0′

-1.3%± -6.00% +2.00%

+ 54.8 / 704.04

+ 36.00 / 705.17

705.47

458+87.9 - RESIDENTIAL DRIVE - LT.

705.52

+60 +50 +40 +30 +20 +10 0 +10 +20 +30 +40 +50 +60

DRIVE PROFILES US 20
STA. 458+87.90 TO STA. 459+32.72

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86
189

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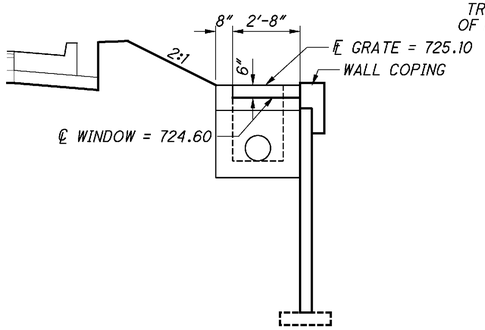
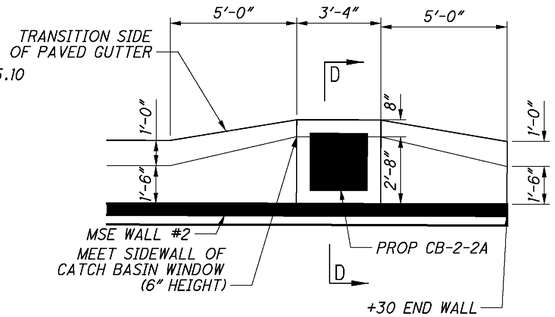
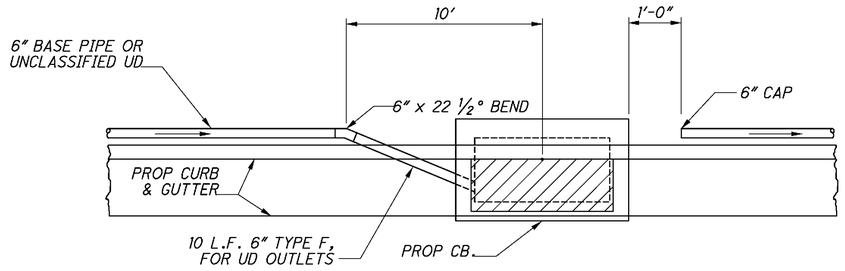


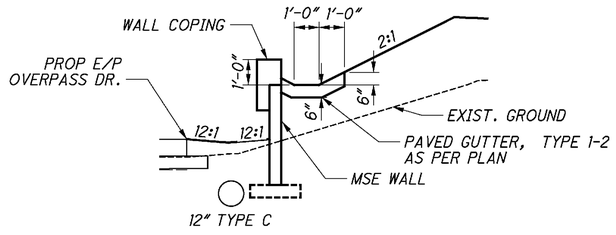
SECTION D-D



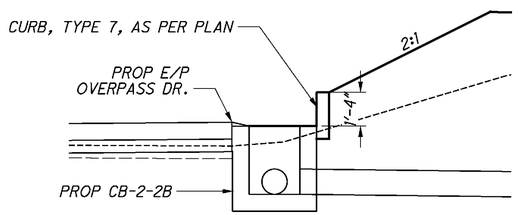
PAVED GUTTER DETAIL - 453+23.33 RT



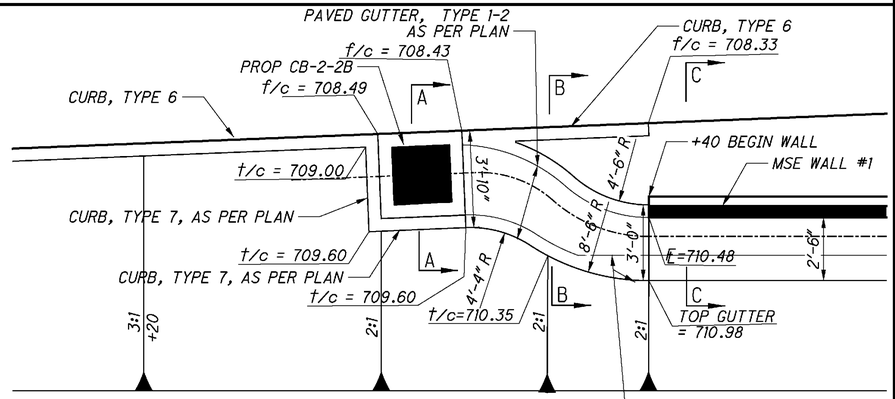
UNDERDRAIN CONNECTION TO CB'S



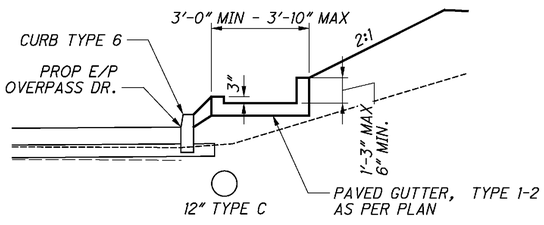
SECTION C-C



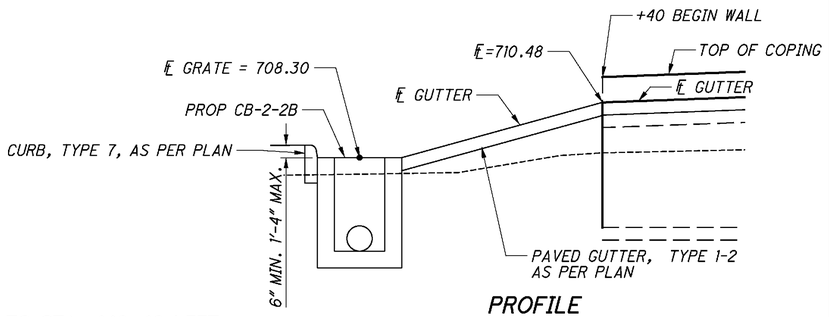
SECTION A-A



PLAN



SECTION B-B



PROFILE

DETAIL - PAVED FLUME STA.440+31 TO STA. 440+40 LEFT

CALCULATED DPF
CHECKED MAM

DRAINAGE DETAILS

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):

BR-2-98	DATED/REVISED	01-18-13
SBR-1-13	DATED/REVISED	07-19-13

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS

800-2013	DATED	07-18-14
840	DATED	01-07-14
878	DATED	10-18-13

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 6TH EDITION, INCLUDING THE 2013 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI (CAST-IN-PLACE COPING)
CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4500 PSI (MOMENT SLABS, PARAPETS)
REINFORCING STEEL - ASTM A615 OR A996 GRADE 60, MINIMUM YIELD STRENGTH 60,000 PSI

MINIMUM SOIL REINFORCEMENT LENGTHS

PROVIDE MINIMUM SOIL REINFORCEMENT LENGTHS ACCORDING TO SUPPLEMENTAL SPECIFICATION 840 EXCEPT FOR A PORTION OF MSE WALL NO. 1. FOR MSE WALL NO. 1, THE MINIMUM SOIL REINFORCEMENT LENGTHS SHALL BE DETERMINED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 840, EXCEPT FROM STATION 16+08 TO STATION 18+33, FOR WHICH THE MINIMUM SOIL REINFORCEMENT LENGTH SHALL BE 0.8H (BUT NOT LESS THAN 8'-0"); AND FROM STATION 18+33 TO 19+88, FOR WHICH THE MINIMUM SOIL REINFORCEMENT LENGTH SHALL BE 0.9H (BUT NOT LESS THAN 8'-0").

H = THE WALL HEIGHT AS DETERMINED ACCORDING TO SUPPLEMENTAL SPECIFICATION 840.

PROPRIETARY RETAINING WALL DATA

THE PROPRIETARY WALL SUPPLIER SHALL DESIGN THE INTERNAL STABILITY OF THE MECHANICALLY STABILIZED EARTH (MSE) WALLS IN ACCORDANCE WITH SS840 TO SUPPORT THE ABUTMENTS AND INDEPENDENT RETAINING WALLS. THE DESIGN FOR INTERNAL STABILITY SHALL INCLUDE UNFACTORED HORIZONTAL STRIP LOADS FROM THE SUPERSTRUCTURES LISTED IN THE TABLE ON THIS SHEET, APPLIED PERPENDICULAR TO THE FACE OF THE WALL AT THE BASE OF THE CONCRETE FOOTING. THIS STRIP LOAD DOES NOT INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL. HOWEVER, THE PROPRIETARY WALL SUPPLIER SHALL INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL IN THE DESIGN CALCULATIONS.

BRIDGE SUPERSTRUCTURE LOADS		
WALL	LOCATION	HORIZONTAL LOAD (Kip/Ft.)
1	REAR ABUTMENT	8.96
2	FORWARD ABUTMENT	4.56

WALL DESIGN CRITERIA

THE ALLOWABLE BEARING CAPACITY FOR EACH WALL IS LISTED IN THE TABLE BELOW:

WALL	STATIONS ALONG WALL BASELINE		FACTORED BEARING RESISTANCE
	FROM	TO	
1	10+05	10+45	8.6
1	10+45	10+75	11.8
1	10+75	10+95	13
1	10+95	12+17	18
1	12+17	13+50	10.3
1	13+50	14+30	9.7
1	14+30	16+00	8.5
1	16+00	17+80	7.9
1	17+80	18+75	7.7
1	18+75	19+00	7.5
1	19+00	19+25	7.5
1	19+25	19+75	7.6
1	19+75	20+30	8.3
2	10+25	10+75	8.5
2	10+75	11+00	9.3
2	11+00	11+25	11.5
2	11+25	12+74	14.4
2	12+74	13+75	10.4
2	13+75	14+22	9.7
2	14+22	14+73	9.7
2	14+95	14+95	9.9
2	15+73	15+73	10
2	16+50	16+50	9.3
2	17+23	17+23	9.3

THE FOUNDATION SOIL SHALL BE EVALUATED BY THE CONTRACTOR DURING CONSTRUCTION TO DETERMINE SUITABILITY FOR SUPPORT OF THE APPLIED BEARING STRESSES.

ITEM 203 EMBANKMENT, AS PER PLAN

PLACE AND COMPACT EMBANKMENT MATERIAL IN 6 INCH LIFTS FOR THE CONSTRUCTION OF THE WALL BACKFILL IN FRONT OF THE MSE WALLS, AND WHERE SHOWN ON THE PLANS, FOR EMBANKMENT FILL BELOW THE MSE WALLS.

THE DEPARTMENT WILL MEASURE WALL EMBANKMENT FOR BACKFILL IN FRONT OF AND BEHIND MSE WALLS ACCORDING TO THE PAYMENT LIMITS SHOWN ON THE MSE WALL SECTION SHEETS. PAYMENT WILL BE BOUNDED ABOVE BY THE EXISTING OR PROPOSED SUBGRADE, WHICHEVER IS LOWER. PAYMENT WILL BE BOUNDED BELOW BY THE WALL EXCAVATION PAYMENT LIMITS.

PRIOR TO INCORPORATION OF ANY BORROW INTO THE EMBANKMENTS, REPRESENTATIVE BULK SAMPLES OF THE PROPOSED BORROW MUST BE PROCURED AND APPROPRIATELY TESTED (CONSOLIDATED-UNDRAINED TRIAXIAL TEST OR DIRECT SHEAR TEST) TO CONFIRM THAT THE REMOLDED ANGLE OF INTERNAL FRICTION (ϕ'- EFFECTIVE STRESS) OF THE BORROW, WHEN PROPERLY COMPACTED, MEETS OR EXCEEDS A VALUE OF 28 DEGREES WITH A COHESION (c') INTERCEPT OF 300 PSF FOR A-4a, A-6a AND A-6b SOILS AND A REMOLDED ANGLE OF INTERNAL FRICTION (ϕ' - EFFECTIVE STRESS) OF 34 DEGREES WITH NO COHESION FOR A-1a, A-1b, A-2-4, A-3a AND A-3 SOILS.

ITEM 511 - QC2 CONCRETE, MISC.: MOMENT SLAB

THIS ITEM IS FOR THE CIP MOMENT SLABS. PAYMENT SHALL INCLUDE CONCRETE, EXPANSION AND CONTRACTION JOINTS AND JOINT MATERIAL AT EACH END AND WITHIN THE LIMITS OF THE MOMENT SLABS. FOR DETAILS, SEE SHEETS 13/17 AND 14/17.

THE MOMENT SLAB EXPANSION AND CONTRACTION JOINTS SHOULD LINE UP WITH THE PARAPET EXPANSION AND CONTRACTION JOINTS AS WELL AS THE MSE WALL AND COPING SLIP JOINTS.

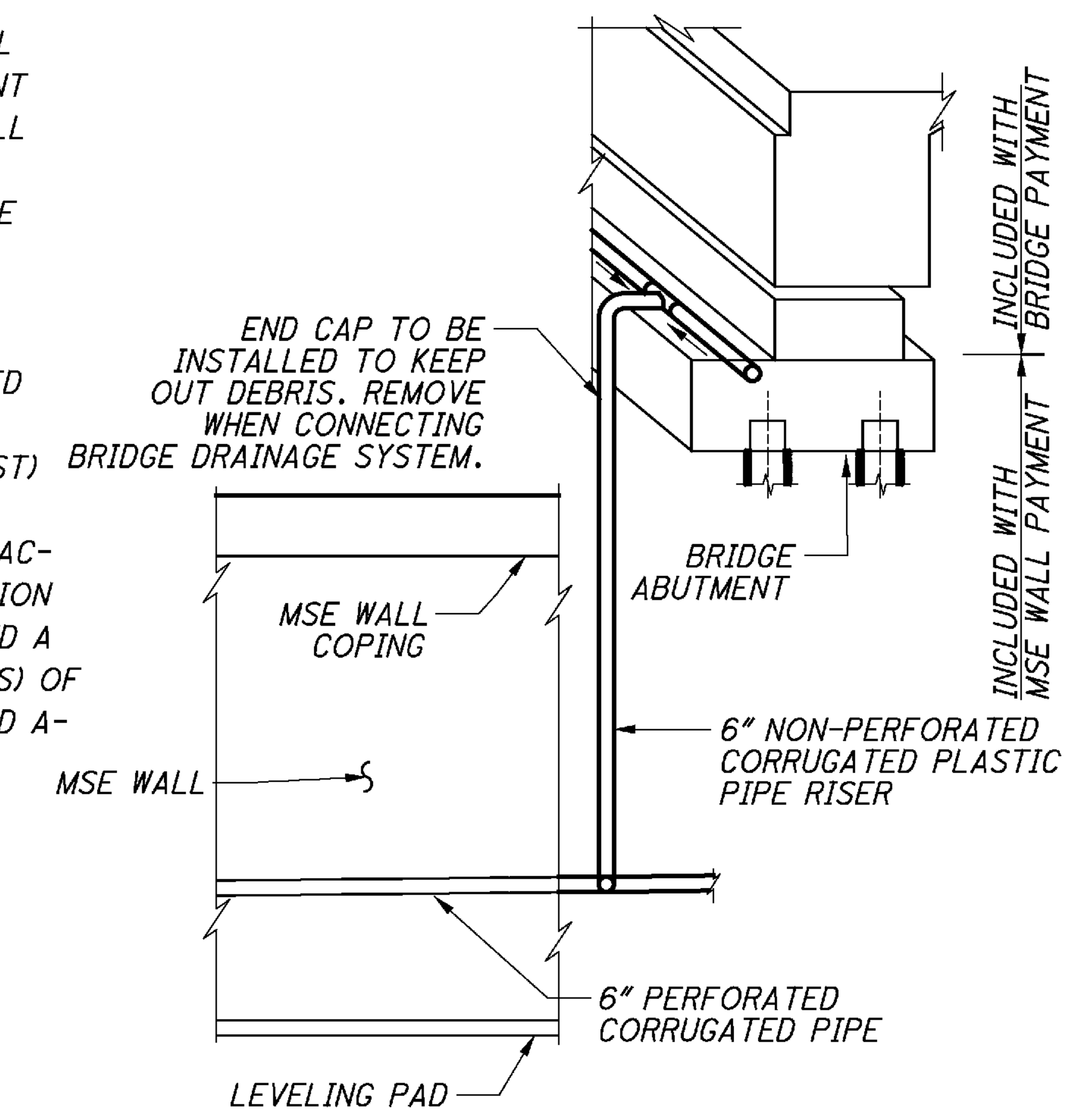
ITEM 511 - QC2 CONCRETE, MISC.: PARAPET ON MOMENT SLAB

THIS ITEM IS FOR THE CIP BARRIERS ON THE MOMENT SLAB AT MSE WALL 1. PAYMENT SHALL INCLUDE CONCRETE AND JOINT MATERIAL AT EACH END AND WITHIN THE LIMITS OF THE CIP BARRIERS. FOR DETAILS, SEE SHEET 13/17.

PARAPET EXPANSION AND CONTRACTION JOINTS SHOULD LINE UP WITH THE MOMENT SLAB EXPANSION AND CONTRACTION JOINTS AS WELL AS THE MSE WALL AND COPING SLIP JOINTS.

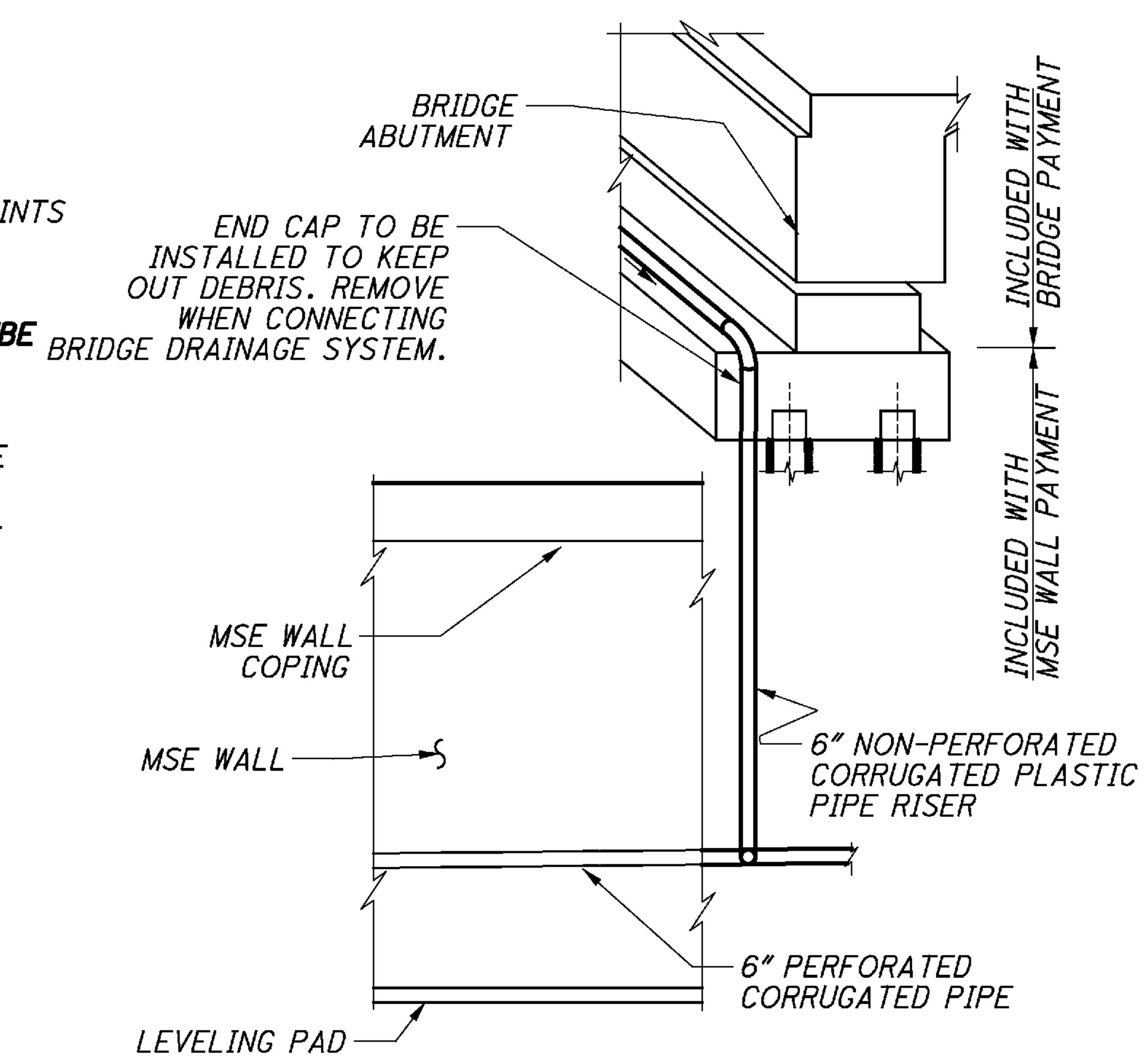
ITEM 517 - RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN

THIS ITEM IS FOR THE BARRIER ON THE MOMENT SLAB AT MSE WALL 2. PAYMENT SHALL INCLUDE ALL MATERIAL AND LABOR FOR CONSTRUCTING THE BARRIER ABOVE THE SIDEWALK JOINT AS SHOWN ON SHEET 14/17.



TYPICAL RISER DETAIL

(CONNECTION FROM BRIDGE DRAINAGE SYSTEM TO MSE #1 WALL DRAINAGE REAR ABUTMENT - RIGHT, MSE WALL #2 FWD. ABUTMENT RIGHT)



TYPICAL RISER DETAIL

(CONNECTION FROM BRIDGE DRAINAGE SYSTEM TO MSE #1 WALL DRAINAGE REAR ABUTMENT - LEFT, MSE WALL #2 FWD. ABUTMENT LEFT)

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED JPR | DRAWN CML | REVIEWED MLJ | DATE 3/26/14 | CHECKED BJF | REVISED | STRUCTURE FILE NUMBER 0402265

MSE WALL GENERAL NOTES
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

ITEM SPECIAL - SETTLEMENT PLATFORM

THIS ITEM CONSISTS OF FURNISHING, CONSTRUCTING, AND MAINTAINING SETTLEMENT PLATFORMS AND OBTAINING SETTLEMENT READINGS AS REQUIRED BY THE PLANS OR AS DIRECTED BY THE ENGINEER. AT THE OPTION AND EXPENSE OF THE CONTRACTOR, ADDITIONAL SETTLEMENT PLATFORMS MAY BE INSTALLED AT LOCATIONS APPROVED BY THE ENGINEER. SETTLEMENT READINGS SHALL BE TAKEN WEEKLY DURING CONSTRUCTION AND DURING ANY SPECIFIED WAITING PERIOD. THE READINGS SHALL BE PLOTTED ON GRAPH PAPER PRESENTING DEFORMATION (ON THE NEGATIVE Y-AXIS), AND FILL HEIGHT (ON THE POSITIVE Y-AXIS) VERSUS TIME (ON THE X-AXIS). A COPY OF EACH CUMULATIVE PLOT SHALL BE SENT TO THE OFFICE OF GEOTECHNICAL ENGINEERING, ATTENTION: GEOTECHNICAL DESIGN COORDINATOR, AFTER EACH SETTLEMENT READING IS RECORDED.

MATERIALS: SOUND LUMBER SUCH AS 3/4 - INCH EXTERIOR GRADE PLYWOOD SHALL BE USED FOR THE BASE. THE PIPE SHALL BE 2-1/2 - INCH STANDARD BLACK PIPE WITH THREADED FITTINGS AS SHOWN ON THE PLANS. A STEEL PLATE 36" X 36" X ⅛" MY BE SUBSTITUTED FOR THE LUMBER FOR THE PLATFORMS, AT THE CONTRACTOR'S OPTION.

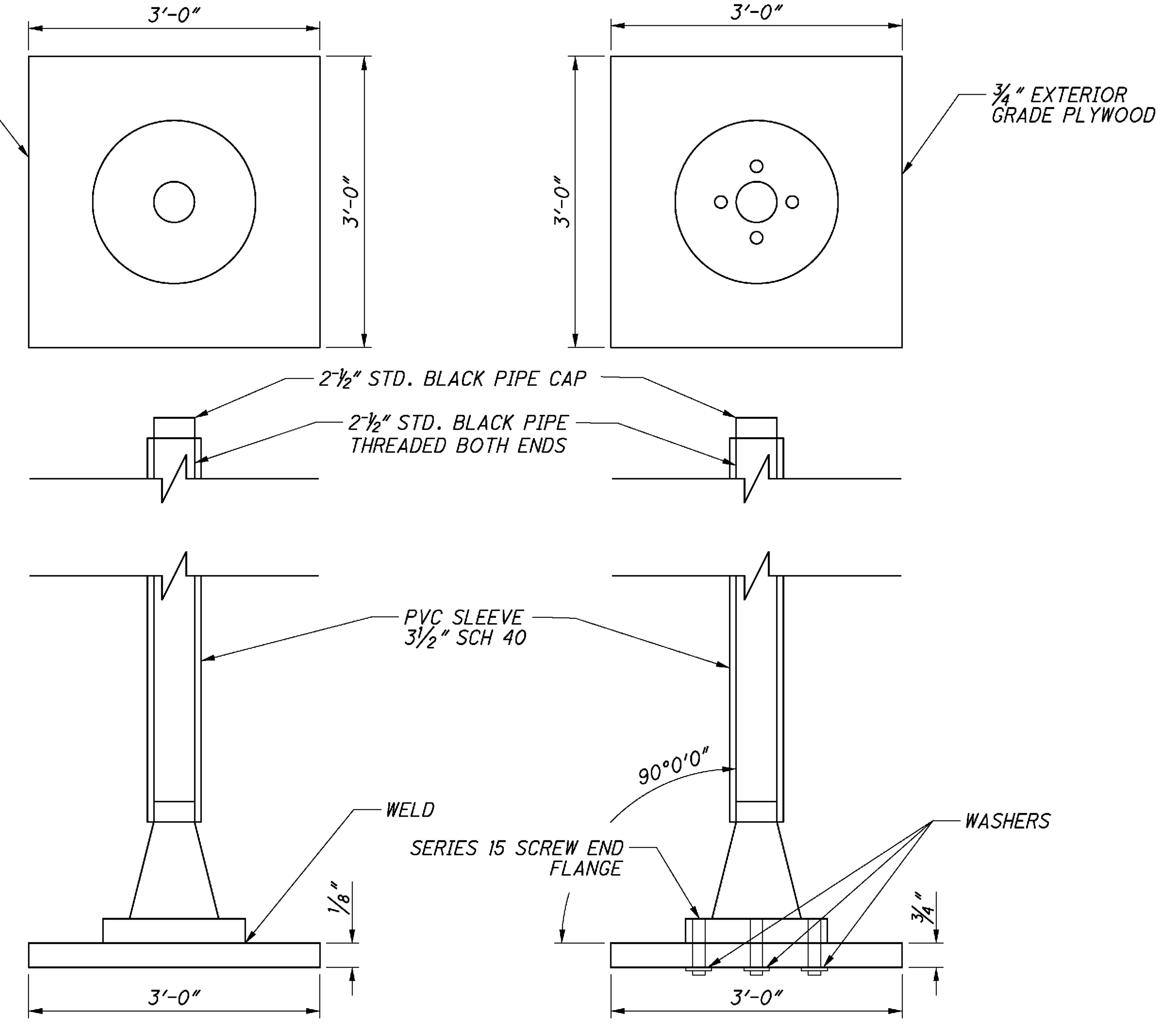
CONSTRUCTION METHODS: THE PLATFORMS SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS. THE PLATFORM SHALL BE SET ON A LEVEL SURFACE. THE PIPE SHALL BE FIRMLY SECURED TO THE PLATFORM AND SHALL BE MAINTAINED IN A PLUMB POSITION DURING THE PLACEMENT OF THE EMBANKMENT. THE PIPE SHALL BE MARKED AT INTERVALS TO FACILITATE THE MEASUREMENT OF THE DEPTH OF FILL. THE CONTRACTOR SHALL STOP WORK IN ANY LOCATION WHERE THE SETTLEMENT PLATFORM HAS BEEN DISTURBED OR DAMAGED. PLATFORMS OR PIPES DAMAGED OR DISPLACED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PROPER CONDITION AT THE CONTRACTOR'S EXPENSE. PRIOR TO PAVING, THE TOP OF THE SETTLEMENT PLATFORM PIPE SHALL BE CUT OFF TWO FEET BELOW FINISHED SURFACE OF THE SUBGRADE OR FINISHED GROUND SURFACE, WHICHEVER IS APPLICABLE.

METHOD OF MEASUREMENT: THE NUMBER OF SETTLEMENT PLATFORMS TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF SETTLEMENT PLATFORMS COMPLETED, MAINTAINED, AND ACCEPTED BY THE ENGINEER.

BASIS OF PAYMENT: PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE EACH FOR "ITEM SPECIAL - SETTLEMENT PLATFORM" WHICH IS COMPENSATION FOR CONSTRUCTING, MAINTAINING, AND MONITORING THE SETTLEMENT PLATFORMS INCLUDING FURNISHING ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK. PAYMENT SHALL NOT BE MADE FOR SETTLEMENT PLATFORMS WHICH BECOME USELESS DUE TO DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS.

SETTLEMENT PLATFORM SCHEDULE

ALIGNMENT	STATION	OFFSET	MAXIMUM ANTICIPATED SETTLEMENT	ITEM SPECIAL SETTLEMENT PLATFORM (EACH)
US 20	445+90	7' LT	2 3/4"	1
US 20	446+40	7' RT	2 3/4"	1
US 20	450+80	7' RT	2 3/4"	1
US 20	451+30	7' LT	2 3/4"	1



SETTLEMENT PLATFORM DETAIL

PRELOADING/SURCHARGE NOTES:

THE PRELOADING/"WAITING PERIOD" SHALL NOT BE CONSIDERED TO BEGIN UNTIL ALL FILL (MSE OR EMBANKMENT) HAS BEEN PLACED. AT ANY LOCATION OF THE PROJECT THE PRELOAD FILL SHALL CONSIST OF THE PROPOSED MSE WALLS OR EMBANKMENT CONSTRUCTED TO THE ENTIRE PROPOSED LATERAL EXTENTS AND TO WITHIN 1 FOOT OF THE PROPOSED VERTICAL EXTENTS.

NO PAVING OF ROADWAYS OR RE-TAPPING OF ABUTMENT PILES OR PILES SUPPORTING PIERS 4 AND 5 SHALL BEGIN UNTIL CONFIRMATION HAS BEEN RECEIVED FROM THE ENGINEER THAT THE CRITERIA TO END PRELOADING HAVE BEEN MET. THE CRITERIA TO DETERMINE WHEN PRELOADING/"WAIT PERIOD" CAN END IS AS FOLLOWS:

SURVEY MONITORING SHOWS THAT ALL SETTLEMENT PLATFORMS AT THE LOCATION HAVE SETTLED LESS THAN 0.1 INCHES OVER THE PREVIOUS TWO WEEK PERIOD.

THE ANTICIPATED WAIT PERIOD IS TWO (2) MONTHS.

NOTES:

1. SETTLEMENT PLATFORMS SHALL BE PLACED AT THE LOCATION INDICATED IN THE PLATFORM SCHEDULE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. CONTRACTOR HAS OPTION OF USING EITHER STEEL OR PLYWOOD PLATFORM BASE.
3. CONTRACTOR SHALL FURNISH MATERIALS AND LABOR TO EXTEND PIPE THROUGH ENTIRE FILL.
4. SETTLEMENT PLATFORMS SHALL BE ANCHORED BY STAKES DRIVEN AT EACH CORNER TO PREVENT OVERTURNING.

CALC: DPF DATE: 3/19/2014
CHK: BJF DATE: 3/21/2014

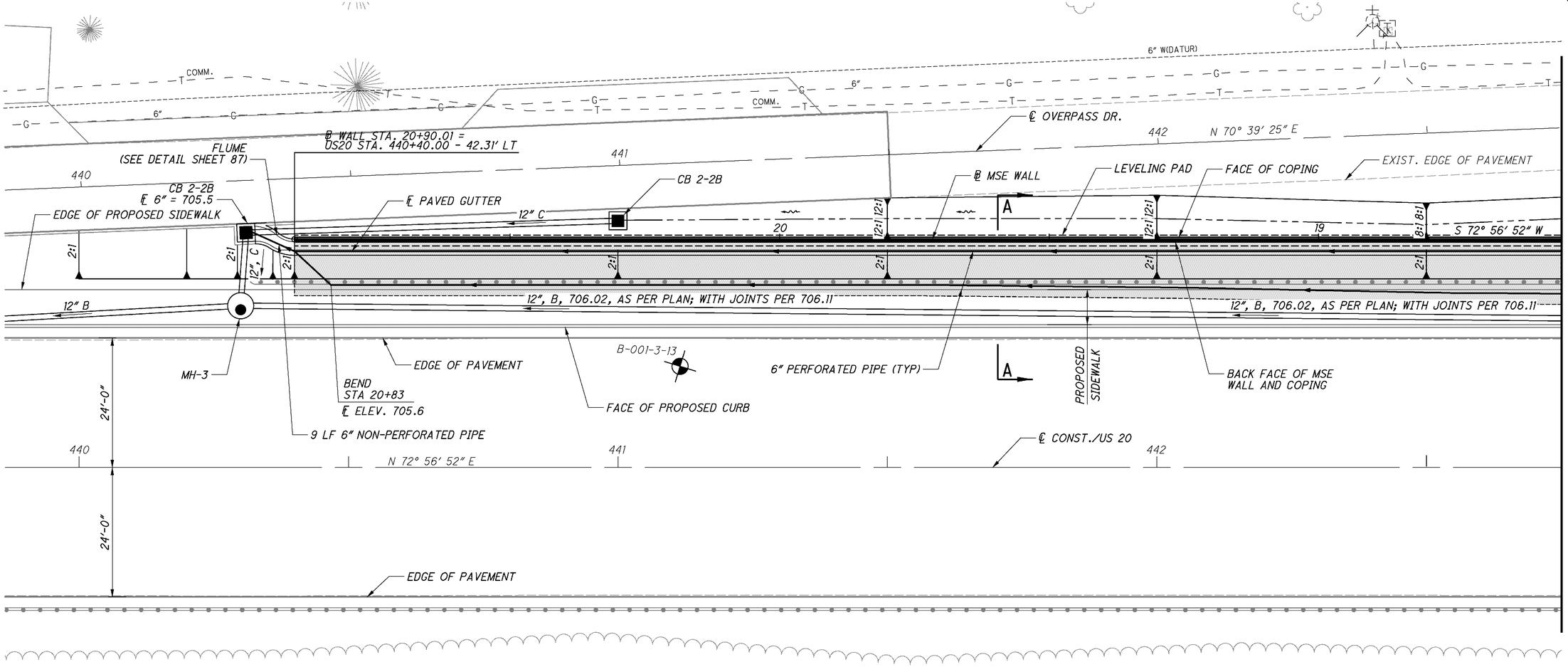
ITEM	TOTALS CARRIED TO GENERAL SUMMARY	UNIT	DESCRIPTION	MSE WALL 1	MSE WALL 2	GENERAL	SHEET REF.
203	1809	CY	EMBANKMENT, AS PER PLAN	901	908		1/17
203	2584	CY	GRANULAR MATERIAL, TYPE B	1247	1337		
203	1181	CY	GRANULAR MATERIAL, TYPE C	668	513		
203	4	EACH	SPECIAL - SETTLEMENT PLATFORM	2	2		
503	LS		COFFERDAMS AND EXCAVATION BRACING			LS	
509	11968	LB	EPOXY COATED REINFORCING STEEL	5,977	5,991		17/17
511	86	CY	CLASS QC2 CONCRETE, MISC.: MOMENT SLAB	86			1/17
511	15	CY	CLASS QC2 CONCRETE, MISC.: PARAPET ON MOMENT SLAB	15			1/17
512	3606	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1911	1695		
516	228	SF	1" PREFORMED EXPANSION JOINT FILLER	177	51		
517	134	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN		134		1/17
611	5	EACH	PRECAST REINFORCED CONCRETE OUTLET	2	3		
840	33156	SF	MECHANICALLY STABILIZED EARTH WALL	18335	14821		
840	11075	CY	WALL EXCAVATION	6044	5031		
840	3541	SY	FOUNDATION PREPARATION	2002	1539		
840	20306	CY	SELECT GRANULAR BACKFILL	10779	9527		
840	957	CY	NATURAL SOIL	608	350		
840	3592	FT	6" DRAINAGE PIPE, PERFORATED	2118	1474		
840	208	FT	6" DRAINAGE PIPE, NON-PERFORATED	75	133		
840	1885	FT	CONCRETE COPING	1110	775		
840	5	DAY	ON-SITE ASSISTANCE			5	
840	LS		SGB INSPECTION AND COMPACTION TESTING			LS	

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED DPF | DRAWN CML | REVIEWED MLJ | DATE 3/26/14 | CHECKED BJF | REVISED | STRUCTURE FILE NUMBER 0402265

MSE WALL GENERAL NOTES AND ESTIMATED QUANTITIES
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



PLAN - MSE WALL 1

0 5 10 20
HORIZONTAL SCALE IN FEET

NOTE

SEE SHEET 12/17 FOR SECTION A-A.

LIMITS OF MSE WALL QUANTITIES
(SELECT BACKFILL DRAINAGE AND REINFORCING STRAPS)

BORING LOCATION

6" DRAINAGE PIPE, PERFORATED (H.P. = HIGH POINT)
(NOTE: FOR ℄ INFORMATION NOT NOTED, SEE WALL ELEVATIONS)

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED DPF
DRAWN SDW
CHECKED BJF
REVIEWED MLJ
DATE 3/26/14
REVISED
STRUCTURE FILE NUMBER 0402265

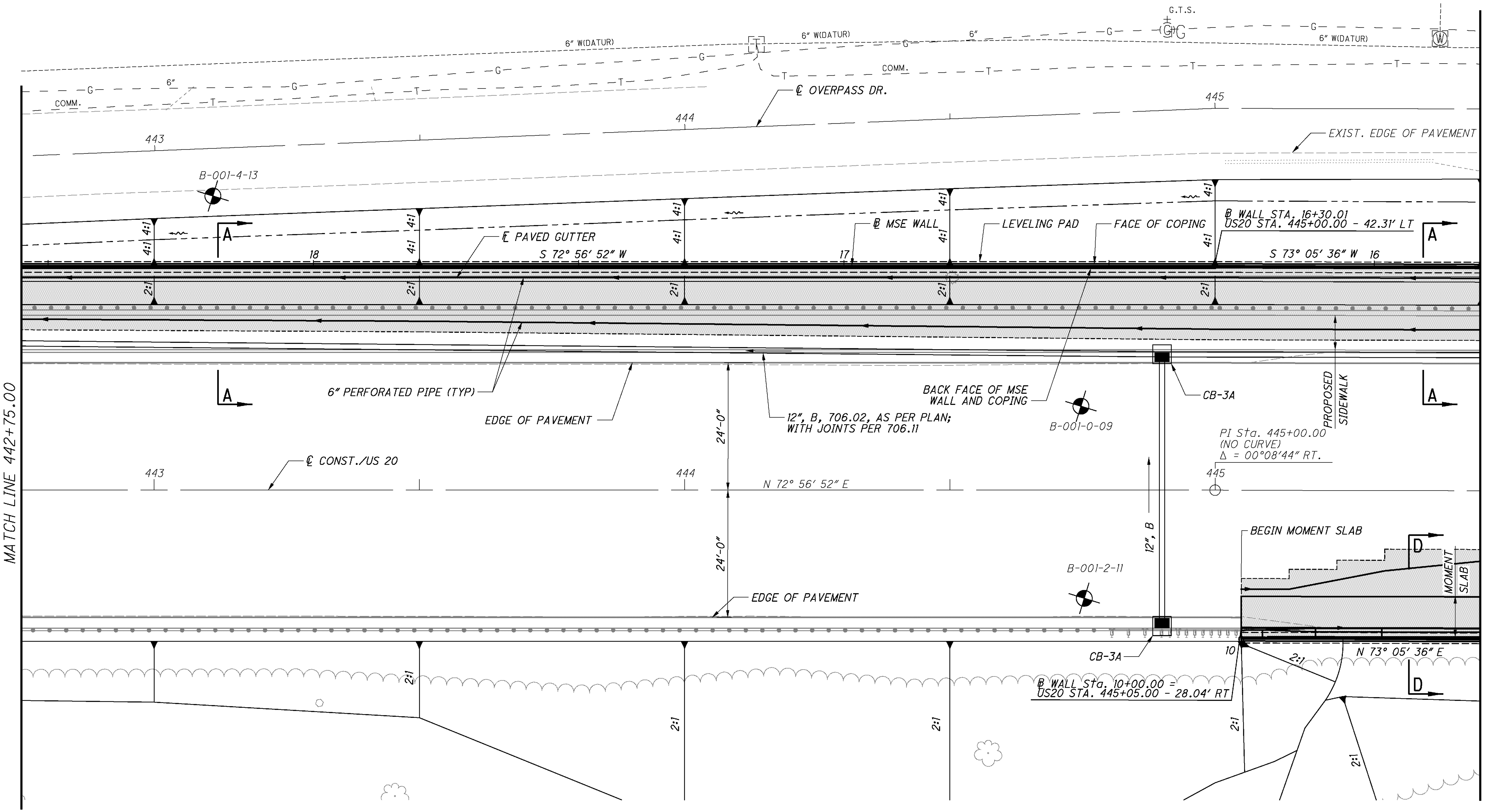
STA. 440+00.00
STA. 442+75.00

MSE WALL 1 (REAR) PLAN
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

3 / 17

90
189



PLAN - MSE WALL 1

HORIZONTAL SCALE IN FEET

NOTE

SEE SHEET 12/17 FOR SECTION A-A AND D-D.

LIMITS OF MSE WALL QUANTITIES (SELECT BACKFILL DRAINAGE AND REINFORCING STRAPS)

BORING LOCATION

6" DRAINAGE PIPE, PERFORATED (H.P. = HIGH POINT) (NOTE: FOR ℄ INFORMATION NOT NOTED, SEE WALL ELEVATIONS)

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

STA. 442+75.00
STA. 445+50.00

MSE WALL 1 (REAR) PLAN

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599

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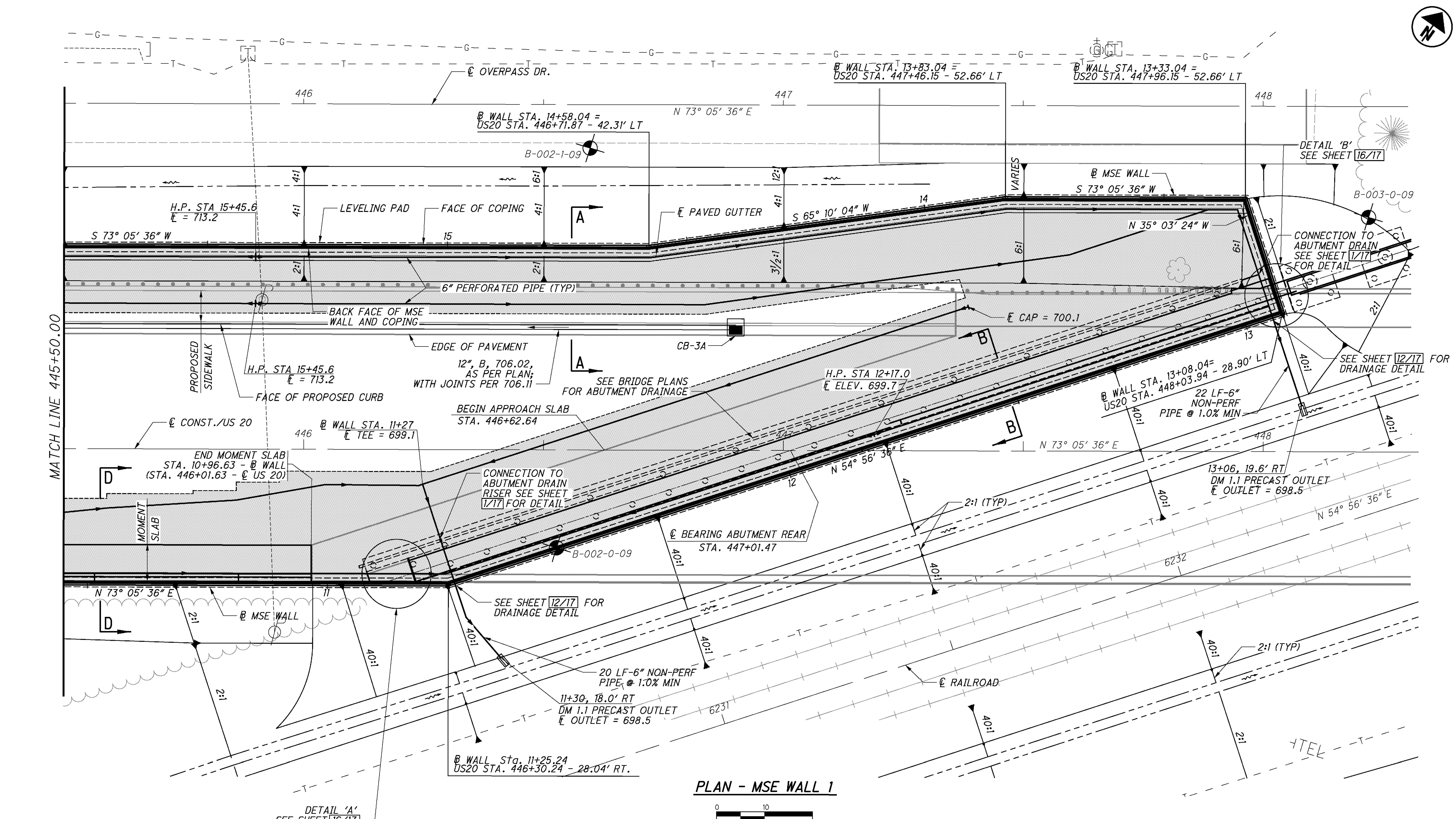


PLAN - MSE WALL 1

0 5 10 20
HORIZONTAL
SCALE IN FEET

NOTE

SEE SHEET 12/17 FOR SECTION A-A, B-B AND D-D.

SEE SHEET 13/17 FOR MOMENT SLAB DETAILS

LIMITS OF MSE WALL QUANTITIES (SELECT BACKFILL DRAINAGE AND REINFORCING STRAPS)

BORING LOCATION

6" DRAINAGE PIPE, PERFORATED (H.P. = HIGH POINT)
(NOTE: FOR ℄ INFORMATION NOT NOTED, SEE WALL ELEVATIONS)

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

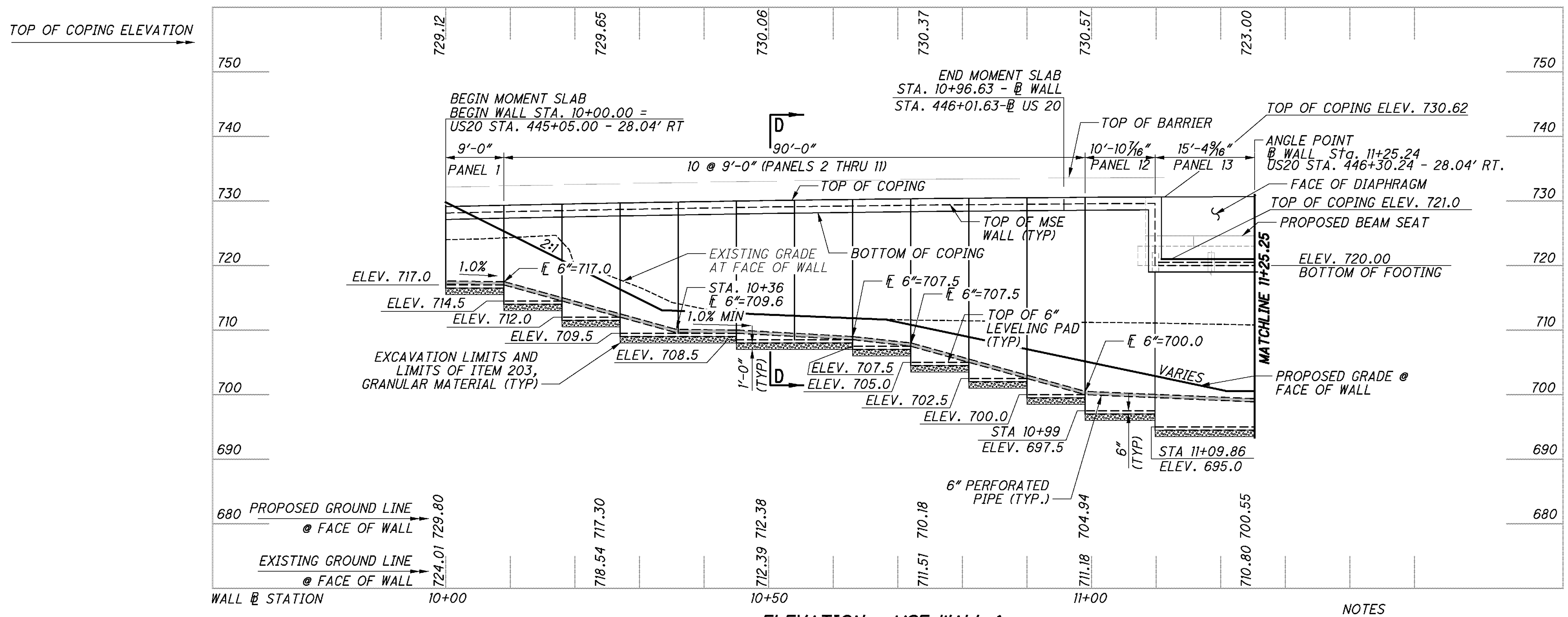
STA. 445+50.00
STA. 448+50.00

MSE WALL 1 (REAR) PLAN
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

5/17

92/189



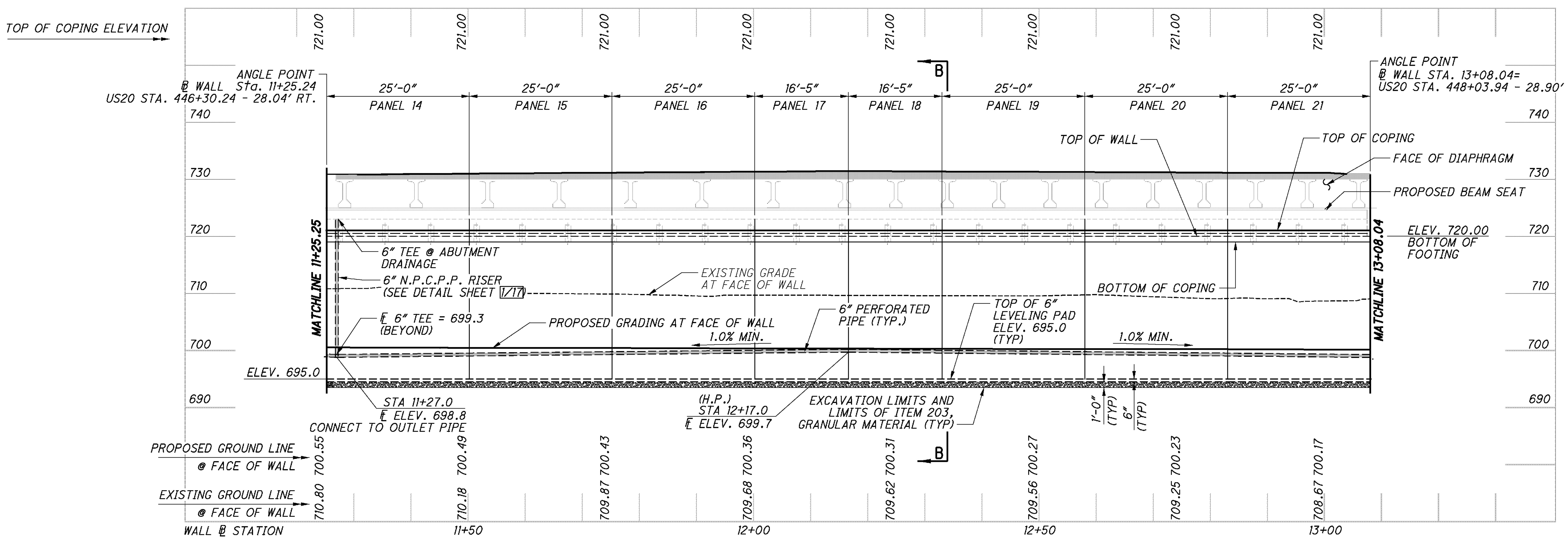
ELEVATION - MSE WALL 1

STATION 10+00.00 TO STATION 11+25.25
MOMENT SLAB NOT SHOWN FOR CLARITY

NOTES

1) SEE SHEET 12/17 FOR SECTION B-B AND D-D.

2) LEVELING PAD ELEVATIONS GIVEN TO TOP OF PAD



ELEVATION - MSE WALL 1

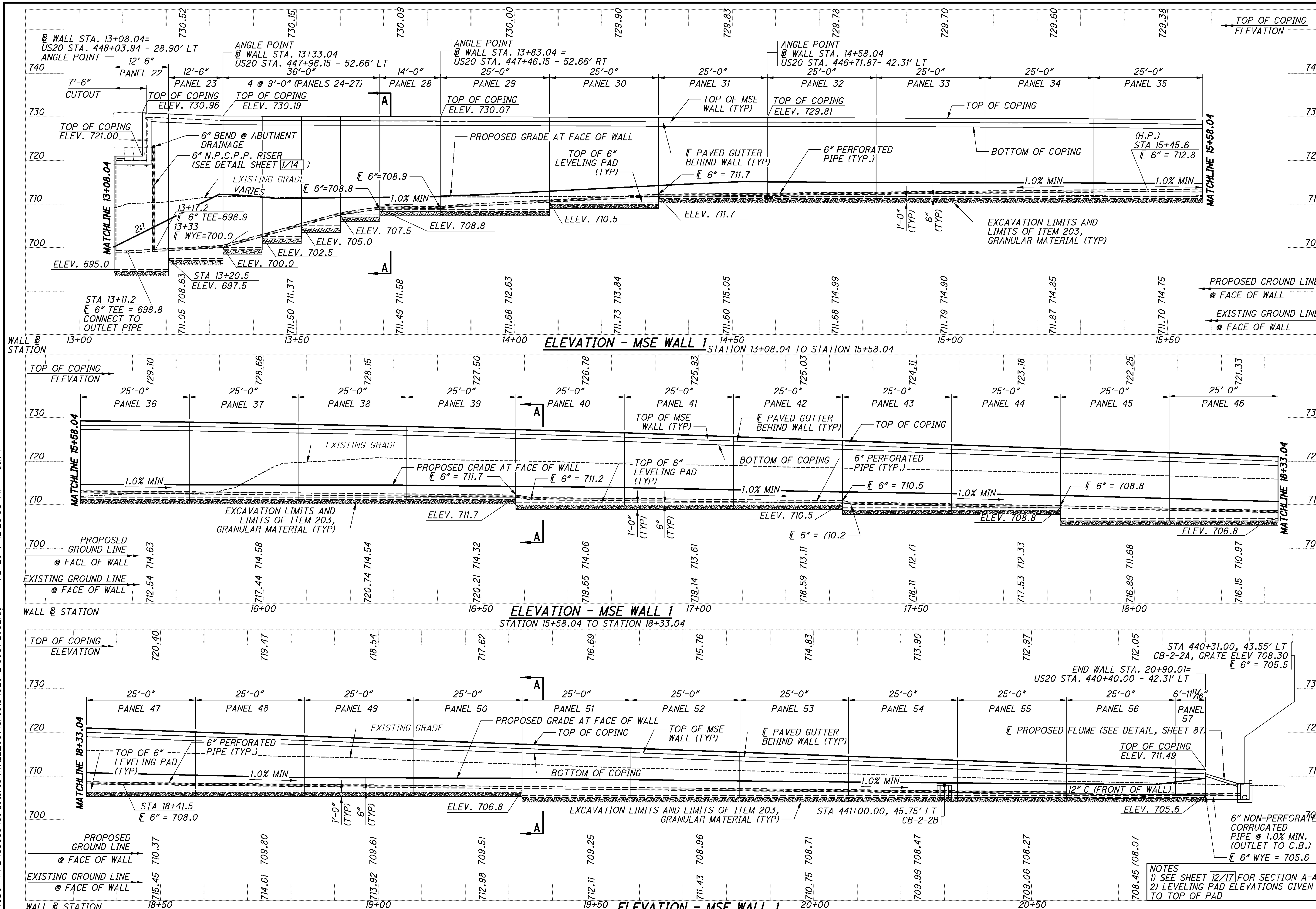
STATION 11+25.25 TO STATION 13+08.04

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MSE WALL 1 (REAR) ELEVATION DETAILS
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



ELEVATION - MSE WALL 1
STATION 13+08.04 TO STATION 15+58.04
℄ WALL STA. 13+08.04= US20 STA. 448+03.94 - 28.90' LT ANGLE POINT
ANGLE POINT ℄ WALL STA. 13+33.04 US20 STA. 447+96.15 - 52.66' LT
ANGLE POINT ℄ WALL STA. 13+83.04 = US20 STA. 447+46.15 - 52.66' RT
ANGLE POINT ℄ WALL STA. 14+58.04 US20 STA. 446+71.87- 42.31' LT
TOP OF COPING ELEVATION
7'-6" CUTOUT
TOP OF COPING ELEV. 721.00
TOP OF COPING ELEV. 730.96
TOP OF COPING ELEV. 730.19
TOP OF COPING ELEV. 730.07
TOP OF COPING ELEV. 729.81
6" BEND @ ABUTMENT DRAINAGE
6" N.P.C.P.P. RISER (SEE DETAIL SHEET 1/14)
EXISTING GRADE VARIES
PROPOSED GRADE AT FACE OF WALL
TOP OF 6" LEVELING PAD (TYP)
TOP OF MSE WALL (TYP)
℄ PAVED GUTTER BEHIND WALL (TYP)
6" PERFORATED PIPE (TYP.)
BOTTOM OF COPING
EXCAVATION LIMITS AND LIMITS OF ITEM 203, GRANULAR MATERIAL (TYP)
(H.P.) STA 15+45.6 ℄ 6" = 712.8
STA 13+11.2 ℄ 6" TEE = 698.8 CONNECT TO OUTLET PIPE
13+17.2 ℄ 6" TEE=698.9
13+33 ℄ WYE=700.0
STA 13+20.5 ELEV. 697.5
MATCHLINE 13+08.04
MATCHLINE 15+58.04
PROPOSED GROUND LINE @ FACE OF WALL
EXISTING GROUND LINE @ FACE OF WALL
WALL ℄ STATION
ELEVATION - MSE WALL 1
STATION 15+58.04 TO STATION 18+33.04
MATCHLINE 18+33.04
ELEVATION - MSE WALL 1
STATION 18+33.04 TO STATION 20+90.01
STA 440+31.00, 43.55' LT CB-2-2A, GRATE ELEV 708.30 ℄ 6" = 705.5
END WALL STA. 20+90.01= US20 STA. 440+40.00 - 42.31' LT
℄ PROPOSED FLUME (SEE DETAIL, SHEET 87)
TOP OF COPING ELEV. 711.49
12" C (FRONT OF WALL)
STA 441+00.00, 45.75' LT CB-2-2B
STA 18+41.5 ℄ 6" = 708.0
6" NON-PERFORATED CORRUGATED PIPE @ 1.0% MIN. (OUTLET TO C.B.)
℄ 6" WYE = 705.6

NOTES
1) SEE SHEET 12/17 FOR SECTION A-A.
2) LEVELING PAD ELEVATIONS GIVEN TO TOP OF PAD

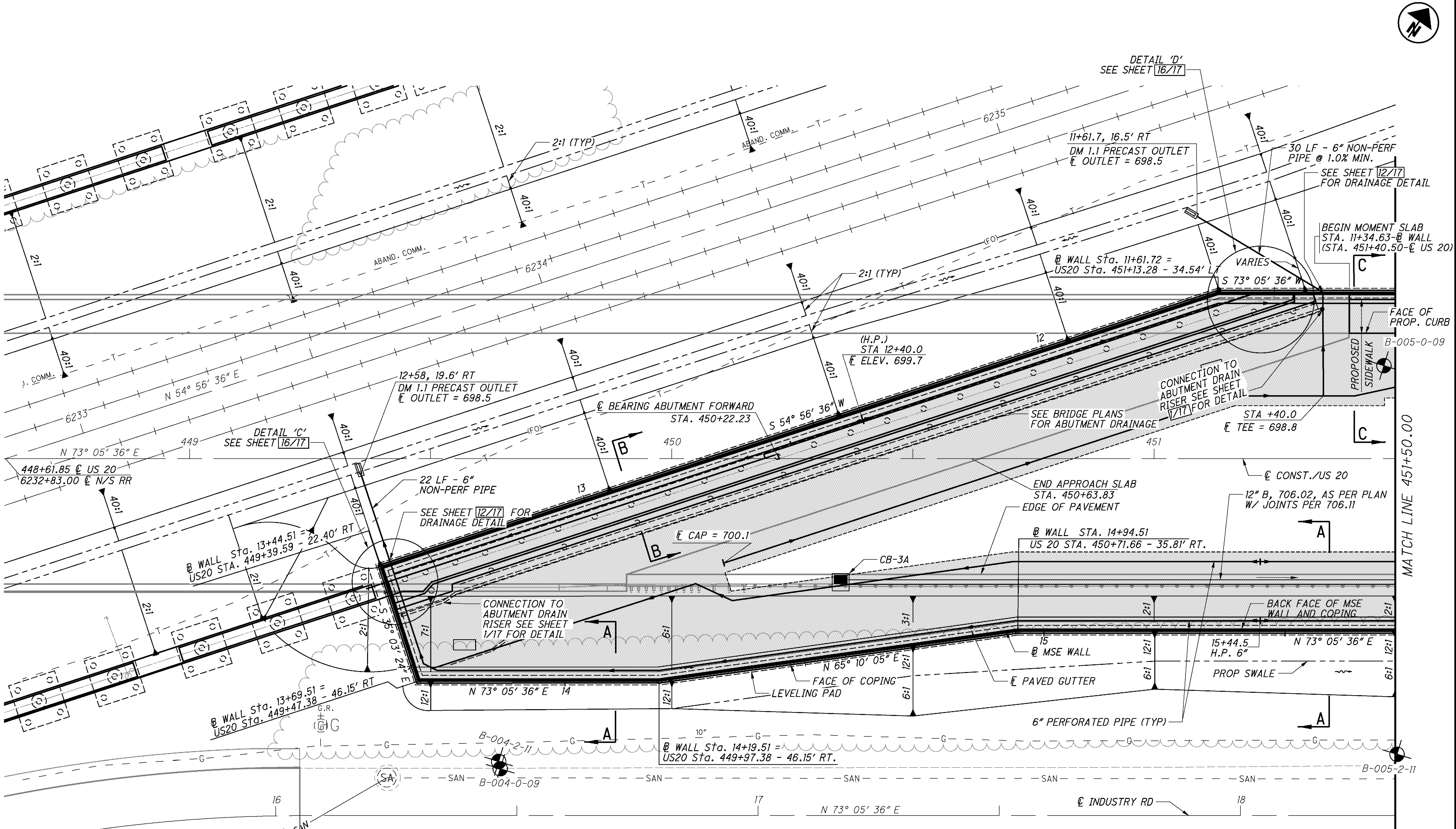
DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE	STRUCTURE FILE NUMBER
DPF	SDW	MLJ	3/26/14	0402265

CHECKED / REVISED

MSE WALL 1 (REAR) ELEVATION DETAILS
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



PLAN - MSE WALL 2

0 5 10 20
HORIZONTAL
SCALE IN FEET

NOTE

SEE SHEET 12/17 FOR SECTION A-A, B-B, AND C-C.

SEE SHEET 14/17 FOR MOMENT SLAB DETAILS

LIMITS OF MSE WALL QUANTITIES
(SELECT BACKFILL DRAINAGE AND REINFORCING STRAPS)

BORING LOCATION

6" DRAINAGE PIPE, PERFORATED (H.P. = HIGH POINT)
(NOTE: FOR ℄ INFORMATION NOT NOTED, SEE WALL ELEVATIONS)

DESIGN AGENCY
Palmer ENGINEERING
AKRON, OHIO 44320

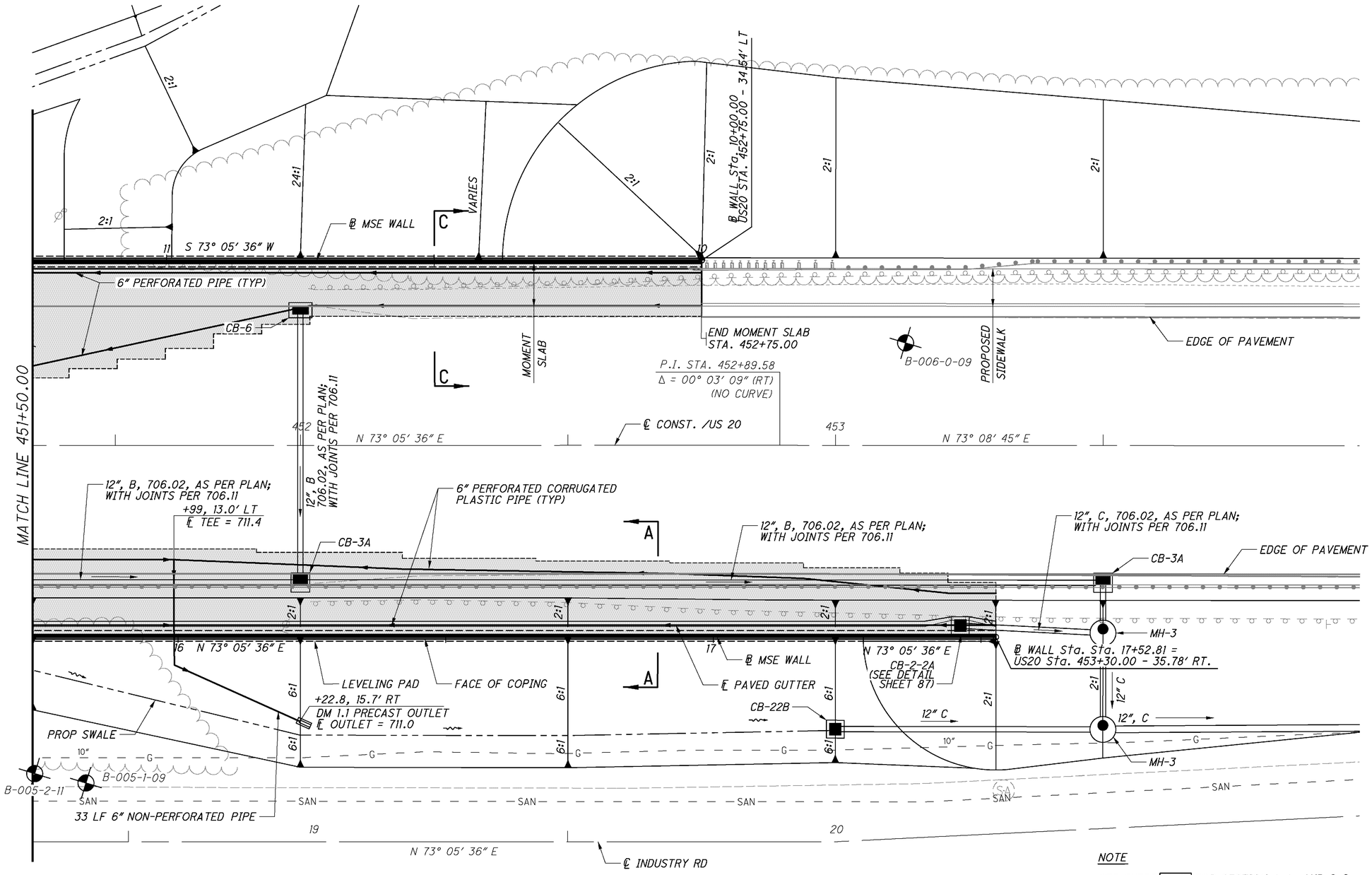
DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

STA. 448+50.00
STA. 451+50.00

MSE WALL 2 (FORWARD) PLAN
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

8/17



PLAN - MSE WALL 2

0 5 10 20
HORIZONTAL SCALE IN FEET

NOTE

SEE SHEET 12/17 FOR SECTION A-A, AND C-C.

SEE SHEET 14/17 FOR MOMENT SLAB DETAILS.

LIMITS OF MSE WALL QUANTITIES (SELECT BACKFILL DRAINAGE AND REINFORCING STRAPS)

BORING LOCATION

6″ DRAINAGE PIPE, PERFORATED (H.P. = HIGH POINT)
(NOTE: FOR ℄ INFORMATION NOT NOTED, SEE WALL ELEVATIONS)

DESIGN AGENCY
PALMER ENGINEERING
400 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND • CHARLESTON

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	0402265

STA. 451+50.00
STA. 454+00

MSE WALL 2 (FORWARD) PLAN
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

9 / 17

96 / 189

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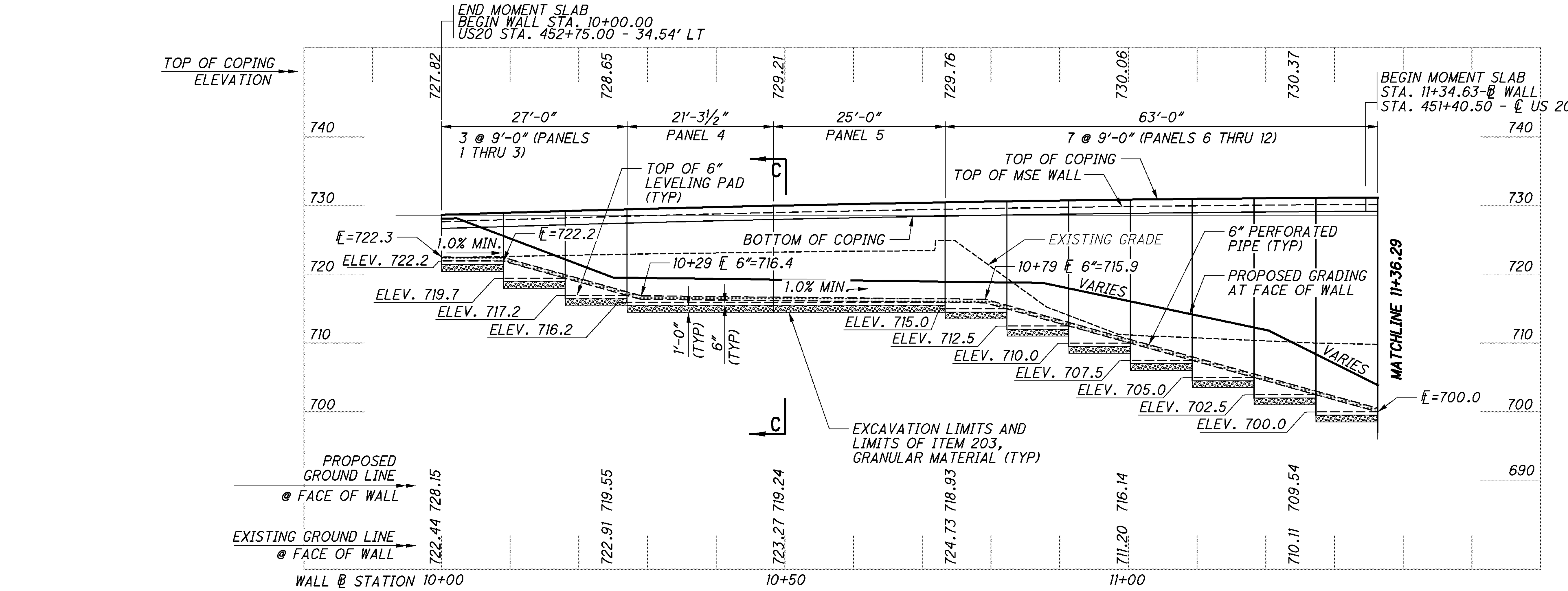
NOTES

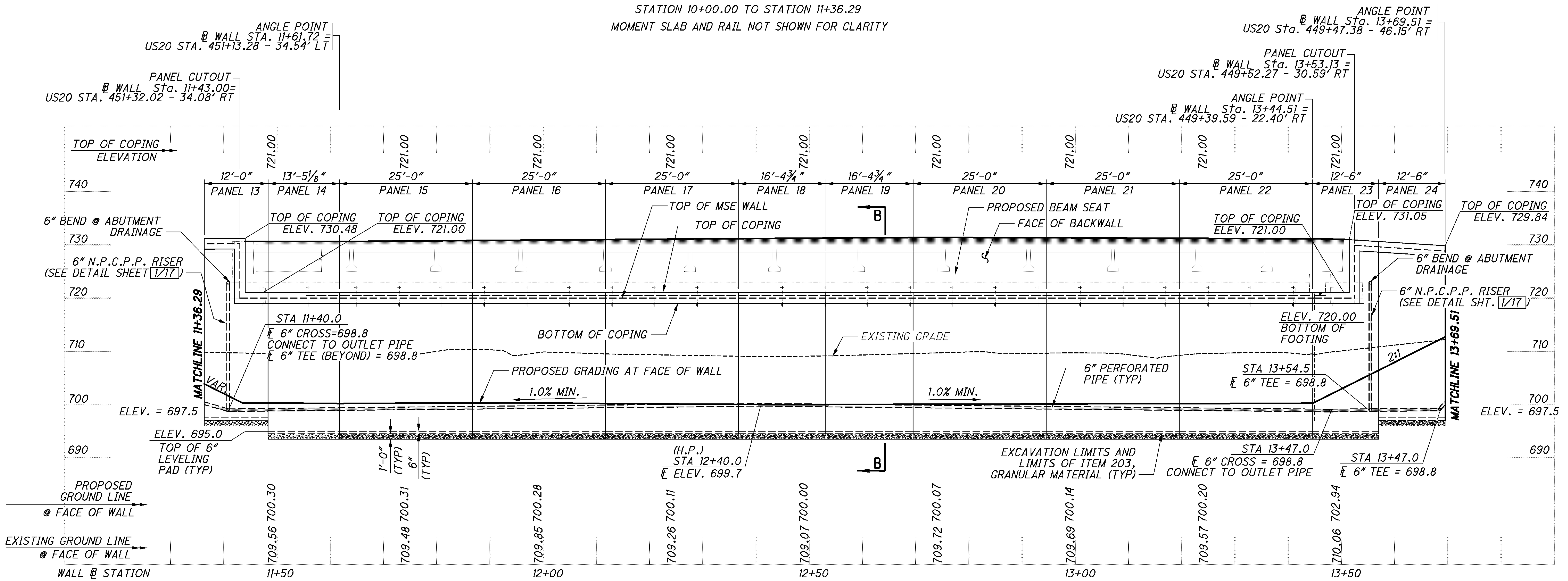
1) SEE SHEET 12/17 FOR SECTION B-B AND C-C.
2) LEVELING PAD ELEVATIONS GIVEN TO TOP OF PAD



ELEVATION - MSE WALL 2

STATION 10+00.00 TO STATION 11+36.29

MOMENT SLAB AND RAIL NOT SHOWN FOR CLARITY



ELEVATION - MSE WALL 2

STATION 11+36.29 TO STATION 13+69.51

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DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MSE WALL 2 (FORWARD) ELEVATION DETAILS

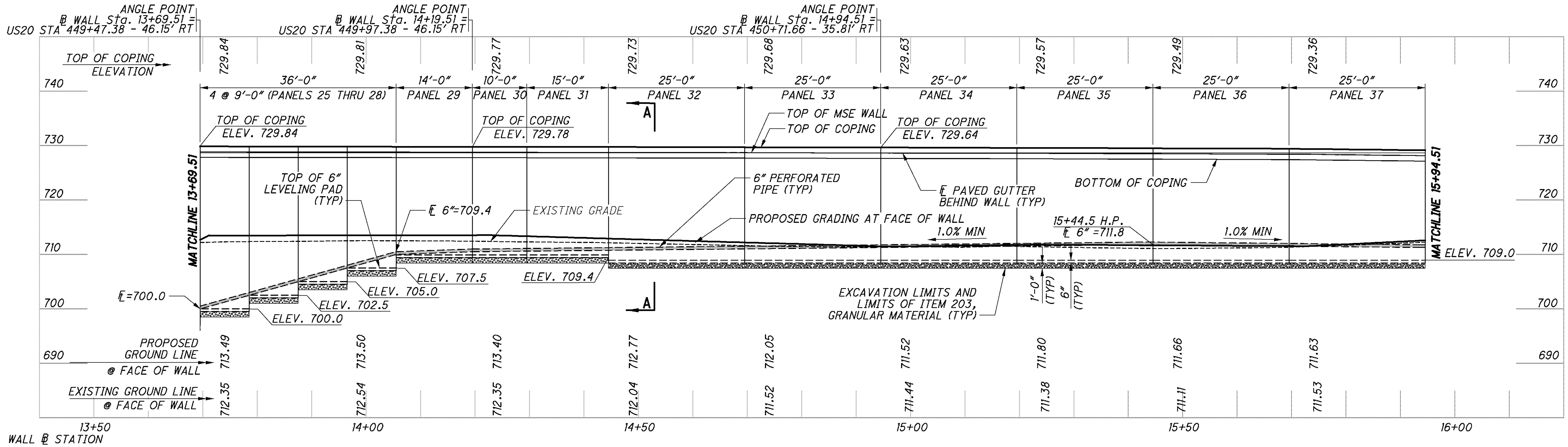
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599

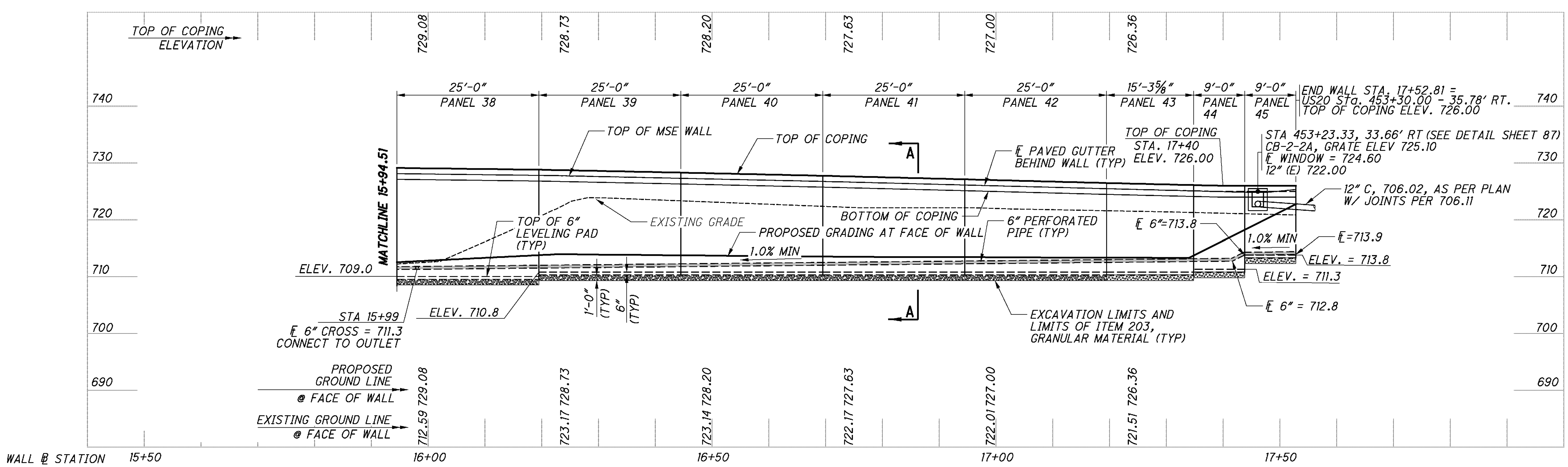
10/17

97/189



ELEVATION - MSE WALL 2

STATION 13+69.51 TO STATION 15+94.51



ELEVATION - MSE WALL 2

STATION 15+94.51 TO STATION 17+52.81

NOTES

1) SEE SHEET 12/17 FOR SECTION A-A.
2) LEVELING PAD ELEVATIONS GIVEN TO TOP OF PAD

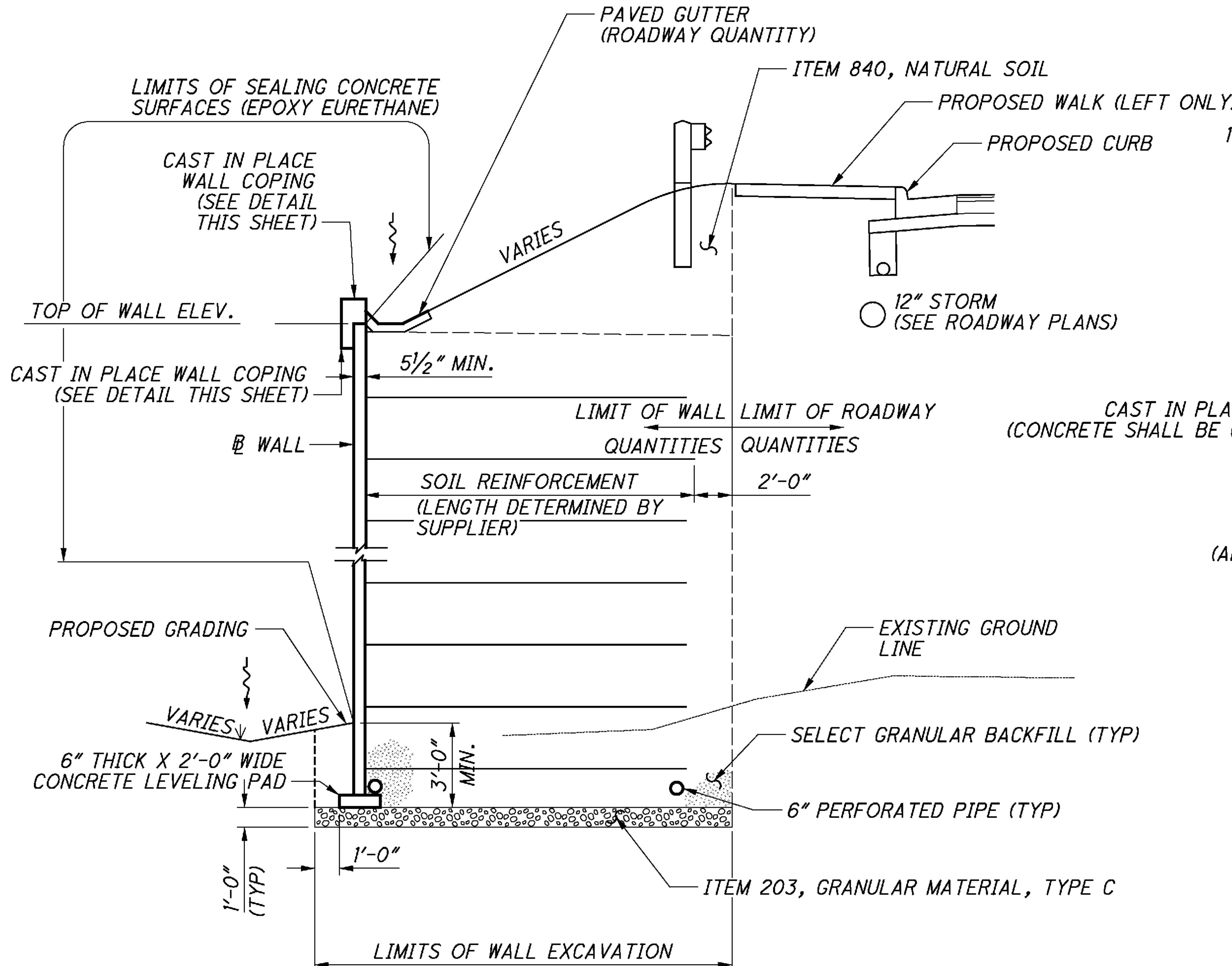
DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MSE WALL 2 (FORWARD) ELEVATION DETAILS

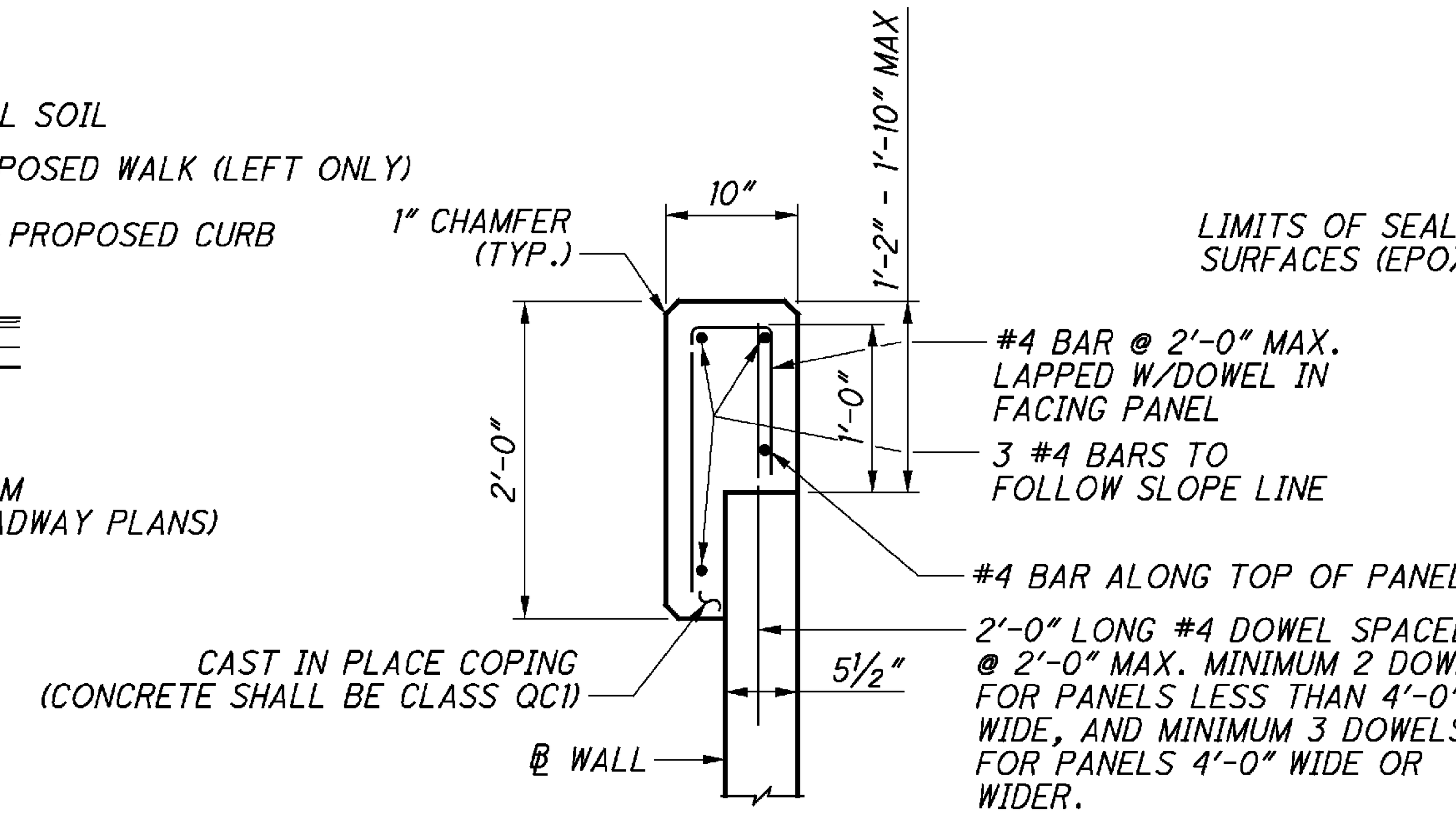
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



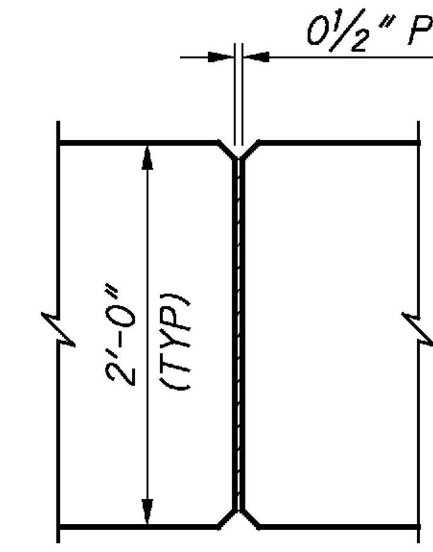
SECTION A-A

STATION 440+40.00 TO STATION 447+96.15 (LEFT)
STATION 449+47.38 TO STATION 453+30.00 (RIGHT

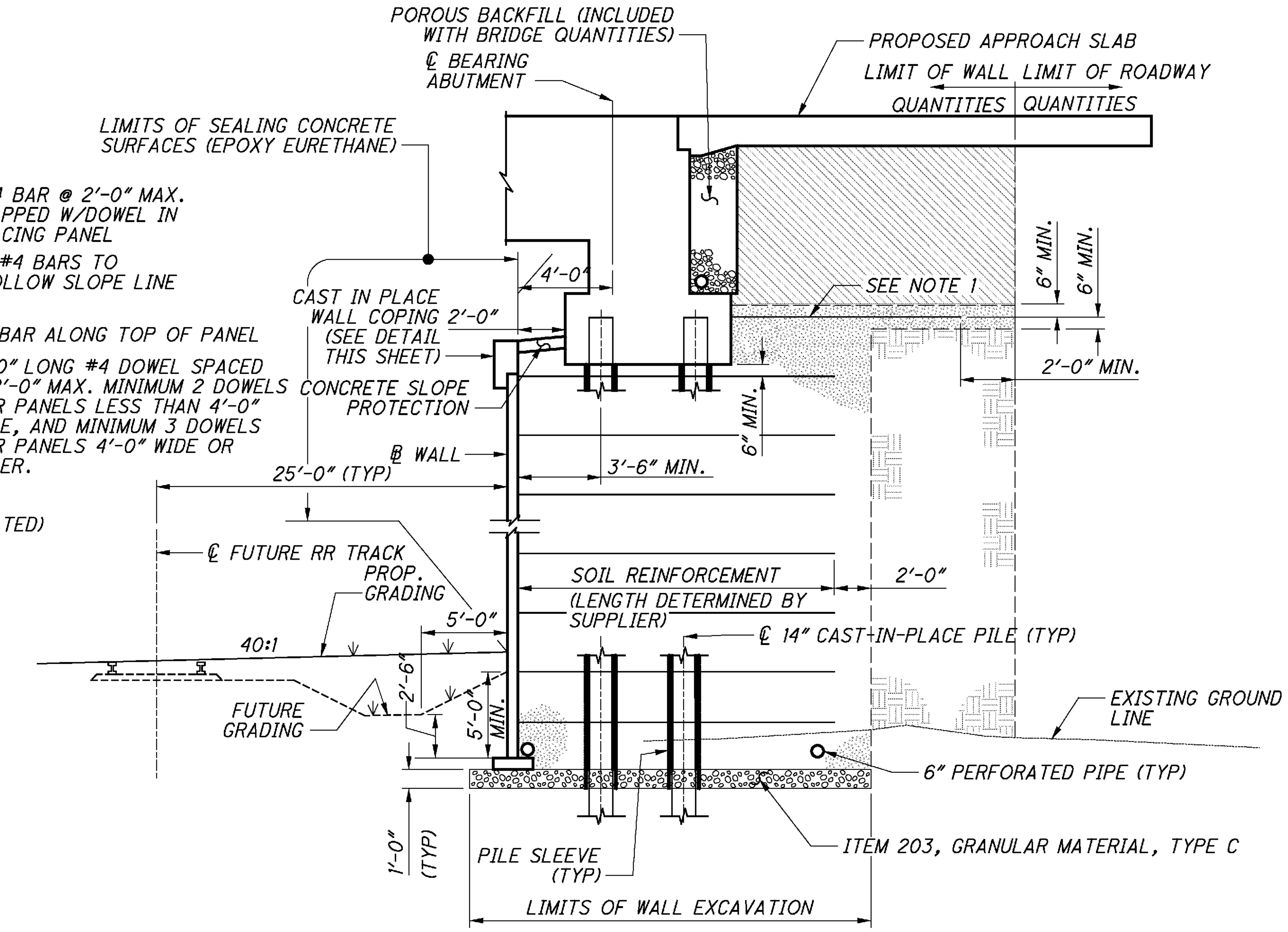


COPING DETAIL

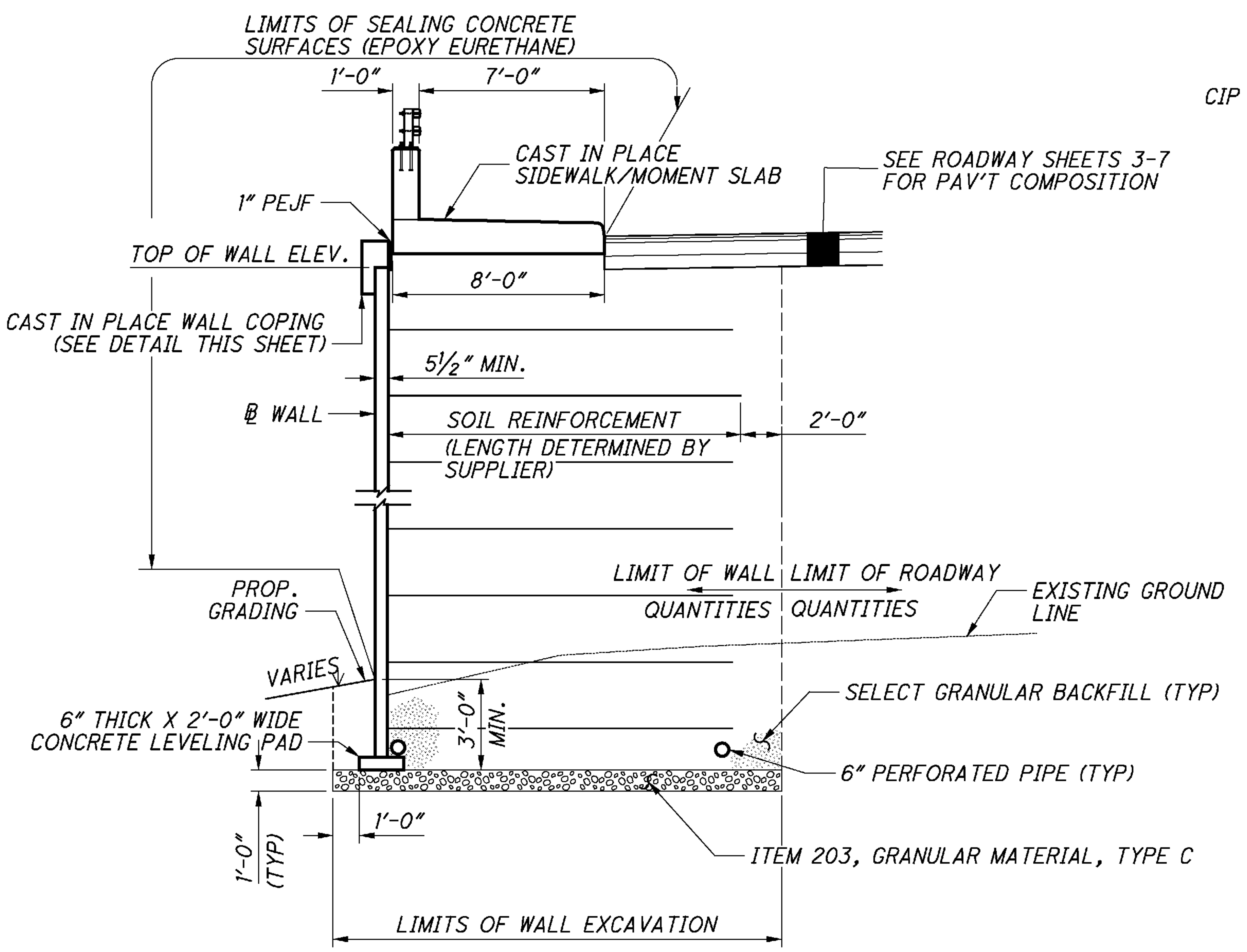
(ALL REINFORCING SHALL BE EPOXY COATED)



COPING EXPANSION JOINT

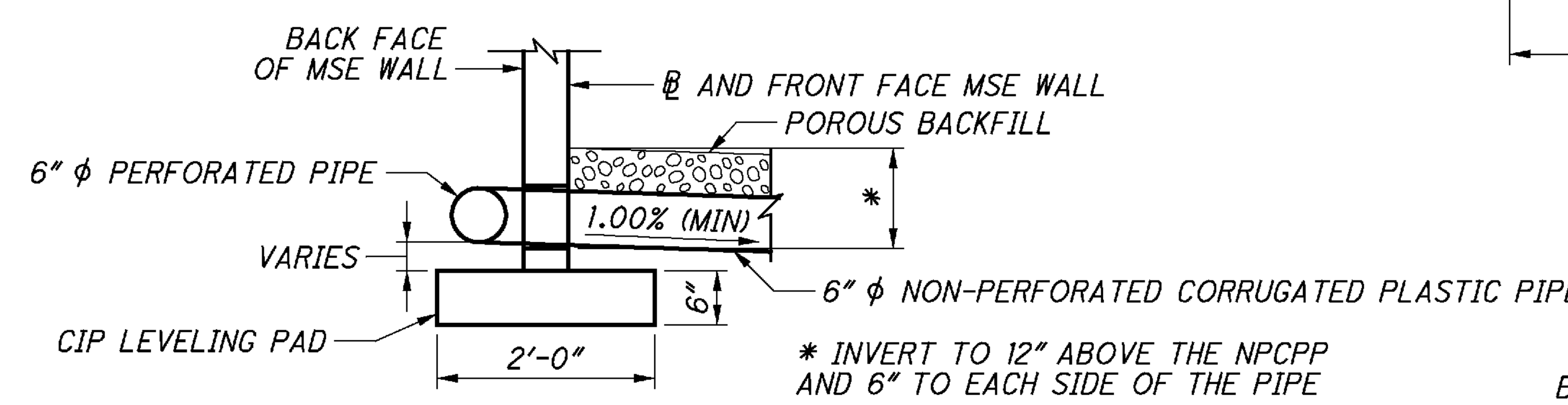


SECTION B-B



SECTION C-C

STATION 451+40.50 TO STATION 452+75.00 (LEFT)



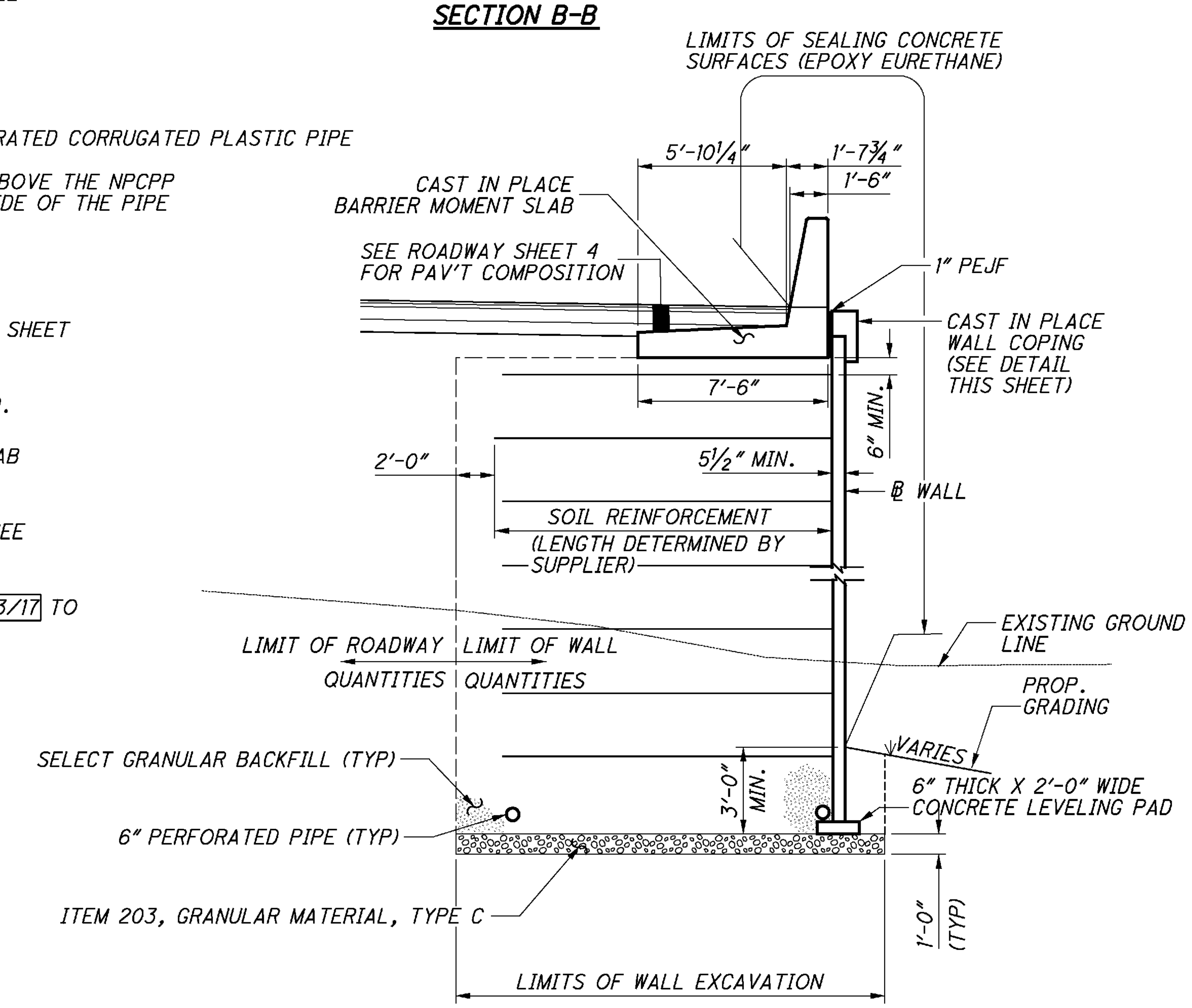
MSE WALL DRAINAGE DETAIL

NOTES

1. SEE NOTE FOR PROPRIETARY RETAINING WALL DATA ON SHEET 1/17 FOR HORIZONTAL LOADS FROM SUPERSTRUCTURE.
2. FOR ABUTMENT DETAILS, SEE BRIDGE SHEETS 125 TO 129.
3. FOR CAST IN PLACE BARRIER AND SIDEWALK MOMENT SLAB DETAILS, SEE SHEET 13/17 AND 14/17 .
4. FOR LOCATIONS OF SECTIONS A-A, B-B, C-C AND D-D SEE SHEETS 3/17 TO 11/17 .
5. FOR PLAN LIMITS OF PAYMENT BOUNDARY, SEE SHEETS 3/17 TO 5/17, 8/17 AND 9/17 .

LEGEND

- SELECT GRANULAR BACKFILL
- ITEM 203, GRANULAR MATERIAL, TYPE C
- ITEM 203, GRANULAR MATERIAL, TYPE B
- ITEM 203 EMBANKMENT, AS PER PLAN - TO BE INCLUDED WITH WALL QUANTITIES



SECTION D-D

STATION 445+05.00 TO STATION 446+01.63 (RIGHT)

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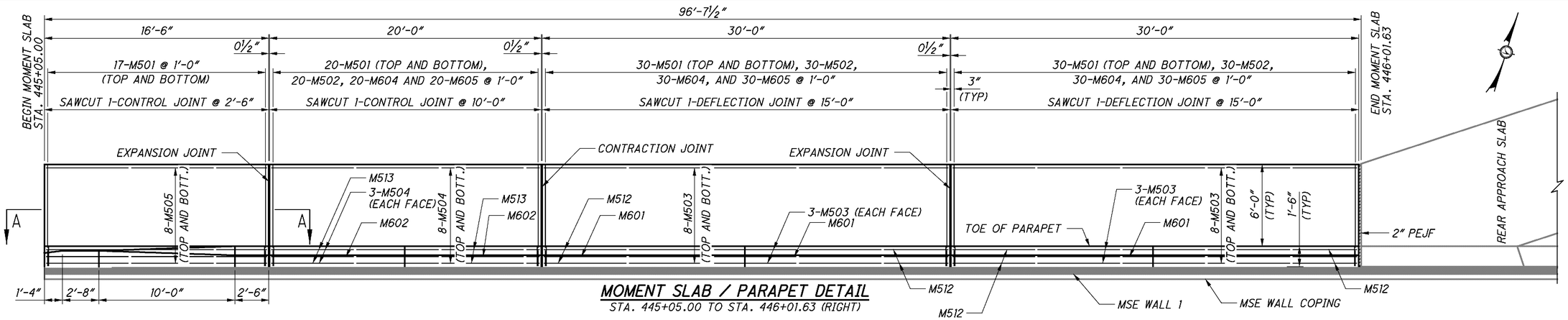
DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

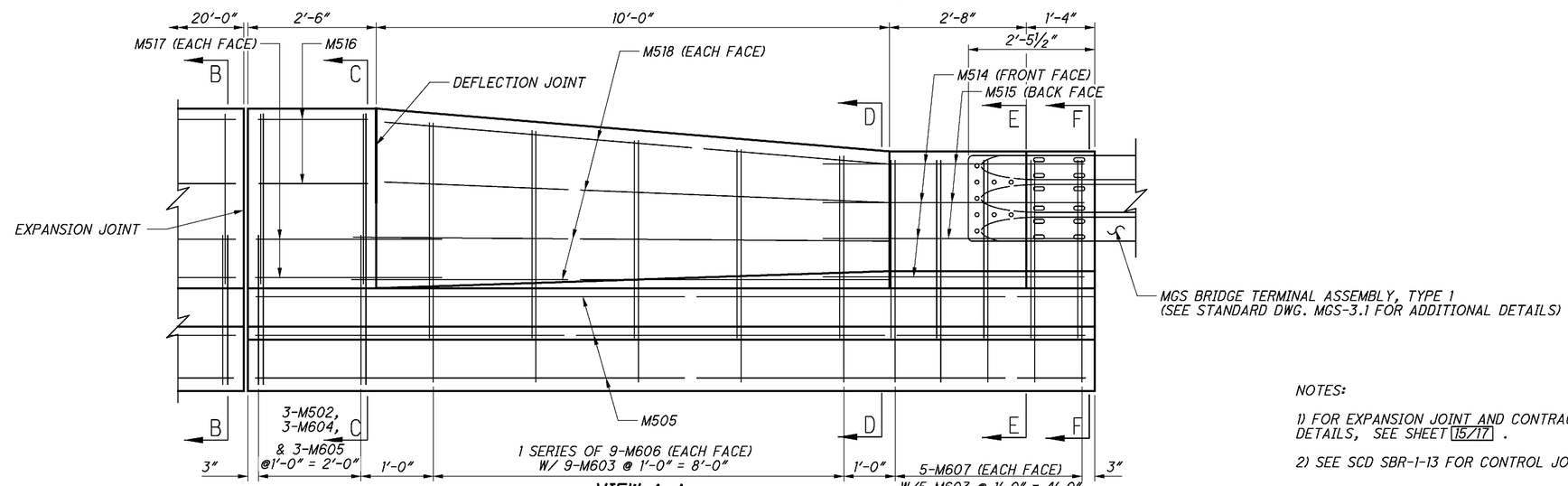
MSE WALL TYPICAL SECTION DETAILS
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



MOMENT SLAB / PARAPET DETAIL

STA. 445+05.00 TO STA. 446+01.63 (RIGHT)

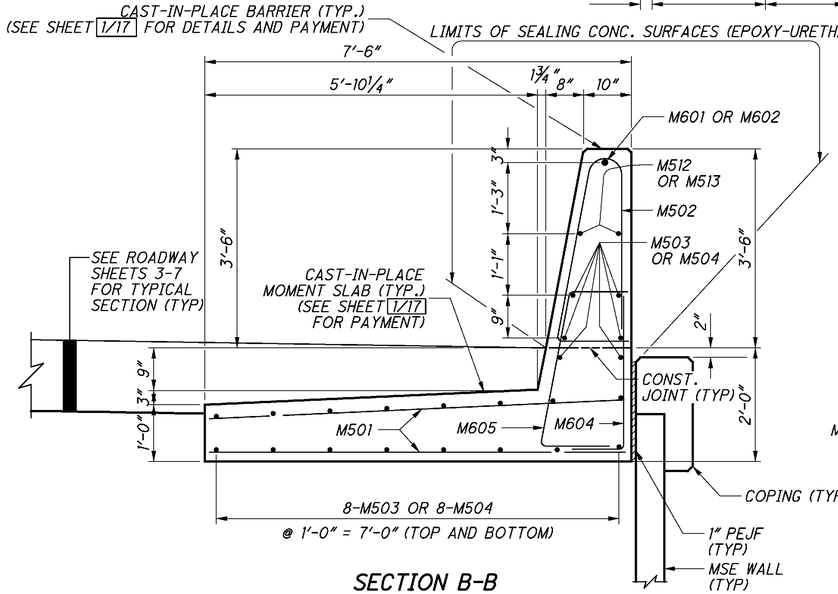


VIEW A-A

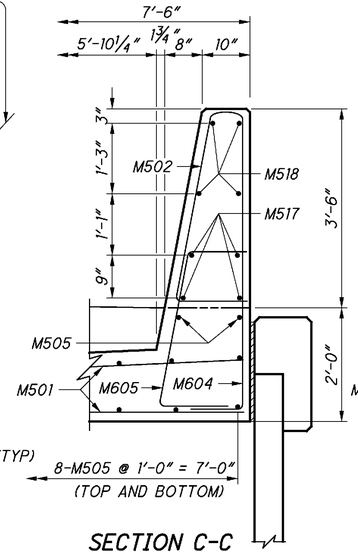
NOTES:

1) FOR EXPANSION JOINT AND CONTRACTION JOINT DETAILS, SEE SHEET 15/17 .

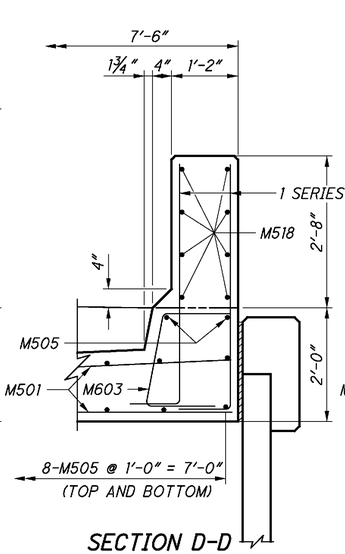
2) SEE SCD SBR-1-13 FOR CONTROL JOINT DETAILS.



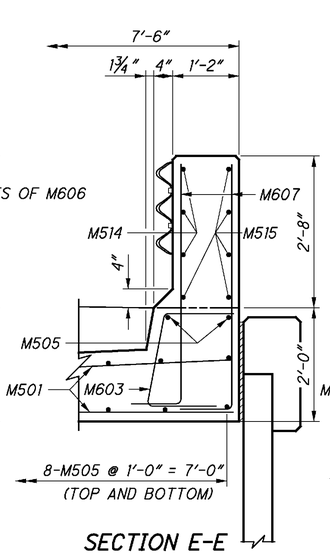
SECTION B-B



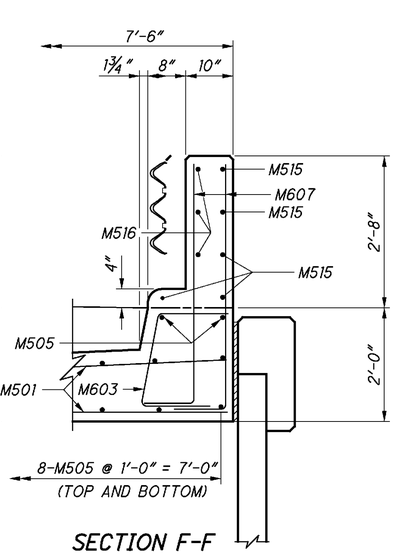
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MOMENT SLAB DETAILS
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

13 / 17

100 / 189

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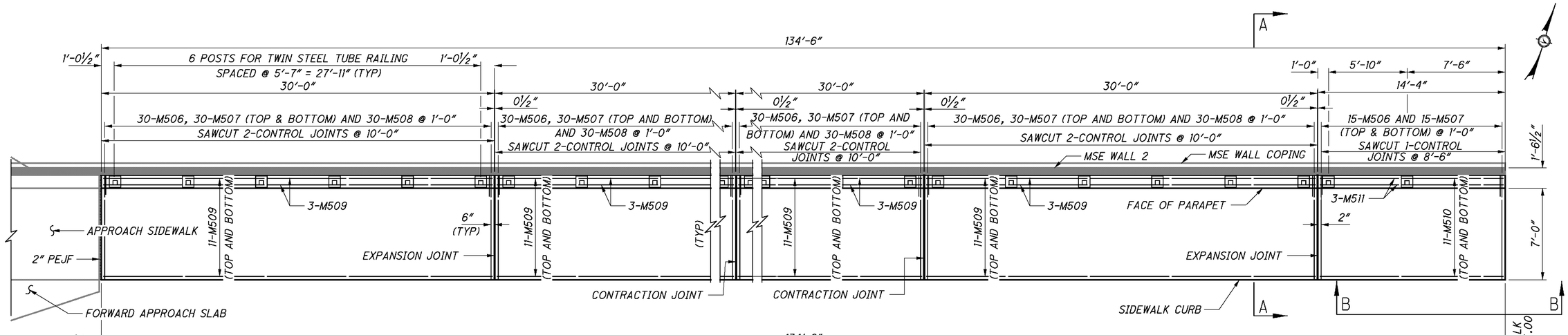
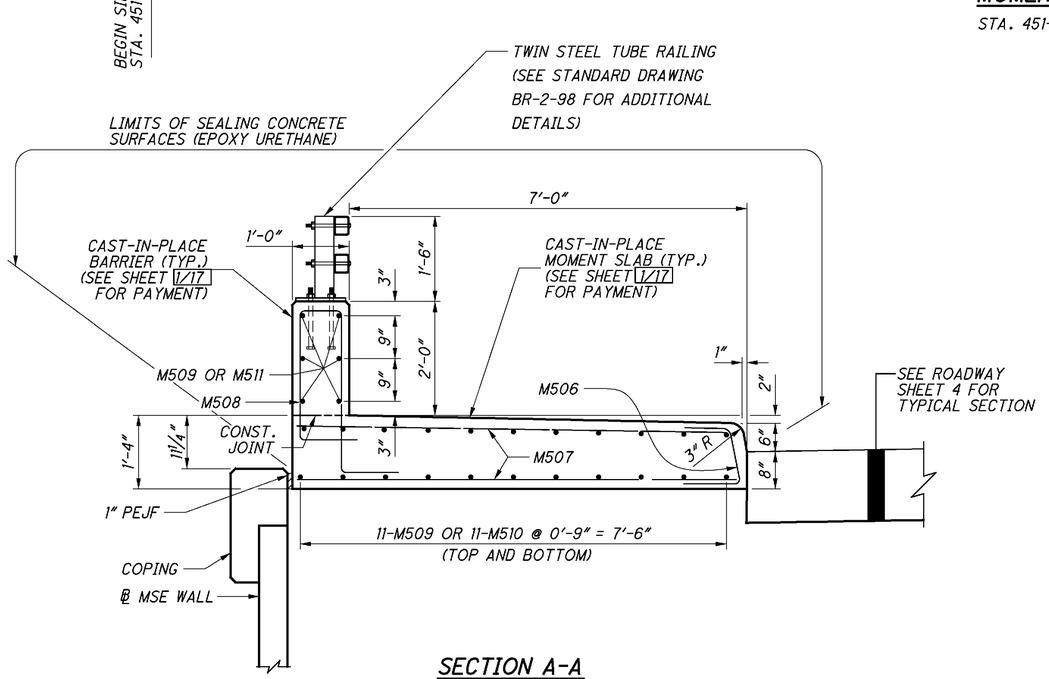
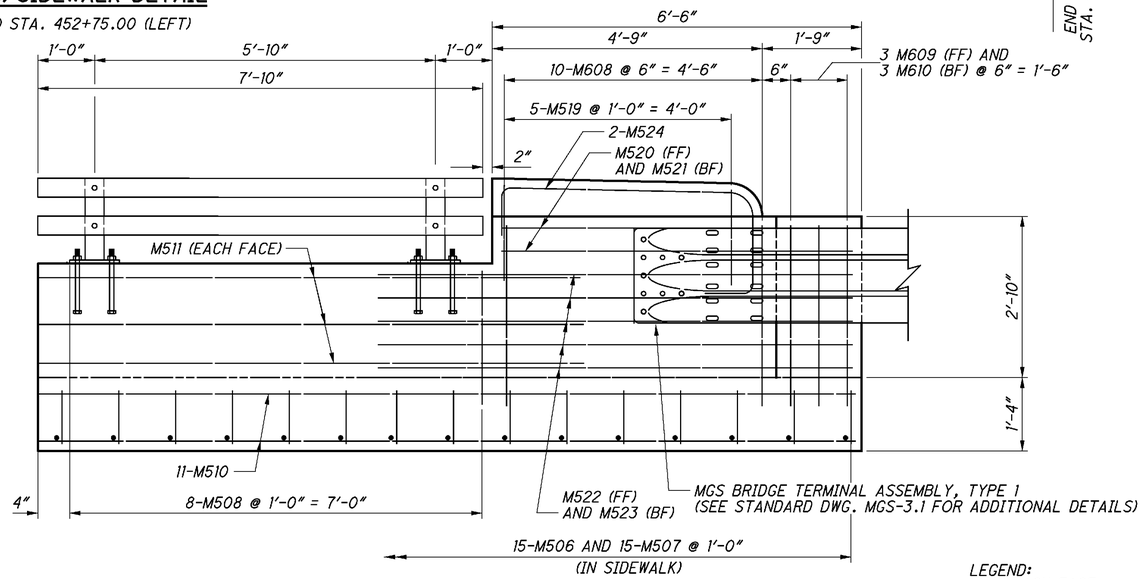


MOMENT SLAB/SIDEWALK DETAIL

STA. 451+40.50 TO STA. 452+75.00 (LEFT)



SECTION A-A



VIEW B-B

SEE SCD BR-2-98 FOR ADDITIONAL DETAILS

LEGEND:
EF = EACH FACE
FF = FRONT FACE
BF = BACK FACE

NOTES:
1) SEE SCD BR-2-98 FOR CONTROL JOINT DETAILS.

2) FOR EXPANSION JOINT AND CONTRACTION JOINT DETAILS, SEE SHEET 15/17.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR., SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MOMENT SLAB/SIDEWALK DETAILS

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

14 / 17

101 / 189

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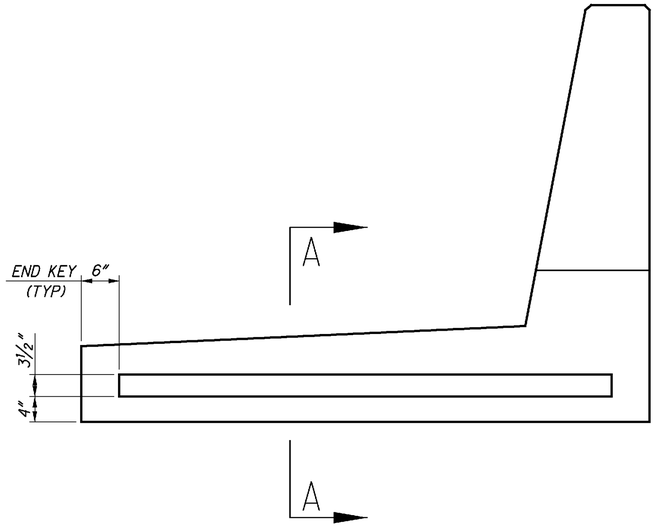


CONTRACTION JOINT DETAIL

MOMENT SLAB FROM
STA. 445+05.00 - STA. 446+01.63 (RIGHT)

NOTES:

1) SEE SHEET 17/17 FOR REINFORCING LIST.

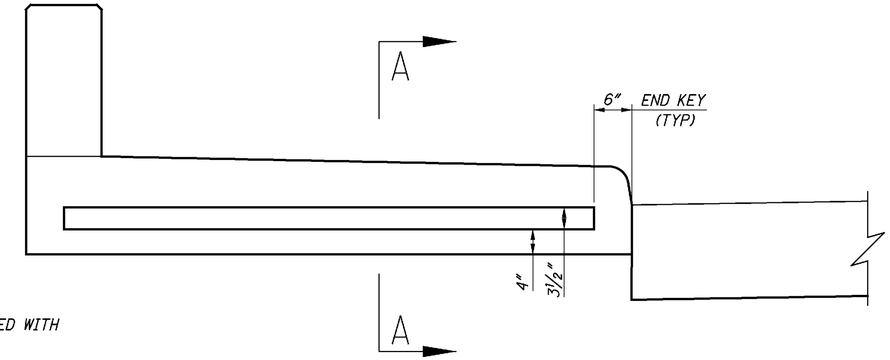
2) PAYMENT FOR 1" PEJF AND JOINT SEAL AT VERTICAL EXPANSION JOINTS FOR MOMENT FLAB SHALL BE INCLUDED WITH ITEM 511, QC2 CONCRETE, MISC; MOMENT SLAB.

3) PAYMENT FOR 1" PEJF AT VERTICAL EXPANSION JOINTS FOR THE PARAPET ON THE MOMENT SLAB AT MSE WALL 1 SHALL BE INCLUDED WITH ITEM 511-QC2 CONCRETE, MISC.; PARAPET ON MOMENT SLAB.

4) PAYMENT FOR 1" PEJF AT VERTICAL EXPANSION JOINTS FOR THE PARAPET ON THE MOMENT SLAB AT MSE WALL 2 SHALL BE INCLUDED WITH ITEM 517 - RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING) AS PER PLAN.

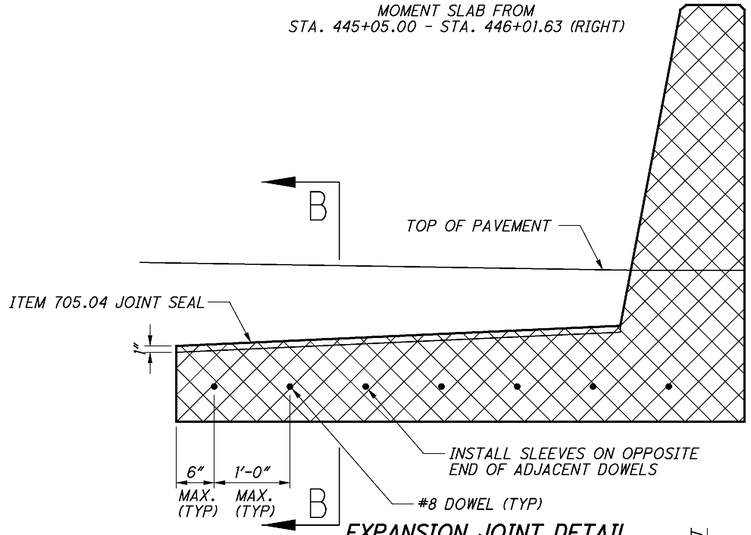
LEGEND

LIMITS OF 1" PEJF



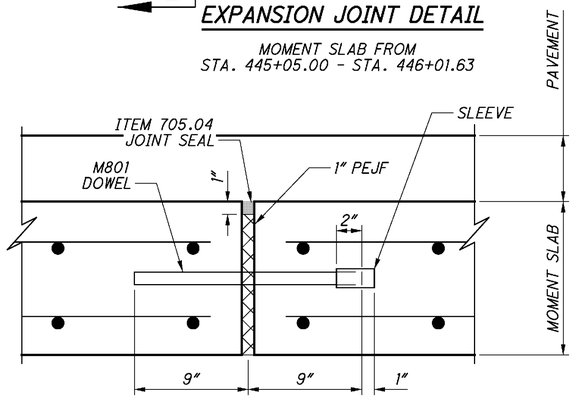
CONTRACTION JOINT DETAIL

MOMENT SLAB FROM
STA. 451+40.50 - STA. 452+75.00 (LEFT)

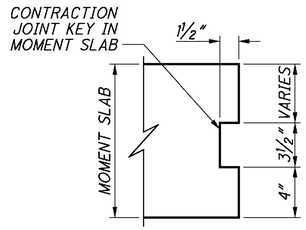


EXPANSION JOINT DETAIL

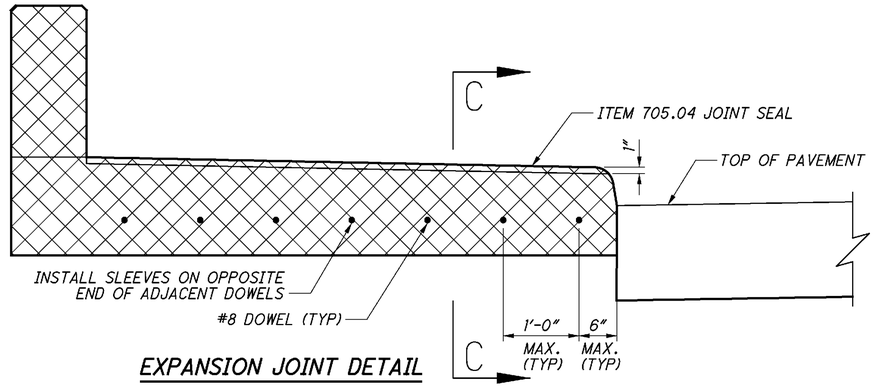
MOMENT SLAB FROM
STA. 445+05.00 - STA. 446+01.63



SECTION B-B

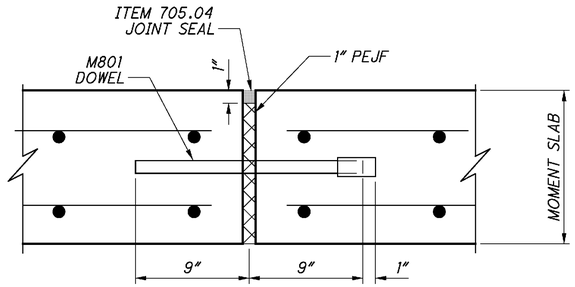


SECTION A-A



EXPANSION JOINT DETAIL

MOMENT SLAB FROM
STA. 451+40.50 - STA. 452+75.00 (LEFT)



SECTION C-C

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
ENGINEERS • ARCHITECTS • SURVEYORS

DESIGNED	DRAWN	REVIEWED	DATE
JPR	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

MOMENT SLAB - JOINT DETAILS
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

15 / 17

102
189

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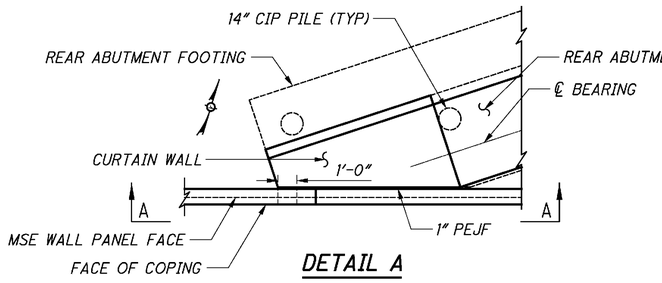
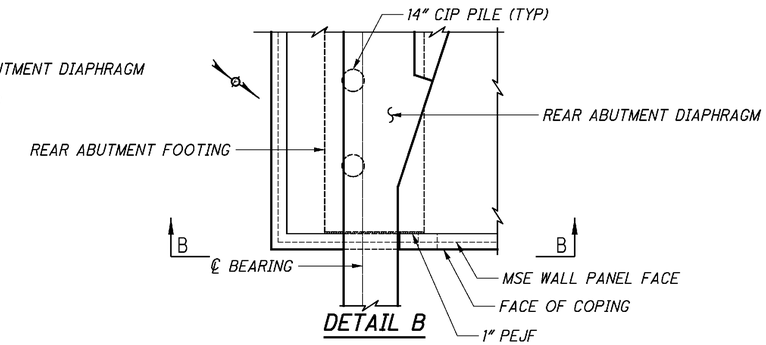
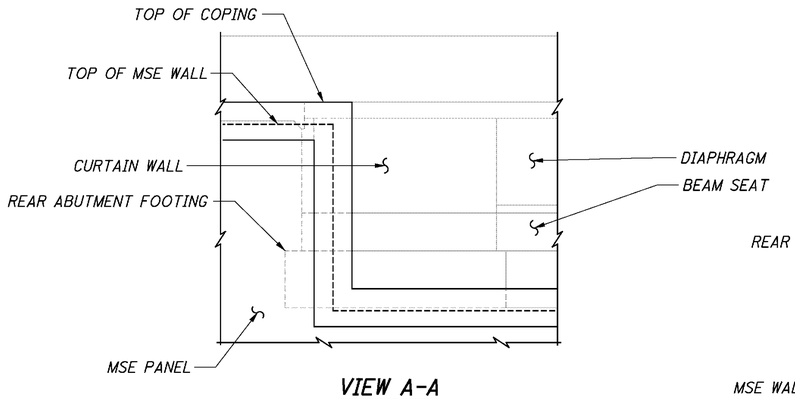


DETAIL A

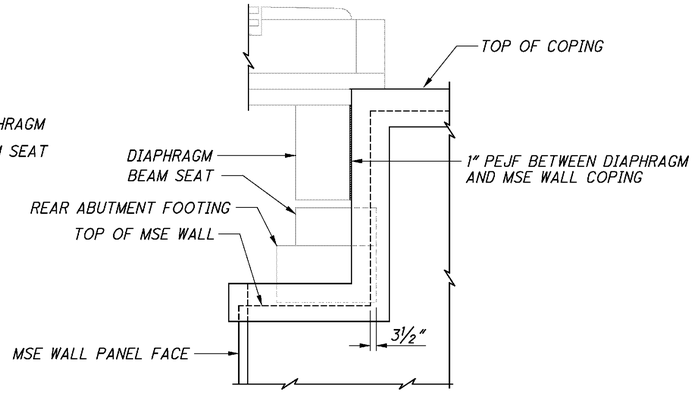


DETAIL B



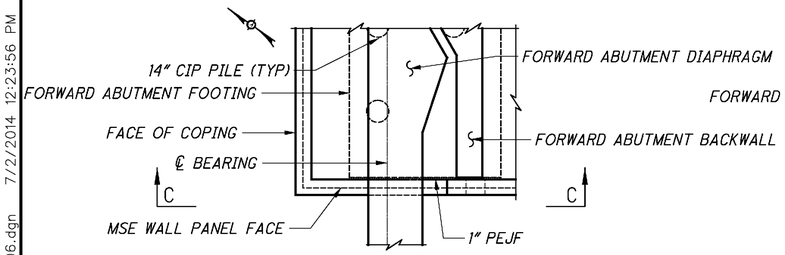
VIEW A-A

(PILES NOT SHOWN FOR CLARITY)

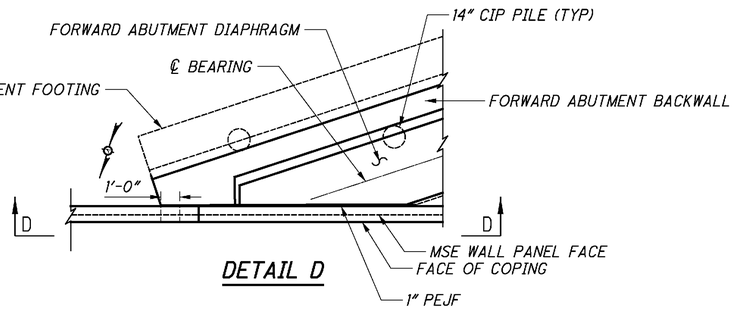


VIEW B-B

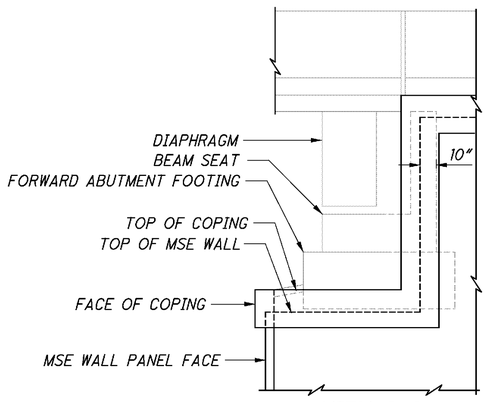
(PILES NOT SHOWN FOR CLARITY)



DETAIL C

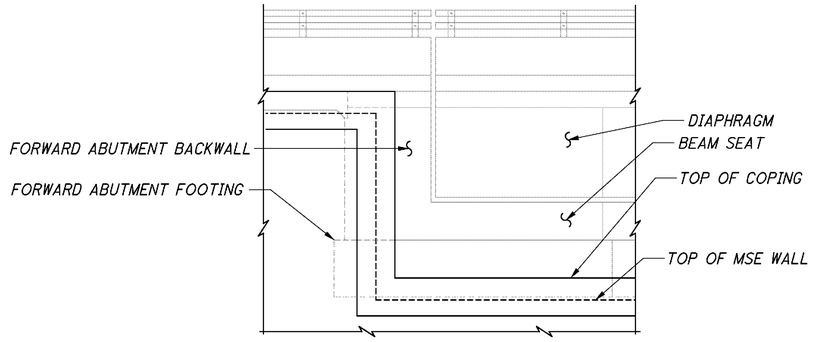


DETAIL D



VIEW C-C

(PILES NOT SHOWN FOR CLARITY)



VIEW D-D

(PILES NOT SHOWN FOR CLARITY)

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
JPR	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		0402265	

MSE WALLS - SECTION VIEWS

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

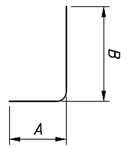
16 / 17

103
189

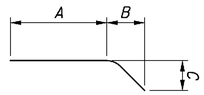
0:\ODOT\ATB\83599\structures\WALL_001\sheets\020-2160CWD006.dgn 7/2/2014 12:23:56 PM dan-f

MOMENT SLABS

MARK	NUMBER			LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS						
	MSE WALL 1	MSE WALL 2	TOTAL				A	B	C	D	E	R	INC.
M501	194		194	7′ - 2″	1,450	STR							
M502	83		83	7′ - 4″	635	23	11″	3′ - 3″	3′ - 0″			2 3/4″	
M503	44		44	29′ - 7″	1,358	STR							
M504	22		22	19′ - 7″	449	STR							
M505	18		18	16′ - 1″	302	STR							
M506		135	135	5′ - 5″	765	28	10″	2′ - 5″					
M507		270	270	7′ - 7″	2,136	STR							
M508		128	128	7′ - 8″	1,024	30	1′ - 6″	8″	2′ - 4″	2′ - 2″			
M509		112	112	29′ - 7″	3,456	STR							
M510		22	22	13′ - 11″	319	STR							
M511		6	6	9′ - 5″	59	STR							
M512	8		8	14′ - 8″	122	STR							
M513	4		4	9′ - 8″	40	STR							
M514	4		4	5′ - 8″	24	25	1′ - 10″	2′ - 5″	1′ - 5″	1.5″	5″		
M515	4		4	5′ - 8″	24	STR							
M516	4		4	2′ - 2″	9	STR							
M517	4		4	4′ - 5″	18	STR							
M518	8		8	10′ - 0″	83	STR							
M519		5	5	3′ - 7″	19	24	6.5″	1′-4 3/4″				3 1/4″	
M520		2	2	6′ - 1″	13	19	4′ - 8″	1′ - 4″	4″				
M521		2	2	6′ - 2″	13	STR							
M522		5	5	8′ - 2″	43	19	6′ - 10″	1′ - 4″	4″				
M523		5	5	8′ - 3″	43	STR							
M524		2	2	7′ - 6″	16	31	1′ - 11″	1″	4′ - 5″			4 3/8″	
M601	4		4	14′ - 8″	88	STR							
M602	2		2	9′ - 8″	29	STR							
M603	14		14	3′ - 8″	78	28	1′ - 8″	1′ - 2″					
M604	83		83	3′ - 7″	447	1	1′ - 0″	2′ - 9″					
M605	83		83	4′ - 4″	536	28	2′ - 9″	11″					
	2		2	5′ - 3″			1′ - 0″	4′ - 5″					
M606	SERIES		SERIES	to	151	1	to	to					1″
	9		9	5′ - 11″			1′ - 0″	5′ - 1″					
M607	10		10	5′ - 2″	78	1	1′ - 0″	4′ - 4″					
M608		10	10	9′ - 11″	149	30	1′ - 10″	8″	3′ - 2″	3′ - 0″			
M609		3	3	4′ - 10″	22	1	1′ - 10″	3′ - 2″					
M610		3	3	4′ - 8″	21	1	1′ - 10″	3′ - 0″					
M801	14	14	28	1′ - 6″	112	STR							
MSE WALL 1 MOMENT SLAB TOTAL					5,977								
MSE WALL 2 MOMENT SLAB TOTAL					5,991								



TYPE-1



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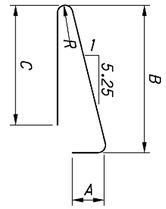

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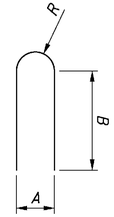
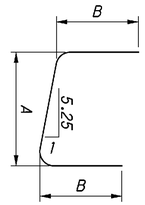
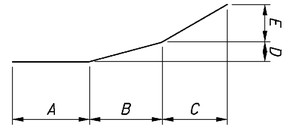


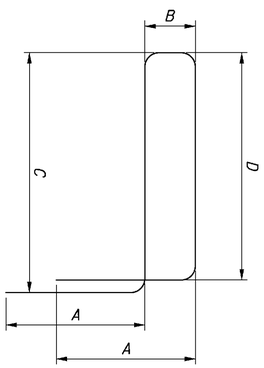
TYPE-24



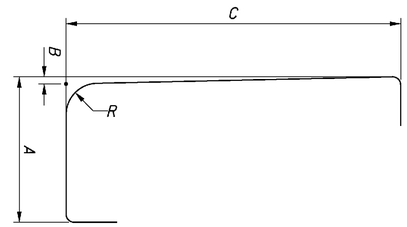
TYPE-28



TYPE-25



TYPE-30



TYPE-31

NOTE:

2160 LBS HAVE BEEN REMOVED FROM THE TOTAL REINFORCING STEEL IN THE MOMENT SLABS TO ACCOUNT FOR BARS IN THE PARAPET THAT ARE INCLUDED UNDER ITEM 517 - RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN, FOR PAYMENT.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR - SUITE 200
AKRON, OHIO 44320
ENGINEERS • ARCHITECTS • SURVEYORS
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED JPR | DRAWN SDW | REVIEWED MLJ | DATE 3/26/14
CHECKED BJF | REVISED | STRUCTURE FILE NUMBER 0402265

MSE WALL - REINFORCING STEEL
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

17 / 17

104
189

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GENERAL

1. ALL WATER LINES SHALL BE IN CONFORMANCE WITH A.W.W.A. STANDARD C909, CLASS 150. MECHANICAL STYLE JOINTS WITH MEGALUG OR STAR GRIP PIPE RESTRAINTS.

2. ALL WATER LINE FITTINGS SHALL BE MECHANICAL JOINT FITTINGS APPROVED FOR USE WITH AWWA C909 PIPE.

3. ALL WATER VALVES SHALL BE RESILIENT SEAT GATE VALVES, OPEN TO THE RIGHT (CLOCKWISE) IN ACCORDANCE WITH AWWA C-500. ALL VALVE AND CURB BOXES TO BE CAST IRON, 5¼". TWO OR THREE PIECE SCREW ASSEMBLIES ARE ACCEPTABLE.

4. ALL INSTALLATION PRACTICES SHALL BE IN CONFORMANCE WITH A.W.W.A. STANDARDS C-605.

5. TOP OF WATER LINE SHALL BE LOCATED 5 FT. BELOW FINISHED GRADE, UNLESS OBSTRUCTED BY A CROSSING WITH A STORM SEWER OR NOTED OTHERWISE.

6. ALL CENTER LINE DISTANCE SHOWN ARE FROM INTERSECTION TO INTERSECTION OR TO TANGENT POINT ON CURVE.

7. ALL HYDRANTS TO BE LOCATED AT MIDDLE OF LOT (NOT ON LOT PROPERTY LINE).

8. ALL CONSTRUCTION MATERIALS AND TESTING TO BE INSPECTED AND/OR WITNESSED BY AND AGENT OF THE CITY OF CONNEAUT WATER DEPARTMENT.

9. ALL MATERIALS, METHODS OF CONSTRUCTION, ETC., TO BE IN ACCORDANCE WITH THE CITY OF CONNEAUT WATER DEPARTMENT SPECIFICATIONS.

10. CONTRACTOR SHALL SUBMIT A PLAN OF HOT TAP AND PRESSURE TESTING METHODOLOGY AND SCHEDULE FOR CITY OF CONNEAUT APPROVAL.

11. CITY OF CONNEAUT WATER DEPARTMENT SHALL BE NOTIFIED 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AND 48 HOURS PRIOR TO TESTING AT (440) 593-7420.

12. DEVIATION FROM THESE PLANS, AS APPROVED, WILL NOT BE PERMITTED WITHOUT WRITTEN AUTHORIZATION FROM THE CITY OF CONNEAUT WATER DEPARTMENT ENGINEER.

13. PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING WILL BE HELD WITH THE WATER DEPARTMENT.

CONTACTS:

BOB MANNION
DIRECTOR OF PUBLIC WORKS
294 MAIN STREET
CONNEAUT, OH 44030
(440) 593-7420

STEVE KEHOE
WATER SUPERINTENDANT
770 LAKE ROAD
CONNEAUT, OHIO 44030
(440) 593-7437

ITEM 638 6" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS, AWWA CLASS 150, AS PER PLAN

ALL WATER MAINS SHALL BE MOLECULAR ORIENTED POLYVINYL CHLORIDE (PVCO) PRESSURE PIPE, IN CONFORMANCE WITH A.W.W.A. STANDARD C909, CLASS 150. MECHANICAL STYLE JOINTS WITH MEGALUG OR STAR GRIP PIPE RESTRAINTS.

USE ONLY MECHANICAL JOINT FITTINGS APPROVED FOR USE WITH AWWA C909 PIPE. USE OF SOLVENT WELD PVC FITTINGS IS NOT PERMITTED. ALL FITTINGS AND CHANGES IN ALIGNMENT (HORIZONTAL AND VERTICAL) NEED CONCRETE THRUST BLOCKING AS DETAILED ON SHEET 106.

ALL COST FOR LABOR, MATERIALS AND EQUIPMENT TO CONSTRUCT THE WATER MAIN AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE PER UNIT BID PRICE FOR ITEM 638 6" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS, AWWA CLASS 150, AS PER PLAN

ITEM 638 6" FIRE HYDRANT. AS PER PLAN

ALL FIRE HYDRANTS SHALL BE MUELLER SUPER CENTURION 250 A-421 OR AN APPROVED EQUAL, WITH CONNEAUT SPECIFICATIONS. ALL FIRE HYDRANTS ARE TO COMPLY WITH A.W.W.A. STANDARDS C-502. SEE DETAILS ON SHEET 106.

ALL COST FOR LABOR, MATERIALS AND EQUIPMENT TO CONSTRUCT THE FIRE HYDRANTS AS DESCRIBED ABOVE, COMPLETE AND IN PLACE SHALL BE INCLUDED IN THE PER UNIT BID PRICE FOR ITEM 638 6" FIRE HYDRANT, AS PER PLAN

ITEM 638 6" GATE VALVE AND VALVE BOX. AS PER PLAN

ALL WATER VALVES 4" THROUGH 6" SHALL BE RESILIENT SEATED GATE VALVES, OPEN TO THE RIGHT (CLOCKWISE,) WITH NON-RISING STEMS IN CONFORMANCE WITH A.W.W.A. STANDARDS C-500. ALL JOINTS SHALL BE RESTRAINED.

ALL COST FOR LABOR, MATERIALS AND EQUIPMENT TO CONSTRUCT THE VALVES AS DESCRIBED ABOVE, COMPLETE IN PLACE SHALL BE INCLUDED IN THE PER UNIT BID PRICE FOR ITEM 638 6" GATE VALVE AND VALVE BOX, AS PER PLAN

ITEM 638 1" COPPER SERVICE BRANCH, AS PER PLAN

SERVICE BRANCHES SHALL BE TYPE K COPPER TUBING. ITEM SHALL INCLUDE ONE OF EACH OF THE FOLLOWING PER LOCATION: STAINLESS STEEL REPAIR BAND TYPE TAPPING SADDLE, 1" STAINLESS STEEL OR ALL BRASS CURB STOP AND CAST IRON VALVE BOX, REMOVAL OF EXISTING SERVICE BRANCH AND CURB BOX, AND CONNECTING TO EXISTING SERVICE BRANCH.

SEE DETAIL ON SHEET 106.

ALL COST FOR LABOR, MATERIALS AND EQUIPMENT TO CONSTRUCT THE VALVES AS DESCRIBED ABOVE, COMPLETE IN PLACE SHALL BE INCLUDED IN THE PER UNIT BID PRICE FOR ITEM 638 6" GATE VALVE AND VALVE BOX, AS PER PLAN

LEGEND

County Line
Township Line
Section Line
Corporation Line or
Fence Line (Ex) x (Pr)
Center Line
Right of Way (Ex) Ex R/W
Right of Way (Pr) R/W
Standard Highway Ease.(Ex) Ex SH
Railroad R/W (Ex) Ex N/S R/W
Temporary Right of Way TMP
Utility Ease. (Pr) U
Utility Ease. (Ex) Ex U
Railroad or
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)

Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol , Example
Property Line Symbol , Example
Break Line Symbol , Example
Tree (Pr) , Tree (Ex) , Shrub (Ex)
Tree (Remove) , Shrub (Remove)
Evergreen (Ex) , Stump
Evergreen (Remove) , Stump (Remove)
Wetland (Pr) , Grass (Pr)
Post (Ex) , Mailbox (Ex) MB , Mailbox (Pr) MB
Light (Ex) , Telephone Marker (Ex) TEL
Fire Hydrant (Ex) , Water Meter (Ex) WM
Water Valve (Ex) , Utility Valve Unknown (Ex.)
Telephone Pole (Ex) , Power Pole (Ex)
Light Pole (Ex) , Power Pole (Pr)
Water Main (Pr)
Water Service (Pr) W
Fire Hydrant (Pr) , Water Valve (Pr)

REF. NO.	SHEET NO.	STATION TO STATION		SIDE	REMARKS	638 6" ITEM 638 6" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS, AWWA CLASS 150, AS PER PLAN FEET	638 1" COPPER SERVICE BRANCH FEET	638 1" COPPER SERVICE BRANCH, AS PER PLAN FEET	638 6" FIRE HDYRANT, AS PER PLAN EACH	638 6" GATE VALVE AND VALVE BOX, AS PER PLAN EACH	638 VALVE BOX ADJUSTED TO GRADE EACH	638 FIRE HYDRANT REMOVED EACH	202 ASBESTOS PIPE REMOVED FEET	
W1	108	10+00.00	14+73.00		WATERLINE STATIONS	473								
W2	108	14+70.00		RT				20						
W3	108-109	14+73.00	19+73.00			500								
W4	109	16+00.00		RT				20						
W5	109	17+12.00		RT				20						
W6	109	17+95.00		RT				20						
W7	109	19+25.00		LT		7			1	1				
W8	109-110	19+73.00	25+56.00			583				1				
W9	110	23+02.00		LT	WATERLINE STATIONS		125							
W10	110	457+05.00		LT	US 20						1			
W11	110	458+35.90		LT	US 20						1			
W12	110	459+02.50		RT	US 20						1			
W13	110	459+26.60		LT	US 20						1			
W14	108	10+57.00		LT	WATERLINE STATION				1	1				
W15	31		438+54.20	RT	US 20						1			
R1	108	11+02.90	15+81.00	RT	INDUSTRY STATIONS								478	
R2	109-110	15+81.00	454+50.00	RT	INDUSTRY STATIONS							1	549	
R3	110	454+50.00	458+95.00	RT	INDUSTRY/US20 STATIONS								445	
TOTALS CARRIED TO GENERAL SUMMARY						1563	125	80	2	3	5	1	1472	

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS PROTECTIVE SERVICE CALL: **1-800-925-0988**

ENGINEERS SEAL:

STATE OF OHIO · DANIEL P FICKER · E-63916 · REGISTERED · PROFESSIONAL ENGINEER

SIGNED:
DATE: 7/2/14

CALCULATED DPF CHECKED GDP

GENERAL NOTES - WATER WORK ESTIMATED QUANTITIES

ATB-20-21.43

105
189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

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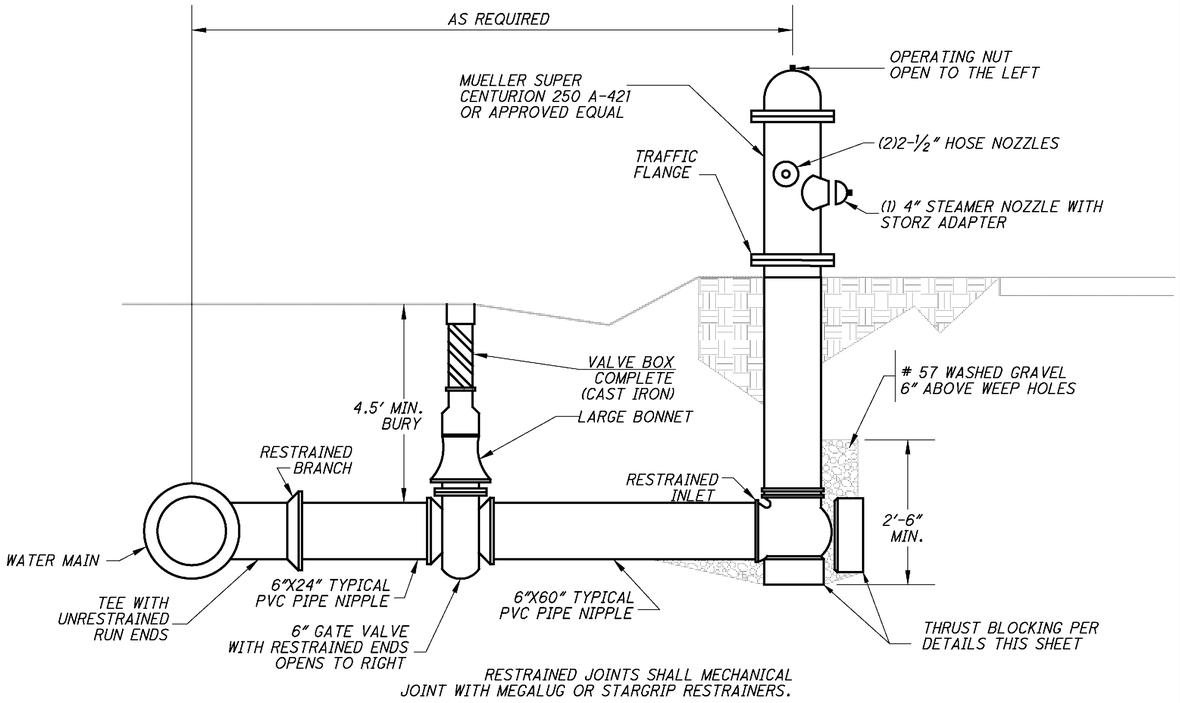
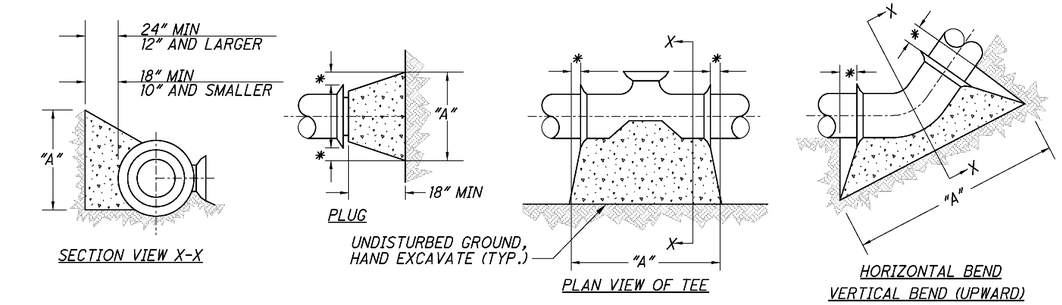
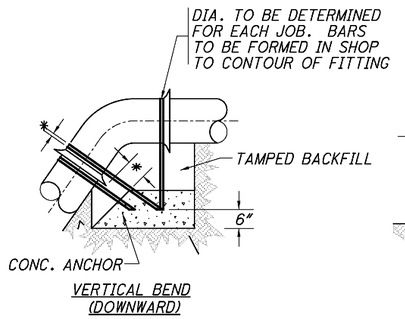
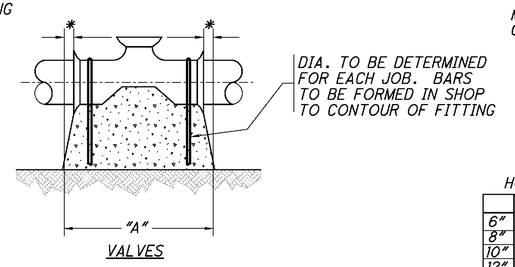


FIRE HYDRANT DETAIL







MINMUM VOLUME OF CONCRETE FOR TOP VERTICAL BENDS

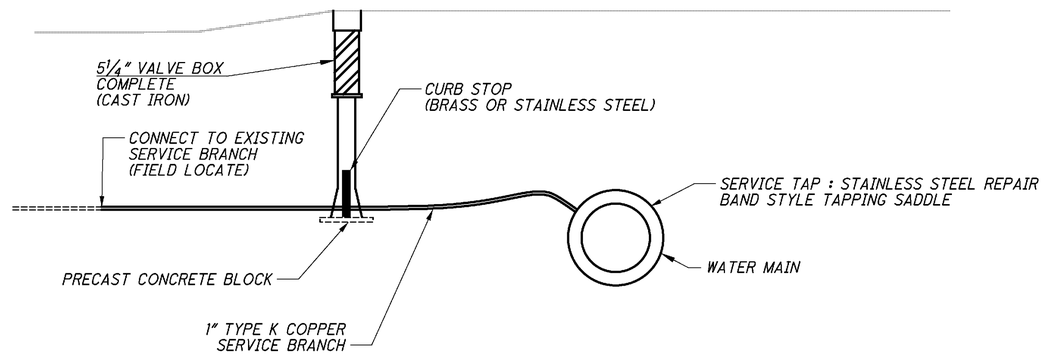
6"	4 C.F.
8"	11 C.F.
10"	22 C.F.
12"	37 C.F.
16"	71 C.F.

"A" HORIZONTAL BENDS

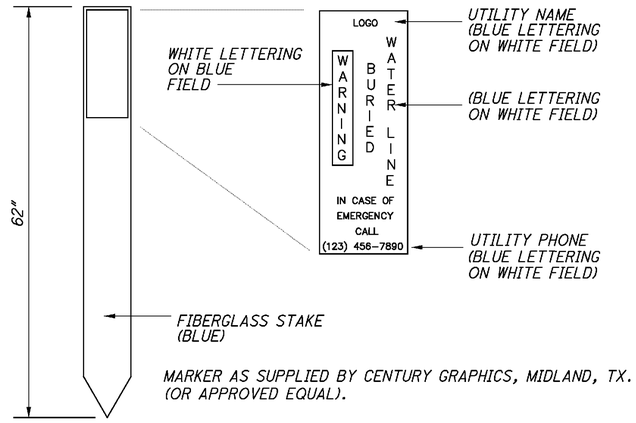
	90°	45°	22½°	TEE
6"	17"	13"	9"	13"
8"	23"	17"	12"	17"
10"	28"	21"	15"	21"
12"	34"	25"	18"	25"
16"	45"	33"	24"	28"

* 6" MINIMUM

THURST BLOCKING DETAILS



SERVICE TAP DETAIL



MARKER AS SUPPLIED BY CENTURY GRAPHICS, MIDLAND, TX. (OR APPROVED EQUAL).

TYPICAL UTILITY LINE MARKER

CALCULATED DPF CHECKED GDP

WATER WORK - DETAILS

ATB-20-21.43

106
189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

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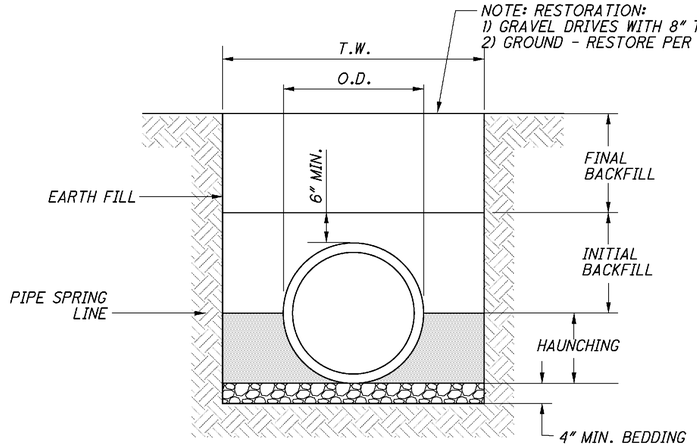

TRENCH DETAIL

N.T.S.

NOTE: MINIMUM TRENCH WIDTH (T.W.) SHALL BE THE GREATER OF (1.25 O.D. + 12") OR (O.D. + 16")

TABLE 1: CLASSES OF EMBEDMENT AND BACKFILL MATERIALS

ASTM D 2321 MATERIAL CLASS	ASTM D 2487 USCS SOIL GROUP	MATERIAL TYPE	% PASSING			ATTERBERG LIMITS	
			1 1/2 IN.	NO. 4	NO. 200	LL	PI
IA	NONE	MANUFACTURED OPEN GRADED AGGREGATES	100%	≤10%	<5%	NON PLASTIC	
IB	NONE	MANUFACTURED DENSE GRADED AGGREGATES	100%	≤50%	<5%	NON PLASTIC	
II	GW	COARSE-GRAINED SOILS, CLEAN	100%	<50% OF "COARSE FRACTION"	<5%	NON PLASTIC	
	GP						
	SW			>50% OF "COARSE FRACTION"			
	SP						
III	GM	COARSE-GRAINED SOILS W/ FINES	100%	<50% OF "COARSE FRACTION"	12% TO 50%		<4 OR <"A" LINE
	GC						<7 OR >"A" LINE
	SM			>50% OF "COARSE FRACTION"			>4 OR <"A" LINE
	SC						>7 OR >"A" LINE
IV-A	ML	FINE-GRAINED SOILS	100%	100%	>50%	<50	<4 OR <"A" LINE
	CL						>7 OR >"A" LINE

TRENCH AND BEDDING DETAILS

GENERAL NOTES

1. BEDDING SHALL BE DUMPED CLASS I-A WORKED BY HAND, OR CLASS I-B COMPACTED TO 85% STANDARD PROCTOR. LOCAL CODE PERMITTING WITH GEOTECHNICAL ENGINEER AND OWNER APPROVAL, NATIVE SOIL MAY BE USED FOR BEDDING PROVIDED IT MEETS THE EMBEDMENT AND BACKFILL MATERIALS IN TABLE 1 EXCLUDING CLASS IV-A.

2. HAUNCHING SHALL BE WORKED AROUND THE PIPE BY HAND TO ELIMINATE VOIDS AND SHALL BE CLASS I-A, OR CLASS I-B OR CLASS II COMPACTED TO 95 % STANDARD PROCTOR. PEA GRAVEL SHALL NOT BE USED AS A HAUNCHING MATERIAL. CLASS III MATERIAL SHALL BE ALLOWED FOR RIGID PIPE COMPACTED AT 95 % STANDARD PROCTOR.

3. INITIAL BACKFILL SHALL BE CLASS I-A WORKED BY HAND, OR CLASS I-B OR CLASS II COMPACTED TO 90 % STANDARD PROCTOR, OR CLASS III COMPACTED 95 % STANDARD PROCTOR. CLASS I & II MATERAIL SHALL BE USED FOR FLEXIBLE PIPE WHEN FILL HEIGHTS EXCEED 8'.

4. FINAL BACKFILL SHALL BE CLASS I-A WORKED BY HAND, OR CLASS I-B OR CLASS II COMPACTED TO 90 % STANDARD PROCTOR, OR CLASS III COMPACTED TO 95 % STANDARD PROCTOR.

5. FINAL BACKFILL NOT UNDER PAVED AREAS CAN BE CLASS IV-A COMPACTED TO 95% STANDARD PROCTOR.

6. ALL MATERIALS ARE CLASSIFIED IN ACCORDANCE WITH ASTM D 2321. (SEE TABLE 1)

7. ALL MATERIALS SHALL BE INSTALLED IN MAXIMUM 8" LOOSE LIFTS IN ACCORDANCE WITH ASTM D 698. CLASS III AND IV-A MATERIALS SHALL BE COMPACTED NEAR OPTIMUM MOISTURE CONTENT.

8. FILL SALVAGED FROM EXCAVATION SHALL BE FREE OF DEBRIS, ORGANICS AND ROCKS LARGER THAN 3".

9. ALL TRENCH EXCAVATIONS SHALL BE SLOPED, SHORED, SHEETED, BRACED, OR OTHERWISE SUPPORTED IN COMPLIANCE WITH OSHA REGULATIONS AND LOCAL ORDINANCES.

10. DESIGN ENGINEER SHALL DESIGNATE ON THE PLANS WHERE WATERTIGHT JOINTS ARE TO BE REQUIRED.

11. REPLACE WET OR UNSUITABLE SOIL AS NECESSARY TO PROVIDE A SUITABLE BASE, AS DIRECTED BY GEOTECHNICAL ENGINEER OR OWNER.

12. WHERE GROUND WATER IS PRESENT CLASS I-A MATERIAL SHALL BE WRAPPED WITH A NON-WOVEN GEO-TEXTILE, EXCLUDING BEDDING MATERIAL BETWEEN 4" & 6" THICK.

13. CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT FOR SOIL TYPE AND CLASSIFICATIONS FOR THIS PROJECT.

14. CONTRACTOR SHALL REFER TO THE LATEST VERSION OF ASTM STANDARDS PRIOR TO CONSTRUCTION.

CALCULATED DPF
CHECKED GDP

WATER WORK - DETAILS

ATB-20-21.43

107
189

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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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Ex N/S R/W
Ex SH
ABAND. COMM.
6228
6229
6230
6231
6232
6233
N 73° 05' 36" E
℄ CONST. US 20
US 20 (W. MAIN)
448
KINGSVILLE TOWNSHIP T. 13N R. 2 W.
CONNEAUT TOWNSHIP T. 13N R. 1 W.
CORP LINE
VILLAGE OF N. KINGSVILLE
CITY OF CONNEAUT
NORFOLK SOUTHERN RAILROAD
POT Sta. 11+62.60
PRIVATE ROADWAY
PUBLIC ROADWAY
PROP C.E.I POLE
PROP C.E.I O/H
PROP C.E.I GUY
RELOCATED 10" GAS (BY OTHERS)
T(QL-D)(FO)
XTEL (FO)
INDUSTRY RD.
R1
CONCRETE
℄ EXIST. INDUSTRY RD
PC Sta. 15+05.28
MATCH LINE STA.449+00 (SEE SHEET 109)
GRAVEL LOT
** 6" TRANSITE W.M. (APPROXIMATE LOCATION)
** EXIST. F.O. TELE. (APPROXIMATE LOCATION)
** EXIST. TELE. (APPROXIMATE LOCATION)
6" TRANSITE W.M.
6" W(QL-D)
COMM.
6" W(DATUR)
2" SFM
2" SFM(QL-D)
W14
6" GATE VALVE
(10+57 W.M.)
SAN
2" PRIVATE FORCE MAIN (APPROXIMATE LOCATION)
2" PRIVATE FORCE MAIN
**
45° BEND
11+02.9 - 11.9' RT.
(10+00 W.L.)
GRAVEL DRIVE
11¼° BEND
11+62.8
37.3 RT
(10+65.1 W.M.)
PROP. TEMP ROAD
18" CHERRY
PROP 6" W.M. PVC; AWWA C909
W1
16" LOCUST
14" LOCUST
16" CHERRY
20" LOCUST
24" CHERRY
14" PINE
SERVICE CONNECTION
W2
TMP
EXIST. ℄ INDUSTRY DRIVE
CURVE DATA
P.I.= Sta. 15+55.57
Δ = 18° 40' 00" (RT)
Dc = 18° 43' 27"
R = 306.00'
T = 50.29'
L = 99.69'
E = 4.11'
C = 99.25'
C.B. = N 63° 45' 36" E
GARAGE
GRAVEL DRIVE
1 STORY FRAME
ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD

**NOTE: EXISTING UTILITIES NOT DESIGNATED BY SUBSURFACE UTILITY ENGINEERING FROM STATION 10+00 TO STATION 13+25 ±; APPROXIMATE LOCATIONS ARE SHOWN

PROFILE ALONG WATERLINE

715
710
705
700
695
690
685
EXIST. GROUND OVER PROP WATER MAIN
PROP TEMP. ROAD
11¼° BEND
22½° BEND (CONNECT TO EXIST WATERMAIN)
** EXIST 6" WATER
** EXIST. TELE (COMM.)
2" FORCE MAIN **
6" TEE (F.H.)
22½° BEND
MIN. 5' COV.
EXIST. TELE (F.O.) **
10+00
11+00
12+00
13+00
14+00
15+00

HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED DPF
CHECKED GDP

PLAN AND PROFILE - WATERMAIN

ATB-20-21.43

108
189

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MATCH LINE STA.449+00 (SEE SHEET 108)

MATCH LINE STA.454+00 (SEE SHEET 110)

US 20 (W. MAIN)

℄ CONST. US 20

N 73° 05' 36" E

N 73° 08' 45" E

EX N/S R/W

℄ EXIST. INDUSTRY RD

INDUSTRY RD.

CB-6

CB-3A

CB-2-2A

CB-2-2B

MSE WALL #2

+30 END WALL #2, RT.

MH-3

12", B, 706.02, APP, JOINTS PER 706.11

EQUATION: Sta. 18+81.71 BK = Sta 452+02.35 AH

PROP C.E.I. O/H

12", C

15", C

SAN 12" PVC

2" PRIVATE FORCE MAIN

6" TRANSITE W.M.

6" W(DATUR)

6" GATE VALVE

REMOVE F.H.

15+93.7
29.6 RT
(14+86.4 W.M.)

16+09.9
28.0 RT
(15+01.5 W.M.)

453+50
(19+25 W.M.)

452+89.8
28.0 RT
(18+63.5 W.M.)

PI Sta. 453+00.00
= STA 453+00.00
US 20, 73.99' RT

PROP. TEMP ROAD

GRAVEL DRIVE

GARAGE

40" MAPLE

48" OAK

18" MAPLE

30" MAPLE

14" MAPLE

22" CHERRY

14" CHERRY

W3

W4

W5

W6

W7

SERVICE CONNECTION

PROP 6" W.M. PVC; AWWA C909

RELOCATED 11#4" GAS (BY OTHERS)

RELOCATED 10" GAS (BY OTHERS)

RELOCATED 1¼" GAS (BY OTHERS)

PROP C.E.I. POLE & DOWN GUY

OLD CONC PARKING LOT

EXIST. ℄ INDUSTRY DRIVE
CURVE DATA
P.I.= Sta. 15+55.57
Δ = 18° 40' 00" (RT)
Dc = 18° 43' 27"
R = 306.00'
T = 50.29'
L = 99.69'
E = 4.11'
C = 99.25'
C.B. = N 63° 45' 36" E

1 STORY FRAME

ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD

GRANT L. CASE
MARGIE A. CASE
631 INDUSTRY RD.

DAVID A. DELLO
JACKIE L. DELLO
627 INDUSTRY RD.

1½ STORY FRAME

32" MAPLE

DEAKAN ADAMS
621 INDUSTRY RD.

RW SIDLEY, INC
(NO SERVICE PROPOSED)

EXIST. GROUND OVER PROP WATER MAIN

11¼° BEND

MIN. 5' COV.

6" TEE (F.H.)

715
710
705
700
695
690
685

15+00
16+00
17+00
18+00
19+00
20+00

PROFILE ALONG WATERLINE

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED GDP

PROFILE - WATERMAIN

PLAN AND PR

ATB-20-21.43

109
189

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ROBERT G. LEHTONEN
594 W MAIN (US 20) RD

JAMES A. EVANS
JUDITH ANN EVANS
594 W MAIN (US 20) RD

HOWARD S. JOHNSON
592 W. MAIN

EXIST BIN WALL (REMOVE)
GRAVEL
EXIST. WALK
REMOVE EX. CB
REMOVE EX. CB
℄ CONST. US 20
US 20 (W. MAIN)
N 73° 8' 45" E
455
456
457
458
10" VCP (ABANDON)
CB-3A
MH-3
10" VCP (TO REMAIN)
RELOCATED 10" GAS (BY OTHERS)
458+96± CONNECT TO EXIST (25+56 W.L.)
12" PVC
6"x6" TEE (CAPPED) TIE IN
6" GATE VALVE
1" WATER SERVICE (PER RECORDS)
US 20 (W. MAIN)
6" TRANSITE W.M.
MATCH LINE STA.454+00 (SEE SHEET 109)
INDUSTRY RD.
℄ EXIST INDUSTRY ROAD
N 70° 16' 36" E
CB-2-2B
10" VCP (REMOVE) (APPRX. LOC.)
12", B
(REMOVE) 10" VCP
(REMOVE)10" VCP (APPRX. LOC.) 15", B
15", C
12", C
10" VCP-SAN (APPRX. LOC.)
12" PVC
1" SERVICE
INLET (BURIED)
SPACE RESERVED MANF. SYSTEM, TYPE 2
6" W(DATUR)
1" W(DATFI)
PROP 6" W.M. PVC; AWWA C909
RELOCATED 1¼" GAS (BY OTHERS)
RELOCATED 10" GAS (BY OTHERS)
OLD CONC PARKING LOT
22½° BEND 456+34.6-31.0 RT (22+09.7 W.M.)
22½° BEND 456+34.6-32.9 RT (22+14.8 W.M.)
45° & 11¼° BEND 456+97.7- 79.6 RT (22+89.5 W.M.)
RELOCATED 1¼" GAS (BY OTHERS)
45° & 11¼° BEND 457+68.7 - 80.2 RT (23+60.6 W.M.)
45° BEND * 458+18.6- 66.4 RT (24+40.24 W.M.)
11¼° BEND 458+06.3* 78.6 RT (24+22.8 W.M.)
90° BEND *458+91.0 65.4 RT (25+12.8 W.M.)
RELOCATED 1¼" GAS (BY OTHERS)
FIELD DRIVE (GRAVEL)
END PROJECT STA 459+00.00 (US 20)
END WORK INDUSTRY RD. STA. 457+70.59
BURYING GROUND, TRUSTEE (A.K.A. CONNEAUT CITY) (NO SERVICE)
THE CITY OF CONNEAUT, OH (NO SERVICE PROPOSED)
RW SIDLEY, INC (NO SERVICE PROPOSED)
* - DENOTES STATION - OFFSET FROM US 20

W8 W9 W10 W11 W12 W13 R3

N

HORIZONTAL SCALE IN FEET 0 10 20 40

CALCULATED DPF CHECKED GDP

PLAN AND PROFILE - WATERMAIN

ATB-20-21.43

110 / 189

715 710 705 700 695 690 685 680

EXIST. GROUND OVER PROP WATER MAIN
EXIST. GROUND OVER PROP WATER MAIN
22½° BEND
22½° BEND
MIN. 5' COV.
11¼° & 45° BENDS
11¼° & 45° BENDS
11¼° BEND
PROP. 1¼" G
45° BEND
EXIST. 1¼" G
3.7' COVER
EXIST 6" W
90° BEND
6" TEE (CONNECT TO EXIST WATERMAIN)

20+00 21+00 22+00 23+00 24+00 25+00

PROFILE ALONG WATERLINE

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460 WHITE POND DR • SUITE 300
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SIGNS

REFERENCE NO.	SHEET NO.	LOCATION	STATION	SIDE	CODE	SIZE (INCHES)	630							
							GROUND MOUNTED SUPPORT, NO. 2 POST	GROUND MOUNTED SUPPORT, NO. 3 POST	GROUND MOUNTED SUPPORT, NO. 4 POST	SIGN, FLAT SHEET	SIGN POST REFLECTOR (RED)	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL
							FEET	FEET	FEET	SF	EACH	EACH	EACH	EACH
S1	112	US20	428+15.00	RT	W3-5			14.8					1	1
S2	112	OVERPASS	38+70.00	RT	R1-1-30	30 x 30	13.0			6.3	1			
S3	112	OVERPASS	39+00.00	RT								1		1
S4	112	US20	439+37.00	LT	STREET NAME SIGN		11.5						1	1
S5	112	OVERPASS	40+10.00	RT	W14-1-24	24 x 24	11.3			4.0				
S6	113	US20	441+75.00	LT	W2-2R-36 / W14-1aR-36	36x36 36x8			17.0	11.0				
S7	113	US20	442+53.00	LT	R2-1							1		1
S8	113	US20	443+00.00	RT	R2-1-36	48 x 36			17.3	12.0				
S9	113	US20	445+00.00	RT	I-H2A-48		14.3 15.5						1	2
S10	113	US20	445+00.00	LT	R2-1-36	48 36			17.3	12.0				
S11	113	INDUSTRY	12+25.00	RT	R2-1			12.7					1	1
S12	113	INDUSTRY	13+25.00	RT	SPECIAL		10.8						1	1
S13	113	US20	447+00.00	LT	I-H2A-48				14.8 14.4			2	1	2
S14	113	OVERPASS	48+19.00	℄	OM4-1-18 / OM4-1-18	18x18 18x18	10.7 10.7			4.5				
S15	114	US20	453+50.00	RT	R2-1							1		1
S16	114	US20	453+92.00	RT					19.0				2	1
S17	114	US20	454+57.00	RT	R16-H4-30			16.0					1	1
S18	114	INDUSTRY	454+60.00	LT	W14-2		11.3						1	1
S19	114	INDUSTRY	455+52.00	LT	SPECIAL		10.5						1	1
S20	114	US20	456+00.00	RT	W2-2R-36 / W14-1aR-36	36x36 36x8			17.8	11.0				
S21	114	INDUSTRY	456+27.00	LT	R2-1		10.5						1	1
S22	114	INDUSTRY	456+82.00	LT	STREET NAME SIGN		9.2						1	1
S23	115	INDUSTRY	457+00.00	LT	R1-1							1		1
S24	115	INDUSTRY	458+10.00	RT	R1-1-30	30 x 30	11.0			6.3	1			
TOTALS CARRIED TO TRAFFIC CONTROL GENERAL SUMMARY							150	44	118	67	2	6	13	18

PAVEMENT MARKINGS

REFERENCE NO.	SHEET NO.	STATION		SIDE	LENGTH	644			646		
						CENTERLINE,DOUBLE SOLID 4" (Y)	LANE LINE, 4" (W)	STOP LINE (W)	CENTERLINE,DOUBLE SOLID 4" (Y)	EDGE LINE, 4" (W)	LANE LINE, 4" (W)
		FROM	TO			MILE	MILE	FEET	MILE	MILE	MILE
DY1	112-113	436+95.00	446+63.00	℄	968.00	0.183					
DY2	112	44+17.00	39+44.00	OVERPASS	48.00	0.009					
DY3	113-114	446+63.00	450+64.00	℄	401.00				0.076		
DY4	114-115	450+64.00	459+50.00	℄	886.00	0.168					
DY5	113	455+50.00	457+62.00	INDUSTRY	235.00	0.045					
LL1	112-113	436+95.00	446+99.00	LT	1004.00		0.190				
LL2	112-113	436+95.00	446+26.00	RT	931.00		0.176				
LL3	113-114	446+26.00	450+27.00	RT	401.00						0.076
LL4	113-114	446+99.00	451+00.00	LT	401.00						0.076
LL5	114-115	450+27.00	459+50.00	RT	923.00		0.175				
LL6	114-115	451+00.00	459+50.00	LT	850.00		0.161				
SL1	112	438+70.00	439+02.00	OVERPASS	32.00			32			
SL2	115	457+67.00	458+03.00	INDUSTRY	36.00			36			
WE1	113-114	445+05.00	449+91.00	RT	486.00					0.09	
WE2	113-114	447+36.00	452+75.00	LT	539.00					0.10	
TOTALS CARRIED TO TRAFFIC CONTROL GENERAL SUMMARY						0.41	0.70	68	0.08	0.19	0.15

CALCULATED CML
CHECKED DPF

ESTIMATED QUANTITIES - TRAFFIC CONTROL

ATB-20-21.43

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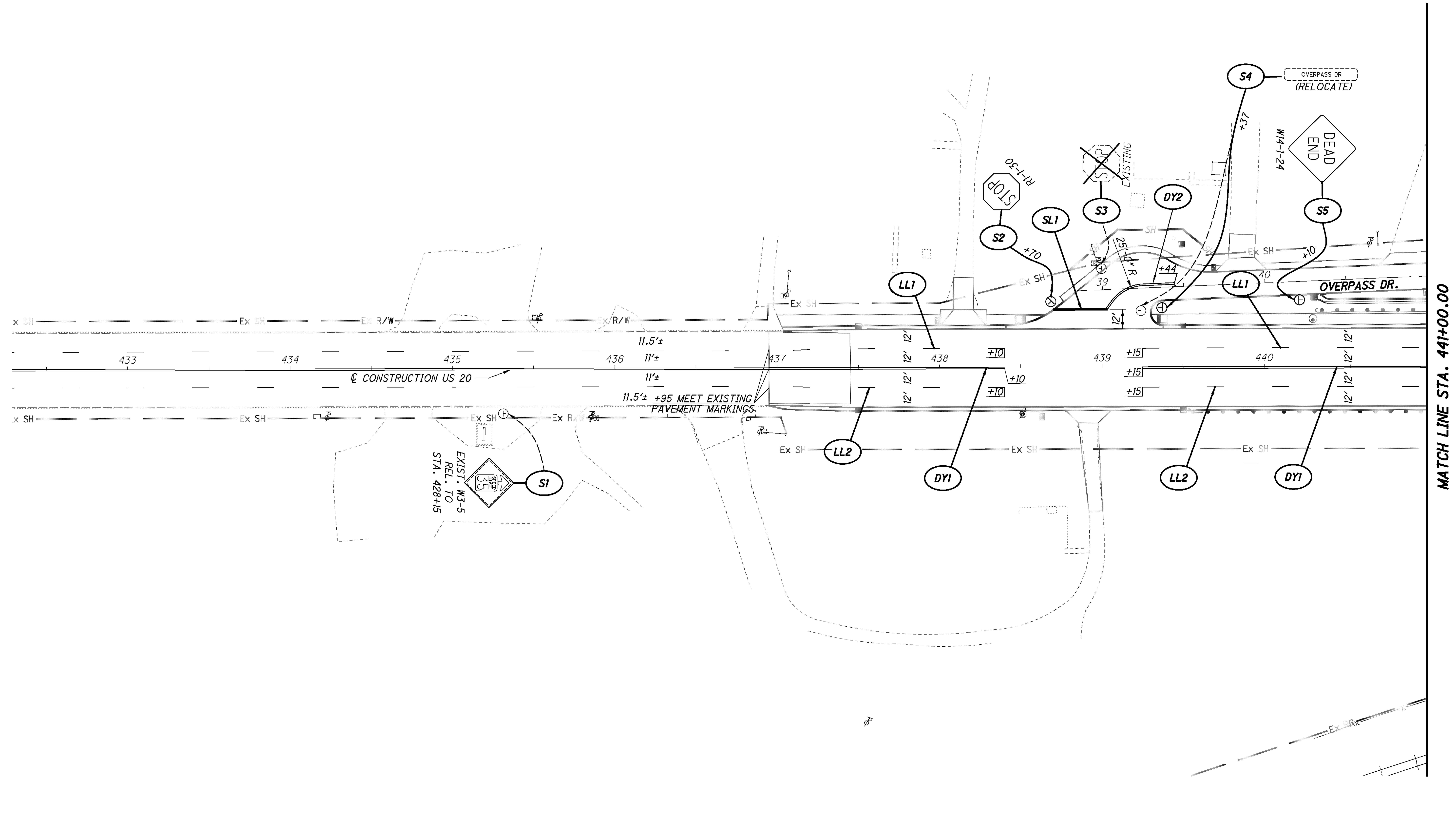

ITEM 644/646	ODOT LINE SPECIFICATIONS		
DY	CENTER LINE, SOLID DOUBLE, 4"	LL	LANE LINE DASHED WHITE, 4"
		WE	EDGE LINE, WHITE, 4"
SL	STOP LINE, 24"		

SIGN LEGEND

REMOVE AND DISPOSE OF EXISTING SIGN	EXISTING SIGN TO REMAIN
PROPOSED SIGN	REMOVE & RESET SIGN ON NEW SUPPORTS

NOTE: USE ITEM 646 FOR PAVEMENT MARKINGS ON BRIDGE DECK AND APPROACH SLABS

HORIZONTAL SCALE IN FEET 0 15 30 60

CALCULATED DPF
CHECKED MAM

TRAFFIC CONTROL PLAN
STA. 441+00.00 TO STA. 449+00.00

ATB-20-21.43

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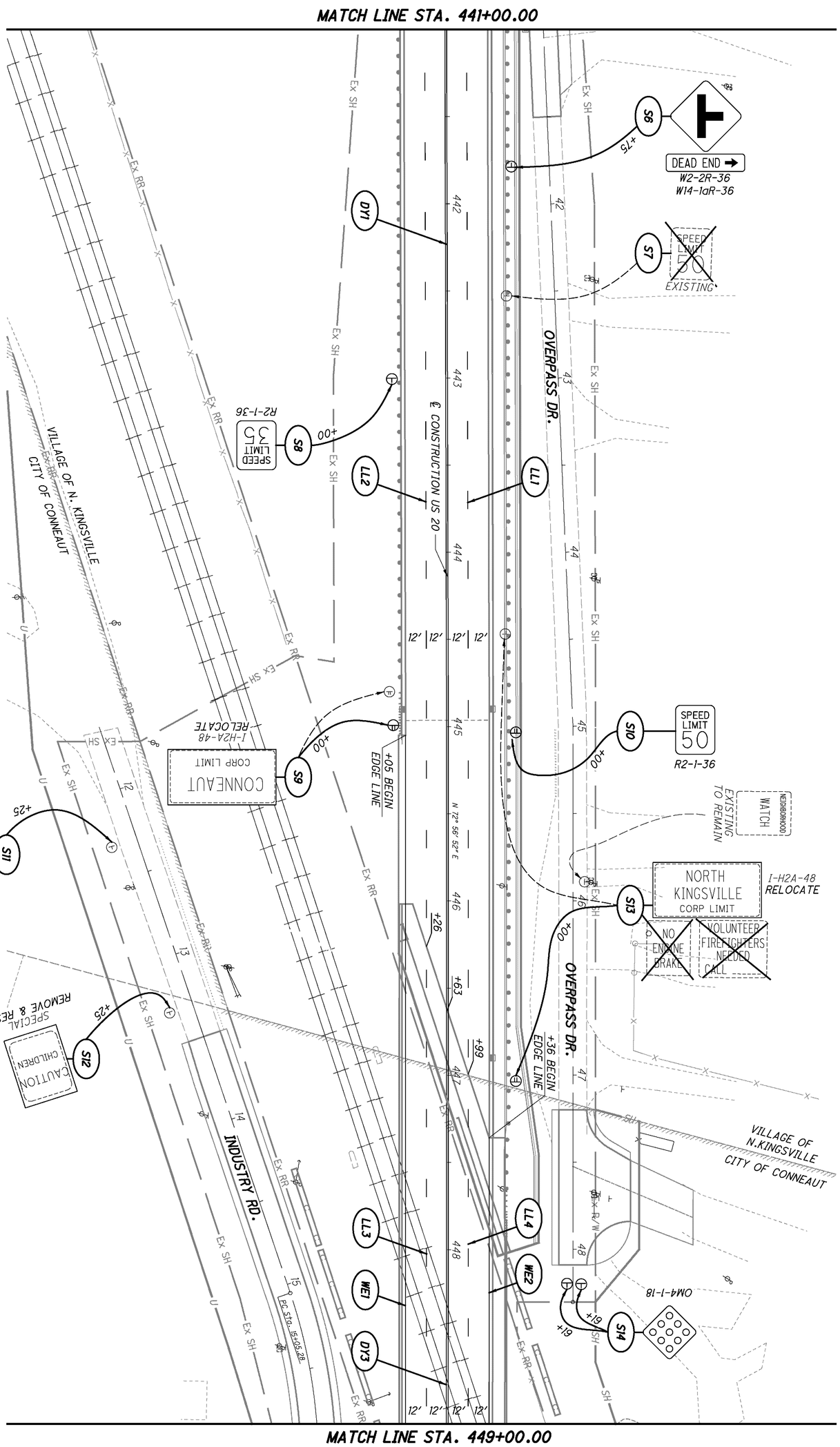

NOTE: USE ITEM 646 FOR PAVEMENT MARKINGS ON BRIDGE DECK AND APPROACH SLABS
SEE SHEET 112 FOR SIGNING AND PAVEMENT MARKING LEGEND

ATB-20-21.43

TRAFFIC CONTROL PLAN
STA. 441+00.00 TO STA. 449+00.00

CALCULATED DPF
CHECKED MAM

0 15 30 60
HORIZONTAL SCALE IN FEET

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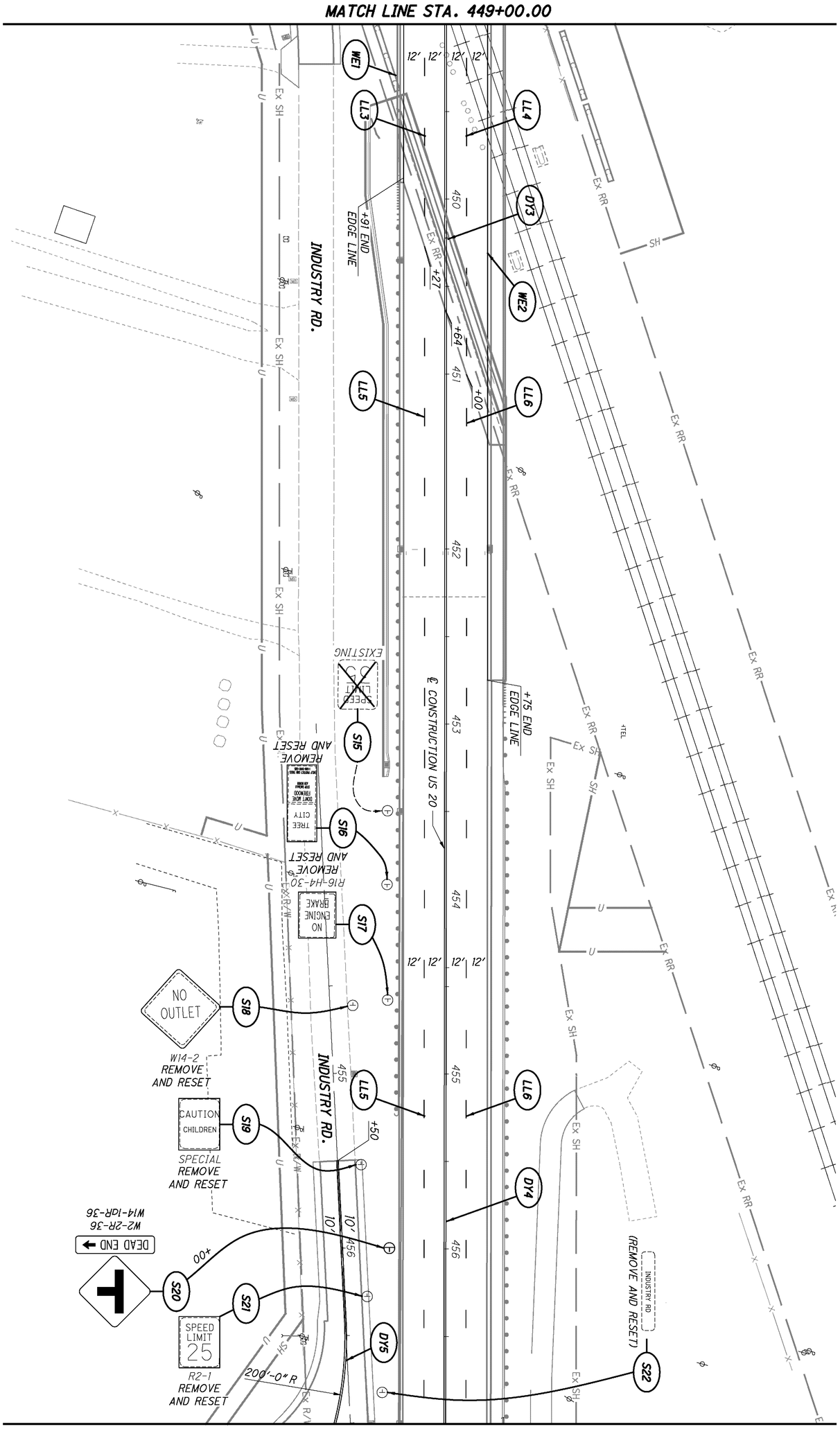

NOTE: USE ITEM 646 FOR PAVEMENT MARKINGS ON BRIDGE DECK AND APPROACH SLABS
SEE SHEET 112 FOR SIGNING AND PAVEMENT MARKING LEGEND

114 / 189	ATB-20-21.43	TRAFFIC CONTROL PLAN STA. 449+00.00 TO STA. 456+00.00	CALCULATED DPF CHECKED MAM	0 30 15 60 HORIZONTAL SCALE IN FEET

PALMER ENGINEERING
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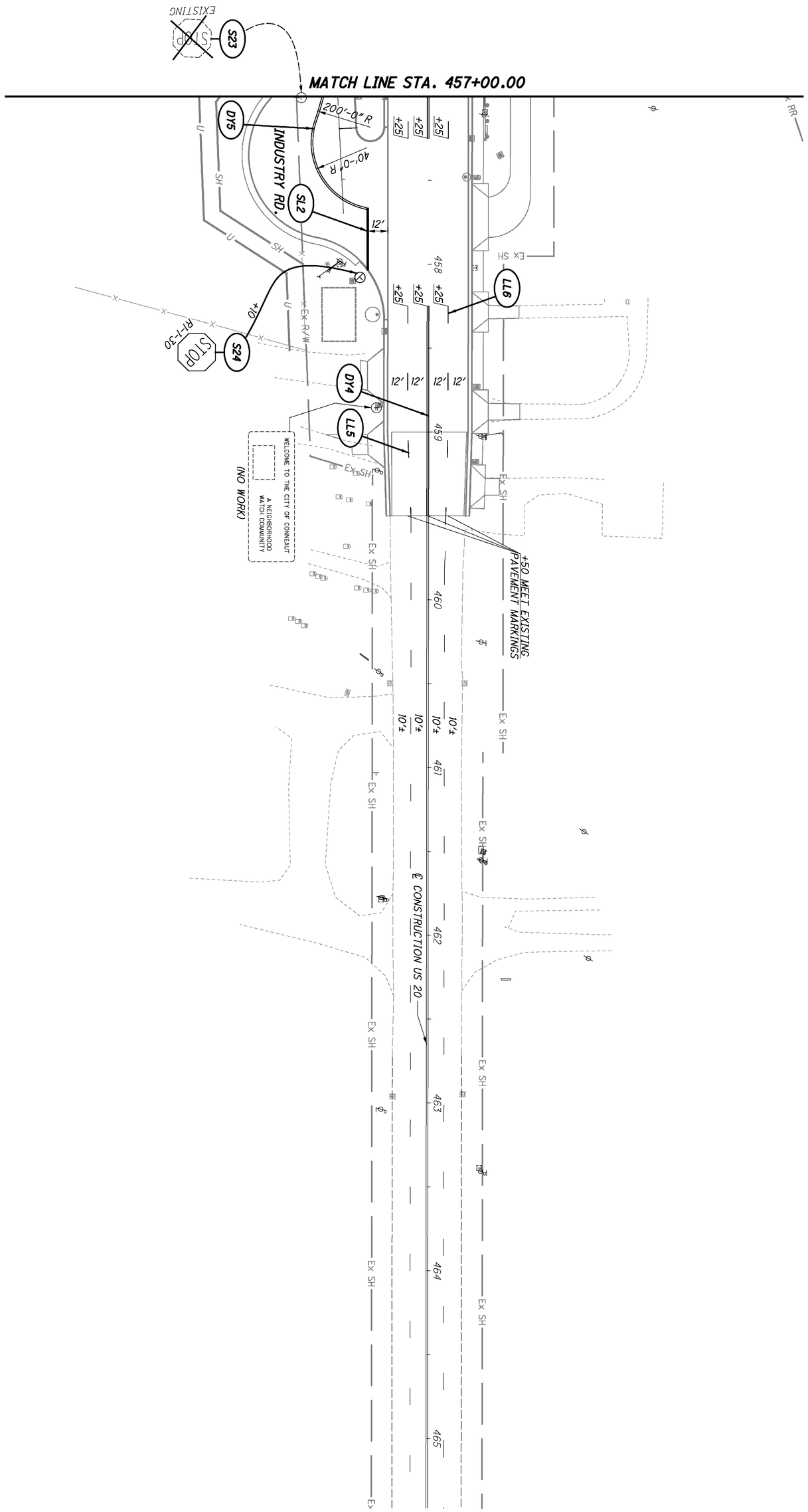


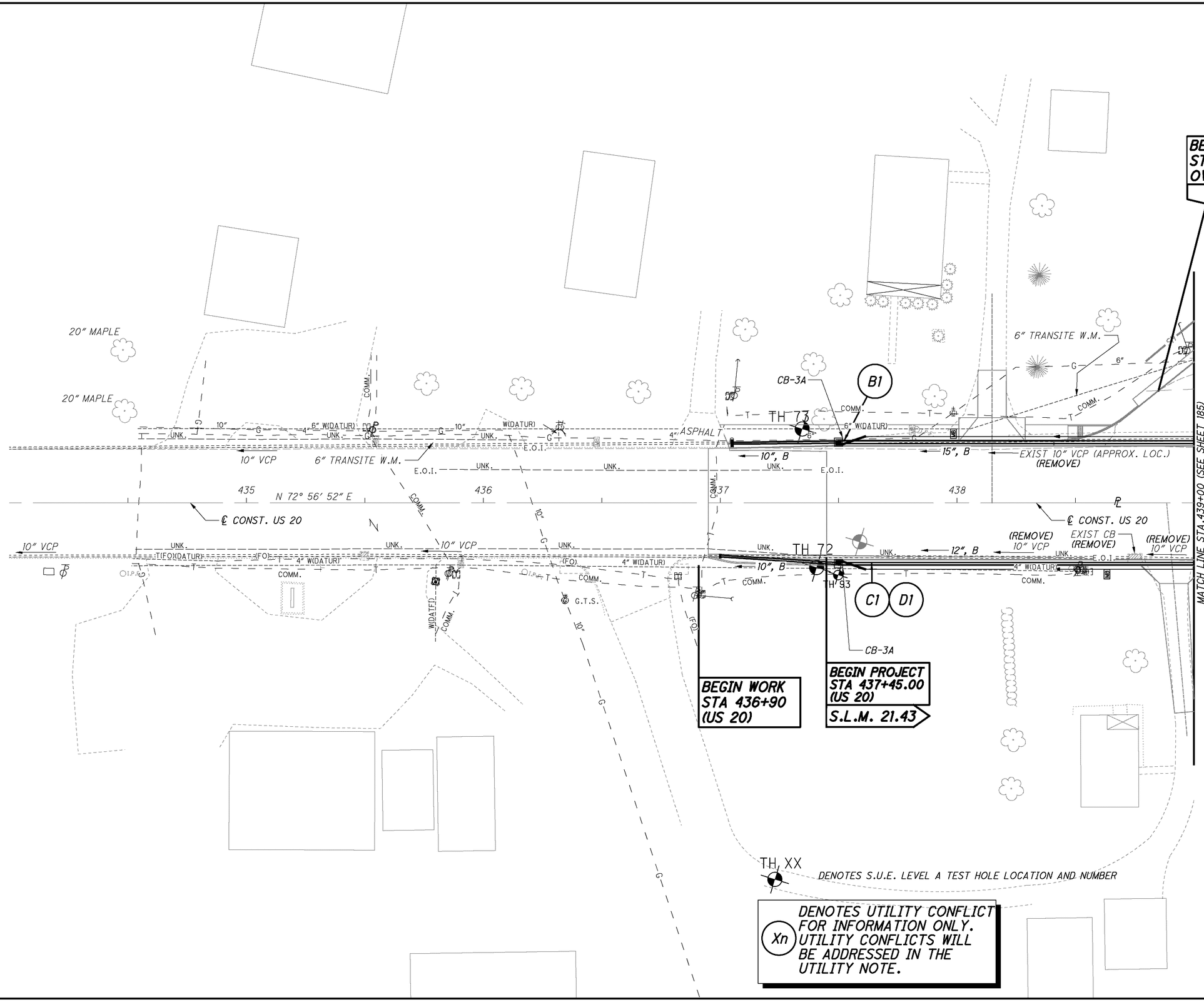
NOTE: USE ITEM 646 FOR PAVEMENT MARKINGS ON BRIDGE DECK AND APPROACH SLABS
SEE SHEET 112 FOR SIGNING AND PAVEMENT MARKING LEGEND

ATB-20-21.43

TRAFFIC CONTROL PLAN
STA. 449+00.00 TO STA. 456+00.00

CALCULATED DPF
CHECKED MAM

0 15 30 60
HORIZONTAL SCALE IN FEET



HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED

UTILITY PLAN - US 20
STA. 434+00.00 - STA. 439+00.00

ATB-20-21.43

116
189

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ENGINEERING AKRON, OHIO 44320

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UTILITY PLAN - US 20
STA. 439+00.00 TO STA. 444+00.00

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED

ATB-20-21.43

117
189

MATCH LINE STA.439+00 (SEE SHEET 184)

MATCH LINE STA.444+00 (SEE SHEET 186)

CB-22B
D2
D3
C2
B2
TH 74
TH 76
6" TRANSITE W.M.
6" W(DATUR)
COMM.
GRAVEL
CONCRETE
INLET (NOT FOUND)
(REMOVE)
EXIST CB (PAVED OVER) (REMOVE)
40 +40 BEGIN WALL #1, LT.
℄ OVERPASS DR.
41
42
43
CB 2-2B
EXIST INLET (REMOVE)
EXIST 10" VCP (APPROX. LOC.) (ABANDON)
PAVED GUTTER, AS PER PLAN
MSE WALL #1
PROP SWALE
12", C
15", B
12", B
12", B, 706.02, APP, JOINTS PER 706.11
10" VCP (REMOVE)
CB-3A
MH-3
EXISTING WALK
N 72° 56' 52" E
℄ CONST. US 20
440
441
442
443
(REMOVE) EXIST MH (BURIED)
(REMOVE) EXIST CB (BURIED)
(ABANDON) EXIST 10" VCP (APPROX. LOC.)
10" VCP (ABANDON)
6228
6227
6226

TH XX — DENOTES S.U.E. LEVEL A TEST HOLE LOCATION AND NUMBER

Xn — DENOTES UTILITY CONFLICT FOR INFORMATION ONLY. UTILITY CONFLICTS WILL BE ADDRESSED IN THE UTILITY NOTE.

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AKRON, OHIO 44320

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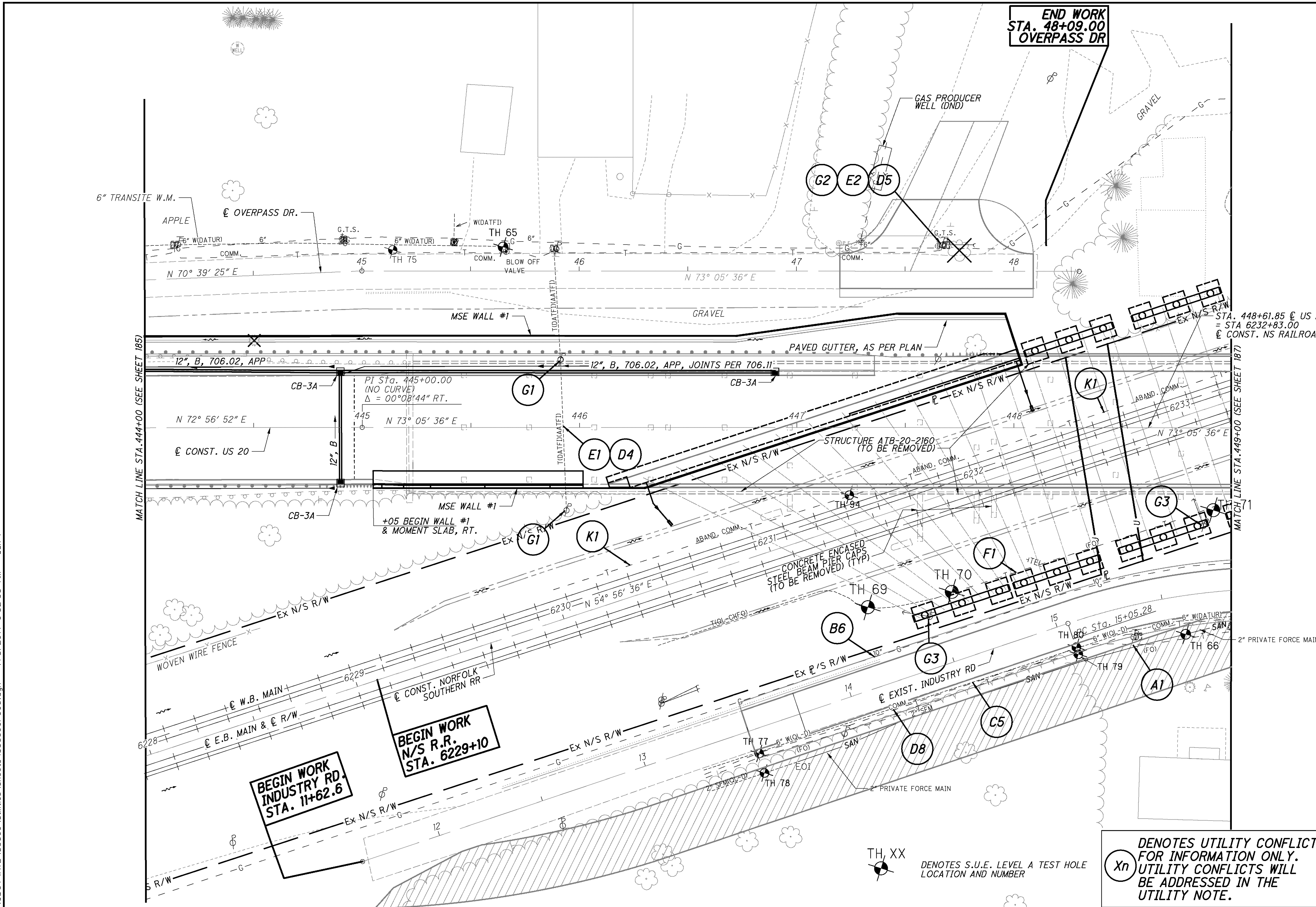
END WORK
STA. 48+09.00
OVERPASS DR
GAS PRODUCER WELL (DND)
6" TRANSITE W.M.
APPLE
℄ OVERPASS DR.
N 70° 39' 25" E
N 73° 05' 36" E
GRAVEL
MSE WALL #1
PAVED GUTTER, AS PER PLAN
12", B, 706.02, APP
12", B, 706.02, APP, JOINTS PER 706.11
CB-3A
PI Sta. 445+00.00
(NO CURVE)
Δ = 00°08'44" RT.
N 72° 56' 52" E
℄ CONST. US 20
MATCH LINE STA.444+00 (SEE SHEET 185)
MATCH LINE STA.449+00 (SEE SHEET 187)
STA. 448+61.85 ℄ US 20
= STA 6232+83.00
℄ CONST. NS RAILROAD
STRUCTURE ATB-20-2160
(TO BE REMOVED)
+05 BEGIN WALL #1
& MOMENT SLAB, RT.
CONCRETE ENCASED
STEEL BEAM PIER CAPS
(TO BE REMOVED) (TYP)
N 54° 56' 36" E
WOVEN WIRE FENCE
℄ W.B. MAIN
℄ E.B. MAIN & ℄ R/W
℄ CONST. NORFOLK
SOUTHERN RR
BEGIN WORK
N/S R.R.
STA. 6229+10
BEGIN WORK
INDUSTRY RD.
STA. 11+62.6
℄ EXIST. INDUSTRY RD
PC Sta. 15+05.28
2" PRIVATE FORCE MAIN
TH XX
DENOTES S.U.E. LEVEL A TEST HOLE
LOCATION AND NUMBER
Xn
DENOTES UTILITY CONFLICT
FOR INFORMATION ONLY.
UTILITY CONFLICTS WILL
BE ADDRESSED IN THE
UTILITY NOTE.

HORIZONTAL SCALE IN FEET

CALCULATED DPF

CHECKED

UTILITY PLAN - US 20

STA. 444+00.00 TO STA. 449+00.00

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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END WORK
N/S R.R.
STA. 6236+50

MATCH LINE STA.449+00 (SEE SHEET 186)

MATCH LINE STA.454+00 (SEE SHEET 188)

Ex N/S R/W

℄ CONST. NORFOLK SOUTHERN RR

℄ W.B. MAIN

℄ E.B. MAIN & ℄ R/W

℄ CONST. US 20

℄ EXIST. INDUSTRY RD

MSE WALL #2

+75 END WALL #2, LT.

+30 END WALL #2, RT.

CB-6

CB-3A

CB-2-2A

CB-2-2B

MH-3

K1

G4

H1

A1

B3

TH 95

TH 67

TH 68

TH XX

ABAND. COMM.

18" CMP

24" CHERRY

18" CHERRY

6234

6235

6236

6237

6238

450

451

452

453

N 73° 05' 36" E

N 73° 08' 45" E

N 70° 16' 36" E

12", B, 706.02, APP, JOINTS PER 706.11

12" PVC SAN

12", C

15", C

2" SFM

2" PRIVATE FORCE MAIN

6" TRANSITE W.M.

6" W(DATUR)

1¼" W(DATFI)

COMM.

(FO)

T-TEL

G.R.

Xn DENOTES UTILITY CONFLICT FOR INFORMATION ONLY. UTILITY CONFLICTS WILL BE ADDRESSED IN THE UTILITY NOTE.

TH XX DENOTES S.U.E. LEVEL A TEST HOLE LOCATION AND NUMBER

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED

UTILITY PLAN - US 20
STA. 449+00.00 TO STA. 454+00.00

ATB-20-21.43

119
189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
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UTILITY PLAN - US 20
STA. 454+00.00 TO STA. 459+00.00

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED

ATB-20-21.43

120
189

MATCH LINE STA.454+00 (SEE SHEET 187)

MATCH LINE STA.459+00 (SEE SHEET 189)

6239

℄ CONST. US 20

N 73° 8' 45" E

N 70° 16' 36" E

℄ EXIST INDUSTRY ROAD

455 456 457 458

REMOVE EX. CB

REMOVE EX. CB

10" VCP (ABANDON)

20" MAPLE

EXIST BIN WALL (REMOVE)

EXIST BIN WALL (REMOVE)

GRAVEL

GRAVEL

EXIST. WALK

1" W(DATFI)

6" GAS

10" VCP

12", C

12", B

CB-3A

MH-3

10" VCP (TO REMAIN)

CONC.

COMM.

(FO)

TH 91

TH 92

12" PVC

6" TRANSITE W.M.

6" W(DATUR)

10" VCP (REMOVE) (APPRX. LOC.)

15", C

CB-2-2B

12" PVC

SAN

INLET (BURIED)

TH 81

TH 82

TH 83

TH 84

TH 86

TH 87

TH 88

TH 89

32'-0"

20'-0"

SPACE RESERVED MANF. SYSTEM, TYPE 2

B3 B4 B5 B7 B8 B9 B10 C3 C4 C6 D6 D7 D9

END WORK INDUSTRY RD. STA. 457+70.59

END PROJECT STA 459+00.00 (US 20)

TH, XX — DENOTES S.U.E. LEVEL A TEST HOLE LOCATION AND NUMBER

Xn — DENOTES UTILITY CONFLICT FOR INFORMATION ONLY. UTILITY CONFLICTS WILL BE ADDRESSED IN THE UTILITY NOTE.

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR * SUITE 300
AKRON, OHIO 44320

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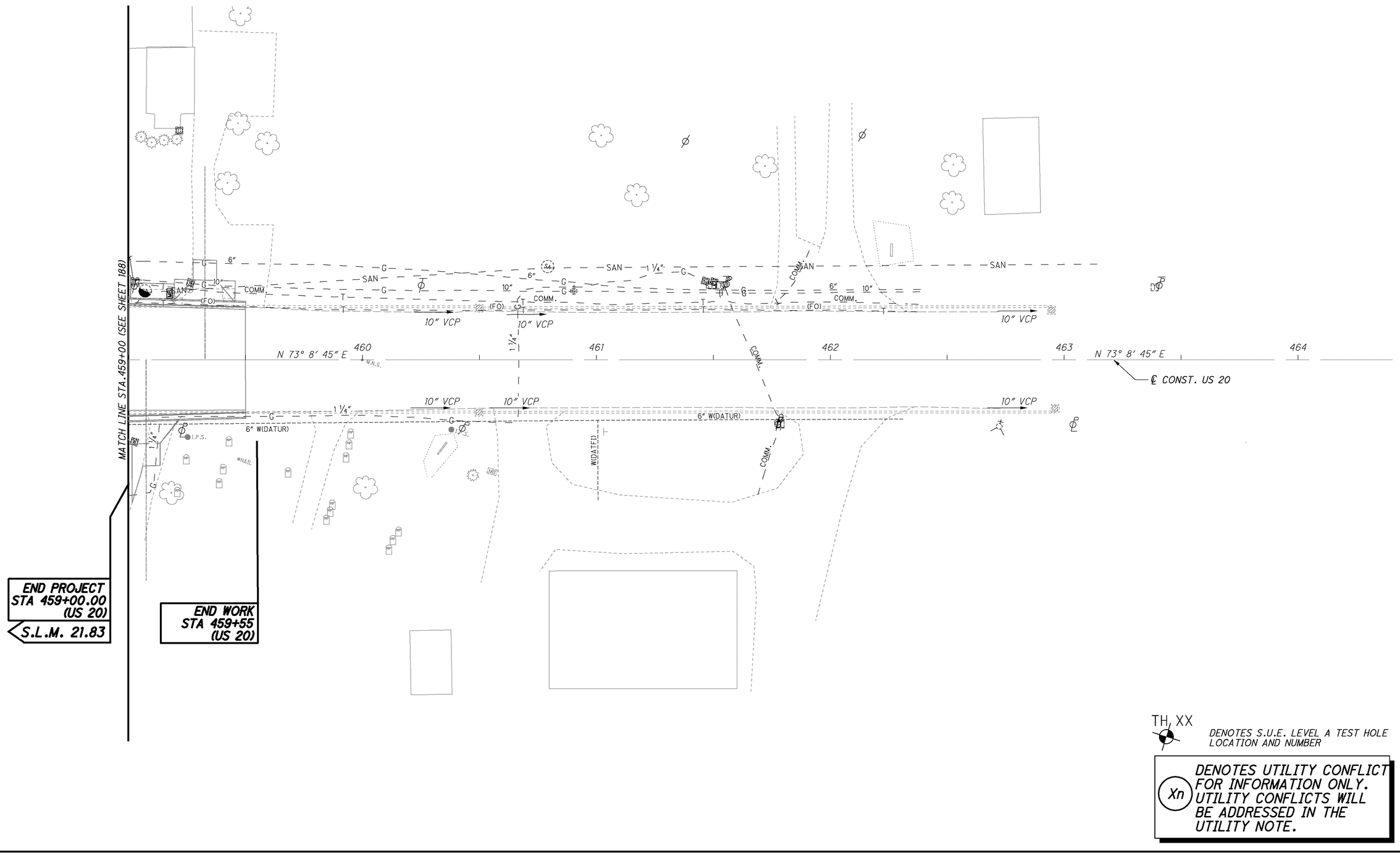
UTILITY PLAN - US 20
STA. 459+00.00 TO STA. 464+00.00

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED DPF
CHECKED

ATB-20-21.43

121
189



TH XX — DENOTES S.U.E. LEVEL A TEST HOLE LOCATION AND NUMBER

(Xn) DENOTES UTILITY CONFLICT FOR INFORMATION ONLY. UTILITY CONFLICTS WILL BE ADDRESSED IN THE UTILITY NOTE.

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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NOTE: STATIONING SHOWN FOR ℄ CONST. NORFOLK SOUTHERN R.R.
(℄ R.R. R/W STATIONING REVERSED - SEE R/W PLANS)

NOTE:
SEE SHEET 3/45 FOR LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

℄ OVERPASS DR
N 73° 05' 36" E

℄ US 20 STA 448+61.85
℄ NS RR STA 6232+83.00

B-001-0-09
B-001-1-11
B-002-1-09
B-002-0-09
B-002-3-09
B-003-2-09
B-003-0-09
B-003-1-09
B-004-1-09
B-004-2-11
B-004-0-09

℄ BEARING REAR ABUT.
STA. 447+01.47

℄ BEARING FWD ABUT
STA. 450+22.23

BEGIN APPROACH
STA. 446+62.64

END APPROACH
STA. 446+92.64

LIMITS OF EXISTING BRIDGE TO BE REMOVED

℄ CONSTRUCTION/
US 20 (CENTER ST)

MSE WALL 1

MSE WALL 2

MGS BTA, TYPE 1
STA. 447+92.2

MGS BTA, TYPE 1
STA. 449+91.6

MGS BTA, TYPE 1
℄ STA. 445+04.0
BEGIN MOMENT SLAB
STA. 445+05.00

℄ PIER 1
℄ PIER 2
℄ PIER 3
℄ PIER 4
℄ PIER 5
℄ PIER 6
℄ PIER 7
℄ PIER 8

UTILITY RIGHT OF WAY

FIBER OPTIC LINE TO BE RELOCATED

10" GAS LINE TO BE RELOCATED

6" PIPE

℄ INDUSTRIAL RD

℄ FUTURE TRACK

℄ W.B. MAIN

℄ E.B. MAIN
(℄ RR R/W)

℄ CONST. NORFOLK SOUTHERN RR

POINT OF MINIMUM VERTICAL CLEARANCE

N 54° 56' 36" E

N 73° 05' 36" E

71°51'10"

STA. 450+25.00 (ALONG US 20)

PLAN

PROPOSED ELEVATIONS
EXISTING ELEVATIONS

30'-0" APPROACH SLAB

PROPOSED PROFILE GRADE

P.V.I. STA 445+25.00 ELEV = 731.01'
200.00' VC
+3.71 %
+0.22 %

P.V.I. STA 448+61.85 ELEV = 731.75'
400.00' VC
+0.22 %
-0.22 %

BRIDGE LIMITS = 341.19'

ELEV. 720.00

FIX

EXP

MSE WALL 1
ELEV. 706.7

MSE WALL 2
ELEV. 709.6

14" DIA. CIP CONCRETE FRICTION PILES
EST. LENGTH = 105'
(TYP. REAR ABUTMENT),
EST. LENGTH = 75'
(TYP. REAR PIERS)

EXISTING PROFILE GRADE

MSE WALL LEVELING PAD ELEV. 695.0

12" CRUSHED AGGREGATE SLOPE PROTECTION PER CMS 601.06, (TYP)

FIBER OPTIC LINE TO BE RELOCATED

PROFILE ALONG ℄ OF SURVEY AND CONSTRUCTION

DESIGN AGENCY
Palmer ENGINEERING
400 WHITE POND DR • SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • WASHINGTON C.H. • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

ASHTABULA COUNTY
STA. 446+92.64
STA. 450+33.83

SITE PLAN - 1 OF 2
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

1 / 45

122
189

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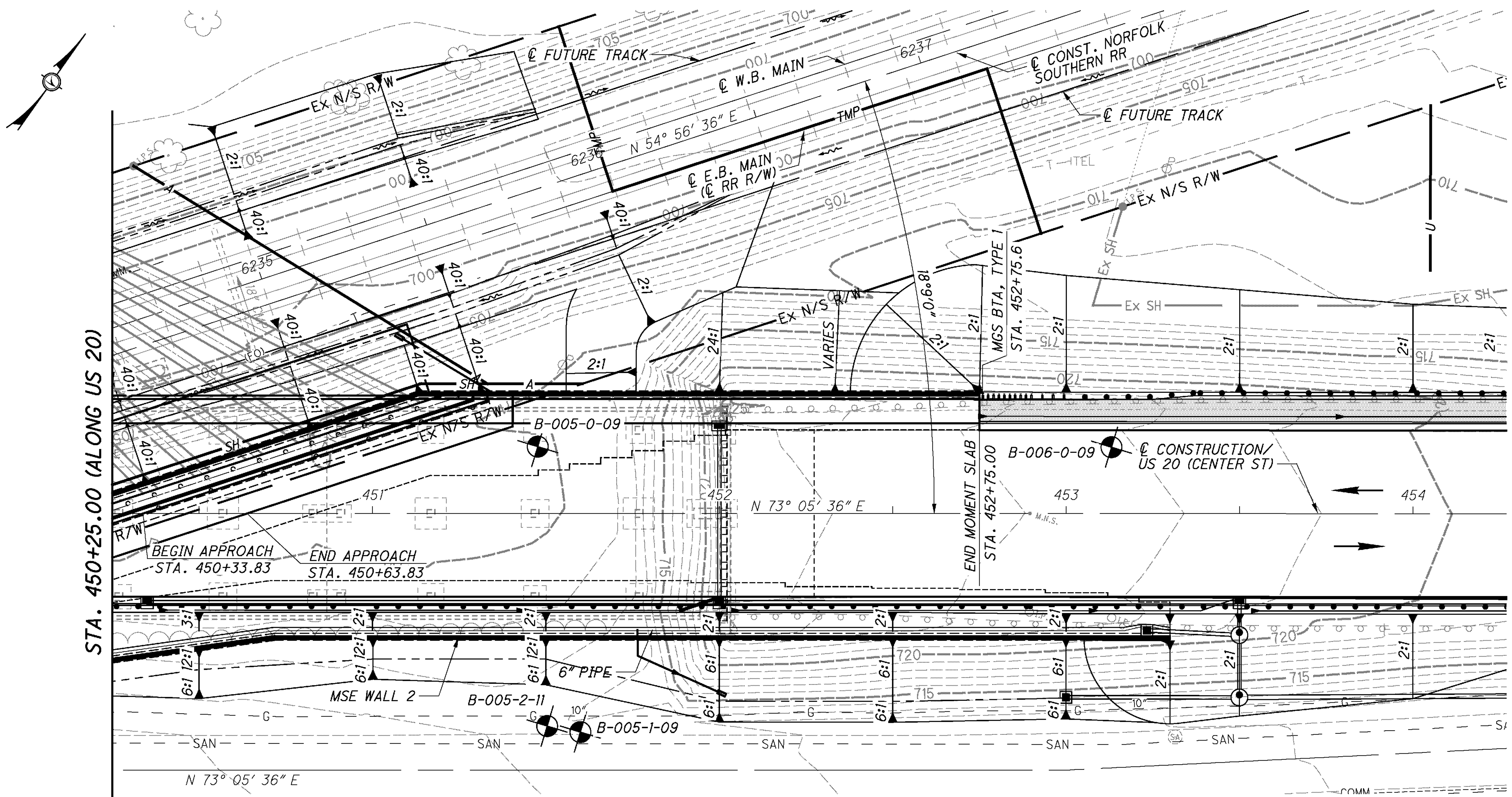
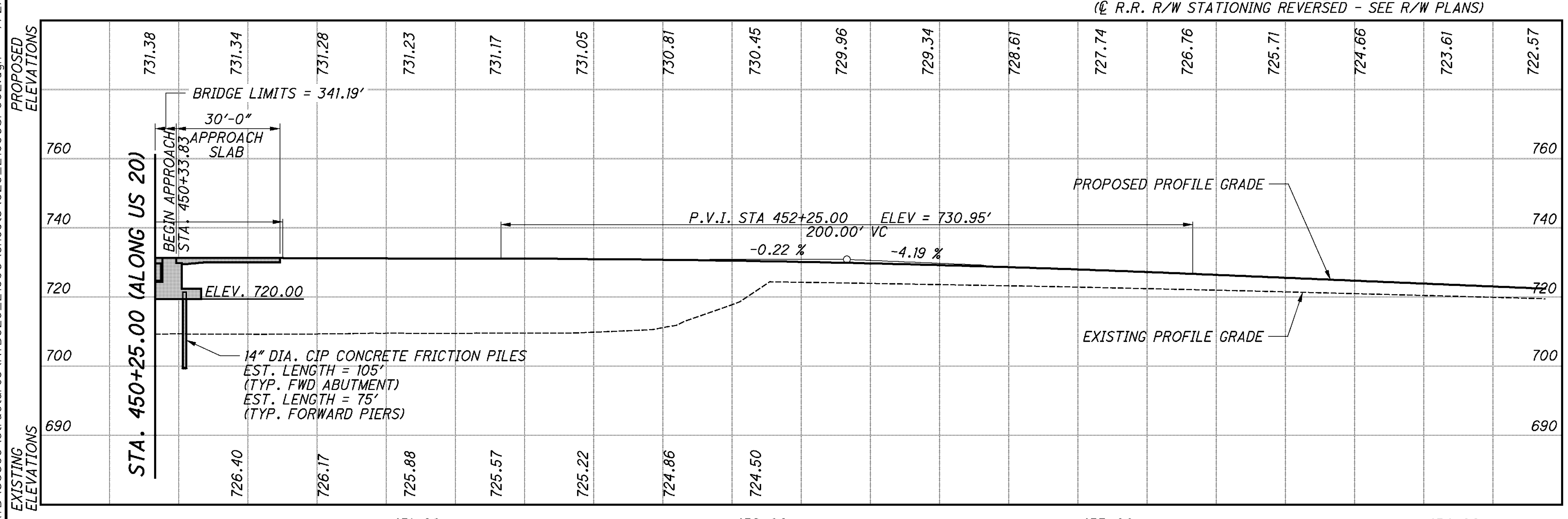


PLAN

NOTE: STATIONING SHOWN FOR ℄ CONST. NORFOLK SOUTHERN R.R.
(℄ R.R. R/W STATIONING REVERSED - SEE R/W PLANS)



PROFILE ALONG ℄ OF SURVEY AND CONSTRUCTION

BENCHMARK DATA (FROM US 20)

BM #1 STA. 439+11.42,	ELEV. 706.76,	OFFSET 29.85,	LT
BM #2 STA. 447+51.03,	ELEV. 712.35,	OFFSET 71.86,	LT
BM #3 STA. 446+11.85,	ELEV. 710.44,	OFFSET 151.72,	RT
BM #4 STA. 459+26.24,	ELEV. 704.44	OFFSET 30.09,	LT

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET 2/189

NOTES

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

DESIGN TRAFFIC:
2010 ADT = 9980 2010 ADTT = 200 TRAINS PER DAY = 16
2030 ADT = 10,900 2030 ADTT = 218
DIRECTIONAL DISTRIBUTION = 0.56

LEGEND

- BORING LOCATION
- ● 23'-0" REQUIRED MINIMUM VERTICAL CLEARANCE
- ●(1) 23'-1" ACTUAL MINIMUM VERTICAL CLEARANCE (EAST BOUND)
- ●(2) 23'-2" ACTUAL MINIMUM VERTICAL CLEARANCE (WEST BOUND)

REQUIRED MINIMUM CONSTRUCTION CLEARANCES:

14'-0" HORIZONTAL (MEASURED FROM ℄ OF TRACK)
22'-0" VERTICAL (MEASURED FROM TOP OF RAIL)

SEE SHEETS 88-104 FOR MSE WALL LAYOUT AND DETAILS

EXISTING STRUCTURE

TYPE: REINFORCED CONCRETE DECK AND FLOOR SYSTEM ON FREE-STANDING CONCRETE PIER COLUMNS AND CAP-AND-COLUMN ABUTMENTS WITH SPREAD FOOTINGS
SPANS: 25.5'-30'-30'-26'-8'-26'-30'-30'-30'-26'-8'-26'-30'-30'-30'-26'-8'-26'-30'-30'-25.5' C/C ABUTMENT/PIERS
ROADWAY: 52'-0" TOE/TOE CURB
LOADING: H20 -33
SKEW: 0°-00'-00"
APPROACH SLABS: 25'-0'
WEARING SURFACE: 2" LMC OVERLAY
ALIGNMENT: TANGENT
CROWN: 1/8 IN/FT
STRUCTURAL FILE NUMBER: 0402257
DATE BUILT: 1940
DISPOSITION: TO BE REMOVED

PROPOSED STRUCTURE

TYPE: PRESTRESSED CONCRETE I-BEAMS WITH NONCOMPOSITE REINFORCED CONCRETE DECK ON CAPPED PILE ABUTMENTS AND CAP-AND-COLUMN PIERS
SPANS: 320'-9" ℄ BRG TO ℄ BRG ALONG ℄ US 20
ROADWAY: 52'-0" T/T PARAPET/CURB W/7'-0" SIDEWALK LEFT
LOADING: HL-93 WITH 60 PSF FUTURE WEARING SURFACE
SKEW: 71°-51'-00" LF
APPROACH SLABS: AS-1-81, 30' LONG (MODIFIED)
WEARING SURFACE: 1½" MONOLITHIC CONCRETE
ALIGNMENT: TANGENT
CROWN: 0.016 FT/FT
STRUCTURE FILE NUMBER: 0402265
COORDINATES: LATITUDE 41°-55'-30" N
LONGITUDE 80°-37'-34" W

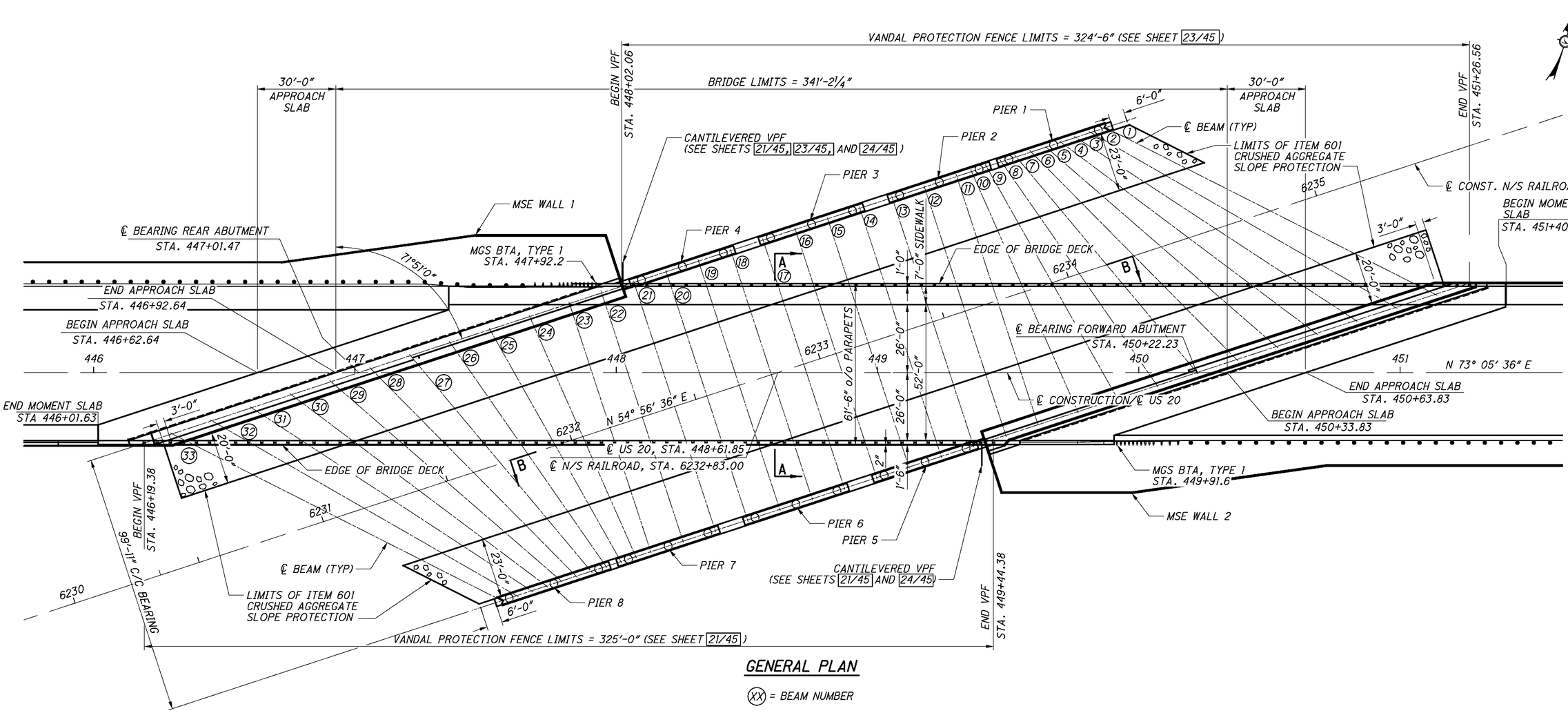
DESIGN AGENCY: Palmer Engineering

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

ASHTABULA COUNTY
STA. 446+92.64
STA. 450+33.83

SITE PLAN - 2 OF 2
BRIGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



GENERAL PLAN

(XX) = BEAM NUMBER

NOTES:

1) SEE SHEET 17/45 FOR SECTION A-A AND SECTION B-B.

2) SEE SHEETS 88/189 - 104/189 FOR MSE WALL DETAILS AND MOMENT SLAB DETAILS.

DESIGN AGENCY
PALMER ENGINEERING
400 WHITE POND DR. SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND • CHARLESTON

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

GENERAL PLAN
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

3 / 45

124 / 189

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STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):

AS-1-81	DATED/REVISED	01-18-13
BR-2-98	DATED/REVISED	07-20-12
EXJ-6-06	DATED/REVISED	01-18-13
PSID-1-13	DATED/REVISED	10-18-13
SBR-1-13	DATED/REVISED	01-17-14
SICD-1-96	DATED/REVISED	07-19-02
VPF-1-90	DATED/REVISED	04-15-11

AND THE SUPPLEMENTAL SPECIFICATION(S)

800-2013	DATED	07-18-14
840	DATED	01-17-14
878	DATED	10-18-13

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 6TH EDITION, INCLUDING THE 2013 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

SPECIAL DESIGN SPECIFICATIONS

THIS BRIDGE REQUIRED THE USE OF A THREE DIMENSIONAL MODEL USING THE FINITE ELEMENT DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS CSI BRIDGE THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD AND THE LIVE LOAD DISTRIBUTION FACTORS USED WERE:

DEAD LOAD DISTRIBUTION: NON-COMPOSITE DEAD LOADS WERE APPLIED AS LINE LOADS. DEAD LOADS APPLIED AFTER THE DECK IS PLACED WERE APPLIED AS POINT LOADS AND DISTRIBUTED LOADS BASED ON TRIBUTARY AREAS.

LIVE LOAD DISTRIBUTION FACTORS: DUE TO THE COMPLEX NATURE OF THE BRIDGE, MOVING LIVE LOADS WERE APPLIED DIRECTLY TO THE DECK ELEMENTS. MOMENTS AND SHEARS WERE DETERMINED FOR EACH GIRDER BY THE FINITE ELEMENT PROGRAM. THE VALUES WERE THEN USED TO DESIGN THE PRESTRESSED I-BEAMS IN LEAP CONSPAN.

OPERATIONAL IMPORTANCE

A LOAD MODIFIER OF 1 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING
HL-93

FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/SQ. FT.

DESIGN DATA

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

DESIGN DATA

CONCRETE FOR PRESTRESSED BEAMS:
COMPRESSIVE STRENGTH (FINAL) - SEE TABLE, SHEET 19/45
COMPRESSIVE STRENGTH (RELEASE) - SEE TABLE, SHEET 19/45

WELDED WIRE REINFORCEMENT:
YIELD STRENGTH - 70 KSI

PRESTRESSING STRAND:
AREA = 0.217 SQ. IN.
ULTIMATE STRENGTH = 270 KSI
INITIAL STRESS = 202.5 KSI (LOW RELAXATION STRANDS)

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL

2.5" CONCRETE COVER

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1½ INCHES THICK.

ITEM 202, STRUCTURE REMOVED,OVER 20 FT SPAN, AS PER PLAN

SEE SHEETS 6/45 THROUGH 8/45 FOR REMOVAL DETAILS.

ITEM 516, STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL MATERIALS AND LABOR ASSOCIATED WITH CONSTRUCTION OF THE FORWARD ABUTMENT EXPANSION JOINT. SEE SHEETS 35/45 AND 36/45 FOR DETAILS.

ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN

APPROACH SLABS SHALL BE CONSTRUCTED AS SHOWN IN THESE PLANS. REFERENCE SHALL BE MADE TO STANDARD DRAWING AS-1-81 FOR DETAILS NOT PROVIDED BY THESE PLANS.

ITEM 530 SPECIAL - STRUCTURE MISC.: EXPANSION ANCHOR DOWELS

THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLATION OF THE STEEL ANCHOR DOWELS AT THE FORWARD ABUTMENT AND PIERS 5-8, INCLUDING DOWEL HOLES AND 4" I.D. PVC PIPES. ANCHOR DOWELS SHALL BE 1½" DIAMETER SMOOTH STEEL RODS, CONFORMING TO ASTM F1554, GRADE 55, AND GALVANIZED ACCORDING TO CMS 711.02. INSTALL DOWEL HOLES ACCORDING TO ITEM 510 DOWEL HOLES WITH NONSHRINK, NON-METALLIC GROUT, CMS 705.20. SEE SHEETS 12/45 THRU 15/45 AND 31/45 THRU 33/45 FOR LOCATION AND INSTALLATION DETAILS.

ITEM 530 SPECIAL - STRUCTURE MISC.: FIXED ANCHOR DOWELS

THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLATION OF THE STEEL ANCHOR DOWELS AT THE REAR ABUTMENT AND PIERS 1-4, INCLUDING DOWEL HOLES, BOND BREAKER AND 3" SLEEVE ON TOP OF DOWEL. ANCHOR DOWELS SHALL BE 1½" DIAMETER SMOOTH STEEL RODS, CONFORMING TO ASTM F1554, GRADE 55, AND GALVANIZED ACCORDING TO CMS 711.02. INSTALL DOWEL HOLES ACCORDING TO ITEM 510 DOWEL HOLES WITH NONSHRINK, NON-METALLIC GROUT, CMS 705.20. SEE SHEETS 10/45, 11/45, 15/45, AND 28/45 THRU 30/45 FOR LOCATION AND INSTALLATION DETAILS.

ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH CONSTRUCTION OF CONCRETE SLOPE PROTECTION BETWEEN THE ABUTMENTS AND MSE WALLS. SEE SHEETS 11/45 AND 13/45 FOR DETAILS.

ITEM 607 - VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING ALL COMPONENTS OF THE VANDAL PROTECTION FENCE, INCLUDING THE CANTILEVERED SECTIONS OF FENCE AT THE NORTHWEST AND SOUTHEAST CORNERS OF THE BRIDGE. THE FENCE SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 AND THESE PLANS.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE)

THE ULTIMATE BEARING VALUE IS 338 KIPS PER PILE FOR THE REAR AND FORWARD ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 363 KIPS PER PILE FOR THE REAR AND FORWARD PIER PILES.

ABUTMENT PILES:
14" DIAMETER CIP PILES 110 FEET LONG, ORDER LENGTH
2 DYNAMIC LOAD TESTING ITEMS (1 REAR AND 1 FORWARD)

PIER PILES:
14" DIAMETER CIP PILES 80 FEET LONG, ORDER LENGTH
2 DYNAMIC LOAD TESTING ITEMS (1 REAR AND 1 FORWARD)

CONSTRUCTION CLEARANCE

MAINTAIN A CONSTRUCTION CLEARANCE OF 14 FEET HORIZONTALLY FROM THE CENTER OF TRACKS AND 22 FEET VERTICALLY ABOVE THE TOP OF THE HIGHER RAIL AND MEASURED FROM A POINT OFFSET 5'-6" FROM THE CENTER OF TRACKS AT ALL TIMES.

DECK PLACEMENT DESIGN ASSUMPTIONS:

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 1.25 KIPS FOR A TOTAL MACHINE LOAD OF 10 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".

A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

PROPRIETARY RETAINING WALL DATA
SEE NOTE FOR PROPRIETARY RETAINING WALL DATA ON MSE WALL SHEET 88/189.

STRUCTURE IDENTIFICATION SIGNS

STRUCTURE IDENTIFICATION SIGNS (I-H25a) WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 7.5' IN LENGTH. INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:
ATB-20-2161
THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:
ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT
ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 7.5 FT

PILE DRIVING CONSTRAINTS

PRIOR TO DRIVING ABUTMENT PILES TO THE ULTIMATE BEARING VALUE (UBV), CONSTRUCT THE MSE WALL AND THE BRIDGE APPROACH EMBANKMENT BEHIND THE ABUTMENT UP TO THE BOTTOM OF THE FOOTING FOR A MINIMUM DISTANCE OF 200 FEET BEHIND EACH ABUTMENT. THE CONTRACTOR MAY PRE-DRIVE ABUTMENT PILES BEFORE CONSTRUCTING MSE WALLS.

PRE-DRIVING CONSISTS OF INSTALLING THE ABUTMENT PILES INTO THE SOIL AS FAR AS NECESSARY SO THAT THE PILE WILL REMAIN VERTICAL DURING MSE WALL CONSTRUCTION OR TO AT LEAST TWO-THIRDS OF THE ANTICIPATED EMBEDMENT REQUIRED TO ACHIEVE THE UBV, WHICHEVER RESULTS IN A GREATER INITIAL PILE EMBEDMENT DEPTH. IF PREDRIVING PILES, INSTALL PILE SLEEVES AROUND PILES BEFORE CONSTRUCTING THE MSE WALL. AT LEAST THREE FEET OF PILE MUST EXTEND ABOVE THE TOP OF THE PILE SLEEVE TO MEET THE REQUIREMENTS OF CMS 507.09 REGARDING SPLICES.

DO NOT DRIVE ABUTMENT PILES TO THE UBV UNTIL AFTER THE ABOVE REQUIRED MSE WALL AND EMBANKMENT HAVE BEEN CONSTRUCTED AND NOTIFICATION HAS BEEN PROVIDED BY THE ENGINEER THAT CRITERIA OF THE PRELOADING/"WAITING PERIOD" HAVE BEEN MEET AS DIRECTED IN THE PLAN NOTE TITLED "PRELOADING/SURCHARGE NOTES" ON SHEET 89/189. AFTER THE WAITING PERIOD HAS ELAPSED, DRIVE ABUTMENT PILES TO THE UBV. IN ORDER TO REMOVE NEGATIVE SKIN FRICTION THAT HAS DEVELOPED DURING THE WAITING PERIOD, DRIVE EACH ABUTMENT PILE A DISTANCE OF AT LEAST 0.5 INCHES.

IF NOT PRE-DRIVING ABUTMENT PILES, INSTALL THE ABUTMENT PILES THROUGH PILE SLEEVES AFTER THE ABOVE REQUIRED MSE WALL AND EMBANKMENT HAVE BEEN CONSTRUCTED AND THE SPECIFIED WAITING PERIOD HAS ELAPSED.

PILES TO BE DRIVEN AT PIERS 1, 2, 3, 6, 7 AND 8 MAY BE DRIVEN TO THE UBV PRIOR TO CONSTRUCTION OF THE MSE WALL. PILES DRIVEN AT PIERS 4 AND 5 SHALL NOT BE DRIVEN TO THE UBV UNTIL AFTER THE REQUIRED MSE WALL AND EMBANKMENT HAVE BEEN CONSTRUCTED AS STATED ABOVE AND THE REQUIRED WAITING PERIOD HAS ELAPSED.

SURFACE GRINDING OF CONCRETE BRIDGE DECK

DUE TO UNCERTAINTIES ASSOCIATED WITH PRESTRESSED I-BEAM CAMBER AND DEFLECTION, AND THE GEOMETRIC COMPLEXITIES OF THE BRIDGE, AN ADDITIONAL ½" OF MONOLITHIC CONCRETE WEARING SURFACE WAS ADDED TO THE DECK. AFTER DECK PLACEMENT, GRINDING OF THE CONCRETE BRIDGE DECK MAY BE REQUIRED TO ADHERE TO PROPOSAL NOTE 555.

ALL COSTS ASSOCIATED WITH ADHERENCE TO PROPOSAL NOTE 555 ARE THE RESPONSIBILITY OF THE CONTRACTOR.

CALC: TES	DATE: 3/3/2014	CHECK: JPR	DATE: 3/26/2014			PARTICIPATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
R. ABUT	F. ABUT	PIERS	SUPER.	AP. SLAB	GENERAL	01/BRO/BR						
											STRUCTURES (20' AND OVER)	
						LS	202	11003	LS		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	4/45
						LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
		2384				2384	503	21100	2384	CY	UNCLASSIFIED EXCAVATION	
						LS	505	11100	LS		PILE DRIVING EQUIPMENT MOBILIZATION	
3990	3990	9000				16980	507	00600	16980	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	
4180	4180	9600				17960	507	00650	17960	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	
26337	40058	90585	435529	1155		593664	509	10000	593664	LB	EPOXY COATED REINFORCING STEEL	
			510			510	511	33418	510	CY	CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE	
			771			771	511	34446	771	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	
			51	7		58	511	34450	58	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	
		314				314	511	41012	314	CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS	
58	145					203	511	44112	203	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	
172	180	267				619	511	46512	619	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
			76			76	511	51512	76	CY	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK	
149	376	666	7306	75		8572	512	10100	8572	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
			33			33	515	15110	33	EACH	DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF 60-49	
			96			96	515	20001	96	EACH	INTERMEDIATE DIAPHRAGMS, AS PER PLAN	20/45
					191	191	516	11211	191	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	4/45
244	250			80		574	516	13600	574	SF	1" PREFORMED EXPANSION JOINT FILLER	
194						194	516	14020	194	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL	
129						129	516	41200	129	SF	1/8" PREFORMED BEARING PAD	
			26			26	516	44100	26	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (18" X 11" X 2.47" WITH 39.5" X 12" X 1.56" LOAD PLATE)	
			4			4	516	44100	4	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (16" X 11" X 2.47" WITH 39.5" X 12" X 1.56" LOAD PLATE)	
			3			3	516	44100	3	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (16" X 10.5" X 2.47" WITH 39.5" X 11.5" X 1.56" LOAD PLATE)	
			1			1	516	44200	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (18" X 11" X 3.27" WITH 39.5" X 12" X 1.56" LOAD PLATE)	
			1			1	516	44200	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (18.5" X 11" X 3.27" WITH 39.5" X 12" X 1.56" LOAD PLATE)	
			10			10	516	44200	10	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (19" X 11.5" X 3.27" WITH 39.5" X 12.5" X 1.56" LOAD PLATE)	
			21			21	516	44200	21	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (19" X 12" X 3.27" WITH 39.5" X 13" X 1.56" LOAD PLATE)	
			1			1	516	44201	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, (18" X 11" X 3.27" WITH 19" X 12" X 1.56" LOAD PLATE)	34/45
			347			347	517	75120	347	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	
99	104					203	518	21200	203	CY	POROUS BACKFILL WITH FILTER FABRIC	
192	199					391	518	40000	391	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
			4			4	523	20000	4	EACH	DYNAMIC LOAD TESTING	
208	207					415	526	30001	415	SY	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN	4/45
			186			186	SPECIAL	53000400	186	EACH	STRUCTURE, MISC.: EXPANSION ANCHOR DOWELS	4/45
			186			186	SPECIAL	53000400	186	EACH	STRUCTURE, MISC.: FIXED ANCHOR DOWELS	4/45
					2054	2054	601	20000	2054	SY	CRUSHED AGGREGATE SLOPE PROTECTION	
41	41					82	601	21001	82	SY	CONCRETE SLOPE PROTECTION, AS PER PLAN	4/45
			660			660	607	39901	660	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	4/45
					15	15	630	02100	15	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
					2	2	630	80100	2	SF	SIGN, FLAT SHEET, 730.20	

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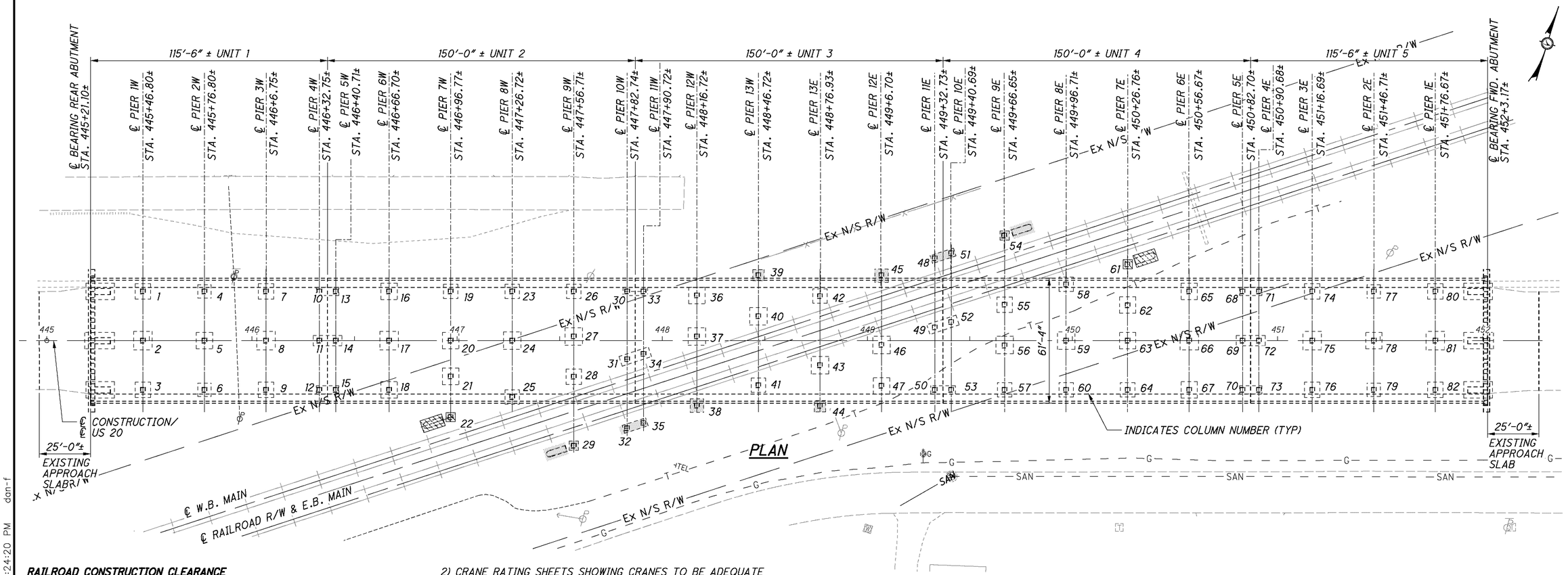
DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED CEJ | CHECKED MLJ | DRAWN CML | REVISED | REVIEWED BJF | DATE 3/26/14 | STRUCTURE FILE NUMBER 0402265

ESTIMATED QUANTITIES
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



RAILROAD CONSTRUCTION CLEARANCE

MAINTAIN A CONSTRUCTION CLEARANCE OF 14'-0" HORIZONTALLY FROM THE CENTER OF TRACKS AND 22'-0" VERTICALLY ABOVE THE TOP OF THE HIGHER RAIL AND MEASURED FROM A POINT OFFSET 5'-6" FROM THE CENTER OF TRACKS AT ALL TIMES.

ANY PROPOSED TEMPORARY CLEARANCES WHICH ARE LESS THAN THOSE LISTED ABOVE MUST BE SUBMITTED TO THE RAILROAD CHIEF ENGINEER BRIDGES & STRUCTURES FOR APPROVAL PRIOR TO CONSTRUCTION.

THE TEMPORARY CLEARANCE REQUIREMENTS NOTED ABOVE SHALL ALSO APPLY TO ALL OTHER PHYSICAL OBSTRUCTIONS INCLUDING, BUT NOT LIMITED TO: STOCKPILED MATERIALS, PARKED EQUIPMENT, PLACEMENT OR DRIVING OF PILES, AND BRACING OR OTHER CONSTRUCTION SUPPORTS.

BRIDGE DEMOLITION PLAN

RAILROAD TRACKS AND OTHER RAILROAD PROPERTY MUST BE PROTECTED FROM DAMAGE DURING THE DEMOLITION AND REMOVAL OF THE EXISTING BRIDGE. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A BRIDGE DEMOLITION PLAN TO NORFOLK SOUTHERN FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

THE DEMOLITION PLAN SHALL SHOW THE FOLLOWING:

1) LOCATION OF CRANES, HORIZONTALLY AND VERTICALLY, OPERATING RADII, WITH DELIVERY OR DISPOSAL LOCATIONS SHOWN. THE LOCATION OF ALL TRACKS AND OTHER RAILROAD FACILITIES AS WELL AS ALL OBSTRUCTIONS SUCH AS WIRE LINES, POLES, ADJACENT STRUCTURES, ETC. MUST ALSO BE SHOWN.

2) CRANE RATING SHEETS SHOWING CRANES TO BE ADEQUATE FOR 150% OF THE ACTUAL WEIGHT OF THE PICK. A COMPLETE SET OF CRANE CHARTS, INCLUDING CRANE, COUNTERWEIGHT, AND BOOM NOMENCLATURE IS TO BE SUBMITTED.

3) PLANS AND COMPUTATIONS SHOWING THE WEIGHT OF THE PICK MUST BE SUBMITTED. CALCULATIONS SHALL BE MADE FROM PLANS OF THE EXISTING AND/OR PROPOSED STRUCTURE SHOWING COMPLETE AND SUFFICIENT DETAILS WITH SUPPORTING DATA FOR THE DEMOLITION OR ERECTION OF THE STRUCTURE.

4) A DATA SHEET MUST BE SUBMITTED LISTING THE TYPES, SIZE, AND ARRANGEMENTS OF ALL RIGGING AND CONNECTION EQUIPMENT.

5) A COMPLETE PROCEDURE IS TO BE SUBMITTED, INCLUDING THE ORDER OF LIFTS, TIME REQUIRED FOR EACH LIFT, AND ANY REPOSITIONING OR RE-HITCHING OF THE CRANE OR CRANES.

6) THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE AT ALL TIMES. ALL ERECTION OR DEMOLITION PLANS, PROCEDURES, DATA SHEETS, ETC. SUBMITTED MUST BE PREPARED, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.

THE RAILROAD'S REPRESENTATIVE MUST BE PRESENT AT THE SITE DURING THE ENTIRE DEMOLITION AND ERECTION PROCEDURE PERIOD. ALL PROCEDURES, PLANS AND CALCULATIONS SHALL FIRST BE APPROVED BY THE ENGINEER AND THE RAILROAD ENGINEER BEFORE DEMOLITION AND REMOVAL OPERATIONS BEGIN; HOWEVER, SUCH APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM LIABILITY.

THE CONTRACTOR SHALL CONTACT NORFOLK SOUTHERN CORPORATION FOR LOCATION OF ANY RAILROAD UTILITIES.

NOTES:

1) PIER NOMENCLATURE REFERS TO ORIGINAL PLANS, S.H. 2 SEC. P (PT) and N. KINGSVILLE (PT) 1939

2) REFER TO ORIGINAL CONSTRUCTION PLANS FOR COMPLETE DETAILS OF EXISTING STRUCTURE TO BE REMOVED.

3) RAILROAD INFORMATION: *NORFOLK SOUTHERN CORPORATION*
AAR/ODOT NOS.:
NS REFERENCE: MILEPOST B-119.48
PITTSBURGH DIVISION
NS FILE NO.: BR0018698

RAIL TRAFFIC:
TRAINS PER DAY = 16
AVERAGE SPEED = 60 MPH

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • WASHINGTON C.H. • COLUMBUS

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

REMOVAL DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

6 / 45

127 / 189

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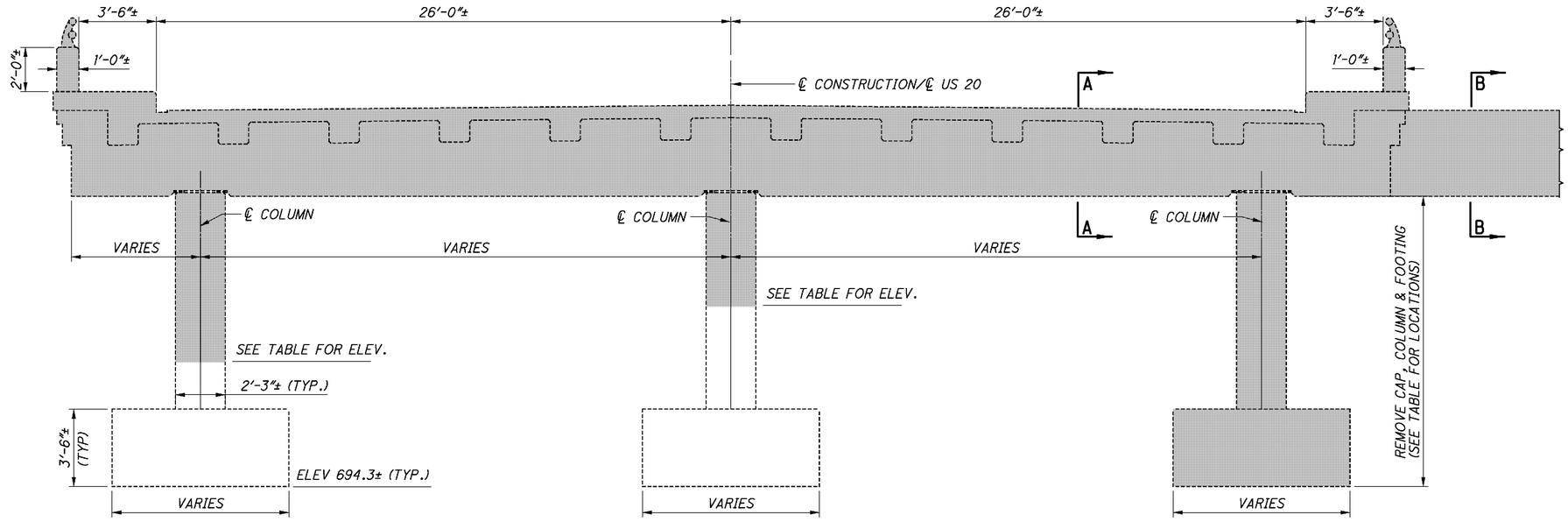
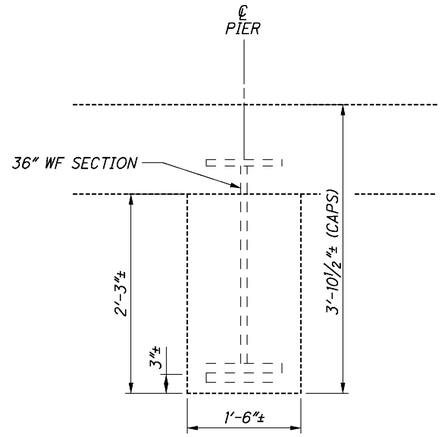


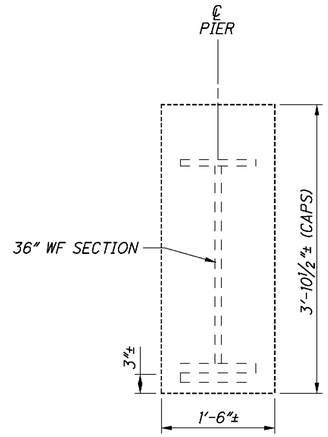
PIER ELEVATION

COLUMN REMOVAL ELEVATIONS							
COLUMN NO.	REMOVAL EL.	COLUMN NO.	REMOVAL EL.	COLUMN NO.	REMOVAL EL.	COLUMN NO.	REMOVAL EL.
1	708.9	22	698.5	43	698.5	63	694.3*
2	711.5	23	694.3*	44	701.6	64	706.5
3	706.9	24	694.3*	45	698.2	65	698.5
4	708.9	25	698.5	46	698.5	66	694.3*
5	709.9	26	694.3*	47	698.5	67	706.5
6	699.4	27	698.5	48	698.2	68	694.3*
7	708.9	28	698.5	49	698.3	69	694.3*
8	694.3*	29	698.8	50	694.3*	70	706.5
9	694.3*	30	694.3*	51	698.2	71	694.3*
10	708.9	31	698.4	52	698.3	72	694.3*
11	694.3*	32	698.7	53	694.3*	73	706.5
12	694.3*	33	694.3*	54	698.5	74	694.3*
13	708.9	34	698.4	55	698.3	75	708.4
14	694.3*	35	698.7	56	698.4	76	706.5
15	694.3*	36	698.4	57	694.3*	77	697.8**
16	708.9	37	698.4	58	698.3	78	708.7
17	694.3*	38	698.7	59	694.3*	79	706.5
18	698.8	39	697.8**	60	694.3*	80	706.8
19	694.3*	40	698.3	61	698.2	81	711.5
20	694.3*	41	698.6	62	698.2	82	706.5
21	698.6	42	698.2				

NOTE: * = COMPLETE COLUMN REMOVAL (INCL. FOOTING)
** = REMOVAL TO TOP OF COLUMN FOOTING



SECTION A-A



SECTION B-B

LEGEND

ITEM 202, STRUCTURE REMOVED, OVER 20 FT SPAN, AS PER PLAN

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

SUBSTRUCTURE REMOVAL DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

7 / 45

128
189

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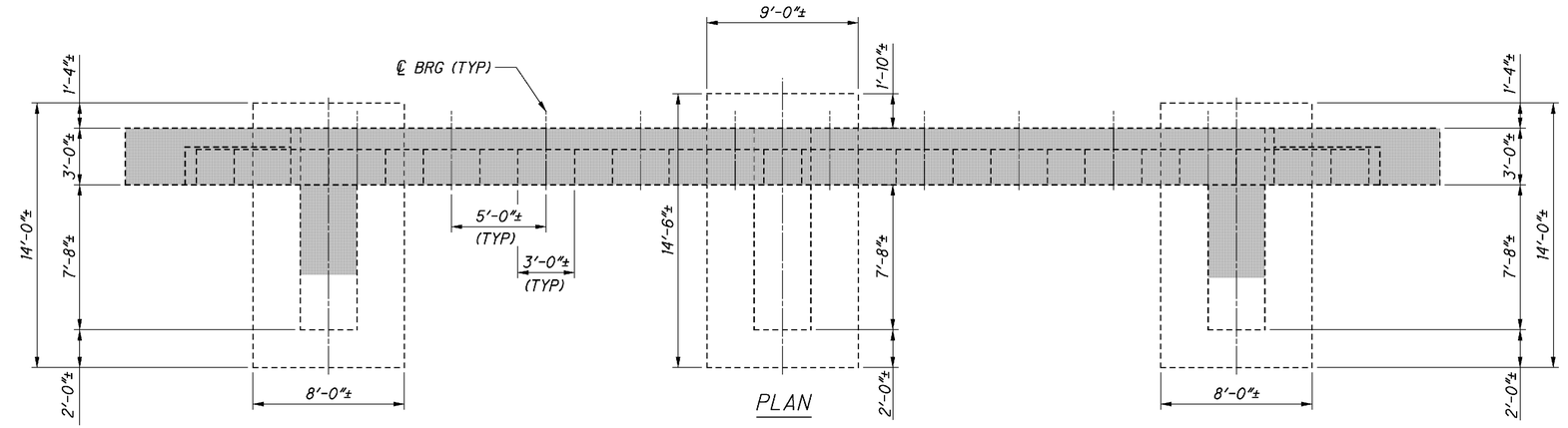
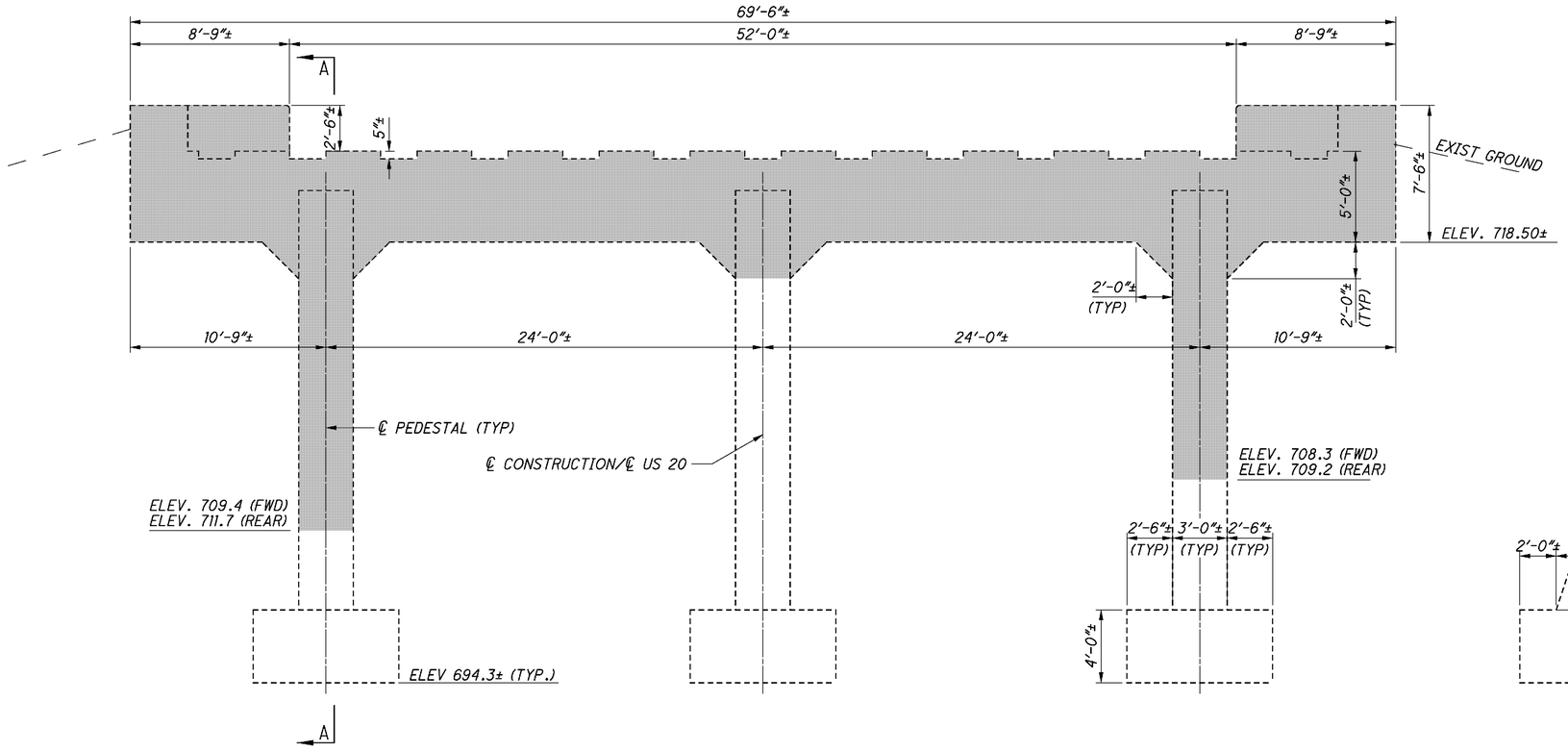
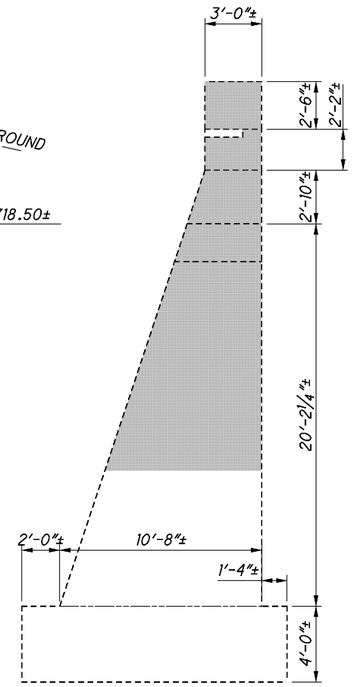


PLAN



ELEVATION

(FORWARD SHOWN - REAR OPPOSITE HAND)



SECTION A-A

REAR

FORWARD

LEGEND

ITEM 202, STRUCTURE REMOVED, OVER 20 FT SPAN, AS PER PLAN

NOTE:

1) REMOVE APPROACH SLABS WITH ABUTMENT REMOVAL.

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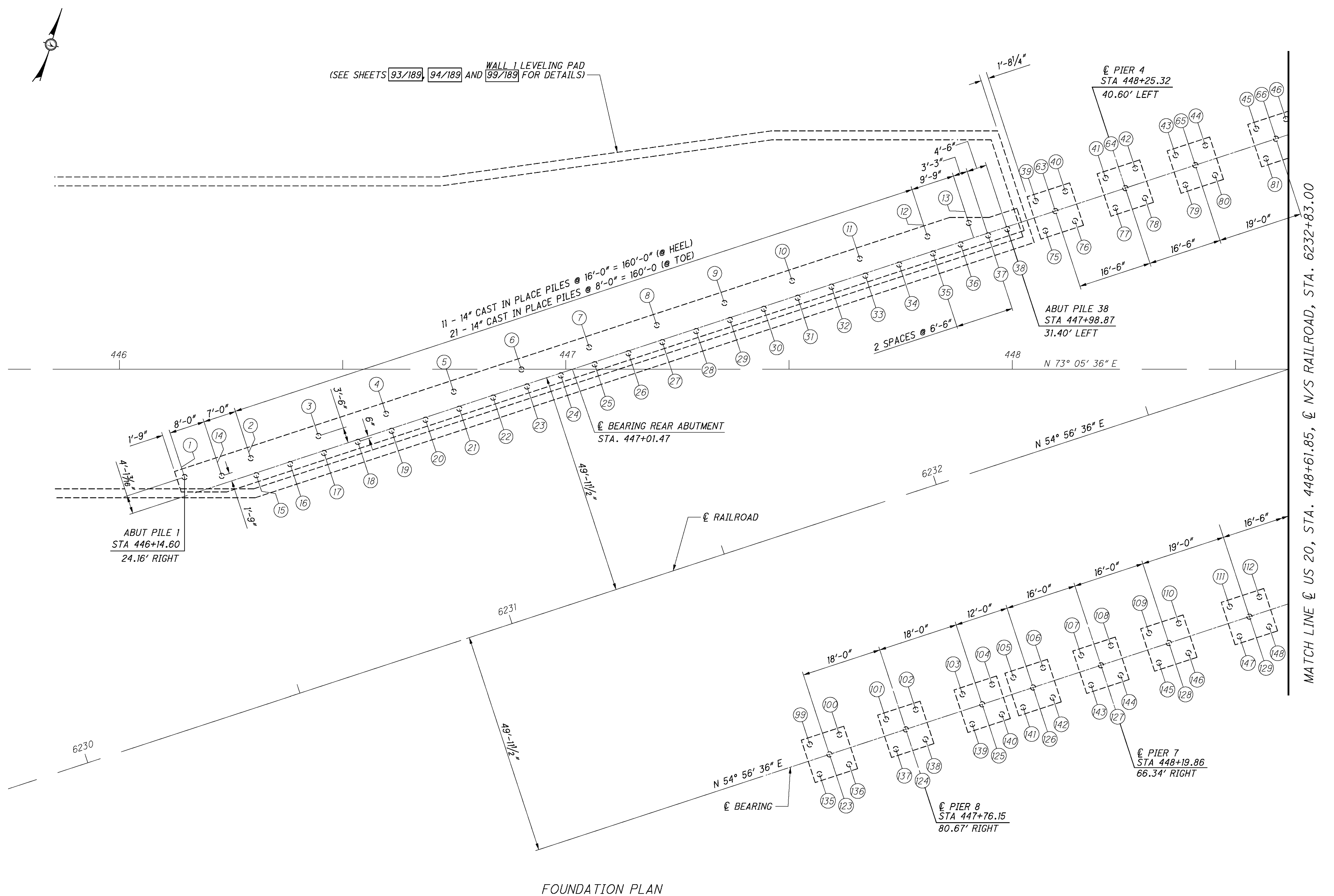
DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
DPF	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

ABUTMENT REMOVAL DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



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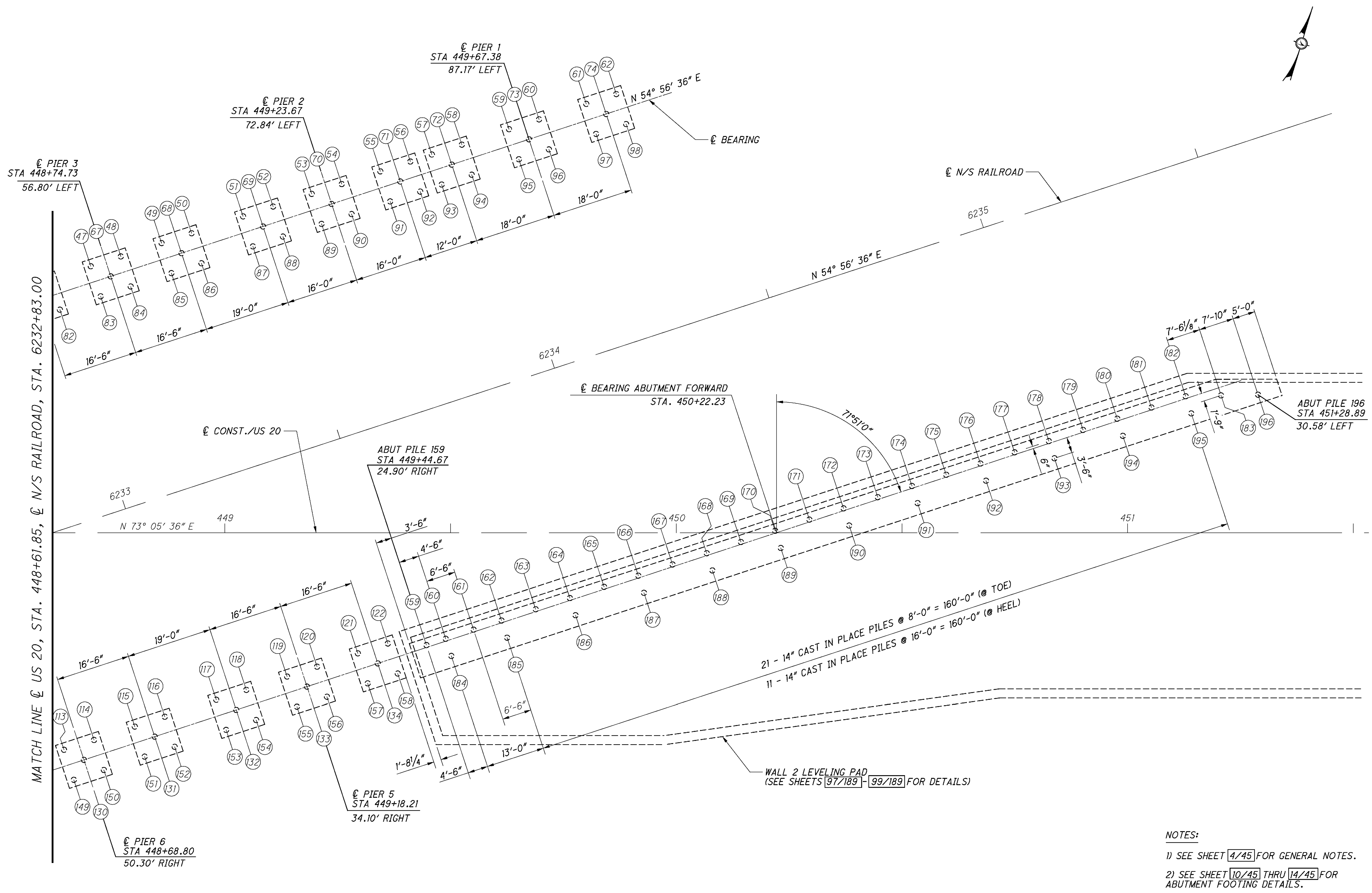
DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		0402265	

STRUCTURE FOUNDATION PLAN - SHEET 1 OF 2
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK/SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



FOUNDATION PLAN

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 10/45 THRU 14/45 FOR ABUTMENT FOOTING DETAILS.

3) SEE SHEET 15/45 AND 16/45 FOR PIER FOOTING DETAILS.

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DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		0402265	

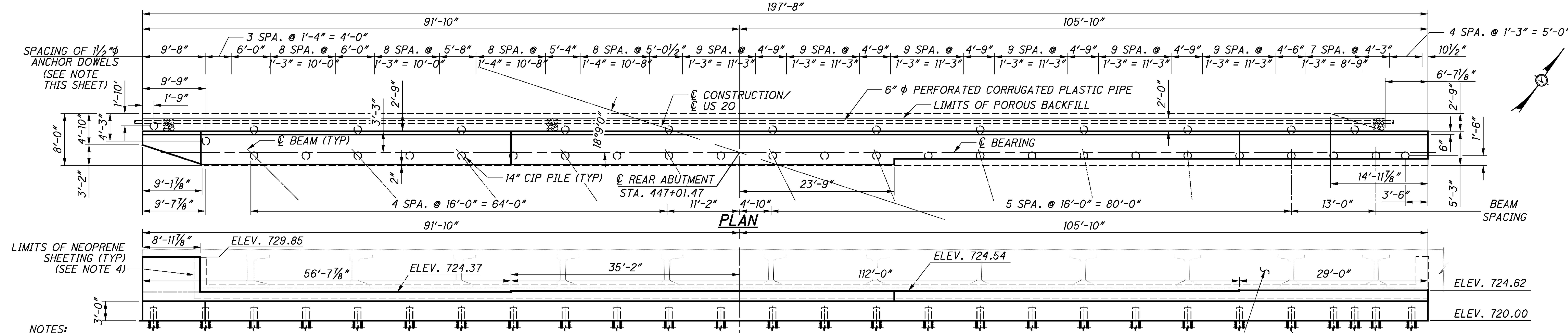
STRUCTURE FOUNDATION PLAN - SHEET 2 OF 2

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK/SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599



NOTES:

1) SEE SHEET 11/45 FOR SECTION A-A AND SHEET 11A/45 FOR B-B, C-C AND D-D.

2) ELEVATIONS ARE GIVEN AT THE CENTERLINE OF BEARING.

3) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

4) INSTALL NEOPRENE SHEETING AS SHOWN IN SICD-1-96. PAYMENT SHALL BE MADE UNDER ITEM 516, SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL. SEE SHEET 11/45 FOR ADDITIONAL DETAILS.

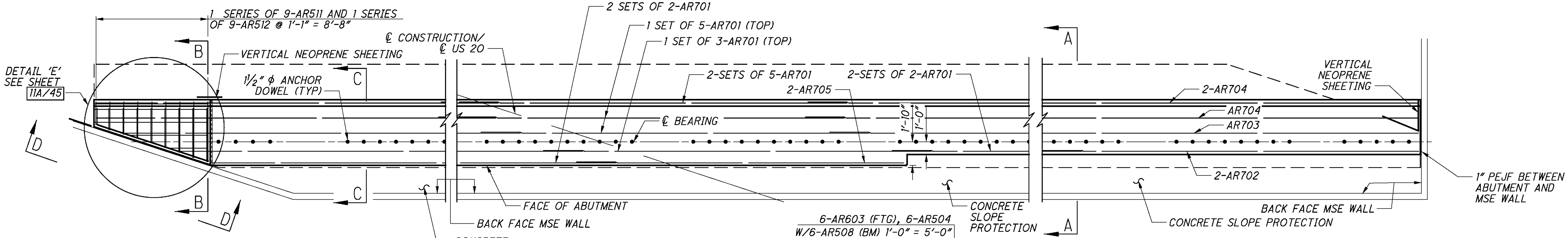
℄ CONSTRUCTION/ ℄ US 20

REAR ABUTMENT DIAPHRAGM (SEE SHEETS 28/45 - 30/45 FOR DETAILS)

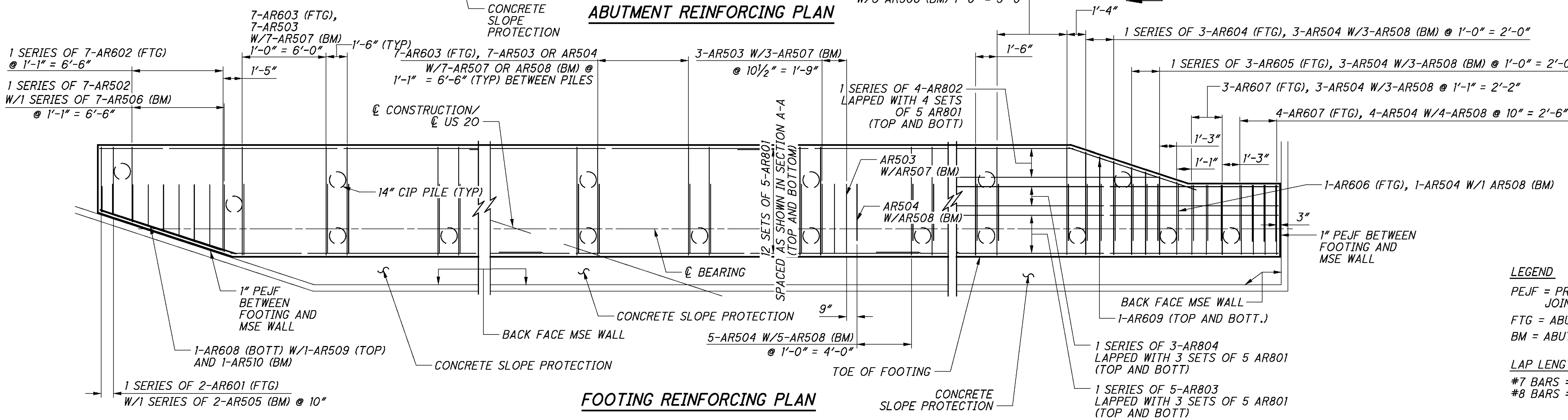
℄ 14" CIP PILE (TYP)

ELEVATION

(SEE SHEET 9/45 FOR PILE NUMBERING AND SPACING)
(SIDEWALK AND PARAPET NOT SHOWN FOR CLARITY)



ABUTMENT REINFORCING PLAN



FOOTING REINFORCING PLAN

LEGEND

PEJF = PREFORMED EXPANSION JOINT FILLER
FTG = ABUTMENT FOOTING
BM = ABUTMENT BEAM SEAT

LAP LENGTH

#7 BARS = 5'-2"
#8 BARS = 6'-10"

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

REAR ABUTMENT
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

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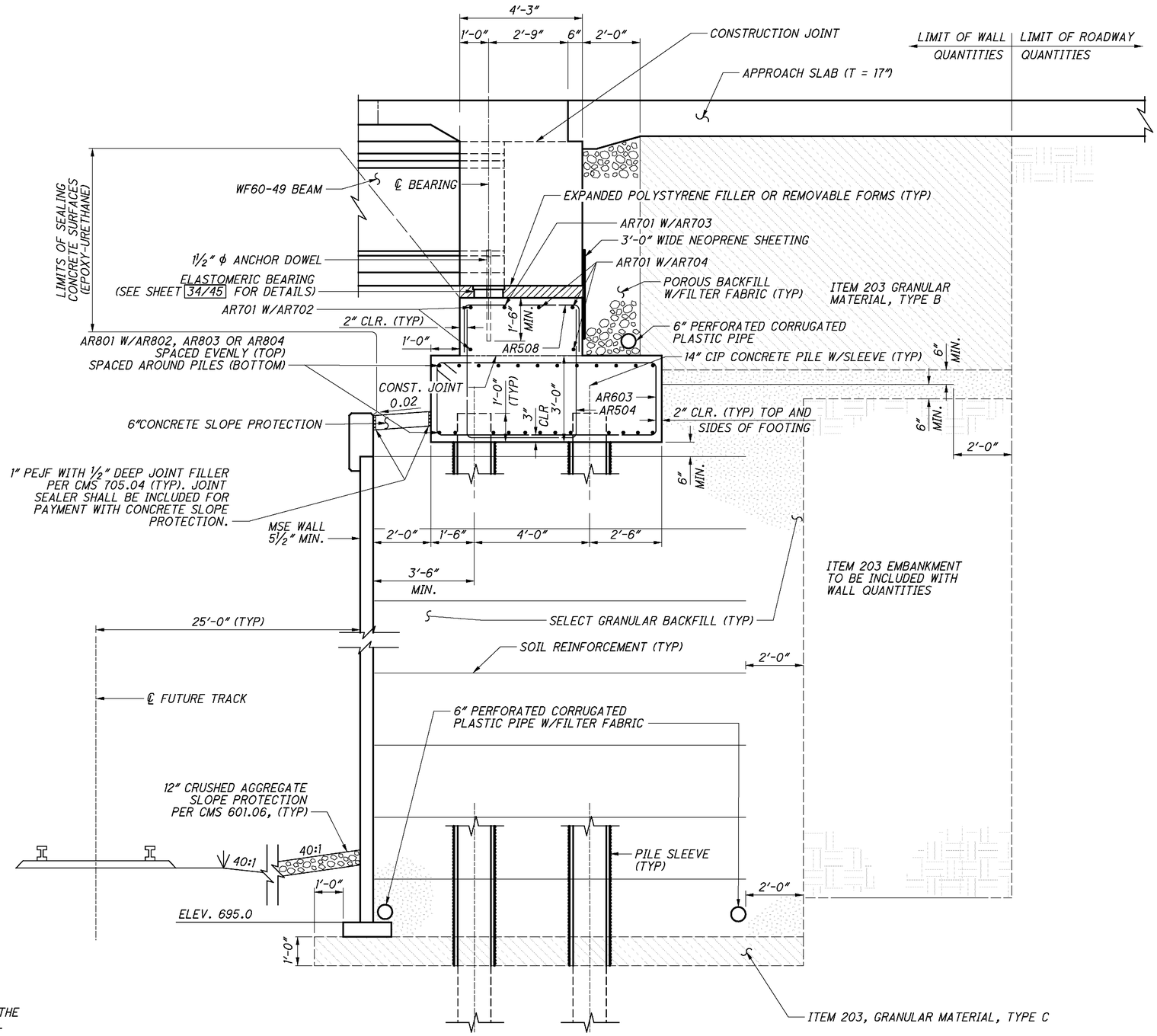


SECTION A-A

NOTES:

1) SEE SHEETS 88/189 - 104/189 FOR MSE WALL DETAILS.

2) SEE SHEETS 28/45 - 30/45 FOR DIAPHRAGM DETAILS.

3) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

4) FOR DRAINAGE DETAILS SEE SHEETS 88/189 - 99/189

5) SEE STANDARD DRAWING PSID-1-13 FOR ANCHOR DOWEL DETAILS. NOTE THAT THE ANCHOR DOWELS SHALL BE 1½" DIAMETER. PAYMENT FOR ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL-STRUCTURE, MISC: FIXED ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

6) SEE SHEET 10/45 FOR LIMITS OF NEOPRENE SHEETING.

7) SEE SHEET 3/45 FOR LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION.

LAP LENGTH

#7 BARS = 5'-2"
#8 BARS = 6'-10"

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

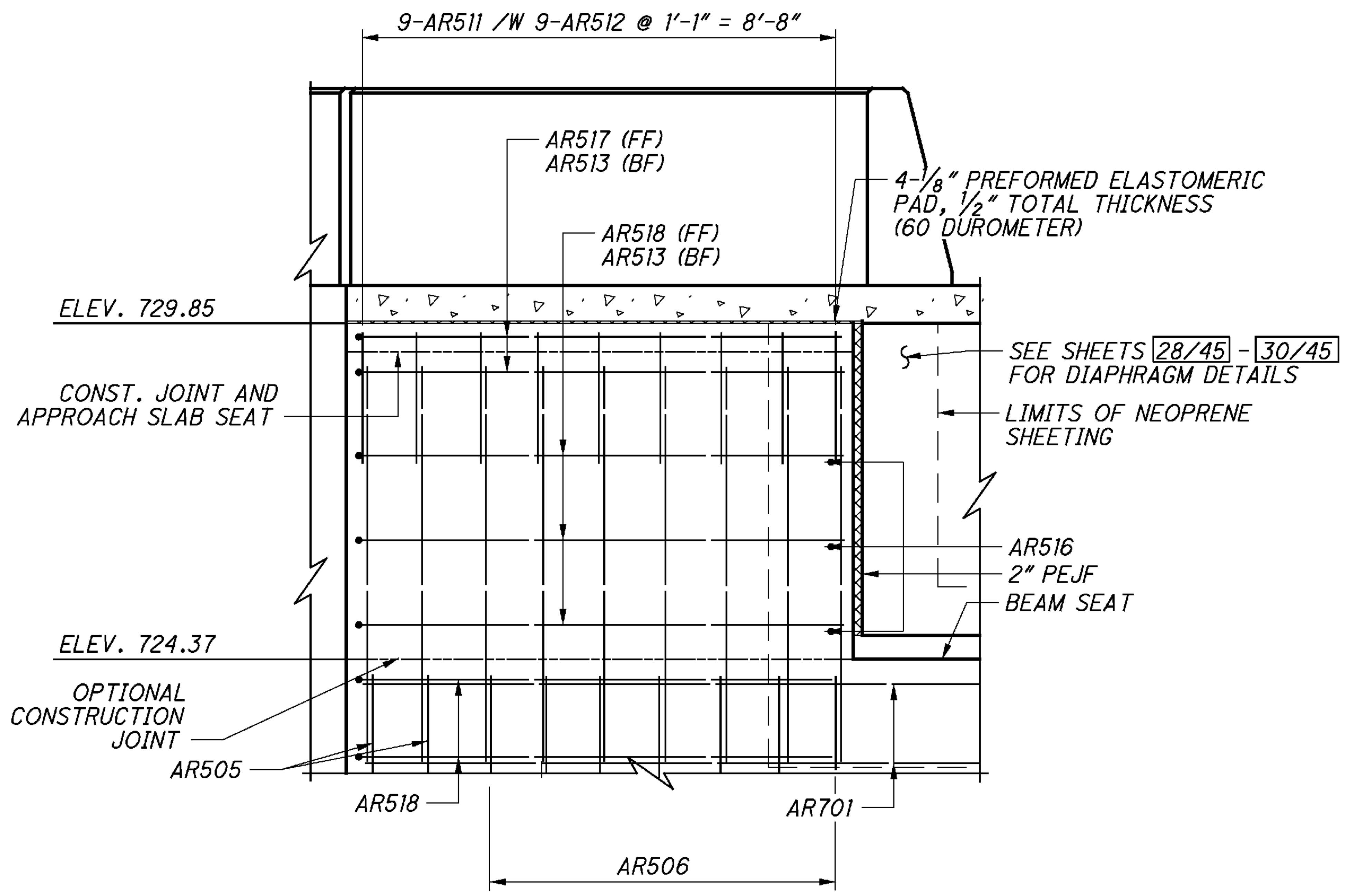
DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

REAR ABUTMENT SECTION VIEW
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

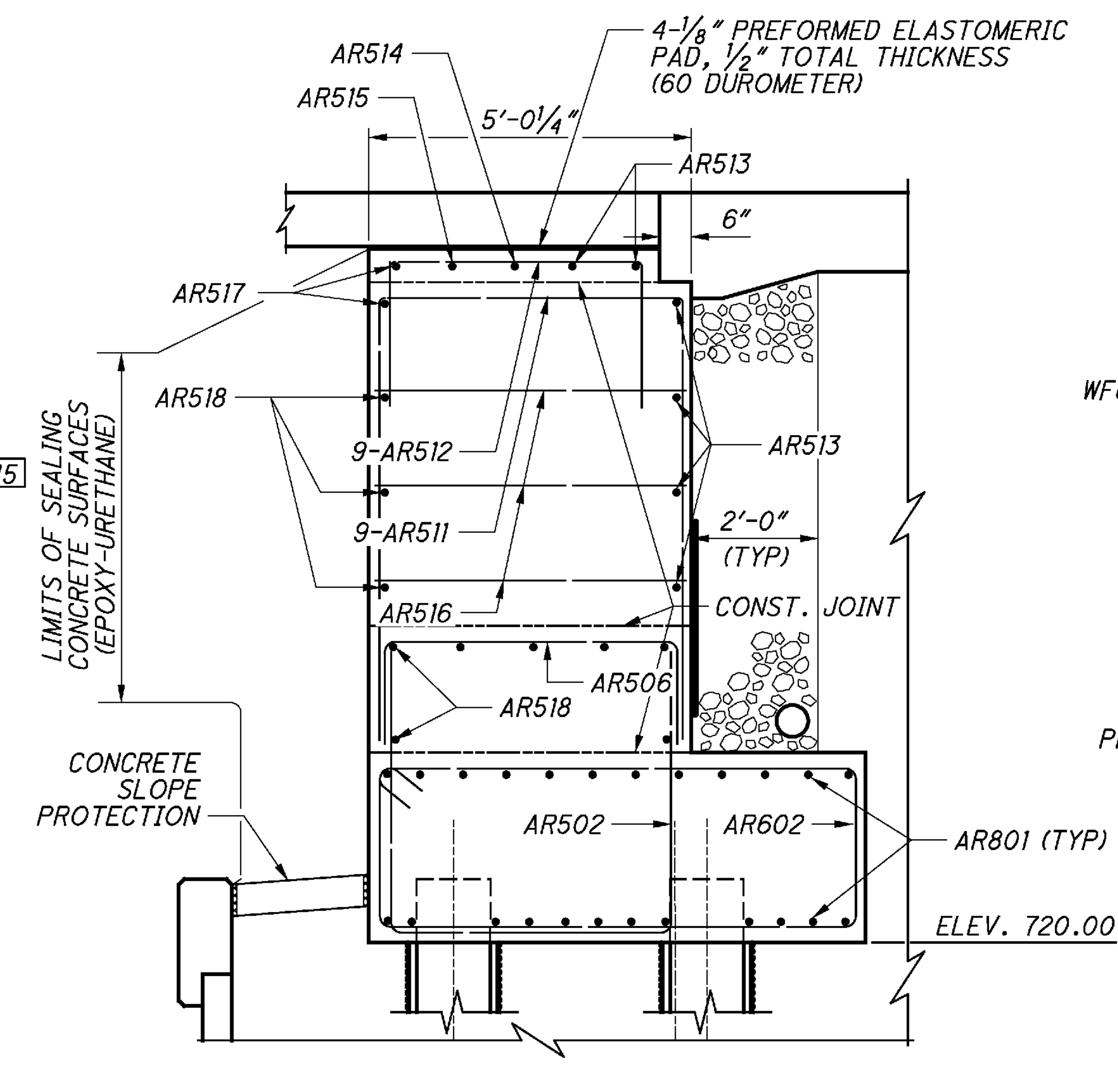
ATB-20-21.43
PID No. 83599

11 / 45

132 / 189

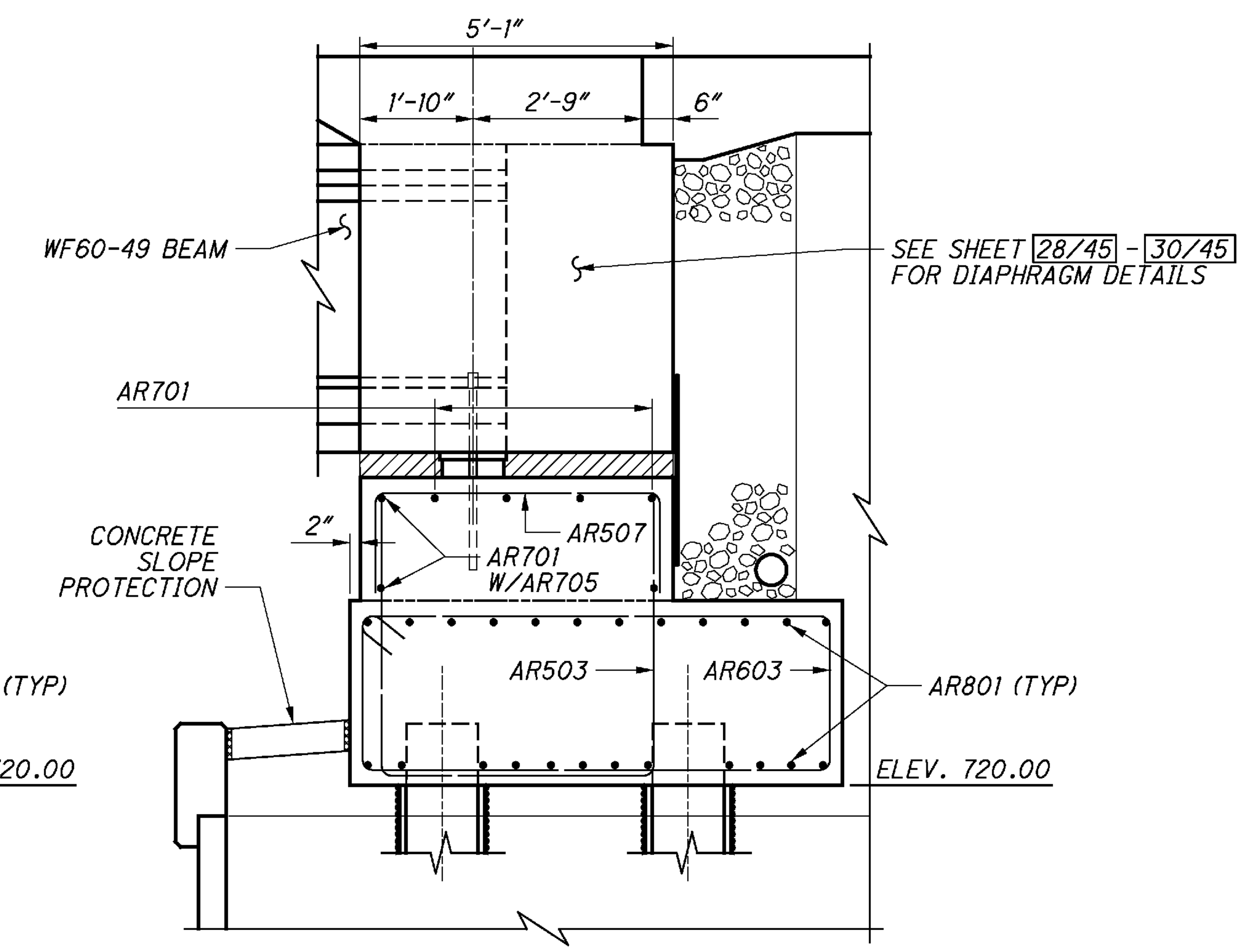


VIEW D-D



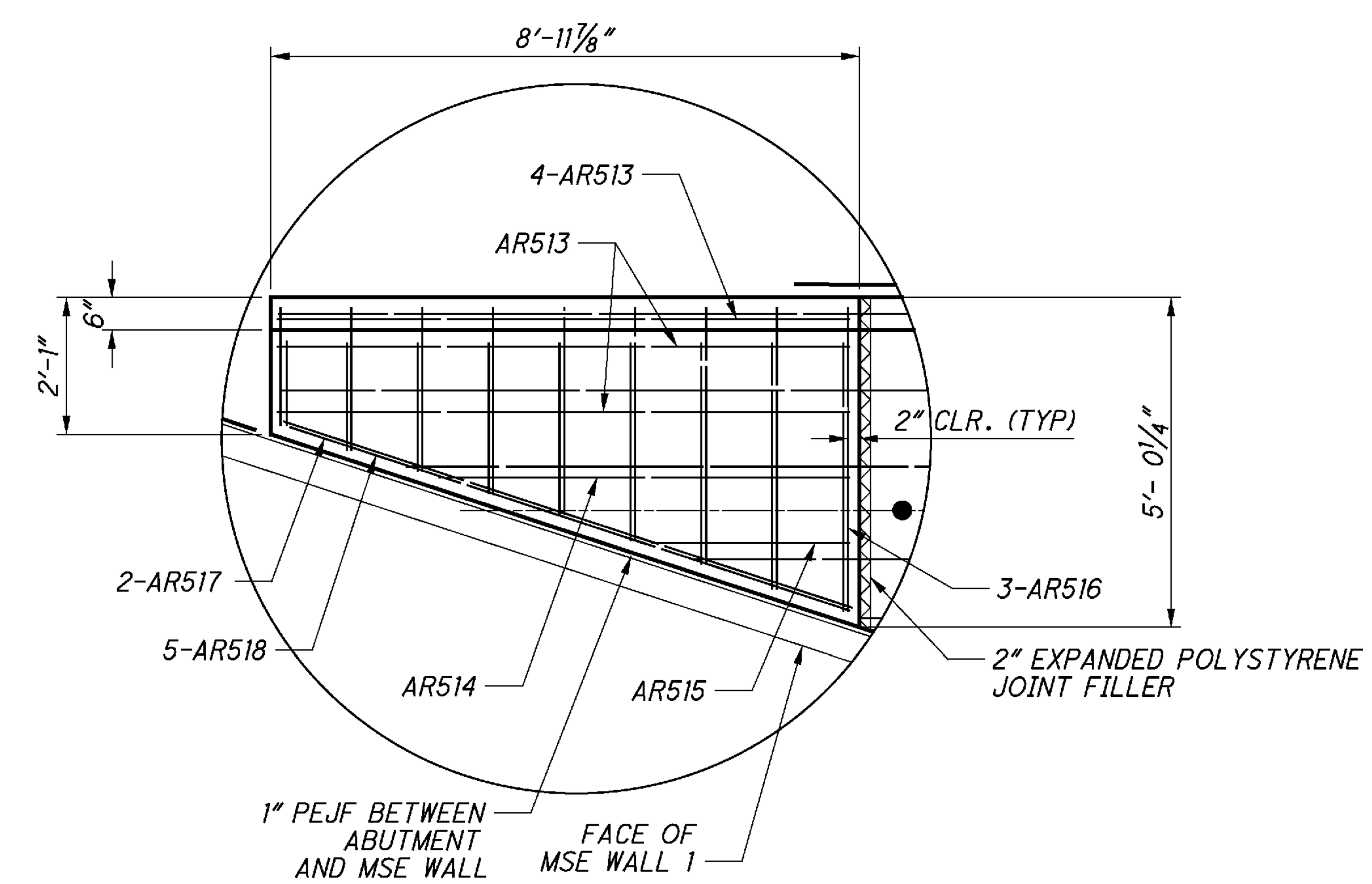
SECTION B-B

(SEE SECTION A-A FOR ADDITIONAL DETAIL INFORMATION)



SECTION C-C

(SEE SECTION A-A FOR ADDITIONAL DETAIL INFORMATION)



DETAIL E

NOTES:

1) SEE SHEETS 88/189 - 104/189 FOR MSE WALL DETAILS.

2) SEE SHEETS 28/45 - 30/45 FOR DIAPHRAGM DETAILS.

3) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

4) FOR DRAINAGE DETAILS SEE SHEETS 88/189 - 99/189.

5) SEE STANDARD DRAWING PSID-1-13 FOR ANCHOR DOWEL DETAILS. NOTE THAT THE ANCHOR DOWELS SHALL BE 1 1/2" DIAMETER. PAYMENT FOR ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL-STRUCTURE, MISC: FIXED ANCHOR DOWELS.

6) SEE SHEET 10/45 FOR LIMITS OF NEOPRENE SHEETING.

LEGEND

BF = BACK FACE
FF = FRONT FACE
PEJF = PREFORMED EXPANSION JOINT FILLER

LAP LENGTH

#7 BARS = 5'-2"
#8 BARS = 6'-10"

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DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

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MLJ	SDW	BJF	3/26/14
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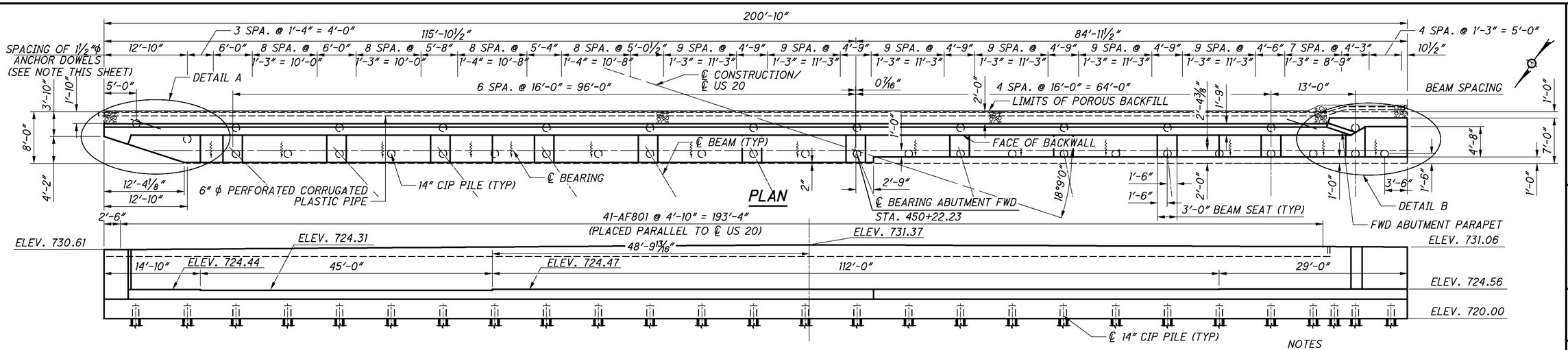
CEJ		0402265	

REAR ABUTMENT SECTION VIEW
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

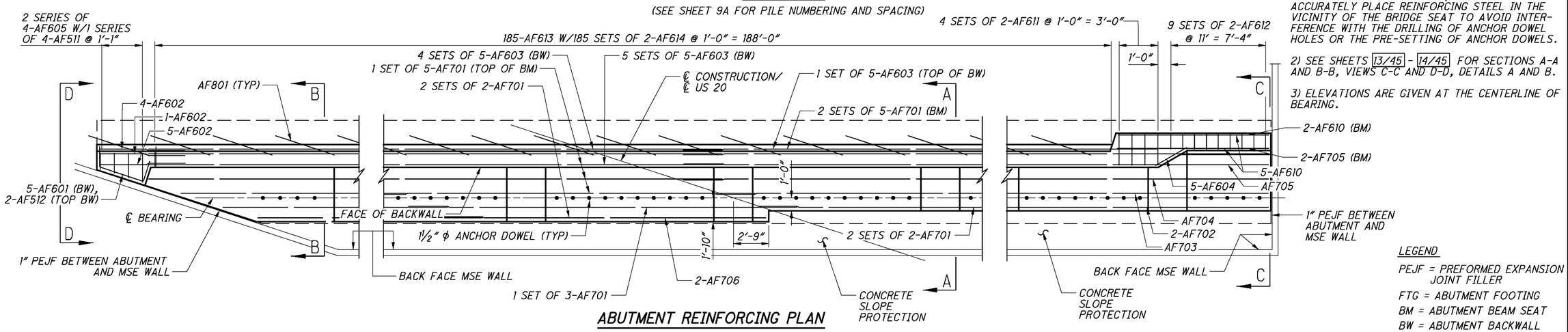


NOTES

1) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

2) SEE SHEETS 13/45 - 14/45 FOR SECTIONS A-A AND B-B, VIEWS C-C AND D-D, DETAILS A AND B.

3) ELEVATIONS ARE GIVEN AT THE CENTERLINE OF BEARING.



ABUTMENT REINFORCING PLAN

LEFTG PARAPET NOT SHOWN FOR CLARITY

LEGEND

PEJF = PREFORMED EXPANSION JOINT FILLER

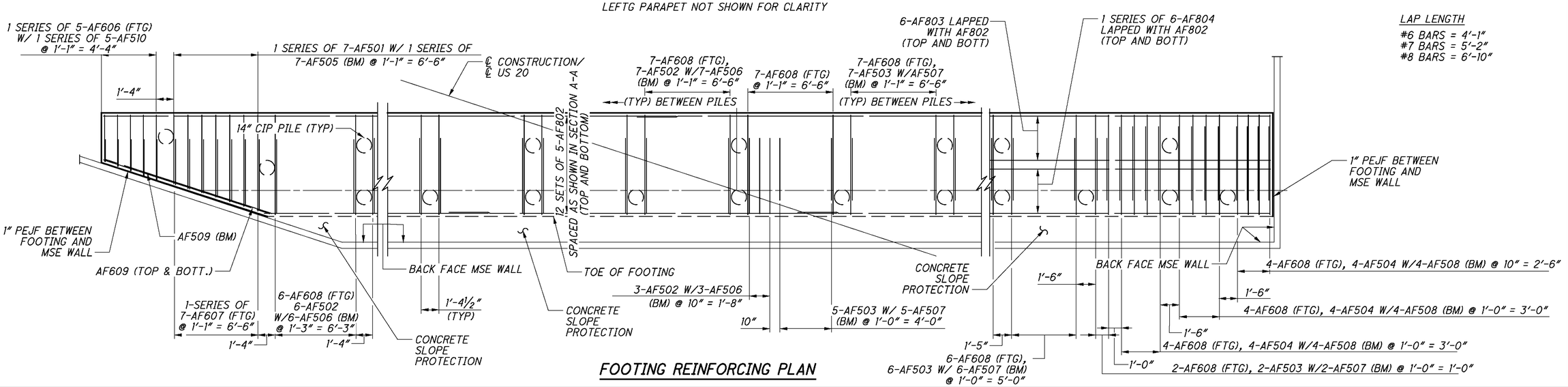
FTG = ABUTMENT FOOTING

BM = ABUTMENT BEAM SEAT

BW = ABUTMENT BACKWALL

LAP LENGTH

#6 BARS = 4'-1"
#7 BARS = 5'-2"
#8 BARS = 6'-10"



FOOTING REINFORCING PLAN

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • PARKERSBURG • CHARLESTON

DESIGNED MLJ | CHECKED CEJ
DRAWN SDW | REVISED
REVIEWED BJF | DATE 3/26/14
STRUCTURE FILE NUMBER 0402265

FORWARD ABUTMENT
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

12 / 45
133 / 189

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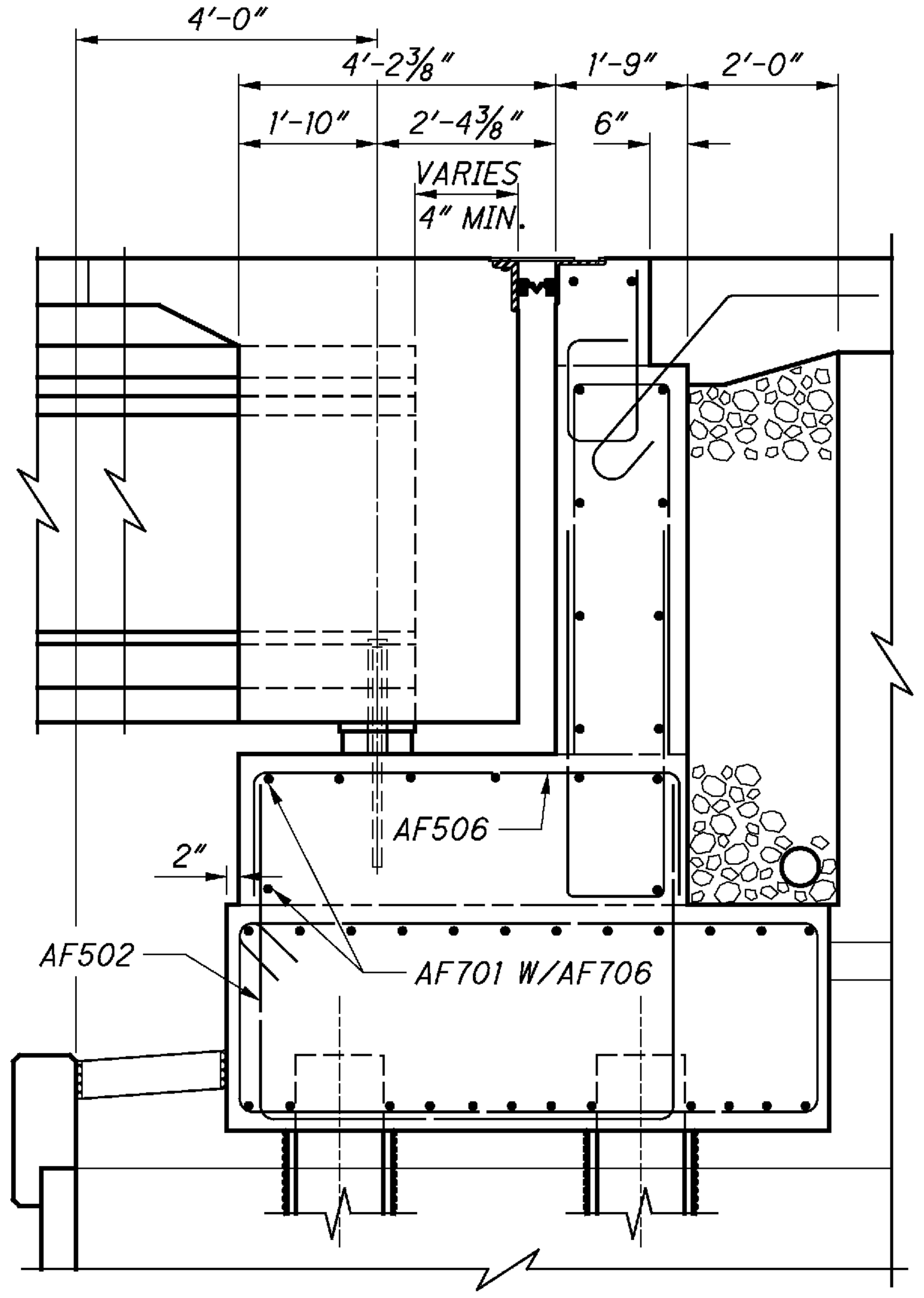
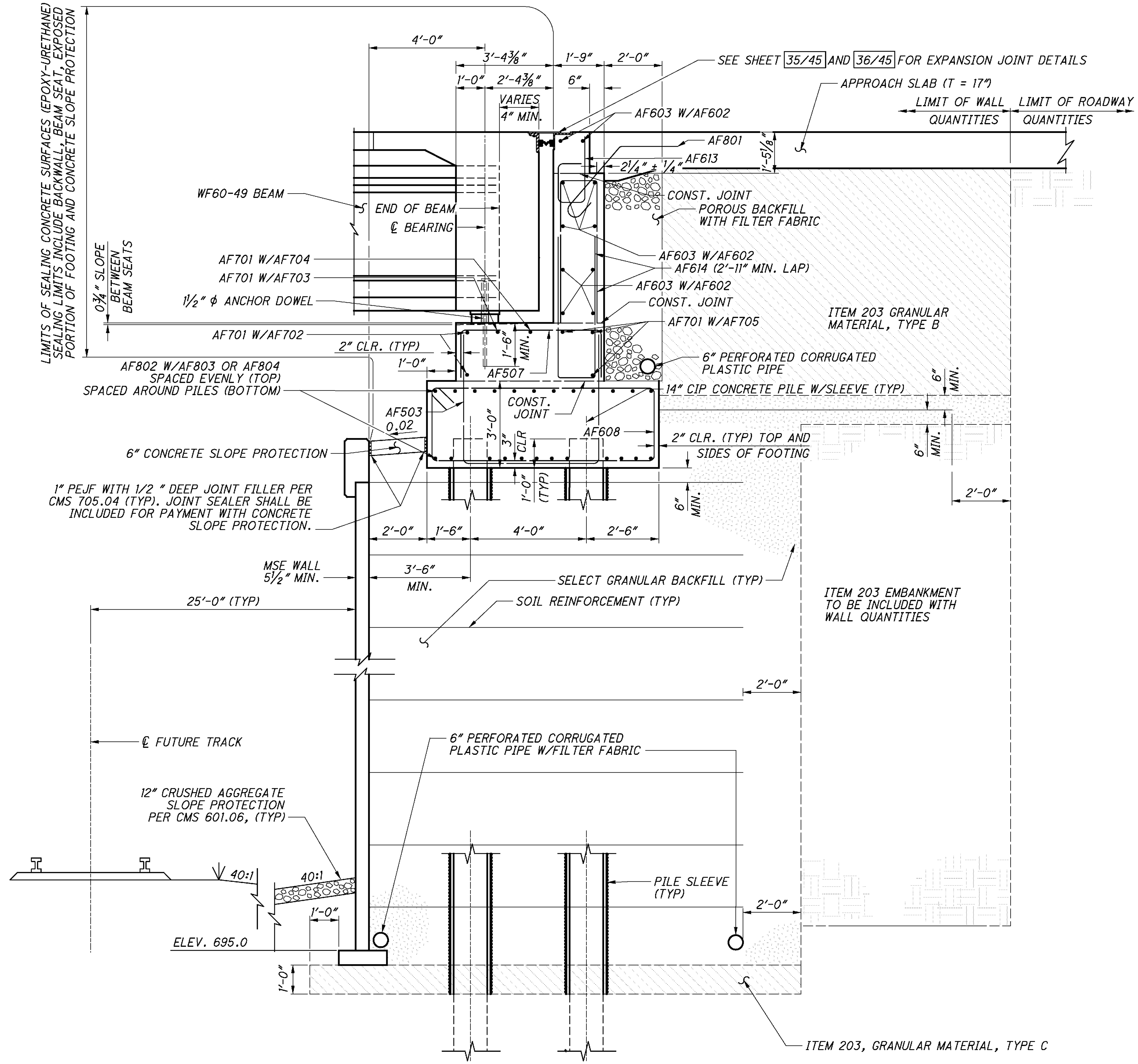


SECTION B-B

(SEE SECTION A-A FOR ADDITIONAL DETAIL AND REINFORCING STEEL INFORMATION)



SECTION A-A

NOTES:

1) FURNISH AND INSTALL 1½" ϕ ANCHOR DOWELS ACCORDING TO ITEM 530, SPECIAL - STRUCTURE, MISC: EXPANSION ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS

2) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

3) FOR DRAINAGE DETAILS SEE SHEETS 88/189 - 99/189.

4) SEE SHEETS 88/189 - 104/189 FOR MSE WALL DETAILS

5) SEE SHEETS 31/45 - 33/45 FOR DIAPHRAGM DETAILS

6) DO NOT APPLY CONCRETE SEALER WITHN THE FOOTPRINT OF BEARING PADS.

7) SEE SHEET 3/45 FOR LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION.

8) SEE SHEET 31/45 FOR ADDITIONAL ANCHOR DOWEL DETAILS.

LEGEND

BF = BACK FACE
FF = FRONT FACE

LAP LENGTH

#6 BARS = 4'-1"
#7 BARS = 5'-2"
#8 BARS = 6'-10"

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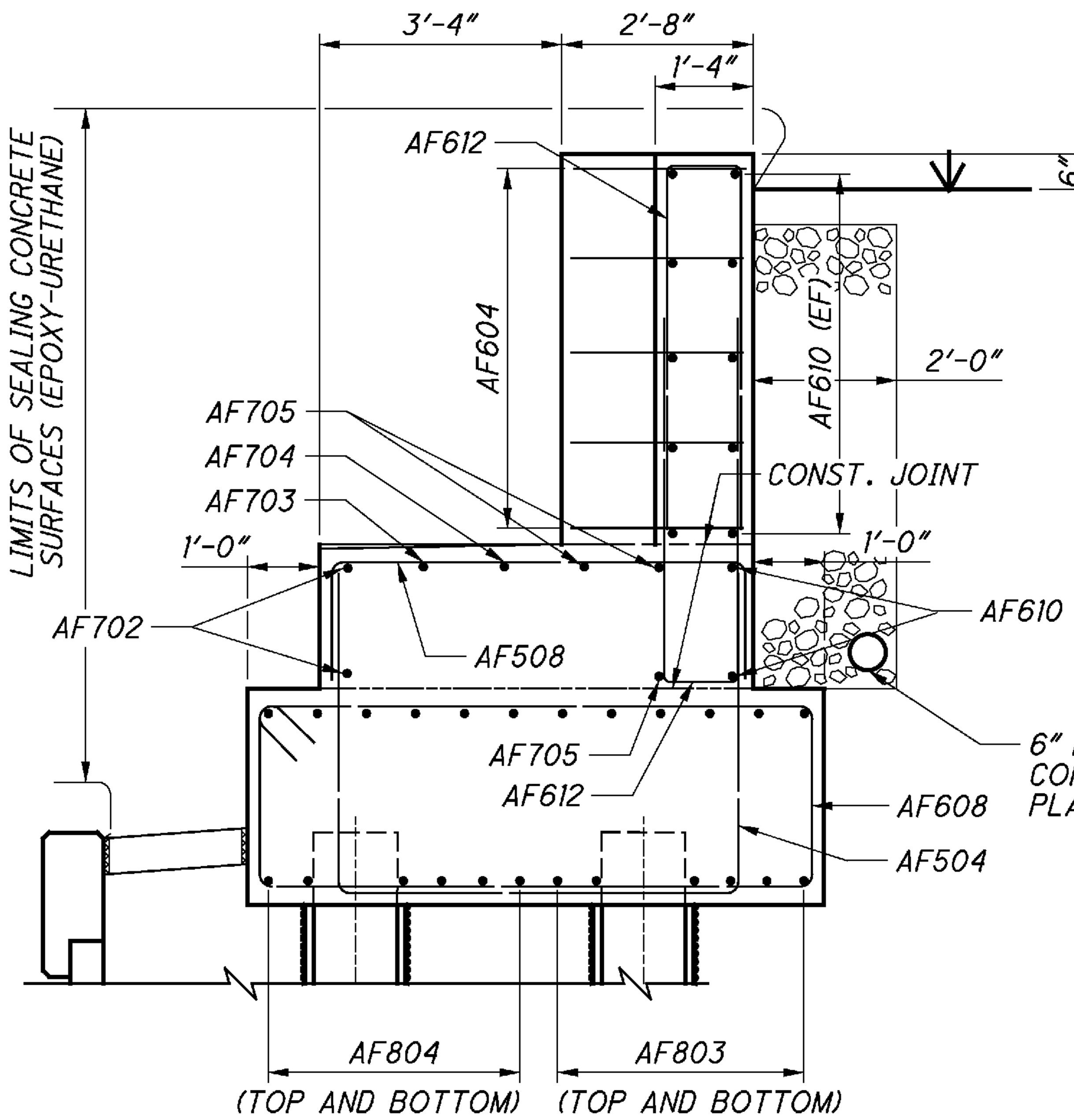
CEJ		0402265	

FORWARD ABUTMENT SECTION VIEW

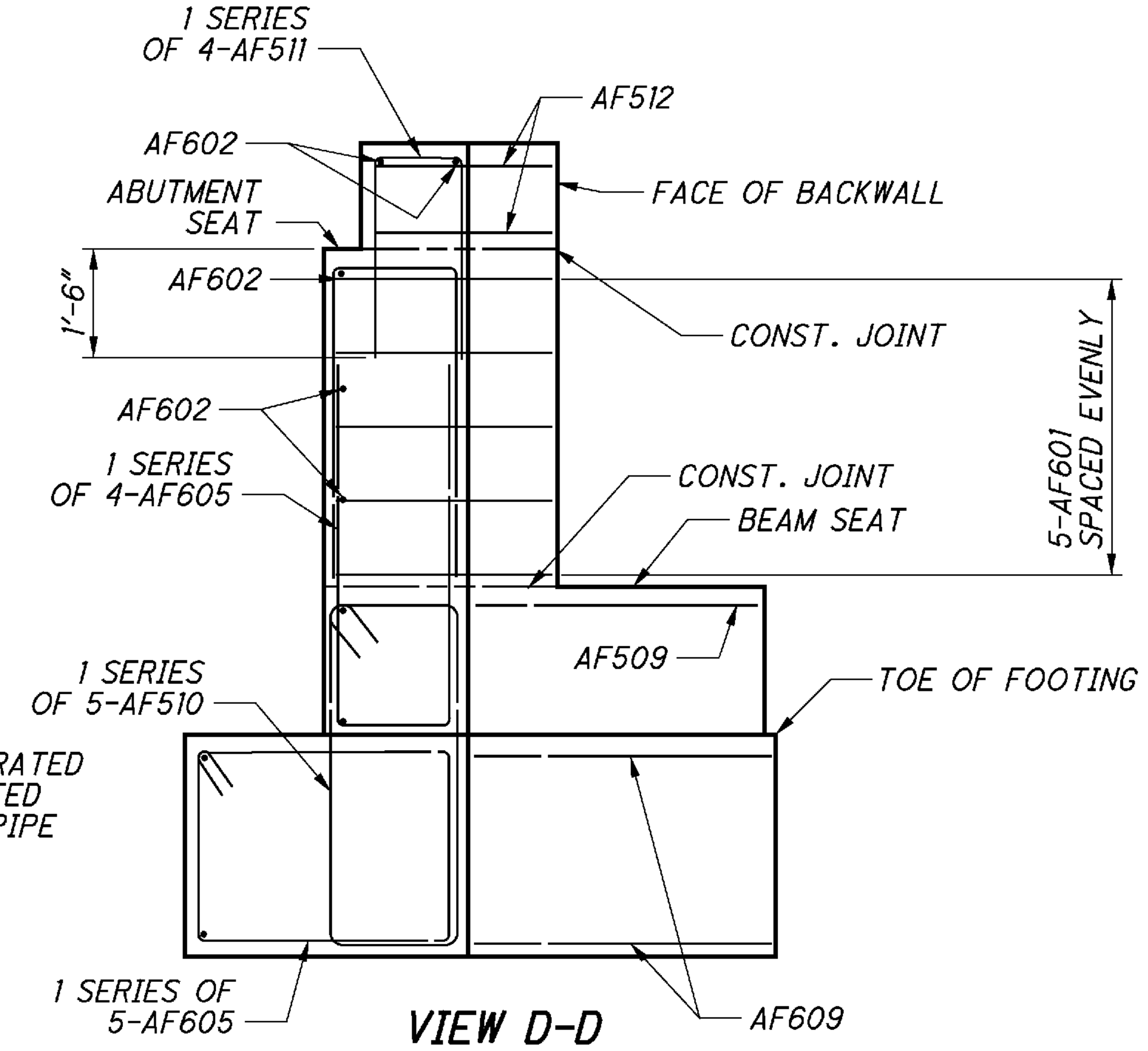
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



VIEW C-C

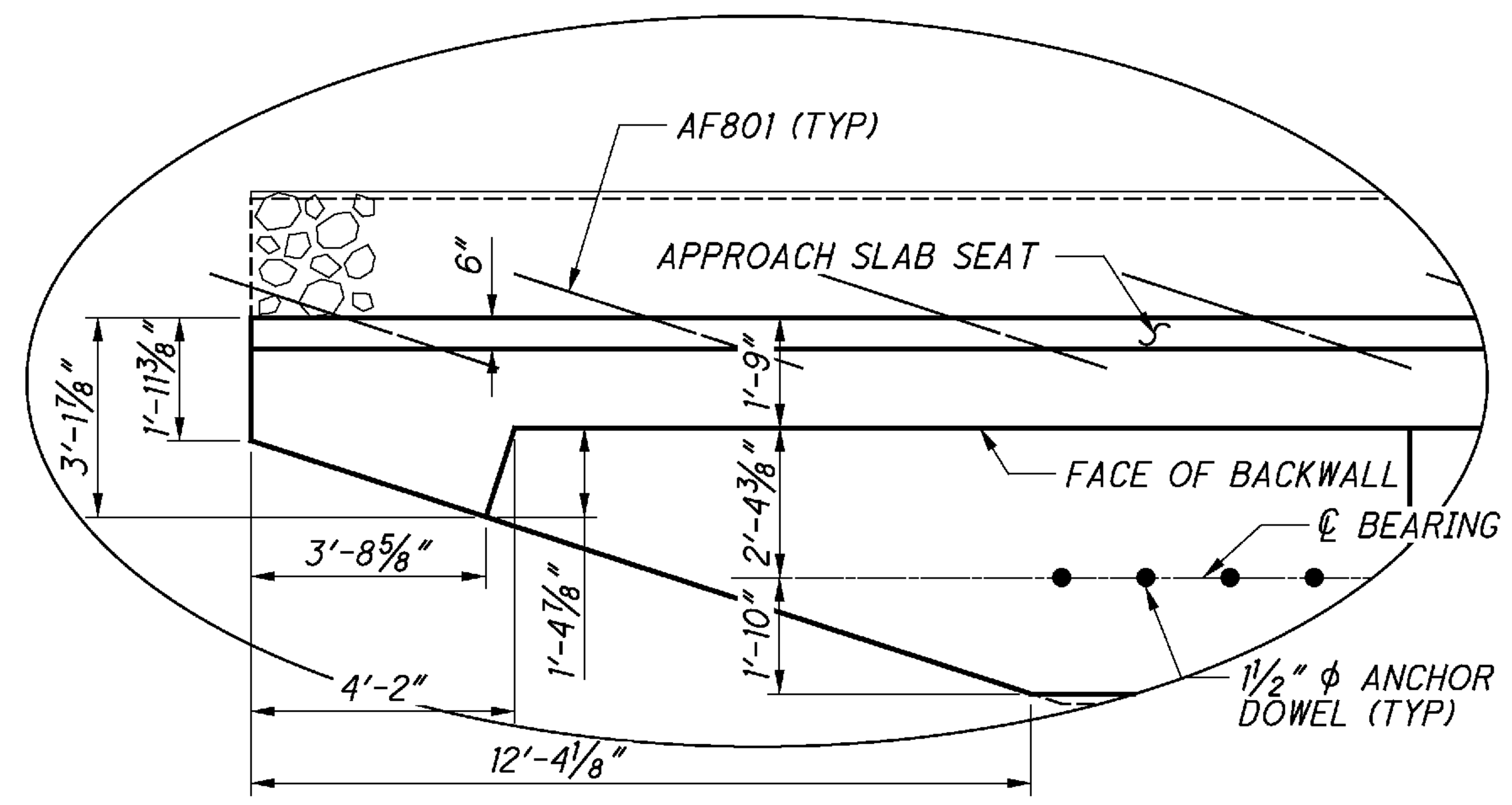
(SEE SHEET 13/45 FOR ADDTIONAL DETAILS)



VIEW D-D

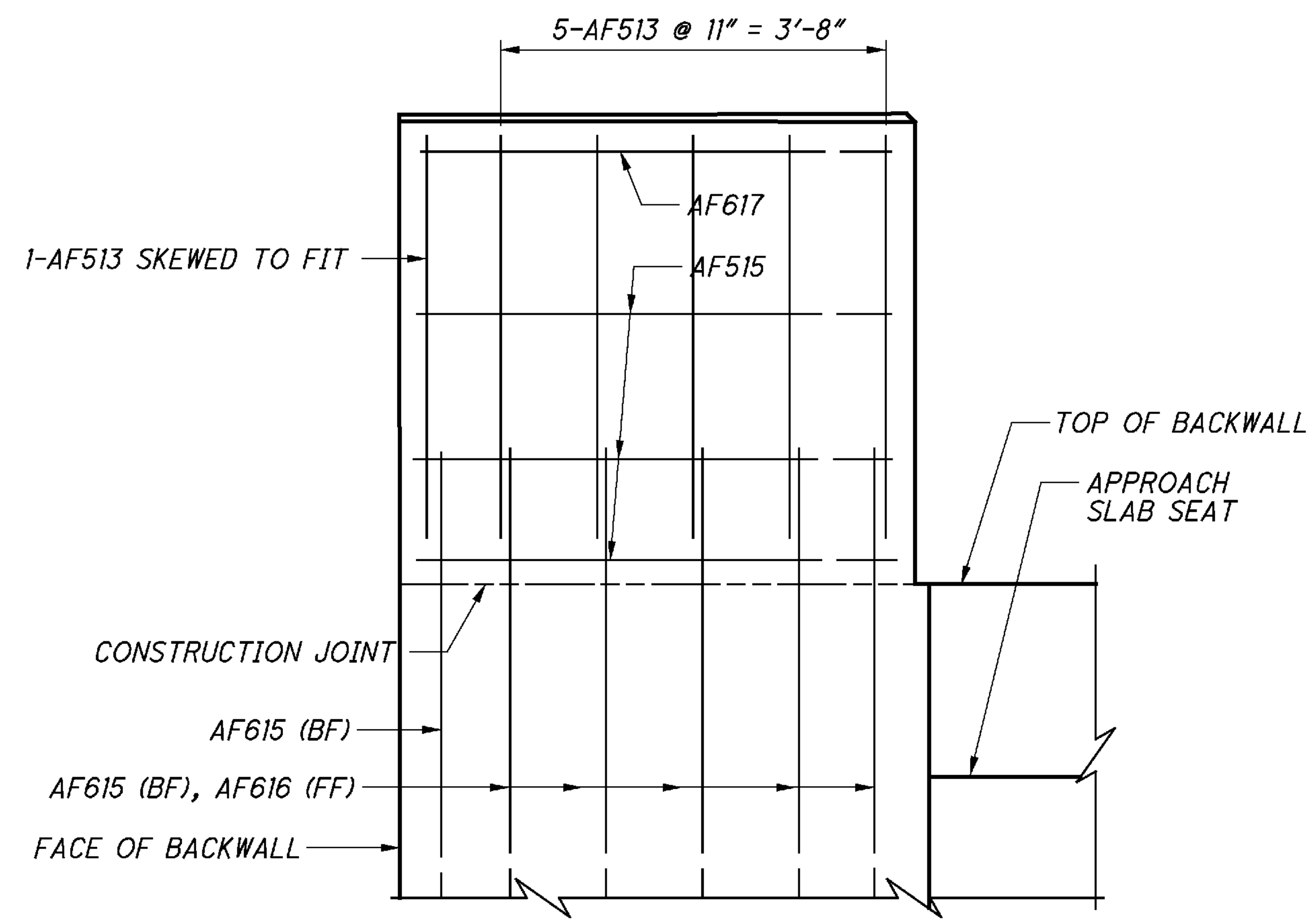
(PILES NOT SHOWN FOR CLARITY)

(SEE SHEET 13/45 FOR ADDTIONAL DETAILS)



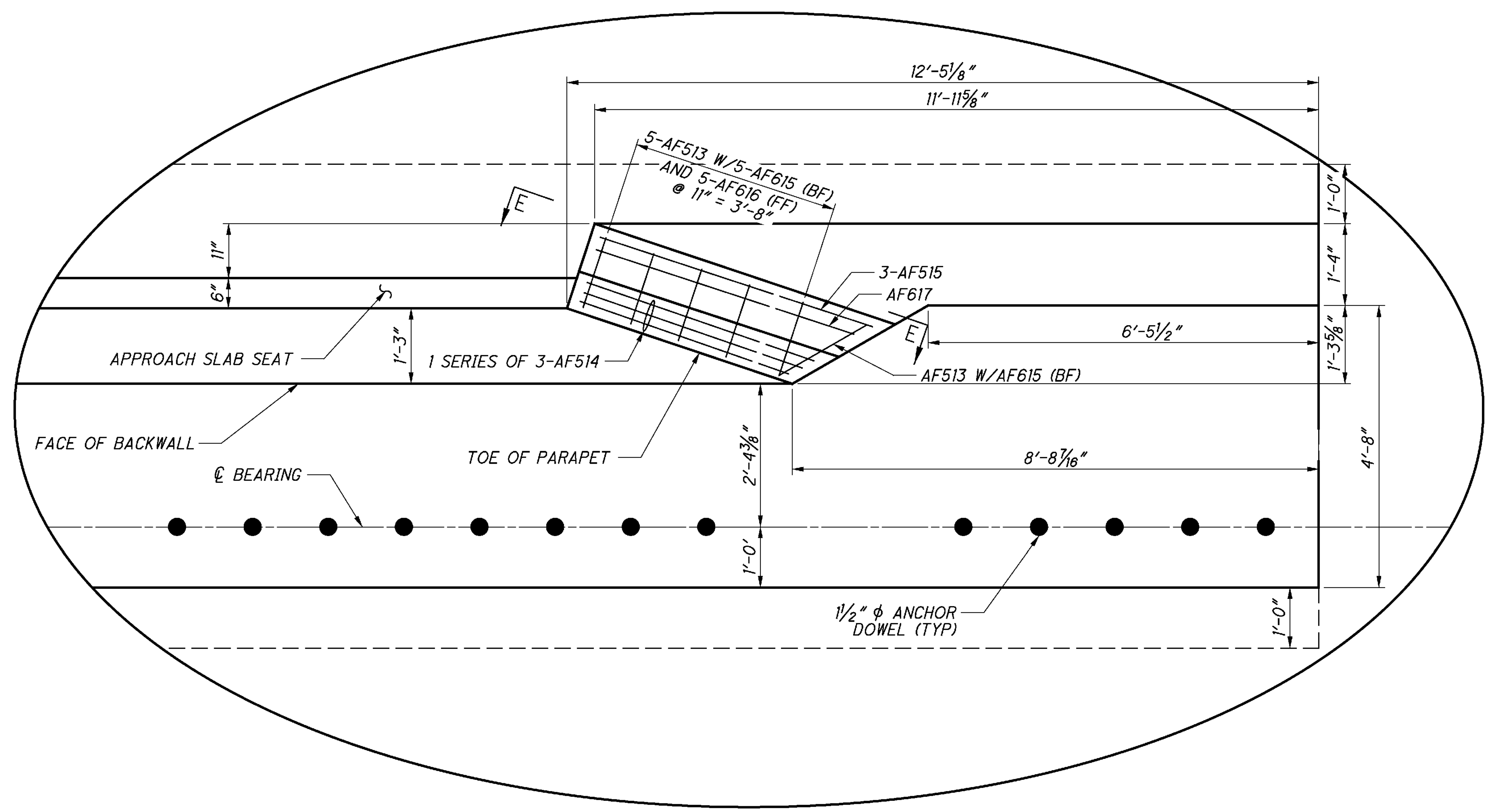
DETAIL A

(PILES NOT SHOWN FOR CLARITY)



VIEW E-E

(FOR ADDITIONAL PARAPET DETAILS, SEE SCD SBR-1-13)



DETAIL B

(PILES NOT SHOWN FOR CLARITY)

(FOR ADDITIONAL PARAPET DETAILS, SEE SCD SBR-1-13)

LEGEND

BF = BACK FACE
FF = FRONT FACE
EF = EACH FACE

LAP LENGTH

#6 BARS = 4'-1"
#7 BARS = 5'-2"
#8 BARS = 6'-10"

NOTES:

SEE SHEETS 88/189 - 104/189 FOR MSE WALL DETAILS

SEE SHEETS 31/45 - 33/45 FOR DIAPHRAGM DETAILS

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

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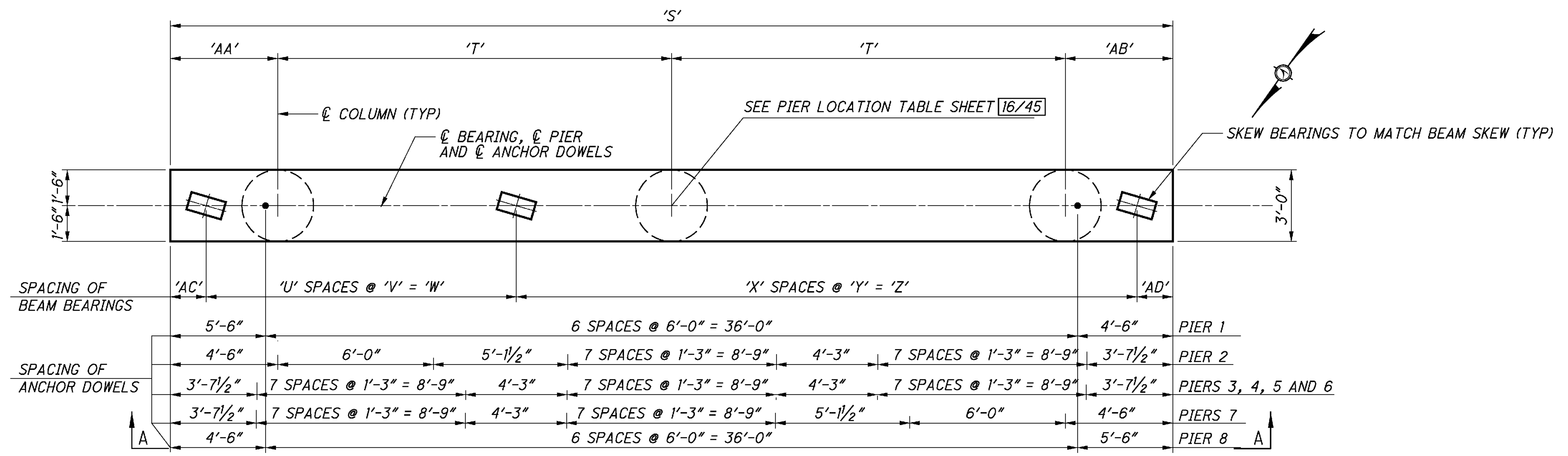
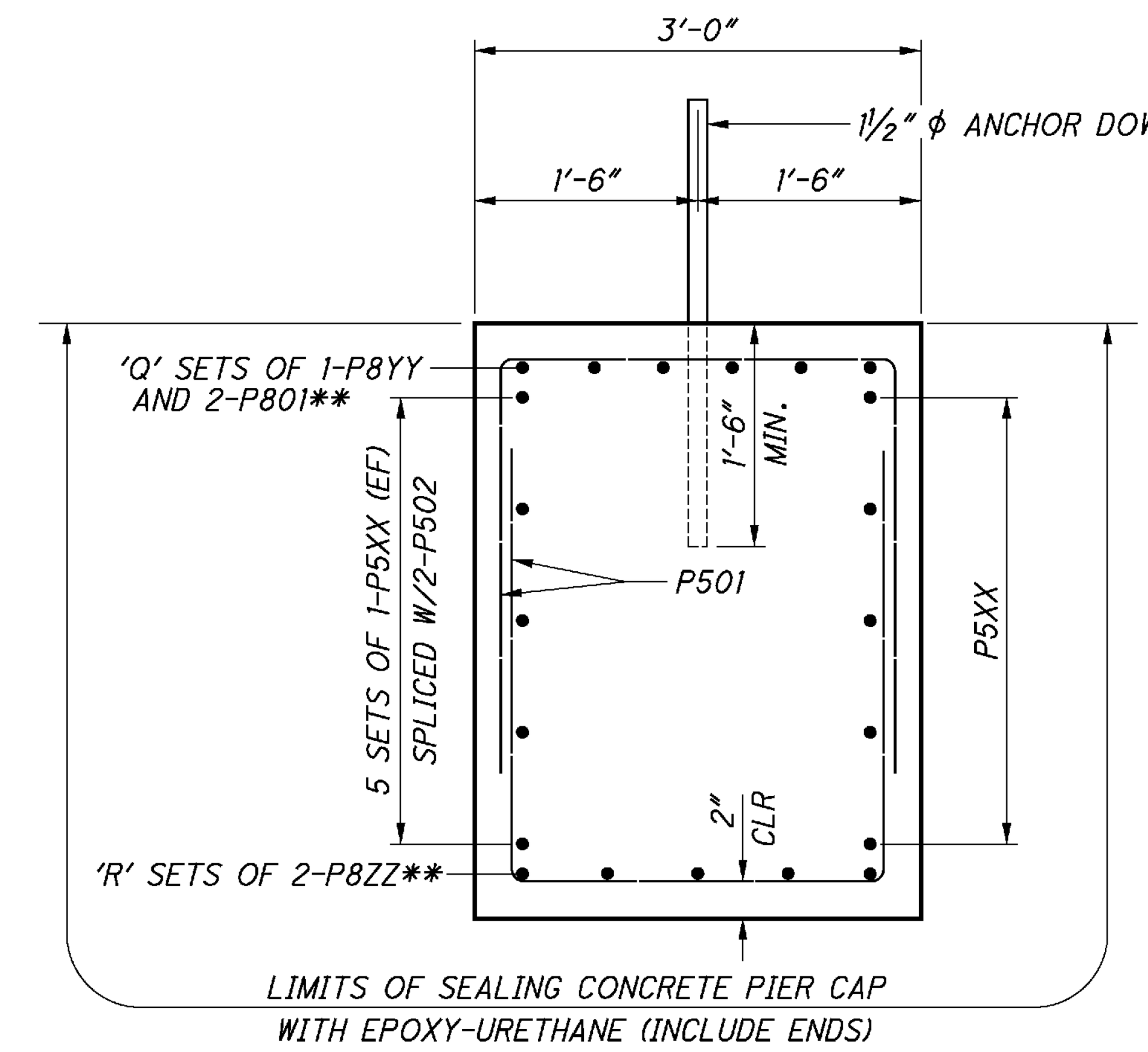
FORWARD ABUTMENT DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

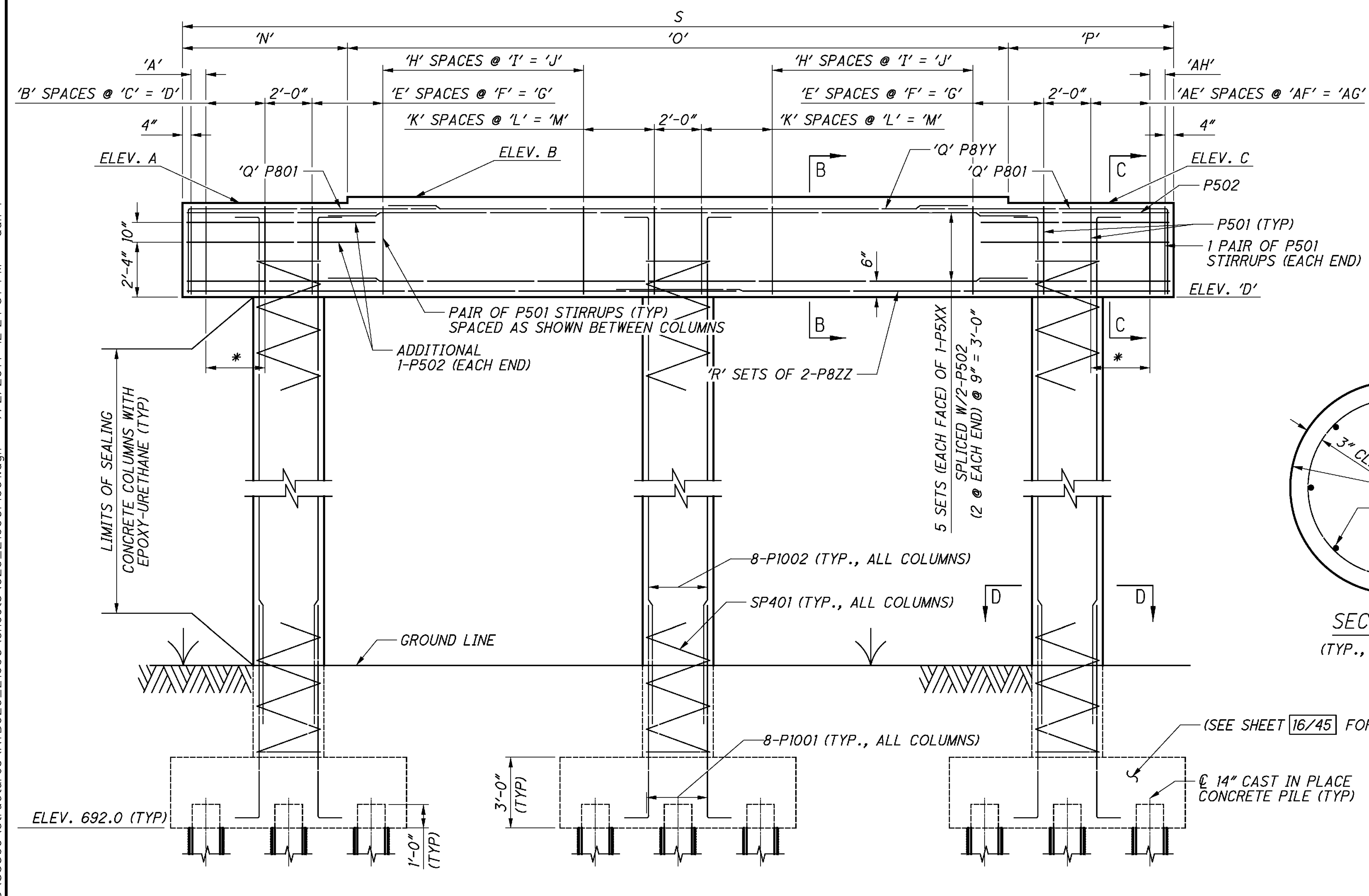


PIER CAP PLAN

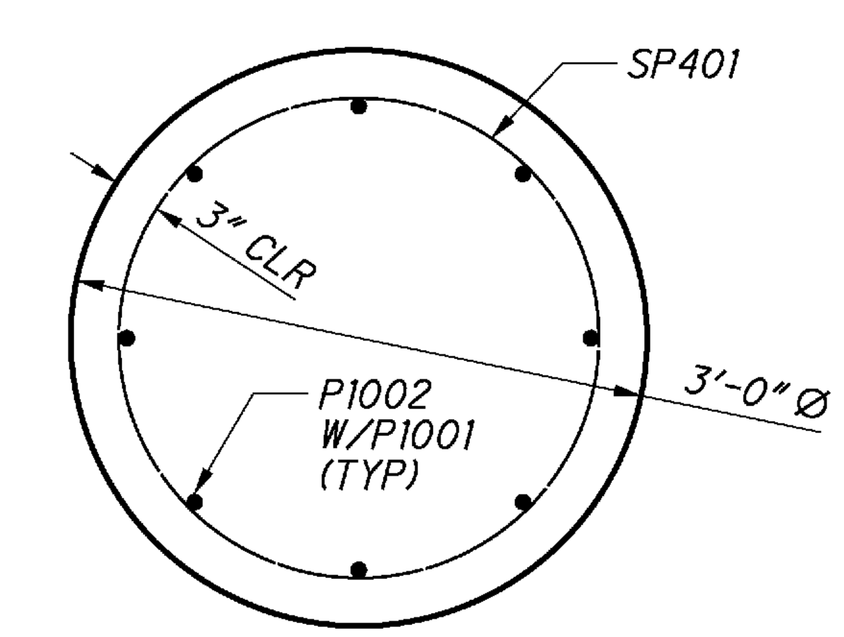


SECTION B-B

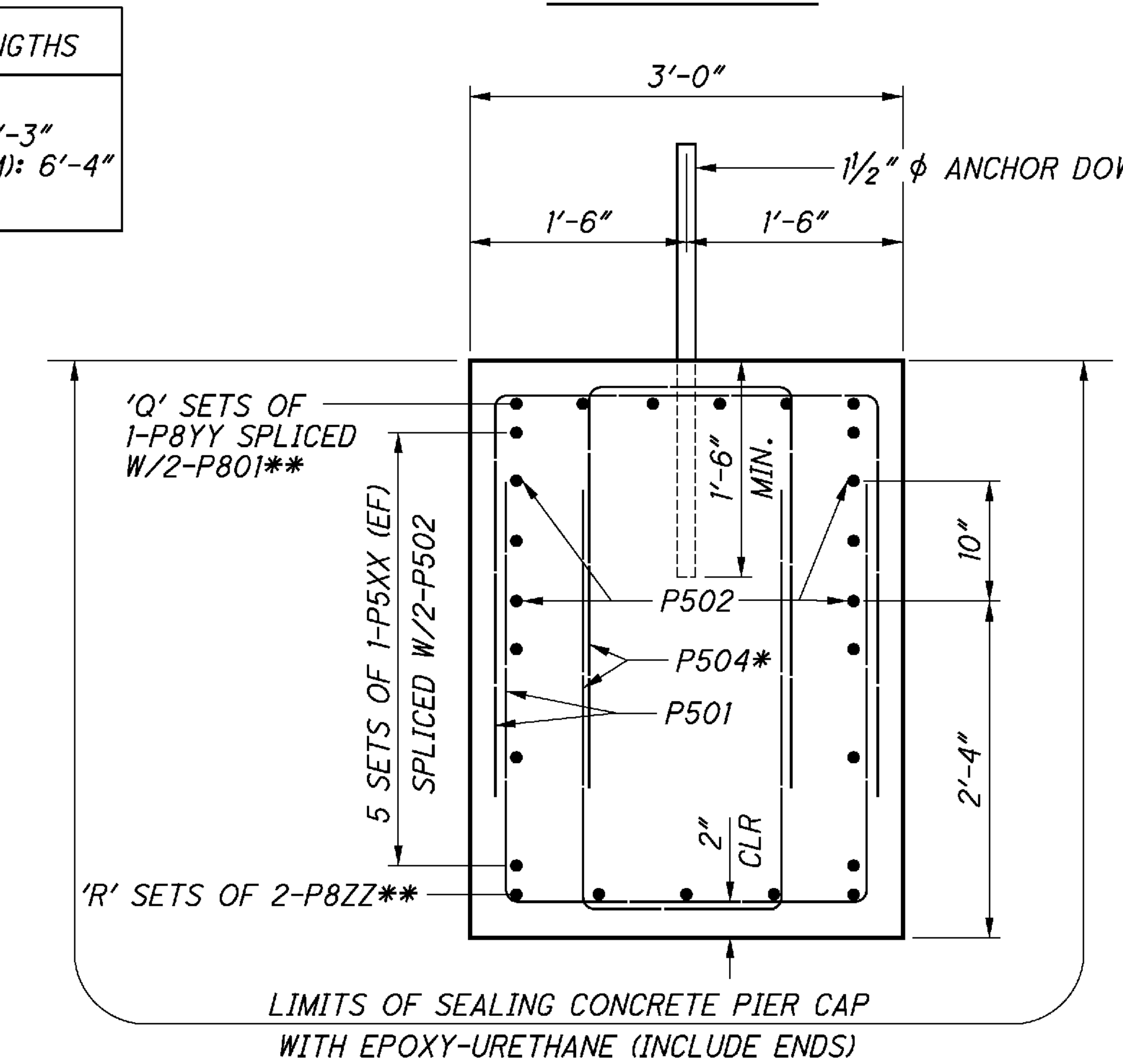
MINIMUM LAP LENGTHS
#5 BARS: 3'-5"
#8 BARS (TOP): 7'-3"
#8 BARS (BOTTOM): 6'-4"
#10 BARS: 8'-3"



VIEW A-A



SECTION D-D
(TYP., ALL COLUMNS)



SECTION C-C

**PIER 1 SHOWN. LONGITUDINAL BARS VARY FOR EACH PIER.

ANCHOR DOWEL NOTES:

1) FOR PIERS 5, 6, 7, AND 8, FURNISH AND INSTALL 1½" ϕ ANCHOR DOWELS ACCORDING TO ITEM 530, SPECIAL - STRUCTURE, MISC.: EXPANSION ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

2) FOR PIERS 1, 2, 3, AND 4, FURNISH AND INSTALL 1½" ϕ ANCHOR DOWELS ACCORDING TO ITEM 530, SPECIAL - STRUCTURE, MISC.: FIXED ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

3) BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES OR THE PRE-SETTING OF ANCHOR DOWELS.

NOTE:
SEE SHEET 16/45 FOR ELEVATION TABLE AND REINFORCING STEEL TABLE

* ADDITIONAL SETS OF 2-P504 STIRRUPS SPACED W/P501 STIRRUPS AS SHOWN (PIERS 3, 4, 5 AND 6)

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Palmer ENGINEERING
PALMER ENGINEERING, AKRON, OHIO 44320

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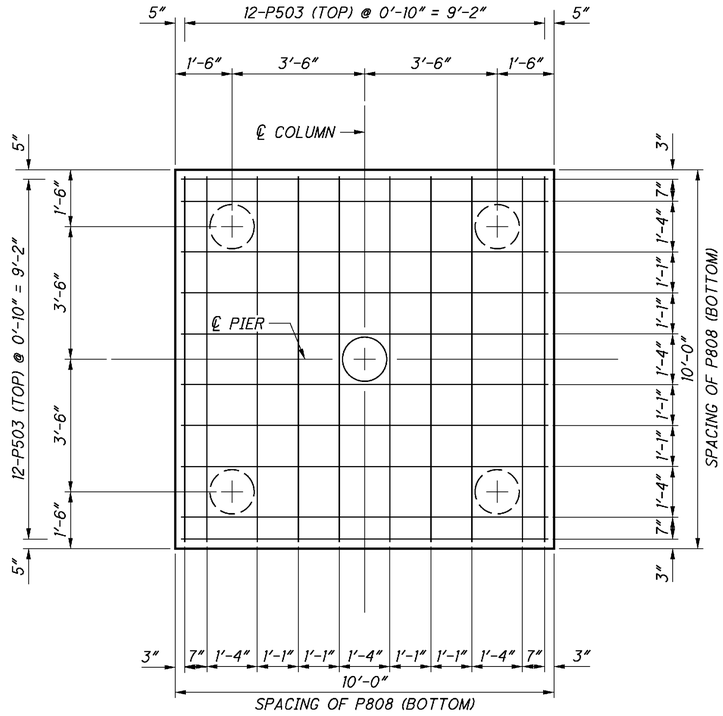
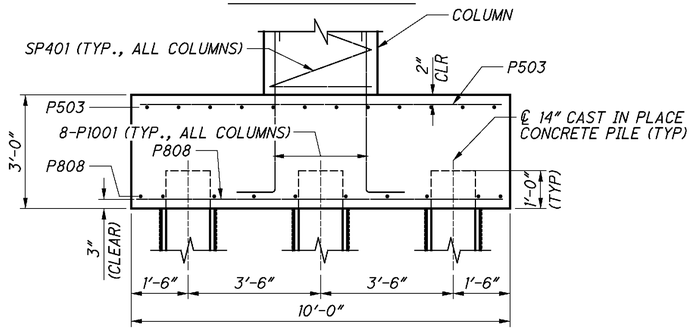
PIER DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



FOOTING A PLAN



ELEVATION

PIER LOCATION TABLE		
PIER NO.	C/L US 20 STA.	OFFSET TO C/L US 20
1	449+67.38	87.17′ LEFT
2	449+23.67	72.84′ LEFT
3	448+74.73	56.80′ LEFT
4	448+25.32	40.60′ LEFT
5	449+18.21	34.10′ RIGHT
6	448+68.80	50.30′ RIGHT
7	448+19.86	66.34′ RIGHT
8	447+76.15	80.67′ RIGHT

PIER ELEVATION TABLE				
PIER NO.	EL. A	EL. B	EL. C	EL. D
1	724.37	724.50	724.62	720.37
2	724.62	724.46	724.50	720.46
3	724.54	724.54	724.54	720.54
4	724.54	724.58	724.58	720.54
5	724.64	724.64	724.64	720.64
6	724.64	724.64	724.64	720.64
7	724.68	724.60	724.72	720.60
8	724.72	724.64	724.56	720.56

NOTE:
1) SEE SHEET 9/45 AND 9A/45 FOR FOUNDATION LAYOUT.

2) FOR PIER DETAILS AND LOCATIONS OF REFERENCED DIMENSIONS SEE SHEET 15/45.

PIER DIMENSION TABLE

PIER NO.	P5XX	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'	'Q'	P8YY	'R'	P8ZZ	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'	'AA'	'AB'	'AC'	'AD'	'AE'	'AF'	'AG'	'AH'
1	P505	1′-0″	3	1′-1″	3′-3″	4	7″	2′-4″	10	1′-1 1/2″	11′-3″	4	7″	2′-4″	17′-6″	12′-0″	16′-6″	6	P802	5	P803	46′-0″	18′-0″	3	6′-0″	18′-0″	4	6′-0″	24′-0″	5′-6″	4′-6″	2′-6″	1′-6″	2	1′-1″	2′-2″	1′-1″
2	P506	1′-2″	4	6″	2′-0″	4	6″	2′-0″	5	1′-4″	6′-8″	4	1′-4″	5′-4″	4′-6″	28′-6″	8′-0″	6	P804	5	P805	41′-0″	16′-0″	2	6′-0″	12′-0″	2	13′-0″	26′-0″	4′-6″	4′-6″	1′-6″	1′-6″	4	6″	2′-0″	1′-2″
3	P507	1′-2″	3	8″	2′-0″	6	1′-3″	7′-6″	3	1′-2″	3′-6″	3	1′-2″	3′-6″	8′-0″	26′-0″	8′-0″	7	P806	6	P807	42′-0″	16′-6″	1	13′-0″	13′-0″	2	13′-0″	26′-0″	4′-6″	4′-6″	1′-6″	1′-6″	3	8″	2′-0″	1′-2″
4	P507	1′-2″	4	6″	2′-0″	6	1′-2″	7′-0″	5	9″	3′-9″	5	9″	3′-9″	8′-0″	26′-0″	8′-0″	9	P806	8	P807	42′-0″	16′-6″	1	13′-0″	13′-0″	2	13′-0″	26′-0″	4′-6″	4′-6″	1′-6″	1′-6″	4	6″	2′-0″	1′-2″
5	P507	1′-2″	4	6″	2′-0″	6	1′-2″	7′-0″	5	9″	3′-9″	5	9″	3′-9″	8′-0″	26′-0″	8′-0″	9	P806	8	P807	42′-0″	16′-6″	2	13′-0″	26′-0″	1	13′-0″	13′-0″	4′-6″	4′-6″	1′-6″	1′-6″	4	6″	2′-0″	1′-2″
6	P507	1′-2″	3	8″	2′-0″	6	1′-3″	7′-6″	3	1′-2″	3′-6″	3	1′-2″	3′-6″	8′-0″	26′-0″	8′-0″	7	P806	6	P807	42′-0″	16′-6″	2	13′-0″	26′-0″	1	13′-0″	13′-0″	4′-6″	4′-6″	1′-6″	1′-6″	3	8″	2′-0″	1′-2″
7	P506	1′-2″	4	6″	2′-0″	4	6″	2′-0″	5	1′-4″	6′-8″	4	1′-4″	5′-4″	8′-0″	28′-6″	4′-6″	6	P804	5	P805	41′-0″	16′-0″	2	13′-0″	26′-0″	2	6′-0″	12′-0″	4′-6″	4′-6″	1′-6″	1′-6″	4	6″	2′-0″	1′-2″
8	P505	1′-1″	2	1′-1″	2′-2″	4	7″	2′-4″	10	1′-1 1/2″	11′-3″	4	7″	2′-4″	16′-6″	12′-0″	17′-6″	6	P802	5	P803	46′-0″	18′-0″	4	6′-0″	24′-0″	3	6′-0″	18′-0″	4′-6″	5′-6″	1′-6″	2′-6″	3	1′-1″	3′-3″	1′-0″

DESIGN AGENCY
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CEJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		0402265	

PIER DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

16 / 45

137 / 189

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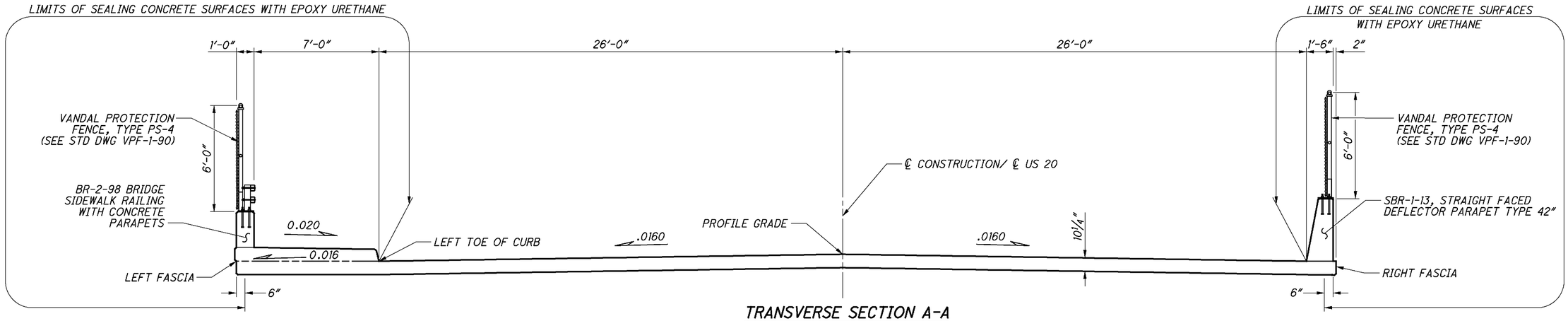
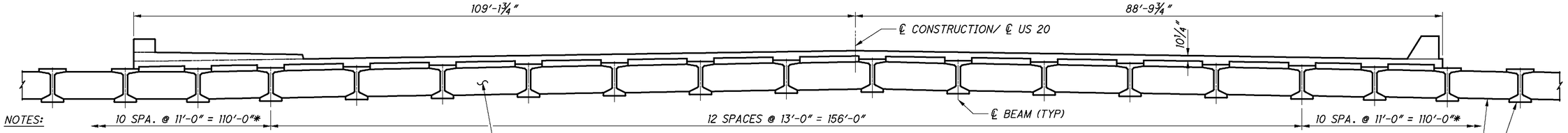


TRANSVERSE SECTION A-A

LOOKING AHEAD STATION

(BEAMS AND DECK REINFORCING STEEL NOT SHOWN FOR CLARITY)



SECTION B-B

(RAILING, VANDAL PROTECTION FENCE AND REINFORCING STEEL NOT SHOWN FOR CLARITY)

* SPACING SHOWN AS MEASURED AT LOACATION OF SECTION

SEAL ALL SURFACES OF GIRDERS AND DIAPHRAGMS THAT FALL OUTSIDE DECK LIMITS WITH EPOXY URETHANE (TYP). SEALING SHALL EXTEND AT LEAST 6" UNDER THE DECK EDGES

NOTES:

1) DECK SLAB THICKNESS FOR CONCRETE QUANTITY: THE TOPPING THICKNESSES SHOWN FROM THE TOP OF THE DECK SLAB TO THE TOP OF THE TOP FLANGE ALONG THE CENTERLINE OF THE I- BEAM ARE THEORETICAL DIMENSIONS. THE HAUNCH DEPTH IS THE TOPPING THICKNESS MINUS THE DESIGN SLAB THICKNESS. THE DEPARTMENT WILL PAY FOR SUPERSTRUCTURE CONCRETE BASED ON THE DESIGN SLAB THICKNESS AND THE AVERAGE OF THE THEORETICAL HAUNCH DEPTHS AT MID-SPAN AND AT EACH BEAM BEARING EVEN THOUGH DEVIATION FROM THE DIMENSIONS SHOWN MAY BE NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. ONCE ALL BEAMS ARE SET IN THEIR FINAL POSITION, THE ACTUAL CAMBER FOR EACH MEMBER WILL BE THE TOP OF BEAM ELEVATION AT MID-SPAN MINUS THE AVERAGE TOP OF BEAM ELEVATION AT EACH BEARING. THE ACTUAL TOPPING THICKNESS AT MID-SPAN WILL BE THE THEORETICAL DIMENSION PLUS OR MINUS THE DIFFERENCE BETWEEN THE ACTUAL AND ANTICIPATED CAMBER.

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEETS 21/45 AND 22/45 FOR DECK DETAILS AND REINFORCING STEEL LAYOUT.

3) SEE SHEETS 21/45 - 24/45 FOR SIDEWALK, RAILING AND VANDAL PROTECTION FENCE DETAILS.

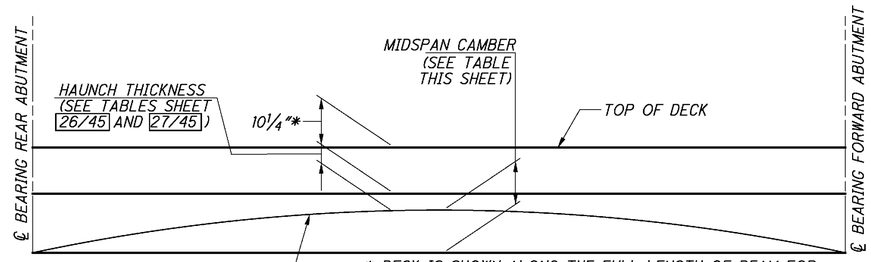
4) SEE SHEETS 18/45 AND 19/45 FOR BEAM DETAILS.

5) SEE SHEET 20/45 FOR FRAMING PLAN.

6) SEE SHEETS 22/45, 26/45 AND 27/45 FOR HAUNCH DETAILS.

7) SEE SHEET 3/45 FOR SECTION LOCATIONS.

BEAM CAMBER AND DEFLECTION AT MIDSPAN (IN.)			
MARK	CAMBER AT THE TIME OF RELEASE	CAMBER AT THE TIME OF ERECTION	LONG TERM CAMBER
MK1	1.78	2.98	4.58
MK 2	1.96	3.34	4.98
MK 3	2.06	3.56	5.20
MK 4	2.10	3.65	5.27
MK 5	2.10	3.67	5.24
MK 6	2.07	3.63	5.15
MK 7	2.02	3.57	5.03
MK 8	1.98	3.50	4.92
MK 9	1.94	3.44	4.82
MK 10	2.31	4.11	5.71
MK 11	2.30	4.08	5.68
MK 12	2.30	4.08	5.68
MK 13	2.30	4.08	5.68
MK 14	2.30	4.08	5.68
MK 15	2.30	4.08	5.68
MK 16	2.30	4.08	5.68
MK 17	2.30	4.08	5.68



* DECK IS SHOWN ALONG THE FULL LENGTH OF BEAM FOR VISUALIZATION PURPOSES ONLY. ACTUAL DECK LIMITS VARY FOR EACH BEAM.

BEAM ELEVATION

ALONG ℄ OF BEAM

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

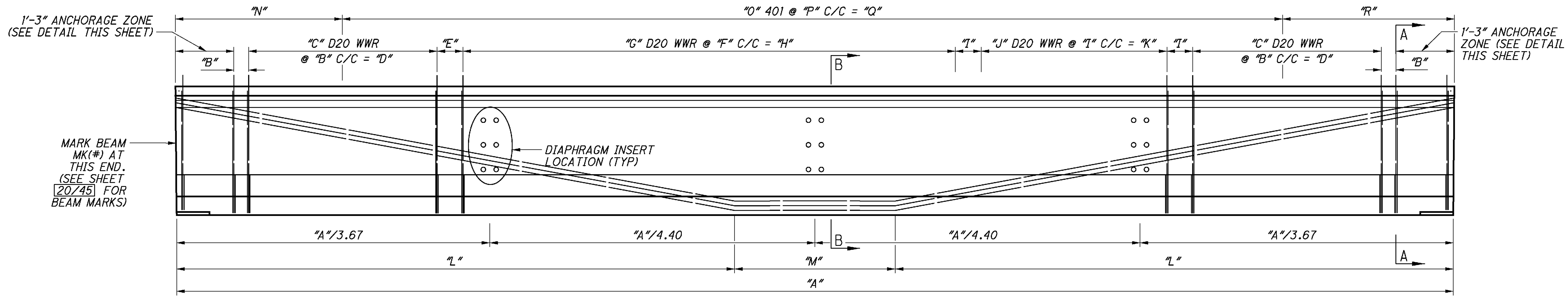
DESIGNED CEJ | DRAWN SDW | REVIEWED MLJ | DATE 3/26/14
CHECKED HJS | REVISED | STRUCTURE FILE NUMBER 0402265

TRANSVERSE SECTION
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

17 / 45

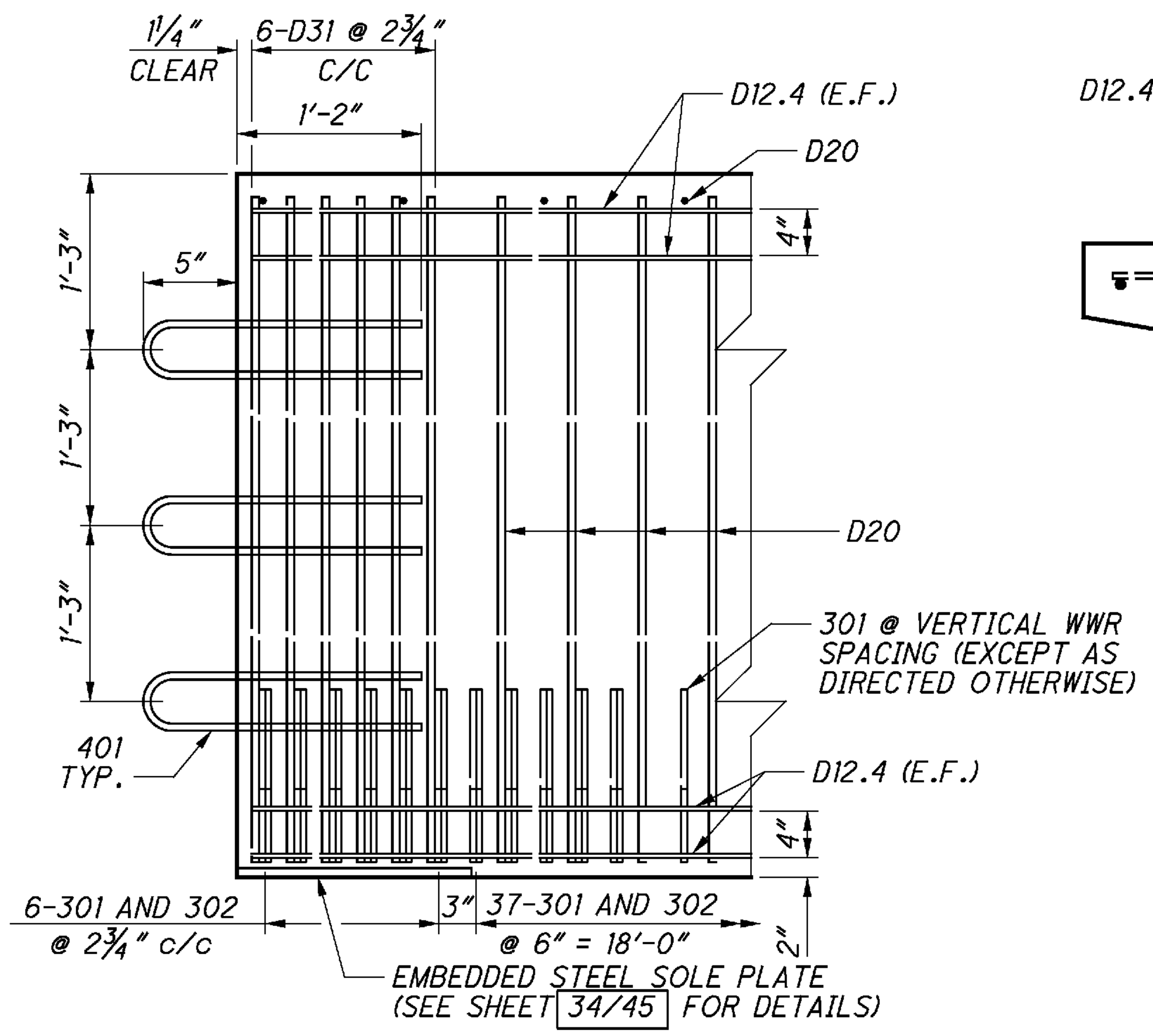
138 / 189



ELEVATION OF BEAM

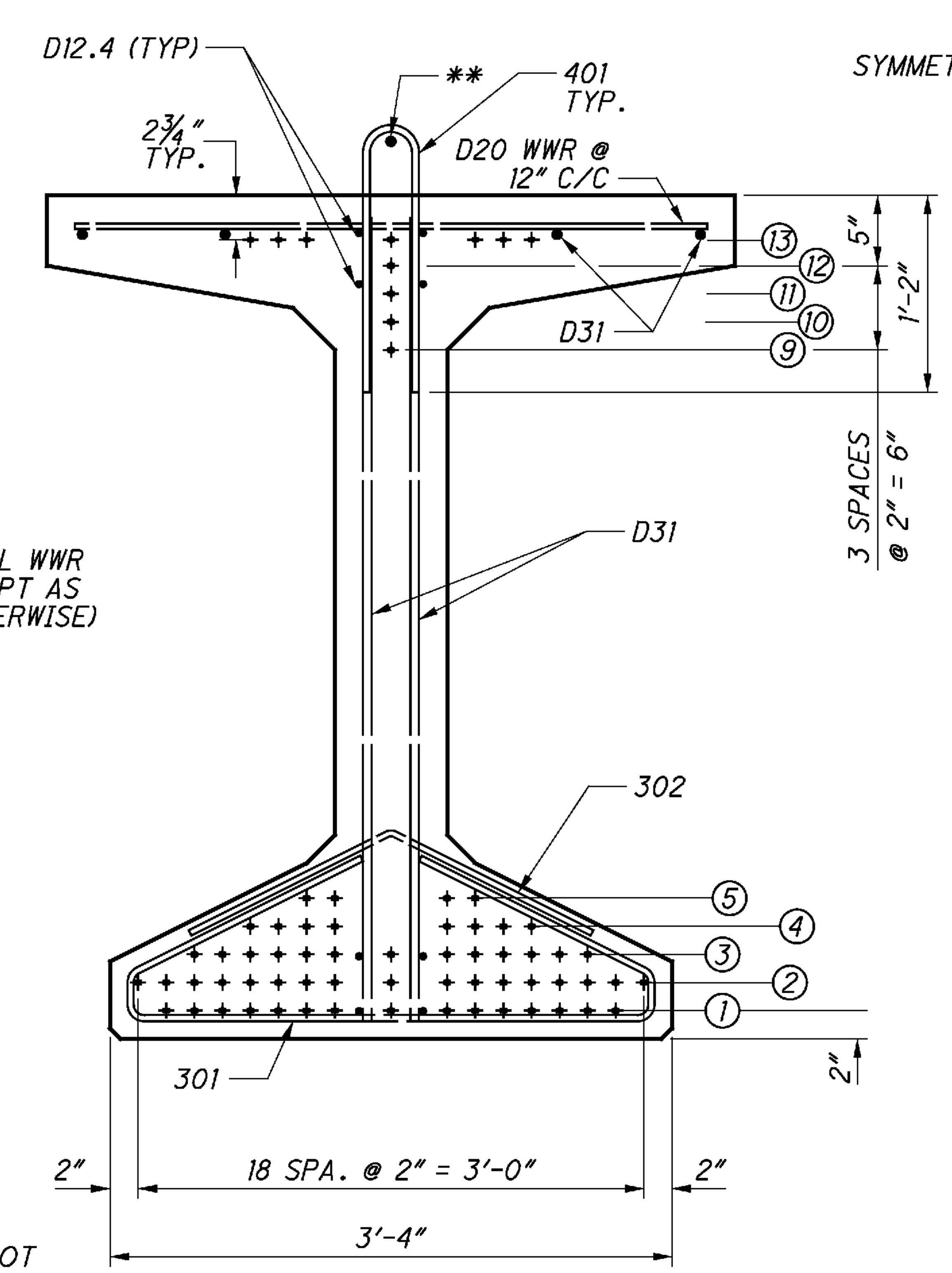
WF60-49

FOR ADDITIONAL DETAILS AND NOTES, SEE STD DRAWING PSID-I-13

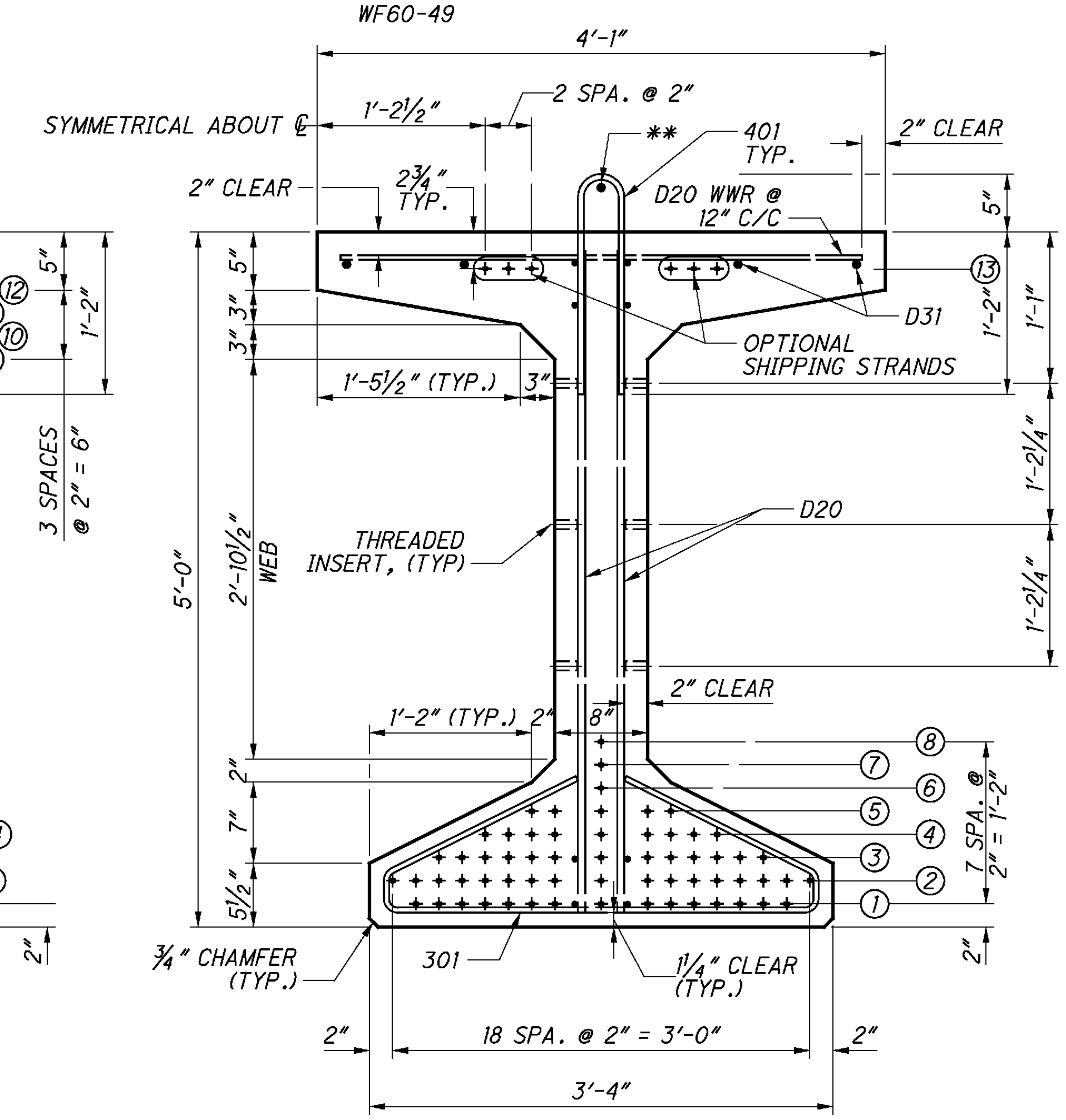


ANCHORAGE ZONE REINFORCING STEEL

STRANDS NOT SHOWN FOR CLARITY



SECTION A-A



SECTION B-B

** - ONE LONGITUDINAL BAR FROM THE BOTTOM MAT OF DECK REINFORCING SHALL BE PLACED UNDER EACH 401 BAR.

BENDING DIAGRAMS

(ALL DIMENSIONS ARE OUT-TO-OUT)

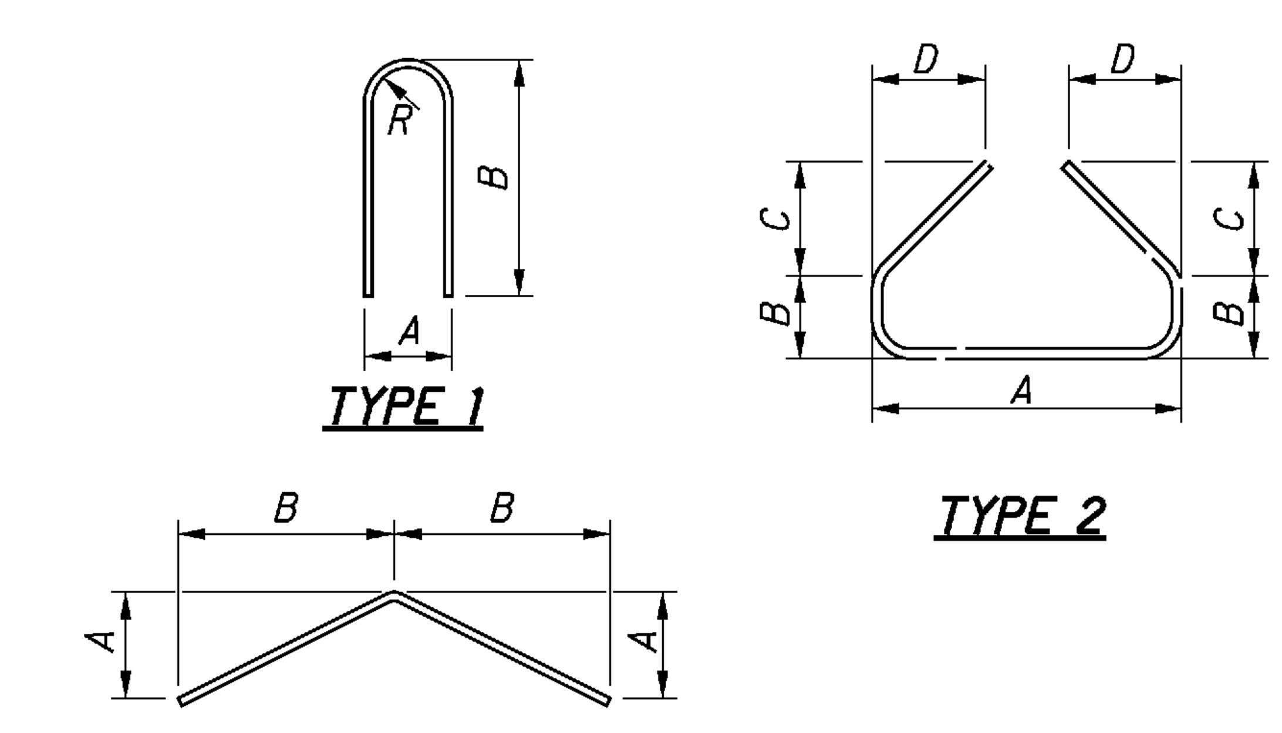
MARK	TYPE	DIMENSIONS A	B	C	D	R
301	2	3'-1½"	3½"	8¼"	1'-4½"	
302	5	9"	1'-6"			
401*	1	4"	1'-8"			

* - SHALL BE EPOXY-COATED

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT INDICATES THE BAR SIZE AND THE REMAINING DIGITS ITS SEQUENCE NUMBER. ALL STEEL SHALL BE BLACK UNLESS OTHERWISE SHOWN.

ALL REINFORCING STEEL MAY BE REPLACED WITH EQUIVALENT WWR.

WWR = WELDED WIRE REINFORCEMENT



GENERAL NOTES

SEE SHEET 19/45 FOR ADDITIONAL BEAM DATA

SEE SHEET 20/45 FOR FRAMING PLAN

THE TOP FLANGE IN THE ZONES DESIGNATED AS 'N' AND 'R' SHALL NOT BE INTENTIONALLY ROUGHENED, AND NO BONDED ROOFING FELT SHALL BE APPLIED TO THOSE AREAS DURING INSTALLATION.

DESIGN CRITERIA

(REFER TO STD. DWG. PSID-1-13)

DESIGN LOADING: DEAD LOAD - 60 LB/FT² (FUTURE WEARING SURFACE)
LIVE LOAD - HL-93

DESIGN STRESSES:

PRESTRESSED CONCRETE: - (SEE SHEET 19/45)

DIAPHRAGM CONCRETE: - f'c = 4500 psi

REINFORCING STEEL - MINIMUM YIELD STRENGTH OF 60 KSI

WELDED WIRE REINFORCEMENT - YIELD STRENGTH - 70 KSI

PRESTRESSING STRAND - ASTM A416 GRADE 270, 6/10" DIA. SEVEN-WIRE, UNCOATED, LOW-RELAXATION STRANDS. NOMINAL STRAND AREA = 0.217 in²

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DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED MLJ | CHECKED CEJ | DRAWN SDW | REVISED | REVIEWED BJF | DATE 3/26/14 | STRUCTURE FILE NUMBER 0402265

PRECAST PRESTRESSED CONCRETE I-BEAM

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

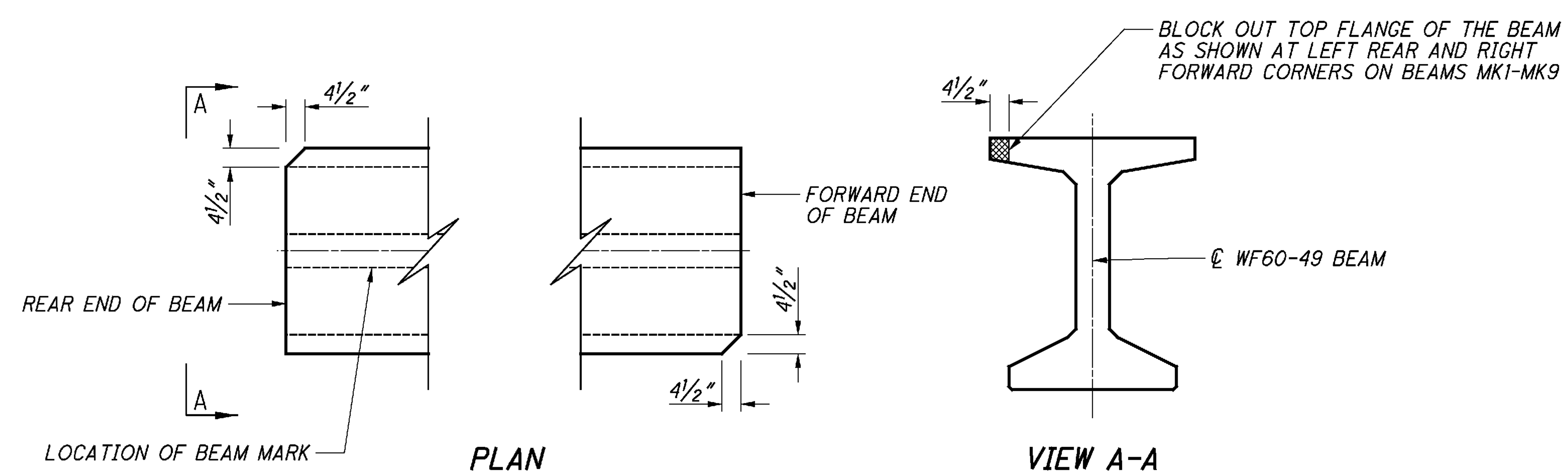
PID No. 83599

MARK	NO. REQD.	STRAND DATA WITH NUMBER INDICATED IN ROWS: MIDSPAN (SECTION B-B) 1	2	3	4	5	6	7	8	9	10	11	12	13	END (SECTION A-A) 1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL NO.	DEBONDING LENGTH 6' 1	6' 2	12' 1	12' 2	TOTAL DEBONDED STRANDS	CONCRETE STRESS (PSI) f'ci	f'c	301 BARS REQD	302 BARS REQD	401 BARS REQD*	D20 WWR REQD	HOLD DOWN CAP
MK1	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	137	86	17	299	0
MK2	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	138	86	30	314	0
MK3	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	140	86	40	337	0
MK4	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	136	86	48	333	0
MK5	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	133	86	54	328	0
MK6	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	131	86	60	321	0
MK7	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	139	86	65	339	0
MK8	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	139	86	69	336	0
MK9	2	15	17	7											15	17	7											39	2	2	2	2	8	5000	7500	135	86	73	325	0
MK10	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	127	86	77	284	15315
MK11	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	127	86	81	283	15390
MK12	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	127	86	87	283	15390
MK13	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	139	86	92	311	15390
MK14	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	139	86	92	311	15390
MK15	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	139	86	92	311	15390
MK16	2	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	139	86	92	311	15390
MK17	1	15	17	13	3	1	1	1	1						15	17	13	2					1	1	1	1	1	52	2		2	2	6	6500	10000	139	86	92	303	15390

* INCLUDES 3 HORIZONTAL 401 BARS AT EACH END OF BEAM

BEAM DATA (MEASURED ALONG CENTERLINE)

MARK	DIMENSIONS A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	APPROXIMATE MASS (lbs EACH)
MK1	142' - 4 3/8"	6"	6	2' - 6"	1' - 10 3/8"	2' - 0"	66	130' - 0"	1' - 0"	0	0' - 0"	N/A	N/A	133' - 11"	11	9"	7' - 6"	11 3/8"	157,604
MK2	135' - 5 11/16"	4"	10	3' - 0"	1' - 9 11/16"	1' - 10"	64	115' - 6"	1' - 6"	5	6' - 0"	N/A	N/A	117' - 4"	24	9"	17' - 3"	10 11/16"	149,925
MK3	129' - 0"	3"	15	3' - 6"	1' - 8"	1' - 8"	66	108' - 4"	1' - 0"	8	7' - 0"	N/A	N/A	103' - 4"	34	9"	24' - 9"	11"	142,704
MK4	122' - 11 15/16"	3"	15	3' - 6"	1' - 3 15/16"	1' - 8"	60	98' - 4"	10"	15	11' - 8"	N/A	N/A	91' - 3"	42	9"	30' - 9"	11 15/16"	136,014
MK5	117' - 6 9/16"	3"	15	3' - 6"	10 9/16"	1' - 8"	54	88' - 4"	10"	21	16' - 8"	N/A	N/A	80' - 11"	48	9"	35' - 3"	1' - 4 9/16"	129,938
MK6	112' - 8 3/4"	3"	15	3' - 6"	1' - 4 3/4"	1' - 8"	51	83' - 4"	9"	23	16' - 6"	N/A	N/A	72' - 0"	54	9"	39' - 9"	11 3/4"	124,566
MK7	108' - 7 1/2"	3"	15	3' - 6"	1' -1 1/2"	1' - 6"	50	73' - 6"	8"	35	22' - 8"	N/A	N/A	64' - 5"	59	9"	43' - 6"	8 1/2"	119,992
MK8	105' - 3 7/8"	3"	15	3' - 6"	1' - 1 7/8"	1' - 6"	46	67' - 6"	8"	39	25' - 4"	N/A	N/A	57' - 11"	63	9"	46' - 6"	10 7/8"	116,310
MK9	102' - 10 13/16"	3"	15	3' - 6"	1' - 4 13/16"	1' - 6"	46	67' - 6"	8"	35	22' - 8"	N/A	N/A	52' - 6"	67	9"	49' - 6"	10 13/16"	113,606
MK10	101' - 5"	3"	11	2' - 6"	1' - 3"	1' - 6"	53	78' - 0"	10"	16	12' - 6"	40' - 8 1/2"	20' - 0"	48' - 0"	71	9"	52' - 6"	11"	111,953
MK11	100' - 11"	3"	11	2' - 6"	9"	1' - 6"	53	78' - 0"	10"	16	12' - 6"	40' - 5 1/2"	20' - 0"	44' - 3"	75	9"	55' - 6"	1' - 2"	111,397
MK12	100' - 11"	3"	11	2' - 6"	9"	1' - 6"	53	78' - 0"	10"	16	12' - 6"	40' - 5 1/2"	20' - 0"	40' - 0"	81	9"	60' - 0"	11"	111,397
MK13	100' - 11"	3"	11	2' - 6"	1' - 1"	1' - 2"	69	79' - 4"	10"	14	10' - 10"	40' - 5 1/2"	20' - 0"	35' - 9"	86	9"	63' - 9"	1 ' - 5"	111,397
MK14	100' - 11"	3"	11	2' - 6"	1' - 1"	1' - 2"	69	79' - 4"	10"	14	10' - 10"	40' - 5 1/2"	20' - 0"	31' - 5"	86	9"	63' - 9"	5 ' - 9"	111,397
MK15	100' - 11"	3"	11	2' - 6"	1' - 1"	1' - 2"	69	79' - 4"	10"	14	10' - 10"	40' - 5 1/2"	20' - 0"	27' - 2"	86	9"	63' - 9"	10' - 0"	111,397
MK16	100' - 11"	3"	11	2' - 6"	1' - 1"	1' - 2"	69	79' - 4"	10"	14	10' - 10"	40' - 5 1/2"	20' - 0"	22' - 10"	86	9"	63' - 9"	14' - 4"	111,397
MK17	100' - 11"	3"	11	2' - 6"	11 1/2"	1' - 2"	79	91' - 0"	5 3/4"	0	0' - 0"	40' - 5 1/2"	20' - 0"	18' - 7"	86	9"	63' - 9"	18 ' - 7"	111,397



TOP FLANGE BLOCK OUT DETAIL

NOTE:

SEE SHEET 20/45 FOR FRAMING PLAN.

DESIGN AGENCY: Palmer ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

PRECAST PRESTRESSED CONCRETE I-BEAM

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599

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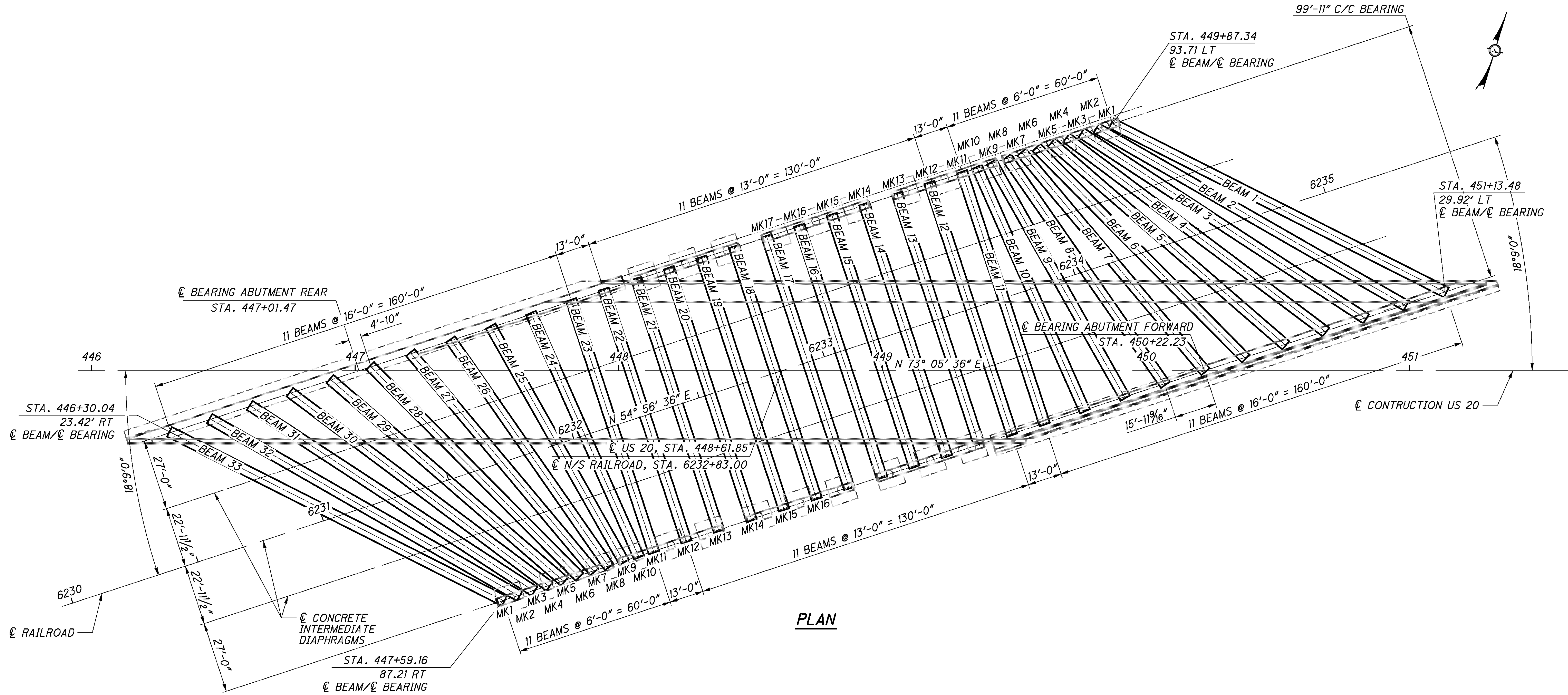


PLAN

NOTES:

1) INTERMEDIATE DIAPHRAGMS: INTERMEDIATE DIAPHRAGMS SHALL BE CIP CONCRETE ONLY. DO NOT PLACE THE DECK CONCRETE UNTIL ALL INTERMEDIATE DIAPHRAGMS HAVE BEEN PROPERLY INSTALLED. COMPLETE THE INSTALLATION OF THE CONCRETE INTERMEDIATE DIAPHRAGMS AT LEAST 48 HOURS BEFORE DECK PLACEMENT BEGINS. CONCRETE SHALL CONFORM TO C&MS 511, CLASS 2 QC CONCRETE WITH QC/QA WITH A DESIGN STRENGTH OF 4.5 KSI.

2) INTERMEDIATE DIAPHRAGM THREADED INSERT BARS ARE TO BE FURNISHED STRAIGHT AND FIELD BENT AFTER INSTALLATION. PROCEDURES FOR FIELD BENDING SHALL PREVENT DAMAGE OR DISTRESS TO BEAM AND THREADED INSERT.

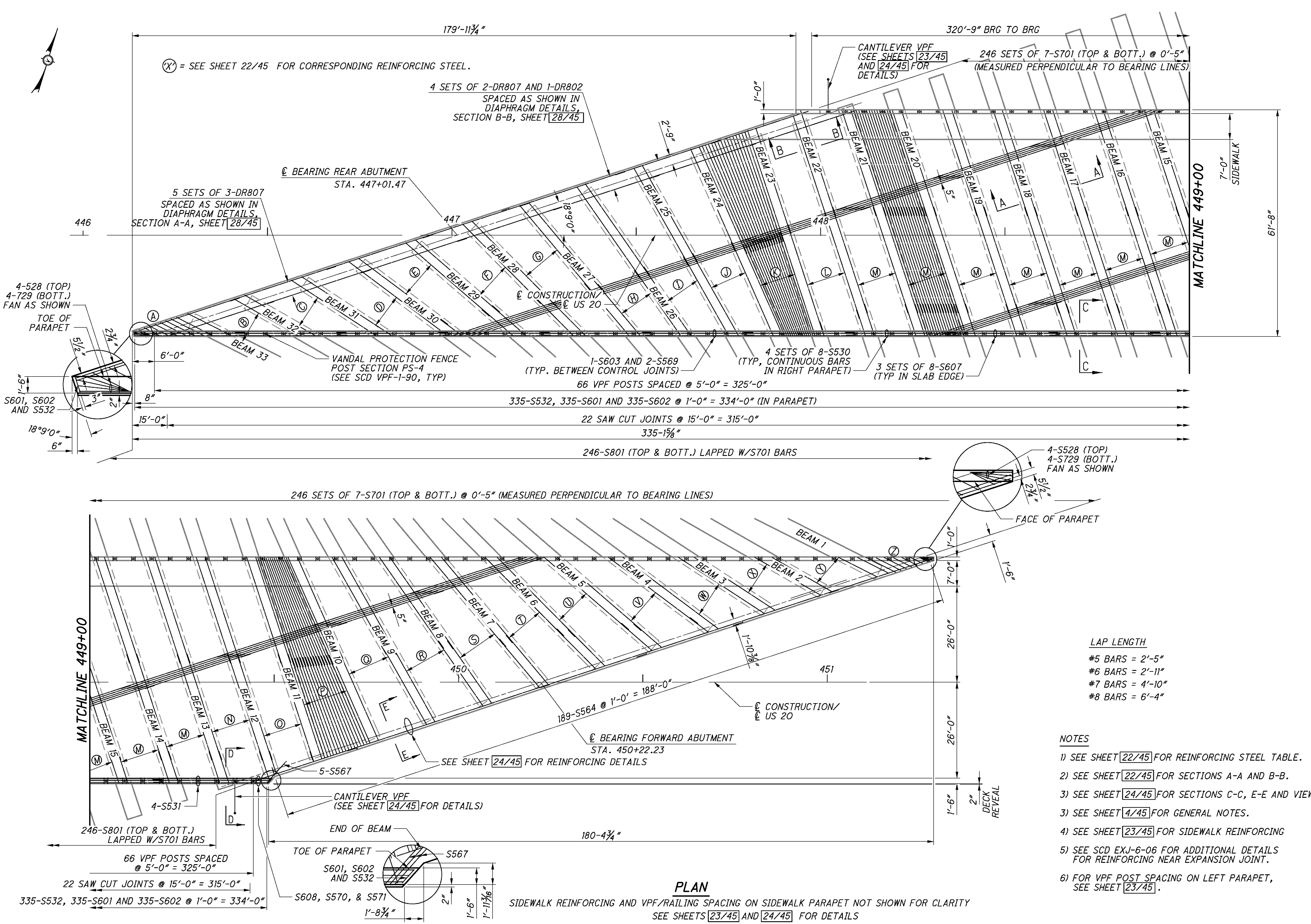
3) MK# INDICATES BEAM MARK AND LOCATION OF BEAM MARK. SEE SHEET 18/45 AND 19/45 FOR BEAM DETAILS.

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

FRAMING PLAN
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



PLAN

SIDEWALK REINFORCING AND VPF/RAILING SPACING ON SIDEWALK PARAPET NOT SHOWN FOR CLARITY
SEE SHEETS 23/45 AND 24/45 FOR DETAILS

LAP LENGTH

#5 BARS = 2'-5"
#6 BARS = 2'-11"
#7 BARS = 4'-10"
#8 BARS = 6'-4"

NOTES

1) SEE SHEET 22/45 FOR REINFORCING STEEL TABLE.
2) SEE SHEET 22/45 FOR SECTIONS A-A AND B-B.
3) SEE SHEET 24/45 FOR SECTIONS C-C, E-E AND VIEW D-D.
3) SEE SHEET 4/45 FOR GENERAL NOTES.
4) SEE SHEET 23/45 FOR SIDEWALK REINFORCING
5) SEE SCD EXJ-6-06 FOR ADDITIONAL DETAILS FOR REINFORCING NEAR EXPANSION JOINT.
6) FOR VPF POST SPACING ON LEFT PARAPET, SEE SHEET 23/45.

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DESIGN AGENCY
PALMER ENGINEERING 460 WHITE POND DR - SUITE 300 AKRON, OHIO 44320
WINCHESTER ▪ NASHVILLE ▪ LOUISVILLE ▪ CINCINNATI ▪ AKRON ▪ HURRICANE ▪ ORLANDO
DESIGNED CEJ | DRAWN SDW | REVIEWED MLJ | DATE 3/26/14
CHECKED HJS | REVISED | STRUCTURE FILE NUMBER 0402265

DECK PLAN
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

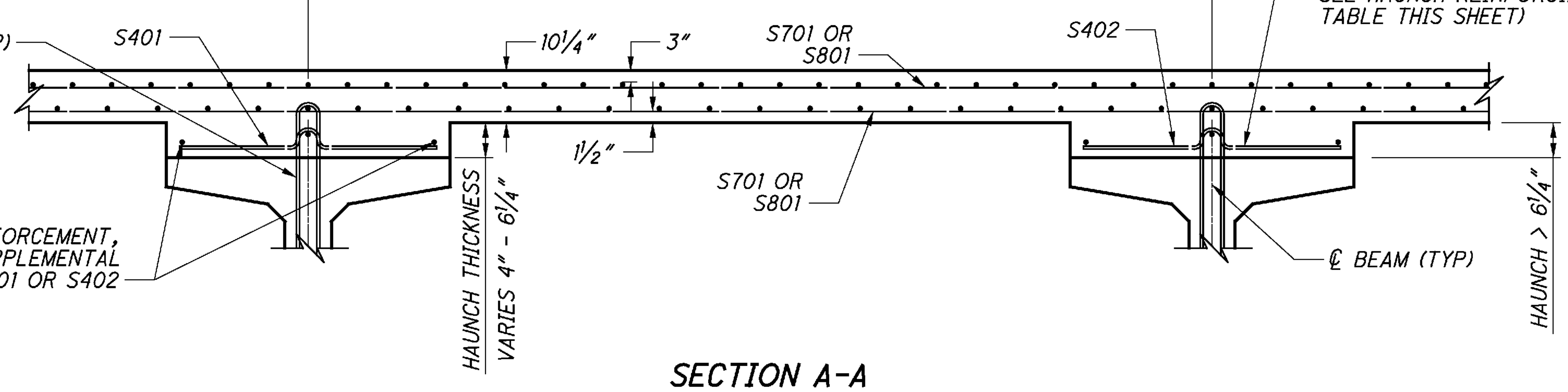
ATB-20-21.43
PID No. 83599

NOTES

1) SEE SHEET 21/45 FOR DECK PLAN AND SECTION LOCATIONS.

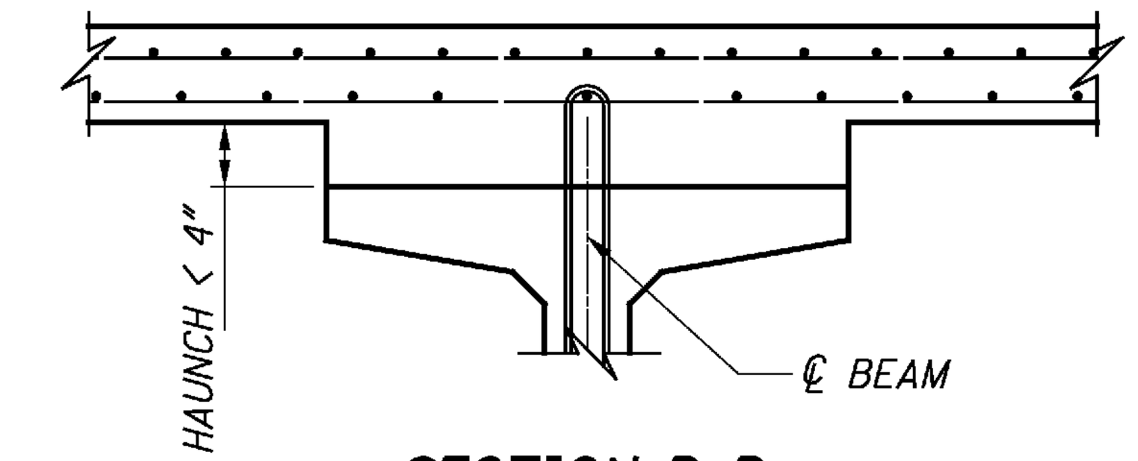
2) SEE SHEET 4/45 FOR GENERAL NOTES.

3) LONGITUDINAL DECK REINFORCING SERIES START AT THE CENTERLINE OF THE BEAM TO THE REAR AND END AT THE LAST BAR BEFORE THE FORWARD BEAM CENTERLINE.



SECTION A-A

SEE SHEET 26/45 AND 27/45 FOR TOP OF HAUNCH ELEVATION TABLE



SECTION B-B

(UNREINFORCED HAUNCH SECTION)

DECK REINFORCING TABLE	
A	1 SERIES OF 8-S501 @ 1'-1" (TOP) 1 SERIES OF 12-S702 @ 0'-9" (BOTTOM)
B	1 SERIES OF 28-S502 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 23-S703 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
C	1 SERIES OF 28-S503 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 23-S704 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
D	1 SERIES OF 28-S504 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 23-S705 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
E	28-S505 BARS W/1 SERIES OF 28-S506 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S707 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
F	28-S505 BARS W/1 SERIES OF 28-S507 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S708 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
G	28-S505 BARS W/1 SERIES OF 28-S508 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S709 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
H	28-S505 BARS W/1 SERIES OF 28-S509 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S710 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
I	28-S505 BARS W/1 SERIES OF 28-S510 (TOP) SPACED EVENLY BETWEEN BEAMS AND 21-S706 W/1 SERIES OF 21-S711 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
J	28-S505 BARS W/1 SERIES OF 28-S511 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S712 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
K	28-S505 BARS W/1 SERIES OF 28-S512 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S713 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
L	2 SETS OF 23-S505 BARS W/1 SERIES OF 23-S513 (TOP) SPACED EVENLY BETWEEN BEAMS AND 2 SETS OF 18-S706 W/1 SERIES OF 18-S714 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
M	2 SETS OF 23-S505 BARS W/23-S514 (TOP) SPACED EVENLY BETWEEN BEAMS AND 2 SETS OF 18-S706 W/18-S715 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
N	2 SETS OF 23-S505 BARS W/1 SERIES OF 23-S515 (TOP) SPACED EVENLY BETWEEN BEAMS AND 2 SETS OF 18-S706 W/1 SERIES OF 18-S718 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
O	2 SETS OF 23-S505 BARS W/1 SERIES OF 23-S516 (TOP) SPACED EVENLY BETWEEN BEAMS AND 2 SETS OF 18-S706 W/1 SERIES OF 18-S717 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
P	28-S505 BARS W/1 SERIES OF 28-S517 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S718 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
Q	28-S505 BARS W/1 SERIES OF 28-S518 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S719 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
R	28-S505 BARS W/1 SERIES OF 28-S519 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S720 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
S	28-S505 BARS W/1 SERIES OF 28-S520 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S723 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
T	28-S505 BARS W/1 SERIES OF 28-S521 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S722 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
U	28-S505 BARS W/1 SERIES OF 28-S522 (TOP) SPACED EVENLY BETWEEN BEAMS AND 21-S706 W/1 SERIES OF 21-S723 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
V	28-S505 BARS W/1 SERIES OF 28-S523 (TOP) SPACED EVENLY BETWEEN BEAMS AND 23-S706 W/1 SERIES OF 23-S724 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
W	1 SERIES OF 28-S524 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 23-S725 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
X	1 SERIES OF 28-S525 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 23-S726 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
Y	1 SERIES OF 29-S526 (TOP) SPACED EVENLY BETWEEN BEAMS 1 SERIES OF 24-S727 (BOTTOM) SPACED EVENLY BETWEEN BEAMS
Z	1 SERIES OF 8-S527 @ 1'-1" (TOP) 1 SERIES OF 12-S728 @ 0'-9" (BOTTOM)

HAUNCH REINFORCING TABLE

	AA	BB	START S401✱	END S401 / START S402✱	END S402 / START S401✱	END S401✱	S5XX
BEAM 1	-	-	-	-	-	-	-
BEAM 2	-	-	-	-	-	-	-
BEAM 3	13	-	119'	-	-	128'	S544
BEAM 4	-	-	-	-	-	-	-
BEAM 5	24	-	100'	-	-	117'	S545
BEAM 6	28	5	87'	108'	112'	-	S546
BEAM 7	25	17	76'	95'	108'	-	S547
BEAM 8	23	27	68'	85'	105'	-	S548
BEAM 9	20	33	62'	77'	102'	-	S549
BEAM 10	19	39	58'	72'	101'	-	S550 W/ S551
BEAM 11	35	25	55'	69'	88'	100'	S550 W/ S552
BEAM 12	36	20	50'	66'	81'	92'	S550 W/ S551
BEAM 13	35	21	46'	61'	77'	88'	S550 W/ S551
BEAM 14	35	24	41'	56'	74'	85'	S550 W/ S552
BEAM 15	35	25	36'	51'	70'	81'	S550 W/ S552
BEAM 16	32	29	32'	45'	67'	78'	S550 W/ S553
BEAM 17	33	29	27'	41'	63'	74'	S550 W/ S553
BEAM 18	32	28	25'	38'	59'	70'	S550 W/ S552
BEAM 19	33	28	21'	34'	55'	67'	S550 W/ S553
BEAM 20	33	29	16'	29'	51'	63'	S550 W/ S553
BEAM 21	33	24	13'	27'	45'	56'	S550 W/ S551
BEAM 22	36	23	10'	24'	41'	54'	S550 W/ S552
BEAM 23	33	20	7'	20'	35'	47'	S549
BEAM 24	31	29	0'	11'	33'	45'	S550 W/ S552
BEAM 25	25	36	0'	5'	32'	46'	S550 W/ S553
BEAM 26	20	37	-	0'	28'	43'	S550 W/ S551
BEAM 27	23	31	-	0'	23'	40'	S549
BEAM 28	27	23	-	0'	17'	37'	S548
BEAM 29	33	11	-	0'	8'	33'	S554
BEAM 30	30	-	0'	-	-	22'	S555
BEAM 31	29	3	-	0'	2'	24'	S556
BEAM 32	17	-	0'	-	-	12'	S557
BEAM 33	-	-	-	-	-	-	-

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED CEJ | CHECKED HJS | DRAWN SDW | REVISED | REVIEWED MLJ | DATE 3/26/14 | STRUCTURE FILE NUMBER 0402265

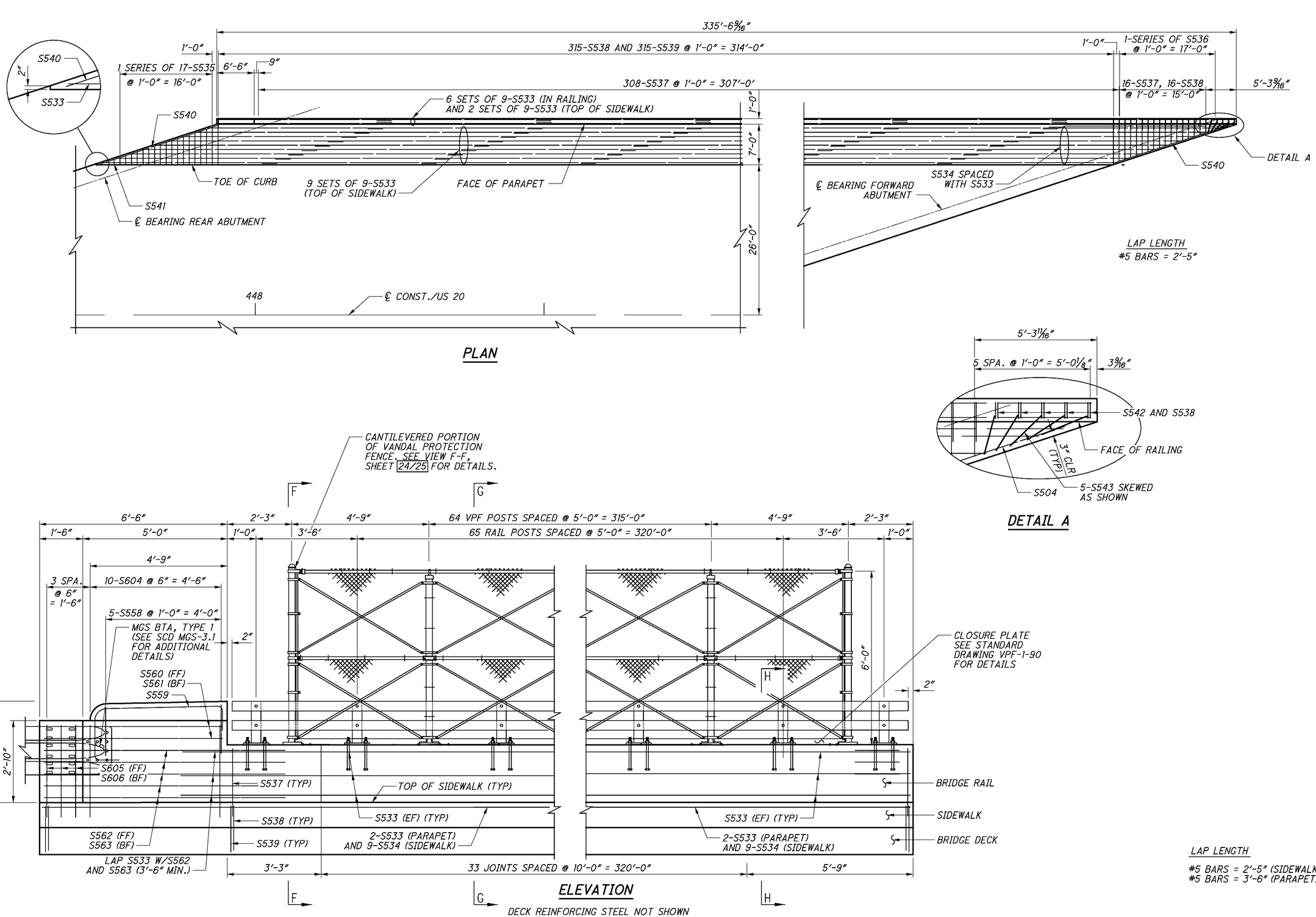
DECK REINFORCING DETAILS

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599



LAP LENGTH

#5 BARS = 2'-5" (SIDEWALK)
#5 BARS = 3'-6" (PARAPET)

LEGEND:
EF = EACH FACE
FF = FRONT FACE
BF = BACK FACE

NOTE:

1) SEE SHEET 24/45 FOR SECTIONS G-G AND H-H, AND VIEW F-F.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
HJS		0402265	

DECK PLAN - SIDEWALK DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

23 / 45

144 / 189

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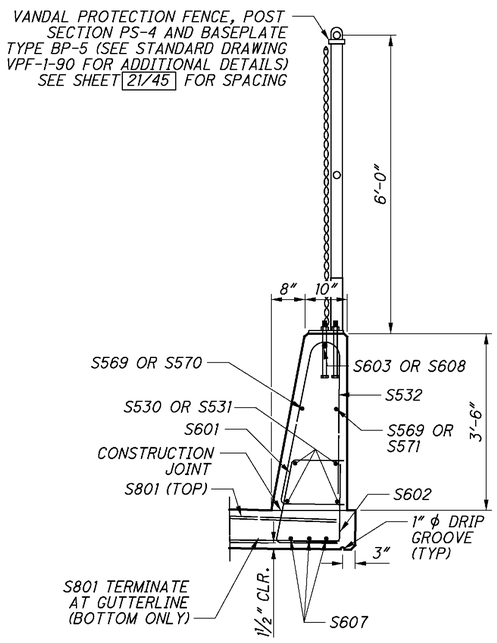
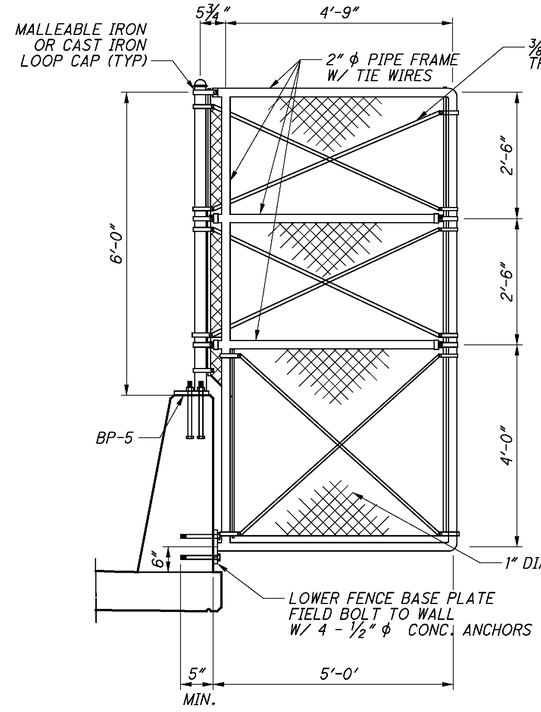
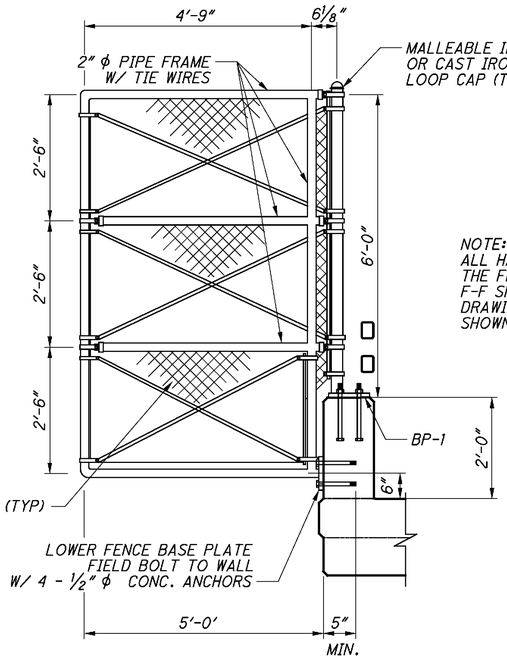


SECTION C-C



VIEW D-D

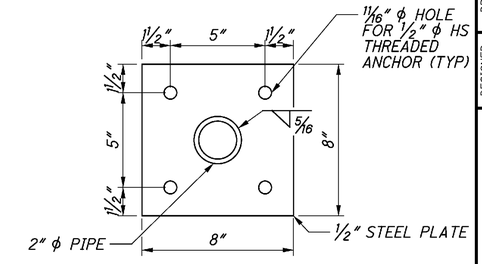
SEE STD DWG VPF-1-90 FOR ADDITIONAL DETAILS
(PARAPET AND DECK REINFORCEMENT NOT SHOWN)



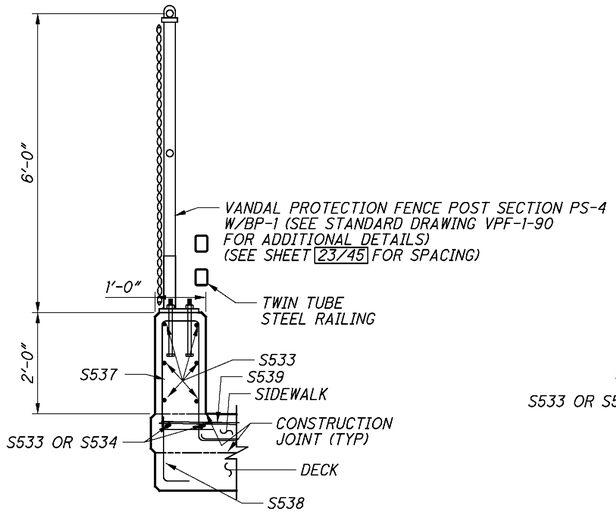
VIEW F-F

(SEE STD DWG VPF-1-90 FOR ADDITIONAL DETAILS)
(PARAPET AND DECK REINFORCEMENT NOT SHOWN)

NOTE:
ALL HARDWARE AND FENCE COMPONENTS FOR THE FENCE SECTIONS SHOWN IN VIEWS D-D AND F-F SHALL BE IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 EXCEPT FOR THE DIMENSIONS SHOWN IN THESE VIEWS.

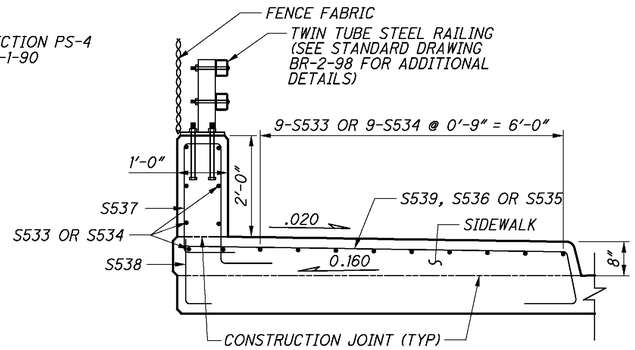


LOWER FENCE BASE PLATE DETAIL



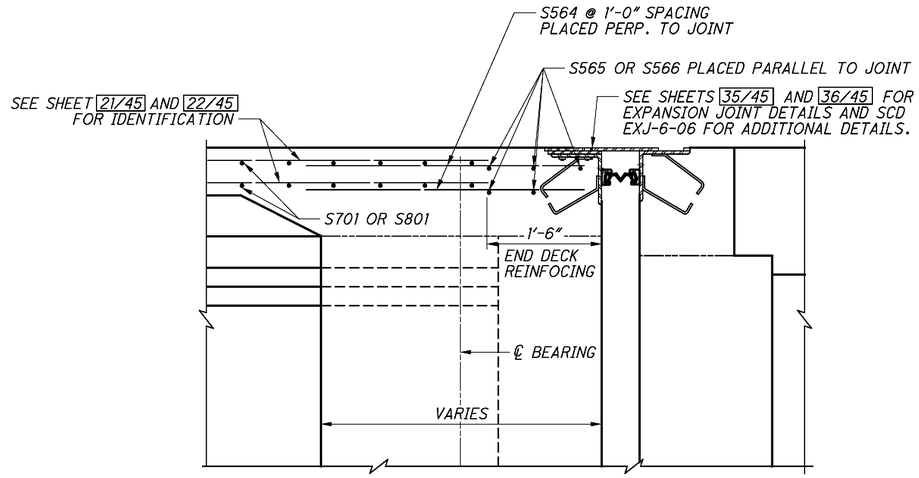
SECTION G-G

(DECK REINFORCING STEEL NOT SHOWN FOR CLARITY)



SECTION H-H

(DECK REINFORCING STEEL NOT SHOWN FOR CLARITY)



SECTION E-E

(SEE SHEETS 31/45 THRU 33/45 FOR DIAPHRAGM DETAILS)
(SEE SHEETS 12/45 THRU 13/45 FOR ABUTMENT DETAILS)

NOTE:
1) ALL MATERIALS AND LABOR ASSOCIATED WITH THE CONSTRUCTION OF THE VANDAL PROTECTION FENCE SHOWN IN VIEW D-D AND VIEW E-E SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 607 - VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN.

LEGEND:
EF = EACH FACE
FF = FRONT FACE
BF = BACK FACE

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

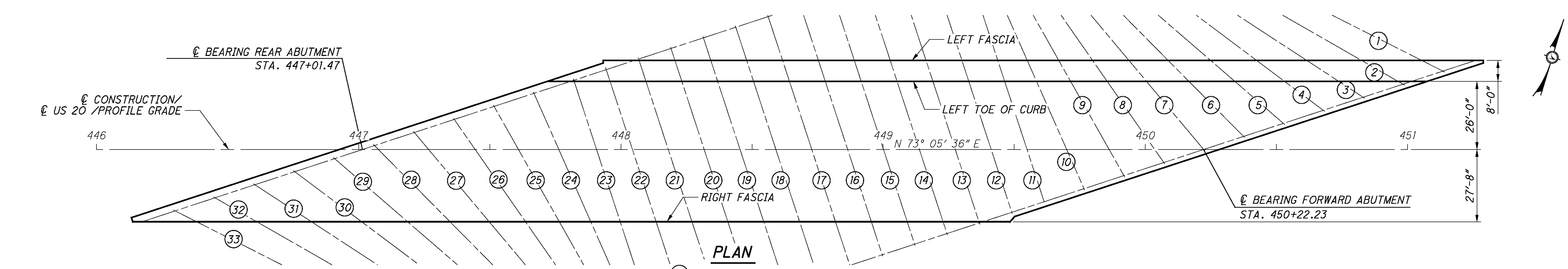
DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
HJS		0402265	

DECK PLAN - SECTION DETAILS

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

24/45
145/189



PLAN

(XX) = BEAM NUMBER

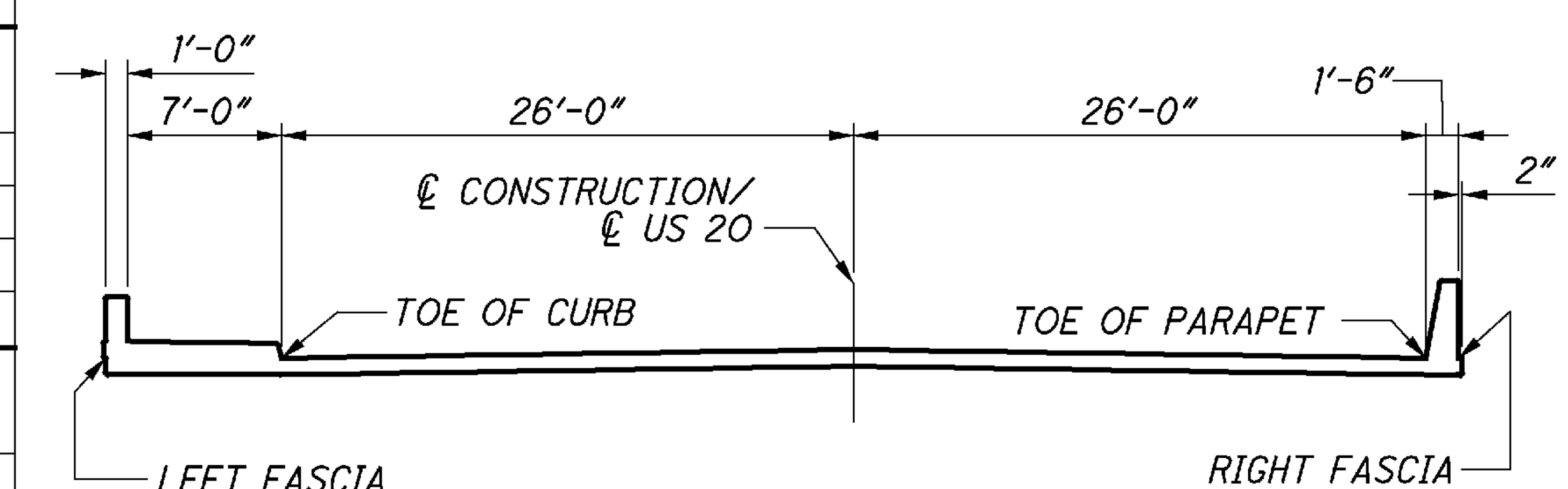
	LOCATION	CL BEARING REAR ABUT.	BEAM 21	BEAM 20	BEAM 19	BEAM 18	BEAM 17	BEAM 16	BEAM 15	BEAM 14	BEAM 13	BEAM 12	BEAM 11
LEFT FASCIA	STATION	448+05.19	448+06.96	448+20.64	448+34.32	448+48.00	448+61.68	448+75.36	448+89.05	449+02.73	449+16.41	449+30.09	449+43.77
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.00	0.02	0.03	0.05	0.07	0.08	0.09	0.10	0.10	0.10	0.09
	FINAL DECK ELEVATION	730.98	730.97	730.98	730.98	730.98	730.99	730.98	730.98	730.98	730.97	730.96	730.95
	SCREED ELEVATION	730.98	730.97	731.00	731.01	731.03	731.06	731.06	731.07	731.08	731.07	731.06	731.04
	LOCATION	CL BEARING REAR ABUT.	BEAM 23	BEAM 22	BEAM 21	BEAM 20	BEAM 19	BEAM 18	BEAM 17	BEAM 16	BEAM 15	BEAM 14	BEAM 13
LEFT TOE OF CURB	STATION	447+80.79	447+82.22	447+95.90	448+09.58	448+23.26	448+36.94	448+50.63	448+64.31	448+77.99	448+91.67	449+05.35	449+19.03
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.00	0.02	0.03	0.05	0.06	0.08	0.09	0.10	0.11	0.11	0.11
	FINAL DECK ELEVATION	731.09	731.08	731.09	731.10	731.11	731.11	731.11	731.12	731.11	731.11	731.11	731.10
	SCREED ELEVATION	731.09	731.08	731.11	731.13	731.16	731.17	731.19	731.21	731.21	731.21	731.22	731.21
	LOCATION	CL BEARING REAR ABUT.	BEAM 28	BEAM 27	BEAM 26	BEAM 25	BEAM 24	BEAM 23	BEAM 22	BEAM 21	BEAM 20	BEAM 19	BEAM 18
PROFILE GRADE	STATION	447+01.47	447+07.55	447+26.71	447+44.46	447+60.97	447+76.36	447+90.75	448+04.43	448+18.11	448+31.79	448+45.47	448+59.15
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.01	0.03	0.05	0.06	0.06	0.08	0.09	0.10	0.12	0.12	0.13
	FINAL DECK ELEVATION	731.39	731.40	731.43	731.45	731.47	731.49	731.50	731.51	731.52	731.53	731.53	731.53
	SCREED ELEVATION	731.39	731.41	731.46	731.50	731.53	731.55	731.58	731.60	731.62	731.65	731.65	731.66
	LOCATION	CL BEARING REAR ABUT.	BEAM 33	BEAM 32	BEAM 31	BEAM 30	BEAM 29	BEAM 28	BEAM 27	BEAM 26	BEAM 25	Midspan	BEAM 24
RIGHT FASCIA	STATION	446+17.58	446+38.12	446+61.06	446+81.95	447+01.07	447+18.62	447+34.80	447+49.75	447+63.62	447+76.51	447+77.97	447+88.53
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.01	0.04	0.06	0.08	0.09	0.10	0.10	0.10	0.10	0.10	0.09
	FINAL DECK ELEVATION	730.78	730.82	730.87	730.91	730.95	730.98	731.00	731.02	731.04	731.05	731.05	731.06
	SCREED ELEVATION	730.78	730.83	730.91	730.97	731.03	731.07	731.10	731.12	731.14	731.15	731.15	731.15

NOTES:

1) FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.

2) SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

3) FOR TOP OF HAUNCH ELEVATIONS SEE SHEET 26/45 AND 27/45.



	LOCATION												
	LOCATION	BEAM 10	Midspan	BEAM 9	BEAM 8	BEAM 7	BEAM 6	BEAM 5	BEAM 4	BEAM 3	BEAM 2	BEAM 1	CL BEARING FORWARD ABUT.	
LEFT FASCIA	STATION	449+55.00	449+65.57	449+67.01	449+79.91	449+93.77	450+08.73	450+24.9	450+42.46	450+61.57	450+82.47	451+05.41	451+25.94	
	ANTICIPATED DEAD LOAD DEFLECTION	0.09	0.10	0.10	0.10	0.10	0.10	0.09	0.08	0.06	0.04	0.01	0.00	
	FINAL DECK ELEVATION	730.94	730.92	730.92	730.91	730.89	730.87	730.84	730.81	730.77	730.72	730.67	730.63	
	SCREED ELEVATION	731.03	731.02	731.02	731.01	730.99	730.97	730.93	730.89	730.83	730.76	730.68	730.63	
	LOCATION	BEAM 12	Midspan	BEAM 11	BEAM 10	BEAM 9	BEAM 8	BEAM 7	BEAM 6	BEAM 5	BEAM 4	BEAM 3	BEAM 2	CL BEARING FORWARD ABUT.
LEFT TOE OF CURB	STATION	449+32.71	449+41.16	449+46.39	449+58.54	449+71.54	449+85.48	450+00.00	450+16.65	450+34.15	450+53.14	450+73.82	450+96.42	451+01.54
	ANTICIPATED DEAD LOAD DEFLECTION	0.11	0.10	0.10	0.09	0.10	0.10	0.09	0.08	0.07	0.05	0.03	0.00	0.00
	FINAL DECK ELEVATION	731.09	731.08	731.07	731.06	731.04	731.03	731.01	730.98	730.95	730.92	730.87	730.82	730.81
	SCREED ELEVATION	731.19	731.18	731.17	731.15	731.14	731.13	731.10	731.07	731.02	730.97	730.90	730.82	730.81
	LOCATION	Midspan	BEAM 17	BEAM 16	BEAM 15	BEAM 14	BEAM 13	BEAM 12	BEAM 11	BEAM 10	BEAM 9	BEAM 8	CL BEARING FORWARD ABUT.	
PROFILE GRADE	STATION	448+61.85	448+72.87	448+86.51	449+00.19	449+13.87	449+27.55	449+41.23	449+54.91	449+70.04	449+86.23	450+03.59	450+22.23	
	ANTICIPATED DEAD LOAD DEFLECTION	0.13	0.12	0.12	0.12	0.11	0.09	0.08	0.06	0.05	0.04	0.02	0.00	
	FINAL DECK ELEVATION	731.53	731.53	731.53	731.52	731.52	731.51	731.50	731.48	731.47	731.44	731.42	731.39	
	SCREED ELEVATION	731.66	731.65	731.65	731.64	731.63	731.60	731.58	731.54	731.52	731.48	731.44	731.39	
	LOCATION	BEAM 23	BEAM 22	BEAM 21	BEAM 20	BEAM 19	BEAM 18	BEAM 17	BEAM 16	BEAM 15	BEAM 14	BEAM 13	CL BEARING FORWARD ABUT.	
RIGHT FASCIA	STATION	447+99.76	448+13.44	448+27.12	448+40.80	448+54.48	448+68.16	448+81.84	448+95.52	449+09.20	449+22.89	449+36.57	449+38.35	
	ANTICIPATED DEAD LOAD DEFLECTION	0.09	0.10	0.10	0.10	0.09	0.08	0.07	0.05	0.03	0.02	0.00	0.00	
	FINAL DECK ELEVATION	731.07	731.08	731.08	731.09	731.09	731.09	731.09	731.08	731.08	731.07	731.06	731.06	
	SCREED ELEVATION	731.16	731.18	731.18	731.19	731.18	731.17	731.16	731.13	731.11	731.09	731.06	731.06	

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

DECK ELEVATIONS

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599

TOP OF HAUNCH ELEVATIONS

BEAM 1	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	7/10	8/10	9/10	LEFT FASCIA	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	-	-	-	729.85	729.87	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	-	-	-	0.82	1.89	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	-	-	-	11.07	12.14	-	-
BEAM 2	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	7/10	8/10	LEFT FASCIA	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	-	-	730.02	730.02	729.98	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	-	-	1.91	2.18	3.21	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	-	-	12.16	12.43	13.46	-	-
BEAM 2	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	7/10	LEFT FASCIA	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	-	730.18	730.18	730.14	730.09	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	-	3.16	3.16	3.68	4.53	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	-	13.41	13.41	13.93	14.78	-	-
BEAM 4	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	7/10	LEFT FASCIA	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	-	730.28	730.29	730.26	730.21	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	-	2.10	2.54	3.07	3.97	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	-	12.35	12.79	13.32	14.22	-	-
BEAM 5	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	LEFT FASCIA	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	730.35	730.36	730.37	730.35	730.32	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	2.59	2.75	3.55	4.29	5.29	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	12.84	13.00	13.80	14.54	15.54	-	-
BEAM 6	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	6/10	LEFT FASCIA	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	-	730.38	730.42	730.45	730.44	730.43	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	-	2.31	3.14	4.22	5.28	6.61	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	-	12.56	13.39	14.47	15.53	16.86	-	-
BEAM 7	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	LEFT FASCIA	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	730.39	730.40	730.48	730.52	730.53	730.54	-	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	2.32	2.50	3.88	5.11	6.39	7.93	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	12.57	12.75	14.13	15.36	16.64	18.18	-	-
BEAM 8	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	LEFT FASCIA	6/10	7/10	8/10	9/10	PROF. GRADE	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	730.39	730.46	730.54	730.59	730.62	730.63	730.48	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	2.28	3.20	4.66	6.02	7.47	8.19	7.21	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	12.53	13.45	14.91	16.27	17.72	18.44	17.46	-
BEAM 9	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	1/2	LEFT FASCIA	6/10	7/10	8/10	PROF. GRADE	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	-	730.38	730.50	730.59	730.66	730.69	730.67	730.43	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	-	2.19	3.83	5.38	6.89	8.29	8.08	6.61	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	-	12.44	14.08	15.63	17.14	18.54	18.33	16.86	-
BEAM 10	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	LEFT FASCIA	1/2	6/10	7/10	8/10	PROF. GRADE	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	730.35	730.40	730.53	730.63	730.72	730.74	730.60	730.37	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	2.13	2.67	4.30	5.94	7.65	8.36	7.30	5.89	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	12.38	12.92	14.55	16.19	17.90	18.61	17.55	16.14	-
BEAM 11	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	4/10	LEFT FASCIA	1/2	6/10	7/10	PROF. GRADE	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	-	-	-	-	-	730.37	730.48	730.61	730.72	730.79	730.77	730.54	730.31	-
	HAUNCH THICKNESS (IN)	-	-	-	-	-	2.09	3.18	4.74	6.29	7.74	7.54	5.72	4.17	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	-	12.34	13.43	14.99	16.54	17.99	17.79	15.97	14.42	-
BEAM 12	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	LEFT FASCIA	4/10	1/2	6/10	7/10	PROF. GRADE	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	-	-	-	-	730.40	730.42	730.58	730.71	730.82	730.86	730.74	730.49	730.25	-
	HAUNCH THICKNESS (IN)	-	-	-	-	2.64	2.81	4.42	5.96	7.48	8.23	7.12	5.14	3.45	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	12.89	13.06	14.67	16.21	17.73	18.48	17.37	15.39	13.70	-
BEAM 13	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	LEFT FASCIA	4/10	1/2	6/10	7/10	PROF. GRADE	8/10	9/10	RIGHT FASCIA	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	-	-	730.39	730.50	730.66	730.79	730.89	730.90	730.68	730.44	730.21	-
	HAUNCH THICKNESS (IN)	-	-	-	-	2.19	3.04	4.57	6.05	7.51	7.59	5.56	3.58	1.97	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	12.44	13.29	14.82	16.30	17.76	17.84	15.81	13.83	12.22	-
BEAM 14	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	LEFT FASCIA	4/10	1/2	6/10	PROF. GRADE	7/10	8/10	9/10	RIGHT FASCIA	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	-	-	730.39	730.58	730.74	730.87	730.93	730.86	730.63	730.39	730.26	-
	HAUNCH THICKNESS (IN)	-	-	-	-	2.15	3.72	5.29	6.80	7.76	6.95	4.84	2.89	2.01	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	-	12.40	13.97	15.54	17.05	18.01	17.20	15.09	13.14	12.26	-
BEAM 15	LOCATION	CL BRG REAR ABUT.	1/10	2/10	LEFT FASCIA	3/10	4/10	1/2	6/10	PROF. GRADE	7/10	8/10	9/10	RIGHT FASCIA	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	-	730.36	730.45	730.64	730.80	730.93	730.95	730.79	730.57	730.33	730.31	-
	HAUNCH THICKNESS (IN)	-	-	-	2.23	2.88	4.50	6.06	7.60	7.89	6.20	4.15	2.25	2.08	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	12.48	13.13	14.75	16.31	17.85	18.14	16.45	14.40	12.50	12.33	-
BEAM 16	LOCATION	CL BRG REAR ABUT.	1/10	2/10	LEFT FASCIA	3/10	4/10	1/2	PROF. GRADE	6/10	7/10	8/10	RIGHT FASCIA	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	-	730.33	730.52	730.71	730.87	730.98	730.93	730.73	730.51	730.35	-	-
	HAUNCH THICKNESS (IN)	-	-	-	2.29	3.65	5.29	6.88	8.09	7.60	5.47	3.39	2.09	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	-	12.54	13.90	15.54	17.13	18.34	17.85	15.72	13.64	12.34	-	-
BEAM 17	LOCATION	CL BRG REAR ABUT.	1/10	LEFT FASCIA	2/10	3/10	4/10	1/2	PROF. GRADE	6/10	7/10	8/10	RIGHT FASCIA	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	730.30	730.36	730.58	730.77	730.93	730.97	730.86	730.67	730.45	730.39	-	-
	HAUNCH THICKNESS (IN)	-	-	2.44	2.81	4.42	6.00	7.57	8.11	6.74	4.67	2.66	2.21	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	12.69	13.06	14.67	16.25	17.82	18.36	16.99	14.92	12.91	12.46	-	-

NOTE:
TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE BEAM HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED MLJ | DRAWN SDW | REVIEWED BLF | DATE 3/26/14
CHECKED CEJ | REVISED | STRUCTURE FILE NUMBER 0402265

TOP OF HAUNCH ELEVATIONS - 1 OF 2

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

TOP OF HAUNCH ELEVATIONS

BEAM 18	LOCATION	CL BRG REAR ABUT.	1/10	LEFT FASCIA	2/10	3/10	4/10	PROF. GRADE	1/2	6/10	7/10	RIGHT FASCIA	8/10	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	-	730.25	730.41	730.63	730.83	730.99	730.98	730.82	730.62	730.44	-	-	-
	HAUNCH THICKNESS (IN)	-	-	2.35	3.38	5.03	6.74	8.31	8.15	6.18	4.15	2.48	-	-	-
	TOTAL TOPPING THICKNESS (IN)	-	-	12.60	13.63	15.28	16.99	18.56	18.40	16.43	14.40	12.73	-	-	-
BEAM 19	LOCATION	CL BRG REAR ABUT.	LEFT FASCIA	1/10	2/10	3/10	4/10	PROF. GRADE	1/2	6/10	7/10	RIGHT FASCIA	8/10	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	730.21	730.24	730.47	730.70	730.90	730.98	730.92	730.75	730.56	730.47	-	-	-
	HAUNCH THICKNESS (IN)	-	2.07	2.20	3.77	5.49	7.27	8.13	7.17	5.24	3.25	2.47	-	-	-
	TOTAL TOPPING THICKNESS (IN)	-	12.32	12.45	14.02	15.74	17.52	18.38	17.42	15.49	13.50	12.72	-	-	-
BEAM 20	LOCATION	CL BRG REAR ABUT.	LEFT FASCIA	1/10	2/10	3/10	4/10	PROF. GRADE	1/2	6/10	RIGHT FASCIA	7/10	8/10	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	730.17	730.30	730.54	730.76	730.96	730.97	730.85	730.69	730.50	-	-	-	-
	HAUNCH THICKNESS (IN)	-	2.26	2.95	4.53	6.27	8.04	8.15	6.38	4.45	2.53	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	-	12.51	13.20	14.78	16.52	18.29	18.40	16.63	14.70	12.78	-	-	-	-
BEAM 21	LOCATION	CL BRG REAR ABUT.	LEFT FASCIA	1/10	2/10	3/10	PROF. GRADE	4/10	1/2	6/10	RIGHT FASCIA	7/10	8/10	9/10	CL BRG FOR ABUT.
	TOP OF HAUNCH (FT)	-	730.12	730.35	730.59	730.81	730.94	730.90	730.77	730.61	730.50	-	-	-	-
	HAUNCH THICKNESS (IN)	-	2.36	3.53	5.04	6.71	7.81	7.10	5.16	3.17	2.07	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	-	12.61	13.78	15.29	16.96	18.06	17.35	15.41	13.42	12.32	-	-	-	-
BEAM 22	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	PROF. GRADE	4/10	1/2	6/10	RIGHT FASCIA	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.17	730.41	730.65	730.87	730.91	730.83	730.70	730.54	730.52	-	-	-	-	-
	HAUNCH THICKNESS (IN)	2.49	3.86	5.52	7.32	7.72	6.34	4.57	2.75	2.55	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	12.74	14.11	15.77	17.57	17.97	16.59	14.82	13.00	12.80	-	-	-	-	-
BEAM 23	LOCATION	CL BRG REAR ABUT.	1/10	2/10	PROF. GRADE	3/10	4/10	1/2	RIGHT FASCIA	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.22	730.45	730.69	730.86	730.84	730.73	730.60	730.49	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	3.09	4.42	6.01	7.40	7.00	5.19	3.38	2.11	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	13.34	14.67	16.26	17.65	17.25	15.44	13.63	12.36	-	-	-	-	-	-
BEAM 24	LOCATION	CL BRG REAR ABUT.	1/10	2/10	PROF. GRADE	3/10	4/10	1/2	RIGHT FASCIA	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.29	730.51	730.74	730.81	730.75	730.65	730.52	730.47	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	4.93	6.04	7.43	7.96	6.65	4.75	2.86	2.23	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	15.18	16.29	17.68	18.21	16.90	15.00	13.11	12.48	-	-	-	-	-	-
BEAM 25	LOCATION	CL BRG REAR ABUT.	1/10	PROF. GRADE	2/10	3/10	4/10	RIGHT FASCIA	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.35	730.59	730.79	730.79	730.72	730.63	730.51	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	5.65	6.96	8.30	8.04	6.34	4.59	2.76	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	15.90	17.21	18.55	18.29	16.59	14.84	13.01	-	-	-	-	-	-	-
BEAM 26	LOCATION	CL BRG REAR ABUT.	1/10	PROF. GRADE	2/10	3/10	4/10	RIGHT FASCIA	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.41	730.65	730.73	730.72	730.67	730.59	730.52	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	6.37	7.70	8.24	7.16	5.60	3.95	2.93	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	16.62	17.95	18.49	17.41	15.85	14.20	13.18	-	-	-	-	-	-	-
BEAM 27	LOCATION	CL BRG REAR ABUT.	PROF. GRADE	1/10	2/10	3/10	4/10	RIGHT FASCIA	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.47	730.67	730.67	730.65	730.61	730.53	730.52	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	7.09	8.19	7.81	6.32	4.87	3.26	3.05	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	17.34	18.44	18.06	16.57	15.12	13.51	13.30	-	-	-	-	-	-	-
BEAM 28	LOCATION	CL BRG REAR ABUT.	PROF. GRADE	1/10	2/10	3/10	RIGHT FASCIA	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-
	TOP OF HAUNCH (FT)	730.52	730.57	730.58	730.58	730.55	730.51	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	7.69	8.02	6.74	5.44	4.13	3.14	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	17.94	18.27	16.99	15.69	14.38	13.39	-	-	-	-	-	-	-	-
BEAM 29	LOCATION	CL BRG REAR ABUT.	1/10	2/10	3/10	RIGHT FASCIA	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	730.46	730.49	730.51	730.50	730.49	-	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	6.97	5.72	4.73	3.68	3.48	-	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	17.22	15.97	14.98	13.93	13.73	-	-	-	-	-	-	-	-	-
BEAM 30	LOCATION	CL BRG REAR ABUT.	1/10	2/10	RIGHT FASCIA	3/10	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	730.35	730.40	730.43	730.42	-	-	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	5.65	4.50	3.72	3.13	-	-	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	15.90	14.75	13.97	13.38	-	-	-	-	-	-	-	-	-	-
BEAM 31	LOCATION	CL BRG REAR ABUT.	1/10	2/10	RIGHT FASCIA	3/10	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	730.24	730.29	730.32	730.32	-	-	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	6.33	5.12	4.24	4.24	-	-	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	16.58	15.37	14.49	14.49	-	-	-	-	-	-	-	-	-	-
BEAM 32	LOCATION	CL BRG REAR ABUT.	1/10	RIGHT FASCIA	2/10	3/10	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	730.13	730.17	730.17	-	-	-	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	5.01	3.68	3.30	-	-	-	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	15.26	13.93	13.55	-	-	-	-	-	-	-	-	-	-	-
BEAM 33	LOCATION	CL BRG REAR ABUT.	RIGHT FASCIA	1/10	2/10	3/10	4/10	1/2	6/10	7/10	8/10	9/10	CL BRG FOR ABUT.	-	-
	TOP OF HAUNCH (FT)	730.02	730.00	-	-	-	-	-	-	-	-	-	-	-	-
	HAUNCH THICKNESS (IN)	3.69	2.43	-	-	-	-	-	-	-	-	-	-	-	-
	TOTAL TOPPING THICKNESS (IN)	13.94	12.68	-	-	-	-	-	-	-	-	-	-	-	-

NOTE:
TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE BEAM HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • PARKERSBURG • CHARLESTON

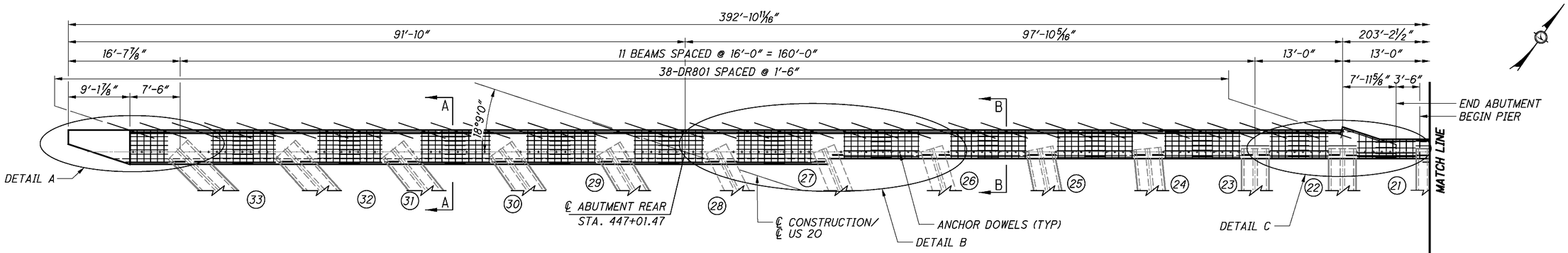
DESIGNED MLJ | DRAWN SDW | REVIEWED BJF | DATE 3/26/14
CHECKED CEJ | REVISED | STRUCTURE FILE NUMBER 0402265

TOP OF HAUNCH ELEVATIONS - 2 OF 2
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

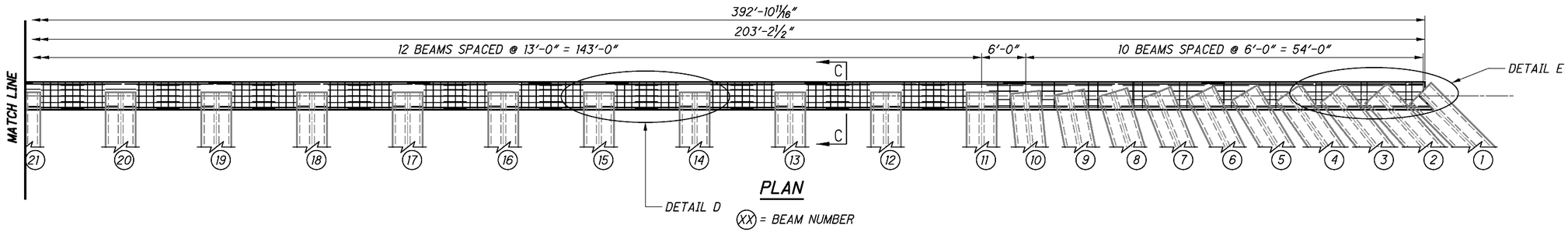
27 / 45

148 / 189



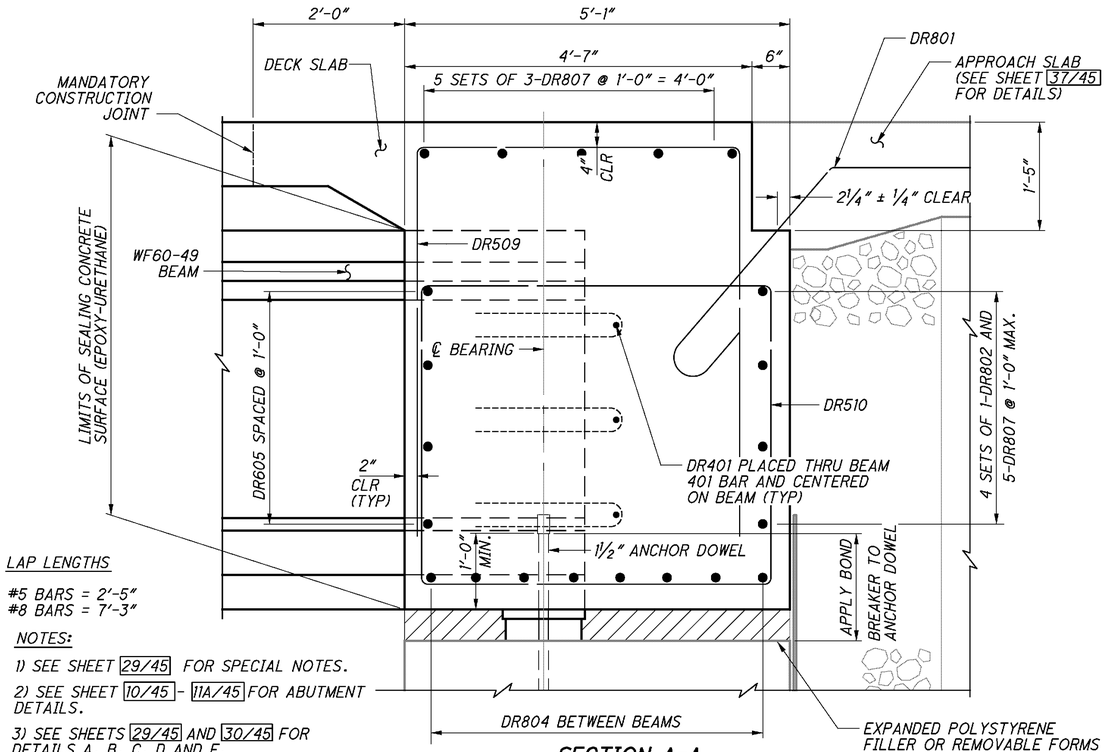
PLAN

(XX) = BEAM NUMBER

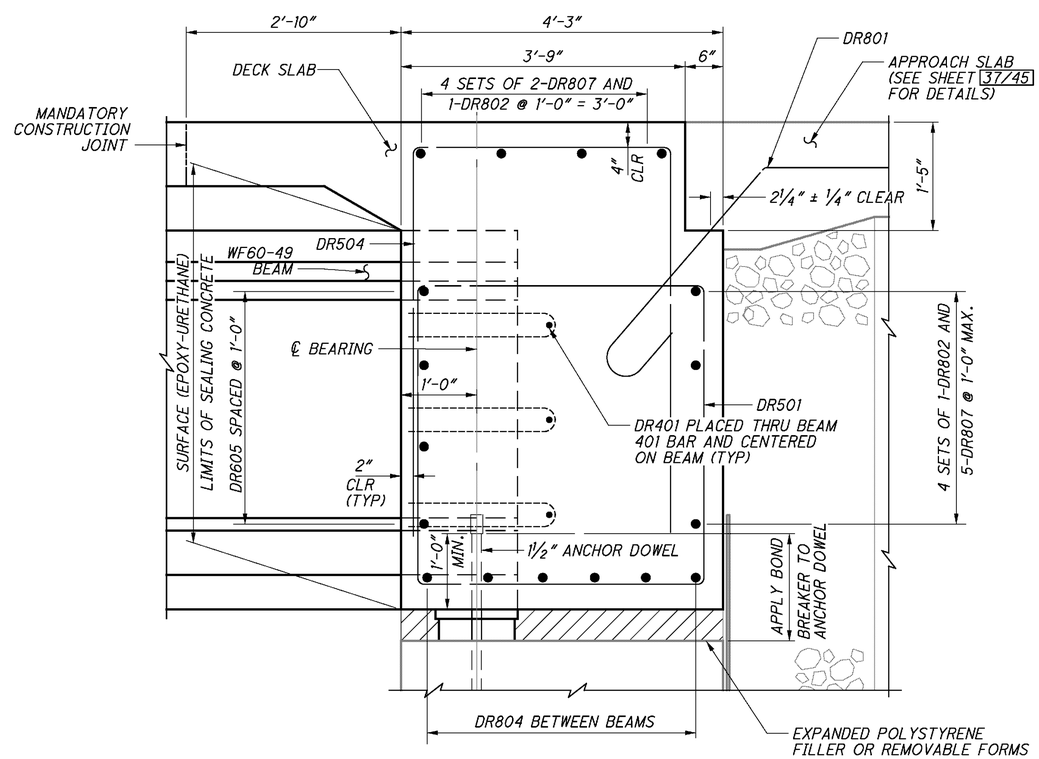


PLAN

(XX) = BEAM NUMBER



SECTION A-A



SECTION B-B

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

NOTES:

1) SEE SHEET 29/45 FOR SPECIAL NOTES.
2) SEE SHEET 10/45 - 11A/45 FOR ABUTMENT DETAILS.
3) SEE SHEETS 29/45 AND 30/45 FOR DETAILS A, B, C, D AND E.
4) SEE SHEET 30/45 FOR SECTION C-C.
5) SEE STANDARD DRAWING PSID-1-13 FOR ANCHOR DOWEL DETAILS. NOTE THAT THE ANCHOR DOWELS SHALL BE 1 1/2" DIAMETER. PAYMENT FOR ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL- STRUCTURE, MISC: FIXED ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

DIAPHRAGM DETAILS - REAR ABUTMENT/PIERS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

28 / 45

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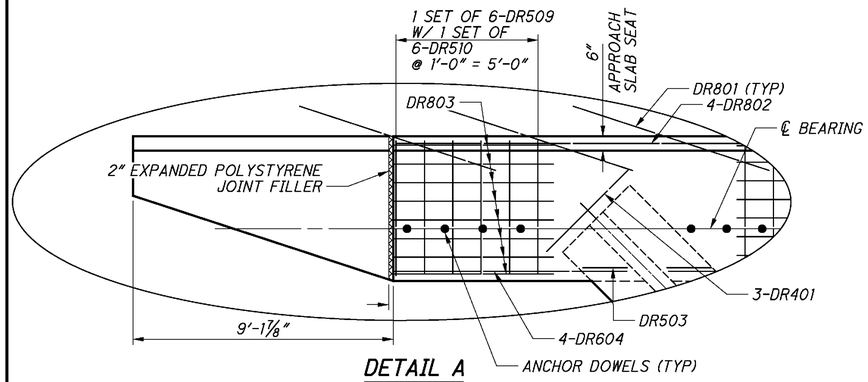
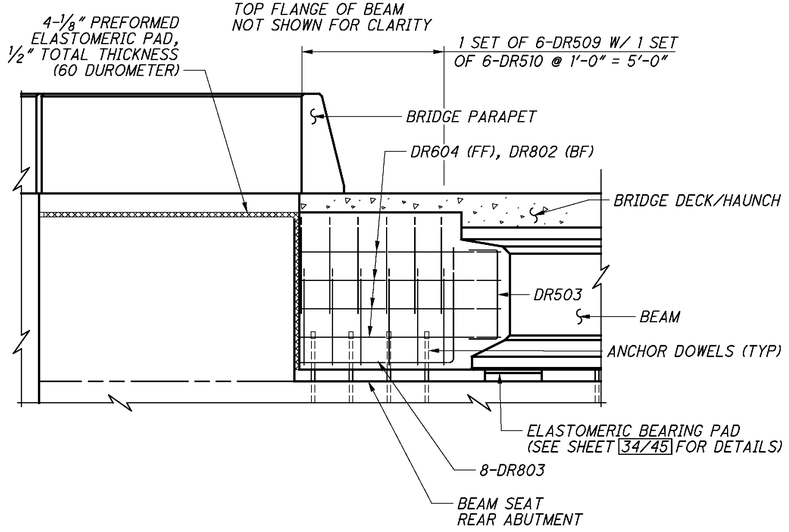
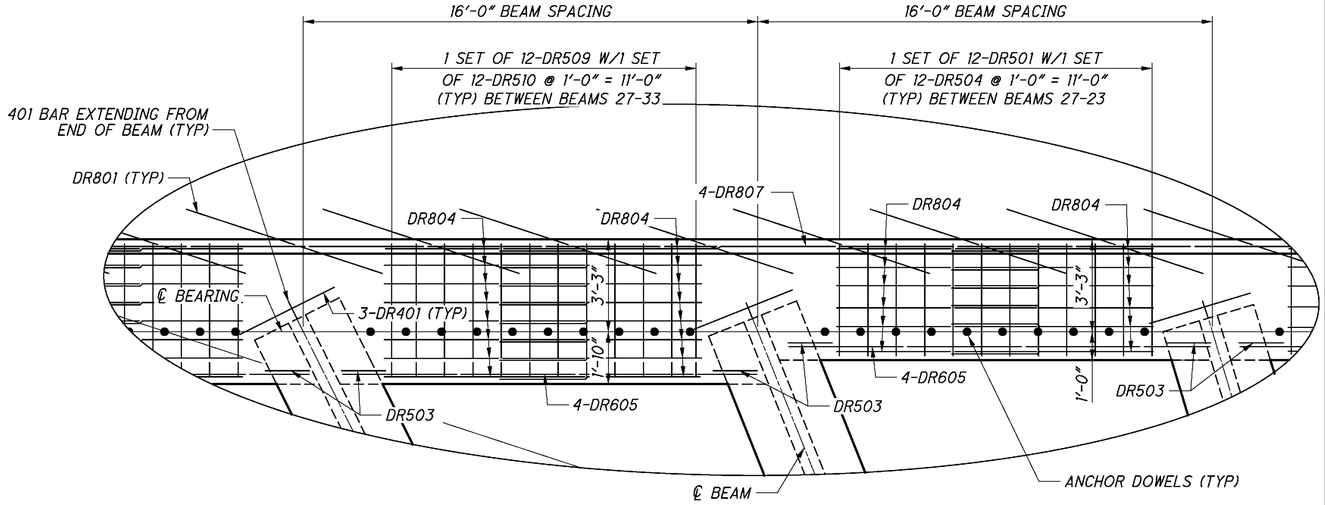


DETAIL A

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY

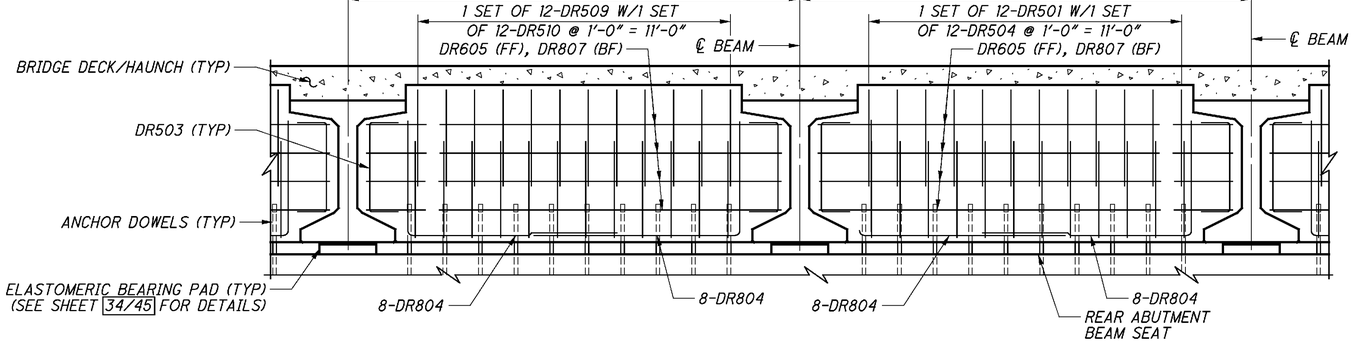


ELEVATION - DETAIL A



DETAIL B

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



ELEVATION - DETAIL B

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

LEGEND

FF = FRONT FACE
BF = BACK FACE

NOTES:

1) PLACE THE DIAPHRAGM CONCRETE ENCASING THE STRUCTURAL MEMBER ENDS AFTER THE DECK PLACEMENT IS COMPLETE. PROCEDURES THAT PLACE THE ABUTMENT DIAPHRAGM WITH THE DECK CONCRETE MAY BE APPROVED BY THE ENGINEER IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE WILL BE PLACED BEFORE THE CONCRETE IN THE DIAPHRAGM HAS REACHED ITS INITIAL SET.

2) FOR ANCHOR DOWEL SPACINGS ON ABUTMENT AND PIERS, SEE SHEET 10/45 AND 15/45.

3) PAYMENT FOR ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL- STRUCTURE, MISC: FIXED ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

4) SEE STANDARD DRAWING PSID-1-13 FOR ANCHOR DOWEL DETAILS. NOTE THAT THE ANCHOR DOWELS SHALL BE 1½" DIAMETER.

DESIGN AGENCY
PALMER ENGINEERING
400 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND • PITTSBURGH

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

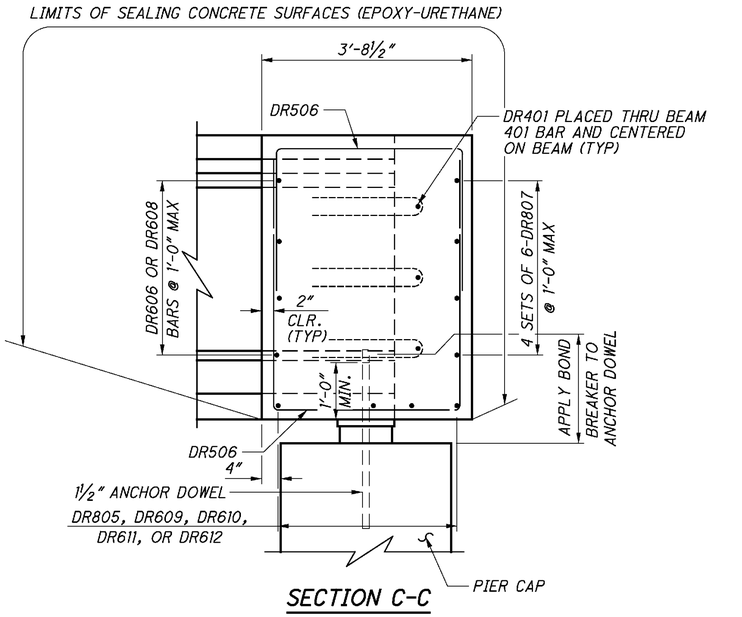
DIAPHRAGM DETAILS - REAR ABUTMENT

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

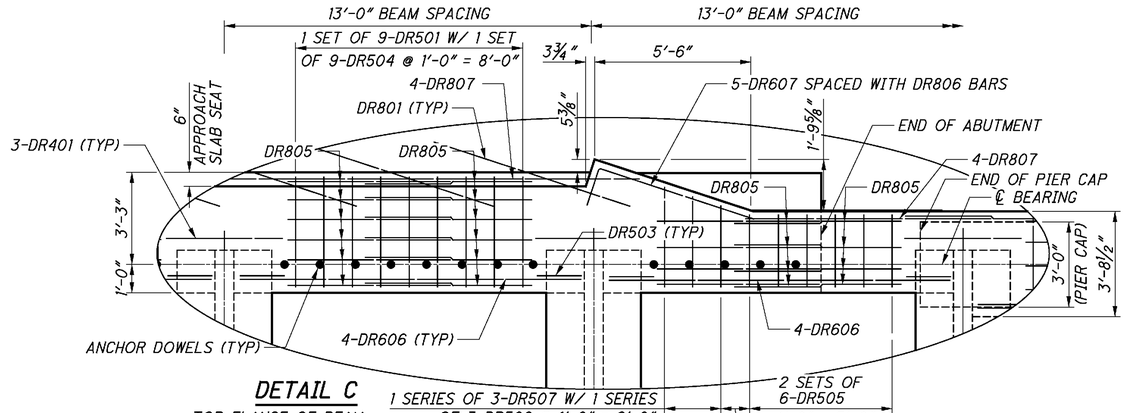
29/45

150/189



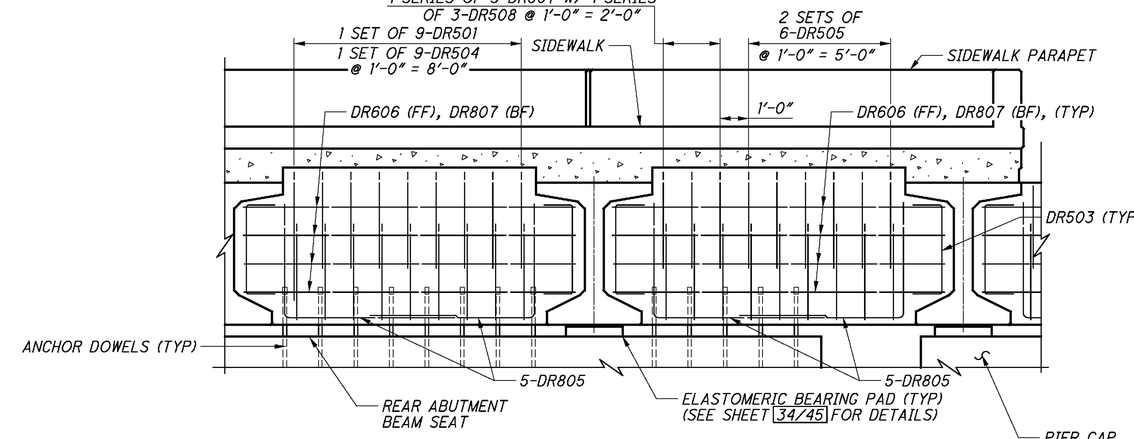
SECTION C-C

NOTE:
SEE STANDARD DRAWING PSID-1-13 FOR ANCHOR DOWEL DETAILS. NOTE THAT THE ANCHOR DOWELS SHALL BE 1 ½" DIAMETER. PAYMENT FOR ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL- STRUCTURE, MISC: FIXED ANCHOR DOWELS.

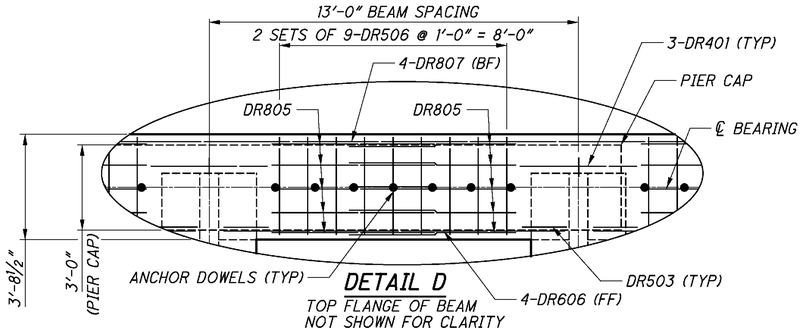


DETAIL C

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY

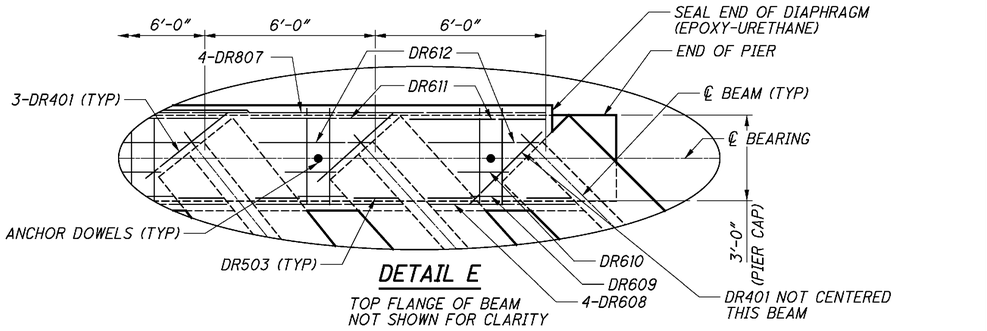


ELEVATION - DETAIL C



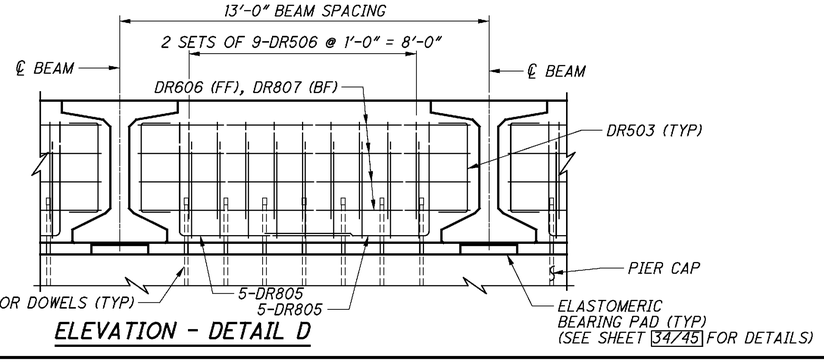
DETAIL D

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY

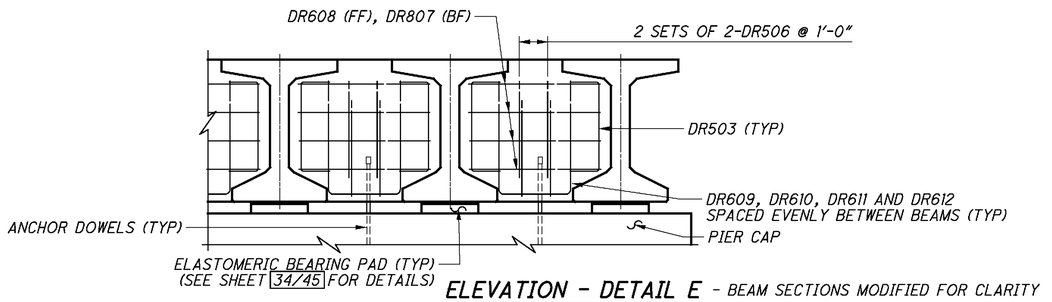


DETAIL E

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



ELEVATION - DETAIL D



ELEVATION - DETAIL E - BEAM SECTIONS MODIFIED FOR CLARITY

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

LEGEND

FF = FRONT FACE
BF = BACK FACE

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • WHEELING • CHARLESTON

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

DIAPHRAGM DETAILS - REAR ABUTMENT/PIERS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

30/45
151/189

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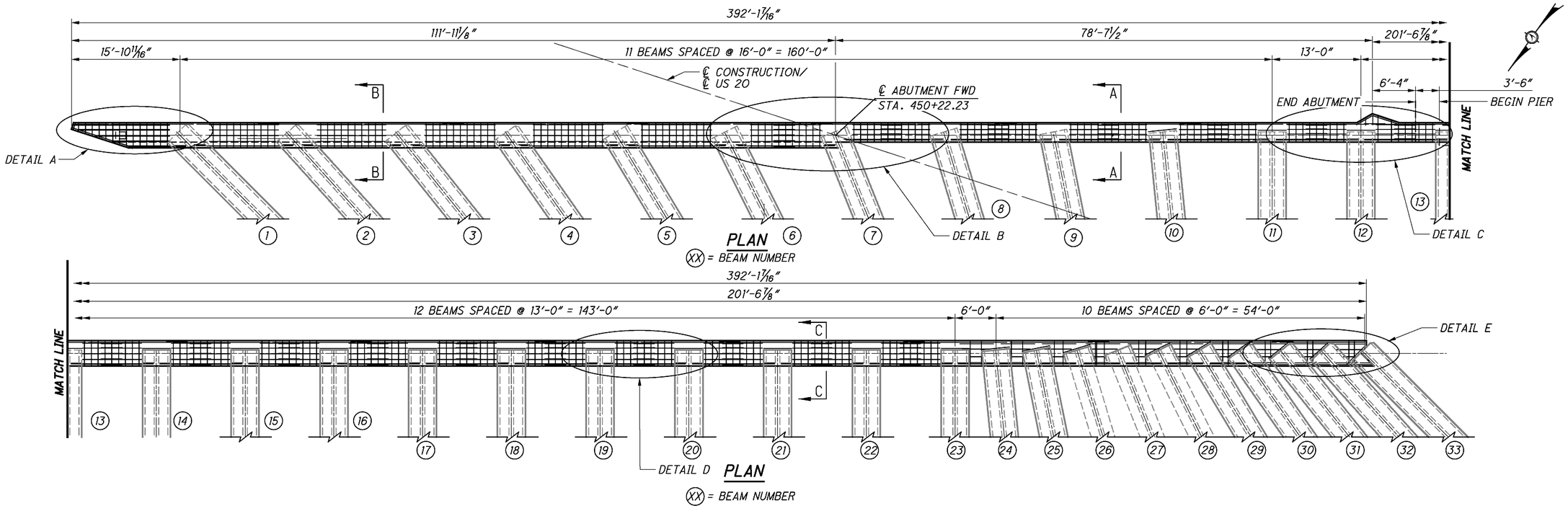

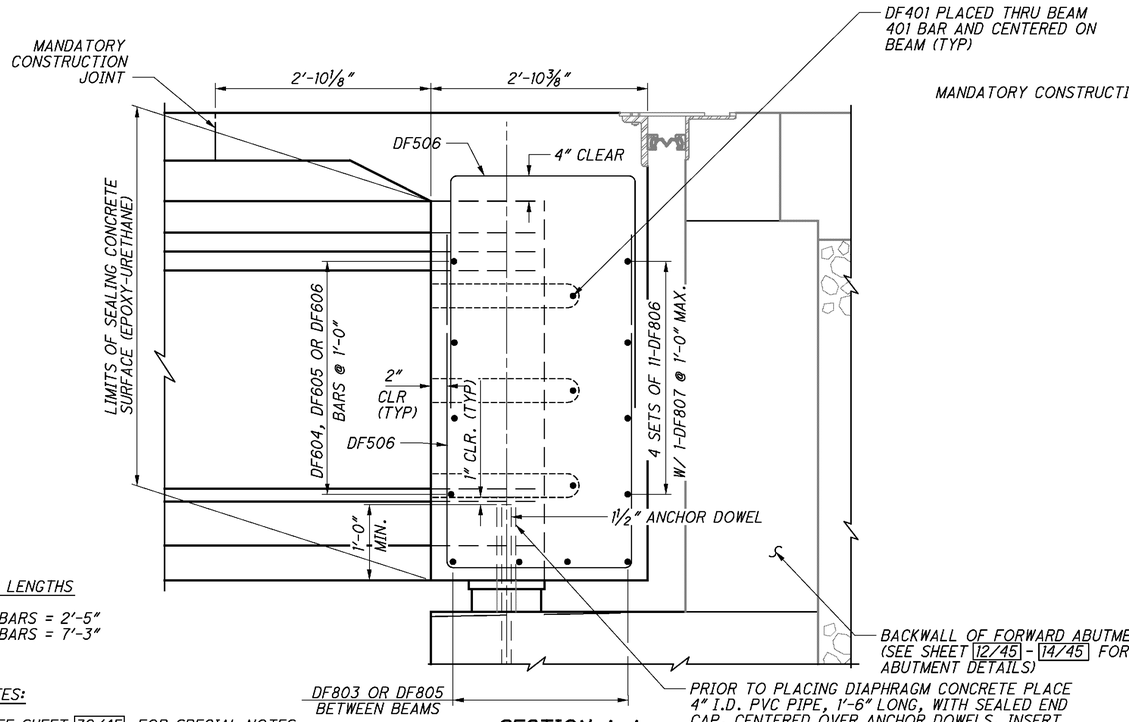

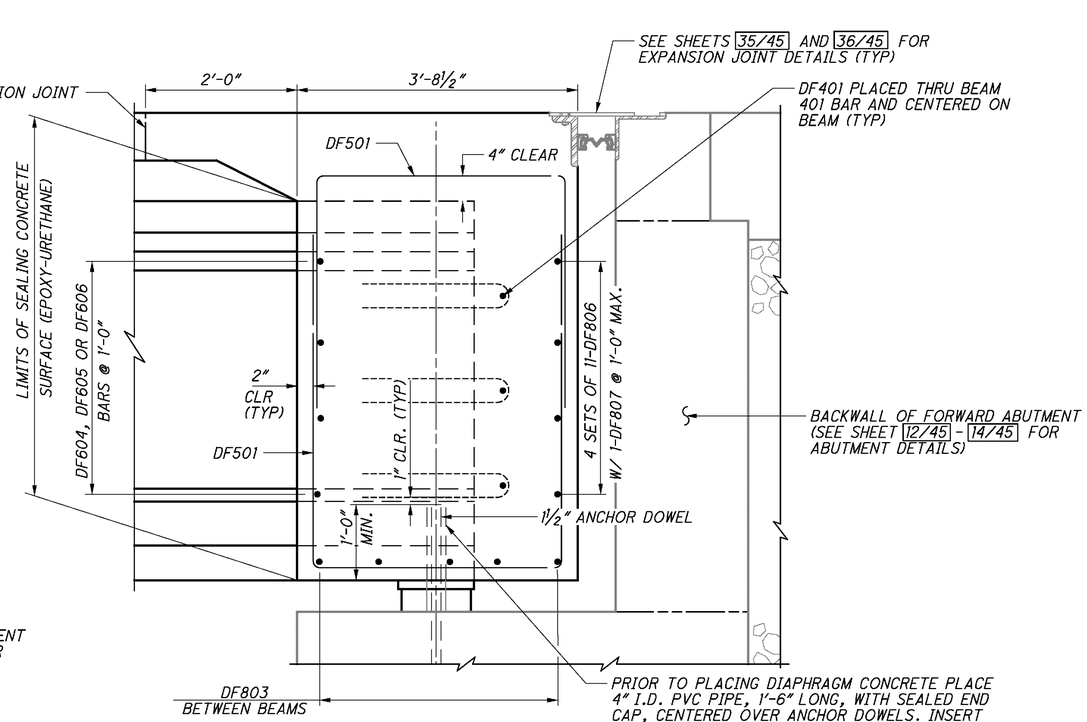

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

NOTES:

1) SEE SHEET 32/45 FOR SPECIAL NOTES
2) SEE SHEET 12/45 - 14/45 FOR ABUTMENT DETAILS
3) SEE SHEETS 32/45 AND 33/45 FOR DETAILS A, B, C, D AND E.
4) SEE SHEET 33/45 FOR SECTION C-C.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

DIAPHRAGM DETAILS - FORWARD ABUTMENT/PIERS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

31 / 45

152
189

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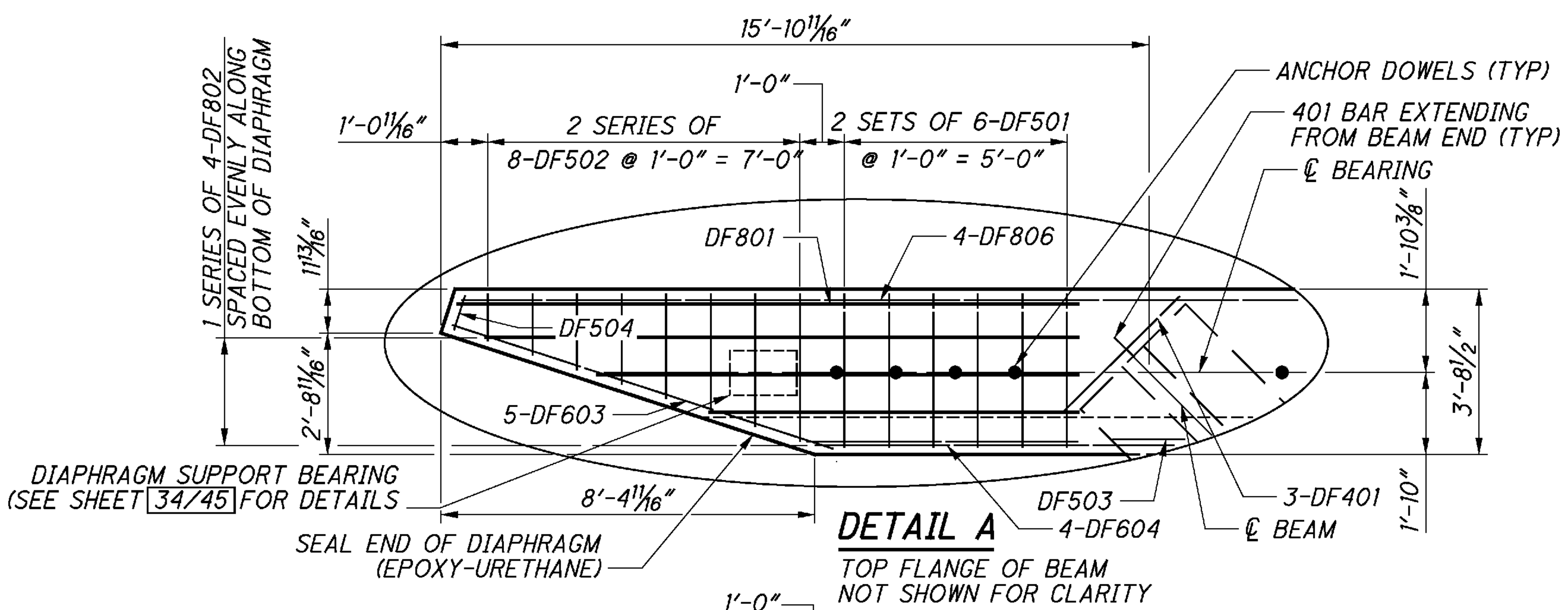
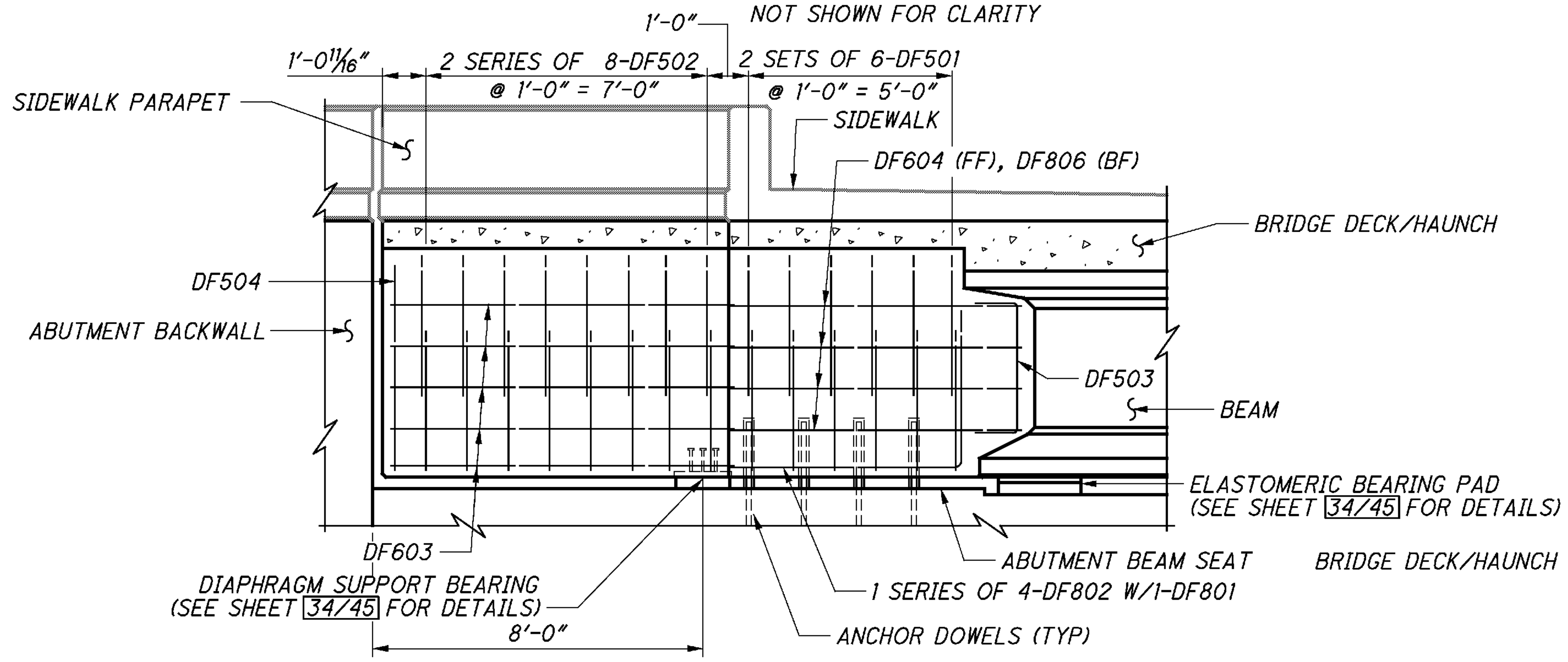
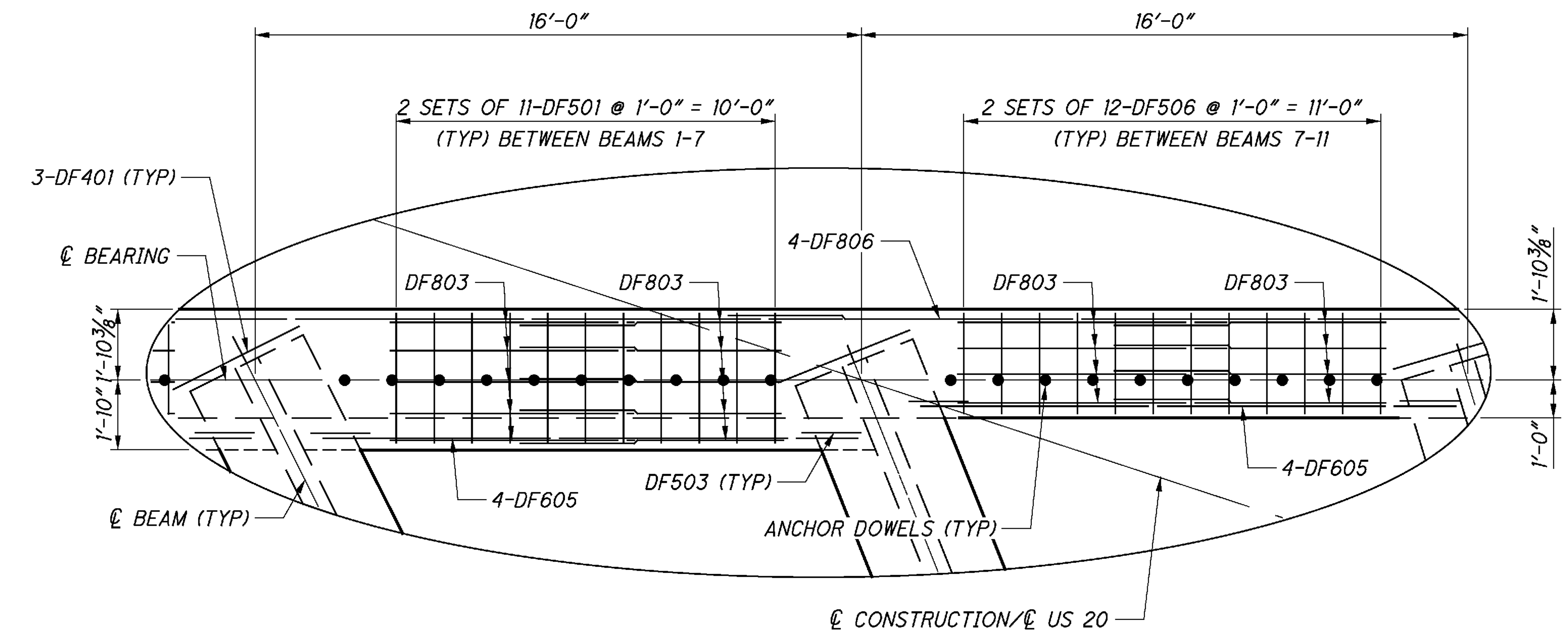


DETAIL A

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY

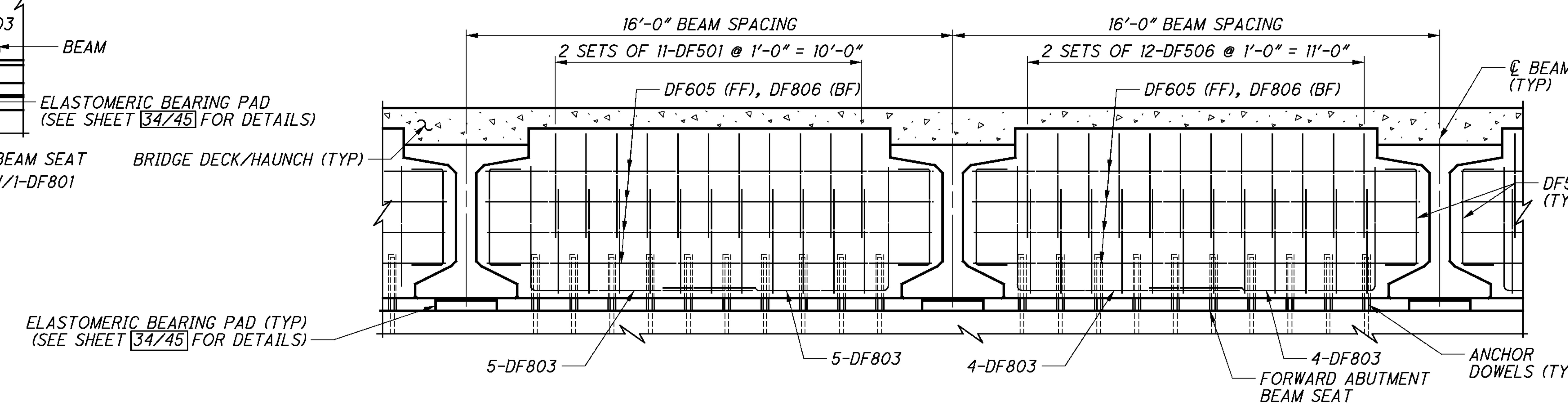


ELEVATION - DETAIL A



DETAIL B

TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



ELEVATION - DETAIL B

NOTES:

1) PLACE THE DIAPHRAGM CONCRETE ENCASING THE STRUCTURAL MEMBER ENDS AFTER THE DECK PLACEMENT IS COMPLETE. PROCEDURES THAT PLACE THE ABUTMENT DIAPHRAGM WITH THE DECK CONCRETE MAY BE APPROVED BY THE ENGINEER IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE WILL BE PLACED BEFORE THE CONCRETE IN THE DIAPHRAGM HAS REACHED ITS INITIAL SET.

2) FOR ANCHOR DOWEL SPACINGS ON ABUTMENT AND PIERS, SEE SHEET 12/45 AND 15/45.

3) PAYMENT FOR FORWARD ABUTMENT ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL-STRUCTURE, MISC: EXPANSION ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

LEGEND

FF = FRONT FACE
BF = BACK FACE

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

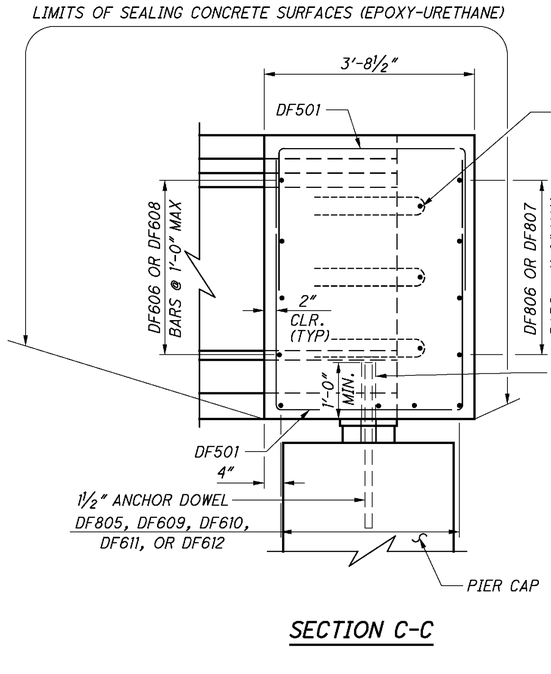
DIAPHRAGM DETAILS - FORWARD ABUTMENT

BRIDGE NO. ATB-20-2161

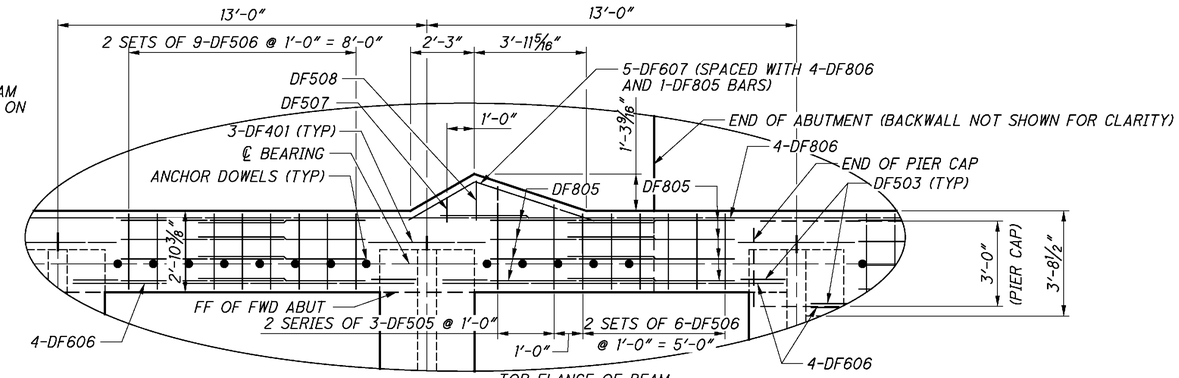
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

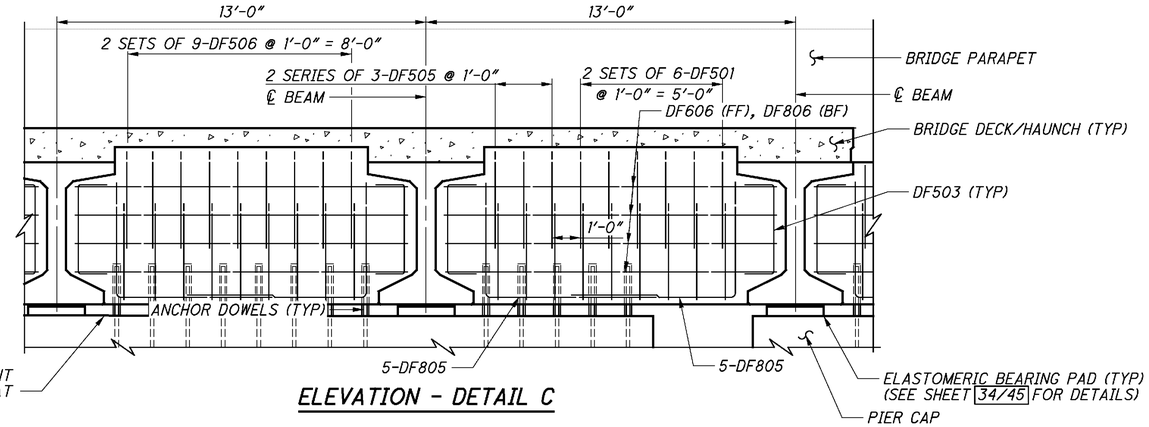
PID No. 83599



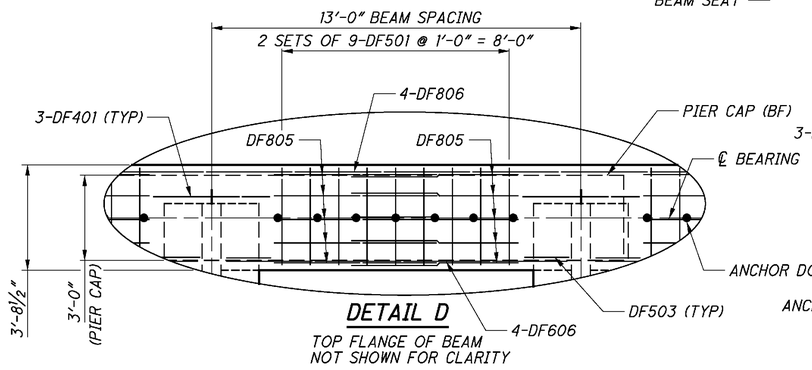
SECTION C-C



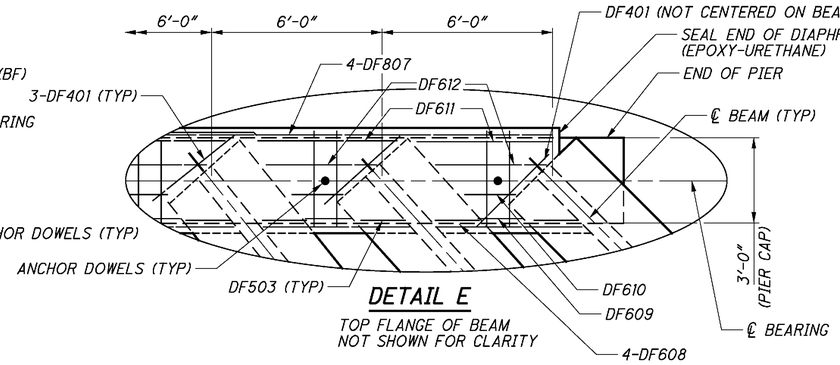
DETAIL C TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



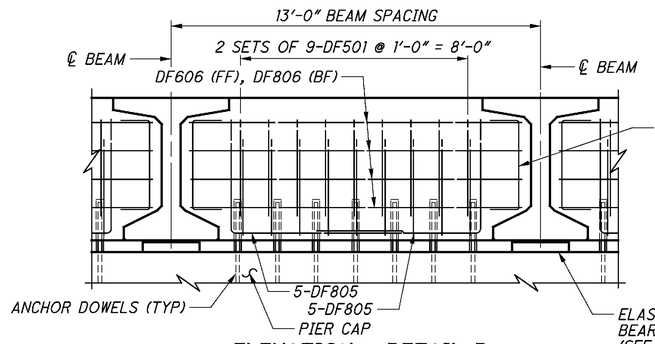
ELEVATION - DETAIL C



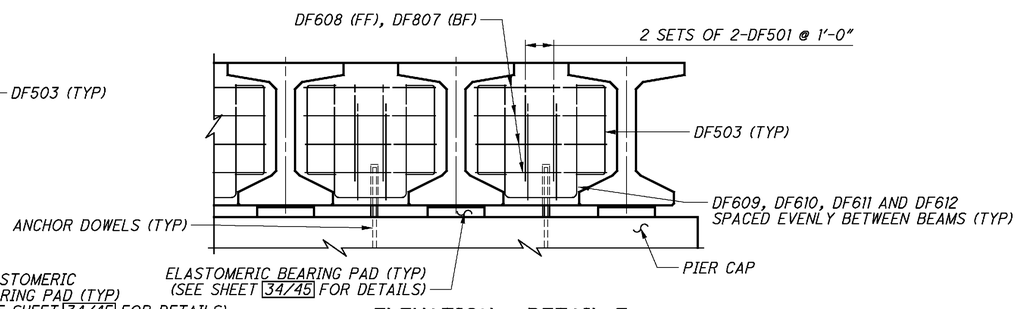
DETAIL D
TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



DETAIL E
TOP FLANGE OF BEAM NOT SHOWN FOR CLARITY



ELEVATION - DETAIL D



ELEVATION - DETAIL E - BEAM SECTIONS MODIFIED FOR CLARITY

LAP LENGTHS

#5 BARS = 2'-5"
#8 BARS = 7'-3"

LEGEND

FF = FRONT FACE
BF = BACK FACE

NOTE

1) PAYMENT FOR FORWARD ABUTMENT ANCHOR DOWELS SHALL BE PER ITEM 530, SPECIAL-STRUCTURE, MISC: EXPANSION ANCHOR DOWELS. SEE SHEET 4/45 FOR DETAILS.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		0402265	

DIAPHRAGM DETAILS - FORWARD ABUTMENT/PIERS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

33/45

154/189

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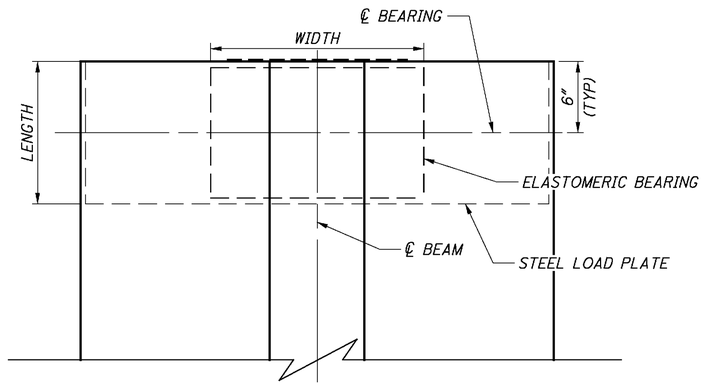
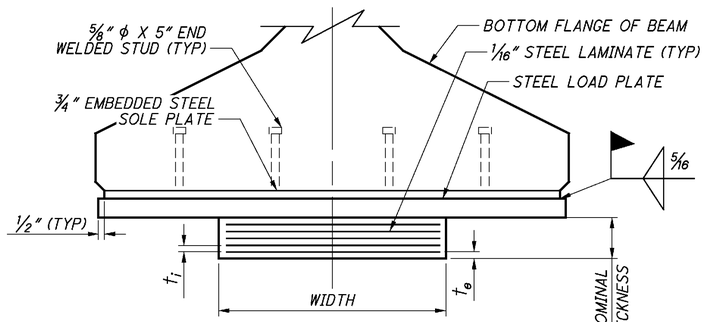
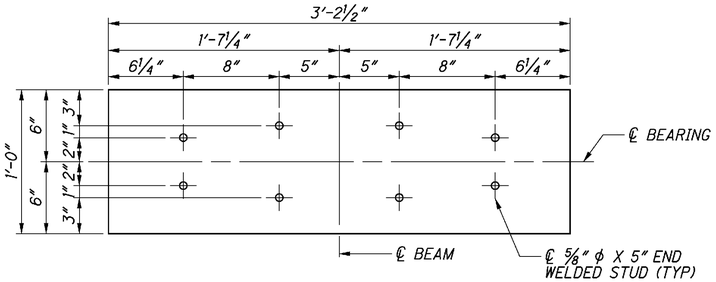


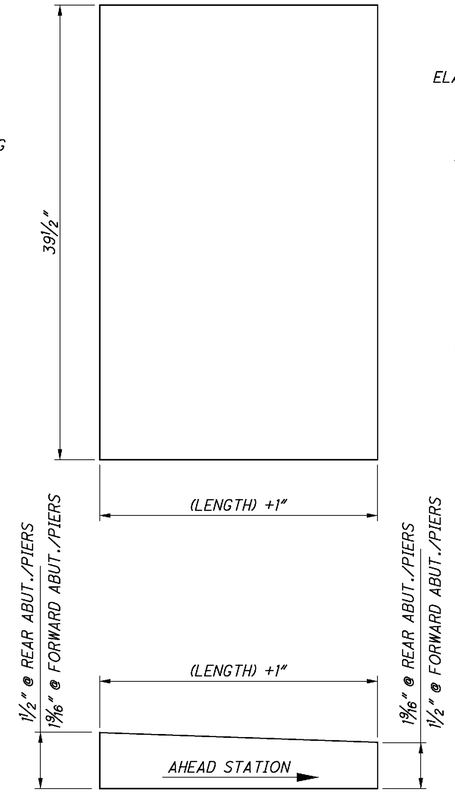
PLAN VIEW - BEARING ORIENTATION



ELEVATION VIEW

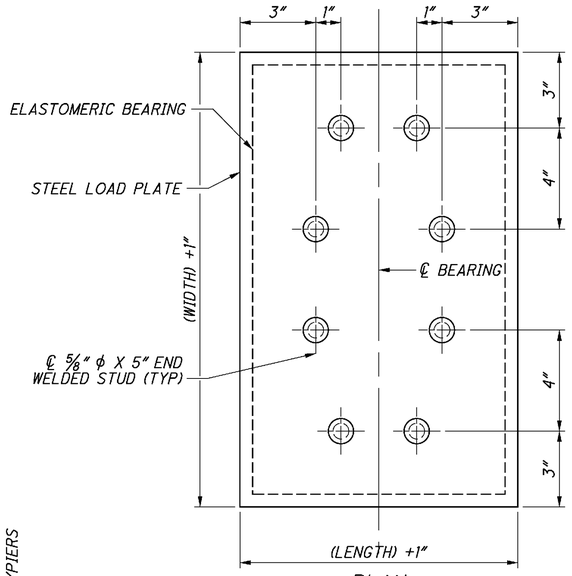


PLAN VIEW - 3/4" EMBEDDED STEEL SOLE PLATE

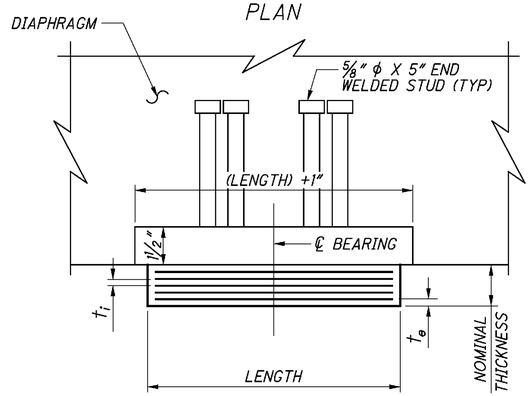


STEEL LOAD PLATE FOR BEAM BEARING

(33 TOTAL FOR REAR ABUTMENT/PIERS,
33 TOTAL FOR FWD ABUTMENT/PIERS)



PLAN



ELEVATION

STEEL LOAD PLATE AND DIAPHRAGM SUPPORT BEARING

(1 TOTAL FOR FWD ABUTMENT)

NOTES:

1) THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.5 (METHOD B) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. PERFORM THE LONG-TERM COMPRESSION PROOF LOAD TEST IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6 AND 18.7.4.5.

2) THE STEEL LOAD PLATE SHALL BE ASTM A709 GRADE 50 STEEL.

3) THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS. CONTROL WELDING OF THE LOAD PLATE TO THE SUPERSTRUCTURE SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300° F AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

4) BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, TESTING AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS AND STEEL LOAD PLATES. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516, EACH, ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE).

5) ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UP STATION. ALL MARKS SHALL BE PERMANENT AND VISIBLE AFTER THE BEARING IS INSTALLED.

6) FOR ADDITIONAL DETAILS FOR EMBEDDED SOLE PLATE, SEE STD DWG PSID-1-13

7) COST OF EMBEDDED STEEL SOLE PLATES SHALL BE INCIDENTAL TO THE UNIT PRICE OF ITEM 515 - DRAPED STRAND PRESTRESSED CONCRETE I-BEAM MEMBERS, LEVEL 3. TYPE WF 60-49.

REAR SUBSTRUCTURE BEARINGS

BEARING LOCATION	NUMBER REQUIRED	DEAD LOAD (KIPS)	LIVE LOAD (KIPS)	TOTAL LOAD (KIPS)	WIDTH	LENGTH	ti	NUMBER OF ti	te (1 EACH)	NO. OF STEEL LAMINATES	NOMINAL THICKNESS
BEAMS 1-26	26	235.9	91.5	327.4	1'-6"	11"	0.40"	5	0.16"	5	2.47"
BEAMS 27-30	4	261.5	61.2	322.7	1'-4"	11"	0.40"	5	0.16"	5	2.47"
BEAMS 31-33	3	241.3	45.5	286.8	1'-4"	10 1/2"	0.40"	5	0.16"	5	2.47"

FORWARD SUBSTRUCTURE BEARINGS

BEARING LOCATION	NUMBER REQUIRED	DEAD LOAD (KIPS)	LIVE LOAD (KIPS)	TOTAL LOAD (KIPS)	WIDTH	LENGTH	ti	NUMBER OF ti	te (1 EACH)	NO. OF STEEL LAMINATES	NOMINAL THICKNESS
BEAM 1/END DIAPHRAGM	2	191.1	24.4	215.5	1'-6"	11"	0.55"	5	0.21"	5	3.27"
BEAM 2	1	205.2	39.3	244.5	1'-6 1/2"	11"	0.55"	5	0.21"	5	3.27"
BEAMS 3-12	10	228.2	63.9	292.1	1'-7"	11 1/2"	0.55"	5	0.21"	5	3.27"
BEAMS 13-33	21	234.1	92.1	326.2	1'-7"	1'-0"	0.55"	5	0.21"	5	3.27"

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND • CHARLESTON

DESIGNED CEJ | DRAWN SDW | REVIEWED BJF | DATE 3/26/14
CHECKED MLJ | REVISED | STRUCTURE FILE NUMBER 0402265

ELASTOMERIC BEARING DETAILS

BRIDGE NO. ATB-20-21.61 & ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

34/45
155/189

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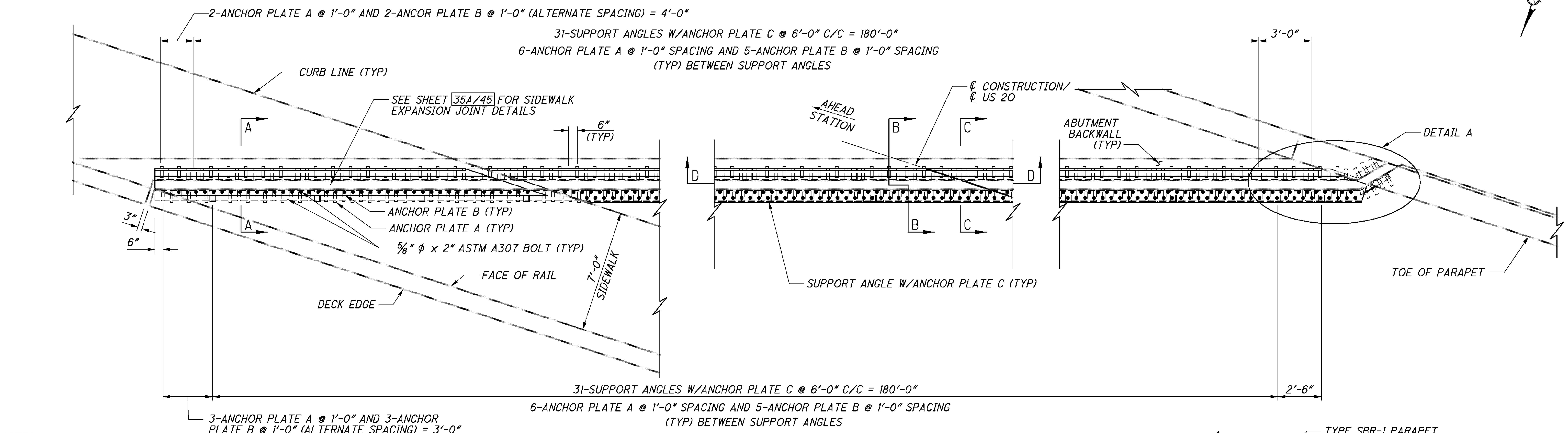
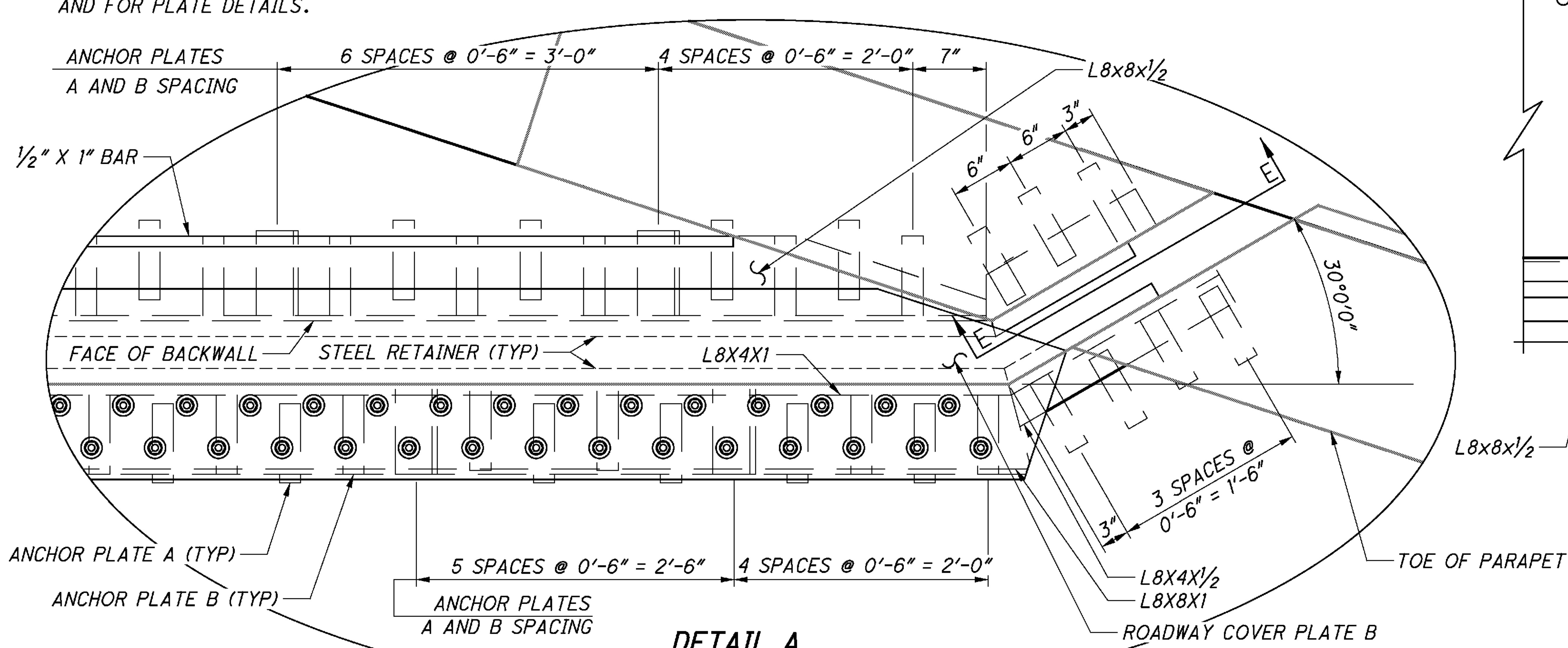


PLAN

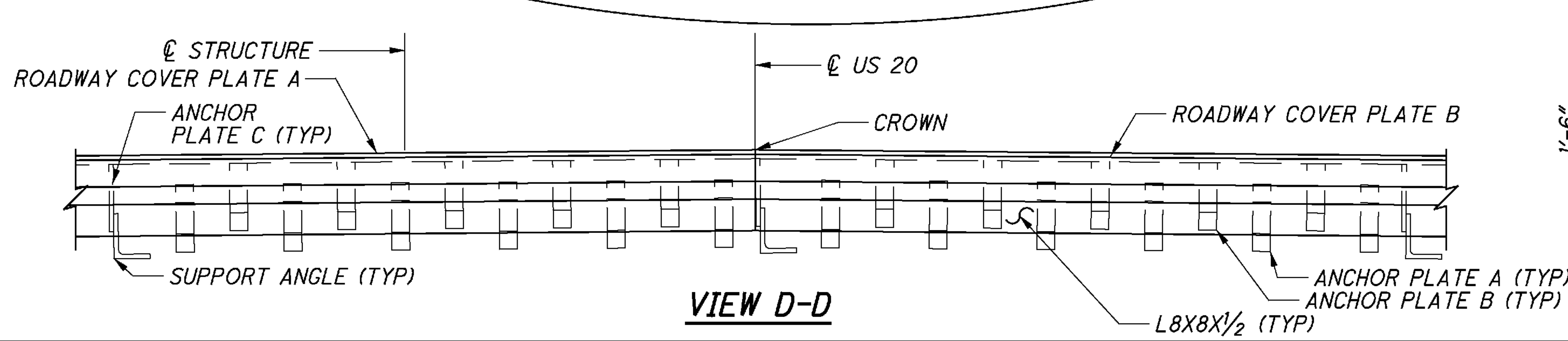
NOTES

1) SEE STANDARD DRAWING EXJ-6-06 FOR INSTALLATION DETAILS, NOTES AND ADDITIONAL DETAILS NOT SHOWN ON THIS SHEET.

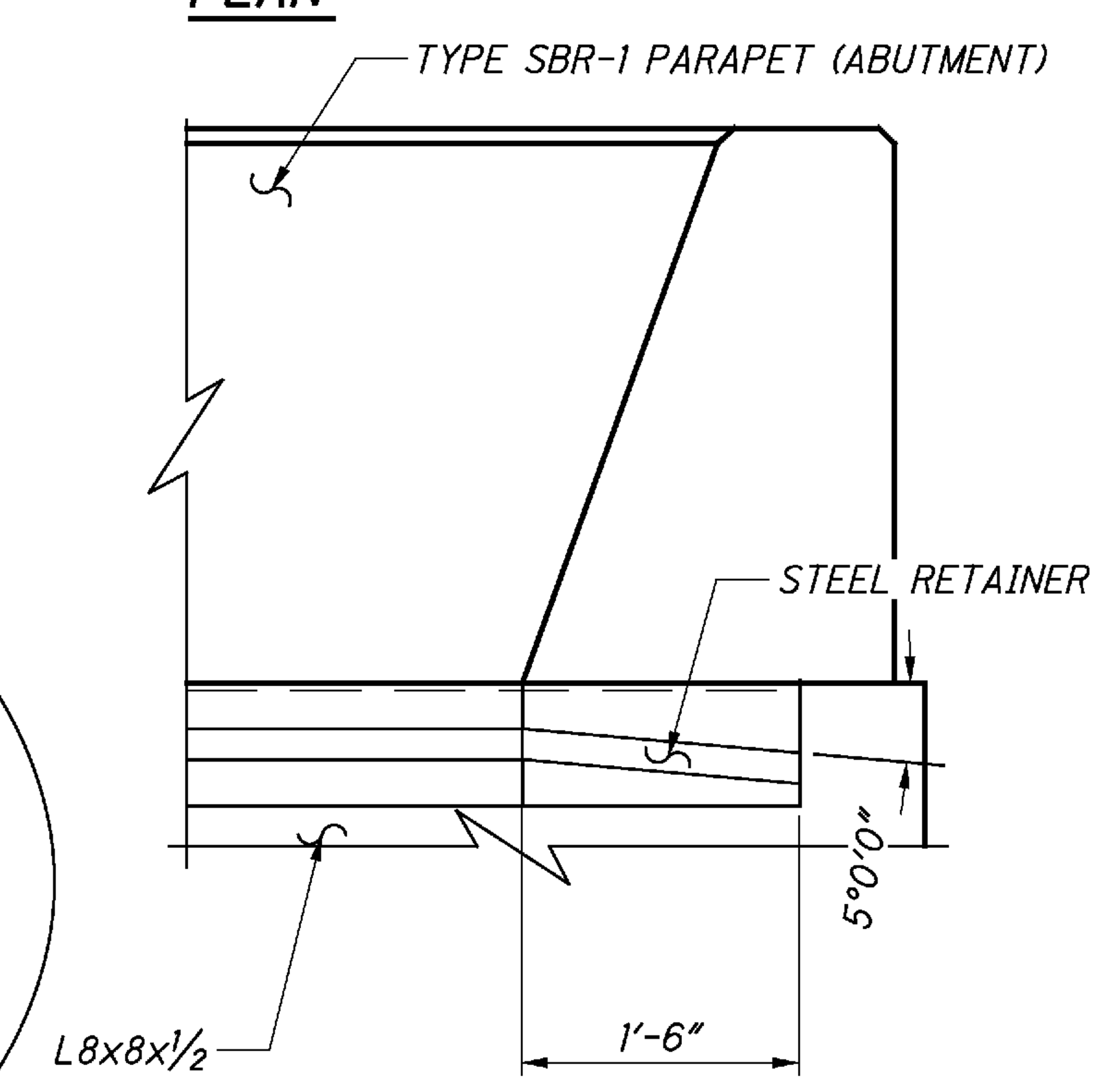
2) SEE SHEET 36/45 FOR SECTIONS A-A, B-B AND C-C AND FOR PLATE DETAILS.



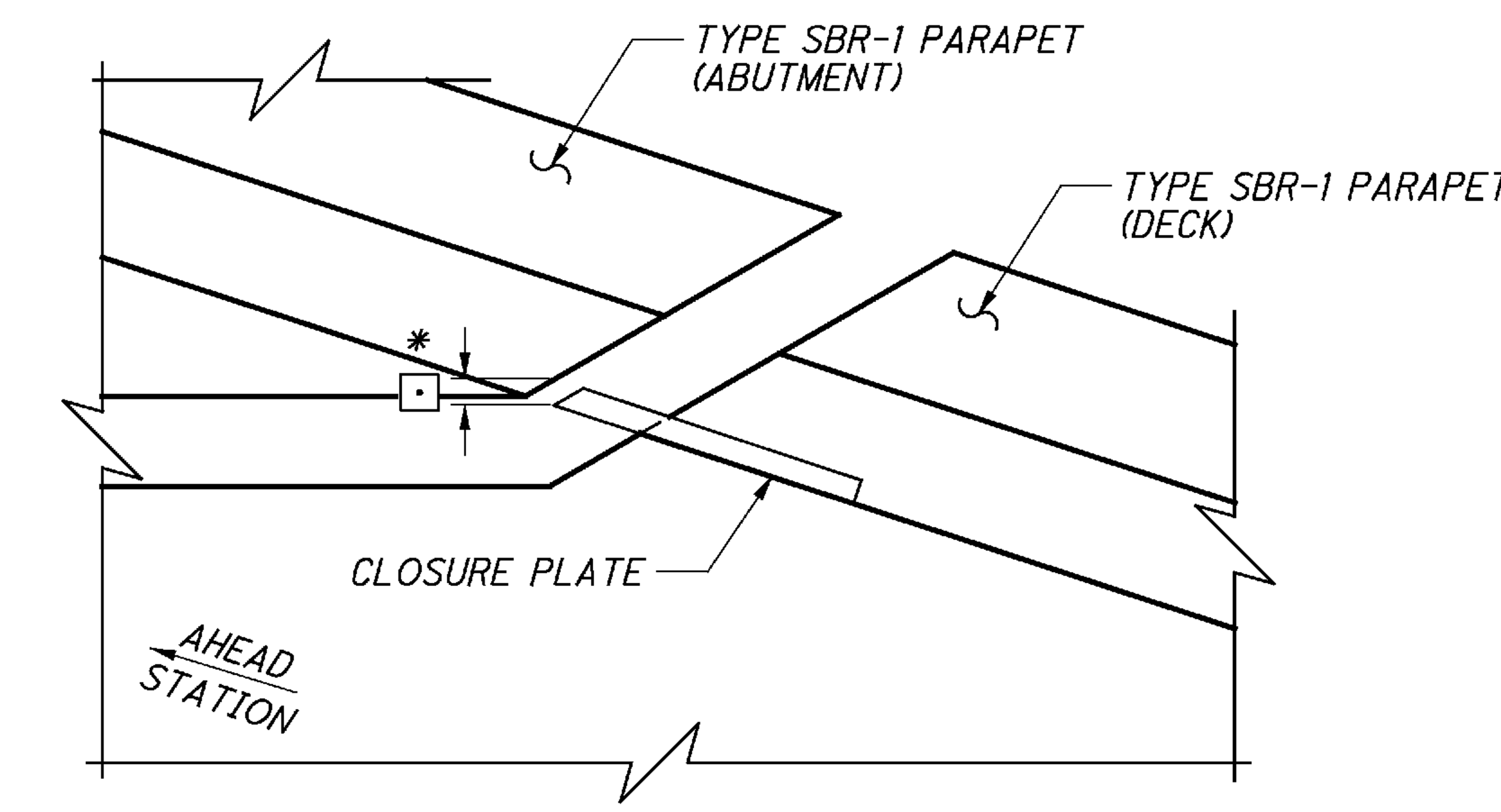
DETAIL A



VIEW D-D

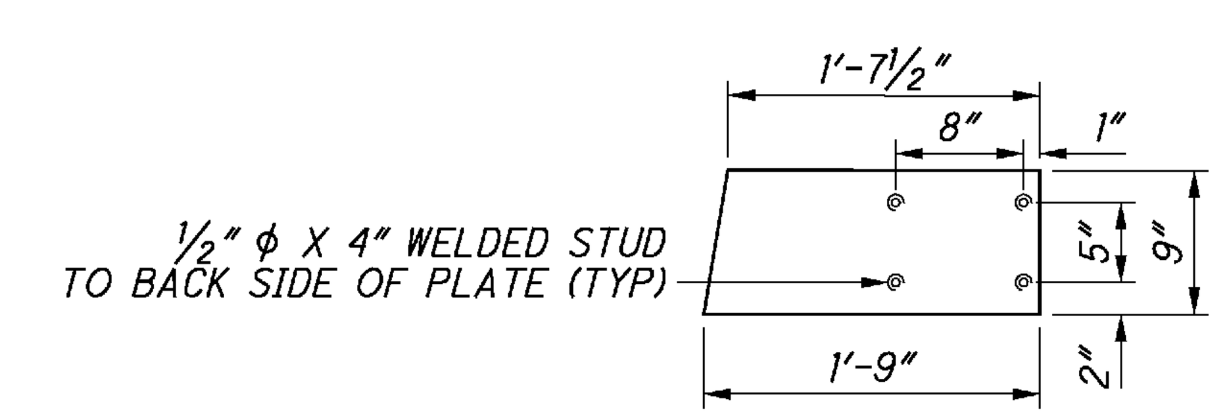


SECTION E-E

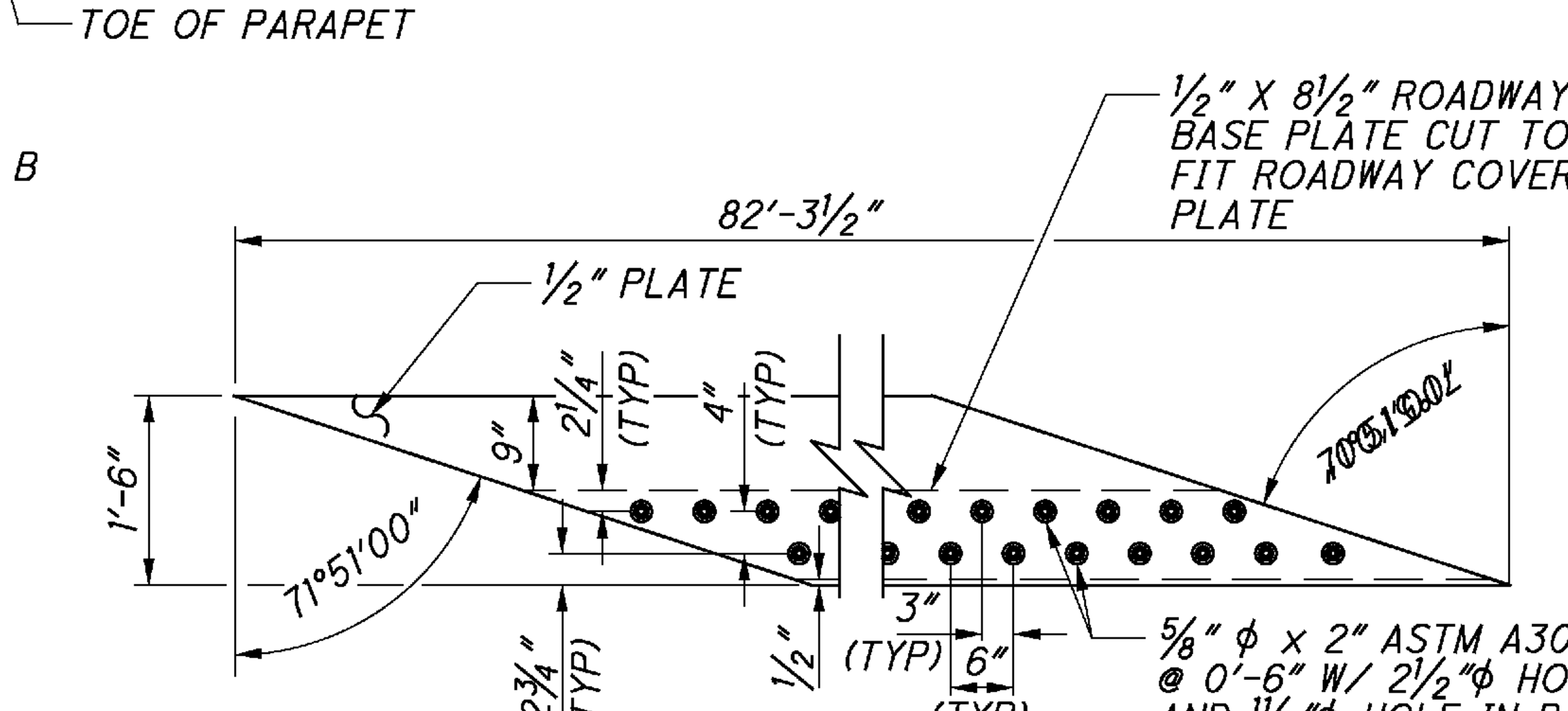


CLOSURE PLATE PLAN

* SEE SHEET 36/45 FOR ⊡ DIMENSION

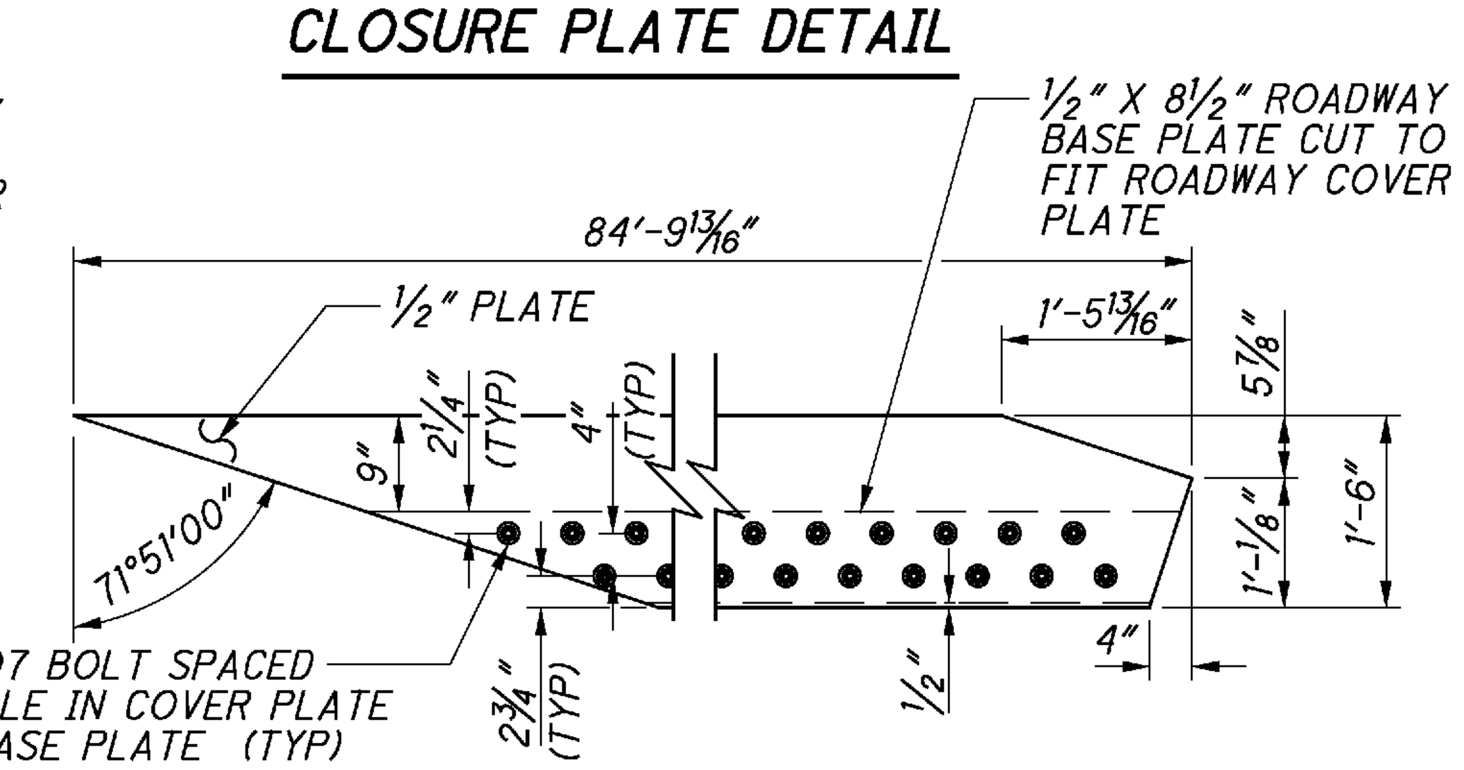


CLOSURE PLATE DETAIL



PLAN VIEW OF ROADWAY COVER PLATE A

W/ROADWAY BASE PLATE AND BOLTS



PLAN VIEW OF ROADWAY COVER PLATE B

W/ROADWAY BASE PLATE AND BOLTS

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
JPR	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

FORWARD ABUTMENT EXPANSION JOINT DETAILS

BRIDGE NO. ATB-20-2161

US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43

PID No. 83599

35/45

156/189

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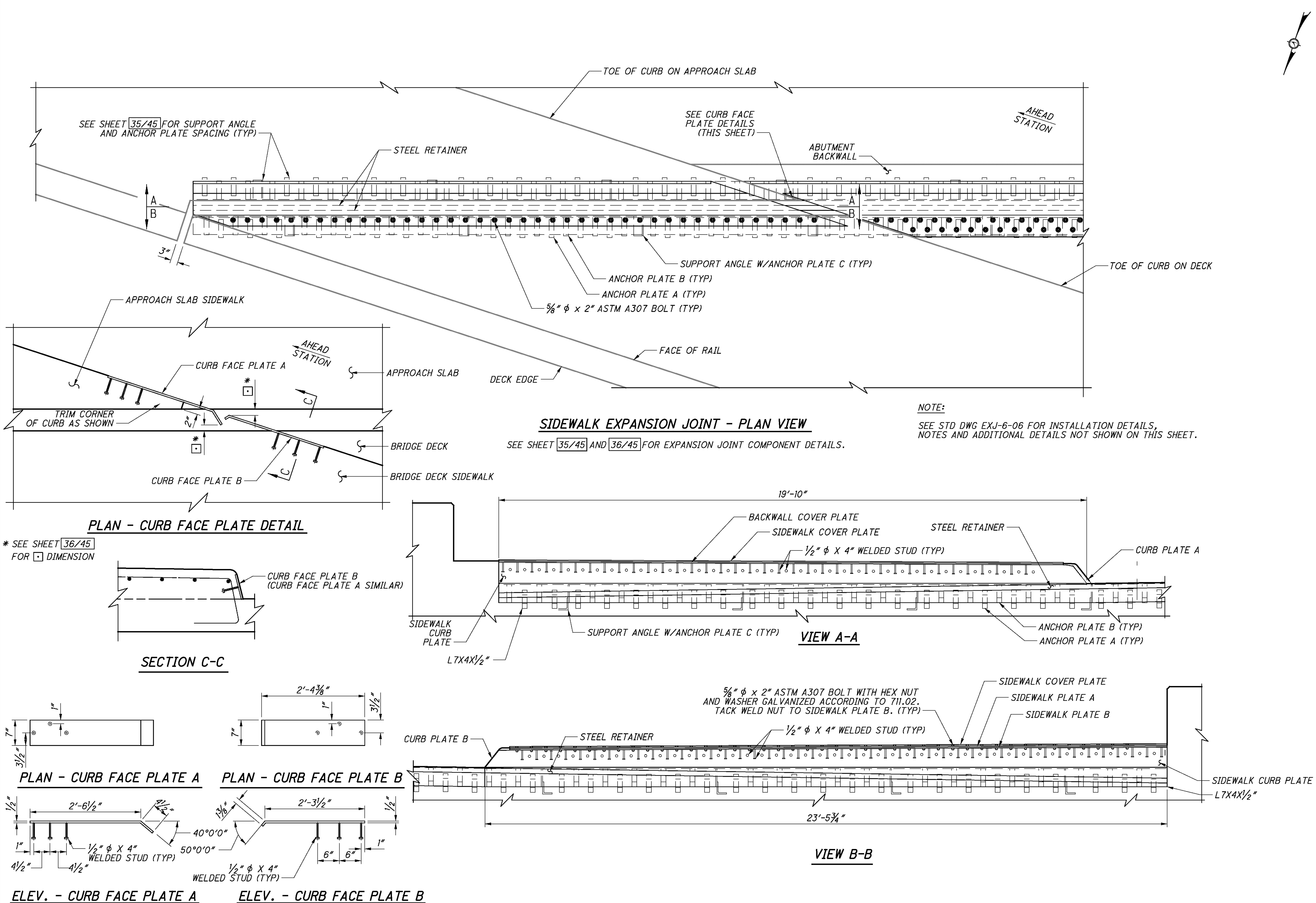
TOE OF CURB ON APPROACH SLAB
SEE SHEET 35/45 FOR SUPPORT ANGLE AND ANCHOR PLATE SPACING (TYP)
STEEL RETAINER
SEE CURB FACE PLATE DETAILS (THIS SHEET)
ABUTMENT BACKWALL
AHEAD STATION
SUPPORT ANGLE W/ANCHOR PLATE C (TYP)
TOE OF CURB ON DECK
ANCHOR PLATE B (TYP)
ANCHOR PLATE A (TYP)
5/8" ϕ x 2" ASTM A307 BOLT (TYP)
FACE OF RAIL
DECK EDGE
APPROACH SLAB SIDEWALK
CURB FACE PLATE A
APPROACH SLAB
TRIM CORNER OF CURB AS SHOWN
BRIDGE DECK
CURB FACE PLATE B
BRIDGE DECK SIDEWALK
PLAN - CURB FACE PLATE DETAIL
* SEE SHEET 36/45 FOR ⊡ DIMENSION
SIDEWALK EXPANSION JOINT - PLAN VIEW
SEE SHEET 35/45 AND 36/45 FOR EXPANSION JOINT COMPONENT DETAILS.
NOTE:
SEE STD DWG EXJ-6-06 FOR INSTALLATION DETAILS, NOTES AND ADDITIONAL DETAILS NOT SHOWN ON THIS SHEET.
CURB FACE PLATE B (CURB FACE PLATE A SIMILAR)
SECTION C-C
19'-10"
BACKWALL COVER PLATE
SIDEWALK COVER PLATE
STEEL RETAINER
1/2" ϕ X 4" WELDED STUD (TYP)
CURB PLATE A
SIDEWALK CURB PLATE
L7X4X1/2"
SUPPORT ANGLE W/ANCHOR PLATE C (TYP)
VIEW A-A
ANCHOR PLATE B (TYP)
ANCHOR PLATE A (TYP)
PLAN - CURB FACE PLATE A
PLAN - CURB FACE PLATE B
2'-4 3/8"
2'-6 1/2"
2'-3 1/2"
40°0'0"
50°0'0"
1/2" ϕ X 4" WELDED STUD (TYP)
ELEV. - CURB FACE PLATE A
ELEV. - CURB FACE PLATE B
5/8" ϕ x 2" ASTM A307 BOLT WITH HEX NUT AND WASHER GALVANIZED ACCORDING TO 711.02. TACK WELD NUT TO SIDEWALK PLATE B. (TYP)
SIDEWALK COVER PLATE
SIDEWALK PLATE A
SIDEWALK PLATE B
CURB PLATE B
STEEL RETAINER
SIDEWALK CURB PLATE
L7X4X1/2"
23'-5 3/4"
VIEW B-B

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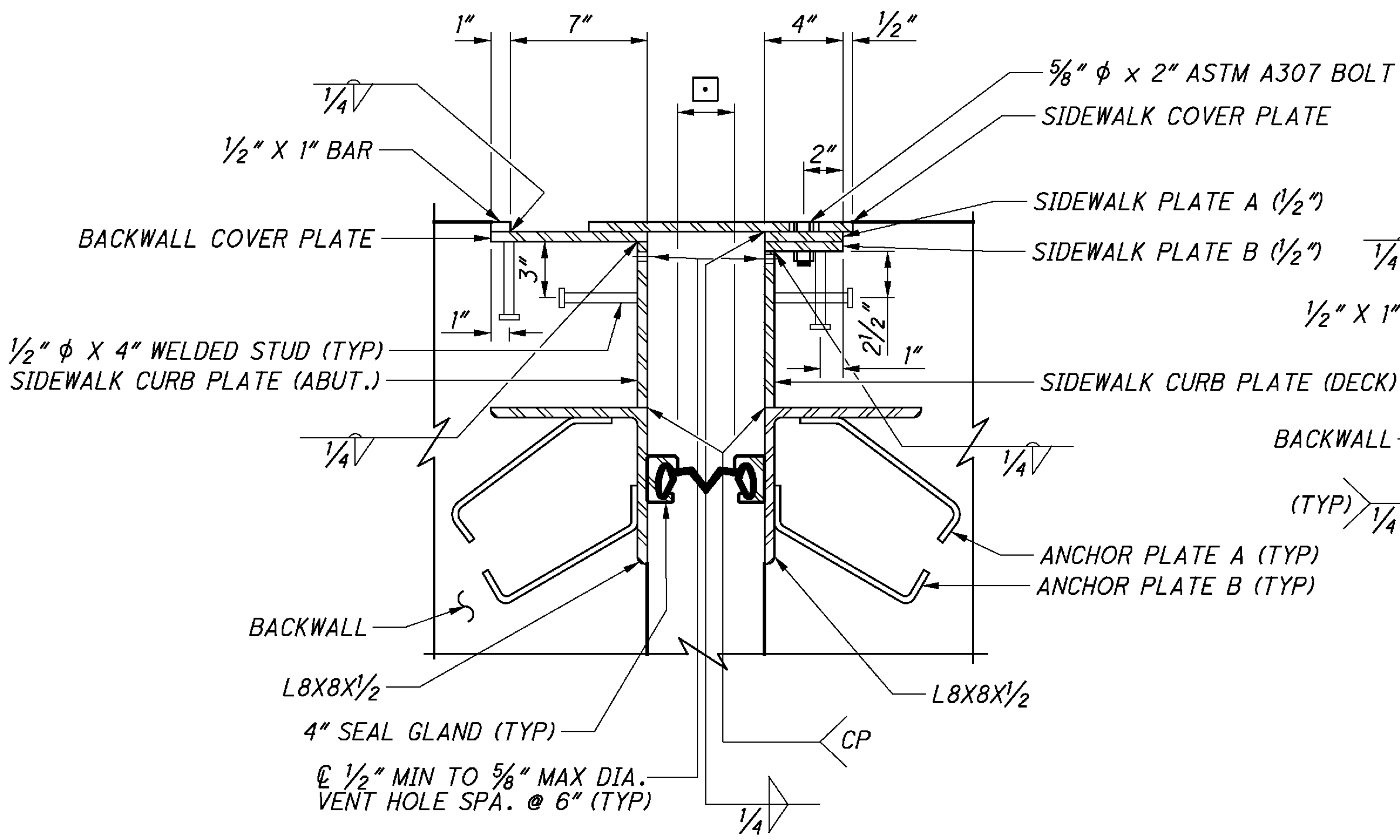
DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
JPR	SDW	MLJ	5/21/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

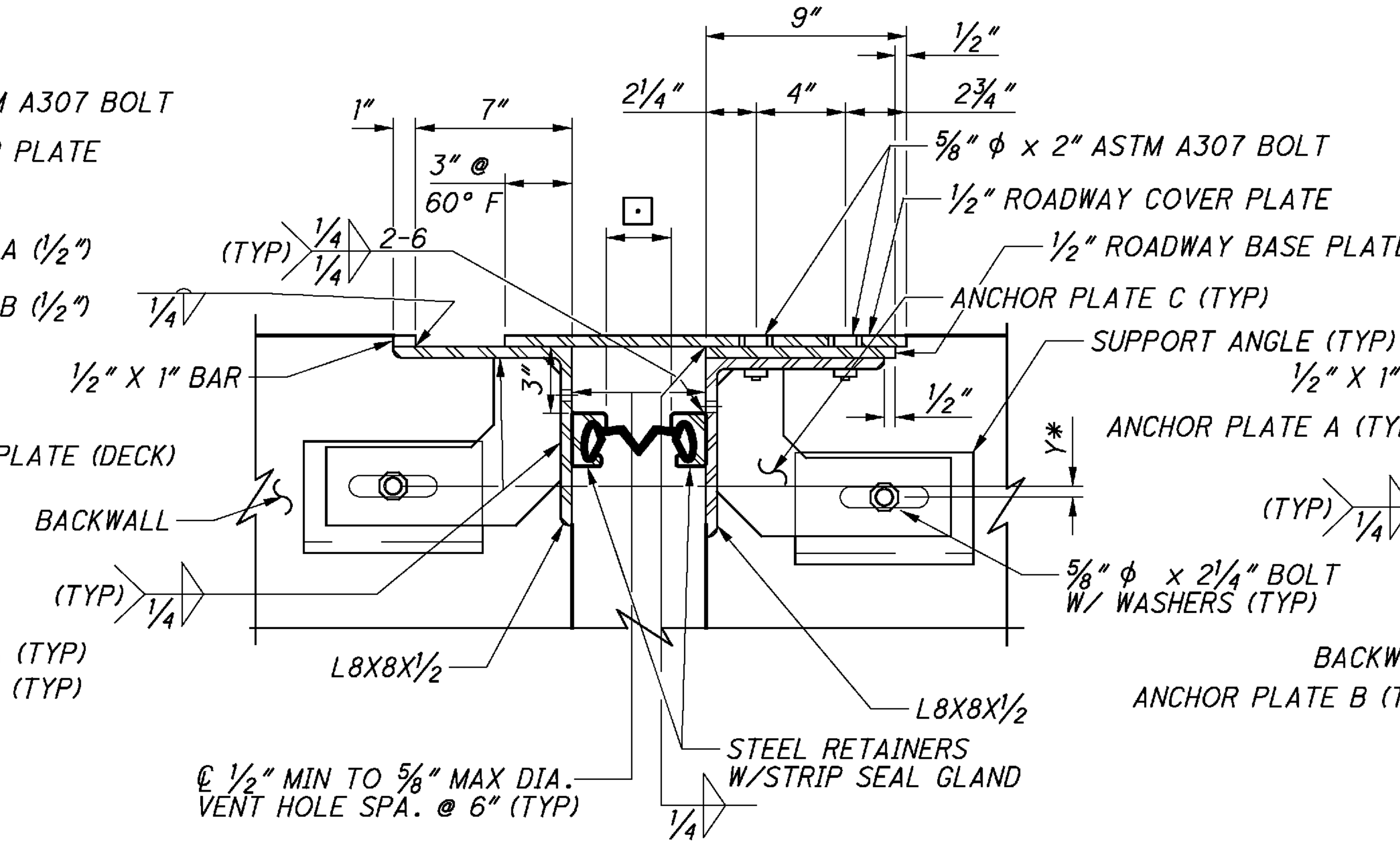
FORWARD ABUTMENT EXPANSION JOINT DETAILS

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

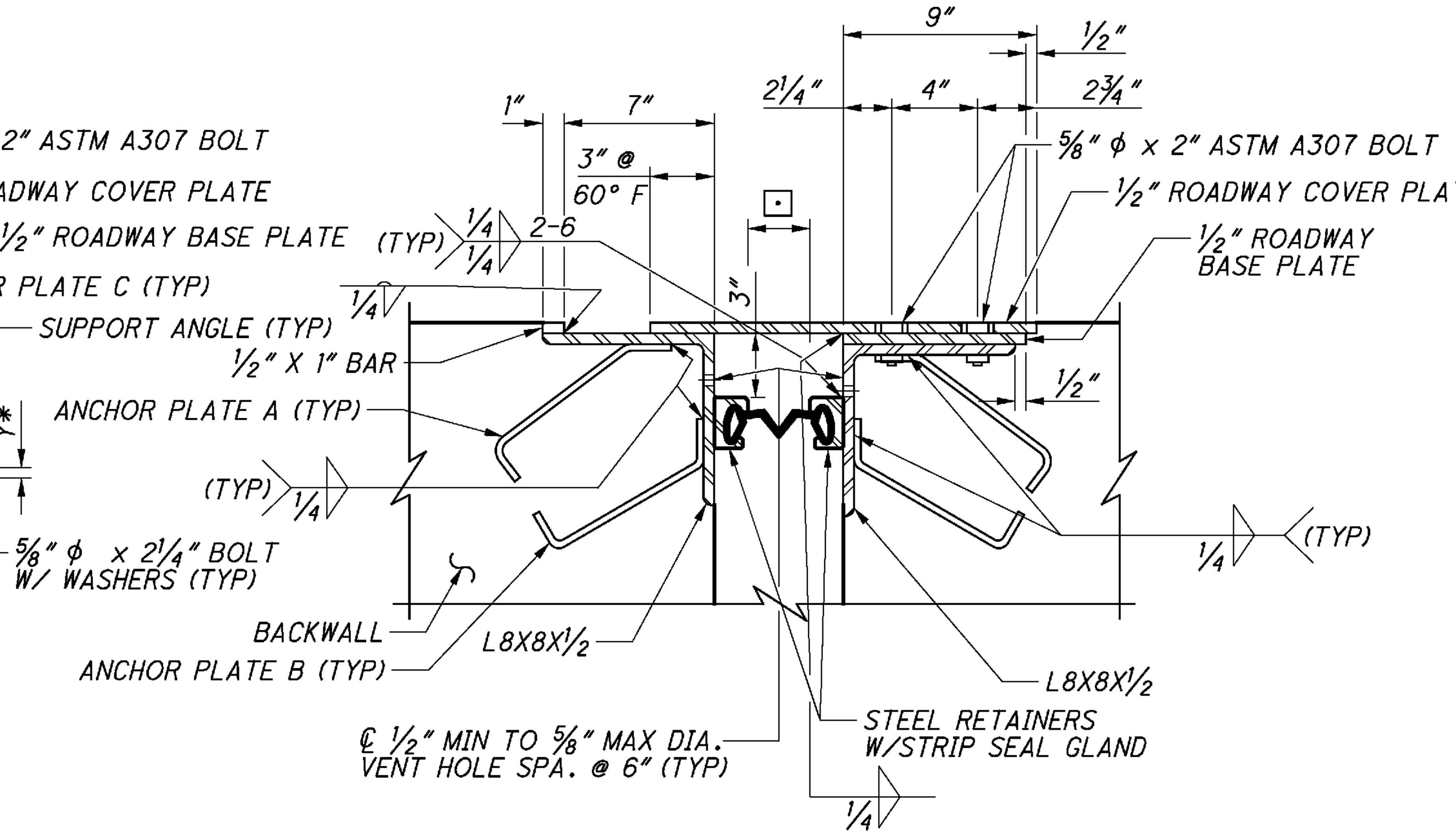
ATB-20-21.43
PID No. 83599



SECTION A-A



SECTION B-B



SECTION C-C

**	⊡
30° F	2 3/8"
40° F	2 1/4"
50° F	2 1/4"
60° F	2 1/8"
70° F	2 1/8"
80° F	2"
90° F	1 7/8"

* "Y" VERTICAL OFFSET DIMENSION IS LESS THATN 1/16" AT ALL POINTS ALONG THE CENTERLINE OF THE JOINT.

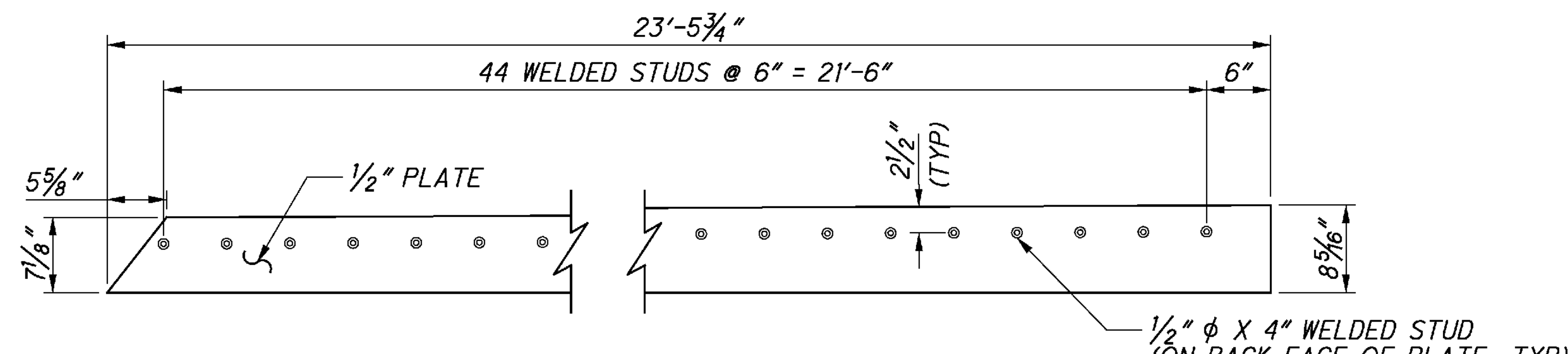
** ANTICIPATED PEAK AMBIENT TEMPERATURE ON DAY OF JOINT INSTALLATION.

NOTE

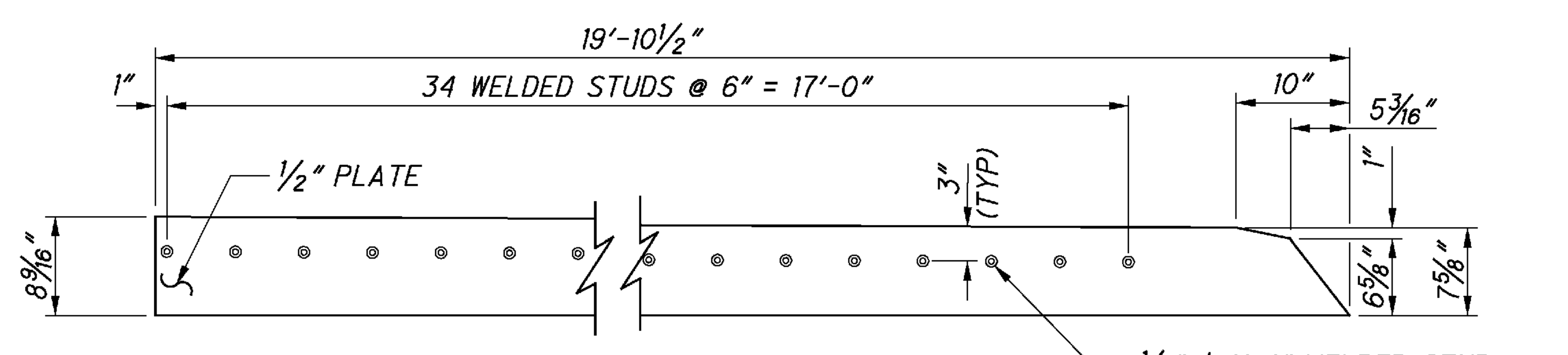
1) SEE STANDARD DRAWING EXJ-6-06 FOR INSTALLATION DETAILS, NOTES AND ADDITIONAL DETAILS NOT SHOWN ON THIS SHEET.

2) SEE SHEET 35/45 FOR FORWARD ABUTMENT EXPANSION JOINT PLAN.

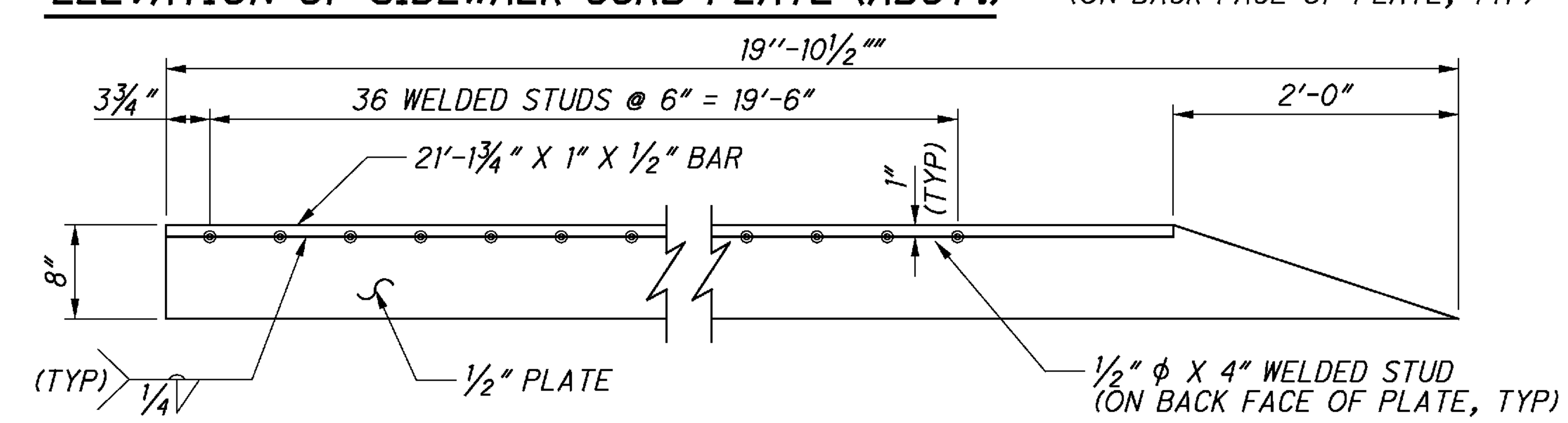
3) APPLY ASPHALT BASED, AGGREGATE FILLED, ONE COMPONENT SKID RESISTANT COATING (CARBONYTE SKIDGUARD OR APPROVED EQUAL) TO EXPOSED ROADWAY AND SIDEWALK STEEL COVER PLATE SURFACE ONLY AFTER INSTALLATION IS COMPLETE. COST OF SKID RESISTANT COATING SHALL BE INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN.



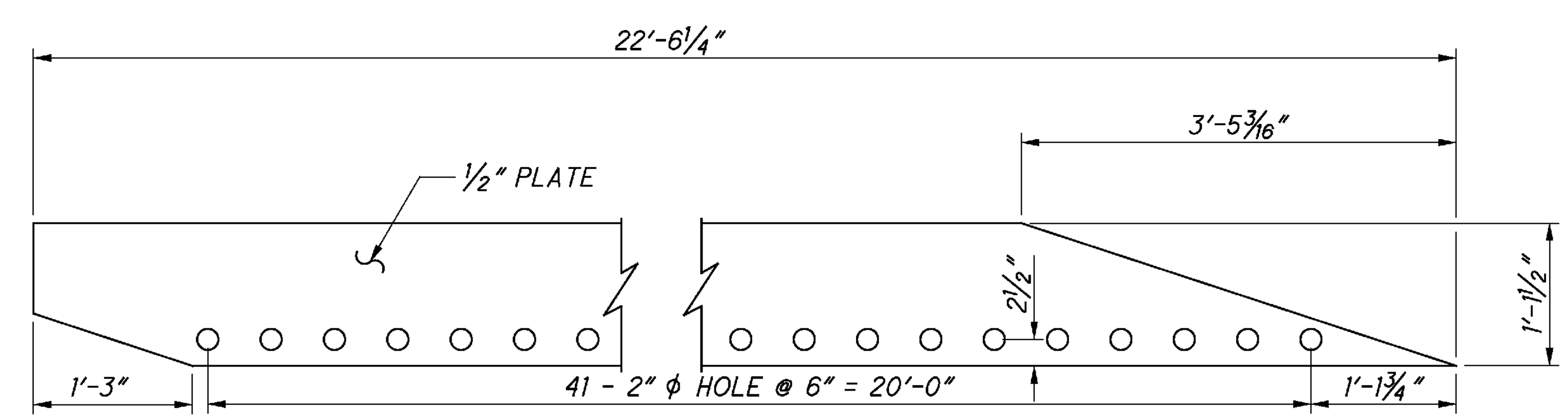
ELEVATION OF SIDEWALK CURB PLATE (DECK)



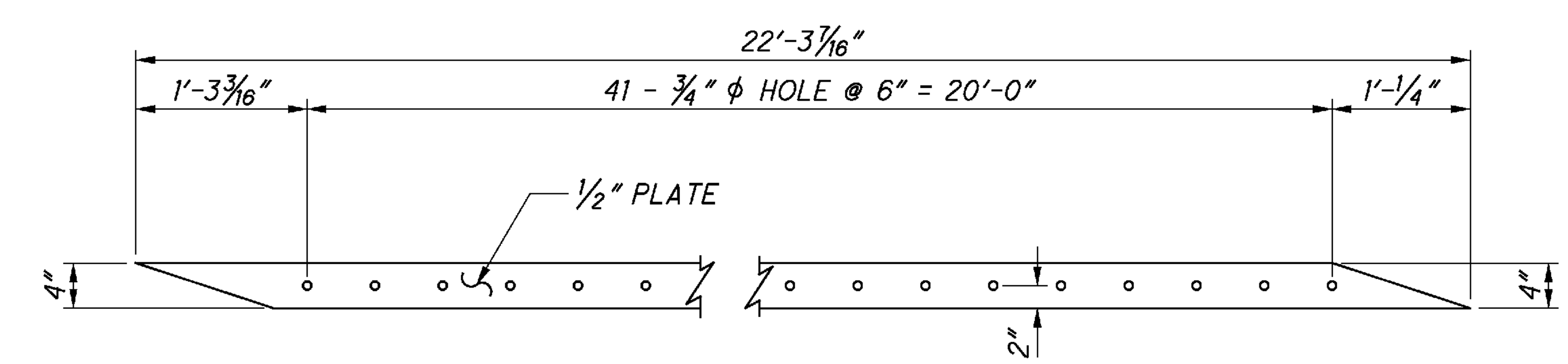
ELEVATION OF SIDEWALK CURB PLATE (ABUT.)



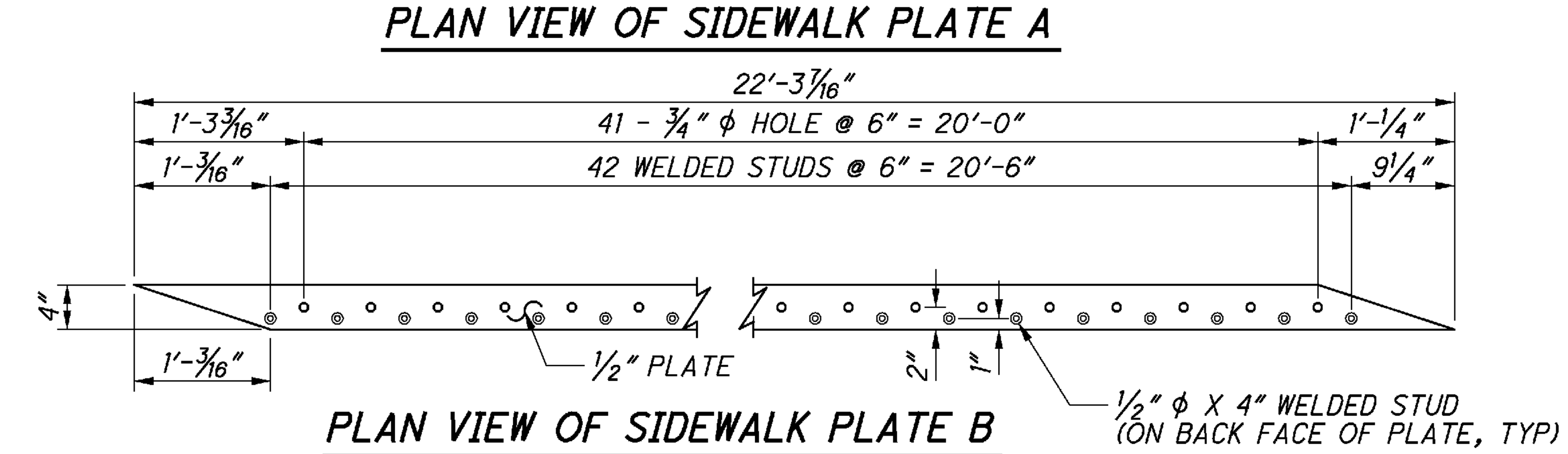
PLAN VIEW OF BACKWALL COVER PLATE



PLAN VIEW OF SIDEWALK COVER PLATE



PLAN VIEW OF SIDEWALK PLATE A



PLAN VIEW OF SIDEWALK PLATE B

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JPR		0402265	

FORWARD ABUTMENT EXPANSION JOINT DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

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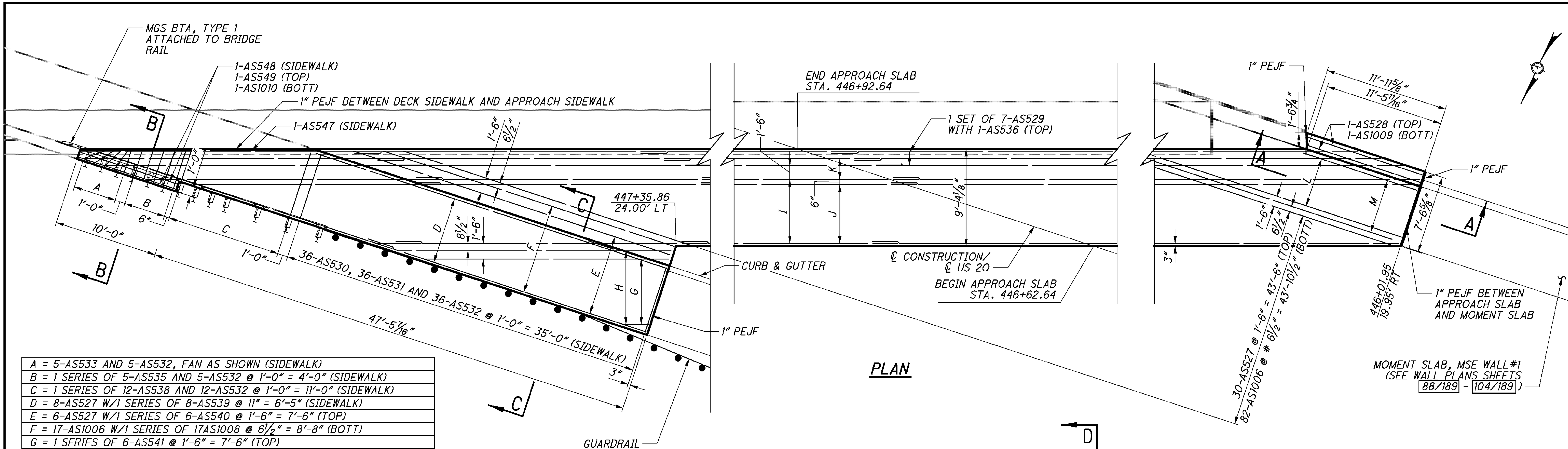
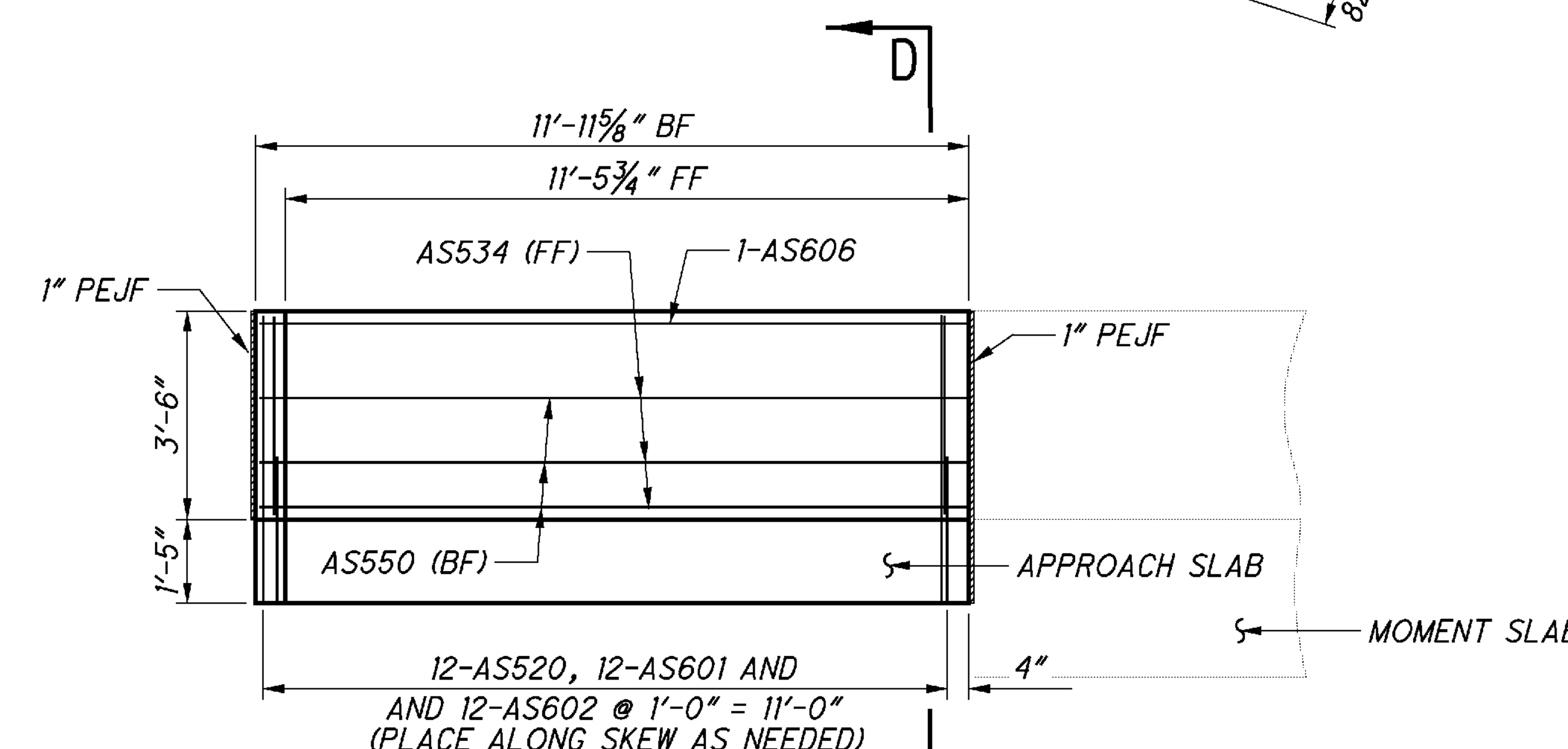


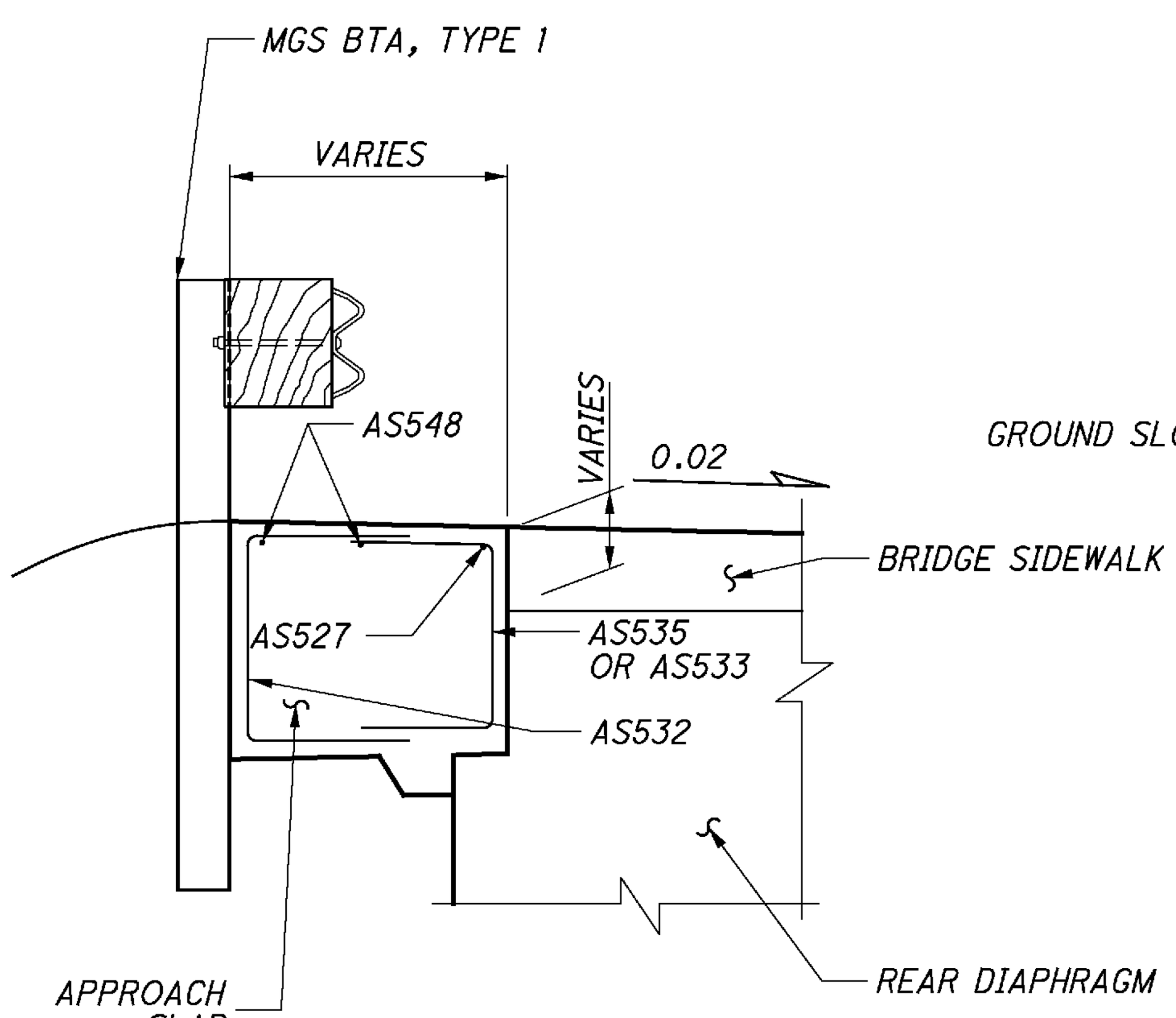
PLAN

A = 5-AS533 AND 5-AS532, FAN AS SHOWN (SIDEWALK)	
B = 1 SERIES OF 5-AS535 AND 5-AS532 @ 1'-0" = 4'-0" (SIDEWALK)	
C = 1 SERIES OF 12-AS538 AND 12-AS532 @ 1'-0" = 11'-0" (SIDEWALK)	
D = 8-AS527 W/1 SERIES OF 8-AS539 @ 11" = 6'-5" (SIDEWALK)	
E = 6-AS527 W/1 SERIES OF 6-AS540 @ 1'-6" = 7'-6" (TOP)	
F = 17-AS1006 W/1 SERIES OF 17AS1008 @ 6 1/2" = 8'-8" (BOTT)	
G = 1 SERIES OF 6-AS541 @ 1'-6" = 7'-6" (TOP)	
H = 1 SERIES OF 11-AS542 @ 8 1/2" = 7'-1" (BOTT)	
I = 5 SETS OF 5-AS519 WITH 1 SERIES OF 5-AS543 @ 1'-6" = 6'-0" (TOP)	
J = 9 SETS OF 5-AS519 WITH 1 SERIES OF 9-AS544 @ 8 1/2" = 5'-8" (BOTT)	
K = 5 SETS OF 5-AS545 WITH 5-AS537 @ 6" = 2'-0" (BOTT)	
L = 1 SERIES OF 4-AS546 @ 1'-6" = 4'-6" (TOP)	
M = 1 SERIES OF 11-AS1007 @ 6 1/2" = 5'-5" (BOTT)	

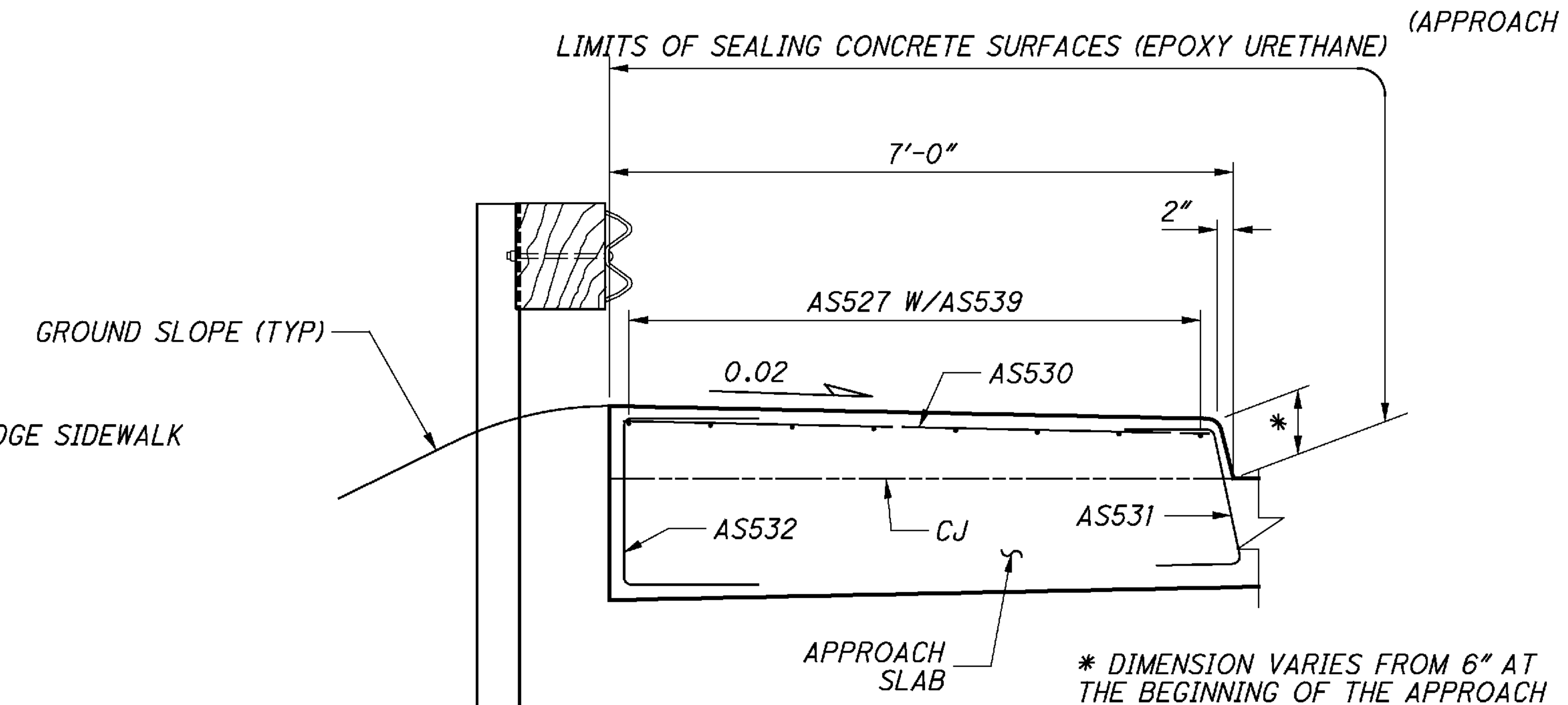


VIEW A-A

(APPROACH SLAB REINFORCING NOT SHOWN)

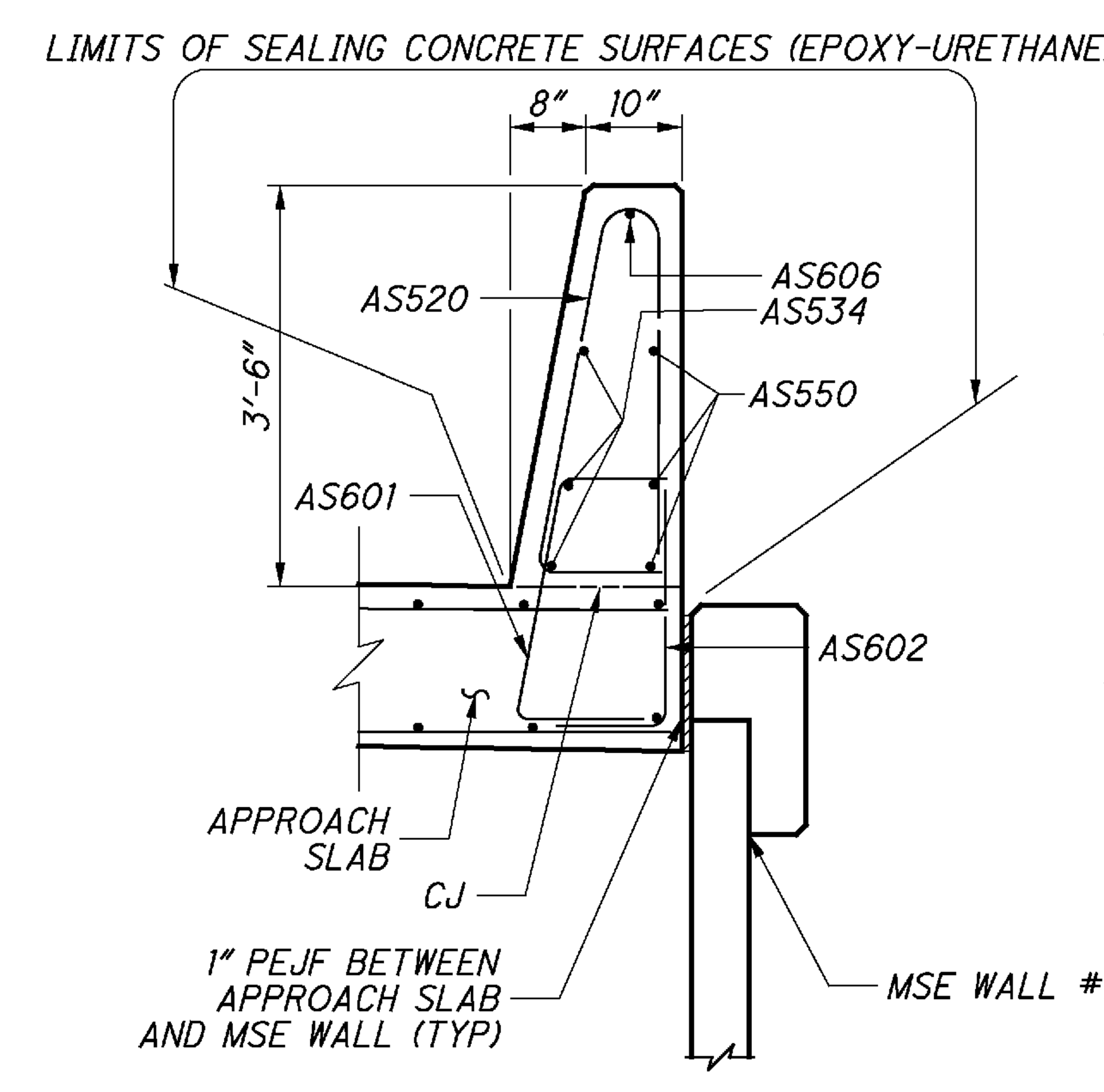


SECTION B-B



SECTION C-C

* DIMENSION VARIES FROM 6" AT THE BEGINNING OF THE APPROACH SLAB TO 8" AT THE BRIDGE.



SECTION D-D

MINIMUM LAP LENGTHS
#5 BARS: 3'-5"
#10 BARS: 7'-10"

LEGEND

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE
CJ = CONSTRUCTION JOINT
PEJF = PREFORMED EXPANSION JOINT FILLER

NOTES

1) CONCRETE AND REINFORCING STEEL IN THE SIDEWALKS, ON THE APPROACH SLABS, SHALL BE INCLUDED WITH ITEM 526, REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN, FOR PAYMENT.

2) FOR ADDITIONAL PARAPET DETAILS SEE SCD SBR-1-13.

3) CONCRETE AND REINFORCING STEEL IN THE STRAIGHT FACED PARAPET SHALL BE PAID FOR UNDER ITEM 511-CLASS QC2 CONCRETE WITH QC/QA BRIDGE DECK (PARAPET) AND ITEM 509 - EPOXY COATED REINFORCING STEEL, RESPECTIVELY.

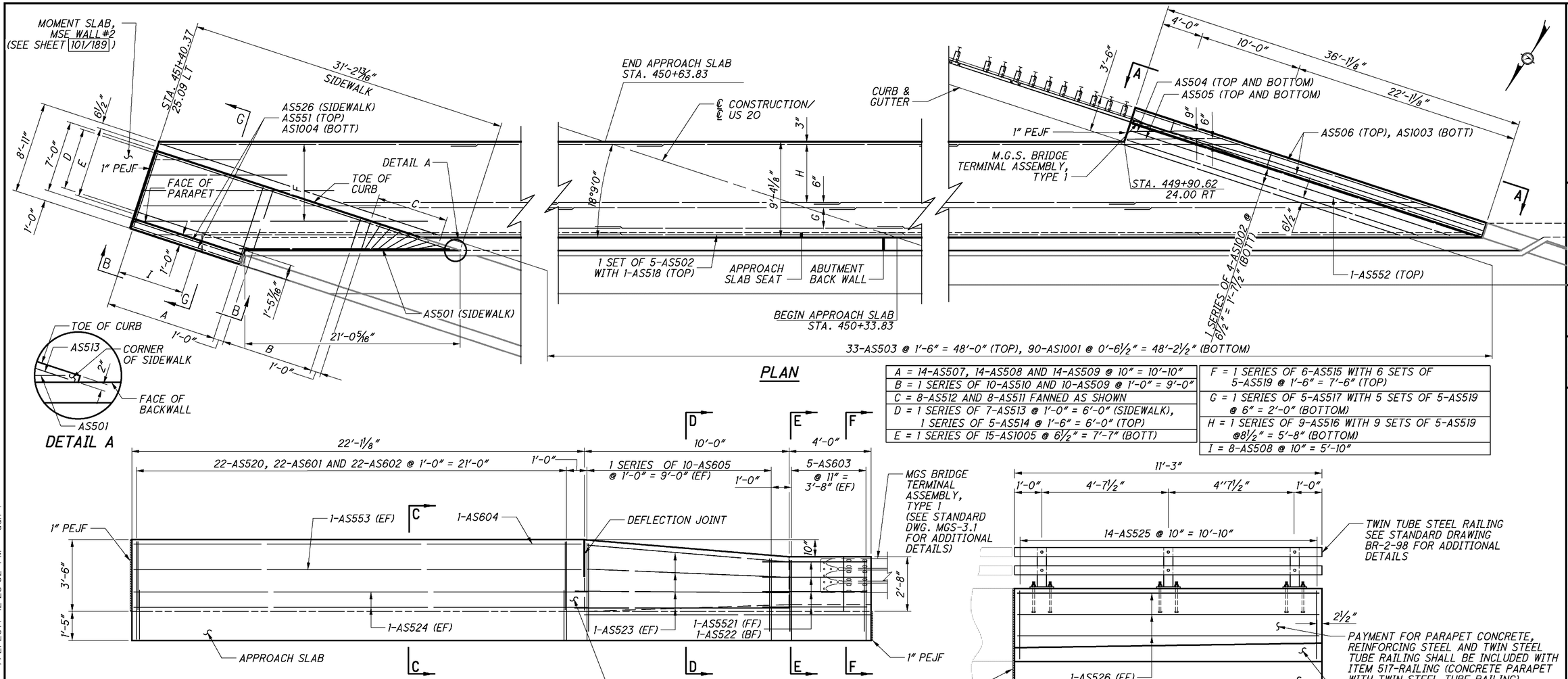
REAR APPROACH SLAB DETAILS

BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED CEJ | DRAWN SDW | REVIEWED MLJ | DATE 3/26/14 | CHECKED BJF | REVISED | STRUCTURE FILE NUMBER 0402265

ATB-20-21.43
PID No. 83599



PLAN

A = 14-AS507, 14-AS508 AND 14-AS509 @ 10" = 10'-10"	F = 1 SERIES OF 6-AS515 WITH 6 SETS OF 5-AS519 @ 1'-6" = 7'-6" (TOP)
B = 1 SERIES OF 10-AS510 AND 10-AS509 @ 1'-0" = 9'-0"	G = 1 SERIES OF 5-AS517 WITH 5 SETS OF 5-AS519 @ 6" = 2'-0" (BOTTOM)
C = 8-AS512 AND 8-AS511 FANNED AS SHOWN	H = 1 SERIES OF 9-AS516 WITH 9 SETS OF 5-AS519 @8 1/2" = 5'-8" (BOTTOM)
D = 1 SERIES OF 7-AS513 @ 1'-0" = 6'-0" (SIDEWALK), 1 SERIES OF 5-AS514 @ 1'-6" = 6'-0" (TOP)	I = 8-AS508 @ 10" = 5'-10"
E = 1 SERIES OF 15-AS1005 @ 6 1/2" = 7'-7" (BOTT)	

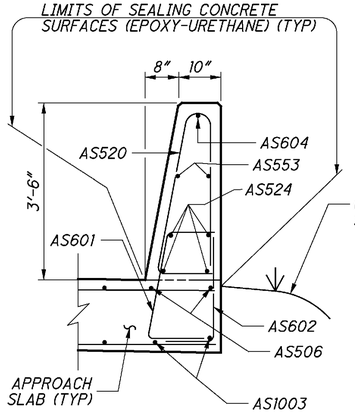
VIEW A-A

APPROACH SLAB REINFORCING NOT SHOWN

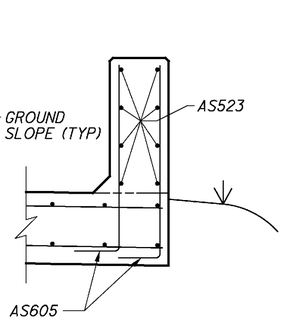
MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1 (SEE STANDARD DWG. MGS-3.1 FOR ADDITIONAL DETAILS)

VIEW B-B

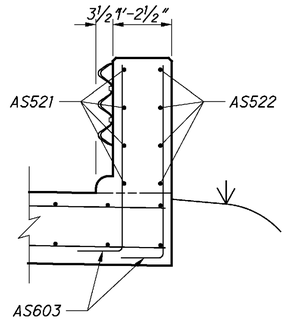
APPROACH SLAB REINFORCING NOT SHOWN
SIDEWALK REINFORCING NOT SHOWN



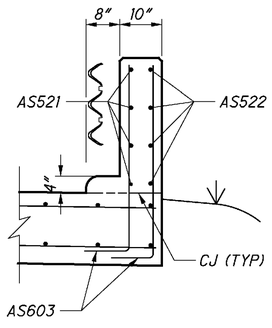
SECTION C-C



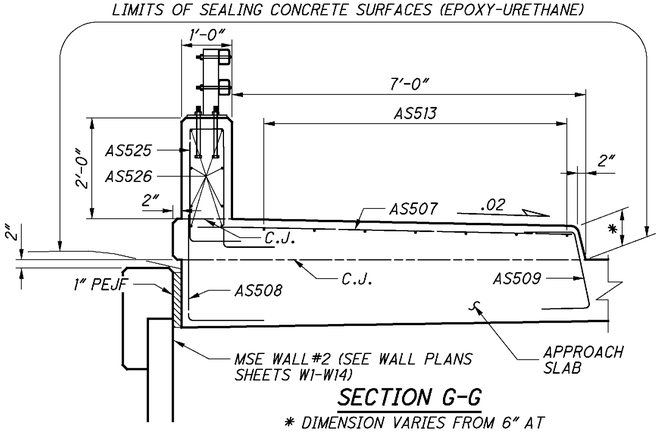
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

* DIMENSION VARIES FROM 6" AT THE BEGINNING OF THE APPROACH SLAB TO 8" AT THE BRIDGE.

MINIMUM LAP LENGTHS
#5 BARS: 3'-5"

LEGEND

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE
CJ = CONSTRUCTION JOINT
PEJF = PREFORMED EXPANSION JOINT FILLER

NOTES

1.) CONCRETE AND REINFORCING STEEL IN THE SIDEWALKS AND ON THE APPROACH SLABS, SHALL BE INCLUDED WITH ITEM 526, REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN, FOR PAYMENT.

2.)FOR ADDITIONAL PARAPET DETAILS SEE SCD BR-2-98 AND SCD SBR-1-13.

DESIGN AGENCY
PALMER ENGINEERING
400 WHITE POND DR. SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	DPF	MLJ	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BJF		0402265	

FORWARD APPROACH SLAB DETAILS
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

38 / 45

159 / 189

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REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
					REAR ABUTMENT						
	1	9′ - 5″			3′ - 11″	1′ - 10″	3′ - 11″				
AR501	SERIES	to	20	2	to	to	to				3 1/4″
	2	9′ - 9″			3′ - 11″	2′ - 1 1/4″	3′ - 11″				
	1	10′ - 2″			3′ - 11″	2′ - 7″	3′ - 11″				
AR502	SERIES	to	82	2	to	to	to				4 1/4″
	7	12′ - 4″			3′ - 11″	4′ - 8 1/2″	3′ - 11″				
AR503	94	12′ - 4″	1209	2	3′ - 11″	4′ - 9″	3′ - 11″				
AR504	74	11′ - 6″	888	2	3′ - 11″	3′ - 11″	3′ - 11″				
	1	3′ - 11″			1′ - 2″	1′ - 10″	1′ - 2″				
AR505	SERIES	to	8	2	to	to	to				3 1/4″
	2	4′ - 3″			1′ - 2″	2′ - 1 1/4″	1′ - 2″				
	1	4′ - 8″			1′ - 2″	2′ - 7″	1′ - 2″				
AR506	SERIES	to	42	2	to	to	to				4 1/4″
	7	6′ - 10″			1′ - 2″	4′ - 8 1/2″	1′ - 2″				
AR507	94	6′ - 10″	670	2	1′ - 2″	4′ - 9″	1′ - 2″				
AR508	74	6′ - 0″	463	2	1′ - 2″	3′ - 11″	1′ - 2″				
AR509	1	9′ - 10″	10	STR							
AR510	1	9′ - 10″	10	STR							
	1	12′ - 9″			5′ - 7″	1′ - 10″	5′ - 7″				
AR511	SERIES	to	133	2	to	to	to				4 1/4″
	9	15′ - 7″			5′ - 7″	4′ - 8″	5′ - 7″				
	1	3′ - 12″			1′ - 6″	1′ - 2 1/2″	1′ - 6″				
AR512	SERIES	to	50	2	to	to	to				4 1/4″
	9	6′ - 10″			1′ - 6″	4′ - 1/2″	1′ - 6″				
AR513	6	8′ - 8″	54	STR							
AR514	1	6′ - 3″	7	STR							
AR515	1	3′ - 2″	3	STR							
AR516	3	4′ - 8″	15	STR							
AR517	2	9′ - 2″	19	STR							
AR518	5	9′ - 11″	51	19	6 3/4″	1′ - 8″	9′ - 2″				
	1	13′ - 9″			4′ - 6 1/2″	2′ - 7″					
AR601	SERIES	to	42	3	to	to					3″
	2	14′ - 3″			4′ - 9 1/2″	2′ - 7″					
	1	15′ - 4″			5′ - 3 3/4″	2′ - 7″					
AR602	SERIES	to	183	3	to	to					4 1/2″
	7	19′ - 7″			7′ - 5 1/4″	2′ - 7″					
AR603	153	20′ - 0″	4596	3	7′ - 8″	2′ - 7″					
	1	17′ - 11″			6′ - 7 1/2″	2′ - 7″					
AR604	SERIES	to	84	3	to	to					4″
	3	19′ - 3″			7′ - 3 1/2″	2′ - 7″					
	1	15′ - 9″			5′ - 6 1/2″	2′ - 7″					
AR605	SERIES	to	74	3	to	to					4″
	3	17′ - 1″			6′ - 2 1/2″	2′ - 7″					
AR606	1	15′ - 0″	23	3	5′ - 2″	2′ - 7″					
AR607	7	14′ - 6″	152	3	4′ - 11″	2′ - 7″					
AR608	1	9′ - 10″	15	STR							
AR609	2	8′ - 10″	27	STR							
AR701	31	40′ - 0″	2535	STR							
AR702	2	17′ - 0″	69	STR							
AR703	1	21′ - 0″	43	STR							
AR704	3	23′ - 0″	141	STR							
AR705	2	37′ - 0″	151	STR							
AR801	120	40′ - 0″	12816	STR							

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
					REAR ABUTMENT						
	2	17′ - 3″			17′ - 3″						
AR802	SERIES	to	433	STR	to						2′-0″
	4	23′ - 3″			23′ - 3″						
	2	22′ - 9″			22′ - 9″						
AR803	SERIES	to	714	STR	to						2′-0″
	5	30′ - 9″			30′ - 9″						
AR804	6	31′ - 6″	505	STR							
REAR ABUTMENT TOTAL			**26,337**								

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

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DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED CEJ	DRAWN CML	REVIEWED MLJ	DATE 3/26/14
CHECKED BJF	REVISED	STRUCTURE FILE NUMBER 0402265	

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
FORWARD ABUTMENT											
	1	10′ - 10″			3′ - 10″	3′ - 5″	3′ - 10″				
AF501	SERIES	to	87	2	to	to	to				4 3/8″
	7	13′ - 0″			3′ - 10″	5′ - 7″	3′ - 10″				
AF502	93	13′ - 0″	1,261	2	3′ - 10″	5′ - 7″	3′ - 10″				
AF503	62	12′ - 3″	787	2	3′ - 10″	4′ - 9″	3′ - 10″				
AF504	12	13′ - 2″	164	2	3′ - 10″	5′ - 8″	3′ - 10″				
	1	5′ - 4″			1′ - 1″	3′ - 5″	1′ - 1″				
AF505	SERIES	to	47	2	to	to	to				4 3/8″
	7	7′ - 6″			1′ - 1″	5′ - 7″	1′ - 1″				
AF506	93	7′ - 6″	727	2	1′ - 1″	5′ - 7″	1′ - 1″				
AF507	62	6′ - 8″	431	2	1′ - 1″	4′ - 9″	1′ - 1″				
AF508	12	7′ - 7″	95	2	1′ - 1″	5′ - 8″	1′ - 1″				
AF509	1	13′ - 0″	14	STR							
	1	11′ - 11″			1′ - 8″	4′ - 0″					
AF510	SERIES	to	67	3	to	to					3″
	5	13′ - 11″			2′ - 8″	4′ - 0″					
	1	7′ - 3″			3′ - 2″	1′ - 2″	3′ - 2″				
AF511	SERIES	to	32	2	to	to	to				4″
	4	8′ - 3″			3′ - 2″	2′ - 2″	3′ - 2″				
AF512	2	6′ - 3″	13	10	4″	1′ - 0″	3′ - 7 1/2″	1′ - 8″			
AF513	6	7′ - 4″	46	23	11″	3′ - 3″	3′ - 0″				
	1	3′ - 9″			3′ - 9″						
AF514	SERIES	to	12	STR	to						2″
	3	4′ - 1″			4′ - 1″						
AF515	3	4′ - 8″	15	STR							
AF601	5	6′ - 9″	50	10	6″	1′ - 6″	3′ - 7 1/2″	1′ - 8″			
AF602	10	14′ - 0″	210	STR							
AF603	50	40′ - 0″	3,004	STR							
AF604	5	2′ - 10″	21	STR							
	2	10′ - 2″			4′ - 5″	1′ - 8″	4′ - 5″				
AF605	SERIES	to	128	2	to	to	to				4″
	4	11′ - 2″			4′ - 5″	2′ - 8″	4′ - 5″				
	1	11′ - 10″			3′ - 7″	2′ - 7″					
AF606	SERIES	to	98	3	to	to					3 1/2″
	5	14′ - 4″			4′ - 10″	2′ - 7″					
	1	15′ - 4″			5′ - 4″	2′ - 7″					
AF607	SERIES	to	184	3	to	to					4 3/8″
	7	19′ - 9″			7′ - 6″	2′ - 7″					
AF608	166	20′ - 0″	4,987	3	7′ - 8″	2′ - 7″					
AF609	2	13′ - 5″	40	STR							
AF610	12	11′ - 8″	210	STR							
AF611	8	12′ - 7″	151	2	5′ - 4″	2′ - 3″	5′ - 4″				
AF612	18	11′ - 4″	306	2	5′ - 4″	1′ - 0″	5′ - 4″				
AF613	185	5′ - 1″	1,413	7	2′ - 5″	11″	1′ - 6″				
AF614	370	10′ - 8″	5,882	2	4′ - 9″	1′ - 5″	4′ - 9″				
AF615	6	3′ - 3″	29	STR							
AF616	5	4′ - 2″	31	13	2′ - 4″	11″	2″	11″			
AF617	1	4′ - 5″	7	STR							
AF701	36	40′ - 0″	2,943	STR							
AF702	2	17′ - 9″	72	STR							
AF703	1	20′ - 6″	42	STR							
AF704	1	24′ - 0″	49	STR							
AF705	3	26′ - 6″	162	STR							
AF706	2	37′ - 0″	151	STR							
AF801	41	11′ - 6″	1,254	18	9′ - 2″	1′ - 0″	1′ - 0″				

REINFORCING STEEL LIST

MARK	NUMBER		TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
FORWARD ABUTMENT													
AF802			120	40′ - 0″	12,816	STR							
AF803			12	35′ - 0″	1,121	STR							
			2	23′ - 0″			23′ - 0″						
AF804			SERIES	to	897	STR	to						2′-0″
			6	33′ - 0″			33′ - 0″						
FORWARD ABUTMENT TOTAL					**40,058**								

MARK	NUMBER REAR	FWD	TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
PIERS													
SP401	12	12	24		9,285	27	4 1/2″	2′ - 6″	27′ - 0″				
P501	338	338	676	8′ - 9″	6,169	2	3′ - 2″	2′ - 8″	3′ - 2″				
P502	56	56	112	20′ - 3″	2,366	2	9′ - 0″	2′ - 6″	9′ - 0″				
P503	288	288	576	9′ - 8″	5,807	STR							
P504	36	36	72	7′ - 6″	563	2	3′ - 2″	1′ - 5″	3′ - 2″				
P505	10	10	20	34′ - 6″	720	STR							
P506	10	10	20	29′ - 6″	615	STR							
P507	20	20	40	30′ - 6″	1,272	STR							
P801	56	56	112	20′ - 5″	6,093	1	3′ - 7″	17′ - 0″					
P802	6	6	12	26′ - 3″	838	STR							
P803	10	10	20	26′ - 0″	1,388	STR							
P804	6	6	12	21′ - 3″	678	STR							
P805	10	10	20	23′ - 6″	1,255	STR							
P806	16	16	32	22′ - 3″	1,894	STR							
P807	28	28	56	24′ - 0″	3,588	STR							
P808	240	240	480	9′ - 8″	12,389	STR							
P1001	96	96	192	12′ - 8″	10,465	1	11′ - 2″	1′ - 10″					
P1002	96	96	192	30′ - 6″	25,198	1	29′ - 0″	1′ - 10″					
PIERS TOTAL					**90,585**								

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320

DESIGNED CEJ | DRAWN CML | REVIEWED BJF | DATE 3/26/14 | CHECKED MLJ | REVISED | STRUCTURE FILE NUMBER 0402265

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

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REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
SUPERSTRUCTURE											
S401	828	4' - 10"	2,673	34	3' - 9"	8.75					
S402	616	5' - 3"	2,143	34	3' - 9"	11"					
	1	4' - 3"			4' - 3"						
S501	SERIES	to	66	STR	to						1'-0 3/4"
	8	11' - 8"			11' - 8"						
	1	12' - 8"			12' - 8"						
S502	SERIES	to	498	STR	to						3 7/8"
	28	21' - 6"			21' - 5"						
	1	21' - 9"			21' - 8"						
S503	SERIES	to	736	STR	to						3 1/8"
	28	28' - 9"			28' - 9"						
	1	29' - 0"			29' - 0"						
S504	SERIES	to	931	STR	to						2 1/2"
	28	34' - 9"			34' - 9"						
S505	944	30' - 0"	29,538	STR							
	1	7' - 4"			7' - 4"						
S506	SERIES	to	282	STR	to						2 1/8"
	28	12' - 0"			12' - 0"						
	1	12' - 2"			12' - 2"						
S507	SERIES	to	411	STR	to						1 3/4"
	28	16' - 0"			16' - 0"						
	1	16' - 3"			16' - 2"						
S508	SERIES	to	520	STR	to						1 1/2"
	28	19' - 6"			19' - 5"						
	1	19' - 7"			19' - 7"						
S509	SERIES	to	615	STR	to						1 1/4"
	28	22' - 6"			22' - 6"						
	1	22' - 7"			22' - 7"						
S510	SERIES	to	701	STR	to						1 1/4"
	28	25' - 6"			25' - 5"						
	1	25' - 6"			25' - 6"						
S511	SERIES	to	787	STR	to						1 1/4"
	28	28' - 6"			28' - 5"						
	1	28' - 6"			28' - 6"						
S512	SERIES	to	879	STR	to						1 3/8"
	28	31' - 9"			31' - 8"						
	1	4' - 2"			4' - 2"						
S513	SERIES	to	149	STR	to						2 1/4"
	23	8' - 3"			8' - 3"						
S514	230	9' - 4"	2,239	STR							
	1	7' - 2"			7' - 2"						
S515	SERIES	to	198	STR	to						1 1/8"
	23	9' - 5"			9' - 4"						
	1	2' - 0"			2' - 0"						
S516	SERIES	to	98	STR	to						2 1/4"
	23	6' - 2"			6' - 2"						
	1	26' - 4"			26' - 4"						
S517	SERIES	to	814	STR	to						1 3/8"
	28	29' - 6"			29' - 5"						
	1	23' - 3"			23' - 3"						
S518	SERIES	to	722	STR	to						1 1/4"
	28	26' - 3"			26' - 2"						
	1	20' - 3"			20' - 3"						
S519	SERIES	to	634	STR	to						1 1/4"
	28	23' - 3"			23' - 2"						

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
SUPERSTRUCTURE											
	1	17' - 3"			17' - 2"						
S520	SERIES	to	545	STR	to						1 3/8"
	28	20' - 3"			20' - 2"						
	1	13' - 8"			13' - 8"						
S521	SERIES	to	448	STR	to						1 1/2"
	28	17' - 0"			17' - 0"						
	1	9' - 8"			9' - 7"						
S522	SERIES	to	337	STR	to						1 3/4"
	28	13' - 6"			13' - 6"						
	1	4' - 8"			4' - 8"						
S523	SERIES	to	206	STR	to						2 1/8"
	28	9' - 5"			9' - 5"						
	1	26' - 3"			26' - 2"						
S524	SERIES	to	849	STR	to						2 5/8"
	28	32' - 0"			32' - 0"						
	1	18' - 10"			18' - 10"						
S525	SERIES	to	669	STR	to						3 5/8"
	28	27' - 0"			27' - 0"						
	1	9' - 5"			9' - 4"						
S526	SERIES	to	421	STR	to						3 7/8"
	29	18' - 6"			18' - 6"						
	1	0' - 10"			10"						
S527	SERIES	to	38	STR							1'-0 3/4"
	8	8' - 3"			8' - 3"						
S528	8	4' - 6"	38	STR							
S529		0' - 0"		STR							
S530	48	40' - 0"	2,003	STR							
S531	6	35' - 1"	220	STR							
S532	335	7' - 4"	2,562	23	11"	3' - 3"	3' - 0"				
S533	153	40' - 0"	6,383	STR							
S534	9	8' - 0"	75	STR							
	1	3' - 6"			1' - 2 1/2"	1/4"	1' - 0"				
S535	SERIES	to	108	31	to	to	to				0 7/8"
	17	8' - 9"			1'-3 3/4"	1 1/2"	6' - 3"				
	1	4' - 4"			1'-2 3/4"	3/8"	1' - 9"				
S536	SERIES	to	132	31	to		to				0 7/8"
	18	9' - 10"			1' - 4"	1 3/4"	7' - 4"				
S537	324	7' - 10"	2,647	30	1' - 6"	8"	2' - 5"				
S538	336	2' - 2"	745	1	10"	1' - 5"					
S539	315	10' - 1"	3,308	31	1' - 4"	1 5/8"	7' - 7"				
S540	2	21' - 5"	45	STR							
S541	1	1' - 10"	2	1	9"	1' - 2 1/2"					
S542	5	6' - 5"	33	3	2' - 3"	8"					
S543	5	3' - 10"	20	1	1' - 6"	2' - 5"					
S544	2	9' - 0"	19	STR							
S545	2	17' - 0"	35	STR							
S546	2	25' - 0"	52	STR							
S547	2	32' - 0"	67	STR							
S548	4	37' - 0"	154	STR							
S549	6	40' - 0"	250	STR							
S550	32	30' - 0"	1,001	STR							
S551	10	15' - 6"	162	STR							
S552	12	17' - 6"	219	STR							
S553	10	19' - 6"	203	STR							
S554	2	33' - 0"	69	STR							
S555	2	22' - 0"	46	STR							
S556	2	24' - 0"	50	STR							

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

DESIGN AGENCY
Palmer ENGINEERING
480 WATER PARK DR. - SUITE 200
AVON LAKE, OHIO 44012
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DATE 3/26/14
REVIEWED BJF
STRUCTURE FILE NUMBER 0402265
DRAWN CML
REVISED
DESIGNED CEJ
CHECKED MLJ

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
SUPERSTRUCTURE											
S557	2	12′ - 0″	25	STR							
S558	5	3′ - 7″	19	24	6 1/2″	1′ - 4 3/4″				3 1/4″	
S559	2	7′ - 6″	16	31	1′ - 11″	1″	4′ - 5″			4 3/8″	
S560	2	6′ - 1″	13	19	4′ - 8″	1′ - 4″	0′ - 4″				
S561	2	6′ - 2″	13	STR							
S562	5	8′ - 3″	43	19	6′ - 10″	1′ - 4″	0′ - 4″				
S563	5	8′ - 3″	43	STR							
S564	189	3′ - 6″	690	STR							
S565	20	40′ - 0″	834	STR							
S566	5	30′ - 0″	156	STR							
S567	5	4′ - 6″	23	STR							
S569	22	14′ - 8″	337	STR							
S570	22	5′ - 3″	120	STR							
S571	22	4′ - 8″	107	STR							
S601	335	3′ - 4″	1,676	28	1′ - 8″	1′ - 0″					
S602	335	2′ - 5″	1,216	1	1′ - 0″	1′ - 8″					
S603	22	14′ - 8″	485	STR							
S604	10	9′ - 11″	149	30	1′ - 10″	8″	3′ - 2″				
S605	3	4′ - 10″	22	1	1′ - 10″	3′ - 2″	3′ - 0″				
S606	3	4′ - 8″	21	1	1′ - 10″	3′ - 0″					
S607	24	40′ - 0″	1,442	STR							
S608	24	4′ - 11″	177	STR							
S701	3444	30′ - 0″	211,186	STR							
	1	3′ - 11″			3′ - 11″						
S702	SERIES	to	195	STR	to						8 7/8″
	12	12′ - 0″			12′ - 0″						
	1	12′ - 8″			12′ - 8″						
S703	SERIES	to	793	STR	to						4 5/8″
	23	21′ - 1″			21′ - 1″						
	1	21′ - 9″			21′ - 8″						
S704	SERIES	to	1,179	STR	to						3 3/4″
	23	28′ - 6″			28′ - 6″						
	1	29′ - 0″			29′ - 0″						
S705	SERIES	to	1,491	STR	to						3″
	23	34′ - 5″			34′ - 5″						
S706	790	30′ - 0″	48,443	STR							
	1	9′ - 9″			9′ - 9″						
S707	SERIES	to	564	STR	to						2 1/2″
	23	14′ - 3″			14′ - 3″						
	1	14′ - 8″			14′ - 8″						
S708	SERIES	to	774	STR	to						1″
	23	18′ - 3″			18′ - 3″						
	1	18′ - 7″			18′ - 7″						
S709	SERIES	to	948	STR	to						1 3/4″
	23	21′ - 9″			21′ - 9″						
	1	22′ - 0″			22′ - 0″						
S710	SERIES	to	1,101	STR	to						1 1/2″
	23	24′ - 10″			24′ - 10″						
	1	25′ - 0″			25′ - 0″						
S711	SERIES	to	1,240	STR	to						1 1/2″
	23	27′ - 9″			27′ - 9″						
	1	27′ - 11″			27′ - 11″						
S712	SERIES	to	1,379	STR	to						1 1/2″
	23	30′ - 9″			30′ - 9″						

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
SUPERSTRUCTURE											
	1	30′ - 11″			30′ - 11″						
S713	SERIES	to	1,524	STR	to						1 5/8″
	23	33′ - 11″			33′ - 11″						
	1	9′ - 0″			9′ - 0″						
S714	SERIES	to	405	STR	to						2 7/8″
	18	13′ - 0″			13′ - 0″						
S715	162	14′ - 3″	4,719	STR							
	1	12′ - 0″			12′ - 0″						
S716	SERIES	to	483	STR	to						1 5/8″
	18	14′ - 3″			14′ - 3″						
	1	6′ - 11″			6′ - 11″						
S717	SERIES	to	330	STR	to						2 7/8″
	18	11′ - 0″			11′ - 0″						
	1	28′ - 10″			28′ - 10″						
S718	SERIES	to	1,426	STR	to						1 5/8″
	23	31′ - 10″			31′ - 10″						
	1	25′ - 10″			25′ - 10″						
S719	SERIES	to	1,279	STR	to						1 1/2″
	23	28′ - 7″			28′ - 7″						
	1	22′ - 10″			22′ - 10″						
S720	SERIES	to	1,138	STR	to						1 1/2″
	23	25′ - 7″			25′ - 7″						
	1	19′ - 9″			19′ - 9″						
S721	SERIES	to	995	STR	to						1 1/2″
	23	22′ - 7″			22′ - 7″						
	1	16′ - 3″			16′ - 3″						
S722	SERIES	to	840	STR	to						1 3/4″
	23	19′ - 6″			19′ - 6″						
	1	12′ - 2″			12′ - 2″						
S723	SERIES	to	660	STR	to						2″
	23	15′ - 11″			15′ - 11″						
	1	7′ - 4″			7′ - 4″						
S724	SERIES	to	451	STR	to						2 1/2″
	23	11′ - 10″			11′ - 10″						
	1	26′ - 6″			26′ - 6″						
S725	SERIES	to	1,375	STR	to						3″
	23	32′ - 0″			32′ - 0″						
	1	19′ - 3″			19′ - 2″						
S726	SERIES	to	1,060	STR	to						3 5/8″
	23	25′ - 11″			25′ - 11″						
	1	9′ - 5″			9′ - 4″						
S727	SERIES	to	654	STR	to						5″
	23	18′ - 6″			18′ - 6″						
	1	0′ - 6″			6″						
S728	SERIES	to	111	STR	to						8 7/8″
	12	8′ - 8″			8′ - 7″						
S729	8	4′ - 6″	74	STR							
S801	492	21′ - 0″	27,586	STR							
SUPERSTRUCTURE TOTAL			**385,780**								

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

3) 6,044 LBS HAVE BEEN REMOVED FROM THE TOTAL REINFORCING STEEL IN THE SUPERSTRUCTURE TO ACCOUNT FOR BARS IN THE PARAPETS THAT ARE INCLUDED UNDER ITEM 517 RAILING FOR PAYMENT.

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED CEJ | DRAWN CML | REVIEWED BJF | DATE 3/26/14
CHECKED MLJ | REVISED | STRUCTURE FILE NUMBER 0402265

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

42 / 45

163 / 189

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REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
REAR DIAPHRAGM											
DR401	99	4′ - 0″	265	STR							
DR501	57	16′ - 7″	983	3	3′ - 11″	4′ - 1″					
DR502											
DR503	65	6′ - 2″	412	2	1′ - 9″	2′ - 10″	1′ - 9″				
DR504	57	11′ - 8″	694	2	4′ - 3″	3′ - 5″	4′ - 3″				
DR505	12	9′ - 6″	118	2	3′ - 7″	2′ - 6″	3′ - 7″				
DR506	220	10′ - 3″	2,352	2	3′ - 7″	3′ - 4″	3′ - 7″				
	1	11′ - 2″			4′ - 3″	2′ - 10″	4′ - 3″				
DR507	SERIES	to	36	2	to	to	to				4″
	3	11′ - 9″			4′ - 3″	3′ - 6″	4′ - 3″				
	1	14′ - 5″			2′ - 10″	4′ - 1″					
DR508	SERIES	to	47	3	to	to					4″
	3	15′ - 9″			3′ - 6″	4′ - 1″					
DR509	78	12′ - 6″	1,017	2	4′ - 3″	4′ - 3″	4′ - 3″				
DR510	78	18′ - 3″	1,481	3	4′ - 9″	4′ - 1″					
DR601											
DR602											
DR603											
DR604	4	8′ - 0″	48	STR							
DR605	40	14′ - 9″	886	STR							
DR606	48	12′ - 0″	865	STR							
DR607	5	8′ - 5″	63	1	7′ - 0″	1′ - 6″					
DR608	40	4′ - 9″	285	STR							
DR609	10	8′ - 9″	131	2	4′ - 0″	1′ - 1″	4′ - 0″				
DR610	10	9′ - 4″	140	2	4′ - 0″	1′ - 8″	4′ - 0″				
DR611	10	11′ - 8″	175	2	4′ - 0″	4′ - 0″	4′ - 0″				
DR612	10	11′ - 4″	170	2	4′ - 0″	3′ - 8″	4′ - 0″				
DR801	38	11′ - 5″	1,162	18	9′ - 2″	1′ - 0″	1′ - 0″				
DR802	8	20′ - 0″	427	STR							
DR803	8	13′ - 3″	283	2	4′ - 0″	5′ - 8″	4′ - 0″				
DR804	144	13′ - 9″	5,303	1	10′ - 0″	4′ - 0″					
DR805	120	12′ - 3″	3,938	1	8′ - 6″	4′ - 0″					
DR806											
DR807	67	40′ - 0″	7,156	STR							
REAR DIAPHRAGM TOTAL			**28,438**								

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
FORWARD DIAPHRAGM											
DF401	99	4′ - 0″	265	STR							
DF501	364	10′ - 9″	4,081	2	3′ - 10″	3′ - 4″	3′ - 10″				
	2	8′ - 5″			3′ - 10″	11″	3′ - 10″				
DF502	SERIES	to	159	2	to	to	to				4″
	8	10′ - 9″			3′ - 10″	3′ - 3″	3′ - 10″				
DF503	65	6′ - 2″	412	2	1′ - 9″	2′ - 10″	1′ - 9″				
DF504	1	12′ - 7″	13	3	9″	5′ - 3″					
	2	10′ - 5″			3′ - 10″	2′ - 11″	3′ - 10″				
DF505	SERIES	to	66	2	to	to	to				3″
	3	10′ - 11″			3′ - 10″	3′ - 6″	3′ - 10″				
DF506	126	9′ - 11″	1,303	2	3′ - 10″	2′ - 6″	3′ - 10″				
DF507	2	8′ - 3″	17	2	3′ - 10″	10″	3′ - 10″				
DF508	2	8′ - 10″	18	2	3′ - 10″	1′ - 5″	3′ - 10″				
DF601											
DF602											
DF603	5	8′ - 9″	66	STR							
DF604	4	8′ - 5″	50	STR							
DF605	40	14′ - 8″	876	STR							
DF606	48	11′ - 10″	853	STR							
DF607	5	7′ - 3″	54	19	4′ - 6″	1′ - 10″	2′ - 0″				
DF608	40	4′ - 10″	290	STR							
DF609	10	8′ - 11″	134	2	4′ - 0″	1′ - 3″	4′ - 0″				
DF610	10	9′ - 6″	143	2	4′ - 0″	1′ - 10″	4′ - 0″				
DF611	10	11′ - 4″	170	2	4′ - 0″	3′ - 8″	4′ - 0″				
DF612	10	12′ - 8″	190	2	4′ - 0″	5′ - 0″	4′ - 0″				
DF801	1	17′ - 5″	47	1	4′ - 0″	13′ - 8″					
	1	9′ - 11″			4′ - 0″	6′ - 1″					
DF802	SERIES	to	144	1	to	to					2′-5″
	4	17′ - 2″			4′ - 0″	13′ - 4″					
DF803	92	13′ - 3″	3,265	1	4′ - 0″	9′ - 6″					
DF804											
DF805	116	11′ - 9″	3,652	1	4′ - 0″	8′ - 0″					
DF806	44	40′ - 0″	4,699	STR							
DF807	4	32′ - 0″	342	STR							
FWD DIAPHRAGM TOTAL			**21,311**								

NOTES:

1) SEE SHEET 4/45 FOR GENERAL NOTES.

2) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • PARKERSBURG • CHARLESTON

DESIGNED CEJ | DRAWN CML | REVIEWED BJF | DATE 3/26/14 | CHECKED MLJ | REVISED | STRUCTURE FILE NUMBER 0402265

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

REINFORCING STEEL LIST

MARK	NUMBER REAR	NUMBER FWD	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	INC.
APPROACH SLABS												
AS501		1	1	20′ - 6″	21	STR						
AS502		5	5	40′ - 0″	209	STR						
AS503		33	33	28′ - 4″	975	STR						
AS504		2	2	6′ - 9″	14	STR						
AS505		2	2	9′ - 3″	19	STR						
AS506		2	2	35′ - 9″	75	STR						
AS507		14	14	7′ - 4″	107	STR						
AS508		14	14	2′ - 7″	37	1	1′ - 0″	1′ - 8″				
AS509		24	24	3′ - 3″	80	28	1′ - 7″	11″				
		1	1	3′ - 2″			3′ - 2″					
AS510		SERIES	SERIES	to	47	STR	to					3 1/2″
		10	10	5′ - 9″			5′ - 9″					
AS511		8	8	3′ - 5″	29	16	2′ - 10″					
AS512		2	2	6′ - 5″	13	2	6′ - 8″					
		1	1	11′ - 6″			11′ - 6″					
AS513		SERIES	SERIES	to	150	STR	to					3′ - 0″
		7	7	29′ - 6″			29′ - 6″					
		1	1	7′ - 2″			7′ - 2″					
AS514		SERIES	SERIES	to	85	STR	to					4′ - 7″
		5	5	25′ - 6″			25′ - 6″					
		1	1	10′ - 8″			10′ - 8″					
AS515		SERIES	SERIES	to	146	STR	to					5′ - 1″
		6	6	36′ - 2″			36′ - 1″					
		1	1	10′ - 8″			10′ - 8″					
AS516		SERIES	SERIES	to	219	STR	to					3′ - 2 1/8″
		9	9	36′ - 2″			36′ - 1″					
		1	1	31′ - 6″			31′ - 6″					
AS517		SERIES	SERIES	to	181	STR	to					1′ - 7″
		5	5	37′ - 10″			37′ - 10″					
AS518		1	1	9′ - 7″	10	STR						
AS519	60	100	160	35′ - 0″	5841	STR						
AS520	12	22	34	10′ - 0″	355	23	11″	3′ - 3″	3′ - 0″			
AS521		4	4	5′ - 8″	24	25	1′ - 10″	2′ - 5″	1′ - 5″	1.5″	5″	
AS522		4	4	5′ - 8″	24	STR						
AS523		8	8	10′ - 0″	83	STR						
AS524		4	4	24′ - 1″	100	STR						
AS525		14	14	7′ - 8″	112	30	1′ - 6″	8″	2′ - 4″	2′ - 2″		
AS526		8	8	10′ - 11″	91	STR						
AS527	44		44	28′ - 4″	1300	STR						
AS528	2		2	11′ - 1″	23	STR						
AS529	14		14	30′ - 0″	438	STR						
AS530	36		36	6′ - 6″	244	STR						
AS531	36		36	3′ - 5″	126	28	1′ - 7″	1′ - 0″				
AS532	58		58	4′ - 5″	267	2	1′ - 6″	1′ - 8″	1′ - 6″			
AS533	5		5	3′ - 11″	20	2	1′ - 3″	1′ - 8″	1′ - 3″			
AS534	3		3	11′ - 1″	35	STR						
	1		1	6′ - 2″			2′ - 4″	1′ - 8″	2′ - 4″			
AS535	SERIES		SERIES	to	39	2	to	to	to			4″
	5		5	8′ - 9″			3′ - 8″	1′ - 8″	3′ - 8″			
AS536	2		2	4′ - 2″	9	STR						
AS537	5		5	14′ - 6″	76	STR						
	1		1	6′ - 11″			2′ - 9″	1′ - 8″	2′ - 9″			
AS538	SERIES		SERIES	to	131	2	to	to	to			3 7/8″
	12		12	14′ - 1″			6′ - 4″	1′ - 8″	6′ - 4″			
	1		1	9′ - 8″			9′ - 8″					
AS539	SERIES		SERIES	to	168	STR	to					2′ - 11 3/4″
	8		8	30′ - 6″			30′ - 6″					

REINFORCING STEEL LIST

MARK	NUMBER REAR	NUMBER FWD	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	INC.
APPROACH SLABS												
	1		1	6′ - 6″			6′ - 6″					
AS540	SERIES		SERIES	to	116	STR	to					4′ - 9 5/8″
	6		6	30′ - 6″			30′ - 6″					
	1		1	2′ - 6″			2′ - 6″					
AS541	SERIES		SERIES	to	82	STR	to					4′ - 3″
	6		6	23′ - 9″			23′ - 9″					
	1		1	2′ - 3″			2′ - 3″					
AS542	SERIES		SERIES	to	164	STR	to					2′ - 5″
	11		11	26′ - 6″			26′ - 5″					
	1		1	12′ - 9″			12′ - 9″					
AS543	SERIES		SERIES	to	123	STR	to					5′ - 5″
	5		5	34′ - 5″			34′ - 5″					
	1		1	12′ - 9″			12′ - 9″					
AS544	SERIES		SERIES	to	206	STR	to					2′ - 3 1/2″
	9		9	31′ - 1″			31′ - 1″					
AS545	25		25	40′ - 0″	1043	STR						
	1		1	11′ - 1″			11′ - 1″					
AS546	SERIES		SERIES	to	75	STR	to					4′ - 7″
	4		4	24′ - 10″			24′ - 10″					
AS547	1		1	21′ - 11″	23	STR						
AS548	2		2	9′ - 8″	20	STR						
AS549	2		2	9′ - 8″	20	STR						
AS550	3		3	11′ - 7″	36	STR						
AS551		2	2	6′ - 8″	14	STR						
AS552		1	1	32′ - 9″	34	STR						
AS553		2	2	21′ - 9″	45	STR						
AS601	12	22	34	3′ - 8″	185	28	2′ - 1″	11″				
AS602	12	22	34	2′ - 11″	149	1	1′ - 0″	2′ - 1″				
AS603		10	10	4′ - 7″	69	1	1′ - 0″	3′ - 9″				
AS604		1	1	21′ - 9″	33	STR						
		2	2	4′ - 8″			1′ - 0″	3′ - 10″				
AS605		SERIES	SERIES	to	151	1	to	to				1″
		10	10	5′ - 5″			1′ - 0″	4′ - 7″				
AS606	1		1	11′ - 4″	17	STR						
AS1001		90	90	29′ - 9″	11521	16	28′ - 4″					
		1	1	31′ - 3″			29′ - 10″					
AS1002		SERIES	SERIES	to	581	16	to					1′ - 8″
		4	4	36′ - 3″			34′ - 10″					
AS1003		2	2	37′ - 2″	320	16	35′ - 9″					
AS1004		2	2	8′ - 2″	70	16	6′ - 8″					
		1	1	3′ - 8″			2′ - 3″					
AS1005		SERIES	SERIES	to	1022	16	to					1′ - 8 7/8″
		15	15	28′ - 0″			26′ - 7″					
AS1006	99		99	29′ - 9″	12673	16	28′ - 4″					
	1		1	12′ - 6″			11′ - 1″					
AS1007	SERIES		SERIES	to	988	16	to					1′ - 8 1/8″
	11		11	29′ - 3″			27′ - 10″					
	1		1	8′ - 5″			8′ - 5″					
AS1008	SERIES		SERIES	to	1585	STR	to					1′ - 7 7/8″
	17		17	34′ - 11″			34′ - 11″					
AS1009	2		2	12′ - 7″	108	16	11′ - 2″					
AS1010	2		2	11′ - 1″	95	16	9′ - 8″					
APPROACH SLABS TOTAL					**1,155**							

NOTES:

1) SEE SHEET 45/45 FOR BAR BEND DIAGRAMS.

2) 180 LBS HAVE BEEN REMOVED FROM THE TOTAL REINFORCING STEEL IN THE APPROACH SLABS TO ACCOUNT FOR BARS IN THE PARAPETS THAT ARE INCLUDED UNDER ITEM 517 RAILING FOR PAYMENT.

3) 42,158 LBS HAVE BEEN REMOVED FROM THE TOTAL REINFORCING STEEL IN THE APPROACH SLABS TO ACCOUNT FOR BARS IN THE APPROACH SLABS AND SIDEWALKS THAT ARE INCLUDED UNDER ITEM 526 REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN FOR PAYMENT.

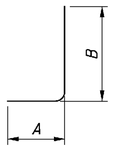
4) THE REMAINING 1,155 POUNDS OF REINFORCING STEEL SHOWN FOR THE TOTAL WEIGHT REFLECTS THE REINFORCEMENT IN SBR-1-13 PARAPETS ON THE APPROACH SLABS.

DESIGN AGENCY
PALMER ENGINEERING
400 WHITE POND DR. - SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

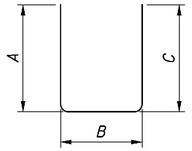
DESIGNED CEJ | DRAWN CML | REVIEWED BJF | DATE 3/26/14 | CHECKED MLJ | REVISED | STRUCTURE FILE NUMBER 0402265

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599



TYPE-1



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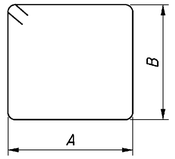

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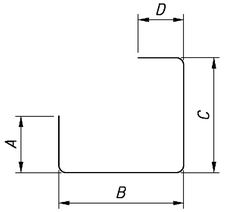
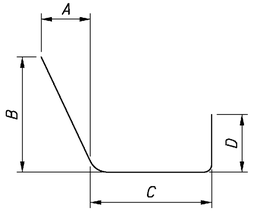
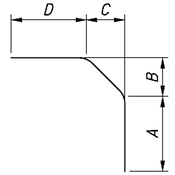


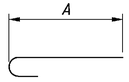
TYPE-7



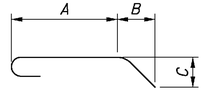
TYPE-10



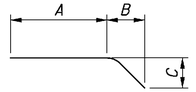
TYPE-13



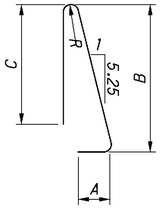
TYPE-16



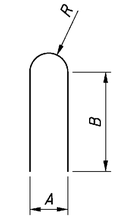
TYPE-18



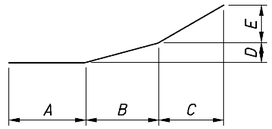
TYPE-19



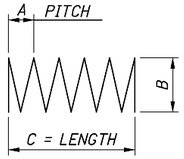
TYPE-23



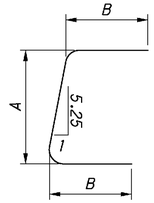
TYPE-24



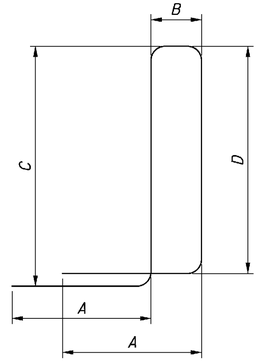
TYPE-25



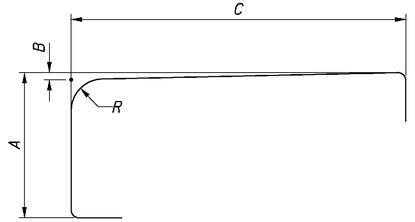
TYPE-27



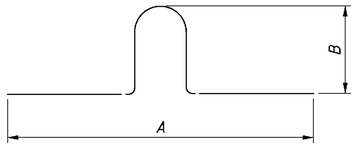
TYPE-28



TYPE-30



TYPE-31



TYPE-34

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
400 WHITE POND DR - SUITE 200
AKRON, OHIO 44320
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
CEJ	SDW	BJF	3/26/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		0402265	

REINFORCING STEEL
BRIDGE NO. ATB-20-2161
US 20 OVER NORFOLK SOUTHERN RAILROAD

ATB-20-21.43
PID No. 83599

RAIL TRAFFIC:	UTILITY OWNERS	
TRAINS PER DAY = 16	TYPE	NAME & ADDRESS
AVERAGE SPEED = 60 MPH	GAS	DOMINION EAST OHIO 320 SPRINGSIDE DRIVE AKRON, OH 44333 (330) 664-2488
	ELECTRIC	C.E.I. 6896 MILLER ROAD BRECKSVILLE, OH 44141 (440) 717-6845
	CABLE TV	TIME WARNER CABLE 2904 STATE ROAD ASHTABULA, OH 44004 (866) 679-2631 EXT. 5739
	TELEPHONE	LEVEL 3 COMMUNICATIONS 1320 DERBYDALE RD AKRON, OH (330) 256-8999
	TELEPHONE	CONNEAUT TELEPHONE 224 STATE STREET CONNEAUT, OH 44030 (440) 969-4855

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED DPF
CHECKED BJF

TOWNSHIP LINE
CORPORATION LINE
N. KINGSVILLE
CONNEAUT
℄ OVERPASS DR.
℄ CONSTRUCTION U.S. 20
STA. 448+61.85 ℄ US 20
STA. 6232+83.00 ℄ NS RAILROAD
CONSTRUCTION LIMITS
℄ FUTURE TRACK
℄ W/B MAIN
℄ FUTURE TRACK
℄ NORFOLK SOUTHERN RAILROAD
N. KINGSVILLE
CONNEAUT
CORPORATION LINE
CONSTRUCTION LIMITS
℄ CONST. INDUSTRY RD
18°90"
Ex RR
Ex SH
Ex R/W
435
440
445
450
455
460
6225
6230
6235
6240
6245

PLAN

NOTE:

THE ELEVATIONS OF THE EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CHIEF ENGINEER BRIDGES & STRUCTURES.

EXISTING GROUND LINE
BOTTOM OF BEAM ELEV. 724.71
TOP RAILS - EAST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)
TOP RAILS - WEST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)
TOP RAILS - EAST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)
TOP RAILS - WEST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)
TOP RAILS - WEST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)
TOP RAILS - EAST BOUND MAIN (OUTSIDE ELEVATIONS SHOWN)

EXISTING ELEVATION

EAST BOUND MAIN - SOUTH (OUTSIDE) RAIL ELEVATIONS

703.68 703.61 703.54 703.47 703.40 703.33 703.26 703.19 703.12 703.05 702.98 702.91 702.84 702.77 702.70 702.63 702.56 702.48 702.41 702.34 702.27 702.20 702.13 702.06 701.99 701.92 701.85 701.78 701.71 701.64 701.57 701.50 701.42 701.36 701.30 701.28 701.33 701.34 701.34 701.32 701.29 701.25 701.23 701.30 701.37 701.44 701.50 701.56 701.62 701.68 701.74 701.80 701.85 701.90 701.96 702.01 702.08 702.12 702.17 702.23 702.28 702.33 702.39 702.44 702.49 702.55 702.60 702.65 702.71 702.76 702.81 702.87 702.92 702.98 703.03

WEST BOUND MAIN - NORTH (OUTSIDE) RAIL ELEVATIONS

703.65 703.58 703.51 703.45 703.38 703.31 703.25 703.18 703.11 703.04 702.98 702.91 702.84 702.78 702.71 702.64 702.57 702.51 702.44 702.37 702.31 702.24 702.17 702.10 702.04 701.97 701.90 701.84 701.77 701.70 701.65 701.62 701.60 701.59 701.57 701.56 701.55 701.54 701.53 701.52 701.52 701.51 701.50 701.48 701.46 701.45 701.48 701.52 701.56 701.60 701.64 701.69 701.75 701.81 701.87 701.93 701.98 702.04 702.10 702.16 702.22 702.28 702.33 702.39 702.45 702.51 702.57 702.63 702.68 702.74 702.80 702.86 702.92 702.98 703.04 703.09

740 720 700 680 660

760 740 720 700 680 660

6226 6227 6228 6229 6230 6231 6232 6233 6234 6235 6236 6237 6238 6239

ELEVATION

NORFOLK SOUTHERN RAILWAY COMPANY
SUPPLEMENTAL SITE PLAN

ATB-20-21.60

167
189

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UTILITY OWNERS	
TYPE	NAME & ADDRESS
GAS	DOMINION EAST OHIO 320 SPRINGSIDE DRIVE AKRON, OH 44333 (330) 664-2488
ELECTRIC	C.E.I. 6896 MILLER ROAD BRECKSVILLE, OH 44141 (440) 717-6845
WATER	CITY OF CONNEAUT 294 MAIN STREET CONNEAUT, OH 44030 (440) 593-7435
WATER	OHIO AMERICAN WATER 2905 NORTH BEND ROAD ASHTABULA, OH 44004 (440) 997-7566
TELEPHONE	CONNEAUT TELEPHONE 224 STATE STREET CONNEAUT, OH 44030 (440) 969-4855
TELEPHONE	WINDSTREAM 100 OWEN BROWN STREET HUDSON, OH 44236 (330) 650-8404
TELEPHONE	LEVEL 3 COMMUNICATIONS 1320 DERBYDALE RD AKRON, OH (330) 256-8999
SEWER	CITY OF CONNEAUT 294 MAIN STREET CONNEAUT, OH 44030 (440) 593-7434
CABLE TV	TIME WARNER CABLE 2904 STATE ROAD ASHTABULA, OH 44004 (866) 679-2631 EXT. 5739

NOTES: THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

LEGEND

WD = WARRANTY DEED
SH = STANDARD HIGHWAY EASEMENT
SL = SLOPE EASEMENT
A = AERIAL EASEMENT
T = TEMPORARY
U = UTILITY

STRUCTURE KEY

RESIDENTIAL
COMMERCIAL
OUT-BUILDING

CONVENTIONAL SYMBOLS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (Ex) (Pr)
Center Line
Right of Way (Ex) Ex R/W
Right of Way (Pr) R/W
Standard Highway Ease.(Ex) Ex SH
Temporary Right of Way TMP
Channel Ease. (Pr) CH
Utility Ease. (Ex) Ex U
Utility Ease. U
Railroad or
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)
Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol , Example
Property Line Symbol , Example
Break Line Symbol , Example
Tree (Pr) , Tree (Ex) , Shrub (Ex)
Tree (Remove) , Shrub (Remove)
Evergreen (Ex) , Stump
Evergreen (Remove) , Stump (Remove)
Wetland (Pr) , Grass (Pr) , Aerial Target
Post (Ex) , Mailbox (Ex) , Mailbox (Pr)
Light (Ex) , Telephone Marker (Ex)
Fire Hydrant (Ex) , Water Meter (Ex)
Water Valve (Ex) , Utility Valve Unknown (Ex.)
Telephone Pole (Ex) , Power Pole (Ex)
Light Pole (Ex)

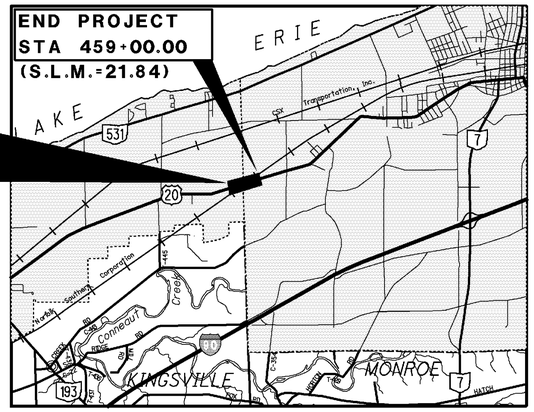
RIGHT OF WAY LEGEND SHEET ATB-20-21.43

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP LOTS 2 & 3
CONNEAUT TOWNSHIP LOTS 57 & 45

INDEX OF SHEETS:

BEGIN PROJECT
STA. 437+45.00
(S.L.M.=21.43)

END PROJECT
STA 459+00.00
(S.L.M.=21.84)



LOCATION MAP
SCALE IN MILES
0 1 2 3 4

LATITUDE: 41°55'30" N
LONGITUDE: 80°37'33"W

PROJECT DESCRIPTION

REPLACEMENT OF EXISTING MULTIPLE SPAN BRIDGE STRUCTURE (ATB-20-2161) WITH A SINGLE SPAN CONCRETE BRIDGE OVER NORFOLK SOUTHERN RAILWAY TRACKS. PROJECT INCLUDES RETAINING WALL CONSTRUCTION, FULL-DEPTH ROADWAY AND ASSOCIATED INCIDENTAL CONSTRUCTION.

PROJECT CONTROL

STATE PLANE GRID OHIO NORTH NAD 83
PROJECT ADJUSTMENT FACTOR 1.000022874

PLANS PREPARED BY:

FIRM NAME : PALMER ENGINEERING COMPANY

R/W DESIGNER: DANIEL P. FICKER

R/W REVIEWER: JAMES D. MAYO

FIELD REVIEW BY: MITCHELL A. McCOY
DATE COMPLETED: 04/10/13

OWNERSHIP VERIFIED BY: CAROL L. OYLER
DATE COMPLETED: 03/15/13

DATE COMPLETED: 4/19/13

I, JAMES DAVID MAYO, P. S. have conducted a survey of the existing conditions for the Ohio Department of Transportation on July 21, 2006 and May 2010. The results of that survey are contained herein.

The horizontal coordinates expressed herein are based on the Ohio State Plane Coordinate System, North Zone on NAD 83 datum by GPS observations to the ODOT CORS network using station OHAS in July, 2006. The Project Coordinates (US Survey feet) are relative to State Plane Grid Coordinates by a Project Adjustment Factor multiplier of 1.000022874.

As a part of this project I have reestablished the locations of the existing property lines and centerline of existing Right of Way for property takes contained herein.

As a part of this project I have established the proposed property lines, calculated the Gross Take, Present Roadway Occupied (PRO), Net Take and Net Residue; as well as prepared the legal descriptions necessary to acquire the parcels shown herein.

As a part of this work I have set right of way monuments at property corners, property line intersections, points along the right of way and/or angle points on the right of way, Section Corners and other points shown herein.

All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "A Minimum Standards for Boundary Surveys in the State of Ohio" unless noted.

The words I and my as used herein are to mean either myself or someone working under my direct supervision.

JAMES DAVID MAYO, Professional Land Surveyor No. 8506,

Date: 4-17-13

SURVEYORS SEAL
STATE OF OHIO
JAMES MAYO S-8506
REGISTERED PROFESSIONAL SURVEYOR

SIGNED:
DATE: 4-17-13

FEDERAL PROJECT NO.
PID NO. 83599
CALCULATED CML CHECKED JDM
RIGHT OF WAY LEGEND SHEET
ATB-20-21.43
1 / 22
168 / 189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

MONUMENT TABLE

℄ of RIGHT OF WAY - US 20		PROJECT COORDINATES SEE SURVEY CERTIFCATION		MONUMENTS TO BE SET DURING CONSTRUCTION		R/W MON. EXPECTED TO BE DISTURBED	
STATION	OFFSET	NORTH (Y)	EAST (X)	MON. ASSY.	REF. MON.	R/W MON.	DESCRIPTION
445+00.00	℄	828,185.209	2,478,139.772	1			ADJUSTABLE CENTERLINE MONUMENT
452+89.58	℄	828,414.831	2,478,895.226	1			ADJUSTABLE CENTERLINE MONUMENT
TOTAL CARRIED TO GENERAL SUMMARY SHEET				2			

SETTING OF ALL MONUMENTS SHALL BE PERFORMED BY A SURVEYOR REGISTERED IN THE STATE OF OHIO. THE MONUMENT ASSEMBLIES AND REFERENCE MONUMENTS WILL BE INSTALLED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. THE IRON PIN AND CAP (WHEN REQUIRED) ARE TO BE INSTALLED BY THE CONTRACTOR'S SURVEYOR.

CHANGES OR ALTERATIONS TO THE LOCATION OF ANY MONUMENTS SHOWN IN THIS TABLE, REQUIRE PRIOR APPROVAL FROM THE DISTRICT REAL ESTATE ADMINISTRATOR OF THE OHIO DEPARTMENT OF TRANSPORTATION. IN THE EVENT THAT CHANGES OR ALTERATIONS ARE APPROVED, A REVISED CENTERLINE PLAT WITH THE NEW LOCATIONS SHALL BE RECORDED IN THE APPLICABLE COUNTY RECORDS AND THE OHIO DEPARTMENT OF TRANSPORTATION. SPECIFICATIONS FOR MONUMENT ASSEMBLIES, REFERENCE MONUMENTS AND RIGHT OF WAY MONUMENTS ARE SHOWN ON STANDARD CONSTRUCTION DRAWING RM-1.1.

BASIS FOR BEARINGS:

ALL BEARINGS SHOWN ARE BASED ON OHIO STATE PLANE NORTH ZONE.

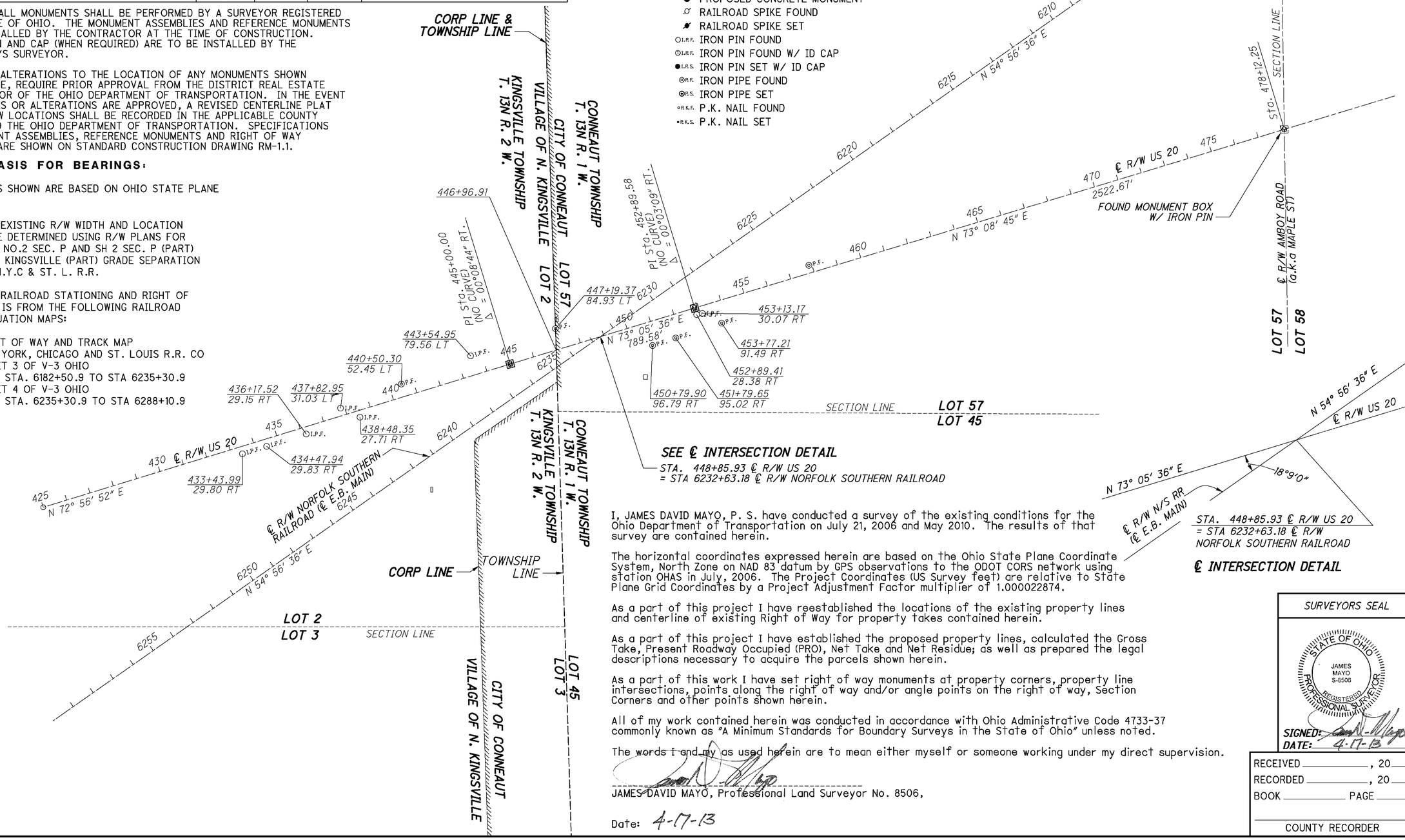
NOTE: THE EXISTING R/W WIDTH AND LOCATION WERE DETERMINED USING R/W PLANS FOR S.H. NO.2 SEC. P AND SH 2 SEC. P (PART) & N. KINGSVILLE (PART) GRADE SEPARATION AT N.Y.C & ST. L. R.R.

THE RAILROAD STATIONING AND RIGHT OF WAY IS FROM THE FOLLOWING RAILROAD VALUATION MAPS:

RIGHT OF WAY AND TRACK MAP
NEW YORK, CHICAGO AND ST. LOUIS R.R. CO
SHEET 3 OF V-3 OHIO
STA. 6182+50.9 TO STA 6235+30.9
SHEET 4 OF V-3 OHIO
STA. 6235+30.9 TO STA 6288+10.9

MONUMENT LEGEND

- EXISTING R/W MONUMENT BOX
- PROPOSED R/W MONUMENT BOX
- EXISTING CONCRETE MONUMENT
- PROPOSED CONCRETE MONUMENT
- RAILROAD SPIKE FOUND
- RAILROAD SPIKE SET
- I.P.F. IRON PIN FOUND
- I.P.F. IRON PIN FOUND W/ ID CAP
- I.P.S. IRON PIN SET W/ ID CAP
- P.F. IRON PIPE FOUND
- P.S. IRON PIPE SET
- P.K.F. P.K. NAIL FOUND
- P.K.S. P.K. NAIL SET



SEE ℄ INTERSECTION DETAIL

STA. 448+85.93 ℄ R/W US 20
= STA 6232+63.18 ℄ R/W NORFOLK SOUTHERN RAILROAD

℄ INTERSECTION DETAIL

I, JAMES DAVID MAYO, P. S. have conducted a survey of the existing conditions for the Ohio Department of Transportation on July 21, 2006 and May 2010. The results of that survey are contained herein.

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The words I and my as used herein are to mean either myself or someone working under my direct supervision.

JAMES DAVID MAYO, Professional Land Surveyor No. 8506,

Date: 4-17-13

SURVEYORS SEAL

STATE OF OHIO
JAMES MAYO S-8506
REGISTERED PROFESSIONAL SURVEYOR

SIGNED:
DATE: 4-17-13

RECEIVED _____, 20___
RECORDED _____, 20___
BOOK _____ PAGE _____
COUNTY RECORDER

HORIZONTAL SCALE IN FEET
0 200 400

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

CENTERLINE PLAT

ATB-20-21.43

2 / 22

169 / 189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

SEE SHEET 5/22 FOR CONTINUATION OF PROPERTY FOR PARCELS (1) (4) (9) (13) (15) (17)

OWNERS

(1)	MARTIN E. & LINDA K. FOX
(2)	ROBERT P. & RANDALL B. NICHOLS
(3)	(NOT USED)
(4)	JOSEPH E. & MARYLIN J. SIMAK
(5)	KIMBERLY A. & ALLEN, THOMAS BURNS
(6)	WILLIS W. & DOROTHEA WESTBAY
(7)	WILLIAM R. & PATRICIA L. FOOTE
(8)	NATALIE LUKJANCZUK
(9)	F. MUCCIARONE, INC
(10)	VICTOR M. GARRIDO
(11)	RNR LAND CO., LLC
(12)	LINDA WALFORD
(13)	ROBERT L ADKINS
(14)	(NOT USED)
(15)	CITY OF CONNEAUT, OHIO & VILLAGE OF NORTH KINSGVILLE OHIO
(16)	LUKJAN METAL PRODUCTS COMPANY
(17)	THOMAS H. & DONNA J. NELSON
(18)	ROY CAMPBELL & RICKY CAMPBELL
(19)	GRANT L. & MARGIE A. CASE
(20)	DAVID A. & JACKIE L. DELLO
(21)	ROBERT G. LEHTONEN
(22)	DEAKAN ADAMS
(23)	R W SIDLEY, INC.
(24)	JAMES A. AND JUDITH ANN EVANS
(25)	CITY OF CONNEAUT, OHIO
(26)	HOWARD S. JOHNSON
(27)	BURYING GROUND, TRUSTEE CITY OF CONNEAUT, OHIO
(30)	THE NORFOLK SOUTHERN RAILWAY CO.

BEGIN AQUISITION
STA 436+94.60
(US 20)

END AQUISITION
STA 459+50.00
(US 20)

KINGSVILLE TOWNSHIP
VILLAGE OF N. KINGSVILLE
CONNEAUT TOWNSHIP
CITY OF CONNEAUT

TOWNSHIP LINE
CORP LINE
SECTION LINE
LOT 2
LOT 3
LOT 57
LOT 45

LAKE

OVERPASS DRIVE
INDUSTRY ROAD
VACATED PRIVATE ROAD (Ord. 143-2 & 818)
℄ R/W US 20
℄ R/W NORFOLK SOUTHERN RAILROAD
Ex RR
Ex SH
Ex R/W

28-002-00-026-00
28-002-00-027-00
28-002-00-028-00
28-002-00-030-00
28-002-00-031-00
28-002-00-032-00
28-002-00-033-00
28-002-00-034-00
28-002-00-035-00
28-002-00-036-00
28-002-00-037-00
28-002-00-038-00
28-002-00-039-00
28-002-00-040-00
28-002-00-041-00
28-002-00-042-00
28-002-00-008-00
28-003-00-003-00
28-003-00-004-00
12-324-00-083-00
12-324-00-082-01
12-324-00-083-01
12-324-00-084-00
12-324-00-085-00
12-324-00-094-01
12-324-00-087-00
12-324-00-088-00
12-324-00-090-00
12-324-00-091-00
12-324-00-074-00
12-324-00-081-00
12-324-00-079-00
12-324-00-077-00
12-324-00-075-00
12-324-00-073-00
12-324-00-072-00
12-324-00-076-00
12-324-00-080-00
12-324-00-078-00
12-321-00-063-00

SEE SHEET 4/22 FOR CONTINUATION OF PROPERTY FOR PARCELS (7) (8) (16) (19) (23)

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 100 200

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

PROPERTY MAP

ATB-20-21.43

3 / 22

170 / 189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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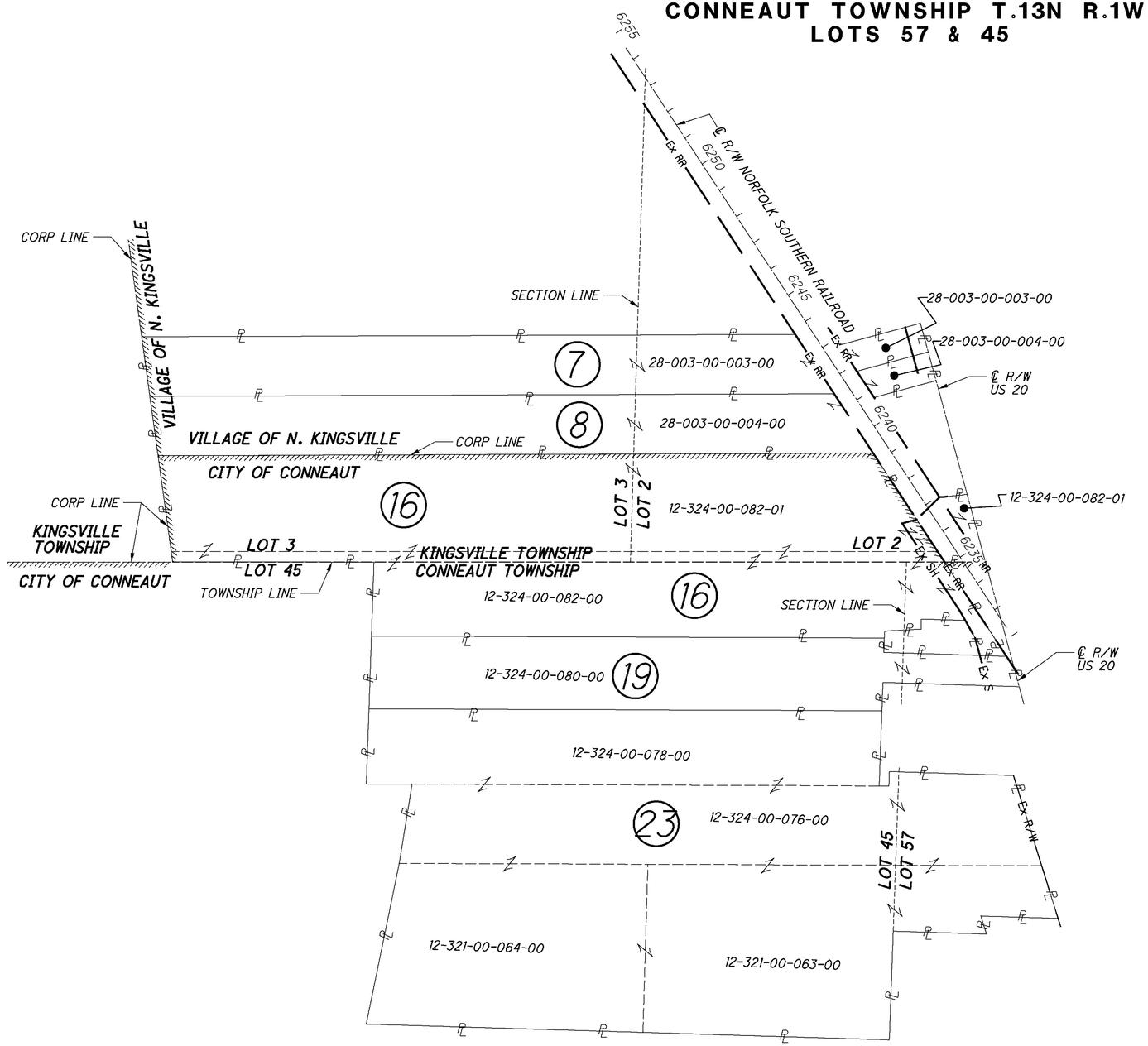
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



OWNERS	
(7) WILLIAM R. & PATRICIA L. FOOTE	(16) LUKJAN METAL PRODUCTS COMPANY
(8) NATALIE LUKJANCZUK	(19) GRANT L. & MARGIE A. CASE
	(23) R W SIDLEY, INC.

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

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HORIZONTAL SCALE IN FEET
0 200 400

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER BJF

PROPERTY MAP (2/3)

ATB-20-21.43

4 / 22

171 / 189

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

℄ R/W GORE RD

C.S.X. RAILROAD

Ex RR — ℄ — Ex RR — ℄ — Ex RR — ℄ — Ex RR — ℄ — Ex RR — ℄

15

12-324-00-116-00

15

28-02-00-008-00

KINGSVILLE TOWNSHIP LOT 2

CONNEAUT TOWNSHIP LOT 57

12-324-00-083-00

TOWNSHIP LINE

CORP LINE

12-324-00-094-03

17

12-324-00-094-01

28-002-00-030-00

28-002-00-032-00

28-002-00-035-00

28-002-00-028-00

VILLAGE OF N. KINGSVILLE

CITY OF CONNEAUT

1

4

9

13

12-324-00-085-00

℄ R/W AMBOY RD

12-324-00-101-01

Ex RR — 6200 — 6205 — Ex 6210 — 6215 — 6220 — Ex RR — 6225 — Ex RR — 6230

℄ R/W NORFOLK SOUTHERN RAILROAD

12-324-00-083-01

Ex SH

℄ R/W

12-324-00-083-00

℄ R/W US 20

OWNERS

1	MARTIN E. & LINDA K. FOX
4	JOSEPH E. & MARYLIN J. SIMAK
9	F. MUCCIARONE, INC
13	ROBERT L ADKINS
15	CITY OF CONNEAUT, OHIO & VILLAGE OF NORTH KINSGVILLE OHIO
17	THOMAS H. & DONNA J. NELSON

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 200 400

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER BJF

PROPERTY MAP (3/3)

ATB-20-21.43

5 / 22

172
189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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TOTAL NUMBER OF :

19 OWNERSHIPS 0 TOTAL TAKES

30 PARCELS 2 OWNERSHIPS W/ STRUCTURES INVOLVED

RECORD AREA - TOTAL PRO - NET TAKE = NET RESIDUE
GROSS TAKE - PRO IN TAKE = NET TAKE
ALL AREAS IN ACRES

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
STATE OF OHIO, DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

* DENOTES RIGHT OF WAY ENCROACHMENT

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1	MARTIN E. & LINDA K. FOX	8,9	24	1249	28-002-00-027-00	1.340	0.000								NO TAKE		
					28-002-00-028-00	5.710	0.000										
2	ROBERT P. & RANDALL B. NICHOLS	8,9	361	86	28-002-00-040-00	1.350	0.000								NO TAKE		
					28-002-00-041-00	1.000	0.069										
					28-002-00-042-00	1.120	0.069										
3	NOT USED																
4	JOSEPH E. & MARYLIN J. SIMAK	8,9	61	1011	28-002-00-030-00	28.500	0.132										
4T								0.043	0.000	0.043				STATE	CONSTRUCT DRIVE AND GRADING		
5	KIMBERLY K. & ALLEN, THOMAS BURNS	8-11	508	205	28-002-00-039-00	1.740	0.093										
5T			391	553				0.040	0.000	0.040					CONSTRUCT DRIVE AND GRADING		
6	WILLIS W. & DOROTHEA WESTBAY	8-11	106	5535	28-002-00-031-00	1.500	0.326										
6SH								0.026	0.000	0.026		1.148			OLD FLAGPOLE BASE		
6T								0.092	0.000	0.092					CONSTRUCT DRIVE AND GRADING		
7	WILLIAM R. & PATRICIA L. FOOTE	10,11	110	513	28-003-00-003-00	10.000	0.109										
7T								0.058	0.000	0.058					CONSTRUCT GRADING		
8	NATALIE LUKJANCZUK	10,11,20,21	108	1359	28-003-00-004-00	9.500	0.000										
8T					28-002-00-038-00	0.500	0.109	0.044	0.000	0.044					CONSTRUCT GRADING		
9	F. MUCCIARONE, INC	10,11	98	131	28-002-00-032-00	10.000	0.386										
															NO TAKE		
10	VICTOR M. GARRIDO	10,11	171	1389	28-002-00-037-00	0.420	0.126										
10T								0.032	0.000	0.032					CONSTRUCT GRADING		
11	RNR LAND CO., LLC	10-13	72	5791	28-002-00-036-00	0.800	0.392										
11T								0.113	0.000	0.113					CONSTRUCT GRADING		
12	LINDA WALFORD	10-13	98	5859	28-002-00-033-00	2.000	0.210								NO TAKE		
			98	5857	28-002-00-034-00	2.150	0.225										
13	ROBERT L ADKINS	12-13	431	976	28-002-00-035-00	13.837	0.381								NO TAKE		
14	NOT USED																
15	CITY OF CONNEAUT, OHIO & VILLAGE OF	12-13	679	822	28-002-00-008-00	79.260	0.067								NO TAKE		
	NORTH KINGSVILLE, OHIO				12-324-00-116-00	6.220	0.000										
16	LUKJAN METAL PRODUCTS COMPANY	12-15,20,21	660	142	12-324-00-082-00	10.200	0.510										
			660	142	12-324-00-082-01	17.990	0.160										
16U					12-324-00-082-00	10.200	0.510	0.090	0.000	0.090							
					12-324-00-082-01	17.990	0.160	0.207	0.000	0.207							
	TOTALS 16-U							0.297	0.000	0.297					OVERLAP 0.195 AC WITH 16-T		
16T					12-324-00-082-00	10.200	0.510	0.196	0.000	0.196							
					12-324-00-082-01	17.990	0.160	0.176	0.000	0.176							
	TOTALS 16-T							0.372	0.000	0.372				STATE	CONSTRUCT FOOTER AND TEMPORARY ROAD		
17	THOMAS H. & DONNA J. NELSON	12-17	84	6378	12-324-00-083-00	70.604	0.282										
			406	336	12-324-00-083-01	3.000	0.000										
					12-324-00-085-00	18.230	0.000										
					12-324-00-094-01	66.498	0.000										
					12-324-00-094-03	6.267	0.000										
					12-324-00-101-01	5.129	0.064										
	(PARCEL 17 CONTINUED ON NEXT SHEET)																

NOTE: ALL TEMPORARY PARCELS TO BE OF 18 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

LEGEND:
WD = WARRANTY DEED
SH = STANDARD HIGHWAY EASEMENT
T = TEMPORARY EASEMENT
S = SEWER EASEMENT
U = UTILITY

REV. BY	DATE	DESCRIPTION
DPF	6/9/14	REMOVE PCL-9T; CHANGE TOTAL # PCLS

FIELD REVIEW BY : MITCHELL A. McCOY DATE: 04/10/13
OWNERSHIP VERIFIED BY: CAROL L. OYLER DATE: 03/15/13
DATE COMPLETED : 04/19/13

FEDERAL PROJECT NO. E081125
PID NO. 83599
STATE JOB NO. 440124
R/W DESIGNER DPF
R/W REVIEWER JDM

SUMMARY OF ADDITIONAL RIGHT OF WAY-PARCELS 1-16

ATB-20-21.43

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

RECORD AREA - TOTAL PRO - NET TAKE = NET RESIDUE
GROSS TAKE - PRO IN TAKE = NET TAKE
ALL AREAS IN ACRES

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
STATE OF OHIO, DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

* DENOTES RIGHT OF WAY ENCROACHMENT

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
17SH					12-324-00-083-00	70.604	0.282	0.053	0.000	0.053	S(1)			STATE	SWING GATE, SIGN		
17SH2					12-324-00-083-00			0.045	0.000	0.045							
	TOTAL FOR 17SH and 17 SH2 (12-324-00-083-00)							0.098	0.000	0.098		70.224					
17SH1					12-324-00-083-01	3.000	0.000	0.180	0.000	0.180	Y(1)	2.820			HOUSE FOUNDATION, DEBRIS PILE, WATER WELL, PRIVACY FENCE-112FT)		
17U					12-324-00-083-00	70.604	0.282	0.031	0.000	0.031					OVERLAP 0.031 AC WITH 17-T1		
17T					12-324-00-083-00			0.089	0.000	0.089					CONSTRUCT GRADING AND PIER FOOTING		
					12-324-00-083-01			0.357	0.000	0.357							
	TOTAL 17-T							0.446	0.000	0.446							
17T1					12-324-00-083-00			0.164	0.000	0.164					CONSTRUCT GRADING/REMOVE GARAGE		
18	ROY CAMPBELL & RICKY CAMPBELL	12-15	530	1899	12-324-00-081-00	0.720	0.000										
18T								0.055	0.000	0.055					CONSTRUCT DRIVE, TEMPORARY ROAD AND GRADING/FLAGPOLE		
18U								0.030	0.000	0.030					OVERLAP 0.026 AC WITH 18-T		
19	GRANT L. & MARGIE A. CASE	14-15	776	281	12-324-00-080-00	10.000	0.212										
19U								0.023	0.000	0.023							
20	DAVID A. & JACKIE L. DELLO	14-15	38	3060	12-324-00-079-00	1.200	0.218										
20U								0.023	0.000	0.023							
21	ROBERT G. LEHTONEN	16-17	79	5092	12-324-00-084-00	0.750	0.349				Y(1)				*FRAME GARAGE - TAKE (& ENCHROACHMENT OVER PARCEL 17)		
21T								0.065	0.000	0.065					*WATER WELL - CONSTRUCT GRADING AND ACCESS DRIVE		
22	DEAKAN ADAMS	14-15	189	1601	12-324-00-077-00	2.000	0.425										
22U								0.054	0.000	0.054					LANDSCAPING		
23	RW SIDLEY, INC.	14-17	40	7457	12-324-00-075-00	2.560	0.000										
					12-324-00-076-00	11.730	0.000										
					12-324-00-078-00	8.800	0.000										
					12-321-00-063-00	10.000	0.000										
					12-321-00-064-00	10.500	0.000										
23SH					12-324-00-075-00	2.560	0.000	0.113	0.000	0.113			2.447				
					12-324-00-076-00	11.730	0.000	0.011	0.000	0.011			11.719				
	TOTALS 23-SH					14.290	0.000	0.124	0.000	0.124			14.166		CHAIN LINK FENCE (264 FT)		
23T					12-324-00-075-00	2.560	0.000	0.061	0.000	0.061							
					12-324-00-076-00	11.730	0.000	0.061	0.000	0.061							
	TOTALS 23-T					14.290	0.000	0.122	0.000	0.122					CONSTRUCT GRADING AND TEMP. ROAD		
23U					12-324-00-075-00	2.560	0.000	0.050	0.000	0.050							
					12-324-00-076-00	11.730	0.000	0.069	0.000	0.069							
	TOTALS 23-U					14.290	0.000	0.119	0.000	0.119					OVERLAPS 0.086 AC WITH 23-T		
24	JAMES A. & JUDITH ANN EVANS	16-17	55	8551	12-324-00-087-00	1.100	0.275										
24T								0.023	0.000	0.023					CONSTRUCT GRADING		
24T1								0.034	0.000	0.034					CONSTRUCT GRADING AND DRIVEWAYS		
25	THE CITY OF CONNEAUT, OHIO	16-19	398	1078	12-324-00-074-00	0.321	0.000								NO TAKE		
26	HOWARD S. JOHNSON	16-19	84	4458	12-324-00-088-00	1.420	0.203										
26T			39	5850				0.009	0.000	0.009					CONSTRUCT GRADING AND DRIVEWAYS		
27	BURYING GROUND,TRUSTEE (aka CITY OF CONNEAUT)	16-19	69	8935	12-324-00-073-00	1.610	0.084								NO TAKE		
30	THE NORFOLK SOUTHERN RAILWAY COMPANY	12-15,22	105	113		7.900	0.000										
30SH			105	166				0.138	0.000	0.138					SEE OVERLAP TABLE ON RAILROAD PLAT (SHEET 22/22)		
30A								0.991	0.000	0.991					SEE OVERLAP TABLE SHEET 22/22		
30U								0.046	0.000	0.046					IN NAME OF THE ILLUMINATING COMPANY/SEE OVERLAP TABLE SHEET 22/22		
30T								1.735	0.000	1.735				STATE	SEE OVERLAP TABLE SHEET 22/22		

NOTE: ALL TEMPORARY PARCELS TO BE OF 18 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

LEGEND:
WD = WARRANTY DEED
SH = STANDARD HIGHWAY EASEMENT
T = TEMPORARY EASEMENT
S = SEWER EASEMENT
U = UTILITY

REV. BY	DATE	DESCRIPTION
CML	10/8/13	ADD PARCEL 23-U
TWW	7-24-13	ADD SIGN AS 'TAKE' PCL 17SH

FIELD REVIEW BY: MITCHELL A. McCOY DATE: 04/10/13
OWNERSHIP VERIFIED BY: CAROL L. OYLER DATE: 03/15/13
DATE COMPLETED: 04/19/13

FEDERAL PROJECT NO. E081125
PID NO. 83599
STATE JOB NO. 440124
DPF
R/W REVIEWER JDM

SUMMARY OF ADDITIONAL RIGHT OF WAY-PARCELS 17-30

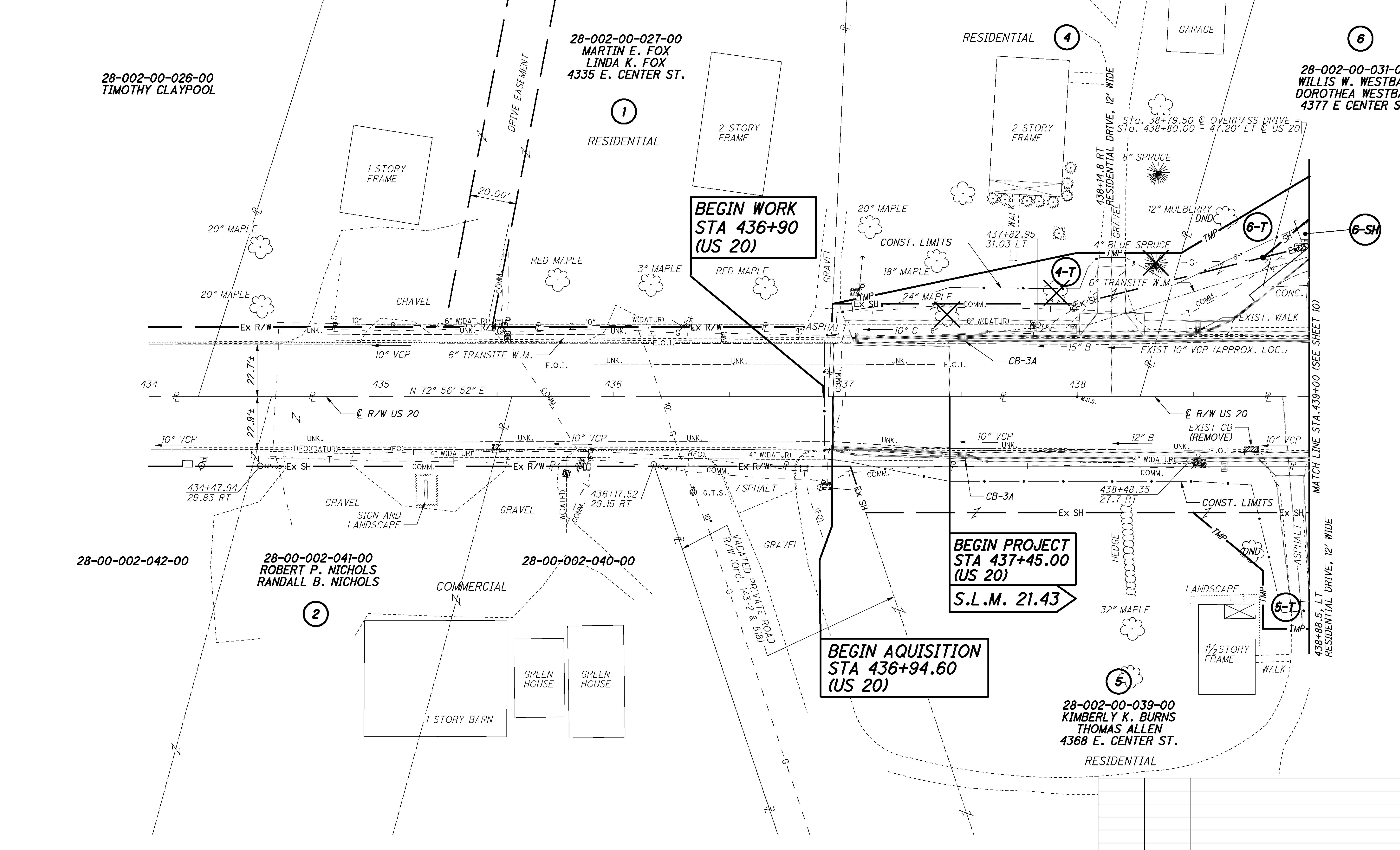
ATB-20-21.43

7 / 22

174 / 189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



BARN
DRIVE EASEMENT
20.00'
28-002-00-026-00
TIMOTHY CLAYPOOL
1 STORY FRAME
28-002-00-027-00
MARTIN E. FOX
LINDA K. FOX
4335 E. CENTER ST.
RESIDENTIAL
2 STORY FRAME
BEGIN WORK
STA 436+90
(US 20)
28-002-00-030-00
JOSEPH E. SIMAK
MARYLIN J. SIMAK
4359 E. CENTER ST.
RESIDENTIAL
GARAGE
28-002-00-031-00
WILLIS W. WESTBAY
DOROTHEA WESTBAY
4377 E CENTER ST
Sta. 38+79.50 ℄ OVERPASS DRIVE =
Sta. 438+80.00 - 47.20' LT ℄ US 20
438+14.8 RT
RESIDENTIAL DRIVE, 12' WIDE
8" SPRUCE
12" MULBERRY
DND
20" MAPLE
437+82.95
31.03 LT
CONST. LIMITS
18" MAPLE
4" BLUE SPRUCE
6" TRANSITE W.M.
24" MAPLE
RED MAPLE
3" MAPLE
GRAVEL
Ex R/W
Ex SH
6" W(DATUR)
10" C
15" B
CB-3A
EXIST 10" VCP (APPROX. LOC.)
EXIST. WALK
CONC.
6" TRANSITE W.M.
10" VCP
E.O.I.
UNK.
434
435
436
437
438
N 72° 56' 52" E
℄ R/W US 20
22.7'±
22.9'±
MATCH LINE STA.439+00 (SEE SHEET 10)
10" VCP
12" B
EXIST CB
(REMOVE)
4" W(DATUR)
COMM.
434+47.94
29.83 RT
436+17.52
29.15 RT
G.T.S.
ASPHALT
438+48.35
27.7 RT
CB-3A
BEGIN PROJECT
STA 437+45.00
(US 20)
S.L.M. 21.43
SIGN AND LANDSCAPE
GRAVEL
28-00-002-042-00
28-00-002-041-00
ROBERT P. NICHOLS
RANDALL B. NICHOLS
28-00-002-040-00
COMMERCIAL
VACATED PRIVATE ROAD
R/W (Ord. 143-2 & 818)
BEGIN AQUISITION
STA 436+94.60
(US 20)
HEDGE
32" MAPLE
LANDSCAPE
1½ STORY FRAME
WALK
438+88.5, LT
RESIDENTIAL DRIVE, 12' WIDE
28-002-00-039-00
KIMBERLY K. BURNS
THOMAS ALLEN
4368 E. CENTER ST.
RESIDENTIAL
1 STORY BARN
GREEN HOUSE
GREEN HOUSE

REV. BY	DATE	DESCRIPTION

DATE COMPLETED: 04/19/13

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 434+00.00 - STA. 439+00.00

ATB-20-21.43

8 / 22

175 / 189

Palmer ENGINEERING
PALMER ENGINEERING 460 WHITE POND DR - SUITE 300 AKRON, OHIO 44320

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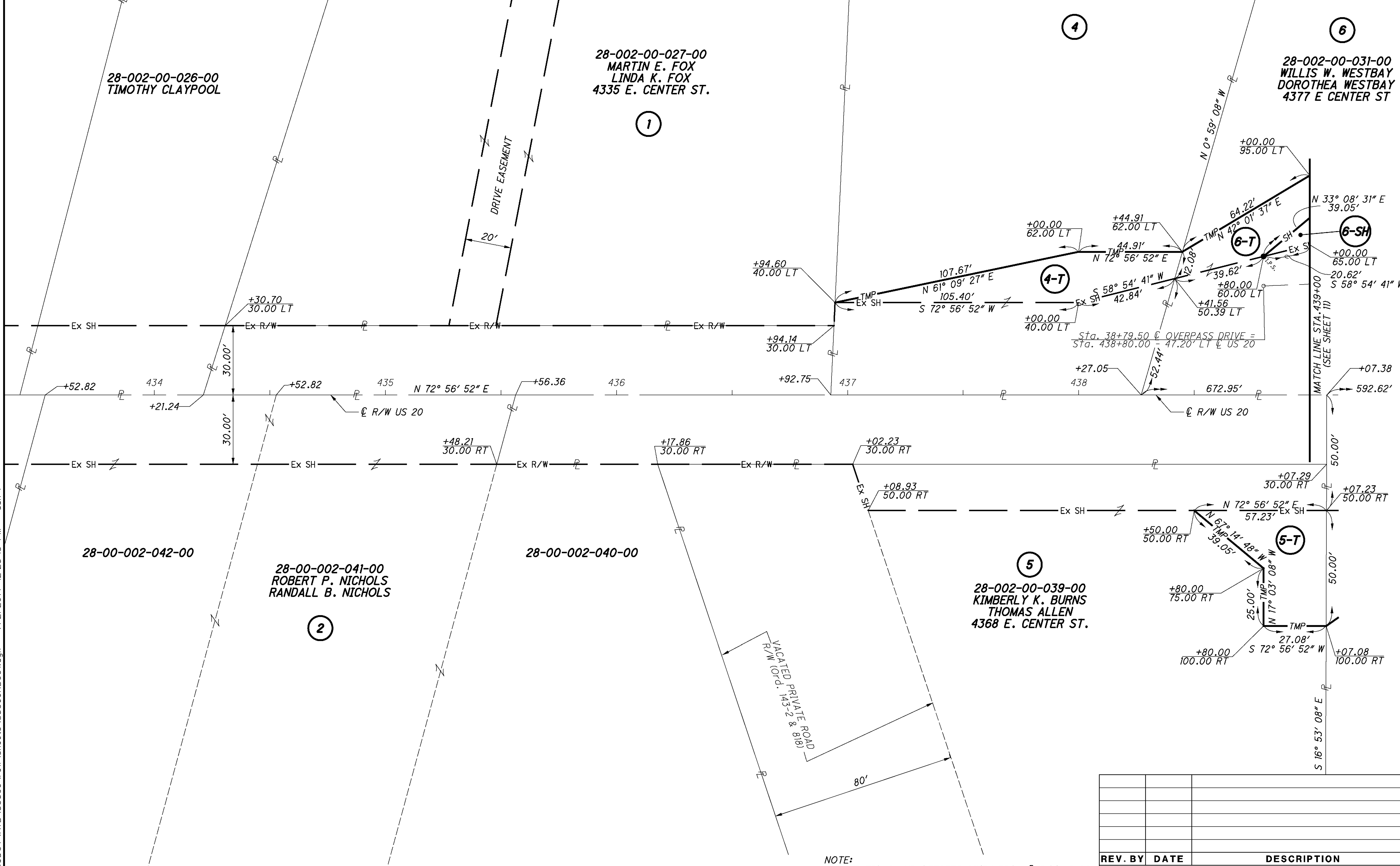
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



28-002-00-026-00
TIMOTHY CLAYPOOL
DRIVE EASEMENT
20'
28-002-00-027-00
MARTIN E. FOX
LINDA K. FOX
4335 E. CENTER ST.
1
28-002-00-030-00
JOSEPH E. SIMAK
MARYLIN J. SIMAK
4359 E. CENTER ST.
4
6
28-002-00-031-00
WILLIS W. WESTBAY
DOROTHEA WESTBAY
4377 E CENTER ST
N 0° 59' 08" W
+00.00
95.00 LT
N 33° 08' 31" E
39.05'
6-SH
6-T
64.22'
N 42° 01' 37" E
+44.91
62.00 LT
44.91'
N 72° 56' 52" E
+00.00
62.00 LT
107.67'
N 61° 09' 27" E
4-T
+94.60
40.00 LT
105.40'
S 72° 56' 52" W
S 58° 54' 41" W
42.84'
39.62'
12.08'
+00.00
65.00 LT
20.62'
S 58° 54' 41" W
+80.00
60.00 LT
+41.56
50.39 LT
+00.00
40.00 LT
Sta. 38+79.50 ℄ OVERPASS DRIVE =
Sta. 438+80.00 - 47.20' LT ℄ US 20
MATCH LINE STA.439+00
(SEE SHEET 11)
+30.70
30.00 LT
Ex SH
Ex R/W
+94.14
30.00 LT
30.00'
30.00'
+52.82
434
+21.24
+52.82
435
N 72° 56' 52" E
+56.36
436
+92.75
437
438
+27.05
52.44'
672.95'
+07.38
592.62'
℄ R/W US 20
℄ R/W US 20
+48.21
30.00 RT
+17.86
30.00 RT
+02.23
30.00 RT
+08.93
50.00 RT
+07.29
30.00 RT
+07.23
50.00 RT
50.00'
N 72° 56' 52" E
57.23'
+50.00
50.00 RT
N 67° 14' 48" W
39.05'
5-T
50.00'
+80.00
75.00 RT
N 17° 03' 08" W
25.00'
TMP
27.08'
S 72° 56' 52" W
+80.00
100.00 RT
+07.08
100.00 RT
S 16° 53' 08" E
28-00-002-042-00
28-00-002-041-00
ROBERT P. NICHOLS
RANDALL B. NICHOLS
2
28-00-002-040-00
5
28-002-00-039-00
KIMBERLY K. BURNS
THOMAS ALLEN
4368 E. CENTER ST.
VACATED PRIVATE ROAD
R/W (Ord. 143-2 & 818)
80'

NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

REV. BY	DATE	DESCRIPTION
DATE COMPLETED: 04/19/13		

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 434+00.00 - STA. 439+00.00

ATB-20-21.43

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
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ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

6 28-002-00-031-00
WILLIS W. WESTBAY
DOROTHEA WESTBAY
4377 E CENTER ST
RESIDENTIAL

9 28-002-00-032-00
F. MUCCIARONE, INC
4399 E CENTER ST
COMMERCIAL

12 28-002-00-033-00
LINDA WALFORD
4409 OVERPASS DR
RESIDENTIAL

5 28-002-00-039-00
KIMBERLY K. BURNS
THOMAS ALLEN
4368 E. CENTER ST.
RESIDENTIAL

7 28-003-00-003-00
WILLIAM R. FOOTE
PATRICIA L. FOOTE
VACANT

8 28-002-00-038-00
NATALIE LUKJANCZUK
VACANT

10 28-002-00-037-00
VICTOR M. GARRIDO
VACANT

11 28-002-00-036-00
RNR LAND CO., LLC
VACANT

30 THE NORFOLK SOUTHERN RAILWAY COMPANY

1 STORY FRAME · 2 STORY FRAME · GARAGE · BARN · MOBILE HOME · POOL · ANTENNA · WOOD SIGN

OLD FLAG POLE BASE (TAKE) · 6-T · 6-SH · 5-T · 7-T · 8-T · 10-T · 11-T

TMP · Ex SH · CONST. LIMITS · WALK · ASPHALT · GRAVEL · CONCRETE · DND

℄ OVERPASS DR. · N 70° 39' 25" E · 440+50.30 52.45 LT · 443+54.95 79.56 LT

EXIST CB (PAVED OVER) (REMOVE) · CB 2-2B · CB-3A · MH-3 · EXIST INLET (REMOVE) · MSE WALL NO. 1 · INLET (NOT FOUND)

℄ R/W US 20 · (REMOVE) EXIST MH (BURIED) · (REMOVE) EXIST CB (BURIED)

℄ CONSTRUCTION N/S RAILROAD · ℄ W/B MAIN · WOVEN WIRE FENCE · Ex RR · ℄ RW R.R. (℄ E.B. MAIN)

MATCH LINE STA. 439+00 (SEE SHEET 8) · MATCH LINE STA. 444+00 (SEE SHEET 12)

N 72° 56' 52" E

REV. BY	DATE	DESCRIPTION
DPF	6/9/14	REMOVE PCL-9T; UPDATE CONST LIMITS
DPF	10/8/13	UPDATED CONST. LIMITS PCL-9

DATE COMPLETED : 04/19/13

PID NO. 83599

R/W DESIGNER DPF · R/W REVIEWER JDM

HORIZONTAL SCALE IN FEET 0 10 20 40

RIGHT OF WAY TOPO SHEET
STA. 439+00.00 - STA. 444+00.00

ATB-20-21.43

10 / 22

177 / 189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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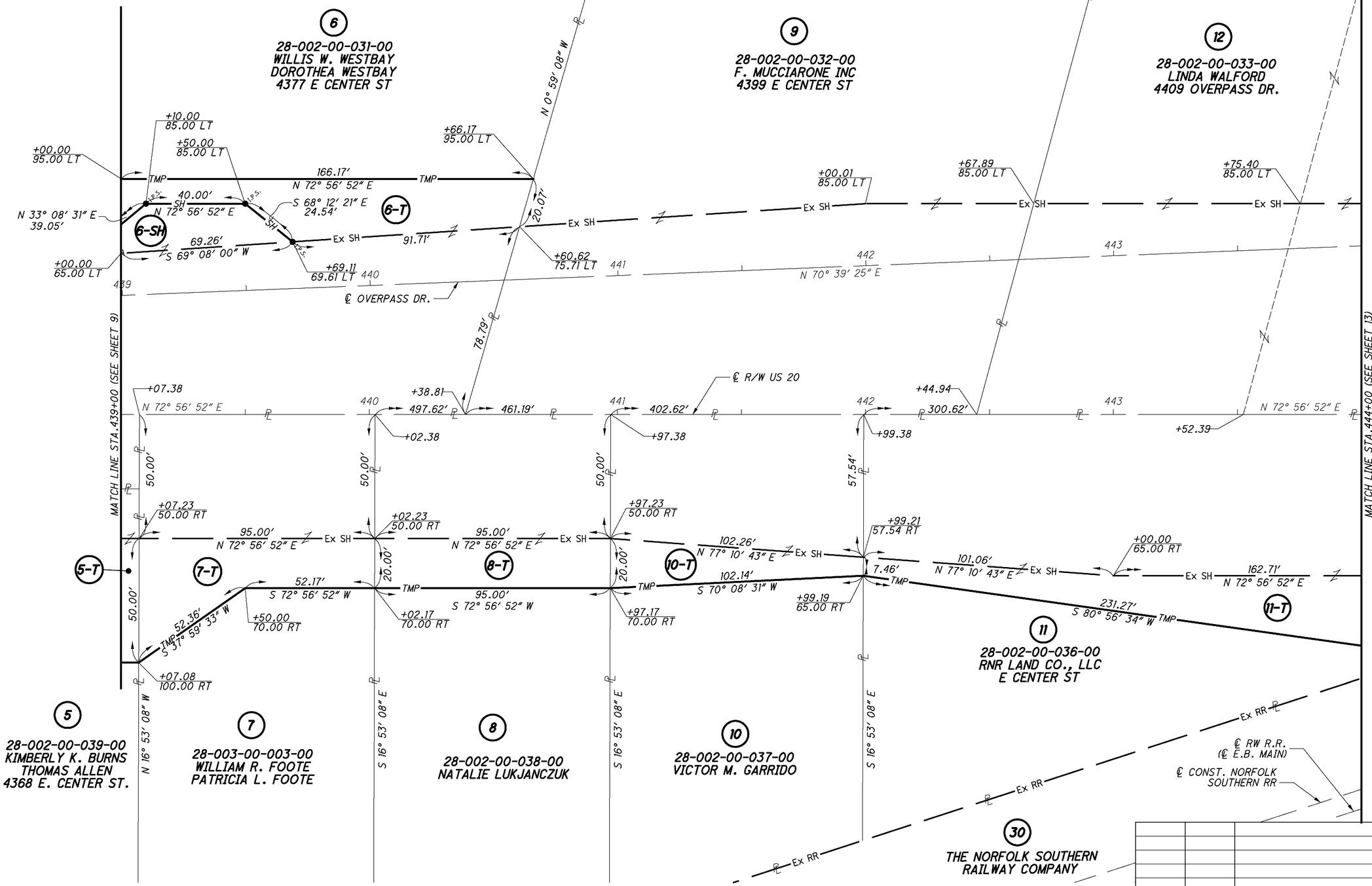
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

REV. BY	DATE	DESCRIPTION
DPF	6/9/14	REMOVE PCL-9T

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 439+00.00 - STA. 444+00.00

ATB-20-21.43

11 / 22

178
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
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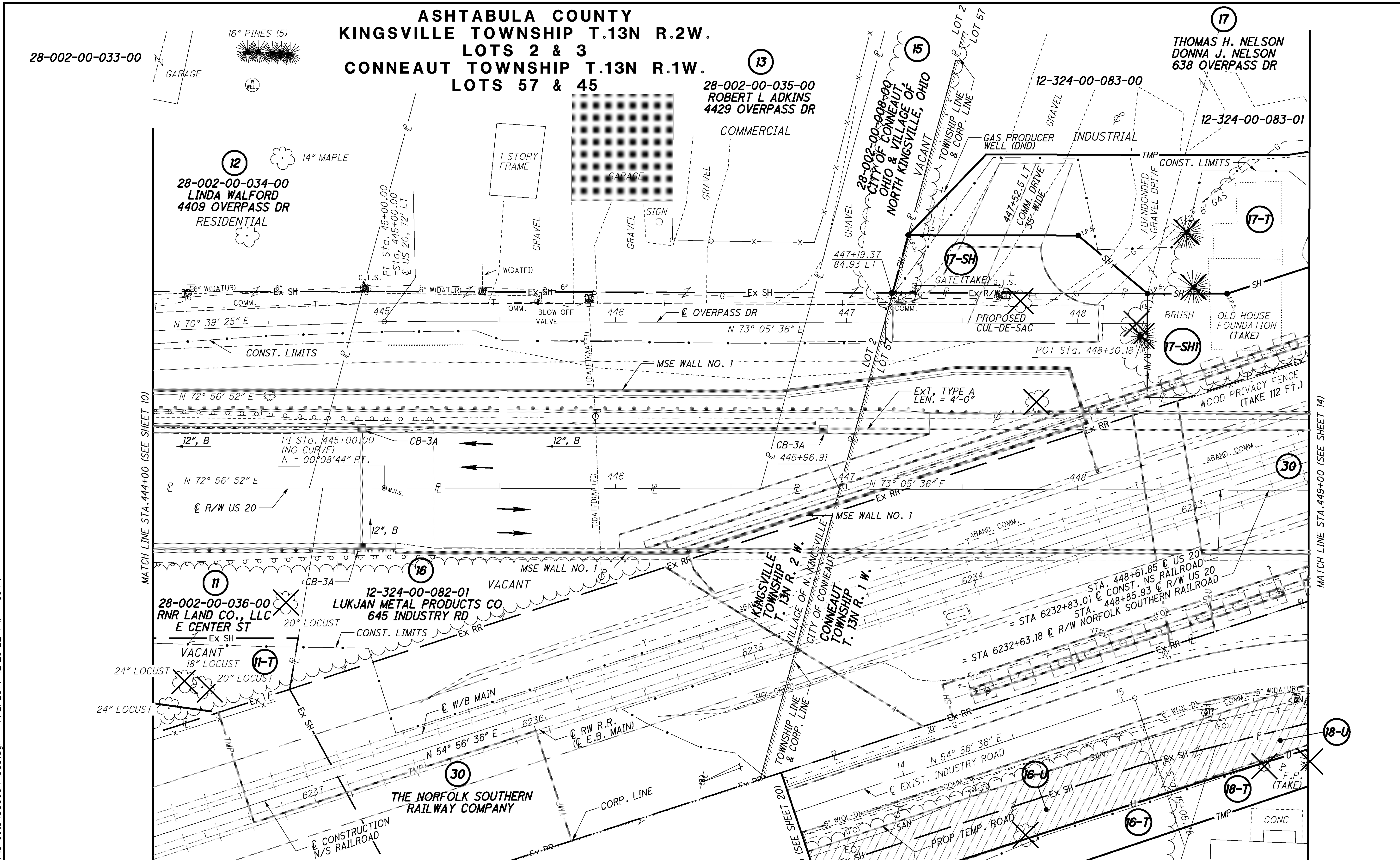

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45
28-002-00-033-00
16" PINES (5)
GARAGE
12
28-002-00-034-00
LINDA WALFORD
4409 OVERPASS DR
RESIDENTIAL
14" MAPLE
1 STORY FRAME
13
28-002-00-035-00
ROBERT L ADKINS
4429 OVERPASS DR
COMMERCIAL
15
28-002-00-008-00
CITY OF CONNEAUT
OHIO & VILLAGE OF
NORTH KINGSVILLE, OHIO
VACANT
17
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR
12-324-00-083-00
INDUSTRIAL
12-324-00-083-01
GAS PRODUCER WELL (DND)
447+52.5 LT
COMM. DRIVE
35' WIDE
ABANDONED GRAVEL DRIVE
CONST. LIMITS
17-T
17-SH
17-SH1
447+19.37
84.93 LT
GATE (TAKE)
PROPOSED CUL-DE-SAC
BRUSH
OLD HOUSE FOUNDATION (TAKE)
POT Sta. 448+30.18
℄ OVERPASS DR
N 70° 39' 25" E
N 73° 05' 36" E
PI Sta. 45+00.00
=Sta. 445+00.00
℄ US 20, 72' LT
BLOW OFF VALVE
MSE WALL NO. 1
N 72° 56' 52" E
ExT. TYPE A
LEN. = 4'-0"
WOOD PRIVACY FENCE
(TAKE 112 Ft.)
PI Sta. 445+00.00
(NO CURVE)
Δ = 00°08'44" RT.
CB-3A
12", B
446+96.91
℄ R/W US 20
30
6253
MATCH LINE STA.444+00 (SEE SHEET 10)
MATCH LINE STA.449+00 (SEE SHEET 14)
11
28-002-00-036-00
RNR LAND CO., LLC
E CENTER ST
VACANT
16
12-324-00-082-01
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD
VACANT
20" LOCUST
18" LOCUST
24" LOCUST
11-T
KINGSVILLE TOWNSHIP T. 13N R. 2 W.
VILLAGE OF N. KINGSVILLE
CITY OF CONNEAUT
CONNEAUT TOWNSHIP T. 13N R. 1 W.
STA. 448+61.85 ℄ US 20
= STA 6232+83.01 ℄ CONST. NS RAILROAD
STA. 448+85.93 ℄ R/W US 20
= STA 6232+63.18 ℄ R/W NORFOLK SOUTHERN RAILROAD
℄ W/B MAIN
℄ RW R.R.
(℄ E.B. MAIN)
N 54° 56' 36" E
30
THE NORFOLK SOUTHERN
RAILWAY COMPANY
℄ CONSTRUCTION
N/S RAILROAD
CORP. LINE
TOWNSHIP LINE & CORP. LINE
℄ EXIST. INDUSTRY ROAD
PROP TEMP. ROAD
16-U
16-T
18-T
18-U
F.P. (TAKE)
MATCH LINE STA.13+50 (SEE SHEET 20)
24" WILD CHERRY
16
12-324-00-082-00
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD
INDUSTRIAL
18
12-324-00-081-00
ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD
RESIDENTIAL
1 STORY FRAME
CONC

		PCL16-SHOW TEMPORARY ROAD
DPF	5/15/14	PCL17-REV. DRIVE & CUL-DE-SAC; GAS WELL
REV. BY	DATE	DESCRIPTION
DATE COMPLETED: 04/19/13		

NOTE: PROPOSED BEAMS ON STRUCTURE ATB-20-2161 NOT SHOWN FOR CLARITY

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 444+00.00 - STA. 449+00.00

ATB-20-21.43

12 / 22

179 / 189

Palmer PALMER ENGINEERING 460 WHITE POND DR - SUITE 300 AKRON, OHIO 44320

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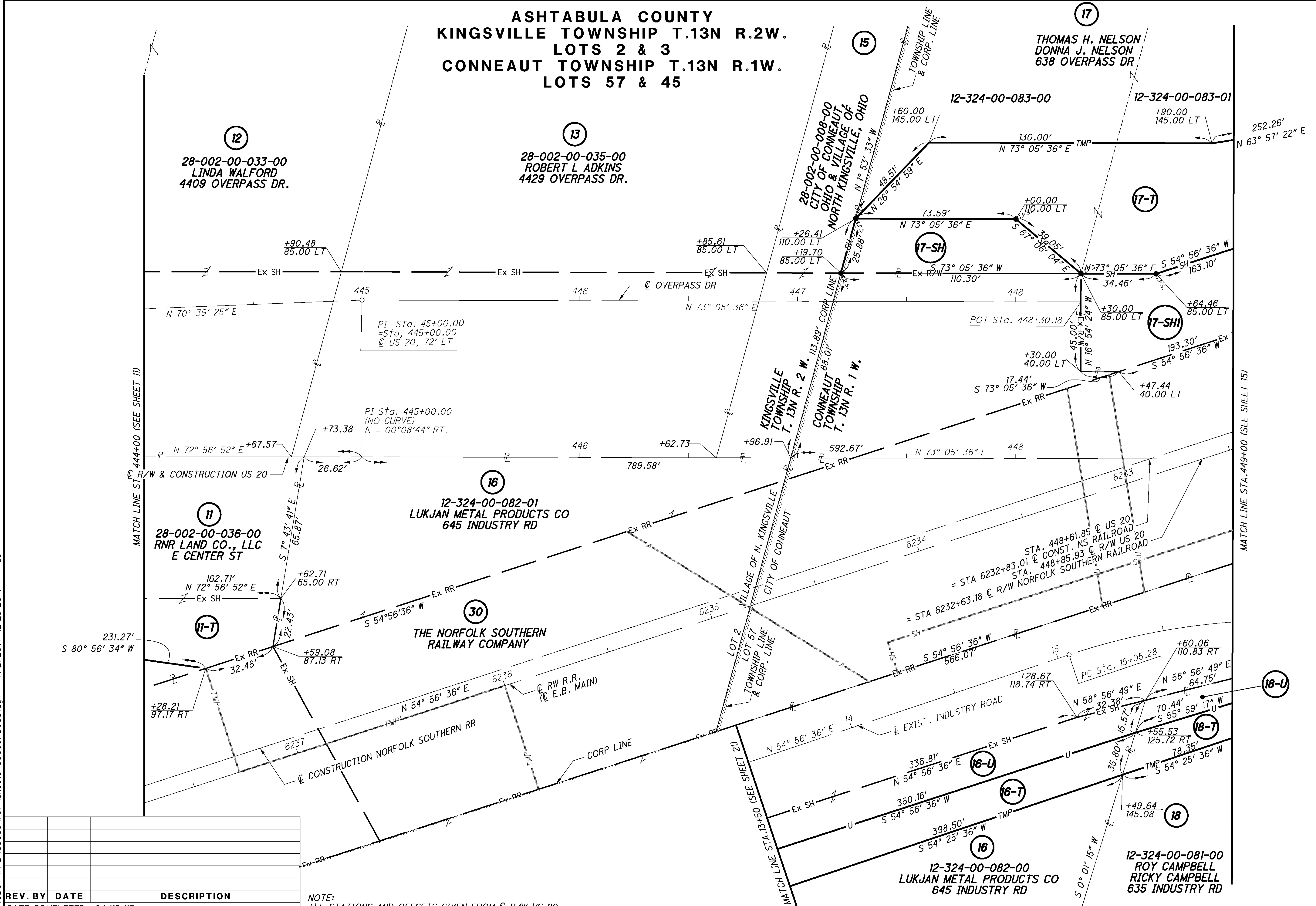
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



12
28-002-00-033-00
LINDA WALFORD
4409 OVERPASS DR.
13
28-002-00-035-00
ROBERT L ADKINS
4429 OVERPASS DR.
15
28-002-00-008-00
CITY OF CONNEAUT, OHIO & VILLAGE OF NORTH KINGSVILLE, OHIO
TOWNSHIP LINE & CORP. LINE
17
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR
12-324-00-083-00
12-324-00-083-01
+60.00
145.00 LT
+90.00
145.00 LT
130.00'
N 73° 05' 36" E
252.26'
N 63° 57' 22" E
N 1° 53' 33" W
48.51'
N 26° 54' 59" E
73.59'
N 73° 05' 36" E
+00.00
110.00 LT
S 67° 06' 04" E
39.05'
17-T
17-SH
+90.48
85.00 LT
+85.61
85.00 LT
+26.41
110.00 LT
+19.70
85.00 LT
25.88'
S 73° 05' 36" W
110.30'
N 73° 05' 36" E
34.46'
S 54° 56' 36" W
163.10'
Ex SH
℄ OVERPASS DR
N 70° 39' 25" E
N 73° 05' 36" E
445
446
447
448
PI Sta. 45+00.00
=Sta, 445+00.00
℄ US 20, 72' LT
POT Sta. 448+30.18
+30.00
85.00 LT
+64.46
85.00 LT
17-SH1
45.00'
N 16° 54' 24" W
193.30'
S 54° 56' 36" W
+30.00
40.00 LT
17.44'
S 73° 05' 36" W
+47.44
40.00 LT
Ex RR
PI Sta. 445+00.00
(NO CURVE)
Δ = 00°08'44" RT.
+67.57
+73.38
N 72° 56' 52" E
26.62'
446
+62.73
789.58'
+96.91
592.67'
N 73° 05' 36" E
448
KINGSVILLE TOWNSHIP T. 13N R. 2 W.
CONNEAUT TOWNSHIP T. 13N R. 1 W.
13.89' CORP LINE
88.01'
℄ R/W & CONSTRUCTION US 20
MATCH LINE STA. 444+00 (SEE SHEET 11)
MATCH LINE STA.449+00 (SEE SHEET 15)
16
12-324-00-082-01
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD
11
28-002-00-036-00
RNR LAND CO., LLC
E CENTER ST
S 7° 43' 41" E
65.87'
162.71'
N 72° 56' 52" E
+62.71
65.00 RT
11-T
22.43'
S 54°56'36" W
30
THE NORFOLK SOUTHERN RAILWAY COMPANY
VILLAGE OF N. KINGSVILLE
CITY OF CONNEAUT
6253
6234
6235
6236
6237
STA. 448+61.85 ℄ US 20
= STA 6232+83.01 ℄ CONST. NS RAILROAD
STA. 448+85.93 ℄ R/W US 20
= STA 6232+63.18 ℄ R/W NORFOLK SOUTHERN RAILROAD
231.27'
S 80° 56' 34" W
32.46'
+59.08
87.13 RT
+28.21
97.17 RT
TMP
N 54° 56' 36" E
℄ RW R.R.
(℄ E.B. MAIN)
℄ CONSTRUCTION NORFOLK SOUTHERN RR
CORP LINE
LOT 2
LOT 57
TOWNSHIP LINE & CORP. LINE
S 54° 56' 36" W
566.07'
15
PC Sta. 15+05.28
+60.06
110.83 RT
N 58° 56' 49" E
64.75'
18-U
+28.67
118.74 RT
N 58° 56' 49" E
32.38'
70.44'
S 55° 59' 17" W
18-T
+55.53
125.72 RT
15.57'
78.35'
S 54° 25' 36" W
35.80'
14
℄ EXIST. INDUSTRY ROAD
N 54° 56' 36" E
336.81'
N 54° 56' 36" E
16-U
16-T
360.16'
S 54° 56' 36" W
398.50'
S 54° 25' 36" W
MATCH LINE STA.13+50 (SEE SHEET 21)
+49.64
145.08
18
S 0° 01' 15" W
16
12-324-00-082-00
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD
12-324-00-081-00
ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD

REV. BY	DATE	DESCRIPTION

DATE COMPLETED: 04/19/13

NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 444+00.00 - STA. 449+00.00

ATB-20-21.43

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

17
12-324-00-083-01
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR

14" MAPLE
24" BOX ELDER (SAVE)
12" CHERRY (SAVE)
14" CHERRY (SAVE)
20" MAPLE (SAVE)
16" MAPLE (SAVE)
6" GAS
24" CHERRY
48" MAPLE
24" MAPLE
24" WILD CHERRY
36" WILD CHERRY
DEMOLITION DEBRIS PILE (TAKE)
(TAKE)
CONST. LIMITS
17-T
17-SH1
℄ FUTURE TRACK
℄ WB MAIN
℄ CONST. NORFOLK SOUTHERN RR
℄ RW R.R. (℄ E.B. MAIN)
N 54° 56' 36" E
6228
6229
6230
6231
6232
30
THE NORFOLK SOUTHERN RAILWAY COMPANY
17
12-324-00-083-00
THOMAS H NELSON
DONNA J NELSON
17-T1
17-SH2
Ex SH
CONST. LIMITS
WOOD PRIVACY FENCE (TAKE 112 FT.)
ABAND. COMM.
18" CMP (FO)
EXT, TYPE B LEN. = 4'-0"
MSE WALL NO. 2
CB-6
PI Sta. 452+89.58
(NO CURVE)
Δ = 00°03'09" RT.
N 73° 08' 45" E
N 73° 05' 36" E
℄ R/W AND CONSTRUCTION US 20
12", B
CB-3A
CB-2-2A
CB-2-2B
MH-3
12", C
15", C
452+89.41
28.38 RT
453+13.17
30.07 RT
℄ EXIST. INDUSTRY ROAD
CONCRETE
N 70° 16' 36" E
453
PROP TEMPORARY ROAD
PT Sta. 16+04.97
451+79.65
95.02 RT
450+79.90
96.79 RT
453+77.21
91.49 RT
LANDSCAPING (TAKE)
PI Sta. 453+00.00
= STA 453+00.00
US 20, 73.99' RT
LANDSCAPING
ROCKS
22" CHERRY
14" CHERRY
14" MAPLE
OLD CONC PARKING LOT
Ex R/W
18-U
19-U
20-U
22-U
23-U
18-T
48" OAK
40" MAPLE
18" MAPLE
30" MAPLE
14" PINE
16+03.6 RT
RES. DRIVE 14.0' WIDE
FRAME GARAGE
SAT. DISH
GRAVEL
18
1 STORY FRAME
12-324-00-081-00
ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD
RESIDENTIAL
19
12-324-00-080-00
GRANT L. CASE
MARGIE A. CASE
631 INDUSTRY RD.
RESIDENTIAL
20
12-324-00-079-00
DAVID A. DELLO
JACKIE L. DELLO
627 INDUSTRY RD.
RESIDENTIAL
1 STORY FRAME
2 STORY FRAME
DECK
32" MAPLE
1½ STORY FRAME
EQUATION:
Sta 18+84.40 BK =
Sta 452+02.35 AH
22
12-324-00-077-00
DEAKAN ADAMS
621 INDUSTRY RD.
RESIDENTIAL
23
12-324-00-076-00
RW SIDLEY, INC
16
12-324-00-082-00
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD
MATCH LINE STA.449+00 (SEE SHEET 12)
MATCH LINE STA.454+00 (SEE SHEET 16)

NOTE: PROPOSED BEAMS ON STRUCTURE ATB-20-2161 NOT SHOWN FOR CLARITY

REV. BY	DATE	DESCRIPTION
DPF	10-8-13	ADD PCL 23-U

DATE COMPLETED: 04/19/13

IN

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 449+00.00 - STA. 454 +00.00

ATB-20-21.43

14 / 22
181
189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR + SUITE 300
AKRON, OHIO 44320

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ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

17
12-324-00-083-01
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR

30
THE NORFOLK SOUTHERN RAILWAY COMPANY

16
12-324-00-082-00
LUKJAN METAL PRODUCTS CO
645 INDUSTRY RD

18
12-324-00-081-00
ROY CAMPBELL
RICKY CAMPBELL
635 INDUSTRY RD

19
12-324-00-080-00
GRANT L. CASE
MARGIE A. CASE
631 INDUSTRY RD.

20
12-324-00-079-00
DAVID A. DELLO
JACKIE L. DELLO
627 INDUSTRY RD.

22
12-324-00-077-00
DEAKAN ADAMS
621 INDUSTRY RD.

23
12-324-00-076-00
RW SIDLEY, INC

17
12-324-00-083-00
THOMAS H NELSON
DONNA J NELSON

PARCEL NO	EASEMENT REQUIRED	TOTAL AREA (Ac)	OVERLAP AREAS (Ac) PROP. UTILITY	
18-T	TEMPORARY	0.055	0.026	

NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 449+00.00 - STA. 454 +00.00

ATB-20-21.43

15 / 22

182 / 189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

℄ WB MAIN
6226
℄ CONSTRUCTION N/S RAILROAD
6227
℄ R/W R.R.
℄ EB MAIN
30
THE NORFOLK SOUTHERN RAILWAY COMPANY
Ex RR
TMP
17-T1
CONST. LIMITS
17
12-324-00-083-00
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR
17-U
17-SH2
Ex SH
14.23'
ENCROACHMENT
FRAME GARAGE (TAKE)
SHED (DND)
GRAVEL
21-T
21
12-324-00-084-00
ROBERT G. LEHTONEN
598 W. MAIN ST. (US 20)
RESIDENTIAL
1 STORY FRAME
DND
18" MAPLE
20" MAPLE
WOOD STEPS DND
32" MAPLE
EXIST BIN WALL (REMOVE)
24
12-324-00-087-00
JAMES A. EVANS
JUDITH ANN EVANS
594 W. MAIN ST. (US 20)
RESIDENTIAL
SHED
36" MAPLE
GARAGE
ASPHALT
2 STORY FRAME
PORCH
DECORATIVE WELL DND
HEDGE
457+72.0, LT. RES. DRIVE, 24.0' WIDE
458+28.5, LT. RES. DRIVE, 24.0' WIDE
458+97.9, LT. RES. DRIVE, 24.0' WIDE
24-T
24-T1
26
12-324-00-088-00
HOWARD S. JOHNSON
592 W. MAIN RD. (US 20)
26-T
US 20
457+87.62
31.67 LT
CB22B
12", C
12", B
CB-3A
MH-3
EXIST 10" VCP
REMOVE EX. CB
℄ R/W & CONSTRUCTION US 20
℄ R/W US 20
N 73° 8' 45" E
455
456
457
458
MATCH LINE STA.454+00 (SEE SHEET 14)
MATCH LINE STA.459+00 (SEE SHEET 18)
PROP TEMPORARY ROAD
Sta. 457+70.59 ℄ INDUSTRY ROAD = Sta. 457+70.00-50.43' RT ℄ US 20
CB-2-2B
℄ EXIST INDUSTRY ROAD
CONCRETE
INLET (BURIED)
CB3A
10", B
15", C
MH-3
CONST. LIMITS
FIELD
N 70° 16' 36" E
GATE
C.L. FENCE (TAKE-264 FT.)
23-SH
OLD CONC PARKING LOT
23-U
23-T
CONST. LIMITS
SPACE RESERVED FOR MANUFACTURED SYSTEM TYPE 1
458+71.6, RT. FIELD DRIVE, 17.0' WIDE
12-324-00-076-00
23
RW SIDLEY, INC
615 W. MAIN RD. (US20)
INDUSTRIAL
12-324-00-075-00
25
12-324-00-074-00
THE CITY OF CONNEAUT, OHIO
INDUSTRIAL
27
12-324-00-073-00
BURYING GROUND, TRUSTEE
(AKA CONNEAUT CITY)

REV. BY	DATE	DESCRIPTION
CML	10/8/13	ADD PARCEL 23-U/SHOW UPDATED DRAINAGE

DATE COMPLETED : 04/19/13

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 454+00.00 - STA. 459+00.00

ATB-20-21.43

ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45

PARCEL NO	EASEMENT REQUIRED	TOTAL AREA (Ac)	OVERLAP AREAS (Ac) PROP. UTILITY	
17-T1	TEMPORARY	0.164	0.031	

℄ CONST. NORFOLK SOUTHERN RR
℄ RW R.R. (℄ E.B. MAIN)
6227
Ex RR
℄ R/W US 20
℄ EXIST INDUSTRY ROAD
MATCH LINE STA.454+00 (SEE SHEET 15)
MATCH LINE STA.459+00 (SEE SHEET 19)

30
THE NORFOLK SOUTHERN RAILWAY COMPANY

21
12-324-00-084-00
ROBERT G. LEHTONEN
594 W MAIN (US 20) RD

24
12-324-00-087-00
JAMES A. EVANS
JUDITH ANN EVANS
594 W MAIN (US 20) RD

26
12-324-00-088-00
HOWARD S. JOHNSON

17
12-324-00-083-00
THOMAS H. NELSON
DONNA J. NELSON
638 OVERPASS DR

23
RW SIDLEY, INC
615 W MAIN (US 20) RD

25
12-324-00-074-00
THE CITY OF CONNEAUT, OH

27
12-324-00-073-00
BURYING GROUND, TRUSTEE (A.K.A. CONNEAUT CITY)

12-324-00-076-00
12-324-00-075-00

17-T1 · 17-U · 17-SH2 · 21-T · 24-T · 24-T1 · 26-T · 23-U · 23-SH · 23-T

Sta. 457+70.59 ℄ INDUSTRY ROAD = Sta. 457+70.00-50.43' RT ℄ US 20

PARCEL NO	EASEMENT REQUIRED	TOTAL AREA (Ac)	OVERLAP AREAS (Ac) PROP. TEMP	
23-U	TEMPORARY	0.199	0.086	

NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

REV. BY	DATE	DESCRIPTION
CML	10/8/13	ADD PARCEL 23-U

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

PID NO. 83599
R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 454+00.00 - STA. 459+00.00
ATB-20-21.43

17 / 22
184 / 189

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
ENGINEERING AKRON, OHIO 44320
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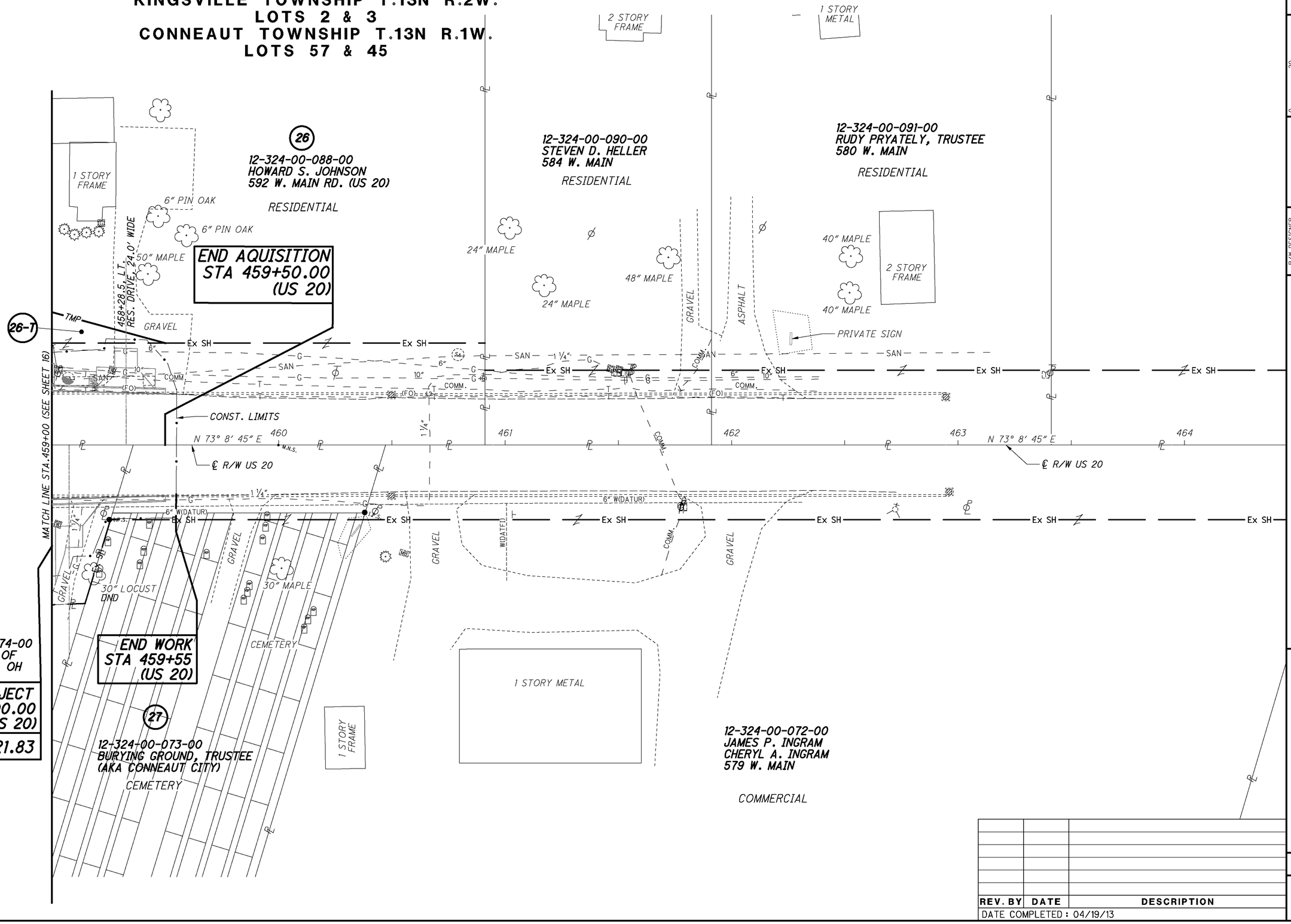
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 459+00.00 - STA. 464+00.00

ATB-20-21.43

18 / 22

185 / 189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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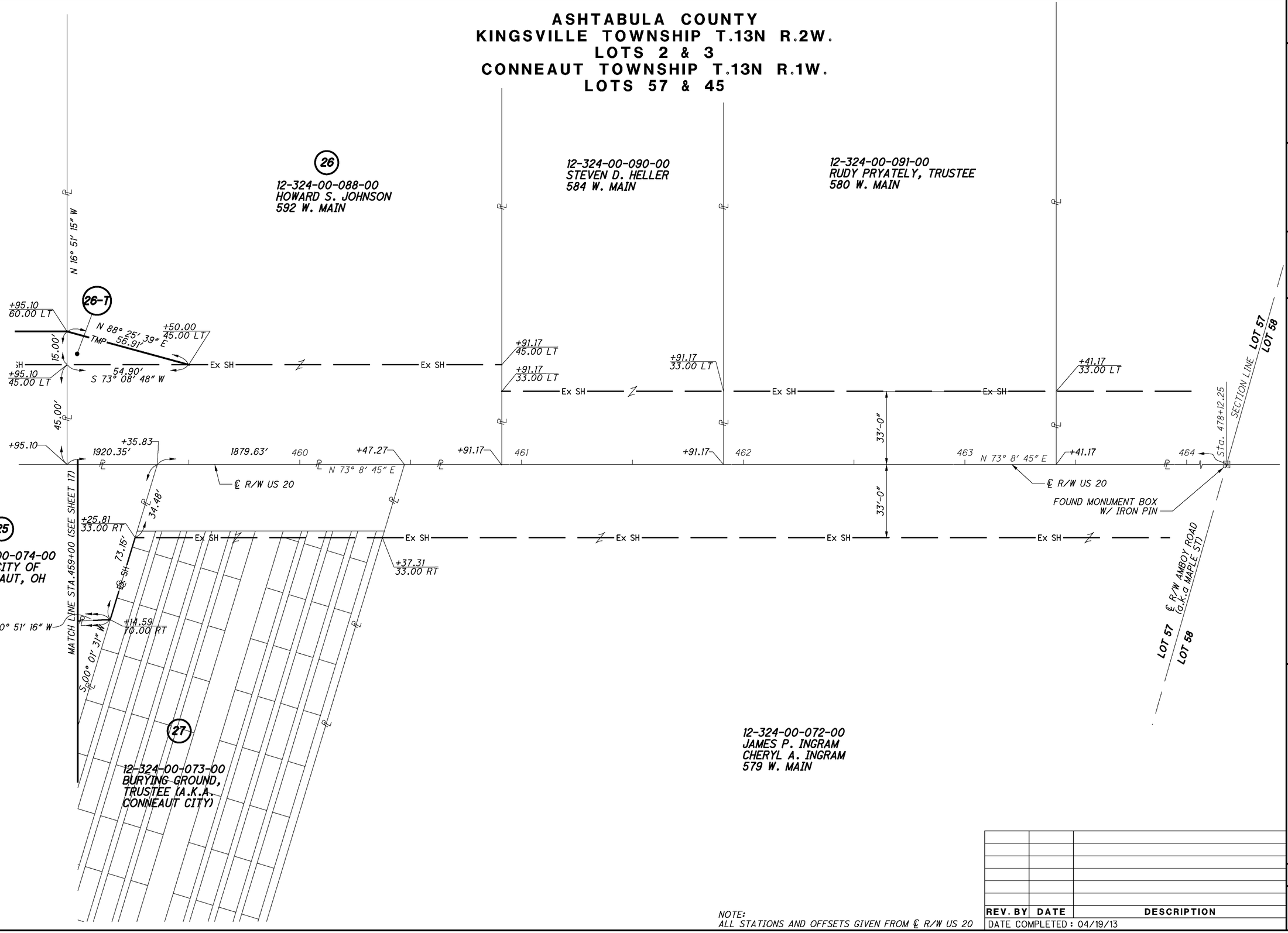
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 459+00.00 - STA. 464+00.00

ATB-20-21.43

19 / 22

186
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
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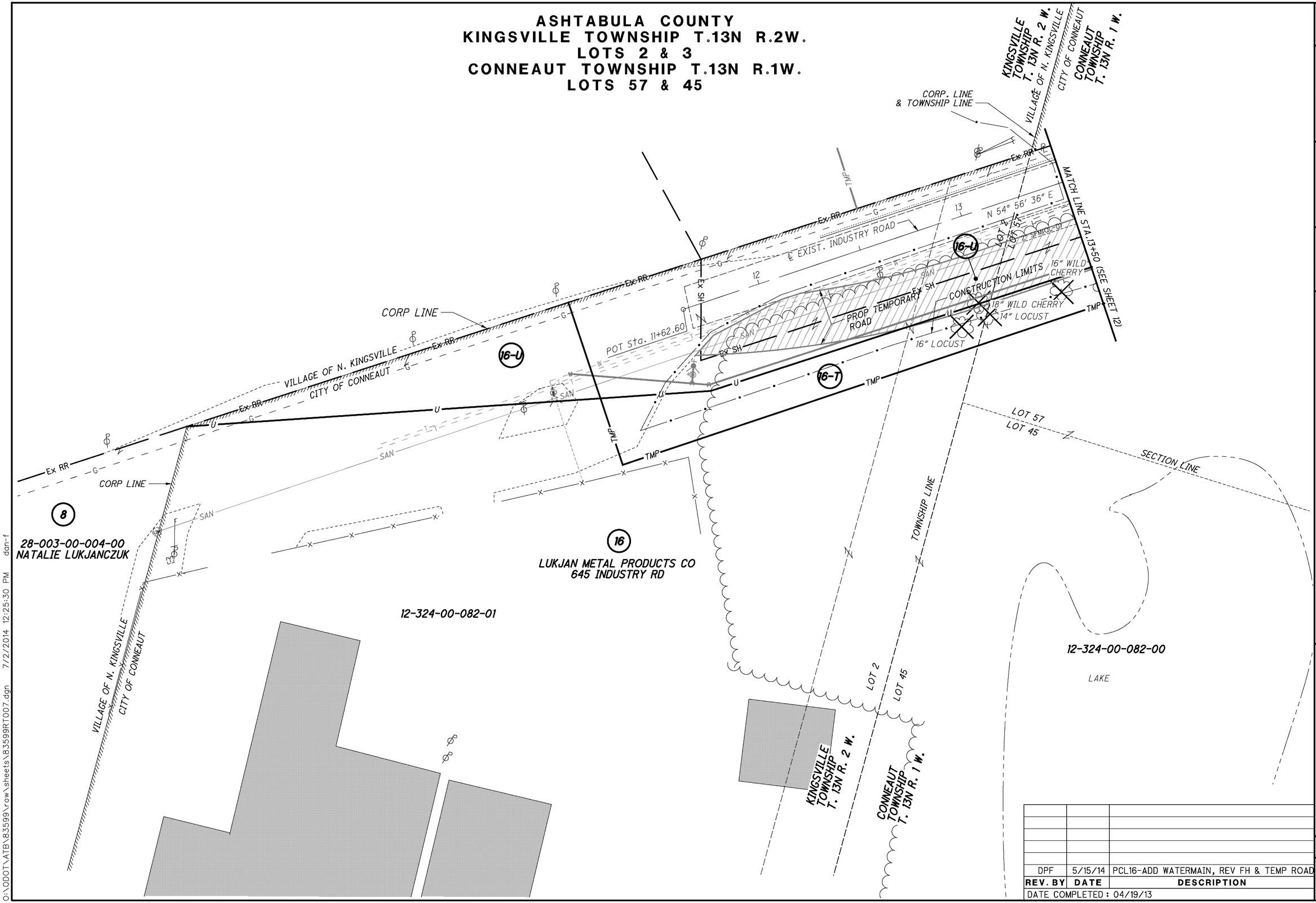
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



DPF	5/15/14	PCL16-ADD WATERMAIN, REV FH & TEMP ROAD
REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET: 0, 10, 20, 40

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY TOPO SHEET
STA. 11+62.60 - STA. 13+50.00

ATB-20-21.43

20 / 22

187 / 189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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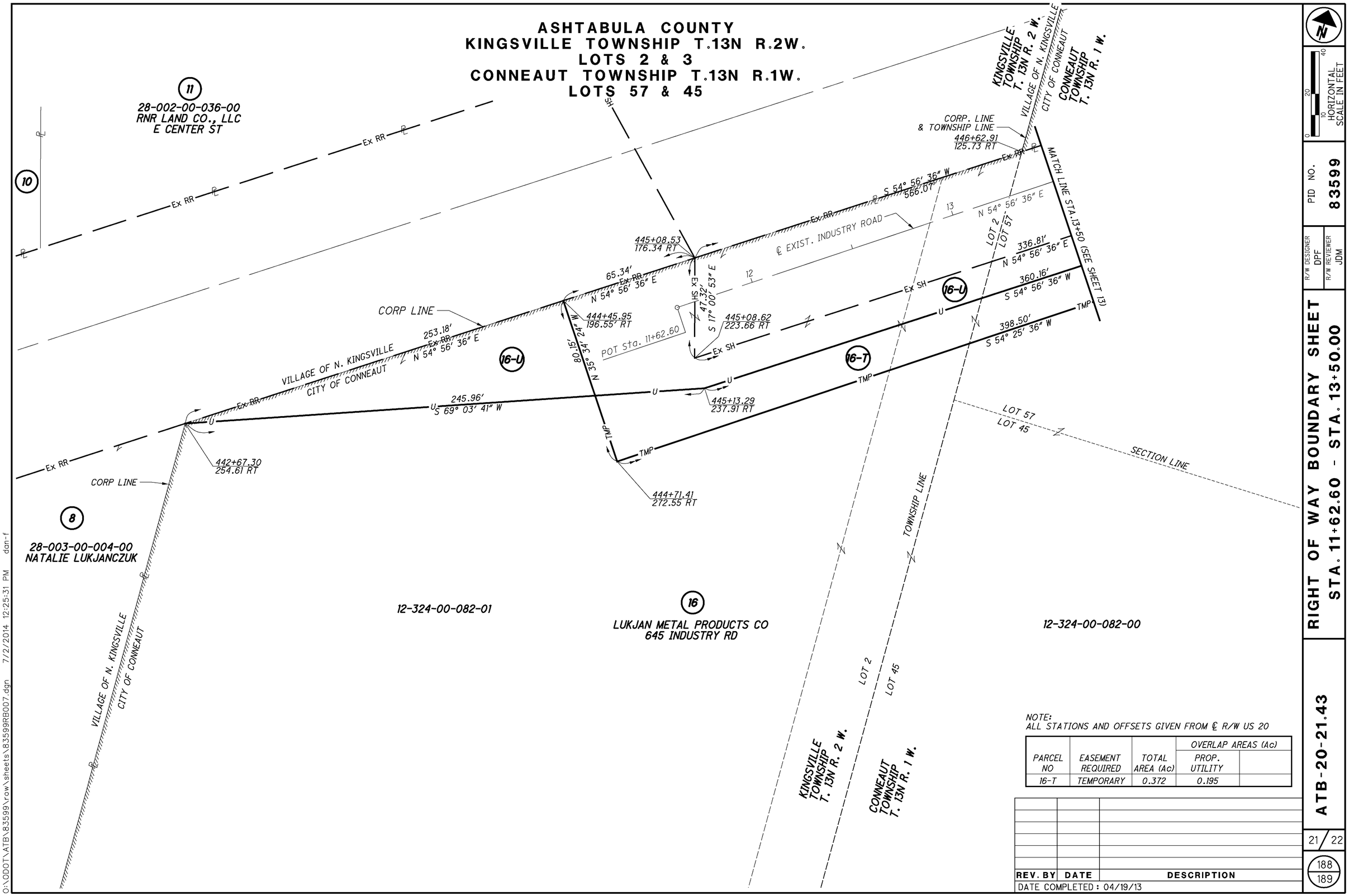
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T.13N R.2W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T.13N R.1W.
LOTS 57 & 45



NOTE:
ALL STATIONS AND OFFSETS GIVEN FROM ℄ R/W US 20

PARCEL NO	EASEMENT REQUIRED	TOTAL AREA (Ac)	OVERLAP AREAS (Ac) PROP. UTILITY	
16-T	TEMPORARY	0.372	0.195	

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RIGHT OF WAY BOUNDARY SHEET
STA. 11+62.60 - STA. 13+50.00

ATB-20-21.43

21 / 22

188
189

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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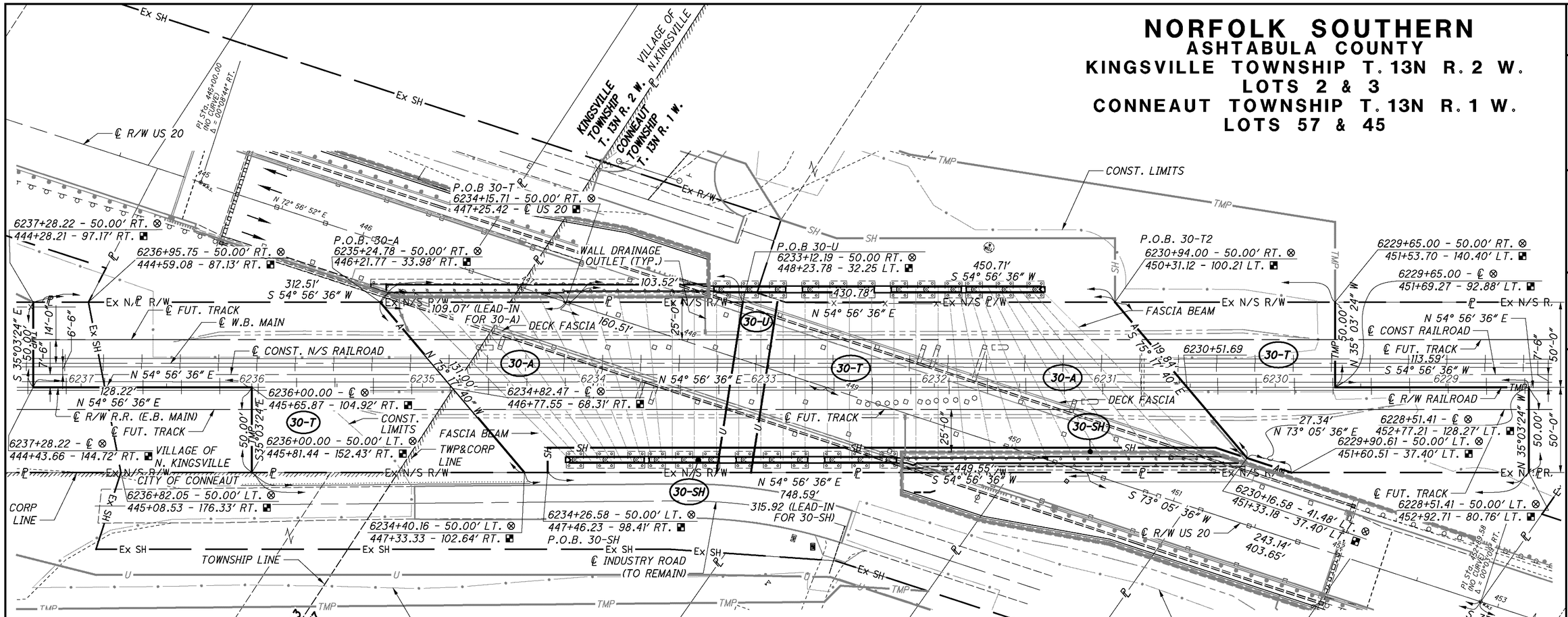
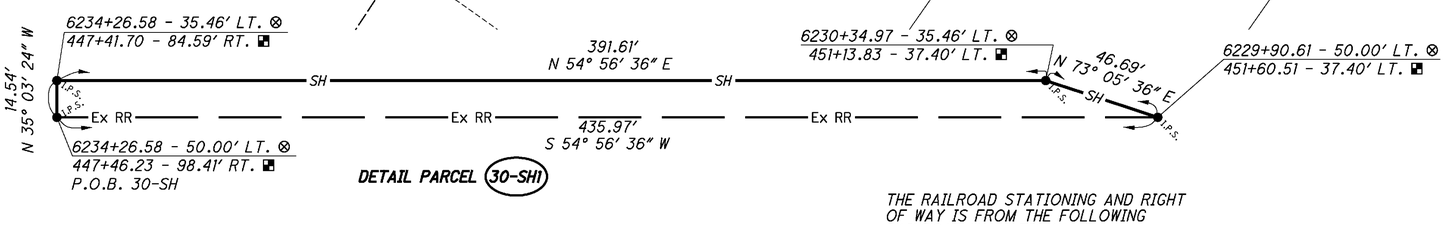
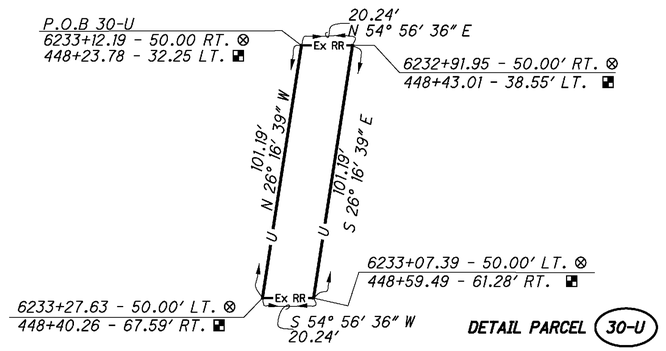
NORFOLK SOUTHERN
ASHTABULA COUNTY
KINGSVILLE TOWNSHIP T. 13N R. 2 W.
LOTS 2 & 3
CONNEAUT TOWNSHIP T. 13N R. 1 W.
LOTS 57 & 45

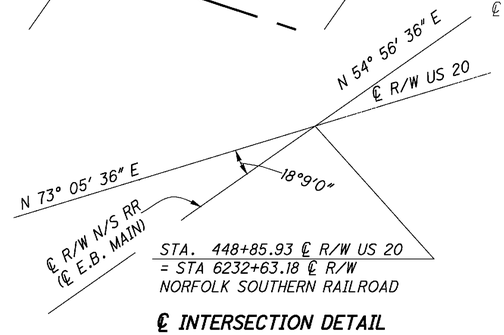




DETAIL PARCEL (30-SH)



DETAIL PARCEL (30-U)



℄ INTERSECTION DETAIL

THE RAILROAD STATIONING AND RIGHT OF WAY IS FROM THE FOLLOWING RAILROAD VALUATION MAP:

RIGHT OF WAY AND TRACK MAP
NEW YORK, CHICAGO AND ST. LOUIS R.R. CO
SHEET 3 OF V-3 OHIO STA. 6182+50.9 TO STA 6235+30.9
SHEET 4 OF V-3 OHIO STA. 6235+30.9 TO STA 6288+10.9

STATION 6207+46 ON ℄ R.R. R/W = M.P. 119

LEGEND
⊗ STATIONS AND OFFSETS FROM RAILROAD ℄ E.B. MAIN
⊞ STATIONS AND OFFSETS FROM US-20 ℄

PARCEL NO	EASEMENT REQUIRED	TOTAL AREA (SF)	COMMENT	OVERLAP AREAS (SF) PROP. SH	PROP AERIAL	PROP UTILITY
30-SH	HIGHWAY	6,018	FOOTINGS, WALL AND PIER		6,018	
30-A	AERIAL	43,158	AERIAL - DECK AND BEAMS	6,018		2,024
30-T	TEMPORARY	75,590	CONSTRUCTION ACCESS	15,490	43,158	2,024
30-U	UTILITY	2,024	AERIAL ELECTRIC FACILITIES	294	2,024	

REV. BY	DATE	DESCRIPTION

DATE COMPLETED : 04/19/13

HORIZONTAL SCALE IN FEET
0 30 60

PID NO. 83599

R/W DESIGNER DPF
R/W REVIEWER JDM

RAILROAD PLAT
THE NORFOLK SOUTHERN RAILWAY CO.

ATB-20-21.43

22 / 22
189
189

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

7/2/2014 12:25:32 PM dan-f
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PROJECT DESCRIPTION

AS PART OF THE ATB-20-21.43 PROJECT, IT IS PLANNED TO REPLACE THE EXISTING 27-SPAN BRIDGE THAT CARRIES U.S. 20 OVER THE NORFOLK SOUTHERN RAILROAD. THE REPLACEMENT BRIDGE IS A SKEWED SINGLE SPAN STRUCTURE WITH THE BEAMS ALIGNED PERPENDICULAR TO THE RAILROAD CENTERLINE AND THE ABUTMENTS SUPPORTED ON MSE WALLS. THE APPROACHES ARE ALSO PROPOSED TO BE SUPPORTED ON MSE WALLS THAT WOULD TIE INTO THE EXISTING U.S. 20 APPROACH EMBANKMENTS. THE HORIZONTAL ALIGNMENT OF U.S. 20 WOULD REMAIN THE SAME. THE CENTERLINE GRADE OF U.S. 20 IS TO BE RAISED FROM THE EXISTING GRADE BY UP TO APPROXIMATELY SIX (6) FEET. ADDITIONAL WORK, INCLUDING REALIGNMENT AND/OR REPAVING IS PLANNED FOR INDUSTRY ROAD AND OVERPASS DRIVE, HOWEVER, DESIGN OF THESE ROADWAYS ARE THE RESPONSIBILITY OF ASHTABULA COUNTY.

SPECIFICATIONS

THE SUBSURFACE INVESTIGATION FOR THIS PROJECT WAS PERFORMED DURING MULTIPLE INVESTIGATIONS (2009 THROUGH 2013) WITH EACH INVESTIGATION PERFORMED IN GENERAL ACCORDANCE WITH THE THEN-CURRENT UPDATE OF THE 2007 ODOT "SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS" (SGE).

GEOLOGY

THE PROJECT SITE IS LOCATED IN A PREVIOUSLY GLACIATED PORTION OF OHIO WHERE THE SOIL OVERBURDEN CONSISTS PREDOMINANTLY OF BEACH RIDGE SAND AND GRAVEL DEPOSITS OF WISCONSONIAN AGE. AVAILABLE ODNR BEDROCK TOPOGRAPHY MAPPING INDICATES THE UPPERMOST BEDROCK CONSISTS OF OHIO SHALE OF DEVONIAN AGE AND IS PRESENT NEAR ELEVATION (EL.) 600 IN THE PROJECT AREA, WHICH IS APPROXIMATELY 100 TO 130 FEET BELOW EXISTING SITE GRADES. SAND AND GRAVEL PITS ARE LOCATED JUST NORTH AND SOUTH OF THE SITE.

RECONNAISSANCE

A REGISTERED PROFESSIONAL ENGINEER VISITED THE SITE ON MULTIPLE OCCASIONS BETWEEN 2009 AND 2013. SEVERE DETERIORATION OF THE BRIDGE AT SEVERAL LOCATIONS WAS OBSERVED, AS INDICATED BY SPALLING OF CONCRETE WITH EXPOSED REBAR AT THE ABUTMENTS, PIER COLUMNS AND CAPS, AND BRIDGE DECK. A GAP OF SEVERAL INCHES WIDE IN THE SIDEWALK AT A DECK JOINT WAS OBSERVED NEAR BORING B-002-0-09. SOME LONGITUDINAL AND TRANSVERSE CRACKS AND SMALL POTHOLES WERE OBSERVED IN THE ROADWAY OF U.S. 20. THE SIDE SLOPES ADJACENT TO THE RAILROAD WERE OBSERVED TO HAVE SLOUGHING AND EROSION IN AREAS WHERE THERE WAS MINIMAL TO NO VEGETATION.

HISTORIC RECORDS

ORIGINAL CONSTRUCTION DRAWINGS FOR THE EXISTING STRUCTURE APPROVED IN JANUARY 1940 AND TITLED "GRADE SEPARATION WITH THE NEW YORK CHICAGO & ST. LOUIS R.R. CO. ON CLEVELAND ÷ BUFFALO S.H. 2" WERE AVAILABLE FOR REVIEW. THE PLANS INDICATED THAT PRIOR TO CONSTRUCTION, S.H. 2 AND THE RAILROAD WAS AN AT-GRADE CROSSING. TO CREATE THE GRADE SEPARATION, UP TO 13 FEET OF FILL WAS PLACED AT THE APPROACH EMBANKMENTS TO THE BRIDGE AND UP TO 13 FEET OF CUT WAS PERFORMED FOR THE RAILROAD LINE. SIDE SLOPES OF THE APPROACH EMBANKMENTS FOR S.H. 2 (NOW U.S. 20) WERE GENERALLY 2:1 (H:V) WHERE MORE THAN 5 FEET OF FILL WAS PLANNED AND 3:1 (H:V) OTHERWISE. THE CUT SLOPES FOR THE RAILROAD LINE WERE PROPOSED TO BE 1.5:1 (H:V). THE EXISTING SITE TOPOGRAPHY MAPPING INDICATES THAT PORTIONS OF THE CUT SLOPES ARE AS STEEP AS ABOUT 1.5:1 (H:V) WITH SOME AREAS AS SHALLOW AS 3.3:1 (H:V).

THE CENTERLINE OF U.S. 20 IS AT APPROXIMATELY A 73 DEGREE SKEW RELATIVE TO THE CENTERLINE OF THE RAILROAD AT THE CROSSING. THE PLANS ALSO INDICATED THAT THAT EXISTING BRIDGE IS APPROXIMATELY 681 FEET LONG (NOT INCLUDING THE APPROACH SLABS) WITH 27 SPANS. THE PIERS AND ABUTMENTS WERE PROPOSED TO BE SUPPORTED ON SHALLOW FOUNDATIONS BEARING AT EL. 695. DRIVE ROD SOUNDINGS PERFORMED AT THE SITE BY THE BRIDGE BUREAU OF THE OHIO DEPARTMENT OF HIGHWAYS (NOW ODOT) INDICATED THAT A COMPACT MATERIAL (PROBABLY GRAVEL AND BOULDER) WERE ENCOUNTERED AT EL. 695. IT WAS NOTED ON SHEET 33 OF 42 OF THE DRAWINGS THAT THIS MATERIAL WAS SUITABLE FOR SPREAD FOOTINGS WITHOUT PILING. THEREFORE IT IS UNKNOWN IF THE FOOTINGS WERE ACTUALLY CONSTRUCTED AS SHOWN ON THE 1940 DRAWINGS.

SUBSURFACE EXPLORATION

BETWEEN APRIL 1 AND APRIL 22, 2009, FOURTEEN (14) BORINGS WERE ADVANCED WITHIN THE PROJECT LIMITS. THESE BORINGS WERE ADVANCED TO DEPTHS RANGING BETWEEN 25 AND 119 FEET BELOW EXISTING GRADES. BETWEEN MAY 14 AND MAY 16, 2012, THREE (3) ADDITIONAL BORINGS WERE ADVANCED WITHIN THE PROJECT LIMITS TO OBTAIN ADDITIONAL INFORMATION FOR A MODIFIED BRIDGE AND RETAINING WALL DESIGN PLAN. THESE BORINGS RANGED BETWEEN 25 AND 60 FEET DEEP. TWO BORINGS, B-004-2-11 AND B-005-2-11 WERE DRILLED ADJACENT TO PREVIOUSLY DRILLED BORINGS B-004-0-09 AND B-005-1-09, RESPECTIVELY, TO OBTAIN SOILS INFORMATION AT A GREATER DEPTH. FIVE (5) SUPPLEMENTAL BORINGS WERE PERFORMED ON APRIL 11, 2013, TO INVESTIGATE ROADWAY SUBGRADE OR EXTENTS OF THE PROPOSED MSE WALL FOUNDATIONS THAT HAD BEEN MODIFIED SINCE THE PREVIOUS TWO INVESTIGATIONS.

THE BORINGS WERE ADVANCED USING A TRUCK OR ATV-MOUNTED DRILL RIG USING 3-1/4-INCH I.D. HOLLOW-STEM AUGERS AND/OR 2-7/8", 3-1/8" OR 3-7/8" O.D. TRI-CONE ROLLER BIT. DISTURBED, BUT REPRESENTATIVE SOIL SAMPLES WERE OBTAINED IN GENERAL ACCORDANCE WITH THE STANDARD PENETRATION TEST (ASTM D1586). SAMPLING WAS PERFORMED IN GENERAL ACCORDANCE WITH SECTION 303 OF THE SGE. HAMMER SYSTEMS ON DRILL RIGS WERE CALIBRATED IN ACCORDANCE WITH ASTM D4633 AND THE ODOT SGE. THE AVERAGE DRILL ROD ENERGY RATIO WAS 84% FOR BORINGS WITH AN "09" YEAR DESIGNATION, 81% FOR BORINGS WITH AN "11" YEAR DESIGNATION AND 80% FOR BORINGS WITH AN "13" YEAR DESIGNATION. UPON COMPLETION OF DRILLING, ALL BORINGS WERE BACKFILLED IN ACCORDANCE WITH APPENDIX F OF THE ODOT SGE, AND THE PAVEMENT SECTIONS WERE REPARED IN-KIND. BORINGS PERFORMED THROUGH THE BRIDGE DECK WERE REPAIRED IN ACCORDANCE WITH SECTION 408 OF THE ODOT SGE.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
GRAVEL AND/OR STONE FRAGMENTS	A-1-a	10	9
GRAVEL WITH SAND	A-1-b	38	52
GRAVEL WITH SAND AND SILT	A-2-4	3	0
FINE SAND	A-3	22	40
COARSE AND FINE SAND	A-3a	17	44
SANDY SILT	A-4a	25	47
SILT	A-4b	7	7
SILT AND CLAY	A-6a	1	2
	TOTAL	122	199
UNCONTROLLED FILL (UCF)	VISUAL		
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		

BORING LOCATION - PLAN VIEW

DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.

WC INDICATES WATER CONTENT IN PERCENT.

N_{60} INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.

INDICATES STATIC WATER ELEVATION.

W— INDICATES FREE WATER ELEVATION.

INDICATES A NON-PLASTIC MATERIAL WITH A MOISTURE CONTENT GREATER THAN 25 % OR GREATER THAN 19 % WITH A WET APPEARANCE.

INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.

NP INDICATES A NON-PLASTIC SAMPLE.

SS INDICATES A SPLIT SPOON SAMPLE, STANDARD PENETRATION TEST.

* INDICATES A SAMPLE TAKEN WITHIN 3 FT OF PROPOSED GRADE.

EXPLORATION FINDINGS

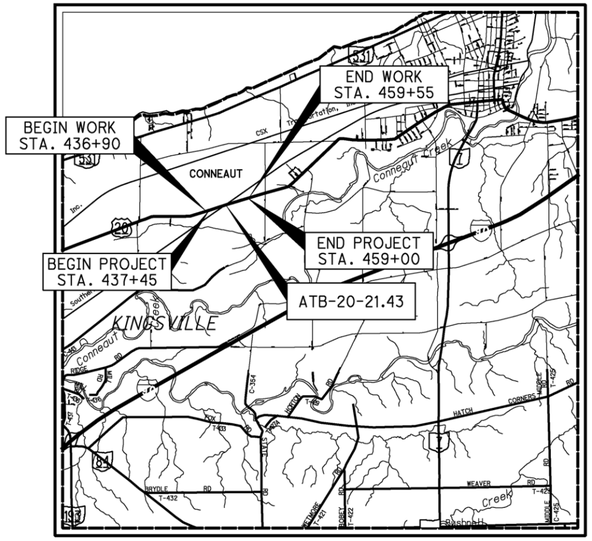
PAVEMENT (ASPHALT, CONCRETE AND/OR GRANULAR BASE) WERE ENCOUNTERED IN 13 OF THE PROJECT BORINGS AND VARIED FROM 3 TO 4 INCHES OF ASPHALT, 5 TO 10 INCHES OF CONCRETE AND 6 TO 7 INCHES OF GRANULAR BASE. TOPSOIL WAS ENCOUNTERED IN FIVE (5) BORINGS RANGING FROM 6 TO 12 INCHES THICK.

MATERIALS CLASSIFIED AS FILL, POSSIBLE FILL OR PROBABLE FILL WERE ENCOUNTERED IN SEVEN (7) BORINGS GENERALLY EXTENDING DOWN TO ABOUT EL. 710. THESE SOILS PRIMARILY CONSISTED OF MEDIUM-DENSE TO DENSE GRAVEL WITH SAND (A-1-b) WITH OCCASIONAL LAYERS OF MEDIUM-DENSE TO DENSE GRAVEL WITH SAND AND SILT (A-2-4), COARSE AND FINE SAND (A-3a) AND/OR STIFF/LOOSE SANDY SILT (A-4a).

BELOW THE FILL, NATURAL SOILS FIRST ENCOUNTERED WERE GENERALLY COMPOSED OF VERY-LOOSE TO VERY-DENSE GRAVEL (A-1-a), GRAVEL WITH SAND (A-1-b), GRAVEL WITH SAND AND SILT (A-2-4), FINE SAND (A-3) AND COARSE AND FINE SAND (A-3a), WITH OCCASIONAL POCKETS OF SILT (A-4b). BELOW THESE SOILS, GLACIAL TILL COMPOSED PRIMARILY OF VERY-STIFF TO HARD SANDY SILT (A-4a), SILT (A-4b) AND/OR SILT AND CLAY (A-6a) WERE ENCOUNTERED DOWN TO A LAYER OF "HARD PAN" SANDY SILT (A-4a) AT APPROXIMATELY EL. 623 WHICH WAS OBSERVED TO CONTINUE TO THE TERMINATION DEPTH OF THE BORINGS.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.



LOCATION MAP
SCALE IN MILES
0 1 2 3 4

N

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

INDEX OF SHEETS

LOCATION FROM STA.	TO STA.	PLAN VIEW SHEET	PROFILE SHEET	CROSS-SECTION SHEET	CUT MAX.	FILL EMB. MAX.
U.S. 20						
436+90	445+00	4	4	-	<1 FT	5 FT
445+00	455+00	5	5-6	-	0	25 FT
455+00	459+55	7	7	-	<1 FT	2 FT
446+00		-	-	8	8 FT	20 FT
448+00		-	-	9	10 FT	21 FT
449+50		-	-	10	10 FT	22 FT
451+50		-	-	11	6 FT	21 FT
MSE WALL 1						
10+00	11+25.25	5	12	-	<1 FT	35 FT
11+25.25	13+08.04	5	13	-	<1 FT	27 FT
13+08.04	15+58.04	5	14	-	<1 FT	35 FT
15+58.04	20+90.01	4-5	15	-	<1 FT	17 FT
MSE WALL 2						
10+00	11+36.72	5	16	-	<1 FT	31 FT
11+36.72	13+69.51	5	17	-	<1 FT	35 FT
13+69.51	15+94.51	5	18	-	<1 FT	20 FT
15+94.51	17+51.81	5	19	-	<1 FT	17 FT

RECON. - S&ME (MULTIPLE 2009 THRU 2013)
DRILLING - S&ME (04/2010, 05/2012, 04/2013)
DRAWN - KJD (5/6/2014)
REVIEWED - BKS (5/8/2014)

STATE OF OHIO
BRIAN KEITH SEARS
74693
REGISTERED
PROFESSIONAL ENGINEER

DESIGN AGENCY S&ME

PID NO. 83599

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. ATB-20-21.43

ATB-20-21.43

SUMMARY OF SOIL TEST DATA
U.S. 20

EXPLORATION NUMBER AND LOCATION	SAMPLE INTERVAL (FROM - TO)	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	OHIO CLASS
B-001-2-13	1.0 - 2.5	SS-1	61	38	33	14	9	6	NP	NP	NP	8	A-1-b (0)*
STA. 437+59, 16.4' Rt.	2.5 - 2.9	SS-2A	100	FILL: STIFF DARK BROWN AND BLACK SANDY SILT								19	A-4a (VISUAL)*
NORTHING: 827952.2	2.9 - 3.5	SS-2B	100	27	13	19	28	13	NP	NP	NP	15	A-4a (1)
EASTING: 2477436.11	3.5 - 4.0	SS-2C	100	POSSIBLE FILL: MEDIUM-DENSE BROWN COARSE, FINE SAND								11	A-3a (VISUAL)
	4.0 - 5.5	SS-3	78	SAME AS SS-2C								9	A-3a (VISUAL)
	5.5 - 7.0	SS-4	67	MEDIUM DENSE BROWN GRAVEL WITH SAND								8	A-1-b (VISUAL)
B-001-3-13	1.0 - 1.5	SS-1A	100	FILL: VERY-STIFF TO HARD BROWN AND BLACK SANDY SILT								14	A-4a (VISUAL)*
STA. 441+12, 18.8' Lt.	1.5 - 2.5	SS-1B	67	43	28	12	11	6	NP	NP	NP	9	A-1-b (0)
NORTHING: 828089.23	2.5 - 4.0	SS-2	100	39	29	13	13	6	NP	NP	NP	9	A-1-b (0)
EASTING: 2477762.88	4.0 - 5.5	SS-3	100	PROBABLE FILL: DENSE BROWN COARSE AND FINE SAND								8	A-3a (VISUAL)
	5.5 - 5.9	SS-4	40	SAME AS SS-3									A-3a (VISUAL)
	8.5 - 10.0	SS-5	56	23	57	12	5	3	NP	NP	NP	9	A-1-b (0)
	11.0 - 12.5	SS-6	56	SAME AS SS-5								8	A-1-b (VISUAL)
	13.5 - 15.0	SS-7	67	SAME AS SS-5								8	A-1-b (VISUAL)
	16.0 - 17.5	SS-8	44	LOOSE TO DENSE BROWN GRAVEL, SOME FINE,COARSE SAND								18	A-1-a (VISUAL)
	18.5 - 20.0	SS-9	72	SAME AS SS-8								11	A-1-a (VISUAL)
	21.0 - 22.5	SS-10	78	MEDIUM-DENSE REDDISH BROWN FINE SAND								27	A-3 (VISUAL)
	23.5 - 25.0	SS-11	72	MEDIUM-DENSE GRAY FINE SAND								26	A-3 (VISUAL)
	26.0 - 27.5	SS-12	100	SAME AS SS-11								23	A-3 (VISUAL)
	28.5 - 30.0	SS-13	67	SAME AS SS-11								22	A-3 (VISUAL)
B-001-0-09	2.0 - 3.5	SS-1	100	29	42	16	7	6	NP	NP	NP	8	A-1-b (0)
STA.444+75, 15.8' Lt.	3.5 - 5.0	SS-2	100	50	22	12	10	6	NP	NP	NP	10	A-1-b (0)
NORTHING: 828192.9	5.0 - 6.5	SS-3	100	FILL: SAME AS SS-2								8	A-1-b (VISUAL)
EASTING: 2478111	6.5 - 8.0	SS-4	100	FILL: SAME AS SS-2								10	A-1-b (VISUAL)
	8.5 - 10.0	SS-5	100	FILL: SAME AS SS-2								10	A-1-b (VISUAL)
	11.0 - 12.5	SS-6	100	48	31	10	6	5	NP	NP	NP	8	A-1-b (0)
	13.5 - 14.0	SS-7A	100	FILL: MEDIUM-DENSE GRAY SLAG								14	UCF (VISUAL)
	14.0 - 14.5	SS-7B	100	MEDIUM-DENSE DARK GRAY SILT, SOME FINE, COARSE SAND								23	A-4b (VISUAL)
	14.5 - 15.0	SS-7C	100	SAME AS SS-8								12	A-1-b (VISUAL)
	16.0 - 17.5	SS-8	100	38	36	13	8	5	NP	NP	NP	9	A-1-b (0)
	18.5 - 20.0	SS-9	83	SAME AS SS-8								6	A-1-b (VISUAL)
	21.0 - 22.5	SS-10	100	34	45	11	5	5	NP	NP	NP	8	A-1-b (0)
	23.5 - 25.0	SS-11	100	SAME AS SS-8								7	A-1-b (VISUAL)
	26.0 - 27.5	SS-12	89	16	5	76	2	1	NP	NP	NP	22	A-3 (0)
	28.5 - 28.9	SS-13A	100	SAME AS SS-12								21	A-3 (VISUAL)
	28.9 - 30.0	SS-13B	100	64	3	27	4	2	NP	NP	NP	9	A-1-b (0)
	31.0 - 32.5	SS-14	100	DENSE BROWN FINE SAND								22	A-3 (VISUAL)
	33.5 - 35.0	SS-15	100	2	6	87	0	5	NP	NP	NP	29	A-3 (0)
	38.5 - 40.0	SS-16	89	SAME AS SS-17								23	A-3a (VISUAL)
	43.5 - 45.0	SS-17	100	0	0	66	27	7	NP	NP	NP	24	A-3a (0)
	48.5 - 50.0	SS-18	100	SAME AS SS-17								25	A-3a (VISUAL)
B-001-1-11	1.0 - 2.5	SS-1	83	FILL: MEDIUM-DENSE BROWN GRAVEL WITH SAND								8	A-1-b (VISUAL)
STA. 444+75, 20.4' Rt.	3.5 - 5.0	SS-2	83	SAME AS SS-1								10	A-1-b (VISUAL)
NORTHING: 828158.48	6.0 - 7.5	SS-3	67	40	19	14	19	8	26	25	1	14	A-2-4 (0)
EASTING: 2478122.18	8.5 - 10.0	SS-4	78	FILL: DENSE TO VERY-DENSE BROWN GRAVEL WITH SAND								9	A-1-b (VISUAL)
	11.0 - 12.5	SS-5	72	SAME AS SS-4								8	A-1-b (VISUAL)
	15.0 - 15.5	SS-6	100	SAME AS SS-7								7	A-1-b (VISUAL)
	16.0 - 17.5	SS-7	67	32	25	22	16	5	NP	NP	NP	8	A-1-b (0)
	18.5 - 20.0	SS-8	56	SAME AS SS-7								8	A-1-b (VISUAL)
	21.0 - 22.5	SS-9	44	SAME AS SS-7								7	A-1-b (VISUAL)
	23.5 - 25.0	SS-10	72	SAME AS SS-7								7	A-1-b (VISUAL)
	26.0 - 26.5	SS-11A	100	3	5	86	4	2	NP	NP	NP	21	A-3 (0)
	26.5 - 27.5	SS-11B	30	SAME AS SS-12								12	A-1-b (VISUAL)
	28.5 - 30.0	SS-12	78	47	12	31	7	3	NP	NP	NP	10	A-1-b (0)
	31.0 - 32.5	SS-13	100	SAME AS SS-14								23	A-3 (VISUAL)
	33.5 - 35.0	SS-14	83	6	13	73	6	2	NP	NP	NP	19	A-3 (0)
	36.0 - 37.5	SS-15	100	SAME AS SS-16								27	A-3a (VISUAL)
	38.5 - 40.0	SS-16	78	1	0	71	25	3	NP	NP	NP	23	A-3a (0)

SUMMARY OF SOIL TEST DATA
U.S. 20

EXPLORATION NUMBER AND LOCATION	SAMPLE INTERVAL (FROM - TO)	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	OHIO CLASS
B-006-0-09	2.0 - 3.5	SS-1	100	29	37	23	4	7	NP	NP	NP	9	A-1-b (0)
STA. 453+13, 19.1' Lt.	3.5 - 5.0	SS-2	100	39	34	16	6	5	NP	NP	NP	8	A-1-b (0)
NORTHING: 828440	5.0 - 6.5	SS-3	100	SAME AS SS-2								9	A-1-b (VISUAL)
EASTING: 2478912.2	6.5 - 6.9	SS-4A	100	SAME AS SS-2								10	A-1-b (VISUAL)
	6.9 - 8.0	SS-4B	100	38	30	19	5	8	NP	NP	NP	9	A-1-b (0)
	8.5 - 10.0	SS-5	100	SAME AS SS-4B								8	A-1-b (VISUAL)
	13.5 - 13.8	SS-6A	100	FILL: MEDIUM-DENSE GRAY SLAG								11	UCF (VISUAL)
	13.8 - 14.9	SS-6B	58	51	36	5	3	5	NP	NP	NP	9	A-1-a (0)
	18.5 - 20.0	SS-7	100	MEDIUM-DENSE BROWN COARSE AND FINE SAND								10	A-3a (VISUAL)
	23.5 - 25.0	SS-8	100	MEDIUM-DENSE LIGHT BROWN FINE SAND								5	A-3 (VISUAL)
	28.5 - 30.0	SS-9	100	SAME AS SS-11								23	A-3 (VISUAL)
	31.0 - 32.5	SS-10	100	SAME AS SS-11								25	A-3 (VISUAL)
	33.5 - 35.0	SS-11	100	1	3	89	1	6	NP	NP	NP	23	A-3 (0)
	36.0 - 37.5	SS-12	100	SAME AS SS-11								29	A-3 (VISUAL)
	38.5 - 40.0	SS-13	100	SAME AS SS-14								28	A-3a (VISUAL)
	41.0 - 42.5	SS-14	100	0	0	74	20	6	NP	NP	NP	25	A-3a (0)
	43.5 - 45.0	SS-15	100	SAME AS SS-14								25	A-3a (VISUAL)
	46.0 - 47.5	SS-16	100	1	2	79	11	7	NP	NP	NP	23	A-3a (0)
	48.5 - 50.0	SS-17	100	SAME AS SS-14								21	A-3a (VISUAL)
	53.5 - 55.0	SS-18	100	1	4	7	56	32	24	18	6	19	A-4b (8)
B-007-0-13	1.0 - 2.5	SS-1	78	46	21	17	10	6	NP	NP	NP	9	A-1-b (0)*
STA. 456+43, 16.8' Rt.	2.5 - 4.0	SS-2	78	SAME AS SS-1								9	A-1-b (VISUAL)
NORTHING: 828501.32	4.0 - 5.5	SS-3	56	48	27	10	10	5	NP	NP	NP	9	A-1-b (0)
EASTING: 2479238.75	5.5 - 5.8	SS-4	100	SAME AS SS-3								8	A-1-b (VISUAL)
	7.0 - 8.5	SS-5	39	MEDIUM-DENSE BROWN COARSE AND FINE SAND									A-3a (VISUAL)
B-008-0-13	1.0 - 1.3	SS-1A	100	FILL: MEDIUM-DENSE BLACK GRAVEL WITH SAND								15	A-1-b (VISUAL)*
STA. 459+28, 15.9' Lt.	1.3 - 2.5	SS-1B	83	27	23	27	15	8	NP	NP	NP	12	A-1-b (0)*
NORTHING: 828615.06	2.5 - 4.0	SS-2	67	32	34	13	14	7	NP	NP	NP	12	A-1-b (0)
EASTING: 2479501.22	4.0 - 5.5	SS-3	72	LOOSE BROWN COARSE AND FINE SAND, SOME FINE GRAVEL								9	A-3a (VISUAL)
	5.5 - 7.0	SS-4	39	SAME AS SS-3								9	A-3a (VISUAL)

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STRUCTURE FOUNDATION EXPLORATION
SUMMARY OF SOIL TEST DATA

ATB-20-21.43

SUMMARY OF SOIL TEST DATA
OVERPASS DRIVE

EXPLORATION NUMBER AND LOCATION	SAMPLE INTERVAL (FROM - TO)	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	OHIO CLASS
B-001-4-13	1.0 - 2.5	SS-1	78	MEDIUM-DENSE BROWN COARSE AND FINE SAND								8	A-3a (VISUAL)
STA. 443+11, 55.5′ Lt.	3.5 - 5.0	SS-2	78	VERY-LOOSE TO LOOSE BROWN COARSE AND FINE SAND								10	A-3a (VISUAL)
NORTHING: 828182.84	6.0 - 7.5	SS-3	33	SAME AS SS-3								8	A-3a (VISUAL)
EASTING: 2477942.9	8.5 - 10.0	SS-4	72	38	36	7	14	5	NP	NP	NP	11	A-1-b (0)
	11.0 - 12.5	SS-5	56	MEDIUM-DENSE BROWN AND DARK BROWN GRAVEL WITH SAND								6	A-1-b (VISUAL)
	13.5 - 15.0	SS-6	78	SAME AS SS-5								10	A-1-b (VISUAL)
	16.0 - 16.5	SS-7A	100	SAME AS SS-5								13	A-1-b (VISUAL)
	16.5 - 17.5	SS-7B	100	2	3	89	3	3	NP	NP	NP	23	A-3 (0)
	18.5 - 20.0	SS-8	72	SAME AS SS-7B								18	A-3 (VISUAL)
	21.0 - 22.5	SS-9	72	SAME AS SS-7B								26	A-3 (VISUAL)
	23.5 - 25.0	SS-10	67	1	4	66	20	9	NP	NP	NP	22	A-3a (0)
	26.0 - 27.5	SS-11	100	SAME AS SS-10								24	A-3a (VISUAL)
	28.5 - 30.0	SS-12	72	SAME AS SS-10								22	A-3a (VISUAL)
B-002-1-09	1.5 - 3.0	SS-1	94	LOOSE TO MEDIUM-DENSE BROWN GRAVEL WITH SAND								7	A-1-b (VISUAL)
STA. 446+60, 62.9′ Lt.	3.5 - 5.0	SS-2	78	40	41	9	4	6	NP	NP	NP	8	A-1-b (0)
NORTHING: 828291.8	6.0 - 7.5	SS-3	100	SAME AS SS-2								9	A-1-b (VISUAL)
EASTING: 2478274.1	8.5 - 10.0	SS-4	94	SAME AS SS-2								7	A-1-b (VISUAL)
	11.0 - 12.5	SS-5	78	5	89	3	2	1	NP	NP	NP	5	A-1-b (0)
	13.5 - 15.0	SS-6	83	SAME AS SS-7A								7	A-1-a (VISUAL)
	16.0 - 16.7	SS-7A	100	67	13	14	2	4	NP	NP	NP	20	A-1-A (0)
	16.7 - 17.5	SS-7B	58	SAME AS SS-8								26	A-3 (VISUAL)
	18.5 - 20.0	SS-8	100	14	10	70	1	5	NP	NP	NP	20	A-3 (0)
	21.0 - 22.5	SS-9	100	SAME AS SS-10								23	A-3 (VISUAL)
	23.5 - 25.0	SS-10	28	1	15	75	3	6	NP	NP	NP	28	A-3 (0)
	28.5 - 30.0	SS-11	78	0	1	72	20	7	NP	NP	NP	25	A-3 (0)
	33.5 - 35.0	SS-12	100	SAME AS SS-11								22	A-3 (VISUAL)
	38.5 - 40.0	SS-13	100	0	0	11	68	21	NP	NP	NP	26	A-4b (8)
	43.5 - 45.0	SS-14	67	0	0	5	75	20	NP	NP	NP	20	A-4b (8)
B-003-0-09	1.0 - 2.5	SS-1	67	44	37	9	5	5	NP	NP	NP	10	A-1-b (0)
STA. 448+22, 48.9′ Lt.	3.5 - 5.0	SS-2	78	SAME AS SS-1								10	A-1-b (VISUAL)
NORTHING: 8283256	6.0 - 7.5	SS-3	100	38	52	4	2	4	NP	NP	NP	8	A-1-b (0)
EASTING: 2478433.5	8.5 - 10.0	SS-4	100	SAME AS SS-3								8	A-1-b (VISUAL)
	13.5 - 14.0	SS-5A	100	LOOSE BROWN COARSE AND FINE SAND								7	A-3a (VISUAL)
	14.0 - 15.0	SS-5B	78	55	6	32	3	4	NP	NP	NP	9	A-1-b (0)
	18.5 - 20.0	SS-6	83	SAME AS SS-7								24	A-3 (VISUAL)
	21.0 - 22.5	SS-7	100	1	10	83	1	5	NP	NP	NP	21	A-3 (0)
	23.5 - 25.0	SS-8	78	SAME AS SS-9								20	A-3a (VISUAL)
	26.0 - 27.5	SS-9	94	0	0	70	22	8	NP	NP	NP	25	A-3a (0)
	28.5 - 30.5	SS-10	100	SAME AS SS-12								24	A-3a (VISUAL)
	31.0 - 32.5	SS-11	100	SAME AS SS-12								24	A-3a (VISUAL)
	33.5 - 35.0	SS-12	100	1	1	71	21	6	NP	NP	NP	24	A-3a (0)
	36.0 - 37.5	SS-13	100	SAME AS SS-12								22	A-3a (VISUAL)
	38.5 - 39.3	SS-14A	100	MEDIUM-DENSE GRAY SILT								26	A-4b (VISUAL)
	39.3 - 40.0	SS-14B	100	MEDIUM-DENSE GRAY COARSE AND FINE SAND								20	A-3a (VISUAL)
	43.5 - 45.0	SS-15	67	6	8	9	43	34	25	18	7	15	A-4a (8)
	48.5 - 50.0	SS-16	100	SAME AS SS-15								16	A-4a (VISUAL)
	53.5 - 55.0	SS-17	100	6	6	7	43	38	25	17	8	16	A-4a (8)
	58.5 - 60.0	SS-18	100	SAME AS SS-17								15	A-4a (VISUAL)
	63.5 - 65.0	SS-19	83	5	7	7	43	38	25	18	7	16	A-4a (8)
	68.5 - 70.0	SS-20	83	SAME AS SS-19								17	A-4a (VISUAL)
	73.5 - 75.0	SS-21	100	SAME AS SS-19								21	A-4a (VISUAL)
	78.5 - 78.9	SS-22A	100	SAME AS SS-19								16	A-4a (VISUAL)
	78.9 - 80.0	SS-22B	46	DENSE GRAY SANDY SILT								19	A-4a (VISUAL)
	83.5 - 85.0	SS-23	100	6	4	6	35	49	28	19	9	18	A-4a (8)
	88.5 - 90.0	SS-24	100	SAME AS SS-25								12	A-4a (VISUAL)
	93.5 - 94.4	SS-25	100	10	12	16	36	26	21	14	7	9	A-4a (5)
	98.5 - 99.5	SS-26	100	SAME AS SS-25								9	A-4a (VISUAL)

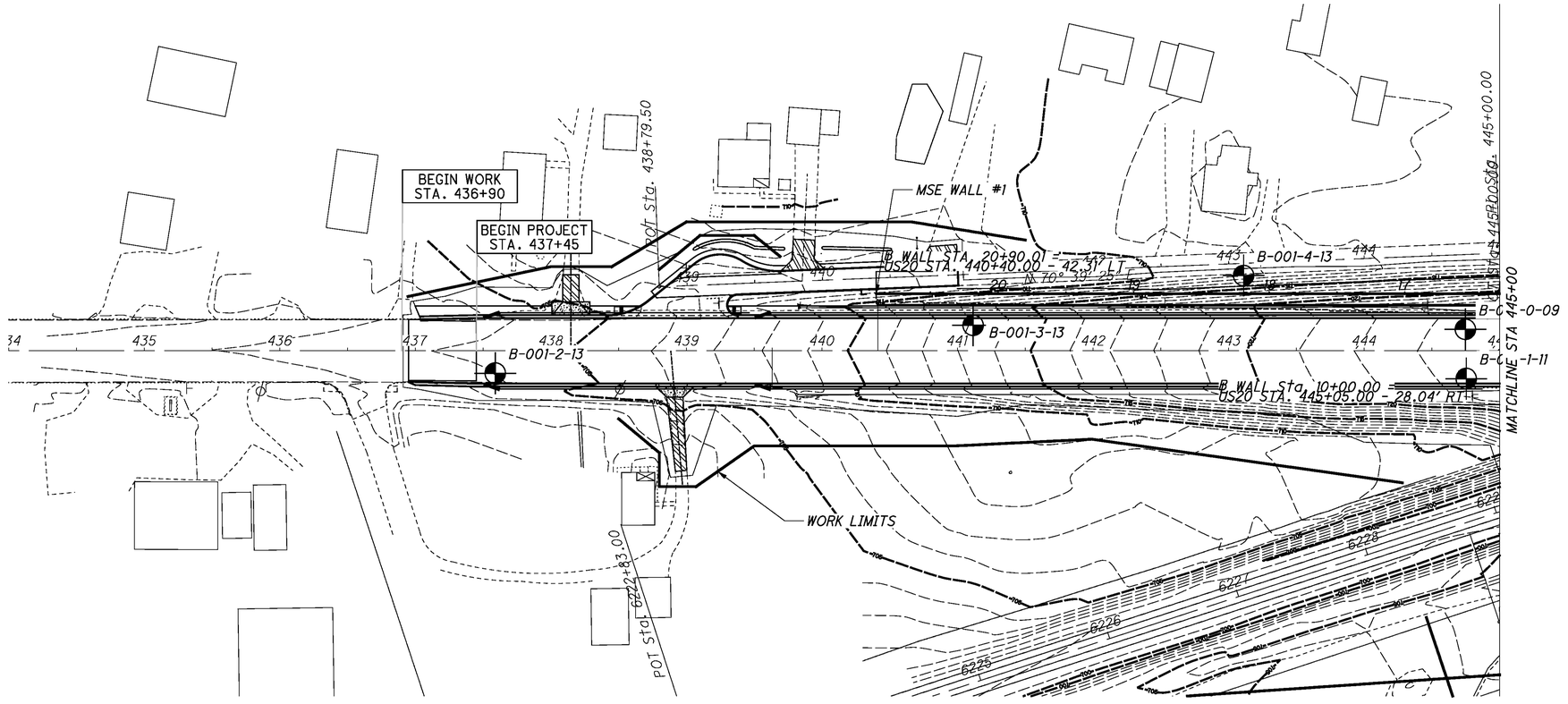
SUMMARY OF SOIL TEST DATA
INDUSTRY ROAD

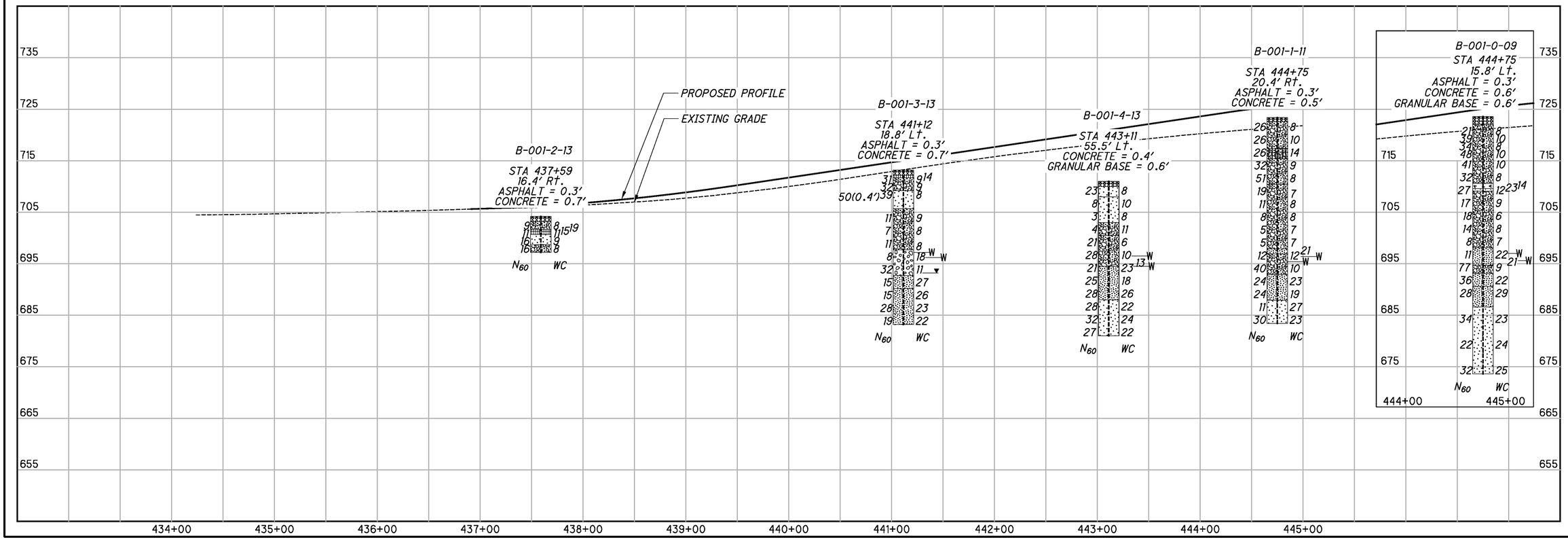
EXPLORATION NUMBER AND LOCATION	SAMPLE INTERVAL (FROM - TO)	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	OHIO CLASS
B-002-2-09	1.0 - 2.5	SS-1	67	20	24	26	19	11	NP	NP	NP	14	A-2-4 (0)
STA. 447+15, 134.9′ Rt.	3.5 - 5.0	SS-2	78	SAME AS SS-3								9	A-1-b (VISUAL)
NORTHING: 828118.5	6.0 - 7.5	SS-3	94	35	37	11	8	9	NP	NP	NP	9	A-1-b (0)
EASTING: 2478384.4	8.5 - 10.0	SS-4	78	VERY-LOOSE BROWN GRAVEL WITH SAND								9	A-1-b (VISUAL)
	11.0 - 12.5	SS-5	100	39	39	13	5	4	NP	NP	NP	8	A-1-b (0)
	13.5 - 15.0	SS-6	100	SAME AS SS-5								7	A-1-b (VISUAL)
	16.0 - 17.5	SS-7	78	70	23	4	2	1	NP	NP	NP	20	A-1-a (0)
	18.5 - 20.0	SS-8	100	SAME AS SS-10								24	A-3 (VISUAL)
	21.0 - 22.5	SS-9	100	SAME AS SS-10								25	A-3 (VISUAL)
	23.5 - 25.0	SS-10	100	0	1	93	1	5	NP	NP	NP	24	A-3 (0)
B-002-3-09	1.0 - 2.5	SS-1	89	SAME AS SS-2								8	A-1-a (VISUAL)
STA. 447+69, 99.4′ Rt.	3.5 - 5.0	SS-2	89	56	33	5	3	3	NP	NP	NP	8	A-1-a (0)
NORTHING: 828168.3	6.0 - 7.5	SS-3	100	SAME AS SS-2								9	A-1-a (VISUAL)
EASTING: 2478428.9	8.5 - 10.0	SS-4	89	36	56	3	1	4	NP	NP	NP	6	A-1-b (0)
	13.5 - 15.0	SS-5	100	SAME AS SS-4								8	A-1-b (VISUAL)
	18.5 - 20.0	SS-6	100	5	29	61	0	5	NP	NP	NP	21	A-3 (0)
	21.0 - 22.5	SS-7	67	1	14	78	1	6	NP	NP	NP	22	A-3 (0)
	23.5 - 25.0	SS-8	61	1	2	91	1	5	NP	NP	NP	23	A-3 (0)
	26.0 - 27.5	SS-9	78	SAME AS SS-8								28	A-3 (VISUAL)
	28.5 - 30.0	SS-10	100	SAME AS SS-11								26	A-3a (VISUAL)
	31.0 - 32.5	SS-11	100	0	10	73	11	6	NP	NP	NP	25	A-3a (0)
	33.5 - 35.0	SS-12	100	SAME AS SS-13								25	A-3 (VISUAL)
	36.0 - 37.5	SS-13	100	1	1	89	4	5	NP	NP	NP	25	A-3 (0)
	38.5 - 39.0	SS-14A	100	SAME AS SS-13								25	A-3 (VISUAL)
	39.0 - 40.0	SS-14B	100	1	1	9	68	21	22	21	1	24	A-4b (8)
	43.5 - 45.0	SS-15	100	SAME AS SS-14B								21	A-4b (VISUAL)
	48.5 - 50.0	SS-16	100	SAME AS SS-18								16	A-4a (VISUAL)
	53.5 - 55.0	SS-17	100	SAME AS SS-18								16	A-4a (VISUAL)
	58.5 - 60.0	SS-18	100	4	6	7	43	40	25	17	8	16	A-4a (8)
	63.5 - 65.0	SS-19	61	SAME AS SS-18								16	A-4a (VISUAL)
	68.5 - 70.0	SS-20	100	SAME AS SS-21								17	A-4a (VISUAL)
	73.5 - 75.0	SS-21	100	3	6	6	46	39	27	18	9	17	A-4a (8)
	78.5 - 80.0	SS-22	100	SAME AS SS-21								16	A-4a (VISUAL)
	83.5 - 85.0	SS-23	100	SAME AS SS-21								17	A-4a (VISUAL)
	88.5 - 90.0	SS-24	100	13	16	17	29	25	22	15	7	14	A-4a (4)
	93.5 - 94.4	SS-25	90	SAME AS SS-26								10	A-4a (VISUAL)
	98.5 - 99.0	SS-26	100	20	11	17	26	26	20	13	7	8	A-4a (3)
B-003-1-09	1.0 - 2.5	SS-1	94	SAME AS SS-2								9	A-1-b (VISUAL)
STA. 448+53, 86.9′ Rt.	3.5 - 5.0	SS-2	78	48	37	7	3	5	NP	NP	NP	8	A-1-b (0)
NORTHING: 828204.8	6.0 - 7.5	SS-3	72	SAME AS SS-2								8	A-1-b (VISUAL)
EASTING: 2478503.0	8.5 - 10.0	SS-4	100	8	75	6	2	9	NP	NP	NP	9	A-1-b (0)
	11.0 - 12.5	SS-5	78	SAME AS SS-4								10	A-1-b (VISUAL)
	13.5 - 15.0	SS-6	89	69	4	22	3	2	NP	NP	NP	3	A-1-a (0)
	16.0 - 17.5	SS-7	94	MEDIUM-DENSE BROWN GRAVEL WITH SAND								9	A-1-b (VISUAL)
	18.5 - 20.0	SS-8	89	3	13	81	2	1	NP	NP	NP	25	A-3 (0)
	21.0 - 22.5	SS-9	89	SAME AS SS-8								28	A-3 (VISUAL)
	23.5 - 25.0	SS-10	100	SAME AS SS-8								31	A-3 (VISUAL)
B-004-0-09	1.0 - 2.5	SS-1	100	LOOSE TO MEDIUM-DENSE BROWN GRAVEL WITH SAND								9	A-1-b (VISUAL)
STA. 449+64, 64.3′ Rt.	3.5 - 4.0	SS-2A	100	SAME AS SS-1								8	A-1-b (VISUAL)
NORTHING: 828258.8	4.0 - 5.0	SS-2B	100	26	31	11	23	9	NP	NP	NP	17	A-2-4 (0)
EASTING: 2478602.8	6.0 - 7.5	SS-3	100	LOOSE TO MEDIUM-DENSE BROWN GRAVEL WITH SAND								9	A-1-b (VISUAL)
	8.5 - 10.0	SS-4	100	39	44	5	7	5	NP	NP	NP	10	A-1-b (0)
	11.0 - 12.5	SS-5	100	SAME AS SS-4								8	A-1-b (VISUAL)
	13.5 - 15.0	SS-6	100	DENSE BROWN GRAVEL, SOME FINE TO COARSE SAND								7	A-1-a (VISUAL)
	16.0 - 17.5	SS-7	100	66	17	12	1	4	NP	NP	NP	6	A-1-a (0)
	18.5 - 20.0	SS-8	72	30	19	46	1	4	NP	NP	NP	15	A-1-b (0)
	21.0 - 22.5	SS-9	100	SAME AS SS-10								26	A-3 (VISUAL)
	23.5 - 25.0	SS-10	100	0	1	94	0	5	NP	NP	NP	25	A-3 (0)
	26.0 - 27.5	SS-11	100	SAME AS SS-10								29	A-3 (VISUAL)
	28.5 - 30.0	SS-12	100	SAME AS SS-13								23	A-3a (VISUAL)
	31.0 - 32.5	SS-13	100	1	0	70	22	7	NP	NP	NP	24	A-3a (0)
	33.5 - 35.0	SS-14	100	SAME AS SS-13								16	A-3a (VISUAL)
	36.0 - 37.5	SS-15	100	SAME AS SS-13								26	A-3a (VISUAL)
	38.5 - 40.0	SS-16	100	0	1	87	6	6	NP	NP	NP	26	A-3a (0)
	43.5 - 45.0	SS-17	100	SAME AS SS-16								22	A-3a (VISUAL)
	48.5 - 50.0	SS-18	100	5	9	14	48	24	20	17	3	15	A-4a (7)
B-005-1-09	1.0 - 2.5	SS-1	94	SAME AS SS-2								9	A-1-b (VISUAL)
STA. 451+60, 63.0′ Rt.	3.5 - 5.0	SS-2	78	37	45	5	6	7	NP	NP	NP	10	A-1-b (0)
NORTHING: 828316.8	6.0 - 7.5	SS-3	89	SAME AS SS-2								10	A-1-b (VISUAL)
EASTING: 2478789.5	8.5 - 10.0	SS-4	89	53	25	8	10	4	NP	NP	NP	11	A-1-a (0)
	11.0 - 12.5	SS-5	67	SAME AS SS-6								6	A-1-b (VISUAL)
	13.5 - 15.0	SS-6	100	44	38	14	1	3	NP	NP	NP	7	A-1-b (0)
	16.0 - 16.7	SS-7A	100	SAME AS SS-6								8	A-1-b (VISUAL)
	16.7 - 17.5	SS-7B	75	SAME AS SS-9								23	A-3 (VISUAL)
	18.5 - 20.0	SS-8	100	SAME AS SS-9								24	A-3 (VISUAL)
	21.0 - 22.5	SS-9	100	5	4	83	2	6	NP	NP	NP	23	A-3 (0)
	23.5 - 25.0	SS-10	100	SAME AS SS-9								22	A-3 (VISUAL)

DRAWN K.JD | CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION SUMMARY OF SOIL TEST DATA

ATB-20-21.43





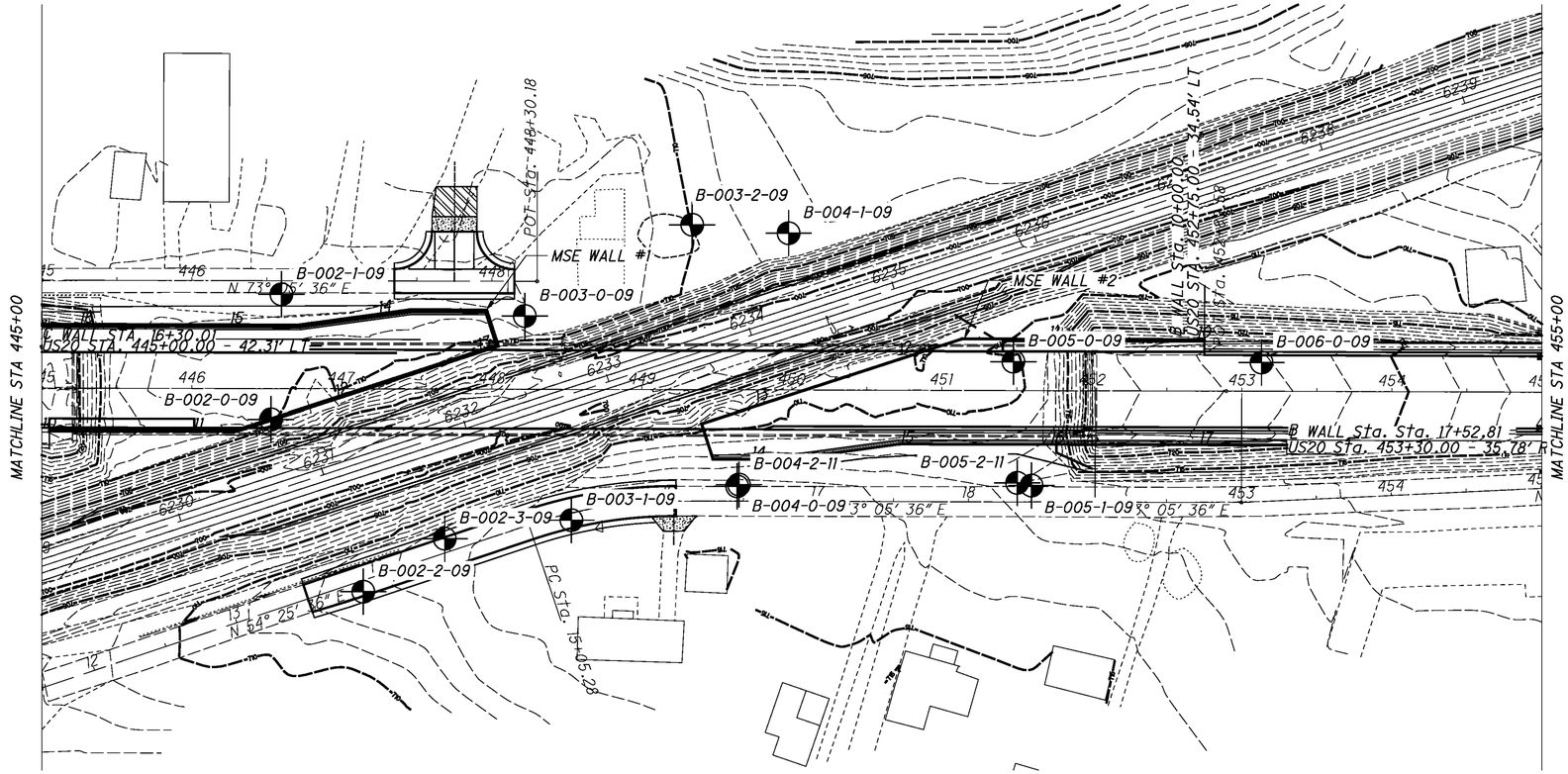
HORIZONTAL SCALE IN FEET
0 50 100

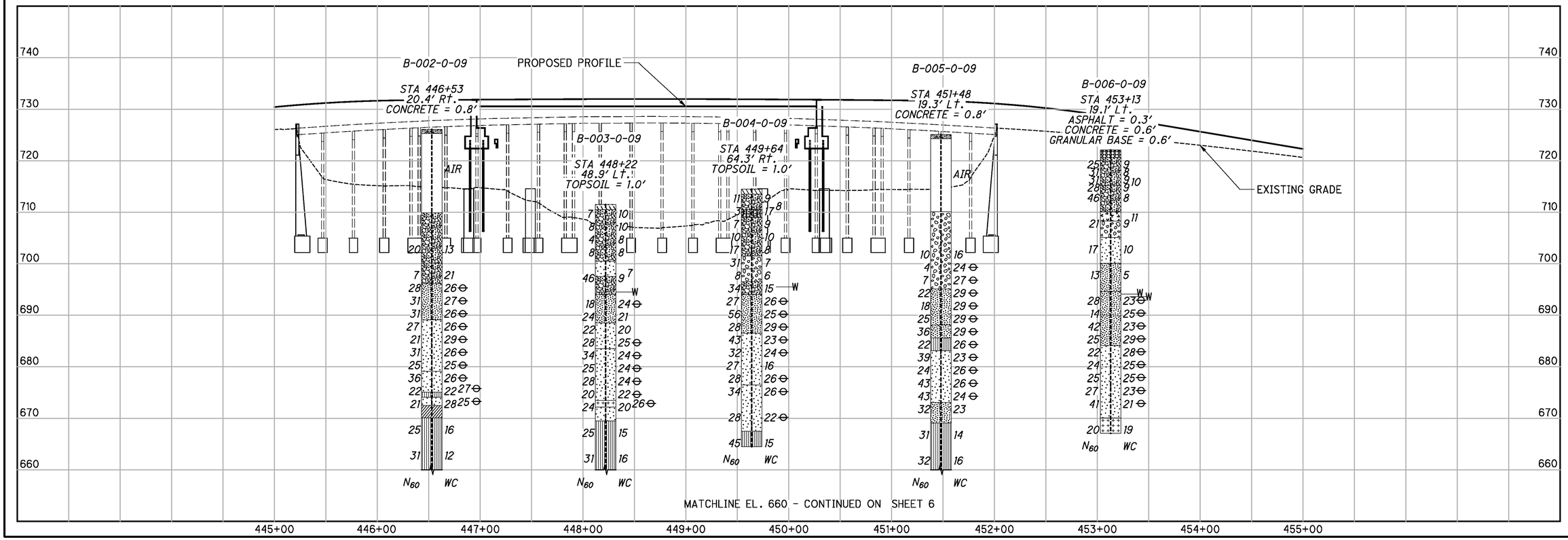
DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 436+90 TO STA 445+00 U.S. 20

ATB-20-21.43

CROSS SECTION INDEX	
STATION	SHEET
STA 446+50	8
STA 448+20	9
STA 449+50	10
STA 451+50	11





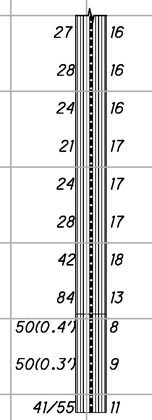
HORIZONTAL SCALE IN FEET
0 50 100

DRAWN KJD
CHECKED BKS

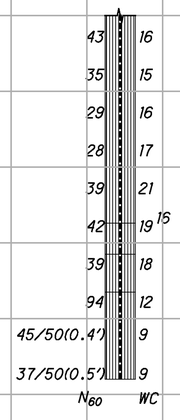
STRUCTURE FOUNDATION EXPLORATION
STA 445+00 TO STA 455+00 U.S. 20

ATB-20-21.43

MATCHLINE EL. 660 - CONTINUED ON SHEET 5



B-002-0-09
STA 446+53
20.4' RT
EOB = 607.6'



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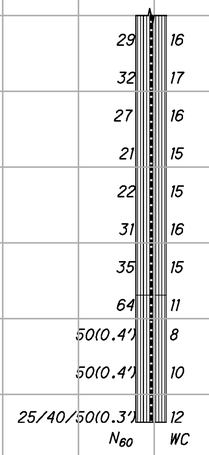
STA 448+22
48.9' LT
EOB = 612.0'



B-005-0-09
STA 451+48
19.3' LT
EOB = 606.3'

660
650
640
630
620
610
600

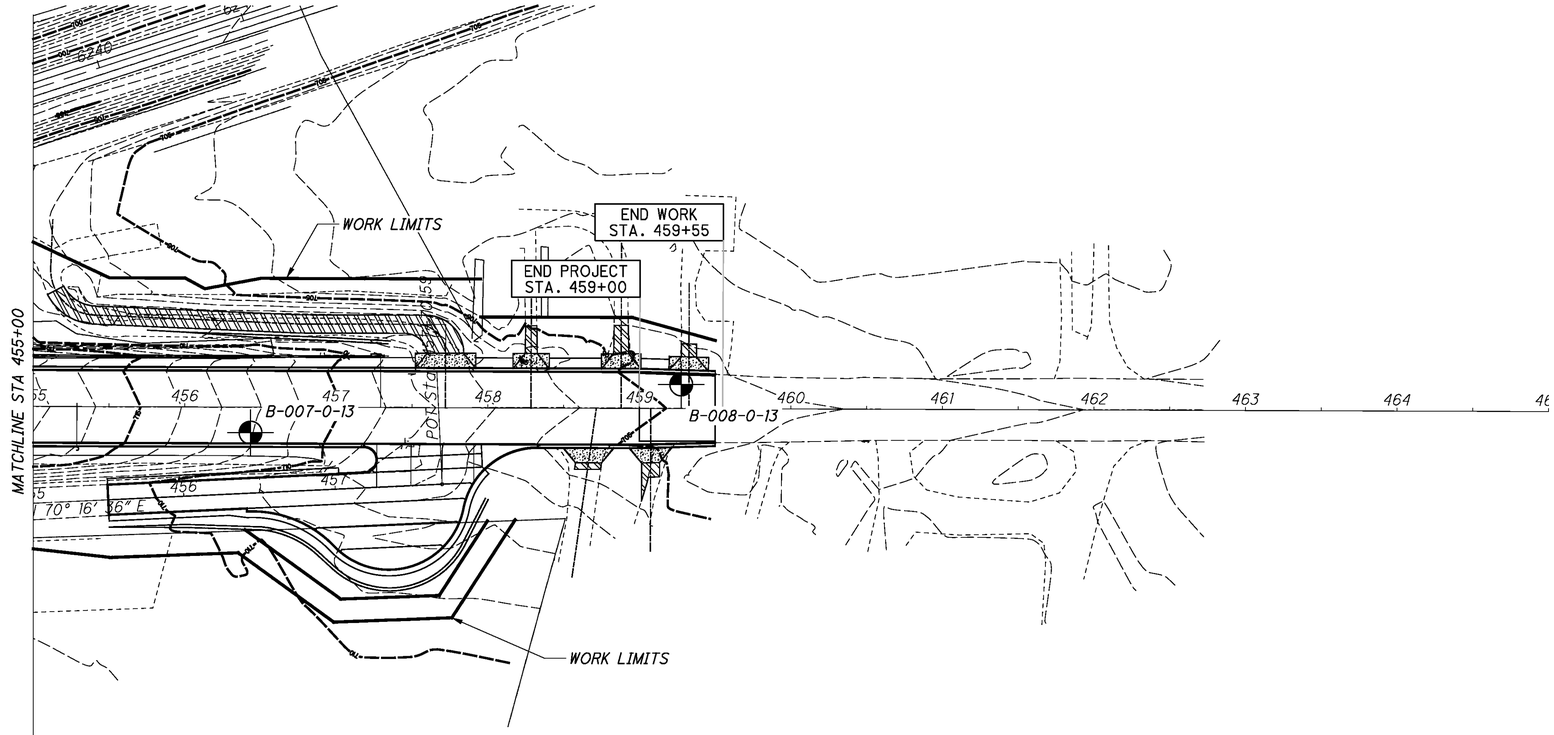
445+00 446+00 447+00 448+00 449+00 450+00 451+00 452+00 453+00 454+00 455+00

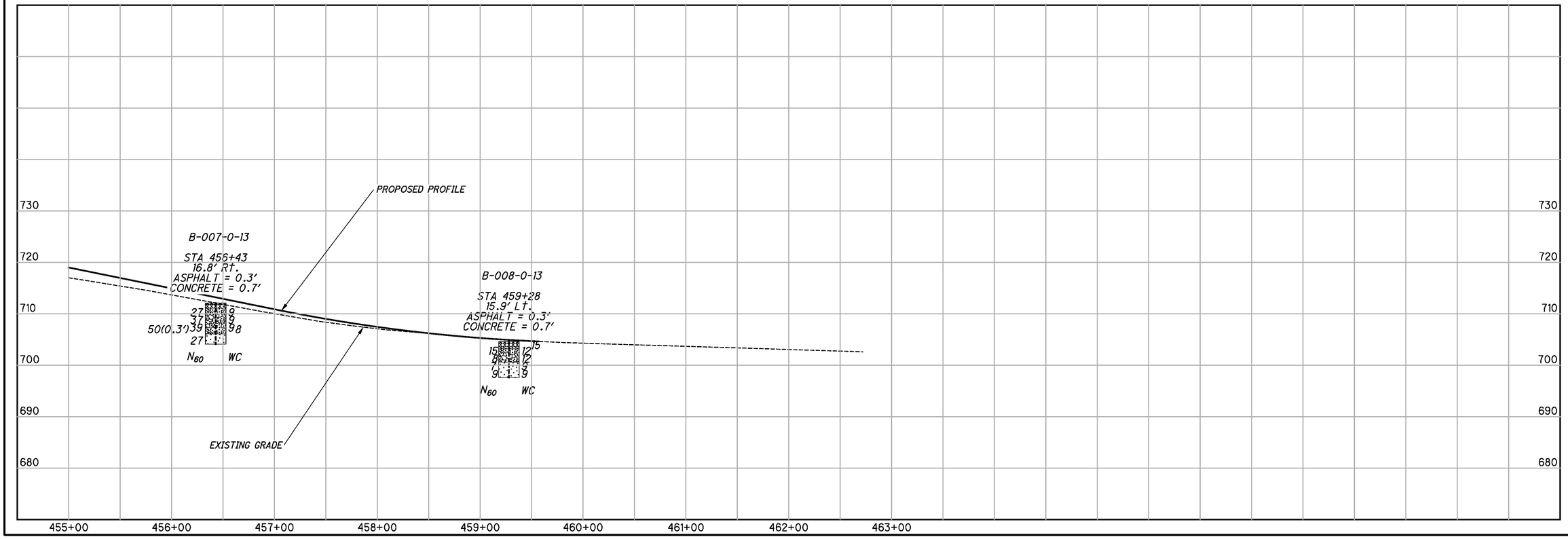
HORIZONTAL SCALE IN FEET
0 50 100

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 445+00 TO STA 455+00 U.S. 20

ATB-20-21.43



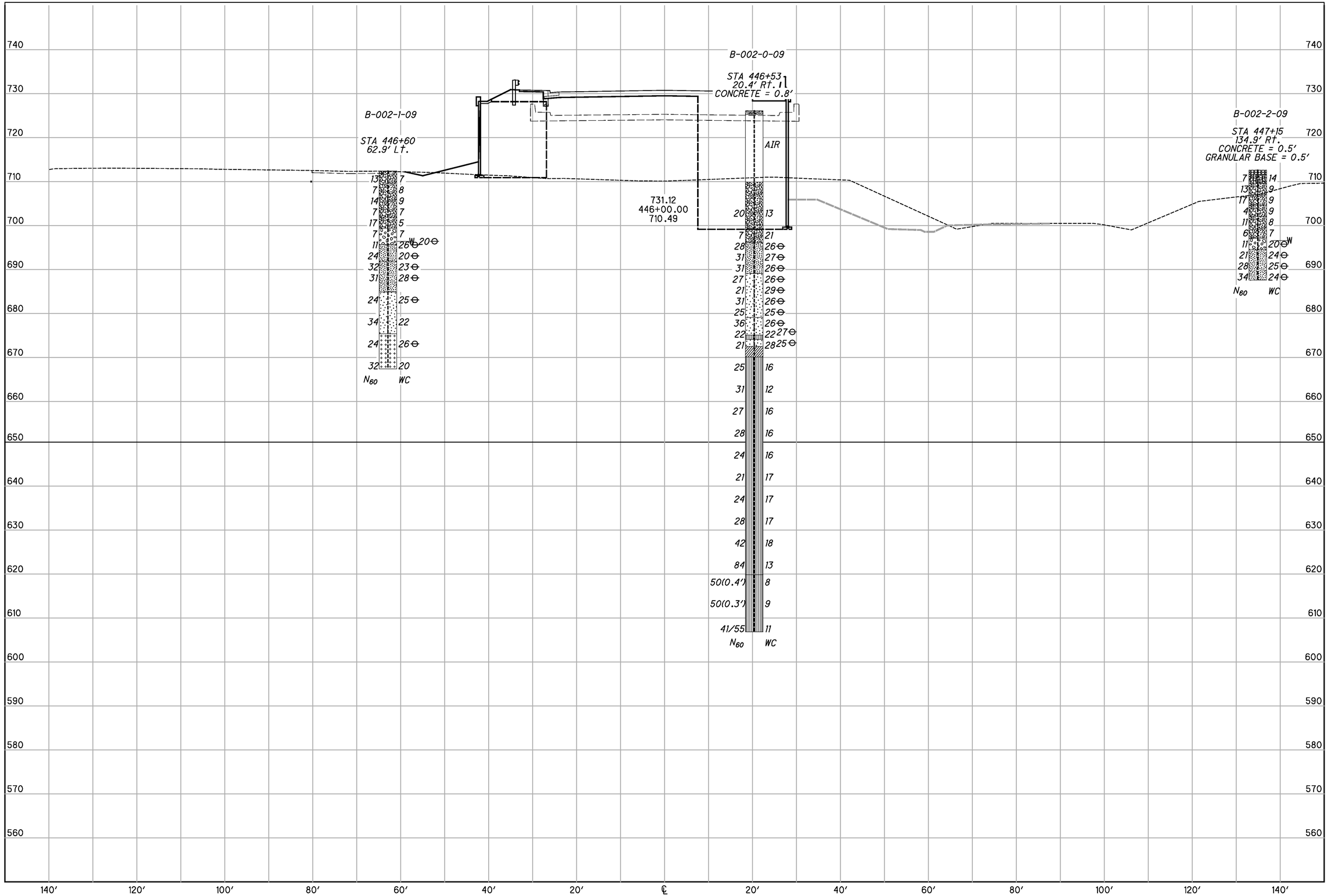


HORIZONTAL SCALE IN FEET
0 50 100

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STATION 455+00 TO STA 459+55 U.S. 20

ATB-20-21.43

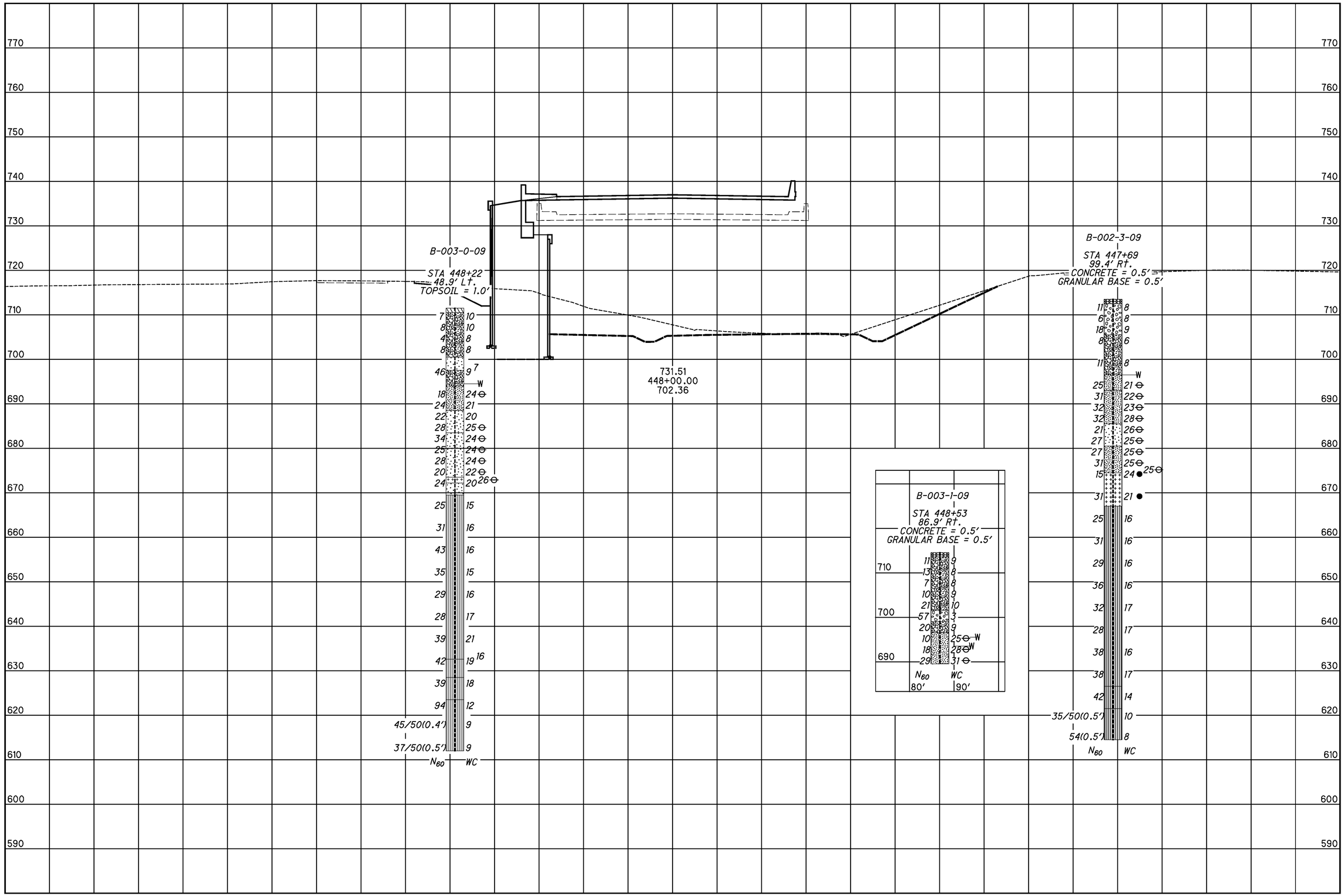


HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION CROSS SECTIONS STA. 446+00

ATB-20-21.43



HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION CROSS SECTIONS STA. 448+00

ATB-20-21.43

B-003-2-09
STA 449+33
110.0' Lt.
TOPSOIL = 1.0'
3 19
11 9
6 8
7 8
7 16 W
10 28
18 25
22 26
N_{60} WC

B-004-1-09
STA 449+98
104.5' Lt.
TOPSOIL = 0.5'
1 12
11 10
8 8
6 10
29 16 W
17 28 22
27 25
15 26
20 25
21 22
17 27
42 20
34 23
20 22
18 16
28 15
31 16
43 16
42 16
25 16
46 19
52 23
42 21
24/50(0.5') 9
N_{60} WC
110' 100' 90'

731.49
449+50.00
703.43

B-004-0-09
STA 449+64
64.3' Rt.
TOPSOIL = 1.0'
11 9
3 17 8
7 9
10 10
17 8
31 7
8 6
34 15 W
27 26
56 25
28 29
43 23
32 24
27 16
28 26
34 26
28 22
45 15
N_{60} WC

B-004-2-11
STA 449+64
62.8' Rt.
▼ (16 HR)
18 16
19 15
20 15
22 16
12 16
26 16
42 24
53 25
127 9
41/68 8
142 12
53/55 12
N_{60} WC
SEE BORING B-004-0-09
FOR SOIL STRATIGRAPHY
FROM 0' TO 50'.
50' 60' 70'

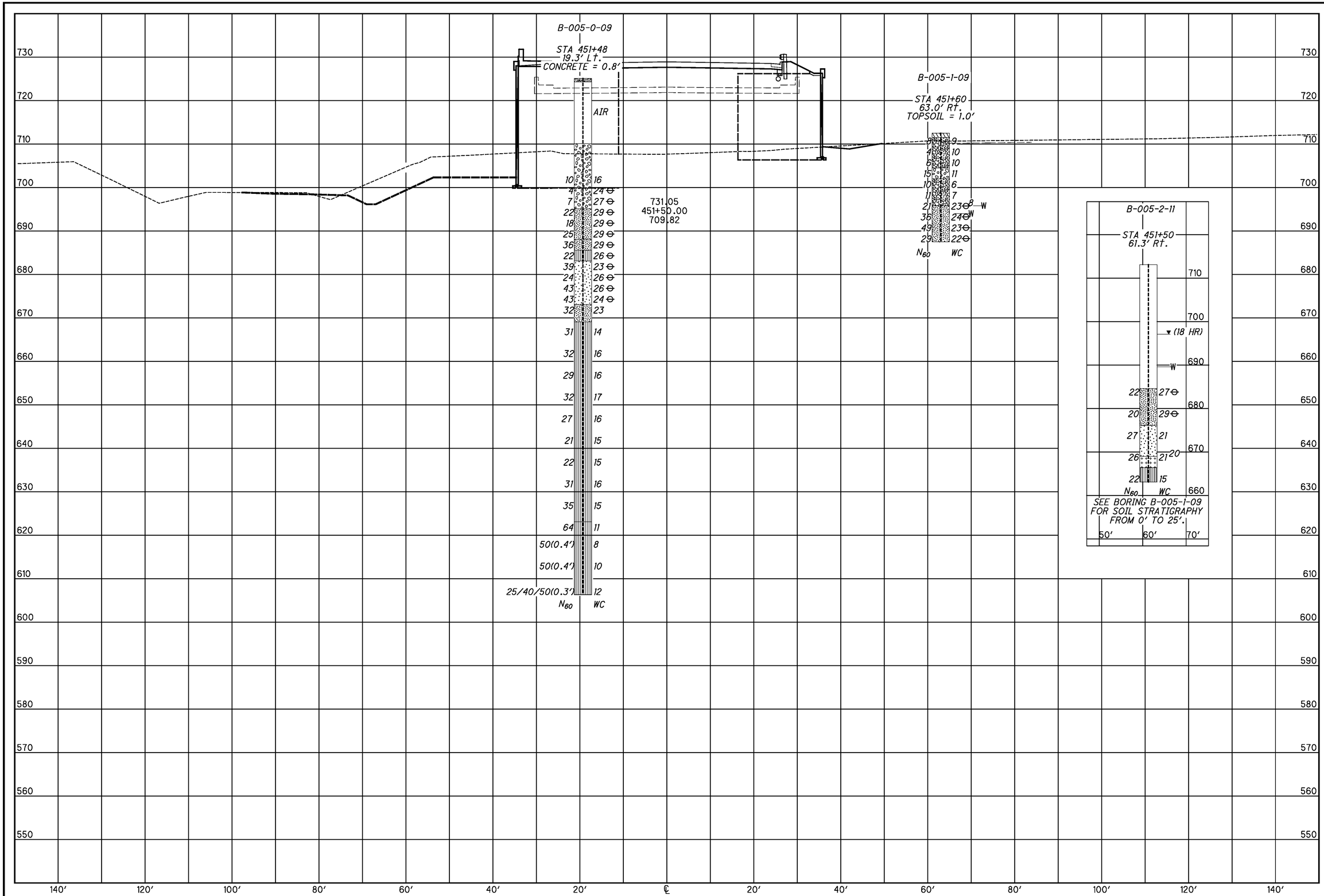
140' 120' 100' 80' 60' 40' 20' ℄ 20' 40' 60' 80' 100' 120' 140'

HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
CROSS SECTIONS STA. 449+50

ATB-20-21.43

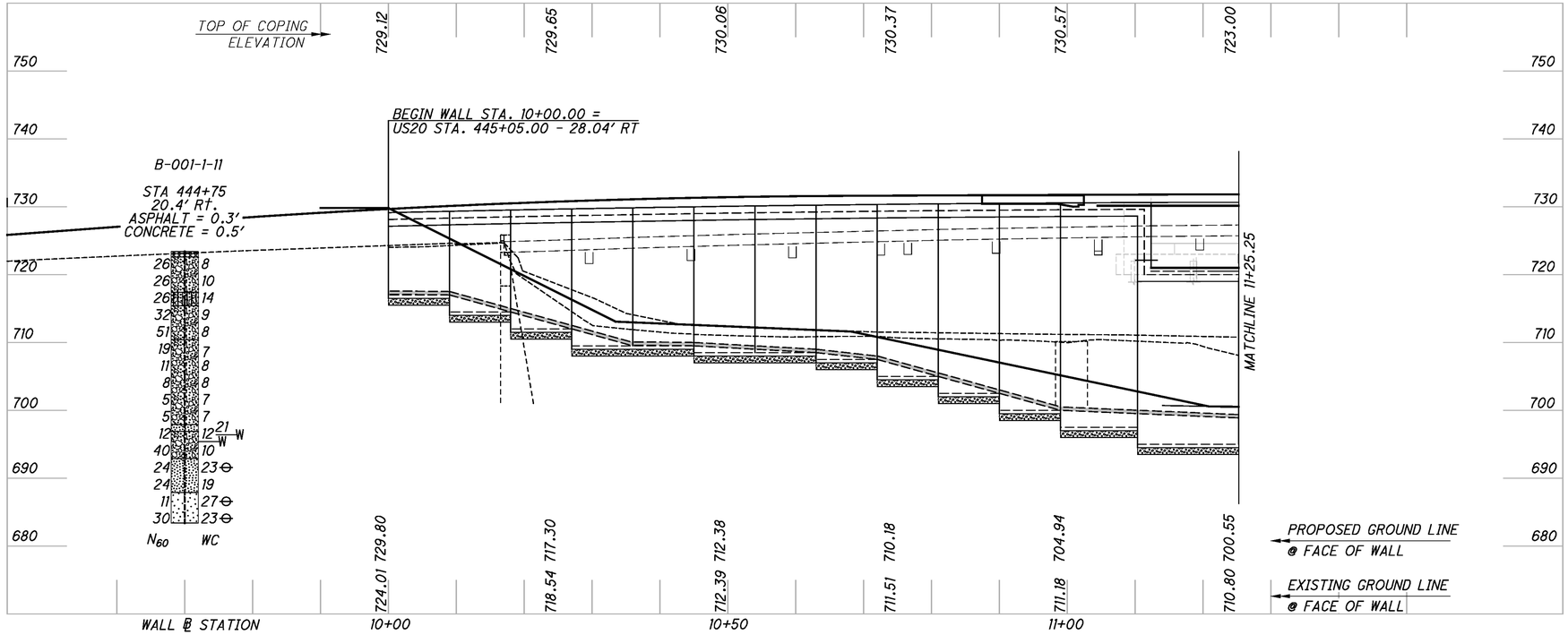


HORIZONTAL SCALE IN FEET
0 10 20

DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION CROSS SECTIONS STA. 451+50

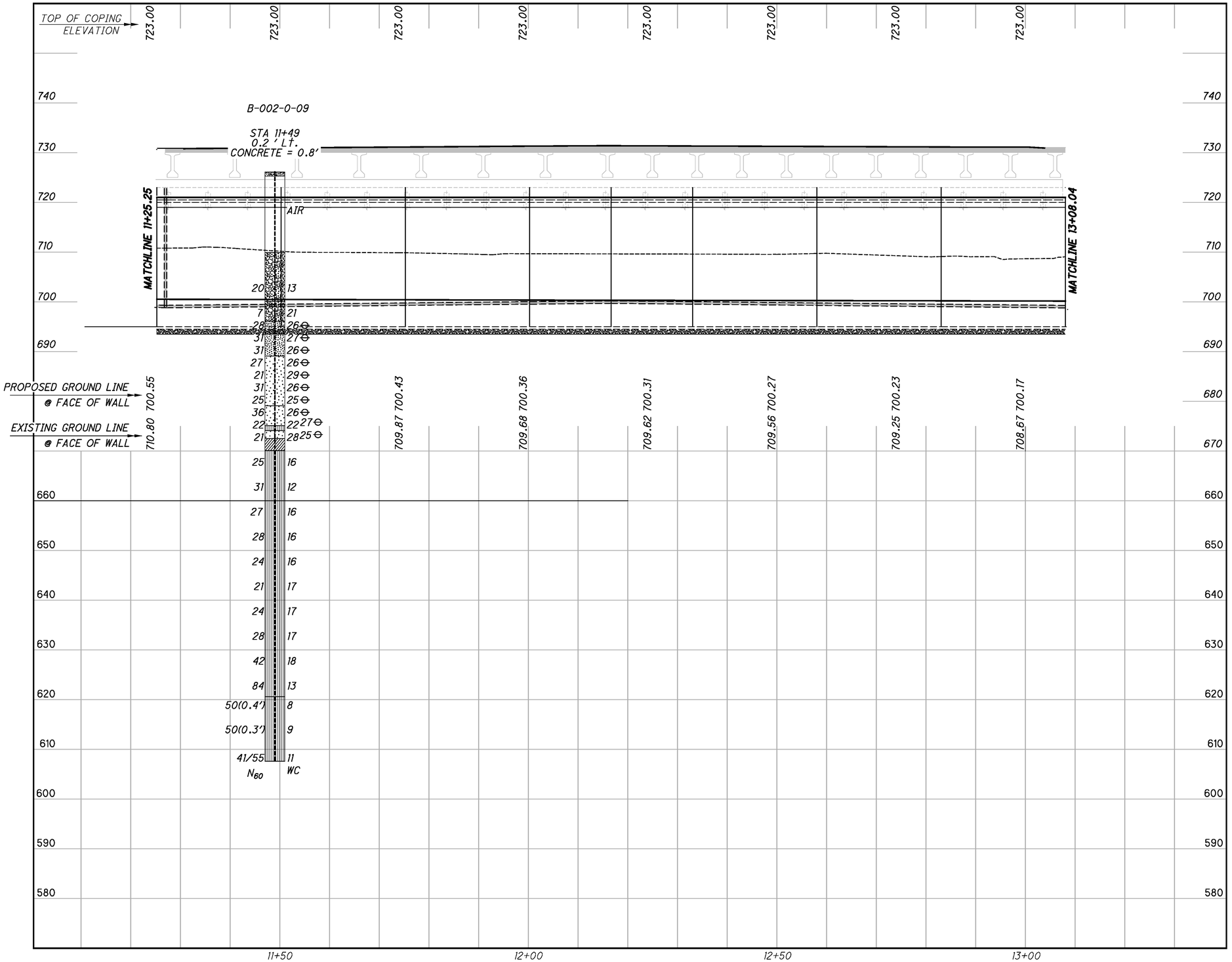
ATB-20-21.43



DRAWN K.JD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 10+00 TO STA 11+25.25 MSE WALL #1

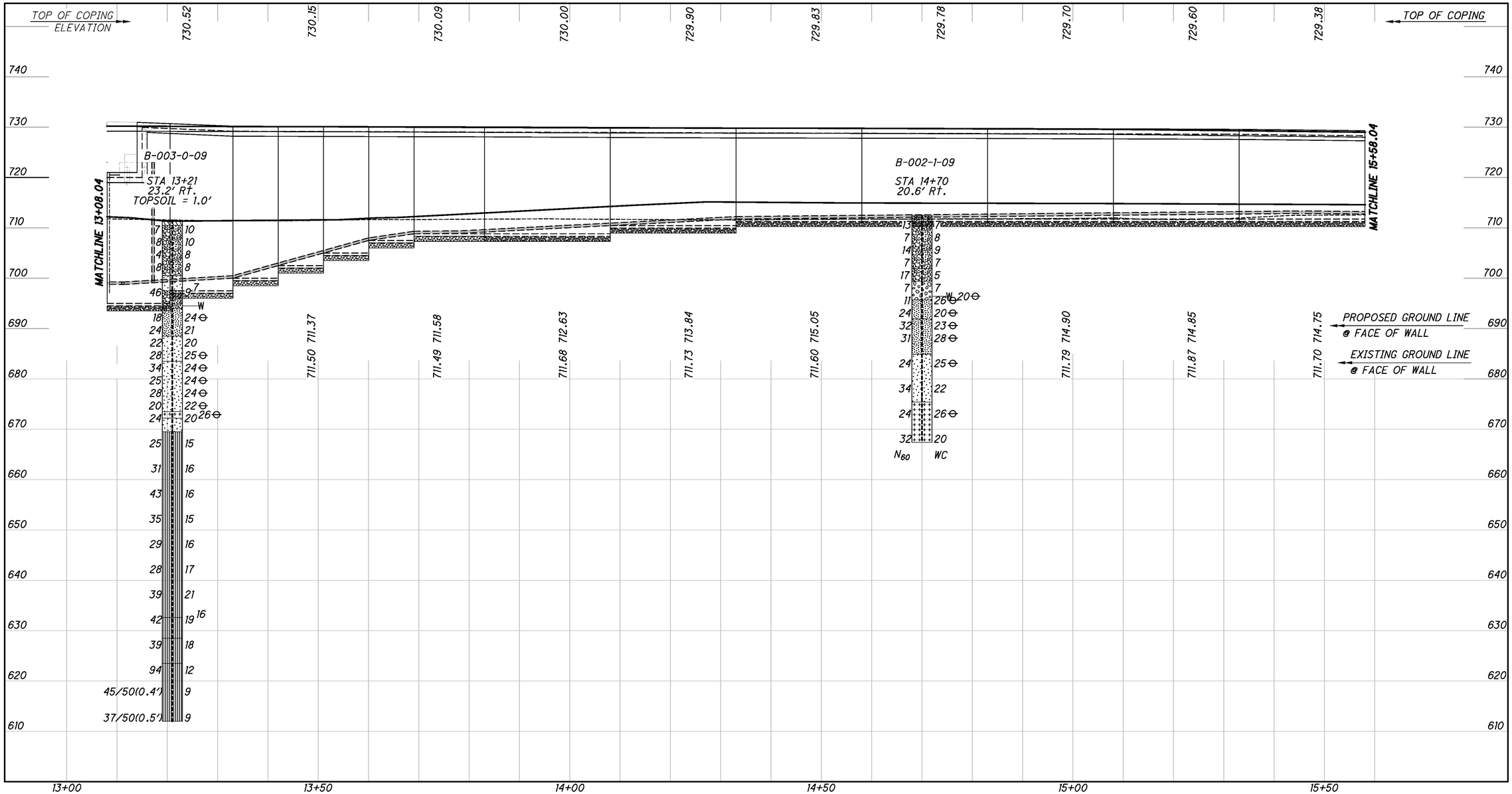
ATB-20-21.43



DRAWN KJD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 11+25.25 TO STA 13+08.04 MSE WALL #1

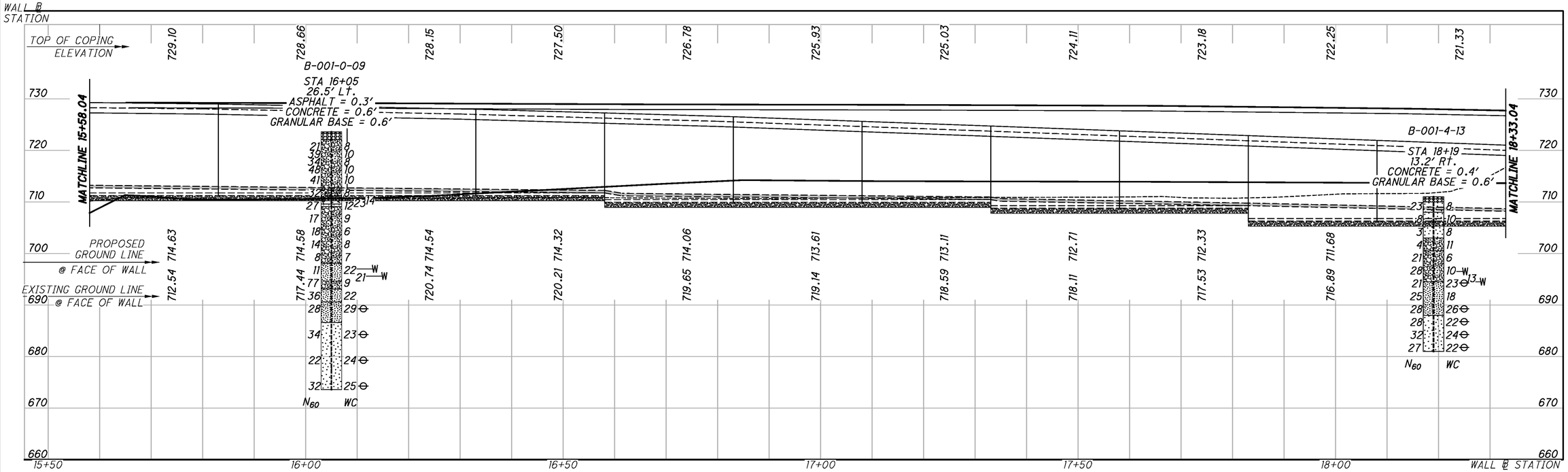
ATB-20-20.43

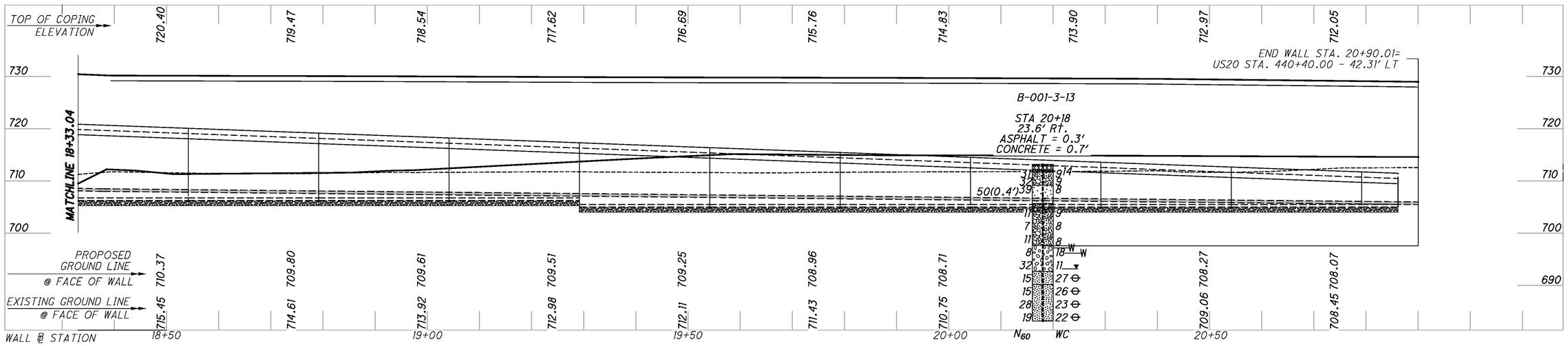


DRAWN K.JD | CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 13+08.04 TO STA 15+58.04 MSE WALL #1

ATB-20-21.43

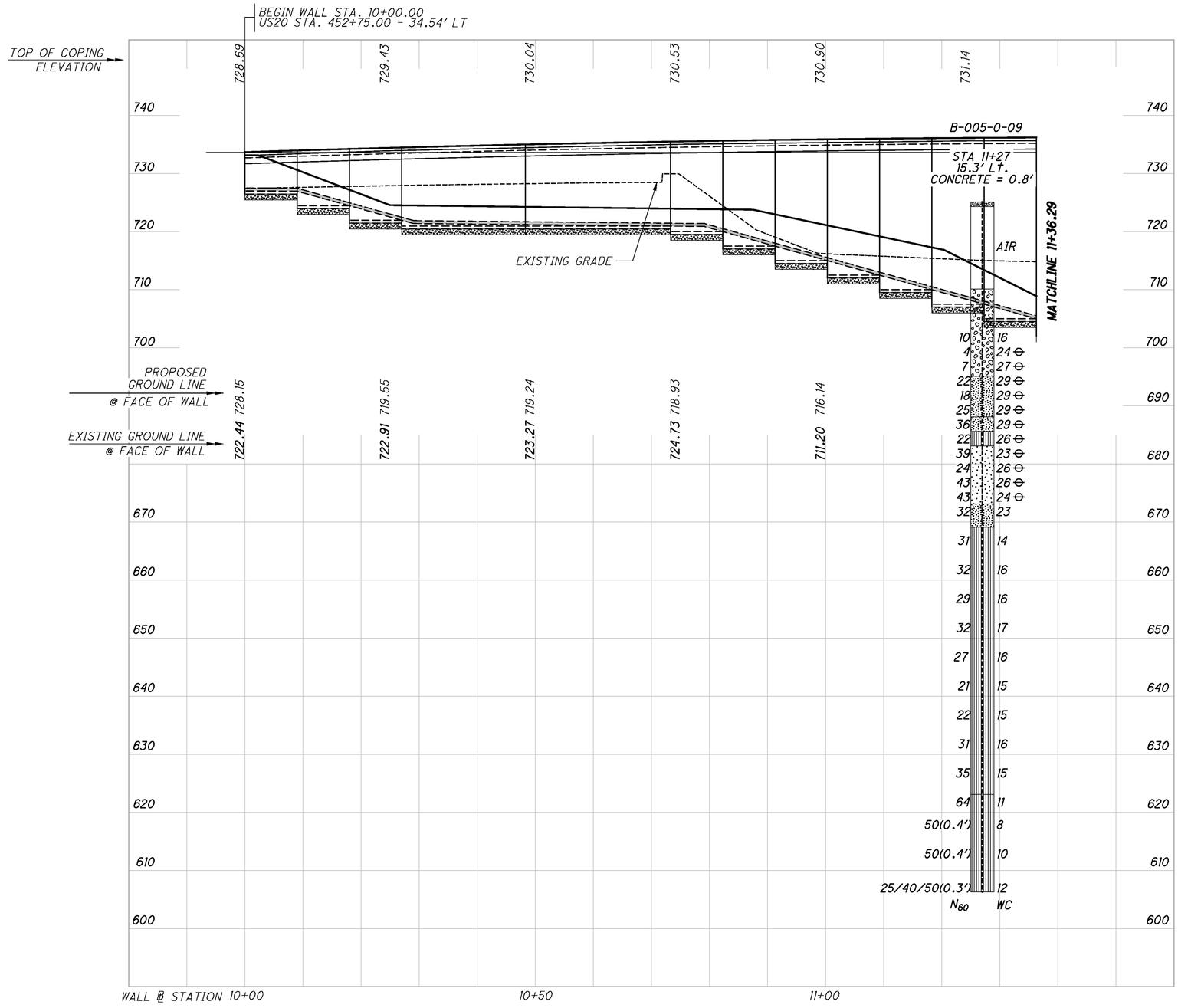




DRAWN KJD | CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 15+58.04 TO STA 20+90.01 MSE WALL #1

ATB-20-21.43



DRAWN K.JD
CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 10+00 TO STA 11+36.29 MSE WALL #2

ATB-20-21.43

DRAWN KJD | CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 11+36.29 TO STA 13+69.51 MSE WALL #2

ATB-20-21.43

TOP OF COPING ELEVATION

729.84 729.81 729.77 729.73 729.68 729.63 729.57 729.49 729.36

740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560

MATCHLINE 13+69.51

B-004-2-11

STA 13+87
16.7' Rt.

EXISTING GRADE

(16 HR)

PROPOSED GROUND LINE @ FACE OF WALL

EXISTING GROUND LINE @ FACE OF WALL

713.49 713.50 713.40 712.77 712.05 711.52 711.80 711.66

712.35 712.54 712.35 712.04 711.52 711.44 711.38 711.11

18 16
19 15
20 15
22 16
12 16
26 16
42 24
53 25
127 9
41/68 8
142 12
53/59 12

N_{60} WC

SEE BORING B-004-0-09
FOR SOIL STRATIGRAPHY
FROM 0' TO 50'.

B-004-0-09

STA 13+86
17.9' Rt.
TOPSOIL = 1.0'

720 710 700 690 680 670 660

11 9
3 17 8
7 9
10 10
17 8
31 7
8 6
34 15 W
27 26 O
56 25 O
28 29 O
43 23 O
32 24 O
27 16
28 26 O
34 26 O
28 22 O
45 15

N_{60} WC

13+80 13+90

B-005-1-09

STA 15+83
27.2' Rt.
TOPSOIL = 1.0'

720 710 700 690 680

8 9
4 10
6 10
15 11
10 6
11 7
21 23 O 8 W
36 24 O W
49 23 O
29 22 O

N_{60} WC

15+80 15+90

B-005-2-11

STA 15+73
25.5' Rt.

MATCHLINE 15+94.51

(18 HR)

W

22 27 O
20 29 O
27 21
26 21 20
22 15

N_{60} WC

SEE BORING B-005-1-09
FOR SOIL STRATIGRAPHY
FROM 0' TO 25'.

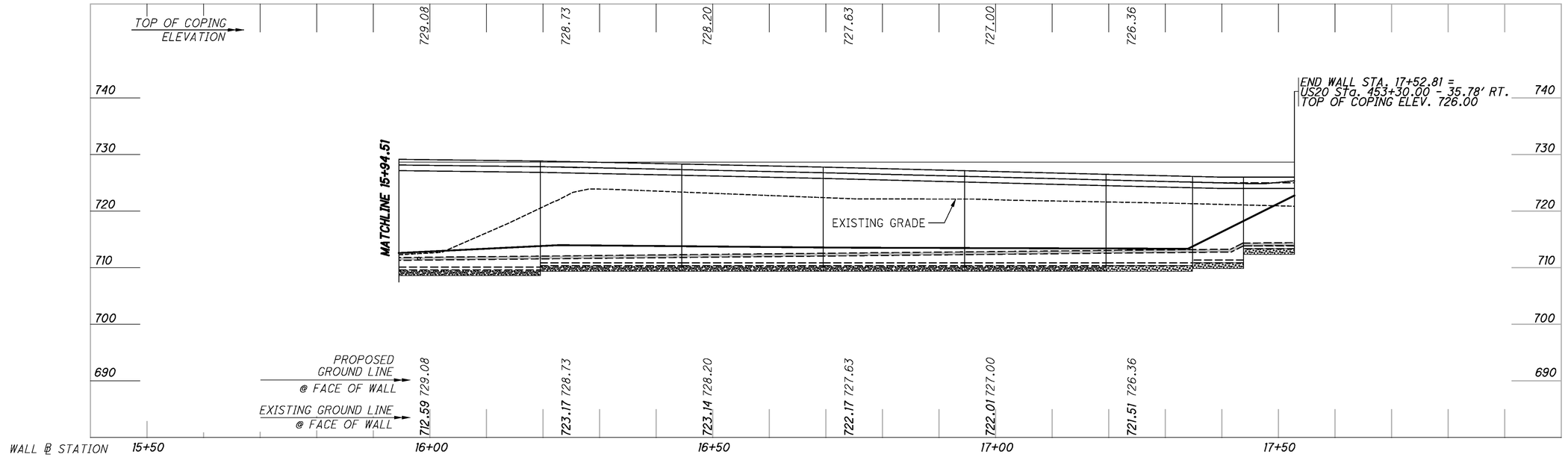
13+50 14+00 14+50 15+00 15+50 16+00

WALL ℄ STATION

DRAWN K.JD CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 13+69.51 TO STA 15+94.51 MSE WALL #2

ATB-20-21.43



DRAWN K.JD | CHECKED BKS

STRUCTURE FOUNDATION EXPLORATION
STA 15+94.51 TO STA 17+52.81 MSE WALL #2

ATB-20-21.43

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 444+75, 15.8 LT	EXPLORATION ID B-001-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 723.6 (MSL) EOB: 50.0 ft.	PAGE 1 OF 1
START: 4/14/10 END: 4/14/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828192.9 N, 2478111 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT - 4 INCHES	723.3																	
CONCRETE - 7 1/4 INCHES	722.7																	
GRANULAR BASE - 7 INCHES	722.1																	
FILL: Medium-dense to dense brown GRAVEL WITH SAND, trace silt, trace clay, contains many slag and asphalt fragments, contains few coal and sandstone fragments, and silty clay seams, damp.			4 6 9	21	100	SS-1	-	29	42	16	7	6	NP	NP	NP	8	A-1-b (0)	
			6 16 12	39	100	SS-2	-	50	22	12	10	6	NP	NP	NP	10	A-1-b (0)	
			5 8 16	34	100	SS-3	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			6 22 12	48	100	SS-4	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
			6 11 18	41	100	SS-5	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
			8 12 11	32	100	SS-6	-	48	31	10	6	5	NP	NP	NP	8	A-1-b (0)	
	710.6																	
FILL: Medium-dense gray SLAG, little fine to coarse sand, damp.	709.6		20	-	100	SS-7A	-	-	-	-	-	-	-	-	-	14	Visual (V)	
Medium-dense dark gray SILT, some fine to coarse sand, trace fine gravel, trace clay, moderately organic, moist.	709.1		7-0.0' 12	27	100	SS-7B	-	-	-	-	-	-	-	-	-	23	A-4b (V)	
					100	SS-7C	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.			5 6 6	17	100	SS-8	-	38	36	13	8	5	NP	NP	NP	9	A-1-b (0)	
			4 6 7	18	83	SS-9	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
			5 5 5	14	100	SS-10	-	34	45	11	5	5	NP	NP	NP	8	A-1-b (0)	
			2 3 3	8	100	SS-11	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
	698.1																	
Medium-dense brown and orange FINE SAND, little fine to coarse gravel, trace coarse sand, trace silt, trace clay, moist.		▼ AD	4 4 4	11	89	SS-12	-	16	5	76	-	3	NP	NP	NP	22	A-3 (0)	
FS		W																
	694.7		8	-	100	SS-13A	-	-	-	-	-	-	-	-	-	21	A-3 (V)	
Very-dense brown GRAVEL WITH SAND, trace silt, trace clay, moist.			20 35	77	100	SS-13B	-	64	3	27	4	2	NP	NP	NP	9	A-1-b (0)	
	693.1																	
Dense brown FINE SAND, little fine gravel, trace coarse sand, trace silt, trace clay, moist.			9 8 18	36	100	SS-14	-	-	-	-	-	-	-	-	-	22	A-3 (V)	
FS	690.6																	
Medium-dense brown FINE SAND, trace coarse sand, trace fine gravel, trace clay, wet.			5 8 12	28	100	SS-15	-	2	6	87	0	5	NP	NP	NP	29	A-3 (0)	
FS	686.6																	
Medium-dense to dense gray COARSE AND FINE SAND, some silt, trace clay, moist to wet.			7 11 13	34	89	SS-16	-	-	-	-	-	-	-	-	-	23	A-3a (V)	
			5 7 9	22	100	SS-17	-	0	0	66	27	7	NP	NP	NP	24	A-3a (0)	
			8 12 11	32	100	SS-18	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
	673.6	EOB																

NOTES:
- Encountered water at 28.0' during drilling.
- Water was added to the borehole at 30.0' to prevent heave.
- At completion of drilling, water was measured at 26.6' inside the hollow-stem augers (HSA).
- After removal of augers, boring caved at 15.0' and was observed to be dry.
- For Sample SS-7B, the Loss-on-Ignition (LOI) value was 7.0%.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:58 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W\PROJECTS\2013123OO.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION LOG OF BORING B-001-0-9

DRAWN KAH

CHECKED BKS

S&ME JOB: 1179-12-011A

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / A. FAY	DRILL RIG: OTB MOBILE B-57 (OLD)	STATION / OFFSET: 444+75, 20.4 RT	EXPLORATION ID B-001-1-11
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / K. DOHLEN	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/14/11	ELEVATION: 723.4 (MSL) EOB: 40.0 ft.	PAGE 1 OF 1
START: 5/14/12 END: 5/14/12	SAMPLING METHOD: SPT	ENERGY RATIO (%): 81	COORD: 828158.4807 N, 2478122.1804 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 723.4	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT - 3 INCHES	723.1																	
CONCRETE - 6 5/8 INCHES	722.6																	
FILL: Medium-dense brown GRAVEL WITH SAND, little silt, trace clay, contains some pockets of black sand, concrete, slag and cinder fragments, damp.		1	7 8 11	26	83	SS-1	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		2																
		3	8 8 11	26	83	SS-2	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
		4																
	717.4	5																
FILL: Very-stiff to hard gray intermixed with brown and black GRAVEL WITH SAND AND SILT, trace clay, contains few concrete, slag and cinder fragments, damp.		6	8 11 8	26	67	SS-3	-	40	19	14	19	8	26	25	1	14	A-2-4 (0)	
	715.4	7																
FILL: Dense to very-dense brown intermixed with black GRAVEL WITH SAND, trace to little silt, trace clay, contains few concrete and cinder fragments, damp.		8																
		9	6 11 13	32	78	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
		10																
		11	12 16 22	51	72	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	710.4	12																
Medium-dense becoming loose brown GRAVEL WITH SAND, little silt, trace clay, damp.		13																
		14	5 7 7	19	0	--	-	-	-	-	-	-	-	-	-	-		
		15	6	-	100	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
		16																
		17	5 4 4	11	67	SS-7	-	32	25	22	16	5	NP	NP	NP	8	A-1-b (0)	
		18																
		19	3 3 3	8	56	SS-8	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		20																
		21	2 2 2	5	44	SS-9	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
		22																
		23																
		24	1 2 2	5	72	SS-10	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
	697.9	25																
Loose brown FINE SAND, trace coarse sand, trace silt, trace fine gravel, trace clay, moist.	F S 696.9	26	2	-	100	SS-11A	-	3	5	86	4	2	NP	NP	NP	21	A-3 (0)	
Medium-dense to dense brown GRAVEL WITH SAND, trace silt, trace clay, damp to moist.		27	W 3 6	12	30	SS-11B	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
		28	W															
		29	3 13 17	40	78	SS-12	-	47	12	31	7	3	NP	NP	NP	10	A-1-b (0)	
	692.9	30																
Medium-dense brown FINE SAND, little coarse sand, trace fine gravel, trace silt, trace clay, moist to wet.		31																
		32	3 7 11	24	100	SS-13	-	-	-	-	-	-	-	-	-	23	A-3 (V)	
F S		33																
		34	WOH 5 13	24	83	SS-14	-	6	13	73	6	2	NP	NP	NP	19	A-3 (0)	
	687.9	35																
Medium-dense brown COARSE AND FINE SAND, some silt, trace clay, trace fine gravel, contains zones of iron-oxide staining from 37.0' to 37.5', moist to wet.		36																
		37	1 3 5	11	100	SS-15	-	-	-	-	-	-	-	-	-	27	A-3a (V)	
		38																
		39	4 8 14	30	78	SS-16	-	1	0	71	25	3	NP	NP	NP	23	A-3a (0)	
	683.4	40	EOB															

NOTES:
- Encountered seepage at 27.0' during drilling.
- Encountered water at 28.0' during drilling.
- Boring was relocated form original location following a failed attempt to penetrate the approach slab concrete. The boring was performed approximately 45' west of the original location.
- Drill chatter (possible cobbles) observed from 30.0' to 35.0'.
- Heaving sand encountered from 30.0' to 40.0'. Water was added at 33.5' to assist controlling heaving sands.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 50# BAG BENTONITE POWDER; PUMPED 90# BAG CEMENT; PUMPED 50 GAL. WATER

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:50 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\WVPROJECTS\1179-12-011.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-001-1-11

DRAWN KAH
CHECKED BKS

S&ME JOB: 1179-12-011A

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / A. FAY	DRILL RIG: OTB MOBILE B-57	STATION / OFFSET: 441+12, 18.8 LT	EXPLORATION ID B-001-3-13
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / K. DOHLEN	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 2/15/13	ELEVATION: 713.2 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1
START: 4/11/13 END: 4/11/13	SAMPLING METHOD: SPT	ENERGY RATIO (%): 80	COORD: 828089.23 N, 2477762.88 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 713.2	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT - 3 INCHES	712.9																	
CONCRETE - 9 INCHES	712.2																	
FILL: Very-stiff to hard brown and black SANDY SILT, some clay, little fine to coarse gravel, contains many slag and few coal fragments, dry to damp.	711.7		7 11 12	31	67	SS-1B	-	43	28	12	11	6	NP	NP	NP	9	A-1-b (0)	
FILL: Dense brown GRAVEL WITH SAND, little silt, trace clay, contains many slag and coal fragments, damp.	709.2		10 11 13	32	100	SS-2	-	39	29	13	13	6	NP	NP	NP	9	A-1-b (0)	
PROBABLE FILL: Dense brown COARSE AND FINE SAND, little fine gravel, trace to little silt, trace clay, limestone fragments and strong hydrocarbon odor near 5.5', damp.	705.7		11 13 16	39	100	SS-3	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
			50-0.4'	-	40	SS-4	-	-	-	-	-	-	-	-	-	-	A-3a (V)	
Loose to medium-dense brown GRAVEL WITH SAND, trace to little silt, trace clay, contains few fine sand pockets from 13.5' to 15.0', damp to moist.	697.7		2 4 4	11	56	SS-5	-	23	57	12	5	3	NP	NP	NP	9	A-1-b (0)	
			2 3 2	7	56	SS-6	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			2 4 4	11	67	SS-7	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
Loose to dense brown GRAVEL, some fine to coarse sand, trace silt, trace clay, wet.	692.7	W W ▼ AD	2 2 4	8	44	SS-8	-	-	-	-	-	-	-	-	-	18	A-1-a (V)	
			1 16 8	32	72	SS-9	-	-	-	-	-	-	-	-	-	11	A-1-a (V)	
Medium-dense reddish brown FINE SAND, little coarse sand, trace silt, trace clay, wet. F.S.	690.2		5 5 6	15	78	SS-10	-	-	-	-	-	-	-	-	-	27	A-3 (V)	
Medium-dense gray FINE SAND, little coarse sand, trace fine gravel, trace silt, trace clay, contains few brown pockets, moist to wet. F.S.			3 5 6	15	72	SS-11	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
NOTES: - Encountered seepage at 16.0' during drilling. - Water measured at 20.0' inside hollow-stem augers at the end of drilling. - After removal of augers, boring caved at 10.5' and was observed to be dry. - Plastic hole plug device placed into borehole during abandonment.	683.2	EOB	5 10 11	28	100	SS-12	-	-	-	-	-	-	-	-	-	23	A-3 (V)	
			2 5 9	19	67	SS-13	-	-	-	-	-	-	-	-	-	22	A-3 (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 98 LB. SOIL CUTTINGS WITH CEMENT

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:52 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\WPROJECTS\1179-12-011.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-001-3-13

DRAWN KAH
CHECKED BKS

S&ME JOB: 1179-12-011A

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / A. FAY	DRILL RIG: OTB MOBILE B-57	STATION / OFFSET: 443+11, 55.5 LT	EXPLORATION ID B-001-4-13
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / K. DOHLEN	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 2/15/13	ELEVATION: 711 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1
START: 4/11/13 END: 4/11/13	SAMPLING METHOD: SPT	ENERGY RATIO (%): 80	COORD: 828182.84 N, 2477942.9 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 711.0	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE - 5 INCHES	710.6																	
GRANULAR BASE - 7 INCHES	710.0																	
Medium-dense brown COARSE AND FINE SAND, little fine gravel, trace to little silt, trace clay, damp.	708.0	1	9 10 7	23	78	SS-1	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
Very-loose to loose brown COARSE AND FINE SAND, little fine gravel, trace silt, trace clay, damp.	703.0	2	3 4 2	8	78	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
		3																
		4	1 1 1	3	33	SS-3	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		5																
Very-loose brown GRAVEL WITH SAND, little silt, trace clay, contains few cohesive pockets, damp to moist.	700.5	6	2 1 2	4	72	SS-4	-	38	36	7	14	5	NP	NP	NP	11	A-1-b (0)	
Medium-dense brown and dark brown GRAVEL WITH SAND, trace to little silt, trace clay, moist to wet.		7																
		8	4 5 11	21	56	SS-5	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
W		9																
		10	6 9 12	28	78	SS-6	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
W	694.5	11																
		12	8	-	100	SS-7A	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
Medium-dense brown FINE SAND, trace to little coarse sand, trace fine gravel, trace silt, trace clay, moist to wet.		13	8 8 8	21	100	SS-7B	-	2	3	89	3	3	NP	NP	NP	23	A-3 (0)	
F.S.		14																
		15	5 8 11	25	72	SS-8	-	-	-	-	-	-	-	-	-	18	A-3 (V)	
		16																
		17	3 8 13	28	72	SS-9	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
	688.0	18																
Medium-dense to dense gray COARSE AND FINE SAND, little silt, trace clay, trace fine gravel, contains few cohesive pockets, moist to wet.		19	4 8 13	28	67	SS-10	-	1	4	66	20	9	NP	NP	NP	22	A-3a (0)	
NOTES:		20																
- Encountered seepage at 14.5' during drilling.		21																
- Encountered groundwater at 16.5' during drilling.		22	8 11 13	32	100	SS-11	-	-	-	-	-	-	-	-	-	24	A-3a (V)	
- Water was added to borehole at 17.5' to prevent heave		23																
- After removal of augers, boring caved at 5.5' and was observed to be dry.		24																
- Plastic hole plug device placed into borehole during abandonment.		25																
		26																
		27	3 9 11	27	72	SS-12	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
	681.0 EOB	28																
		29																
		30																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 98 LB. SOIL CUTTINGS WITH CEMENT

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:53 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\WPROJECTS\1179-12-011.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-001-4-13

DRAWN KAH

CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 446+53, 20.4 RT	EXPLORATION ID B-002-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3-7/8" TRB	CALIBRATION DATE: 10/1/09	ELEVATION: 726.1 (MSL) EOB: 118.5 ft.	PAGE 1 OF 1
START: 4/15/10 END: 4/19/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828210.1 N, 2478291.9 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE (BRIDGE DECK) - 10 INCHES	726.1																	
AIR	725.3																	
Medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, moist.	709.9		5 7 7	20	56	SS-1	-	28	47	16	4	5	NP	NP	NP	13	A-1-b (0)	
Loose brown GRAVEL WITH SAND, trace silt, moist.	700.1		4 2 3	7	33	SS-2	-	-	-	-	-	-	-	-	-	21	A-1-b (V)	
Medium-dense to dense brown FINE SAND, little coarse sand, trace clay, trace fine gravel, wet.	696.1		7 8 12	28	100	SS-3	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
			8 10 12	31	100	SS-4	-	1	12	83	0	4	NP	NP	NP	27	A-3 (0)	
			8 10 12	31	78	SS-5	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
Medium-dense to dense grayish-brown COARSE AND FINE SAND, trace to little silt, trace clay, wet.	689.1		8 9 10	27	100	SS-6	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
			5 6 9	21	100	SS-7	-	0	1	87	6	6	NP	NP	NP	29	A-3a (0)	
			8 10 12	31	100	SS-8	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
			9 9 9	25	100	SS-9	-	0	0	75	19	6	NP	NP	NP	25	A-3a (0)	
Medium-dense to dense gray COARSE AND FINE SAND, some silt, trace clay, trace fine gravel, wet.	679.1		11 13 13	36	100	SS-10	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
			9	-	100	SS-11A	-	2	1	64	26	7	NP	NP	NP	27	A-3a (0)	
Very-stiff gray SANDY SILT, some clay, trace fine gravel, moist.	675.1		9 9 7	22	60	SS-11B	-	-	-	-	-	-	-	-	-	22	A-4a (V)	
Medium-dense dark gray COARSE AND FINE SAND, little silt, trace clay, trace fine gravel, wet.	674.1		7	-	100	SS-12A	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
Stiff to hard gray SILT AND CLAY, little fine to coarse sand, moist.	672.5		8 7	21	92	SS-12B	-	-	-	-	-	-	32	21	11	28	A-6a (V)	
Very-stiff to hard gray SANDY SILT, some to "and" clay, trace to little fine gravel (shale and sandstone fragments), damp.	670.1		7 8 10	25	100	SS-13	-	-	-	-	-	-	-	-	-	16	A-4a (V)	

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:59 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\MYPROJECTS\2013123OO.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-0-09

DRAWN KAH
CHECKED BKS

- Contains many fine to coarse sand seams from 62.5' to 64.0'.																			
	11 11 11	31	100	SS-14	-	11	18	17	25	29	22	14	8	12	A-4a (4)				
	7 8 11	27	100	SS-15	-	-	-	-	-	-	-	-	-	16	A-4a (V)				
	7 9 11	28	100	SS-16	-	-	-	-	-	-	-	-	-	16	A-4a (V)				
	7 8 9	24	100	SS-17	-	6	6	7	42	39	25	16	9	16	A-4a (8)				
	6 7 8	21	100	SS-18	-	-	-	-	-	-	-	-	-	17	A-4a (V)				
	8 8 9	24	100	SS-19	-	-	-	-	-	-	-	-	-	17	A-4a (V)				
	7 8 12	28	100	SS-20	-	-	-	-	-	-	-	-	-	17	A-4a (V)				
	8 13 17	42	100	SS-21	-	1	3	7	46	43	26	17	9	18	A-4a (8)				
- Encountered cobbles at 102.0'																			
	15 25 35	84	100	SS-22	-	-	-	-	-	-	-	-	-	13	A-4a (V)				
620.6																			
Hard gray SANDY SILT, some clay, little fine gravel (shale and sandstone fragments), damp.																			
	50-0.4'	-	100	SS-23	-	-	-	-	-	-	-	-	-	8	A-4a (V)				
	50-0.3'	-	100	SS-24	-	-	-	-	-	-	-	-	-	9	A-4a (V)				
	41 55	-	100	SS-25	-	13	12	15	28	32	22	16	6	11	A-4a (5)				
607.6 EOB																			

NOTES:
- 4" I.D. casing was set to a depth of 27.5'. Due to sample disturbance during casing installation, sampling began at 22.5'.
- Used a 3-7/8" Tri-cone Roller bit (TRB) with drilling mud (water and bentonite) from 16.2' (ground surface beneath bridge deck) to 118.5'.
- Encountered cobbles at 102.0'.
- Bridge deck was repaired in accordance with Section 408 of the ODOT "SGE".

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-0-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 446+60, 62.9 LT	EXPLORATION ID B-002-1-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 712.4 (MSL) EOB: 45.0 ft.	PAGE 1 OF 1
START: 4/5/10 END: 4/5/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828291.8 N, 2478274.1 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 712.4	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, contains few silty clay pockets, damp.			3 5 4	13	94	SS-1	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
			1 2 3	7	78	SS-2	-	40	41	9	4	6	NP	NP	NP	8	A-1-b (0)	
			2 4 6	14	100	SS-3	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			2 3 2	7	94	SS-4	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
	701.9																	
Medium-dense grayish brown GRAVEL WITH SAND, trace clay, camp.			4 5 7	17	78	SS-5	-	5	89	3	-	3 -	NP	NP	NP	5	A-1-b (0)	
	699.4																	
Loose grayish-brown GRAVEL, some fine to coarse sand, trace silt, trace clay, damp becoming wet.			2 2 3	7	83	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-a (V)	
		W																
- Contains few dark gray silty clay pockets.	695.7		1	-	100	SS-7A	-	67	13	14	2	4	NP	NP	NP	20	A-1-a (0)	
Medium-dense brown and orange FINE SAND, little fine to coarse gravel, trace coarse sand, trace silt, trace clay, wet.			2 6	11	58	SS-7B	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
F.S.			6 8 9	24	100	SS-8	-	14	10	70	1	5	NP	NP	NP	20	A-3 (0)	
	691.9																	
Dense brownish-gray FINE SAND, little coarse sand, trace fine gravel, trace silt, trace clay, wet.			3 9 14	32	100	SS-9	-	-	-	-	-	-	-	-	-	23	A-3 (V)	
F.S.			6 9 13	31	28	SS-10	-	1	15	75	3	6	NP	NP	NP	28	A-3 (0)	
	684.9																	
Medium-dense to dense gray COARSE AND FINE SAND, little silt, trace clay, contains slight petroleum-like odor from 28.5' to 30.0', moist.			6 7 10	24	78	SS-11	-	0	1	72	20	7	NP	NP	NP	25	A-3a (0)	
			4 8 16	34	100	SS-12	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
	675.4																	
Medium-dense to dense gray SILT, some clay, trace to little fine sand, contains few silty clay lenses, moist to wet.			6 7 10	24	100	SS-13	-	0	0	11	68	21	NP	NP	NP	26	A-4b (8)	
			5 9 14	32	67	SS-14	-	0	0	5	75	20	NP	NP	NP	20	A-4b (8)	
	667.4	EOB																

NOTES:
- Encountered water at 16.0' during drilling.
- Water was measured at 16.0' inside hollow-stem augers (HSA) prior to adding water at 18.5' to prevent potential heave.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:00 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINTW\PROJECTS\2013\2300.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-1-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 447+15, 134.9 RT	EXPLORATION ID B-002-2-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 712.6 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 4/12/10 END: 4/12/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828118.5 N, 2478384.4 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 712.6	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE - 6 INCHES	712.1																	
GRANULAR BASE - 6 INCHES	711.6																	
Loose brown GRAVEL WITH SAND AND SILT, little clay, moist.	709.6		2 1 4	7	67	SS-1	-	20	24	26	19	11	NP	NP	NP	14	A-2-4 (0)	
Medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.	704.6		4 4 5	13	78	SS-2	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			3 6 6	17	94	SS-3	-	35	37	11	8	9	NP	NP	NP	9	A-1-b (0)	
Very-loose brown GRAVEL WITH SAND, little silt, trace clay, trace fine gravel, damp.	702.1		2 1 2	4	78	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, contains few silt and silty clay pockets, damp.	697.1		4 4 4	11	100	SS-5	-	39	39	13	5	4	NP	NP	NP	8	A-1-b (0)	
			2 2 2	6	100	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
Medium-dense brown GRAVEL, some fine to coarse sand, trace silt, wet.	694.6	W	1 1 7	11	78	SS-7	-	70	23	4	-	3 -	NP	NP	NP	20	A-1-a (0)	
Medium-dense to dense grayish-brown FINE SAND, trace coarse sand, trace silt, trace clay, wet.	687.6	F S	4 7 8	21	100	SS-8	-	-	-	-	-	-	-	-	-	24	A-3 (V)	
			4 9 11	28	100	SS-9	-	-	-	-	-	-	-	-	-	25	A-3 (V)	
		EOB	4 9 15	34	100	SS-10	-	0	1	93	1	5	NP	NP	NP	24	A-3 (0)	

NOTES:
- Encountered water at 16.0' during drilling.
- After removal of augers, boring caved at 9.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:00 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W\PROJECTS\2013\12300.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-2-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 447+69, 99.4 RT
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA, 3-1/8" TRB	CALIBRATION DATE: 10/1/09	ELEVATION: 713.5 (MSL) EOB: 99.0 ft.
START: 4/7/10 END: 4/9/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828168.3 N, 2478425.9 E

EXPLORATION ID: B-002-3-09
PAGE: 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 713.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE - 6 INCHES	713.0																	
GRANULAR BASE - 6 INCHES	712.5																	
Loose to medium-dense brown GRAVEL, "and" fine to coarse sand, trace silt, trace clay, damp.			4 4 4	11	89	SS-1	-	-	-	-	-	-	-	-	-	8	A-1-a (V)	
			2 2 2	6	89	SS-2	-	56	33	5	3	3	NP	NP	NP	8	A-1-a (0)	
			4 6 7	18	100	SS-3	-	-	-	-	-	-	-	-	-	9	A-1-a (V)	
	705.5																	
Loose to medium-dense grayish-brown GRAVEL WITH SAND, trace silt, trace clay, damp.			4 4 2	8	89	SS-4	-	36	56	3	1	4	NP	NP	NP	6	A-1-b (0)	
			4 4 4	11	100	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	696.5	W																
Medium-dense brown and orange FINE SAND, some coarse sand, trace clay, trace fine gravel, wet.			6 8 10	25	100	SS-6	-	5	29	61	0	5	NP	NP	NP	21	A-3 (0)	
	693.0																	
Dense brownish-gray FINE SAND, trace clay, trace silt, trace fine gravel, wet.			7 10 12	31	67	SS-7	-	1	14	78	1	6	NP	NP	NP	22	A-3 (0)	
			6 9 14	32	61	SS-8	-	1	2	91	1	5	NP	NP	NP	23	A-3 (0)	
			6 11 12	32	78	SS-9	-	-	-	-	-	-	-	-	-	28	A-3 (V)	
	685.5																	
Medium-dense brownish-gray COARSE AND FINE SAND, little silt, trace clay, wet.			1 6 9	21	100	SS-10	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
			6 9 10	27	100	SS-11	-	0	10	73	11	6	NP	NP	NP	25	A-3a (0)	
	680.5																	
Medium-dense to dense gray FINE SAND, trace silt, trace clay, trace coarse sand, trace fine gravel, wet.			6 8 11	27	100	SS-12	-	-	-	-	-	-	-	-	-	25	A-3 (V)	
			6 10 12	31	100	SS-13	-	1	1	89	4	5	NP	NP	NP	25	A-3 (0)	
	674.5																	
Medium-dense to dense gray SILT, some clay, little fine to coarse sand, contains few dark-gray slightly organic lenses, wet.			2	-	100	SS-14A	-	-	-	-	-	-	-	-	-	25	A-3 (V)	
			5 5 6	15	100	SS-14B	-	1	1	9	68	21	22	21	1	24	A-4b (8)	
			5 10 12	31	100	SS-15	-	-	-	-	-	-	-	-	-	21	A-4b (V)	
	667.0																	
Very-stiff to hard gray SANDY SILT, "and" clay, trace fine gravel (shale and sandstone fragments), damp.			5 8 10	25	100	SS-16	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
			8 10 12	31	100	SS-17	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
			7 9 12	29	100	SS-18	-	4	6	7	43	40	25	17	8	16	A-4a (8)	

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:00 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W:\PROJECTS\2013\2300.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-3-09

DRAWN: KAH
CHECKED: BKS

	7 11 15	36	61	SS-19	-	-	-	-	-	-	-	-	-	16	A-4a (V)
	8 9 14	32	100	SS-20	-	-	-	-	-	-	-	-	-	17	A-4a (V)
	4 9 11	28	100	SS-21	-	3	6	6	46	39	27	18	9	17	A-4a (8)
	9 11 16	38	100	SS-22	-	-	-	-	-	-	-	-	-	16	A-4a (V)
	9 11 16	38	100	SS-23	-	-	-	-	-	-	-	-	-	17	A-4a (V)
626.5																			
Hard gray SANDY SILT, some clay, little fine gravel, contains many fine to coarse sand seams, damp.																			
	17 15 15	42	100	SS-24	-	13	16	17	29	25	22	15	7	14	A-4a (4)
621.5																			
Hard gray SANDY SILT, some clay, little fine gravel (shale fragments), damp.																			
	35 50-0.5'	-	90	SS-25	-	-	-	-	-	-	-	-	-	10	A-4a (V)
614.5 EOB	54	-	100	SS-26	-	20	11	17	26	26	20	13	7	8	A-4a (3)

NOTES:
- Encountered water at 17.0' during drilling.
- Water was added to the borehole at 18.5' to prevent potential heave.
- Used 3-1/4 I.D. hollow-stem augers (HSA) to a depth of 48.5'.
- From 48.5' to 99.0', used a 3-1/8" Tri-cone Roller bit (TRB) with drilling mud (water and bentonite).
- After removal of augers, boring caved at 12.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-002-3-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 448+22, 48.9 LT	EXPLORATION ID B-003-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA, 3-1/8" TRB	CALIBRATION DATE: 10/1/09	ELEVATION: 711.5 (MSL) EOB: 99.5 ft.	PAGE 1 OF 1
START: 4/6/10 END: 4/7/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828325.6 N, 2478433.5 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 711.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL - 12 INCHES	710.5																	
Very-loose to loose brown GRAVEL WITH SAND, trace silt, trace clay, damp.			3 3 2	7	67	SS-1	-	44	37	9	5	5	NP	NP	NP	10	A-1-b (0)	
			2 3 3	8	78	SS-2	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
			2 2 1	4	100	SS-3	-	38	52	4	2	4	NP	NP	NP	8	A-1-b (0)	
			3 3 3	8	100	SS-4	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	700.5																	
Loose brown COARSE AND FINE SAND, little silt, trace clay, damp.	697.5		5	-	100	SS-5A	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
Dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.	694.0	W	16 17	46	78	SS-5B	-	55	6	32	3	4	NP	NP	NP	9	A-1-b (0)	
Medium-dense grayish-brown FINE SAND, trace coarse sand, trace clay, trace silt, trace fine gravel, moist to wet.		F.S.	2 5 8	18	83	SS-6	-	-	-	-	-	-	-	-	-	24	A-3 (V)	
			3 6 11	24	100	SS-7	-	1	10	83	1	5	NP	NP	NP	21	A-3 (0)	
	688.5																	
Medium-dense grayish-brown COARSE AND FINE SAND, some silt, trace clay, moist to wet.			12 8 8	22	78	SS-8	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
			7 9 11	28	94	SS-9	-	0	0	70	22	8	NP	NP	NP	25	A-3a (0)	
	683.5																	
Medium-dense to dense gray COARSE AND FINE SAND, some silt, trace clay, trace fine gravel, wet.			6 11 13	34	100	SS-10	-	-	-	-	-	-	-	-	-	24	A-3a (V)	
			4 9 9	25	100	SS-11	-	-	-	-	-	-	-	-	-	24	A-3a (V)	
- Contains strong petroleum-like odor from 33.5' to 35.0.			7 9 11	28	100	SS-12	-	1	1	71	21	6	NP	NP	NP	24	A-3a (0)	
			4 7 7	20	100	SS-13	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
	673.5																	
Medium-dense gray SILT, little clay, little fine sand, moist.	672.2		3	-	100	SS-14A	-	-	-	-	-	-	-	-	-	26	A-4b (V)	
Medium-dense gray COARSE AND FINE SAND, some silt, trace clay, moist.			8 9	24	100	SS-14B	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
	669.5																	
Very-stiff to hard gray SANDY SILT, some to "and" clay, trace fine gravel (shale fragments), damp.			6 8 10	25	67	SS-15	-	6	8	9	43	34	25	18	7	15	A-4a (8)	
			6 7 15	31	100	SS-16	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
			8 14 17	43	100	SS-17	-	6	6	7	43	38	25	17	8	16	A-4a (8)	
			6 9 16	35	100	SS-18	-	-	-	-	-	-	-	-	-	15	A-4a (V)	

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:01 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\WVPROJECTS\20131200.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-003-0-09

DRAWN KAH
CHECKED BKS

	64	6 9 12	29	83	SS-19	-	5	7	7	43	38	25	18	7	16	A-4a (8)
	69	7 8 12	28	83	SS-20	-	-	-	-	-	-	-	-	-	17	A-4a (V)
	74	8 12 16	39	100	SS-21	-	-	-	-	-	-	-	-	-	21	A-4a (V)
632.6	79	10	-	100	SS-22A	-	-	-	-	-	-	-	-	-	16	A-4a (V)
Dense gray SANDY SILT, little clay, trace fine gravel, moist.		14 16	42	46	SS-22B	-	-	-	-	-	-	-	-	-	19	A-4a (V)
628.5																			
Very-stiff to hard gray SANDY SILT, "and" clay, trace fine gravel, damp.	84	10 12 16	39	100	SS-23	-	6	4	6	35	49	28	19	9	18	A-4a (8)
623.5																			
Hard gray SANDY SILT, some clay, trace fine gravel (shale fragments), damp. - Encountered a boulder from 90.0' to 92.0'.	89	10 25 42	94	100	SS-24	-	-	-	-	-	-	-	-	-	12	A-4a (V)
	94	45 50-0.4'	-	100	SS-25	-	10	12	16	36	26	21	14	7	9	A-4a (5)
612.0	99	37 50-0.5'	-	100	SS-26	-	-	-	-	-	-	-	-	-	9	A-4a (V)
EOB																			

NOTES:
- Encountered water at 17.0' during drilling.
- Water was added to the borehole at 18.5' to prevent potential heave.
- Used 3-1/4" I.D. hollow-stem augers (HSA) to a depth of 48.5'.
- From 48.5' to 99.5', used a 3-1/8" O.D. Tri-cone Roller bit (TRB) with water.
- Encountered a boulder from 90.0' to 92.0'.
- After removal of the augers, boring caved at 6.5' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-003-0-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 448+53, 86.9 RT	EXPLORATION ID B-003-1-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 714.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 4/12/10 END: 4/12/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828204.8 N, 2478503 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 714.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE - 6 INCHES	714.0																	
GRANULAR BASE - 6 INCHES	713.5																	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.			2 3 5	11	94	SS-1	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			3 4 5	13	78	SS-2	-	48	37	7	3	5	NP	NP	NP	8	A-1-b (0)	
			2 3 2	7	72	SS-3	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			3 4 3	10	100	SS-4	-	8	75	6	2	9	NP	NP	NP	9	A-1-b (0)	
			3 6 9	21	78	SS-5	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	701.5																	
Very-dense light brown GRAVEL, some fine to coarse sand, trace silt, trace clay, dry.			5 19 22	57	89	SS-6	-	69	4	22	3	2	NP	NP	NP	3	A-1-a (0)	
	699.0																	
Medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.			3 5 9	20	94	SS-7	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	696.5																	
Loose becoming medium-dense brownish-gray FINE SAND, little coarse sand, trace silt, trace clay, trace fine gravel, wet.		W	3 3 4	10	89	SS-8	-	3	13	81	- 3 -		NP	NP	NP	25	A-3 (0)	
		W																
	F S		6 7 6	18	89	SS-9	-	-	-	-	-	-	-	-	-	28	A-3 (V)	
			7 9 12	29	100	SS-10	-	-	-	-	-	-	-	-	-	31	A-3 (V)	
	689.5	EOB																

NOTES:
- Encountered seepage at 19.0' during drilling.
- Encountered water at 21.0' during drilling.
- After removal of augers, boring caved at 13.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:01 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W\PROJECTS\2013\12300.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-003-1-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 449+33, 110.0 LT	EXPLORATION ID B-003-2-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 709.8 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1
START: 4/5/10 END: 4/5/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828416.5 N, 2478522.3 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL - 12 INCHES	709.8																	
	708.8																	
Very-loose brown and gray COARSE AND FINE SAND, little clay, trace silt, trace fine gravel, contains few root hairs, moist.		1	1 1	3	83	SS-1	-	9	31	43	6	11	NP	NP	NP	19	A-3a (0)	
	706.8	2																
Loose to medium-dense brown GRAVEL, "and" coarse sand, trace fine sand, trace silt, trace clay, damp.		3	1 4 4	11	83	SS-2	-	-	-	-	-	-	-	-	-	9	A-1-a (V)	
		4																
		5																
		6	1 2 2	6	83	SS-3	-	54	39	3	1	3	NP	NP	NP	8	A-1-a (0)	
		7																
		8																
		9	2 2 3	7	83	SS-4	-	-	-	-	-	-	-	-	-	8	A-1-a (V)	
	698.3	10																
Loose brown GRAVEL WITH SAND, trace silt, trace clay, contains few silty clay pockets and seams, moist.		11																
		12																
		13																
W		14	1 2 3	7	100	SS-5	-	25	27	38	4	6	NP	NP	NP	16	A-1-b (0)	
W		15																
		16																
	692.8	17																
Loose to medium-dense grayish-brown FINE SAND, trace coarse sand, trace fine gravel, trace silt, trace clay, wet.		18																
		19	2 3 4	10	67	SS-6	-	-	-	-	-	-	-	-	-	28	A-3 (V)	
		20																
		21																
		22																
		23																
FS		24	3 4 9	18	100	SS-7	-	4	4	82	4	6	NP	NP	NP	25	A-3 (0)	
		25																
		26																
		27																
		28																
- SEE NOTES ON NEXT PAGE.	679.8	29	2 7 9	22	100	SS-8	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
		EOB 30																

NOTES:
- Encountered seepage at 14.0' during drilling.
- Encountered water at 15.0' during drilling.
- Water was measured at 15.0' inside hollow-stem augers (HSA) prior to adding water at 18.5' to prevent potential heave.
- After removal of augers, boring caved at 6.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:02 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\M:\PROJECTS\2013\12300.GPJ

33/43

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-003-2-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 449+64, 64.3 RT	EXPLORATION ID B-004-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 714.5 (MSL) EOB: 50.0 ft.	PAGE 1 OF 1
START: 4/13/10 END: 4/13/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828258.8 N, 2478602.8 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 714.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL - 12 INCHES	713.5																	
Loose to medium-dense brown GRAVEL WITH SAND, little silt, trace clay, contains few roots, damp.	710.5		3 4 4	11	100	SS-1	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			2	-	100	SS-2A	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
Very-loose brown GRAVEL WITH SAND AND SILT, trace clay, moist.	709.0		1 1	3	100	SS-2B	-	26	31	11	23	9	NP	NP	NP	17	A-2-4 (0)	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, contains few silty clay seams, damp.	701.5		2 2 3	7	100	SS-3	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			3 3 4	10	100	SS-4	-	39	44	5	7	5	NP	NP	NP	10	A-1-b (0)	
			3 5 7	17	100	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
Dense brown GRAVEL, some fine to coarse sand, trace silt, trace clay, damp.	699.0		10 10 12	31	100	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-a (V)	
Loose brown GRAVEL, some fine to coarse sand, trace silt, trace clay, damp.	696.5		2 2 4	8	72	SS-7	-	66	17	12	1	4	NP	NP	NP	6	A-1-a (0)	
Dense grayish-brown GRAVEL WITH SAND, trace silt, trace clay, moist.	694.0	W	7 12 12	34	100	SS-8	-	30	19	46	1	4	NP	NP	NP	15	A-1-b (0)	
Medium-dense to very-dense grayish-brown FINE SAND, trace coarse sand, trace clay, wet.	686.5		8 9 10	27	100	SS-9	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
			8 15 25	56	100	SS-10	-	0	1	94	0	5	NP	NP	NP	25	A-3 (0)	
			3 7 13	28	100	SS-11	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
Medium-dense to dense gray COARSE AND FINE SAND, some silt, trace clay, trace fine gravel, moist to wet.	676.5		8 13 18	43	100	SS-12	-	-	-	-	-	-	-	-	-	23	A-3a (V)	
			8 11 12	32	100	SS-13	-	1	0	70	22	7	NP	NP	NP	24	A-3a (0)	
			8 9 10	27	100	SS-14	-	-	-	-	-	-	-	-	-	16	A-3a (V)	
			6 10 10	28	100	SS-15	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
Medium-dense to dense gray COARSE AND FINE SAND, trace silt, trace clay, wet.	667.5		6 11 13	34	100	SS-16	-	0	1	87	6	6	NP	NP	NP	26	A-3a (0)	
			5 10 10	28	100	SS-17	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
Dense gray SANDY SILT, some clay, trace fine gravel, damp.	664.5	EOB	10 15 17	45	100	SS-18	-	5	9	14	48	24	20	17	3	15	A-4a (7)	

NOTES:
- Encountered water at 19.0' during drilling.
- Water was added to the borehole at 20.0' to prevent potential heave.
- After removal of augers, boring caved at 9.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:02 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W\PROJECTS\20131230O.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-004-0-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 449+98, 104.5 LT	EXPLORATION ID B-004-1-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA, 3-1/8" TRB	CALIBRATION DATE: 10/1/09	ELEVATION: 708.2 (MSL) EOB: 89.5 ft.	PAGE 1 OF 1
START: 4/1/10 END: 4/2/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828429.9 N, 2478585.4 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 708.2	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL - 6 INCHES	707.7																	
Very-loose brown GRAVEL WITH SAND, little silt, trace clay, contains many roots and wood fragments, damp.	705.2		1 0 1	1	44	SS-1	-	27	32	20	14	7	NP	NP	NP	12	A-1-b (0)	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.	696.2		3 4 4	11	78	SS-2	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
			2 3 3	8	94	SS-3	-	38	45	7	6	4	NP	NP	NP	8	A-1-b (0)	
			2 2 2	6	33	SS-4	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
Medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, wet.	691.2	W	4 11 10	29	61	SS-5	-	31	24	38	2	5	NP	NP	NP	16	A-1-b (0)	
Medium-dense brown COARSE AND FINE SAND, trace silt, trace clay, moist.	689.3		2	-	100	SS-6A	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
			4 8	17	92	SS-6B	-	-	-	-	-	-	-	-	-	28	A-3 (V)	
Medium-dense brownish-gray FINE SAND, trace silt, trace clay, trace coarse sand, contains a slight petroleum-like odor, moist to wet.	680.2	FS	6 8 11	27	78	SS-7	-	0	1	90	5	4	NP	NP	NP	25	A-3 (0)	
			2 4 7	15	67	SS-8	-	-	-	-	-	-	-	-	-	26	A-3 (V)	
			4 6 8	20	94	SS-9	-	-	-	-	-	-	-	-	-	25	A-3 (V)	
Medium-dense brownish-gray COARSE AND FINE SAND, some silt, trace clay, trace coarse sand, trace fine gravel, moist to wet.	675.2		5 7 8	21	100	SS-10	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
			2 5 7	17	100	SS-11	-	1	1	65	27	6	NP	NP	NP	27	A-3a (0)	
Dense brownish-gray COARSE AND FINE SAND, some silt, trace fine gravel, trace clay, moist.	670.2		6 12 18	42	94	SS-12	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
			8 9 15	34	78	SS-13	-	-	-	-	-	-	-	-	-	23	A-3a (V)	
Very-stiff to hard gray SILT, some clay, little fine to coarse sand, moist.	666.2		3 6 8	20	73	SS-14	-	-	-	-	-	-	-	-	-	22	A-4b (V)	
Very-stiff to hard gray SANDY SILT, some to "and" clay, trace fine gravel (shale fragments), damp.			3 5 8	18	83	SS-15	-	3	7	8	47	35	24	18	6	16	A-4a (8)	
			5 8 12	28	100	SS-16	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
			6 8 14	31	100	SS-17	-	5	6	7	43	39	26	18	8	16	A-4a (8)	
			7 13 18	43	100	SS-18	-	-	-	-	-	-	-	-	-	16	A-4a (V)	

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:03 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W\PROJECTS\20131230.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-004-1-09

DRAWN KAH
CHECKED BKS

- Contains many fine sand and silt seams.		631.2		62															
				63															
				64	7 13 17	42	100	SS-19	-	6	6	7	45	36	25	17	8	16	A-4a (8)
				65															
				66															
				67															
				68															
				69	6 8 10	25	100	SS-20	-	-	-	-	-	-	-	-	-	16	A-4a (V)
				70															
				71															
				72															
				73															
				74	13 15 18	46	78	SS-21	-	-	-	-	-	-	-	-	-	19	A-4a (V)
				75															
				76															
				77															
				78															
Very-dense gray SILT, little clay, little fine to coarse sand, trace fine gravel, moist.		626.2		79	14 16 21	52	78	SS-22	-	-	-	-	-	-	-	-	-	23	A-4b (V)
				80															
				81															
				82															
				83															
Very-stiff to hard gray SILT, "and" clay, trace fine to coarse sand, trace fine gravel, moist.		621.2		84	9 12 18	42	89	SS-23	-	1	1	2	53	43	27	20	7	21	A-4b (8)
				85															
				86															
				87															
				88															
Hard gray SANDY SILT, little to some clay, little fine to coarse gravel (shale fragments), damp.		618.7	EOB	89	24 50-0.5'	-	100	SS-24	-	-	-	-	-	-	-	-	-	9	A-4a (V)

NOTES:
- Encountered water at 13.0' during drilling.
- Water was measured at 17.0' inside the hollow-stem augers (HSA) prior to adding water at 18.5' to prevent potential heave.
- At 38.5', drilling mud (water and bentonite) was added to the borehole to prevent heave.
- Used 3-1/4" I.D. HSA to a depth of 45.0'.
- From 45.0' to 89.5', used a 3-1/8" Tri-cone Roller bit (TRB) with drilling mud.
- Water measured at 13.7' inside the HSA at the end of drilling.
- After removal of augers, water was measured at 12.0' and the boring caved at 18.5'.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-004-1-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 1179-12-011A

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / A. FAY	DRILL RIG: OTB MOBILE B-57 (OLD)	STATION / OFFSET: 449+64, 62.8 RT	EXPLORATION ID B-004-2-11
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / K. DOHLEN	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA, 2-7/8" TRB	CALIBRATION DATE: 1/14/11	ELEVATION: 714.7 (MSL) EOB: 109.5 ft.	PAGE 1 OF 1
START: 5/15/12 END: 5/16/12	SAMPLING METHOD: SPT	ENERGY RATIO (%): 81	COORD: 828260.1052 N, 2478602.072 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 714.7	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
NO SAMPLING - SEE BORING B-004-0-09 FOR SOIL STRATIGRAPHY FROM 0' TO 50'.		▼ 16 hr																
Hard gray SANDY SILT, some clay, trace fine gravel, contains few silt seams, damp.	664.7		4 6 7	18	83	SS-1	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
Hard gray SILT, some clay, little fine to coarse sand, trace fine gravel, contains few shale fragments, damp.	658.7		5 6 8	19	83	SS-2	-	3	6	7	52	32	27	17	10	15	A-4b (8)	

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:49 - M:\1179_CLEVELAND\03 - LABORATORY\02 - CNTFW\PROJECTS\1179-12-011.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-004-2-11

DRAWN KAH
CHECKED BKS

Description	Elev.	Depth	SPT	N60	Rec %	Sample ID	HP	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT Class (GI)
		64	5 6 9	20	83	SS-3	-	-	-	-	-	-	-	-	-	15	A-4b (V)
		69	7 7 9	22	67	SS-4	-	-	-	-	-	-	-	-	-	16	A-4b (V)
	641.2																
Very-stiff to hard gray SILT, some clay, trace fine sand, trace fine gravel, contains few shale fragments and fine sand pockets, damp.		74	4 4 5	12	78	SS-5	-	2	0	1	62	35	23	17	6	16	A-4b (8)
		79	6 8 11	26	67	SS-6	-	-	-	-	-	-	-	-	-	16	A-4b (V)
	633.2																
Very-stiff gray SILT AND CLAY, little fine to coarse sand, contains few shale fragments and sand and silt seams and pockets, damp.		84	11 14 17	42	67	SS-7	-	-	-	-	-	-	-	-	-	24	A-6a (V)
		89	4 14 25	53	61	SS-8	-	0	6	5	26	63	30	18	12	25	A-6a (9)
	623.2																
Hard gray SANDY SILT, some clay, trace fine gravel, contains few very-stiff zones, few shale fragments and sand and silt pockets, damp. - Encountered possible cobble at 92.5' and 93.5'.		94	17 28 66	127	67	SS-9	-	-	-	-	-	-	-	-	-	9	A-4a (V)
		99	41 68	-	44	SS-10	-	7	9	20	37	27	20	15	5	8	A-4a (6)
		104	40 55 50	142	83	SS-11	-	-	-	-	-	-	-	-	-	12	A-4a (V)
	609.7																
Hard gray SANDY SILT, some clay, trace fine gravel, contains many shale fragments, similar in structure to highly weathered gray shale, damp.		109	53 59	-	83	SS-12	-	-	-	-	-	-	-	-	-	12	A-4a (V)
	605.2	EOB															

NOTES:
- Water was measured at 11.0' before beginning work on 5/16/12.
- Used 3-1/4" ID HSA to a depth of 70.0'.
- From 70.0' to 109.5', used a 2-7/8" Tri-cone Roller bit (TRB) with water.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE POWDER; PUMPED 1 BAG CEMENT; PUMPED 60 GAL. WATER

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-004-2-11

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 451+48, 19.3 LT	EXPLORATION ID B-005-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3-7/8" TRB	CALIBRATION DATE: 10/1/09	ELEVATION: 725.1 (MSL) EOB: 118.8 ft.	PAGE 1 OF 1
START: 4/20/10 END: 4/22/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828392 N, 2478753.8 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 725.1	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
CONCRETE (BRIDGE DECK) - 9 1/2 INCHES	724.3																	
AIR	710.1																	
Very-loose to loose brown GRAVEL, some coarse sand, trace fine sand, trace silt, trace clay, moist becoming wet.	695.1	23	3 2 5	10	61	SS-1	-	59	32	4	2	3	NP	NP	NP	16	A-1-a (0)	
		26	2 1 2	4	33	SS-2	-	-	-	-	-	-	-	-	-	24	A-1-a (V)	
		28	1 2 3	7	39	SS-3	-	72	24	2	-	2 -	NP	NP	NP	27	A-1-a (0)	
Medium-dense brown and orange FINE SAND, trace clay, trace coarse sand, wet.	688.1	31	5 7 9	22	100	SS-4	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
		33	5 6 7	18	89	SS-5	-	0	1	93	0	6	NP	NP	NP	29	A-3 (0)	
		36	9 9 9	25	100	SS-6	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
Dense grayish-brown FINE SAND, trace silt, trace clay, trace coarse sand, wet.	685.6	38	11 12 14	36	89	SS-7	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
Medium-dense gray SANDY SILT, trace clay, contains few dark gray slightly organic seams, moist.	683.1	41	5 7 9	22	100	SS-8	-	0	0	62	29	9	NP	NP	NP	26	A-4a (1)	
Medium-dense to dense gray COARSE AND FINE SAND, little silt, trace clay, moist to wet.	673.1	43	9 13 15	39	100	SS-9	-	-	-	-	-	-	-	-	-	23	A-3a (V)	
		46	9 9 8	24	89	SS-10	-	0	0	79	15	6	NP	NP	NP	26	A-3a (0)	
		48	8 13 18	43	100	SS-11	-	-	-	-	-	-	-	-	-	26	A-3a (V)	
		51	11 14 17	43	100	SS-12	-	-	-	-	-	-	-	-	-	24	A-3a (V)	
Dense gray FINE SAND, trace coarse sand, trace clay, trace fine gravel, moist.	669.1	53	12 13 10	32	89	SS-13	-	3	4	88	0	5	NP	NP	NP	23	A-3 (0)	
Very-stiff to hard gray SANDY SILT, "and" clay, trace fine gravel (shale and sandstone fragments), damp.		58	13 10 12	31	100	SS-14	-	-	-	-	-	-	-	-	-	14	A-4a (V)	

S&ME_MYLAR_LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:03 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINTW\PROJECTS\2013123GD.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-005-0-09

DRAWN KAH
CHECKED BKS

						62														
						63	8 10 13	32	100	SS-15	-	-	-	-	-	-	-	-	-	16	A-4a (V)
						64														
						65														
						66														
						67														
						68	7 9 12	29	100	SS-16	-	-	-	-	-	-	-	-	-	16	A-4a (V)
						69														
						70														
						71														
						72														
						73	7 10 13	32	100	SS-17	-	-	-	-	-	-	-	-	-	17	A-4a (V)
						74														
						75														
						76														
						77														
						78	7 8 11	27	100	SS-18	-	7	7	7	42	37	25	17	8	16	A-4a (8)
						79														
						80														
						81														
						82														
						83	5 7 8	21	100	SS-19	-	-	-	-	-	-	-	-	-	15	A-4a (V)
						84														
						85														
						86														
						87														
						88	5 6 10	22	100	SS-20	-	-	-	-	-	-	-	-	-	15	A-4a (V)
						89														
						90														
						91														
						92														
						93	8 10 12	31	100	SS-21	-	4	5	6	45	40	25	16	9	16	A-4a (8)
						94														
						95														
						96														
						97														
						98	8 12 13	35	100	SS-22	-	-	-	-	-	-	-	-	-	15	A-4a (V)
						99														
						100														
						101														
						102														
					623.1	103														
Hard gray SANDY SILT, some clay, trace fine gravel (shale fragments), damp.						104	12 17 29	64	100	SS-23	-	10	9	13	38	30	23	16	7	11	A-4a (7)
						105														
						106														
						107														
						108	50-0.4'	-	100	SS-24	-	-	-	-	-	-	-	-	-	8	A-4a (V)
						109														
						110														
						111														
						112														
						113	50-0.4'	-	100	SS-25	-	-	-	-	-	-	-	-	-	10	A-4a (V)
						114														
						115														
						116														
						117														
					606.3	118	25 40 50-0.3'	-	100	SS-26	-	10	13	12	31	34	24	15	9	12	A-4a (6)
					EOB															

NOTES:
- 4" I.D. casing was set to a depth of 27.0'. Due to sample disturbance during casing installation, sampling began at 22.5'.
- Used a 3-7/8" Tri-cone Roller bit (TRB) with drilling mud (water and bentonite) from 15.0' (ground surface beneath the bridge deck) to 118.8'.
- Bridge deck repaired in accordance with Section 408 of the ODOT "SGE".

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-005-0-09

DRAWN KAH

CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 451+60, 63.0 RT	EXPLORATION ID B-005-1-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 712.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 4/12/10 END: 4/12/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828316.8 N, 2478789.5 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 712.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL - 12 INCHES	711.5																	
Very-loose to loose brown GRAVEL WITH SAND, trace silt, trace clay, damp.			3 3 3	8	94	SS-1	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
- Contains few silty clay seams.			2 2 1	4	78	SS-2	-	37	45	5	6	7	NP	NP	NP	10	A-1-b (0)	
			1 1 3	6	89	SS-3	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
Medium-dense brown GRAVEL, some fine to coarse sand, trace silt, trace clay, damp.	704.5		3 4 7	15	89	SS-4	-	53	25	8	10	4	NP	NP	NP	11	A-1-a (0)	
Loose to medium-dense brown GRAVEL WITH SAND, trace silt, trace clay, damp.	702.0		3 4 3	10	67	SS-5	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
			3 4 4	11	100	SS-6	-	44	38	14	1	3	NP	NP	NP	7	A-1-b (0)	
	695.8	W	3	-	100	SS-7A	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
Medium-dense to dense grayish-brown FINE SAND, trace coarse sand, trace fine gravel, trace silt, trace clay, wet.		W	7 7 8	21	75	SS-7B	-	-	-	-	-	-	-	-	-	23	A-3 (V)	
			6 14 12	36	100	SS-8	-	-	-	-	-	-	-	-	-	24	A-3 (V)	
		FS	11 15 20	49	100	SS-9	-	5	4	83	2	6	NP	NP	NP	23	A-3 (0)	
	687.5	EOB	3 7 14	29	100	SS-10	-	-	-	-	-	-	-	-	-	22	A-3 (V)	

NOTES:
- Encountered seepage at 16.7' during drilling.
- Encountered water at 18.5' during drilling.
- After removal of augers, boring caved at 9.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:04 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W:\PROJECTS\2013\12300.GPJ

41/43

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-005-1-09

DRAWN KAH
CHECKED BKS

S&ME JOB: 1179-12-011A

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / A. FAY	DRILL RIG: OTB MOBILE B-57 (OLD)	STATION / OFFSET: 451+50, 61.3 RT	EXPLORATION ID B-005-2-11
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / K. DOHLEN	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-21.43	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/14/11	ELEVATION: 713.1 (MSL) EOB: 50.0 ft.	PAGE 1 OF 1
START: 5/14/12 END: 5/15/12	SAMPLING METHOD: SPT	ENERGY RATIO (%): 81	COORD: 828315.6934 N, 2478779.8531 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 713.1	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
NO SAMPLING - SEE BORING B-005-1-09 FOR SOIL STRATIGRAPHY FROM 0' TO 25'.		18 hr ▼ W																
Medium-dense brown intermixed with gray FINE SAND, trace coarse sand, trace fine gravel, trace silt, trace clay, wet.	684.6	F S	2 5 11	22	78	SS-1	-	-	-	-	-	-	-	-	-	27	A-3 (V)	
			4 6 9	20	56	SS-2	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
Medium-dense brown intermixed with gray COARSE AND FINE SAND, little silt, trace clay, trace fine gravel, moist.	676.1		5 9 11	27	100	SS-3	-	1	4	72	19	4	NP	NP	NP	21	A-3a (0)	
	669.0		5	-	100	SS-4A	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
Medium-dense gray SILT, little clay, trace fine sand, contains few slightly organic pockets, damp.	666.4		5 14	26	100	SS-4B	-	0	0	5	81	14	NP	NP	NP	21	A-4b (8)	
Very-stiff to hard gray SANDY SILT, some clay, trace fine gravel, contains few shale fragments and many silt seams, damp.	663.1	EOB	5 6 10	22	83	SS-5	-	-	-	-	-	-	-	-	-	15	A-4a (V)	

NOTES:
- Encountered water at 23.5' during drilling.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAGS BENTONITE PELLETS; PUMPED 2 BAGS CEMENT

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 12:53 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\W:\PROJECTS\1179-12-011.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION
LOG OF BORING B-005-2-11

DRAWN KAH
CHECKED BKS

S&ME JOB: 012.01312.300

PROJECT: ATB-20-21.43	DRILLING FIRM / OPERATOR: OTB / C. BESSEY	DRILL RIG: OTB ATV D50	STATION / OFFSET: 453+13, 19.1 LT	EXPLORATION ID B-006-0-09
TYPE: BRIDGE REPLACEMENT	SAMPLING FIRM / LOGGER: BBCM / C. VOVAK	HAMMER: CME AUTOMATIC	ALIGNMENT: U.S. 20 CENTERLINE	
PID: 83599 BR ID: ATB-20-2143	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/1/09	ELEVATION: 722.1 (MSL) EOB: 55.0 ft.	PAGE 1 OF 1
START: 4/13/10 END: 4/14/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 828440 N, 2478912.2 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 722.1	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT - 3 3/4 INCHES	721.8																	
CONCRETE - 7 1/2 INCHES	721.2																	
GRANULAR BASE - 6 1/2 INCHES	720.6																	
FILL: Medium-dense to dense brown and gray GRAVEL WITH SAND, trace silt, trace clay, contains few slag and asphalt fragments, damp.	715.2		5 9 9	25	100	SS-1	-	29	37	23	4	7	NP	NP	NP	9	A-1-b (0)	
			7 10 12	31	100	SS-2	-	39	34	16	6	5	NP	NP	NP	8	A-1-b (0)	
			9 9 13	31	100	SS-3	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
			4	-	100	SS-4A	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
FILL: Medium-dense to dense brown GRAVEL WITH SAND, trace silt, trace clay, contains few slag and asphalt fragments, damp.	710.1		10 10	28	100	SS-4B	-	38	30	19	5	8	NP	NP	NP	9	A-1-b (0)	
			12 23 10	46	100	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
FILL: Medium-dense gray SLAG, trace fine to coarse sand, damp. - Encountered cobbles at 12.0'.	708.3		10	-	100	SS-6A	-	-	-	-	-	-	-	-	-	11	Visual (V)	
Medium-dense brown GRAVEL, "and" fine to coarse sand, trace silt, trace clay, damp.	705.1		9 6	21	58	SS-6B	-	51	36	5	3	5	NP	NP	NP	9	A-1-a (0)	
Medium-dense brown COARSE AND FINE SAND, little silt, little fine gravel, trace clay, damp.	700.1		4 7 5	17	100	SS-7	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
Medium-dense light brown FINE SAND, trace coarse sand, trace silt, trace clay, trace fine gravel, dry.	694.6		4 4 5	13	100	SS-8	-	-	-	-	-	-	-	-	-	5	A-3 (V)	
Medium-dense to dense grayish-brown FINE SAND, trace coarse sand, trace silt, trace clay, trace fine gravel, wet.	684.1	W AD	6 10 10	28	100	SS-9	-	-	-	-	-	-	-	-	-	23	A-3 (V)	
			3 4 6	14	100	SS-10	-	-	-	-	-	-	-	-	-	25	A-3 (V)	
			9 15 15	42	100	SS-11	-	1	3	89	1	6	NP	NP	NP	23	A-3 (0)	
			5 9 9	25	100	SS-12	-	-	-	-	-	-	-	-	-	29	A-3 (V)	
Medium-dense to dense gray COARSE AND FINE SAND, little silt, trace clay, trace fine gravel, wet.	670.1		4 6 10	22	100	SS-13	-	-	-	-	-	-	-	-	-	28	A-3a (V)	
			6 8 9	24	100	SS-14	-	0	0	74	20	6	NP	NP	NP	25	A-3a (0)	
			6 8 10	25	100	SS-15	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
			6 9 10	27	100	SS-16	-	1	2	79	11	7	NP	NP	NP	23	A-3a (0)	
			9 14 15	41	100	SS-17	-	-	-	-	-	-	-	-	-	21	A-3a (V)	
Very-stiff to hard gray SILT, some clay, little fine to coarse sand, trace fine gravel, contains few dark gray slightly organic lenses, moist.	667.1	EOB	4 6 8	20	100	SS-18	-	1	4	7	56	32	24	18	6	19	A-4b (8)	

NOTES:
- Encountered water at 28.0' during drilling.
- Encountered cobbles at 12.0'.
- Water was measured at 28.0' inside the hollow-stem augers (HSA) prior to adding water at 33.5' to prevent potential heave.
- Water was measured at 28.5' inside the HSA at the completion of drilling.
- After removal of augers, boring caved at 11.0' and was observed to be dry.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE AND CEMENT GROUT MIXTURE

S&ME MYLAR LOG (11 X 17) - OH DOT.GDT - 1/22/14 13:04 - M:\1179_CLEVELAND\03 - LABORATORY\02 - GINT\PROJECTS\2013\2300.GPJ

ATB-20-21.43

STRUCTURE FOUNDATION EXPLORATION LOG OF BORING B-006-0-09

DRAWN KAH

CHECKED BKS