INDEX OF SHEETS

DESIGN DESIGNATION

OPENING YEAR A.D.T. (2024)	N/A
DESIGN A.D.T. (2044)	N/A
DESIGN HOURLY VOLUME (2044)	N/A
TRUCKS (24 HOUR)	N/A
DESIGN SPEED	15 M.P.H.
LEGAL SPEED	N/A
DESIGN FUNCTIONAL CLASSIFICATION~	N/A
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE REQUIRED

ADA DESIGN WAIVERS

NONE REQUIRED

UNDERGROUND UTILITIES

Contact Two Working Days Before You Dig

OHIO811.org Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

THIS PLAN PREPARED AND RECOMMENDED BY:

52 N. Diamond Street
Mansfield, OH 44902
T: (419) 525-0093

526 E. Broad Street
Elyria, OH 44035
T: (440) 323-9608

5065 Oberlin Avenue
Lorain, OH 44053
T: (440) 444-1022

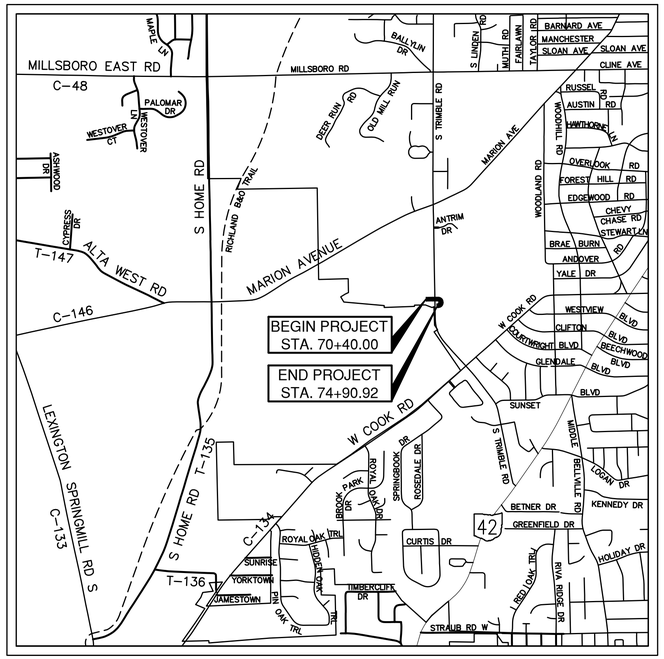
www.kemccartney.com

KEM
K.E. McCARTNEY & ASSOCIATES
ENGINEERS · PLANNERS · SURVEYORS

STATE OF OHIO
JASON D. BURGHOLDER
E-69829
REGISTERED PROFESSIONAL ENGINEER

Jason D. Burgholder 2/29/2024
JASON D. BURGHOLDER DATE

CITY OF MANSFIELD
RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL
RICHLAND COUNTY
STATE OF OHIO



LOCATION MAP
NOT TO SCALE

LATITUDE: 40° 43' 57'' N LONGITUDE: 82° 33' 06'' W

PROJECT DESCRIPTION

CONSTRUCTION OF APPROXIMATELY 400' OF AN 11' WIDE CONCRETE TRAIL AND A 96' LONG PRECAST CONCRETE BOX TUNNEL TO CONNECT THE RICHLAND B&O TRAIL TO TRIMBLE ROAD IN THE CITY OF MANSFIELD. THE PROJECT ALSO INCLUDES MODULAR BLOCK RETAINING WALL STRUCTURES, TUNNEL LIGHTING, SECURITY CAMERAS, WATER MAIN RELOCATION, DRAINAGE STRUCTURES, REGRADING WORK, AND REPLACEMENT OF TRIMBLE ROAD PAVEMENT AND SIDEWALKS.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA	1.4	ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA	0.3	ACRES
NOTICE OF INTENT (NOI) EARTH DISTURBED AREA	1.7	ACRES

2023 SPECIFICATIONS

THE CONSTRUCTION AND MATERIAL SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, 2023 EDITION, WITH THE EXCEPTION OF DIVISION 100 GENERAL PROVISIONS, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

TRAFFIC RE-ROUTED

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 6.

STANDARD CONSTRUCTION DRAWINGS

BP-2.1	1/21/22	HL-40.10	7/21/23	
BP-2.2	1/15/21	HL-40.20	1/19/24	
BP-3.1	1/19/24	HL-60.31	7/21/23	
BP-5.1	7/15/22			
		MT-95.31	7/19/19	
CB-2-2B	1/20/23	MT-101.60	4/21/23	
		MT-101.90	7/17/20	
DM-1.1	7/17/20			
DM-1.2	7/16/21	TC-83.20	1/19/24	
DM-4.4	1/15/16			
MH-3	1/19/24			
RM-1.1	1/20/23			

SUPPLEMENTAL SPECIFICATIONS

800 - 2023		1/19/24
832	7/21/23	
940	4/17/15	

SPECIAL PROVISIONS

APPROVAL:

3/5/2024
ENGINEER, CITY OF MANSFIELD DATE

KEM K.E. McCARTNEY & ASSOCIATES ENGINEERS · PLANNERS · SURVEYORS

PID. NO. N/A

FEDERAL PROJECT NO. N/A

RAILROAD INVOLVEMENT NONE

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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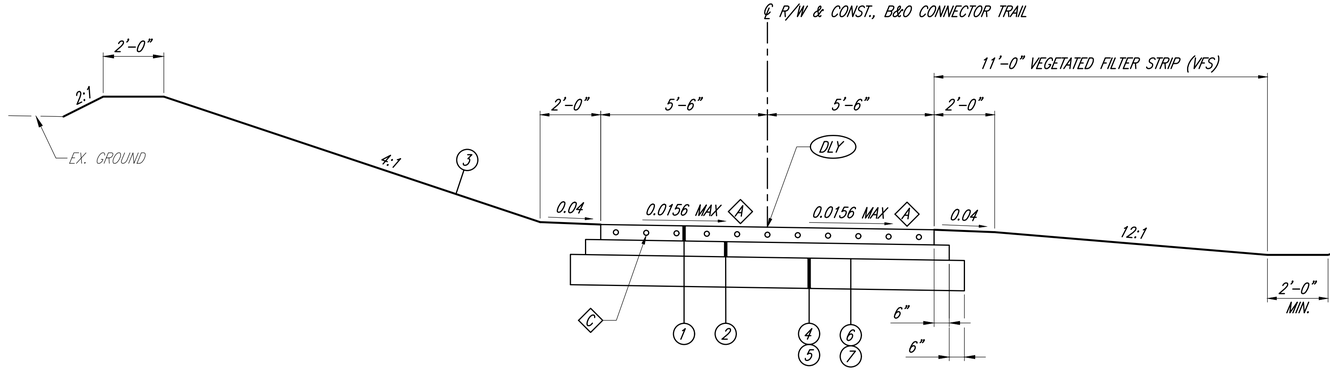
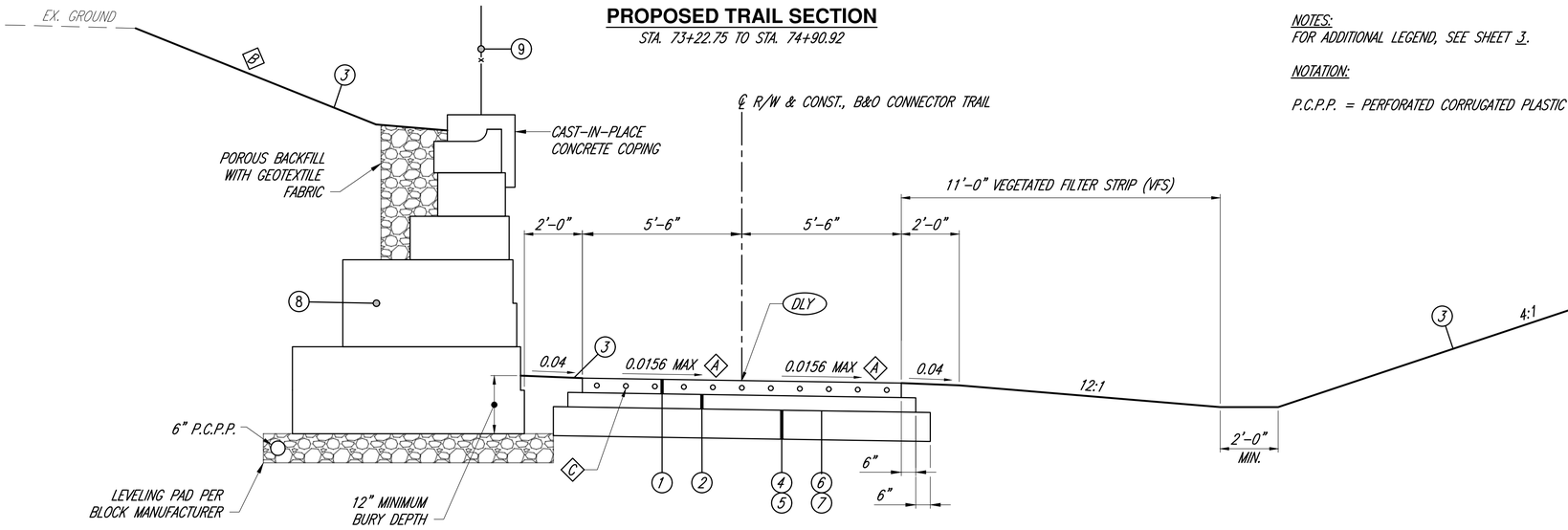


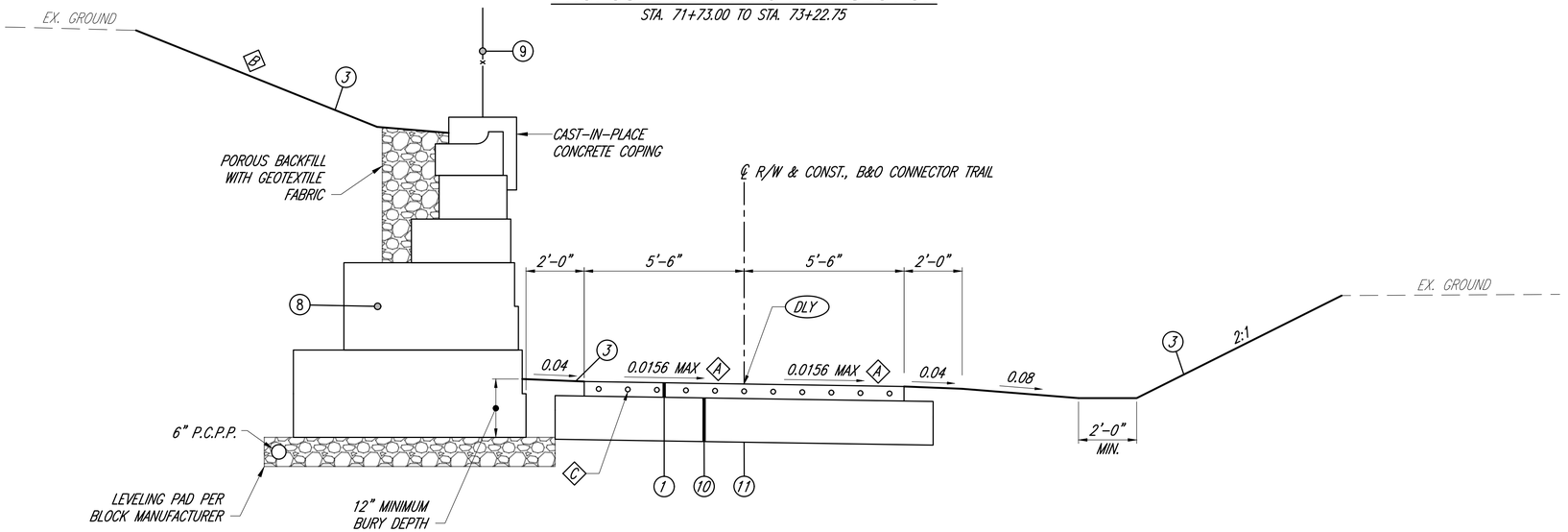
PROPOSED TRAIL SECTION

STA. 73+22.75 TO STA. 74+90.92



PROPOSED RETAINING WALL SECTION

STA. 71+73.00 TO STA. 73+22.75



PROPOSED TRAIL SECTION

STA. 70+40.00 TO STA. 70+77.00

NOTES:
FOR ADDITIONAL LEGEND, SEE SHEET 3.

NOTATION:

P.C.P.P. = PERFORATED CORRUGATED PLASTIC PIPE

TRAIL PAVEMENT TRANSITION TABLE

LEFT SIDE		STATION	RIGHT SIDE	
SLOPE	WIDTH (FT.)		WIDTH (FT.)	SLOPE
BEGIN TRAIL 70+40 MATCHLINE WITH FUTURE TRAIL PROJECT				
1.56%	5.5	70+40.00	5.5	-1.56%
0.00%	5.5	70+77 (BK)	5.5	0.00%
0.00%	7.5	70+77 (AH)	7.5	0.00%
TUNNEL STATION 70+77.00 TO STATION 71+73.00				
0.00%	7.5	71+73 (BK)	7.5	0.00%
0.00%	5.5	71+73 (AH)	5.5	0.00%
0.00%	5.5	71+85.00	5.5	0.00%
1.56%	5.5	71+95.00	5.5	-1.56%
1.56%	5.5	74+75.00	5.5	-1.56%
0.00%	5.5	74+80.00	5.5	0.00%
-0.68%	5.5	74+85.00	5.5	1.80%
-1.50 +/-	5.5	74+90.92	5.5	1.78% +/-
END TRAIL AT STATION 74+90.92 (MEET EXIST. MUP)				

LEGEND

1	452	6"	NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P, AS PER PLAN (TRAIL PAVEMENT) (SAW CUT TRANSVERSE JOINTS)
2	304	4"	AGGREGATE BASE (LIMESTONE)
3	659		SEEDING AND MULCHING, CLASS 2, AS PER PLAN
4	206	12"	CEMENT STABILIZED SUBGRADE
5	206		CEMENT
6	206		CURING COAT
7	204		PROOF ROLLING
8	870		PREFABRICATED MODULAR RETAINING WALL, AS PER PLAN
9	517		RAILING, ALUMINUM, AS PER PLAN
10	304	20"	AGGREGATE BASE (LIMESTONE) - MAX. 8" LIFTS
11	204		SUBGRADE COMPACTION, AS PER PLAN
DLY	642		CENTER LINE, TYPE 1, AS PER PLAN

A: SEE TRAIL PAVEMENT TRANSITION TABLE ABOVE FOR LOCATIONS OF CROSS SLOPE CHANGES.

B: GRADING AS SHOWN ON CROSS SECTIONS.

C: TRANSVERSE JOINTS AT 10' SPACING MAX WITH EPOXY COATED 1" DOWEL BAR BASKETS AS PER SCD BP-2.2. (CONTRACTION JOINT SPACING TABLE SHALL NOT APPLY).

AT STA. 70+40 THE CONTRACTOR SHALL USE A BUTT JOINT WITH A MECHANICAL HOOK BOLT AS PER BP-2.1 FOR TIED TRANSVERSE JOINT WITH FUTURE TRAIL PROJECT.

AT STA. 74+90.92 THE CONTRACTOR SHALL USE A DRILLED TRANSVERSE TIED JOINT CONNECTION TO EXISTING MULTI-USE PATH AS PER BP-2.1.

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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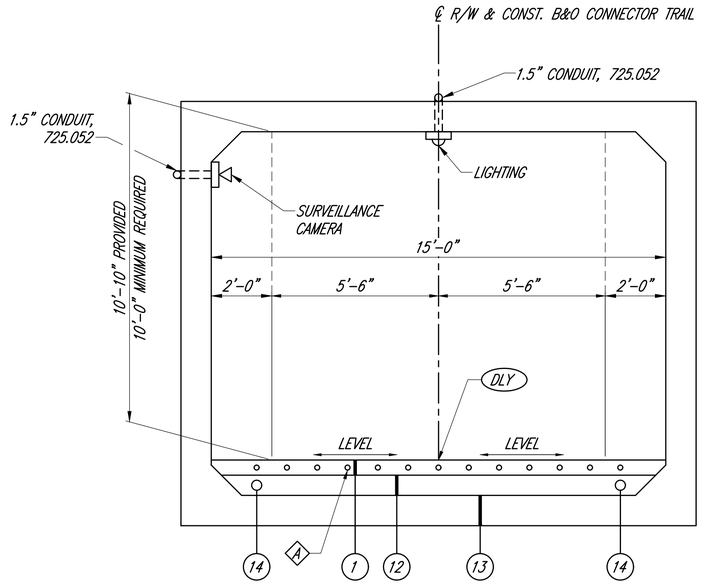
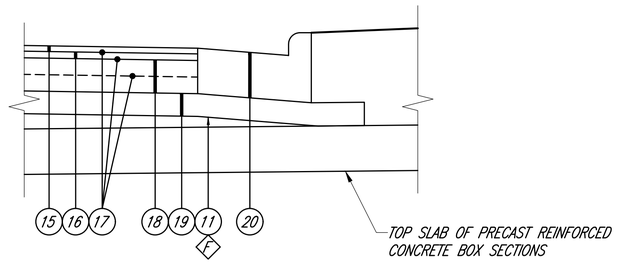
TYPICAL SECTIONS - 1

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



PROPOSED TUNNEL SECTION

STA. 70+77.00 TO STA. 71+73.00



DETAIL "A"

PROPOSED PAVEMENT BUILDUP

LEGEND

(11)	204		SUBGRADE COMPACTION, AS PER PLAN
(12)		8"	NO. 57 LIMESTONE (CRUSHED)
(13)			15' SPAN x 12' RISE PRECAST REINFORCED CONCRETE BOX SECTIONS, 706.05 (TUNNEL)
(14)	518	4"	PERFORATED CORRUGATED PLASTIC PIPE, 707.33 TYPE SP
(15)	441	1 ¼"	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG64-22
(16)	441	1 ¾"	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (449)
(17)	407		TACK COAT
(18)	301	9"	ASPHALT CONCRETE BASE, PG64-22, (449)
(19)	304	6"	AGGREGATE BASE (LIMESTONE)
(20)	609		COMBINATION CURB AND GUTTER, TYPE 2
(21)	254	1 ¼"	PAVEMENT PLANING, ASPHALT CONCRETE

(A) EX. ASPHALT PAVEMENT (DEPTH UNKNOWN)

(B) EX. CURB AND GUTTER

◇A TRANSVERSE JOINTS AT 10' SPACING MAX WITH EPOXY COATED 1" DOWEL BAR BASKETS AS PER SCD BP-2.2.

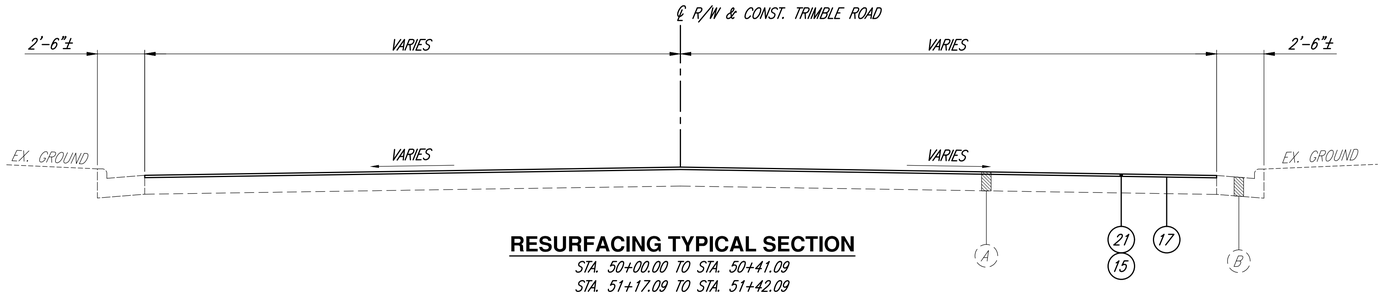
◇D VARIES 11.85' MIN. TO 12.37' MAX.

◇E VARIES 1.16' MIN. TO 1.66' MAX.

◇F SUBGRADE COMPACTION LIMITS SHALL EXCLUDE THE AREA OVER THE PRECAST REINFORCED CONCRETE BOX.

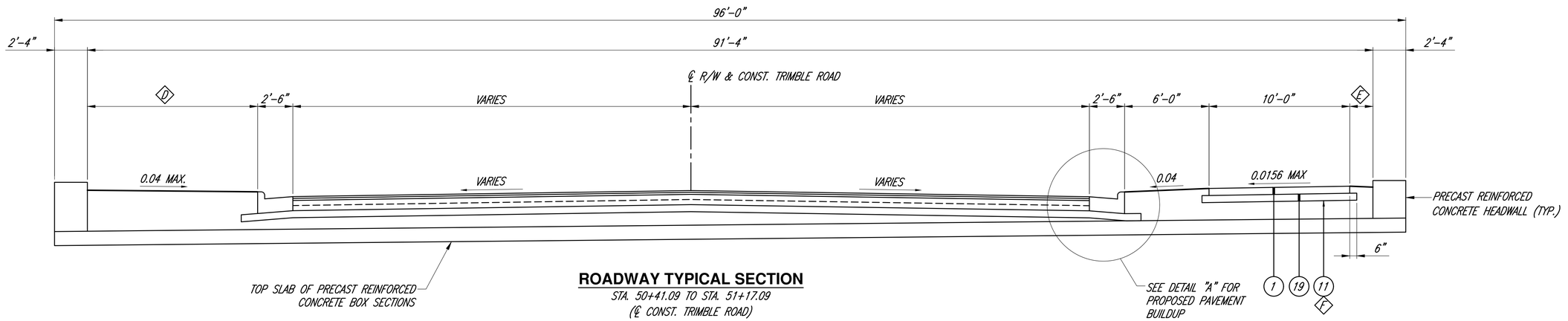
NOTE

FOR ADDITIONAL LEGEND, SEE SHEET 2.



RESURFACING TYPICAL SECTION

STA. 50+00.00 TO STA. 50+41.09
STA. 51+17.09 TO STA. 51+42.09
(℄ CONST. TRIMBLE ROAD)



ROADWAY TYPICAL SECTION

STA. 50+41.09 TO STA. 51+17.09
(℄ CONST. TRIMBLE ROAD)

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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TYPICAL SECTIONS - 2

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

3
37

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GENERAL

WHERE SPECIFIED, THE 2023 STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) (ODOT ITEM NUMBERS) INCLUDING SUPPLEMENTAL SPECIFICATIONS (SS) AND STANDARD CONSTRUCTION DRAWINGS (SCD) SHALL APPLY EXCEPT AS MODIFIED OR EXPANDED HEREIN OR IN THE TECHNICAL SPECIFICATIONS.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF ALL PERSONS, INCLUDING EMPLOYEES, AND PROPERTY.

ALL ITEMS OF WORK CALLED FOR ON THE PLANS FOR WHICH NO SPECIFIC METHOD OF PAYMENT IS PROVIDED SHALL BE PERFORMED BY THE CONTRACTOR. THE COST OF SAID SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS RELATED ITEMS. IT IS THE INTENTION OF THE CONTRACT DOCUMENTS TO PROVIDE AND REQUIRE A COMPLETED PROJECT READY FOR OPERATION. ANY WORK ITEMS OMITTED FROM SUCH CONTRACT DOCUMENTS WHICH ARE CLEARLY NECESSARY FOR THE COMPLETION OF SUCH WORK AND ITS APPURTENANCES SHALL BE CONSIDERED A PART OF SUCH WORK ALTHOUGH NOT DIRECTLY SPECIFIED OR CALLED FOR IN THE CONTRACT DOCUMENTS.

ANY DEFECTS IN CONSTRUCTION, INCLUDING MATERIAL OR WORKMANSHIP, SHALL BE CORRECTED BY REMOVAL AND REPLACEMENT OR OTHER APPROVED METHODS PRIOR TO THE ACCEPTANCE BY THE OWNER. THE COST SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ANY MODIFICATIONS OF THE WORK AS SHOWN ON THESE APPROVED PLANS SHALL HAVE PRIOR WRITTEN APPROVAL OF THE OWNER.

ALL SURFACES INCLUDING DRAINAGE STRUCTURES, LANDSCAPING, PAVEMENTS, DRIVEWAYS, BERMS AND OTHER SURFACES DISTURBED DURING CONSTRUCTION OF THIS PROJECT SHALL BE RESTORED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST.

THE CONTRACTOR SHALL KEEP ALL STREETS, LANES AND PARKING AREAS ADJACENT TO THE PROJECT CLEAN AND FREE FROM ANY DEBRIS, MUD AND/OR OTHER CONSTRUCTION EQUIPMENT AT ALL TIMES DURING THE PROJECT.

UTILITIES

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

OHIO EDISON TRANSMISSION
ATTN: BETSY ALLSHOUSE
76 SOUTH MAIN STREET
AKRON, OHIO 44308
330-384-2475

OHIO EDISON DISTRIBUTION
ATTN: TRAVIS BALLOG
1717 ASHLAND ROAD
MANSFIELD, OHIO 44905
419-521-6213

BRIGHTSPEED
ATTN: TIM BOWSER
175 ASHLAND ROAD
MANSFIELD, OHIO 44902
419-565-9011

WATER/SANITARY/ELECTRIC
CITY OF MANSFIELD
ENGINEERING DIVISION
ATTN: BOB BIANCHI, P.E.
30 NORTH DIAMOND STREET
MANSFIELD, OHIO 44902
419-755-9702

CHARTER COMMUNICATIONS
ATTN: SEAN BEAVIS
1575 LEXINGTON AVE.
MANSFIELD, OHIO 44907
419-632-6723

THE OHIO UTILITIES PROTECTION SERVICE CALL BEFORE YOU DIG 811.

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C. THEY ARE APPROXIMATE ONLY. THE ENGINEER AND OWNER CANNOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES AS TO LINE AND GRADE BEFORE STARTING ANY WORK.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER.

ELEVATION DATUM AND HORIZONTAL CONTROL

ALL ELEVATIONS ARE ORTHOMETRIC HEIGHTS USING THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND THE GEOID12B GEOID. HORIZONTAL POSITIONS ARE BASED ON THE OHIO STATE PLANE NORTH ZONE, A LAMBERT CONFORMAL CONIC MAP PROJECTION, THE NORTH AMERICAN DATUM OF 1983 (NAD 83 (2011)), AND THE GRS80 ELLIPSOID.

PROTECTION OF EXISTING UTILITIES AND PIPES

THE CONTRACTOR SHALL BE REQUIRED, AT HIS OWN EXPENSE, TO DO EVERYTHING NECESSARY TO PROTECT, SUPPORT AND SUSTAIN ALL STORM SEWERS, WATER AND GAS PIPES, SERVICE PIPES, ELECTRIC LIGHTS, POWER AND TELEPHONE POLES, CONDUIT AND OTHER FIXTURES LAID ACROSS OR ALONG THE SITE OF THE WORK. THE ENGINEER AS WELL AS THE COMPANY OR CORPORATION OWNING SAID PIPES, POLES OR CONDUITS MUST BE NOTIFIED OF THE SAME BY THE CONTRACTOR, BEFORE ANY SUCH FIXTURES ARE REMOVED OR DISTURBED. IN CASE ANY OF THE SAID SEWER, GAS OR WATER PIPES, SERVICE PIPES, ELECTRICAL LIGHT, POWER AND TELEPHONE POLES, FIBER OPTIC CABLES, CONDUITS OR OTHER FIXTURES ARE DAMAGED THEY SHALL BE REPAIRED BY THE AUTHORITIES HAVING CONTROL OF THE SAME, AND THE EXPENSE OF SAID REPAIRS SHALL BE DEDUCTED FROM THE MONIES WHICH ARE DUE OR TO BECOME DUE THE CONTRACTOR UNDER THIS CONTRACT.

SHOULD IT BECOME NECESSARY TO CHANGE THE POSITION, OR TEMPORARILY REMOVE ANY STORM SEWER, SANITARY SEWER, ELECTRIC CONDUITS, WATER PIPES, GAS PIPES, FIBER OPTIC LINES, OR OTHER PIPES OR WIRES IN ORDER TO PERMIT THE CONTRACTOR TO USE A PARTICULAR METHOD OF CONSTRUCTION OR IN ORDER TO CLEAR THE STRUCTURES BEING BUILT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE LOCATION AND CIRCUMSTANCES AND SHALL CEASE WORK, IF NECESSARY, UNTIL SATISFACTORY ARRANGEMENTS HAVE BEEN MADE BY THE OWNERS OF SAID PIPES OR WIRES TO PROPERLY CARE FOR THE SAME. THE ENTIRE COST OF THE CHANGES OR TEMPORARY REMOVAL MUST BE INCLUDED IN THE PRICES STIPULATED FOR THE VARIOUS ITEMS OF WORK TO BE DONE UNDER THIS CONTRACT.

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.

PROTECTION OF RIGHT-OF-WAY

CONSTRICT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. USE OF THESE AREAS FOR DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED. THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER.

PROTECTION OF PROPERTY CORNER MARKERS

PROPERTY CORNER MARKERS SHALL NOT BE DISTURBED BY THE CONTRACTOR. IN THE EVENT IT IS NECESSARY TO REMOVE THESE ITEMS, THE CONTRACTOR SHALL AT HIS EXPENSE, EMPLOY A REGISTERED SURVEYOR TO PROPERLY REFERENCE THE POINTS AND SHALL RESET SAME AFTER CONSTRUCTION HAS BEEN COMPLETED IN THE AREA.

ITEM 623 - MONUMENT ASSEMBLY, TYPE C

CONSTRUCT THE MONUMENT ASSEMBLY IN ACCORDANCE WITH THE DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWINGS RM-1.1 AND AT THE LOCATION SHOWN ON SHEET NO. 11. SETTING OF ALL MONUMENTS SHALL BE PERFORMED BY A SURVEYOR REGISTERED IN THE STATE OF OHIO. THE MONUMENT ASSEMBLY SHALL BE INSTALLED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN ITEM 623 - MONUMENT ASSEMBLY, TYPE C.

PRECONSTRUCTION VIDEO

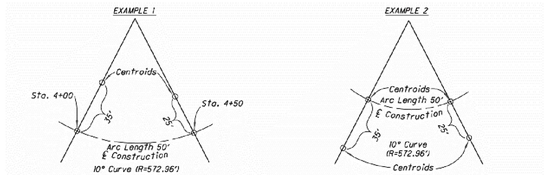
THE CONTRACTOR SHALL SUBMIT A PRECONSTRUCTION VIDEO OF THE ENTIRE PROJECT'S WORK LIMITS TO THE ENGINEER PRIOR TO COMMENCING WORK. COSTS SHALL BE INCLUDED IN ITEM 624 - MOBILIZATION AND NO SEPARATE PAYMENT WILL BE MADE FOR SAID WORK.

EXCESS EXCAVATION MATERIAL

THERE WILL BE EXCESS EXCAVATION MATERIALS FROM THE TUNNEL PROJECT THAT WILL BE UTILIZED AS EMBANKMENT MATERIALS FOR THE NEXT PHASE OF THE B&O CONNECTOR TRAIL (PID NO. 119146). AN ESTIMATE OF APPROXIMATELY 10,173 C.Y. OF EXCESS EMBANKMENT MATERIALS SHALL BE STORED IN THE FIELD TO THE WEST OF TRIMBLE ROAD AND NORTH OF THE OHIO EDISON TRANSMISSION EASEMENT AS DIRECTED BY THE CITY OF MANSFIELD. SEE SHEET 25 OF 37 FOR GENERAL LOCATION. THIS LOCATION IS NOT SHOWN IN THE PROJECT CONSTRUCTION LIMITS AND WILL BE FURTHER DEFINED AT THE PRE-CONSTRUCTION MEETING. ALL DISTURBED AREAS INCLUDING THE EXCESS EMBANKMENT STOCK PILE SHALL BE SEEDED AND MULCHED. ALL COSTS FOR THIS WORK SHALL BE INCLUDED WITH ITEM 203 - EXCAVATION FOR PAYMENT.

ITEM 203 - EXCAVATION AND EMBANKMENT

ALL EXCAVATION AND EMBANKMENT WORK SHALL BE PERFORMED IN ACCORDANCE WITH C&MS ITEM 203. THE EARTHWORK VOLUMES SHALL BE ADJUSTED FOR CURVATURE WHERE APPLICABLE. THE FOLLOWING EXAMPLES SHALL BE USED TO DETERMINE THE ADJUSTMENT FACTORS.



EXAMPLE 1: Find corrected arc length where centroids are located inside the curve.

English: Corrected Radius = 572.96' - $\frac{35°+25°}{2}$ = 542.96'
Alignment Factor = $\frac{542.96'}{572.96'}$ = 0.94764
Corrected Arc Length = 50' x 0.94764 = 47.38'

EXAMPLE 2: Find corrected arc length where centroids are located outside the curve.

English: Corrected Radius = 572.96' + $\frac{35°+25°}{2}$ = 602.96'
Alignment Factor = $\frac{602.96'}{572.96'}$ = 1.05236
Corrected Arc Length = 50' x 1.05236 = 52.62'

ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL CLEARING, GRUBBING, SCALPING AND THE REMOVAL AND SATISFACTORY DISPOSAL OF TREES, STUMPS, VEGETATION AND DEBRIS AS MAY BE NECESSARY FOR THE COMPLETION OF THE WORK. THIS ITEM SHALL ALSO INCLUDE THE REMOVAL OF MISCELLANEOUS ITEMS CALLED OUT TO BE REMOVED IN THE PLANS (STONE WALL, RISER, ROCKS, ETC.) THAT ARE NOT SEPARATELY ITEMIZED.

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT AND SAVE ALL TREES WHICH ARE ADJACENT TO THE LINE OF WORK AND SHALL REMOVE ONLY THOSE TREES WHICH ARE DESIGNATED FOR REMOVAL ON THE PLANS OR DIRECTED BY THE ENGINEER. TREE ROOTS AND OVERHANGING BRANCHES SHALL NOT BE CUT EXCEPT WITH SPECIAL PERMISSION OF THE ENGINEER. ALL BRANCHES OVER HANGING THE TRAIL SHALL BE CUT TO PROVIDE A MINIMUM VERTICAL CLEARANCE OF 10'-0" TO THE TRAIL PAVEMENT. WHEN REQUIRED, THE CUTTING OF ROOTS AND BRANCHES SHALL BE NEATLY TRIMMED AND COVERED WITH GRAFTING WAX. ALL DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE TO THE SATISFACTION OF THE ENGINEER. WHERE MISCELLANEOUS SMALL TREES AND SHRUBS ARE NOTED TO BE REMOVED AND RESET, THE COST OF SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE PROJECT.

ITEM 204 - SUBGRADE COMPACTION, AS PER PLAN

THIS ITEM SHALL CONFORM TO C&MS 204 WITH THE EXCEPTION THAT WITHIN THE CORPORATION LIMITS OF THE CITY OF MANSFIELD, THE CONTRACTOR SHALL NOT USE VIBRATORY ROLLERS FOR THE COMPACTION OF ANY MATERIAL.

ITEM 452 - 6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P, AS PER PLAN

THIS ITEM SHALL CONFORM TO C&MS 452 WITH THE EXCEPTION THE MATERIAL PROVIDED SHALL BE "CLASS C" CONCRETE MEETING THE CITY OF MANSFIELD SPECIFICATIONS AND JMF.

ALL JOINTS SHALL BE SAW CUT UNLESS OTHERWISE APPROVED BY THE ENGINEER AND THE CITY OF MANSFIELD. ALL TRANSVERSE JOINT EPOXY COATED DOWEL BARS SPACED AT 10' MAX AS CALLED FOR IN THE TYPICAL SECTIONS SHALL BE INCLUDED IN THE COST OF THIS ITEM.

SAWCUTS

ALL REQUIRED SAWCUTS ON THE PROJECT SHALL BE INCIDENTAL TO ASSOCIATED PROJECT ITEMS. NO SEPARATE PAYMENTS WILL BE MADE.

REVIEW OF DRAINAGE FACILITIES

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 CITY OF MANSFIELD.

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

ITEM 611 - PIPE CULVERTS, SEWERS, DRAINS, AND DRAINAGE STRUCTURES, AS PER PLAN

ALL STORM SEWERS AND DRAINAGE STRUCTURES SHALL BE INSTALLED PER ODOT ITEM 611, THE TYPICALLY TRENCH DETAIL, AND MANUFACTURERS' RECOMMENDATIONS. THE MOST STRINGENT SHALL APPLY. THE FOLLOWING ODOT 611 SPECIFICATION SECTIONS DO NOT APPLY TO THIS PROJECT: 611.04.D (PERFORMANCE REPORT), 611.12, 611.13, 611.14, & 611.15.

IN ADDITION ALL PAVEMENT RESTORATION/REPAIR AS INDICATED IN THESE NOTES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PERTINENT 611 DRAINAGE ITEM.

ITEM 611 - CATCH BASIN, NO. 2-2B, AS PER PLAN

THIS ITEM SHALL CONFORM TO C&MS SECTION 611 AND SCD CB-2-2B WITH THE EXCEPTION THAT THE GRATES SUPPLIED SHALL BE BICYCLE SAFE. PAYMENT FOR THIS ITEM SHALL BE MADE AT THE UNIT CONTRACT PRICE BID PER EACH FOR ITEM 611 - CATCH BASIN, NO. 2-2B, AS PER PLAN AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM TO THE SATISFACTION OF THE ENGINEER.

ITEM 642 - CENTER LINE, TYPE 1, AS PER PLAN

THIS ITEM SHALL CONFORM TO C&MS 642 EXCEPT IT SHALL BE 4 INCHES WIDE AND APPLIED IN A 12 FOOT CYCLE CONSISTING OF A 3 FOOT DASH AND A 9 FOOT GAP BETWEEN DASHES.

ITEM 644 - PAVEMENT MARKING

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO REPLACE PAVEMENT MARKINGS ON TRIMBLE ROAD AS DIRECTED BY THE ENGINEER.

644, LANE LINE, 4"	0.1 MI.
644, CENTERLINE	0.1 MI.
644, TRANSVERSE/DIAGONAL LINE	50 FT.

POST CONSTRUCTION STORM WATER TREATMENT

THIS PLAN UTILIZES STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) FOR POST CONSTRUCTION STORM WATER TREATMENT.

VEGETATED FILTER STRIP

THIS PLAN UTILIZES VEGETATED FILTER STRIPS FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AND ITEM 670, SLOPE EROSION PROTECTION, TO ALL DISTURBED AREAS DESIGNATED AS VEGETATED FILTER STRIPS.

DITCH EROSION PROTECTION AND POST-CONSTRUCTION BMP'S

THE CONTRACTOR SHALL INSTALL DITCH EROSION PROTECTION OF THE TYPE LISTED AND AT THE LOCATIONS SHOWN IN THE PLANS AND EROSION CONTROL SUBSUMMARY.

ITEM 659 - SEEDING AND MULCHING, CLASS 2, AS PER PLAN

TOPSOIL AND SEEDING AND MULCHING (CLASS 1) SHALL BE APPLIED TO ALL DISTURBED AREAS AND EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINE'S AS APPROVED BY THE ENGINEER. THIS ITEM SHALL ALSO INCLUDE ALL REPAIR SEEDING AND MULCHING, INTER-SEEDING, COMMERCIAL FERTILIZER, LIME, AND WATER PER CMS 659 REQUIRED TO REPAIR ALL DAMAGE OR EROSION OF THE SEEDED AND MULCHED AREAS BEFORE THE COMPLETION OF THE PROJECT. PAYMENT FOR THIS ITEM SHALL BE MADE AT THE PRICE BID PER SQUARE YARD FOR ITEM 659 - SEEDING AND MULCHING, CLASS 2, AS PER PLAN AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM TO THE SATISFACTION OF THE ENGINEER.

ITEM 832 - EROSION CONTROL

EROSION, RESULTING FROM CONSTRUCTION ACTIVITIES, SHALL BE MINIMIZED AND SEDIMENT, RESULTING FROM CONSTRUCTION ACTIVITIES, SHALL NOT LEAVE THE PROJECT LIMITS. ANY BMP'S NOT SPECIFICALLY COVERED OR DISCUSSED IN SS 832 OR SCD DM-4.4, SHALL BE APPROVED BY THE ENGINEER, PRIOR TO USE ON THE PROJECT. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM 832 - EROSION CONTROL 5,000 EA

DESIGNED TGW
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

GENERAL NOTES - 1

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

DRAFTED BY K.E. McCARTNEY & ASSOCIATES, Z:\HY\HY-262 Trimble Rd Multi Use Path to B&O\Plan Sheets\Tunnel\HY-262-GN_Tunnel.dwg\GN01\ Mar 01,2024 - 5:02pm

ITEM 661 – PLANTING, MISC.: LANDSCAPING

THE CITY OF MANSFIELD WANTS TO ENHANCE THE AESTHETICS OF THE TRAIL AND TUNNEL. PRIOR TO COMPLETING THE TRAIL THE CONTRACTOR SHALL MEET WITH THE CITY ENGINEER TO DETERMINE WHAT TYPE OF LANDSCAPE ITEMS WILL BE INSTALLED AND THE LOCATION OF THE LANDSCAPE ITEMS. THE CONTRACTOR SHALL ENGAGE THE CITY SPECIFIED LANDSCAPE ARCHITECT TO DEVELOP A CONCEPT OF THE LANDSCAPING FOR REVIEW AND APPROVAL BY THE CITY. THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING ALL PLANTS, TREES AND MATERIALS AS APPROVED BY THE ENGINEER WITHIN THE PROJECT LIMITS UTILIZING THE BUDGETED VALUE FOR THIS WORK. ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS TO DESIGN, FURNISH, AND INSTALL LANDSCAPING AT THE LOCATIONS APPROVED BY THE CITY SHALL BE INCLUDED WITH THIS ITEM.

THE FIXED AMOUNT SHOWN IN THE PROPOSAL IS INCLUDED (AS ANY OTHER BID ITEMS) IN THE TOTAL BID AMOUNT. THIS FIXED AMOUNT IS THE ESTIMATE OF THE TOTAL COST OF LANDSCAPING WORK REQUIRED TO BE PERFORMED FOR THE PROJECT. CITY'S LANDSCAPING WORK WILL BE PAID AT THE CONTRACTOR/CITY AGREED UNIT PRICE TIMES THE CORRECTLY INSTALLED LANDSCAPING NUMBER OF UNITS. THE PAYMENT DUE WILL BE DEDUCTED FROM ITEM 661 – PLANTING, MISC.: LANDSCAPING (EACH).

THE FOLLOWING HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED FOR THE WORK ABOVE AS APPROVED BY THE CITY OF MANSFIELD.

ITEM 661 – PLANTING, MISC.: LANDSCAPING 15,000 EA

FIRST ENERGY HIGH VOLTAGE TRANSMISSION RIGHTS-OF-WAY RESTRICTIONS

WARNING:
FAILURE TO COMPLY WITH THE FOLLOWING MAY CAUSE PROPERTY DAMAGE, SERIOUS BODILY INJURY AND/OR DEATH.

WORKING SAFETY RESTRICTIONS:
COMPLIANCE IS REQUIRED FOR ALL OCCUPATIONAL SAFETY HEALTH ADMINISTRATION (OSHA) SAFE-WORKING CLEARANCES BETWEEN PERSONS, CONDUCTIVE OBJECTS AND ENERGIZED CONDUCTOR/WIRE. **NOTICE:** THE CONDUCTOR/WIRE POSITION CHANGES CONTINUOUSLY DEPENDING ON LOAD, AMBIENT TEMPERATURE, WIND SPEED, ETC. FIRST ENERGY IS NOT RESPONSIBLE FOR PROVIDING CONDUCTOR/WIRE POSITION TO DETERMINE OSHA SAFE-WORKING CLEARANCE.

PARKING OR OPERATING A VEHICLE OR EQUIPMENT WITHIN OR ADJACENT TO A FIRST ENERGY TRANSMISSION RIGHT-OF-WAY MAY INDUCE AN ELECTRICAL CHARGE. INDUCED ELECTRIC CHARGES MAY ALSO BE TRANSMITTED TO OBJECTS SUCH AS FENCES, SIGNS, OR ANY OTHER CONDUCTIVE OBJECT. THE USE OF A PROPER GROUNDING SYSTEM DESIGNED BY A A LICENSED ENGINEER IS REQUIRED. CONSTRUCTION VEHICLES, VEHICLES WITH BOOMS AND EQUIPMENT OPERATING WITHIN OR ADJACENT TO A FIRST ENERGY TRANSMISSION RIGHT-OF-WAY MUST BE PROPERLY GROUNDED.

RIGHT-OF-WAY ACCESS:
FIRST ENERGY AUTHORIZED PERSONNEL, VEHICLES, AND EQUIPMENT MUST HAVE CONTINUOUS ACCESS TO THE RIGHT-OF-WAY AND ALL FIRST ENERGY STRUCTURES.

RIGHT-OF-WAY RESTRICTIONS:

1. EXCEPT FOR WHAT IS INDICATED IN THESE PLANS, CHANGES TO GRADE ELEVATIONS WITHIN THE FIRST ENERGY TRANSMISSION RIGHT OF WAY ARE NOT PERMITTED. GROUND DISTURBANCE OR EXCAVATIONS BEYOND WHAT IS SHOWN IN THESE PLANS ARE NOT PERMITTED WITHIN 25' OF ANY FIRST ENERGY STRUCTURES (POLES, TOWERS, GUYS, ETC.).

2. BUILDINGS, SOLAR PANELS, LIGHTING FIXTURES, SIGNS, BOLLARDS, SWIMMING POOLS, DECKS, FLAG POSTS, SHEDS, BARNS, GARAGES, PLAYGROUNDS, FENCES, EQUIPMENT, TRAILERS, MATERIALS OR ANY OTHER PERMANENT OR TEMPORARY OBJECTS ARE NOT PERMITTED WITHIN THE FIRST ENERGY TRANSMISSION RIGHT-OF-WAY. OTHER RESTRICTIONS MAY APPLY UNDER SPECIFIC SITUATIONS AS DEFINED BY FIRST ENERGY.

3. PROTECTIVE BARRIERS MUST BE USED FOR ANY DRIVEWAY OR PARKING AREA WITHIN 15 FEET OF ANY FIRST ENERGY STRUCTURE (POLES, TOWERS, GUYS, ETC.)

FIRST ENERGY HIGH VOLTAGE TRANSMISSION RIGHTS-OF-WAY RESTRICTIONS (CONTINUED)

4. ALL VEGETATION ON OR ADJACENT TO THE FIRST ENERGY TRANSMISSION RIGHT-OF-WAY SHALL BE LOW GROWING WITHIN THE WIRE ZONE. THE WIRE ZONE IS DEFINED AS THE AREA DIRECTLY UNDER THE CONDUCTORS WHICH EXTENDS APPROXIMATELY 15 FEET ON EACH SIDE. VEGETATION THAT IS 10-FOOT MAXIMUM MATURE HEIGHT, 3-FOOT IN NJ IS UNDER CERTAIN CIRCUMSTANCES PERMISSIBLE ON FIRST ENERGY TRANSMISSION RIGHT-OF-WAYS. IT IS PREFERRED THAT THE PLANTING OF ANY WOODY VEGETATION BE DONE OUTSIDE OF THE WIRE ZONE OF FIRST ENERGY TRANSMISSION FACILITIES AND ARE NOT PERMITTED TO BE CLOSER THAN 10 FEET IN ANY DIRECTION FROM THE FIRST ENERGY STRUCTURE (POLES, TOWERS, GUYS, ETC.,). ALL APPROVED SHRUBBERY PLANTED NEAR FIRST ENERGY STRUCTURES SHALL ALLOW FOR WORKING AREA AND ACCESSIBILITY AT GROUND LEVEL.

5. EXPLOSIVES OR COMBUSTIBLE LIQUIDS, SUBSTANCES, OR MATERIALS ARE NOT PERMITTED WITHIN THE RIGHT-OF-WAY. PROHIBITED MATERIALS INCLUDED BUT ARE NOT LIMITED TO FUEL, WOOD CHIPS, MULCH, BRUSH, AND TIRES.

6. SEPTIC SYSTEMS, LEACH BEDS, AND/OR WELLS ARE NOT PERMITTED WITHIN A FIRST ENERGY TRANSMISSION RIGHT-OF-WAY.

7. KITE FLYING, MODEL AIRPLANE FLYING, OR SIMILAR ACTIVITIES IS STRICTLY PROHIBITED ON OR NEAR A FIRST ENERGY TRANSMISSION RIGHT-OF-WAY.

FIRST ENERGY TRANSMISSION UTILITY CONSTRUCTION REQUIREMENTS AND COORDINATION

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KNOW AND MAINTAIN ALL OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIRED CLEARANCES WHEN WORKING NEAR OVERHEAD WIRES. THE OVERHEAD WIRES SHOULD BE CONSIDERED ENERGIZED AT ALL TIMES. RECOMMEND THE USE OF HIGH VOLTAGE SIGNAGE TO WARN WORKERS OF THE PRESENCE OF OVERHEAD CONDUCTORS.

2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL INSTALL IN/ADJACENT TO THE TRANSMISSION-RIGHTS-OF-WAY, APPROPRIATELY PLACED, OSHA-COMPLIANT, DANGER SIGNAGE READING "DANGER HIGH VOLTAGE ABOVE", OR SIMILAR, TO REMAIN UNTIL CONSTRUCTION ADJACENT TO/UNDER THE COMPANY'S TRANSMISSION-RIGHTS-OF-WAY IS COMPLETED.

FIRST ENERGY TRANSMISSION UTILITY CONSTRUCTION REQUIREMENTS AND COORDINATION (CONTINUED)

3. NO FUEL TANKS, FUEL DISPENSERS, FUEL VALVES OR VENTS, PROPANE TANKS, OR DUMPSTERS SHALL BE LOCATED WITHIN 20 FEET HORIZONTALLY OF ANY FIRST ENERGY TRANSMISSION LINE OR PERMITTED WITHIN THE TRANSMISSION-RIGHTS-OF-WAY.

4. NO EQUIPMENT SHALL BE OPERATED WITHIN THE TRANSMISSION-RIGHTS-OF-WAY THAT CANNOT MAINTAIN MINIMUM OSHA WORKING CLEARANCES OF ANY ENERGIZED OVERHEAD CONDUCTOR OF FIRST ENERGY TRANSMISSION.

5. IF CONSTRUCTION TRAFFIC ACTIVITIES COME CLOSER THAN 25-FEET TO FIRST ENERGY TRANSMISSION'S FACILITIES, SAFETY SHAPED PROTECTIVE BARRIERS MUST BE INSTALLED TO PROTECT THE FACILITY.

6. NO SOIL SPOILS CAN BE STORE WITHIN THE TRANSMISSION-RIGHTS-OF-WAY.

7. NO CONSTRUCTION EQUIPMENT OR VEHICLES SHALL BE STORED WITHIN 20' HORIZONTALLY OF ANY FIRST ENERGY TRANSMISSION LINES FOR ANY PERIOD OF TIME.

8. AT ALL TIMES DURING THE PROJECT, THE CONTRACTOR SHALL PROVIDE FIRST ENERGY 24/7 ACCESS TO THE STRUCTURES AND LINES.

9. ALL OSHA AND NESC WORKING CLEARANCES SHALL BE OBSERVED FOR THE ADJACENT TRANSMISSION LINES.

10. THE OVERHEAD TRANSMISSION LINES ARE 69,000 VOLTS NOMINAL (72,450 VOLTS MAXIMUM).
    - CONTACT WITH OVERHEAD WIRES DOES NOT NEED TO OCCUR TO HAVE ELECTRICITY FLOW IN UNWANTED DIRECTIONS CAUSE INJURY OR DEATH.
    - THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF ITS WORKERS.
    - STATIC CHARGE CAN BUILD UP IN ANY METALLIC MATERIAL PLACED UNDER THE TRANSMISSION LINES, INCLUDING PARKED VEHICLES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF ITS WORKERS IN THIS RESPECT.

PROJECT CONTROL AND CENTERLINE TABLE

PROJECT ADJUSTMENT FACTOR:			1.00011088	STATE PLANE		PROJECT GROUND			
POINT NO.	STA.	OFFSET	CL	NORTHING (Y)	EASTING (X)	NORTHING (Y)	EASTING (X)	ELEVATION (Z)	DESCRIPTION
CPT/ BM #1	63+42.43	70.86 RT	CL R/W & CONST. B&O CONNECTOR TRAIL	388371.45	1953446.06	388414.51	1953662.66	1408.62	5/8" REBAR SET W/ CAP MARKED "KEM CONTROL"
CPT/ BM #2	70+48.65	223.21 LT	CL R/W & CONST. B&O CONNECTOR TRAIL	388559.30	1954131.77	388602.38	1954348.44	1447.48	5/8" REBAR SET W/ CAP MARKED "KEM CONTROL"
CPT/ BM #3	71+62.24	90.38 RT	CL R/W & CONST. B&O CONNECTOR TRAIL	388247.73	1954250.71	388290.78	1954467.40	1440.44	TOP CENTER OF UNDERGROUND DETENTION MANHOLE
CL PT C20	69+22.94	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388333.98	1954009.92	388377.04	1954226.58		PT C20 CL R/W & CONST. B&O CONNECTOR TRAIL (PID 119146)
CL PC C1	72+05.29	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388338.83	1954292.19	388381.89	1954508.88		PC C21 CL R/W & CONST. B&O CONNECTOR TRAIL
CL PT C1	73+21.39	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388266.25	1954367.43	388309.30	1954584.13		PT C21 CL R/W & CONST. B&O CONNECTOR TRAIL
CL PC C2	73+34.47	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388253.18	1954367.68	388296.23	1954584.38		PC C22 CL R/W & CONST. B&O CONNECTOR TRAIL
CL PT C2	74+50.70	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388177.80	1954295.10	388220.84	1954511.80		PT C22 CL R/W & CONST. B&O CONNECTOR TRAIL
CL PI	75+33.70	CL	CL R/W & CONST. B&O CONNECTOR TRAIL	388176.23	1954212.13	388219.27	1954428.81		PI CL R/W & CONST. B&O CONNECTOR TRAIL
CL POT	47+00.00	CL	CL R/W & CONST. TRIMBLE ROAD	387958.42	1954216.25	388001.44	1954432.93		POT CL R/W & CONST. TRIMBLE ROAD
CL PI	50+50.10	CL	CL R/W & CONST. TRIMBLE ROAD	388308.42	1954209.63	388351.48	1954426.31		PI CL R/W & CONST. TRIMBLE ROAD (S 78°44'21" W – 0.14' FROM IPF IN MONBOX)
CL POT	53+00.00	CL	CL R/W & CONST. TRIMBLE ROAD	388558.26	1954205.34	388601.34	1954422.02		POT CL R/W & CONST. TRIMBLE ROAD

DESIGNED TGW REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES ENGINEERS • PLANNERS • SURVEYORS

GENERAL NOTES - 2

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

MAINTENANCE OF TRAFFIC NOTES

ITEM 614 – MAINTAINING TRAFFIC, AS PER PLAN

GENERAL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND CONTROLLING TRAFFIC ON ALL STREETS AND ROADS AFFECTED BY CONSTRUCTION, AND SHALL, PRIOR TO CONSTRUCTION, SUBMIT A CONSTRUCTION SCHEDULE AND A PLAN OF PROPOSED MAINTENANCE OF TRAFFIC OPERATIONS TO THE CITY OF MANSFIELD AND ENGINEER FOR APPROVAL INDICATING DATES AND DURATION OF EACH STAGE/PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE CITY OF MANSFIELD IN WRITING A MINIMUM OF 14 DAYS IN ADVANCE OF THE FIRST ANTICIPATED MAINTENANCE OF TRAFFIC OPERATION.

ROADWAY WORKZONE

TWO-WAY TRAFFIC (ONE LANE IN EACH DIRECTION) SHALL BE MAINTAINED THROUGH THE PROJECT SITE, UNLESS OTHERWISE NOTED IN THESE PLANS OR AS APPROVED BY THE ENGINEER. THE CONTRACTOR MAY CLOSE ONE LANE IN EACH DIRECTION FOR WATERLINE RELOCATION OR OTHER INCIDENTAL TUNNEL WORK PRIOR TO THE CLOSING OF TRIMBLE ROAD. ANY NECESSARY LANE CLOSURES SHALL BE IN ACCORDANCE WITH SCD MT-95.31. THE CONTRACTOR SHALL MAINTAIN A MINIMUM LANE WIDTH OF TWELVE (12) FEET AT ALL TIMES IN EACH DIRECTION.

THE LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

DROP OFFS WITHIN THE WORKZONE SHALL BE IN ACCORDANCE WITH MT-101.90.

ASBOLUTELY, UNDER NO CIRCUMSTANCES, SHALL THE CONTRACTOR CLOSE THE ROAD OR LANE WITHOUT PRIOR APPROVAL.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH C&MS 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, AS PER PLAN.

TRIMBLE ROAD (CR 281) DETOUR

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 45 CONSECUTIVE CALENDAR DAYS. TRAFFIC IS TO BE DETOURED AROUND TRIMBLE ROAD (CR 281) THROUGHOUT THE DURATION OF THE CLOSURE. THE DETOUR ROUTE IS DETAILED ON THIS SHEET.

THE 45 CONSECUTIVE CALENDAR DAYS SHALL BE CONSIDERED AS AN INTERIM COMPLETION DATE (SECTION 108) AND FOR EACH CALENDAR DAY BEYOND THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC, THE CONTRACTOR WILL BE ASSESSED $600 PER DAY AS A DISINCENTIVE.

THE CONTRACTOR SHALL NOTIFY THE CITY OF MANSFIELD ENGINEER IN WRITING A MINIMUM OF FOURTEEN (14) DAYS IN ADVANCE OF THE DATE THE DETOUR IS NEEDED. THE CONTRACTOR WILL INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE THE DETOUR SIGNING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE GATES, BARRICADES AND ADVANCE WARNING SIGNS AS SHOWN ON THIS SHEET AND SCD MT-101.60.

ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THE DETOUR SIGNING SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 – DETOUR SIGNING. ALL SIGNING SHALL BE IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD).

MAINTENANCE OF TRAFFIC SIGNS AND SUPPORTS

ALL SIGNS WITHIN THE WORK LIMITS SHALL BE MAINTAINED PER 107.10. COSTS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 – MAINTAINING TRAFFIC, AS PER PLAN.

DUST CONTROL

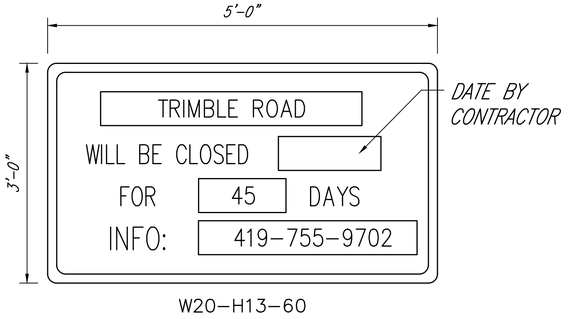
THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616 – WATER	20 M. GAL.

NOTICE OF CLOSURE SIGNS

THESE SIGNS SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROAD FACING TRAFFIC. THE SIGNS SHALL BE LOCATED AS TO NOT INTERFERE WITH ANY PERMANENT SIGNS. A SIGN SHALL BE ERECTED AT THE POINT OF CLOSURE.

PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 – DETOUR SIGNING, AND SHALL INCLUDE FURNISHING, ERECTING, MAINTAINING AND REMOVING THE SIGNS INCLUDING SUPPORTS.



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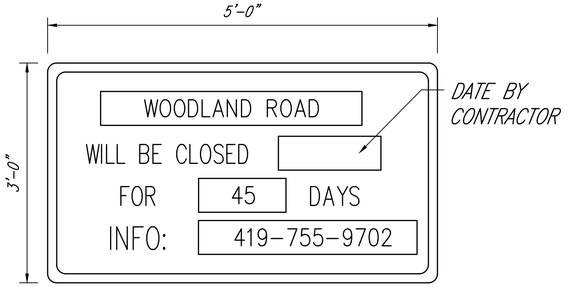

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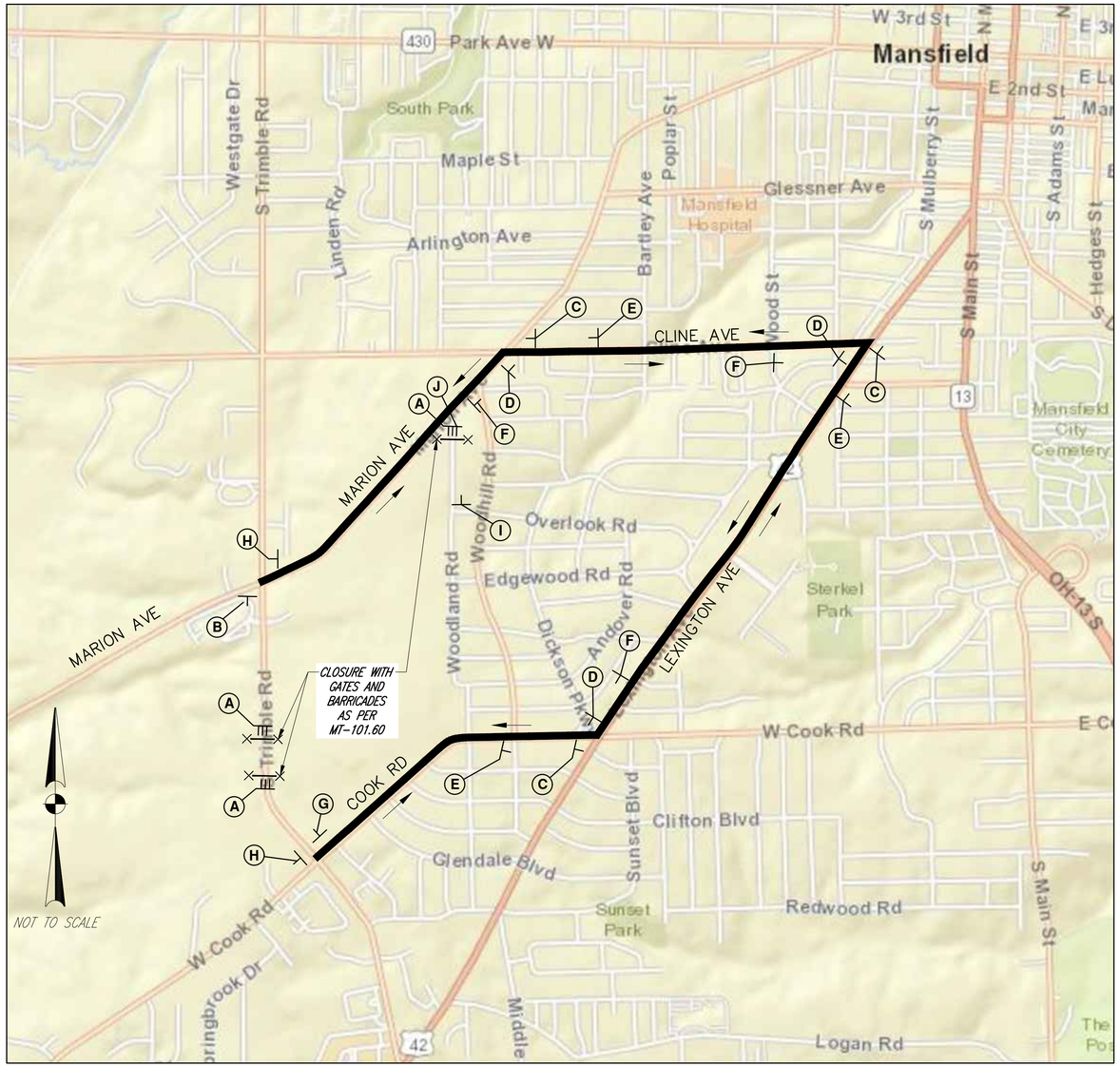
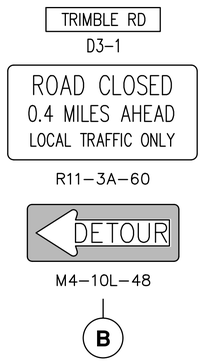
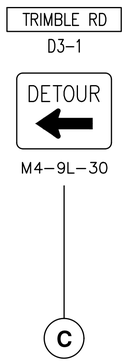
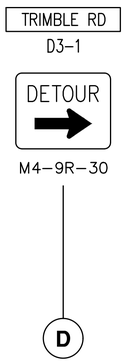
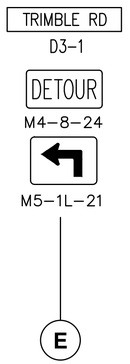


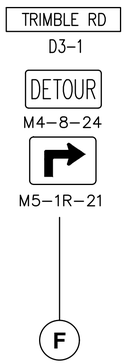
TRIMBLE ROAD (CR 281) DETOUR

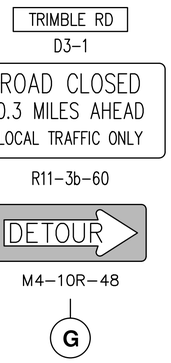


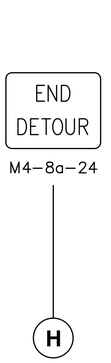


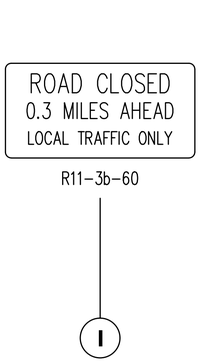












DESIGNED CJS | REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

MAINTENANCE OF TRAFFIC
TRIMBLE ROAD DETOUR

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

DRAFTED BY K.E. McCARTNEY & ASSOCIATES, Z:\HY\HY-262 Trimble Rd Multi Use Path to B&O\Plan Sheets\Tunnel\HY-262-MN.dwg\MN01\ Mar 01,2024 - 5:02pm

SHEET NUMBER											ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
	4–5		6		9		13–20	26	OFFICE CALCS							
															ROADWAY	
	LS										201	11001	LS		CLEARING AND GRUBBING, AS PER PLAN	4
									505		202	23000	505	SY	PAVEMENT REMOVED	
									1155		202	30000	1155	SF	WALK REMOVED	
									194		202	32500	194	FT	CURB AND GUTTER REMOVED	
					477						202	35100	477	FT	PIPE REMOVED, 24" AND UNDER	
					1						202	58000	1	EACH	MANHOLE REMOVED	
					1						202	75610	1	EACH	VALVE BOX REMOVED	
							8989				203	10000	8989	CY	EXCAVATION	
							45				203	20000	45	CY	EMBANKMENT	
									699		204	10001	699	SY	SUBGRADE COMPACTION, AS PER PLAN	4
									0.2		204	45000	0.2	HOUR	PROOF ROLLING	
									12		206	10500	12	TON	CEMENT	
									460		206	11000	460	SY	CURING COAT	
									460		206	15010	460	SY	CEMENT STABILIZED SUBGRADE, 12 INCHES DEEP	
	1										623	38500	1	EACH	MONUMENT ASSEMBLY	4
	15000										661	99900	15000	EACH	PLANTING, MISC.: LANDSCAPING	4
															EROSION CONTROL	
					30						659	00300	30	CY	TOPSOIL	4
									5664		659	00511	5664	SY	SEEDING AND MULCHING, CLASS 2, AS PER PLAN	4
					267						670	00500	267	SY	SLOPE EROSION PROTECTION	
					299						670	00700	299	SY	DITCH EROSION PROTECTION	
	LS										832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
	5000										832	30000	5000	EACH	EROSION CONTROL	4
															DRAINAGE	
					0.4						602	20000	0.4	CY	CONCRETE MASONRY	
					106						605	13300	106	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
					18						611	04601	18	FT	12" CONDUIT, TYPE C, AS PER PLAN, 707.65, TYPE D	4
					152						611	07401	152	FT	18" CONDUIT, TYPE B, AS PER PLAN, 707.65, TYPE D	4
					372						611	07601	372	FT	18" CONDUIT, TYPE C, AS PER PLAN, 707.65, TYPE D	4
					2						611	98471	2	EACH	CATCH BASIN, NO. 2–2B, AS PER PLAN	4
					1						611	99575	1	EACH	MANHOLE, NO. 3, AS PER PLAN	4
															PAVEMENT	
									379		254	01000	379	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
									127		301	56000	127	CY	ASPHALT CONCRETE BASE, PG64–22, (449)	
									200		304	20000	200	CY	AGGREGATE BASE (LIMESTONE)	
									126		407	10000	126	GAL	TACK COAT	
									31		441	70000	31	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG64–22	
									25		441	70300	25	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (449)	
									435		452	10011	435	SY	6" NON–REINFORCED CONCRETE PAVEMENT, CLASS QC 1P, AS PER PLAN	4
									194		609	12000	194	FT	COMBINATION CURB AND GUTTER, TYPE 2	
															WATERWORK	
					181						638	02505	181	FT	12" WATER MAIN DUCTILE IRON PIPE ANSI CLASS 53, MECHANICAL JOINTS AND FITTINGS, AS PER PLAN	23
					2						638	08710	2	EACH	12" CUTTING–IN SLEEVE	23
					1						638	10201	1	EACH	6" FIRE HYDRANT, AS PER PLAN	23
															TRAFFIC CONTROL	
									0.1		642	00301	0.1	MILE	CENTER LINE, TYPE 1, AS PER PLAN	4
	0.1										644	00200	0.1	MILE	LANE LINE, 4"	4
	0.1										644	00300	0.1	MILE	CENTER LINE	4
	50										644	00700	50	FT	TRANSVERSE/DIAGONAL LINE	4

CALCULATED TGW | CHECKED JDB

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GENERAL SUMMARY - 1

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

SHEET NUMBER											ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
	4–5		6		9		13–20	26	OFFICE CALCS							
															TUNNEL LIGHTING AND SECURITY	
								588			625		588	FT	NO. 12 AWG 600 VOLT DISTRIBUTION CABLE	
								121			625	25105	121	FT	CONDUIT, 1", 725.051, AS PER PLAN	26
								5			625	27505	5	EACH	LUMINAIRE, TUNNEL, SOLID STATE (LED), AS PER PLAN	26
								1			625	32000	1	EACH	GROUND ROD	
								1			625	34001	1	EACH	POWER SERVICE, AS PER PLAN	26
								1			809	65001	1	EACH	ITS CABINET – GROUND MOUNTED, AS PER PLAN	26
								LS			809	99000	LS		SPECIAL – ITS: SURVEILLANCE SYSTEM	26
															STRUCTURE 20 FOOT SPAN AND UNDER	
															FOR STRUCTURE QUANTITIES SEE SHEET NO. 32	
															MAINTENANCE OF TRAFFIC	
			LS								614	12420	LS		DETOUR SIGNING	6
			20								616	10000	20	MGAL	WATER	6
															INCIDENTALS	
			LS								614	11001	LS		MAINTAINING TRAFFIC, AS PER PLAN	6
											623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
											624	10000	LS		MOBILIZATION	

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GENERAL SUMMARY - 2

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

8
37

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DRAINAGE SUBSUMMARY

SHEET NO.	REFERENCE NO.	LOCATION FROM STATION	LOCATION FROM OFFSET	LOCATION TO STATION	LOCATION TO OFFSET	202 PIPE REMOVED, 24" AND UNDER	202 MANHOLE REMOVED	602 CONCRETE MASONRY	605 6" UNCLASSIFIED PIPE UNDERDRAINS	611 12" CONDUIT, TYPE B, AS PER PLAN, 707.65, TYPE D	611 18" CONDUIT, TYPE B, AS PER PLAN, 707.65, TYPE D	611 18" CONDUIT, TYPE C, AS PER PLAN, 707.65, TYPE D	611 CATCH BASIN, NO. 2-2B, AS PER PLAN	611 MANHOLE, NO. 3, AS PER PLAN
						FT	EACH	CY	FT	FT	FT	FT	EACH	EACH
B&O CONNECTOR TRAIL – TUNNEL														
10	HW-1	66+82.68	LT					0.33						
10-11	P-1	66+82.68	LT	70+35.00	RT							339		
11	CB-1	70+35.00	RT										1	
11	P-2	70+35.00	RT	71+87.00	RT						152			
11	R-1	70+90.05	LT	70+93.29	RT	100								
11	R-2	71+51.27	RT	71+54.29	LT	94								
11	E-1	71+58.57	LT			115	1							
11	CB-2	71+87.00	RT										1	
11	P-3	71+87.00	RT	71+87.00	LT							33		
11	MH-1	71+87.00	LT											1
11	P-4	71+87.00	LT	71+96.61	LT					18				
11	P-5	70+90.05	LT	71+87.00	LT				106					
					DRAINAGE SUBTOTALS	309	1	0.33	106	18	152	372	2	1
					TOTALS CARRIED TO GENERAL SUMMARY	**309**	**1**	**0.4**	**106**	**18**	**152**	**372**	**2**	**1**

WATER WORK SUBSUMMARY

SHEET NO.	REFERENCE NO.	LOCATION FROM STATION	LOCATION FROM OFFSET	LOCATION TO STATION	LOCATION TO OFFSET	202 PIPE REMOVED, 24" AND UNDER	202 VALVE BOX REMOVED	638 12" WATER MAIN DUCTILE IRON PIPE ANSI CLASS 53, MECHANICAL JOINTS AND FITTINGS, AS PER PLAN	638 12" CUTTING-IN SLEEVE	638 6" FIRE HYDRANT, AS PER PLAN
						FT	EACH	FT	EACH	EACH
B&O CONNECTOR TRAIL – TUNNEL										
25	R-3*	51+02.23	LT			168	1			
25	W-1*	50+03.00	LT	51+68.00	RT			181	2	
25	W-2*	50+70.00	LT							1
					WATER WORK SUBTOTALS	168	1	181	2	1
					TOTALS CARRIED TO GENERAL SUMMARY	**168**	**1**	**181**	**2**	**1**

* STATIONS FROM THE CENTERLINE OF TRIMBLE ROAD

EROSION CONTROL SUBSUMMARY

SHEET NO.	REFERENCE NO.	LOCATION FROM	LOCATION SIDE	LOCATION TO	LOCATION SIDE	659 TOPSOIL	670 SLOPE EROSION PROTECTION	670 DITCH EROSION PROTECTION
						CY	SY	SY
B&O CONNECTOR TRAIL – TUNNEL								
	SLOPE EROSION PROTECTION							
11-12	FS-1	72+25.00	RT	74+75.00	RT	30	267	
	DITCH EROSION PROTECTION							
11-12	DP-1	72+49.87	LT	74+83.87	LT			195
11-12	DP-2*	47+37.69	RT	48+62.62	RT			104
					EROSION CONTROL SUBTOTALS	30	267	299
					TOTALS CARRIED TO GENERAL SUMMARY	**30**	**267**	**299**

* STATIONS FROM THE CENTERLINE OF TRIMBLE ROAD

CALCULATED TGW
CHECKED JDB

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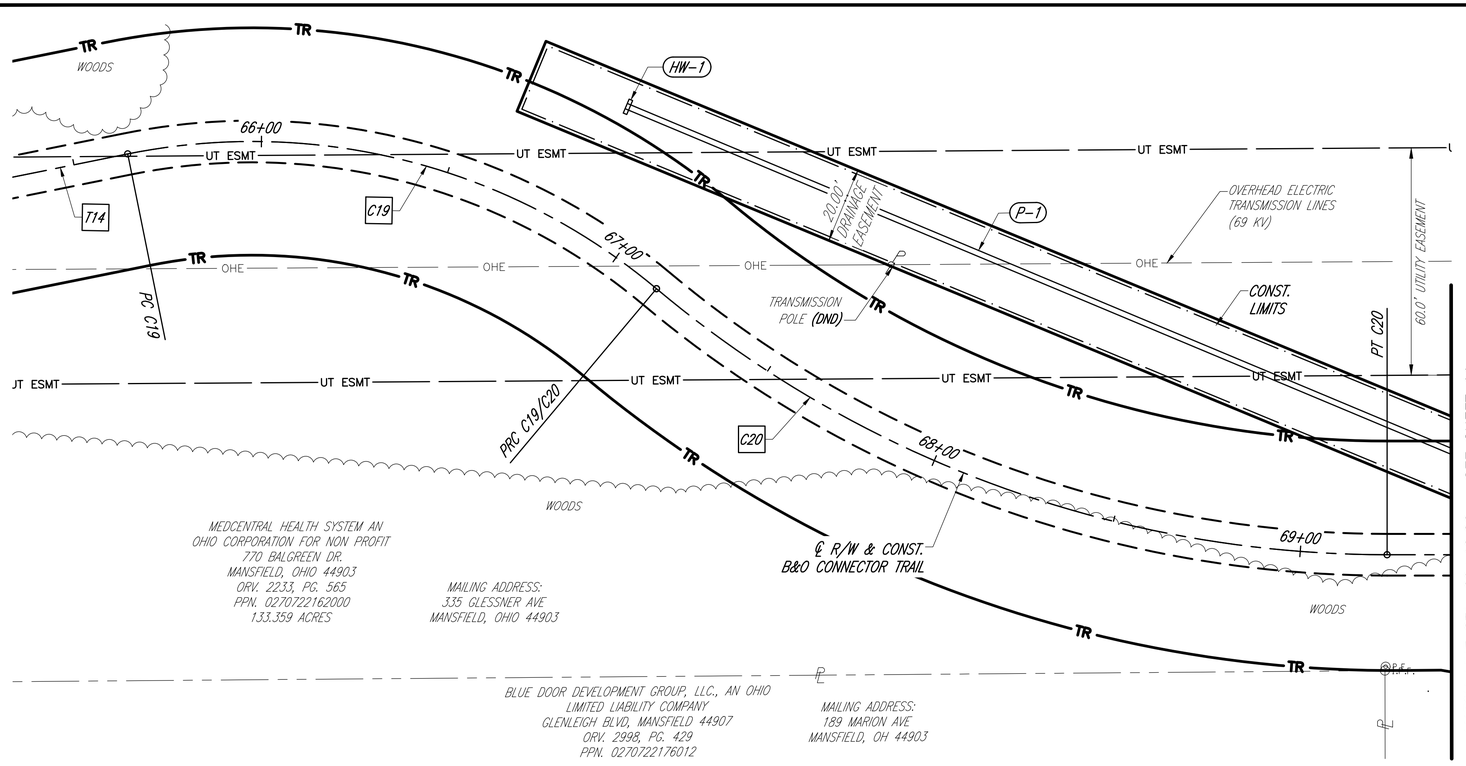
SUBSUMMARIES

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



T14 P.T. STA. = 65+28.15
P.C. STA. = 65+64.48
L = 36.34'
BRG. = N 77°36'09" E

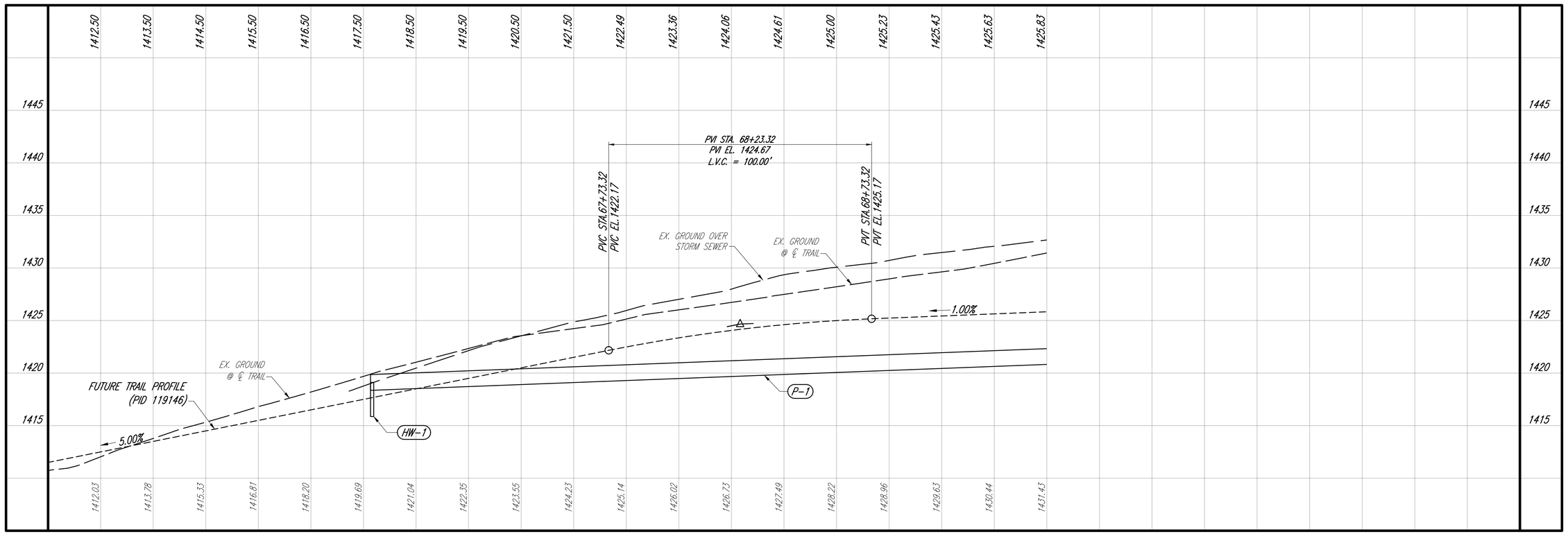
C19 P.C. STA. = 65+64.48
P.I. STA. = 66+44.41
P.R.C. STA. = 67+13.46
Δ = 51°25'20" (RT)
Dc = 34°30'56"
R = 166.00'
T = 79.93'
L = 148.98'
C = 144.03'
C.B. = S 76°41'11" E

C20 P.R.C. STA. = 67+13.46
P.I. STA. = 68+22.68
P.T. STA. = 69+22.94
Δ = 40°00'27" (LT)
Dc = 19°05'55"
R = 300.00'
T = 109.21'
L = 209.48'
C = 205.25'
C.B. = S 70°58'44" E

NOTE:
FOR ADDITIONAL STORM SEWER AND CONDUIT INFORMATION, SEE SHEET 11.

NOTATION:
TBA = TO BE ABANDONED
TBR = TO BE REMOVED
TBRL = TO BE RELOCATED
TBRLBO = TO BE RELOCATED BY OWNERS

HW-1 18" OUTLET
STA. 66+82.68, 35.23' LT.
℄ EL. 1418.36
HALF-HEIGHT HEADWALL
PER ODOT HW-2.1



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N

0 10 20 40
HORIZONTAL
SCALE IN FEET

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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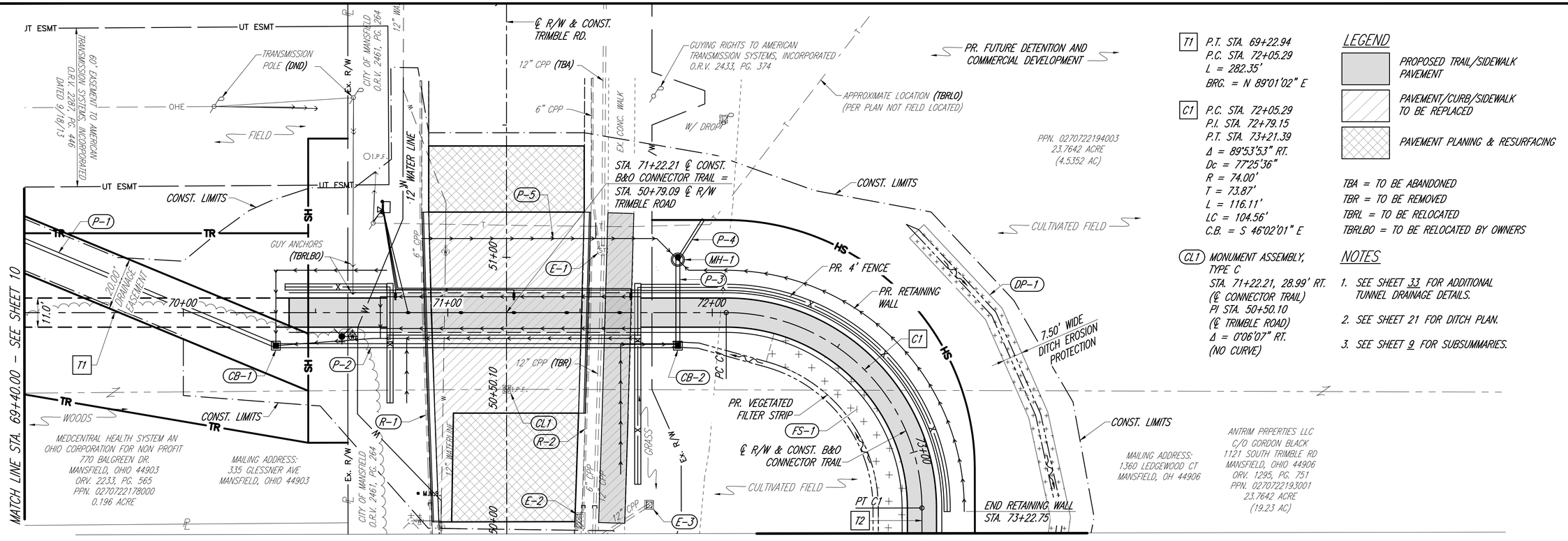
PLAN & PROFILE
STA. 65+60 TO STA. 69+40

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



T1 P.T. STA. 69+22.94
P.C. STA. 72+05.29
L = 282.35'
BRG. = N 89°01'02" E

C1 P.C. STA. 72+05.29
P.I. STA. 72+79.15
P.T. STA. 73+21.39
Δ = 89°53'53" RT.
Dc = 77°25'36"
R = 74.00'
T = 73.87'
L = 116.11'
LC = 104.56'
C.B. = S 46°02'01" E

CL1 MONUMENT ASSEMBLY, TYPE C
STA. 71+22.21, 28.99' RT. (℄ CONNECTOR TRAIL)
PI STA. 50+50.10 (℄ TRIMBLE ROAD)
Δ = 0°06'07" RT.
(NO CURVE)

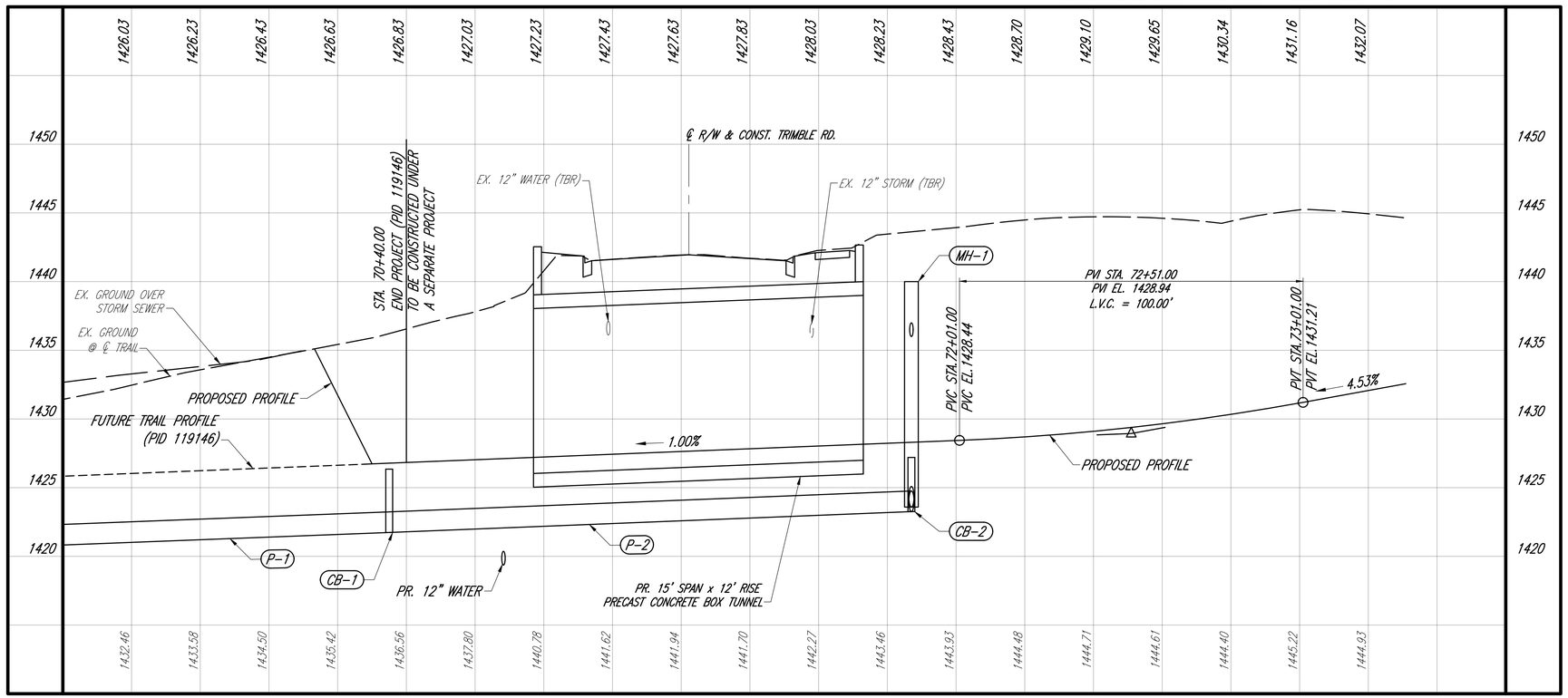
LEGEND

- PROPOSED TRAIL/SIDEWALK PAVEMENT
- PAVEMENT/CURB/SIDEWALK TO BE REPLACED
- PAVEMENT PLANING & RESURFACING

TBA = TO BE ABANDONED
TBR = TO BE REMOVED
TBRL = TO BE RELOCATED
TBRLBO = TO BE RELOCATED BY OWNERS

NOTES

1. SEE SHEET 33 FOR ADDITIONAL TUNNEL DRAINAGE DETAILS.
2. SEE SHEET 21 FOR DITCH PLAN.
3. SEE SHEET 9 FOR SUBSUMMARIES.



P-1 339' ~ 18" CONDUIT, TYPE C, 707.65, TYPE D, @ 1.00%

CB-1 PR. C.B. NO. 2-2B, AS PER PLAN
STA. 70+35.00, 12.50' RT.
1426.35 ℄ GRATE
1423.78 ℄ 6" (E & N)
1421.74 ℄ 18" (E & W)

P-2 152' ~ 18" CONDUIT, TYPE B, 707.65, TYPE D, @ 1.00%

CB-2 PR. C.B. NO. 2-2B, AS PER PLAN
STA. 71+87.00, 12.50' RT.
1427.20 ℄ GRATE
1425.69 ℄ 6" (W)
1423.26 ℄ 18" (N & W)

P-3 33' ~ 18" CONDUIT, TYPE C, 707.65, TYPE D, @ 1.00%

P-4 18' ~ 12" CONDUIT, TYPE C, 707.65, TYPE D, @ 1.00%

MH-1 PR. M.H. NO. 3, AS PER PLAN
STA. 71+87.00, 20.00' LT.
1440.90 T/RIM
1436.50 ℄ 6" (W)
1436.00 ℄ 12" (N)
1425.91 ℄ 6" (E)
1423.59 ℄ 18" (S)

P-5 100' ~ 6" UNCLASSIFIED PIPE UNDERDRAIN @ 2.00%
6' ~ 6" UNCLASSIFIED PIPE

E-1 EX. STORM MANHOLE (TBR)
STA. 71+58.57, 23.50' LT.
1442.56 TOP CASTING
1437.71 INV. 6" CPP NW (TBR)
REMOVE 10' OF EX. PIPE
1436.68 INV. 12" CPP N (TBA)
REMOVE 10' OF EX. PIPE
1436.56 INV. 12" CPP S (TBR)
REMOVE 95' OF EX. PIPE

E-2 EX. CATCH BASIN (DND)
1439.69 TOP CASTING
1435.69 INV. 6" CPP N
1435.53 INV. 12" CPP SE

E-3 EX. CATCH BASIN (DND)
1439.12 TOP CASTING
1435.52 INV. 12" CPP SW

R-1 EX. 6" CPP (TBR)
REMOVE 100' OF EX. PIPE FROM STA. 70+90.05, 28.00' LT.
TO STA. 70+93.29, 71.94' RT.
CAP END WITH 6" END PLUG.

R-2 EX. 6" CPP (TBR)
REMOVE 94' OF EX. PIPE FROM STA. 71+51.27, 72.94' RT.
TO STA. 71+54.29, 20.91' LT.
CAP END WITH 6" END PLUG.

HORIZONTAL SCALE IN FEET
0 10 20 40

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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PLAN & PROFILE STA. 69+40 TO STA. 73+31

RIC-B&O CONNECTOR TRAIL TRIMBLE ROAD TUNNEL

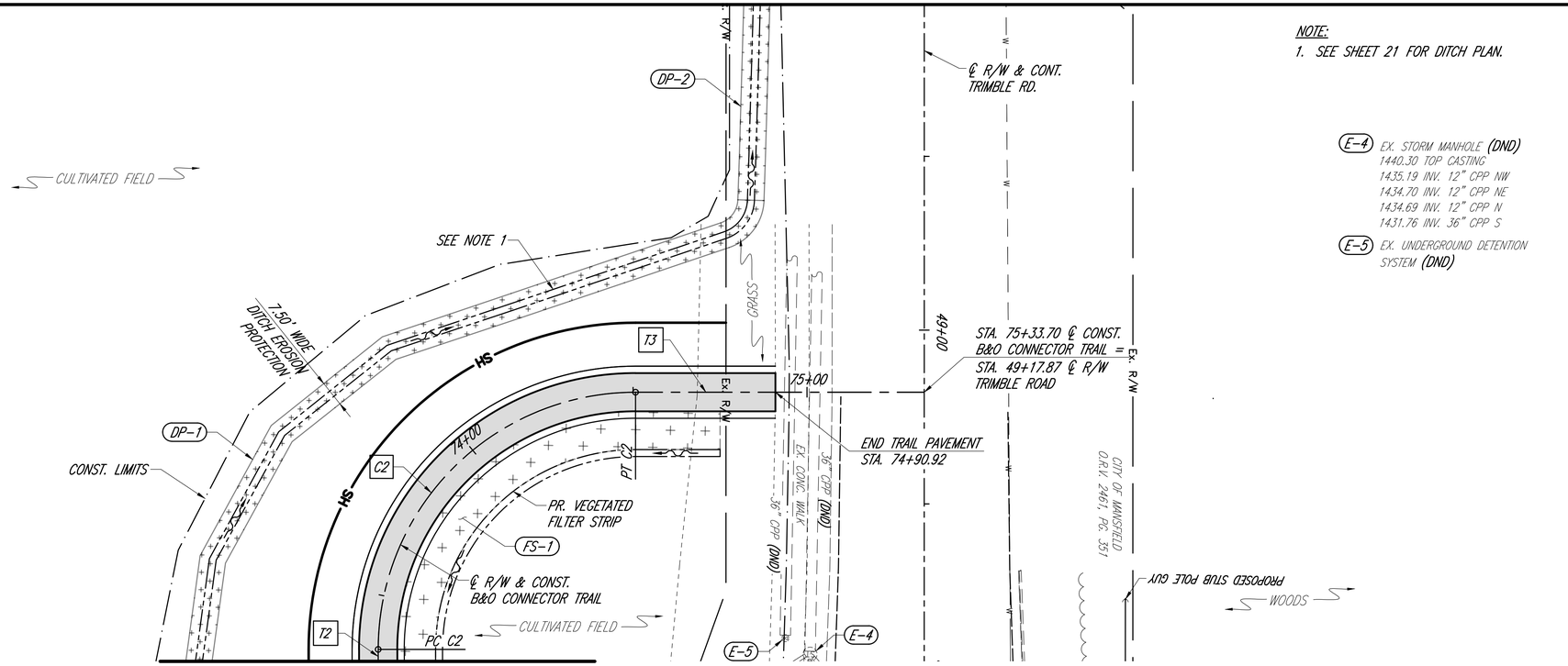
T2 P.T. STA. 73+21.39
P.C. STA. 73+34.47
L = 13.08'
BRG. = S 89°01'02" E

C2 P.C. STA. 73+34.47
P.I. STA. 74+08.47
P.T. STA. 74+50.70
Δ = 90°00'00" RT.
Dc = 77°25'36"
R = 74.00'
T = 74.00'
L = 116.24'
LC = 104.65'
C.B. = S 43°54'55" W
(DS = 20 MPH)

T3 P.T. STA. 74+50.70
P.I. STA. 75+33.70
L = 83.00'
BRG. = S 88°54'35" W

ANTRIM PRPERTIES LLC
C/O GORDON BLACK
1121 SOUTH TRIMBLE RD
MANSFIELD, OHIO 44906
ORV. 1295, PG. 751
PPN. 0270722193001
23.7642 ACRE
(19.23 AC)

MAILING ADDRESS:
1360 LEDGEWOOD CT
MANSFIELD, OH 44906

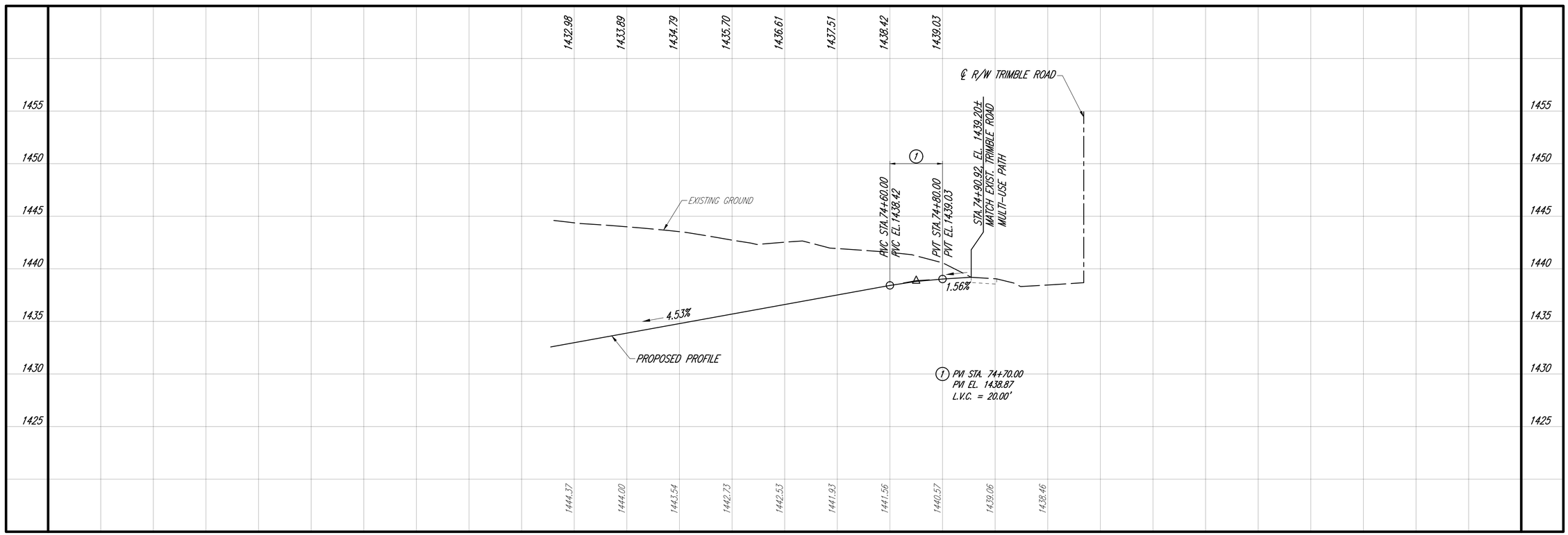


MATCH LINE STA. 73+31 – SEE SHEET 11

NOTE:
1. SEE SHEET 21 FOR DITCH PLAN.

E-4 EX. STORM MANHOLE (DND)
1440.30 TOP CASTING
1435.19 INV. 12" CPP NW
1434.70 INV. 12" CPP NE
1434.69 INV. 12" CPP N
1431.76 INV. 36" CPP S

E-5 EX. UNDERGROUND DETENTION SYSTEM (DND)



HORIZONTAL SCALE IN FEET
0 10 20 40

DESIGNED CJS
REVIEWED JDB

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PLAN & PROFILE
STA. 73+31 TO STA. 75+20

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

12
37

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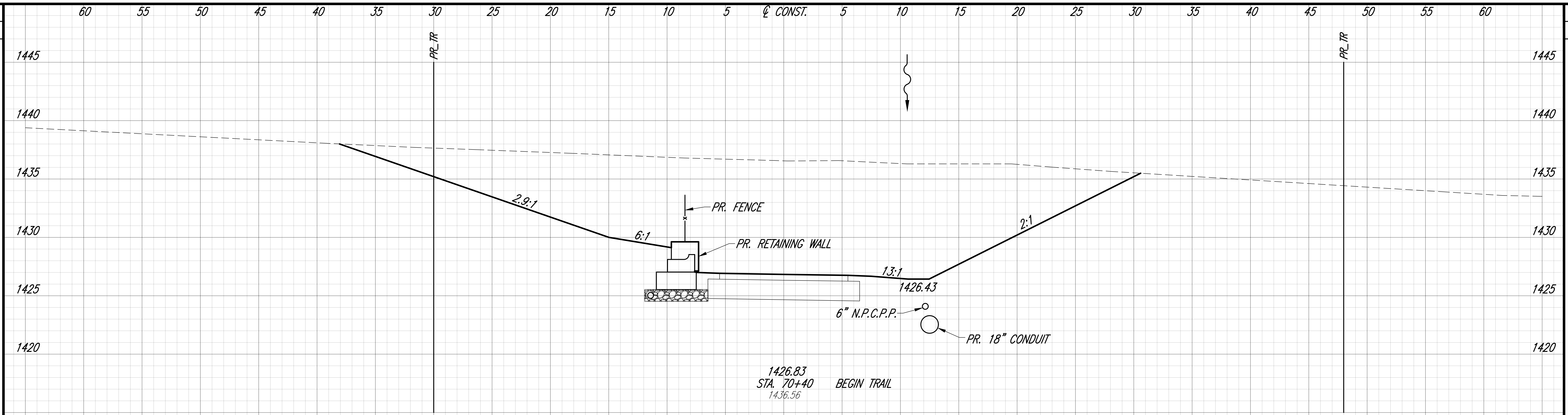

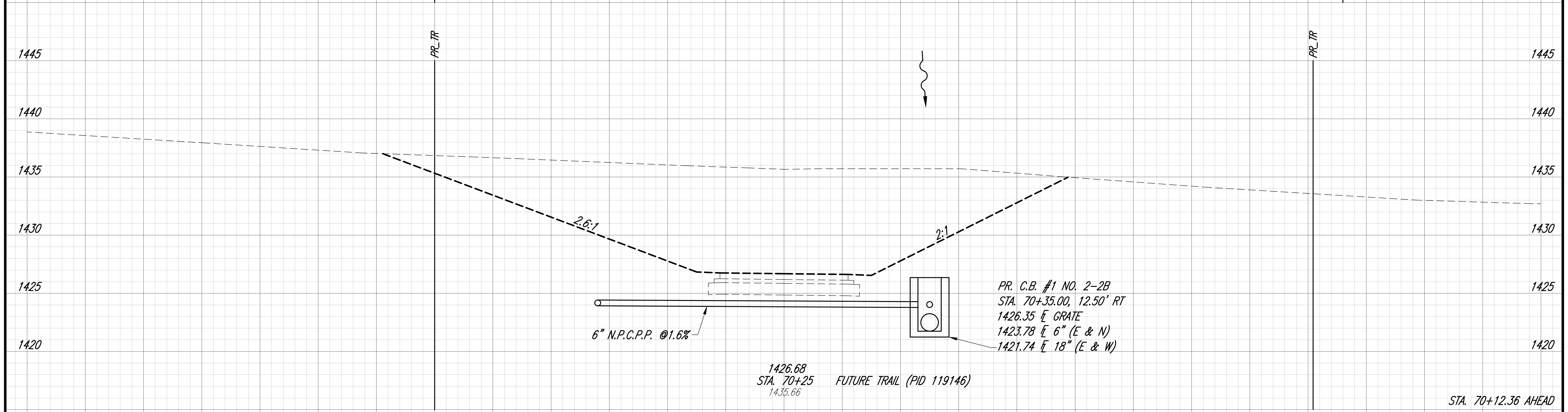

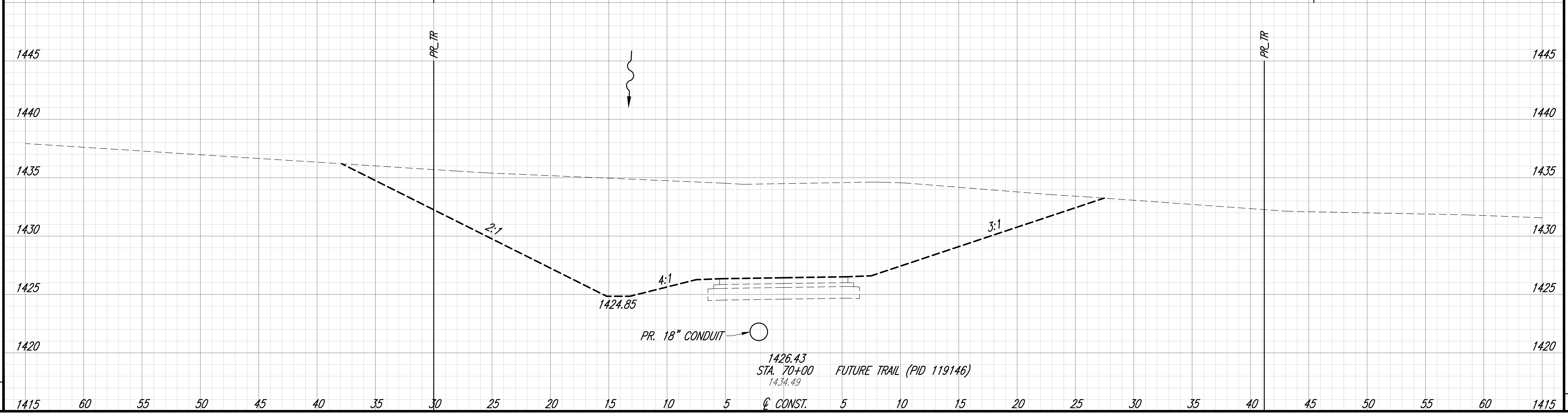

SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
		476	0		
				234	0
		364	0		
				86	0
		0	0		
SHEET TOTAL		SHEET TOTAL		320	0

DESIGNED
CJS

REVIEWED
JDB

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CROSS SECTIONS
70+00.00 TO 70+40.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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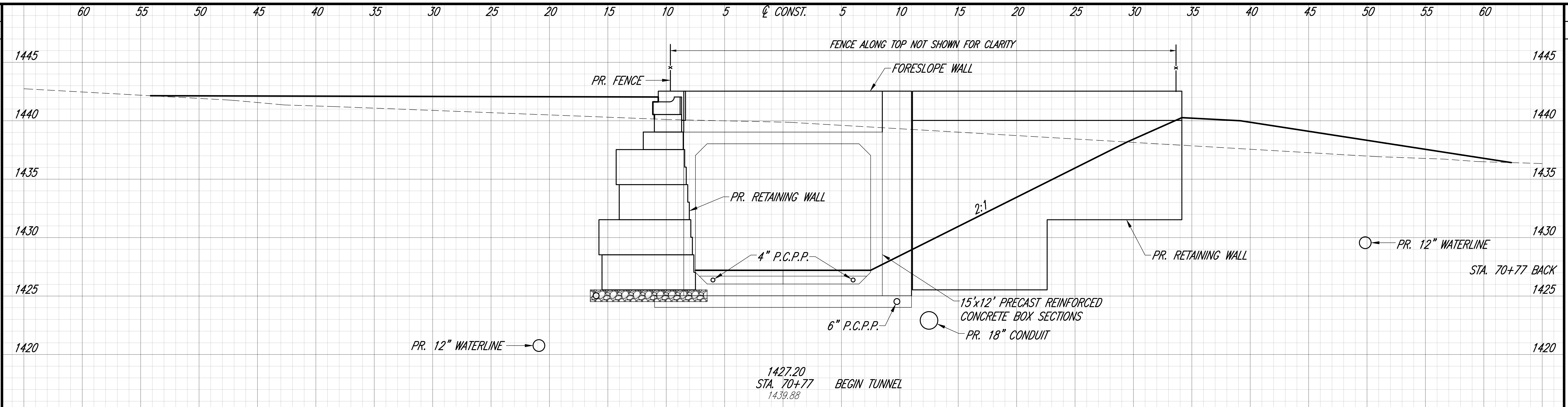
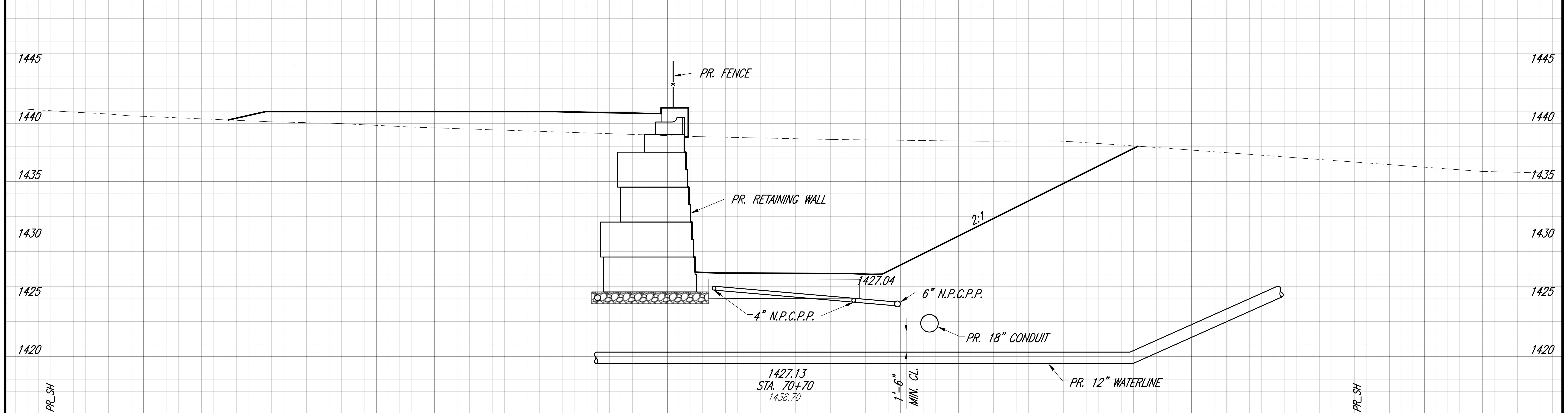
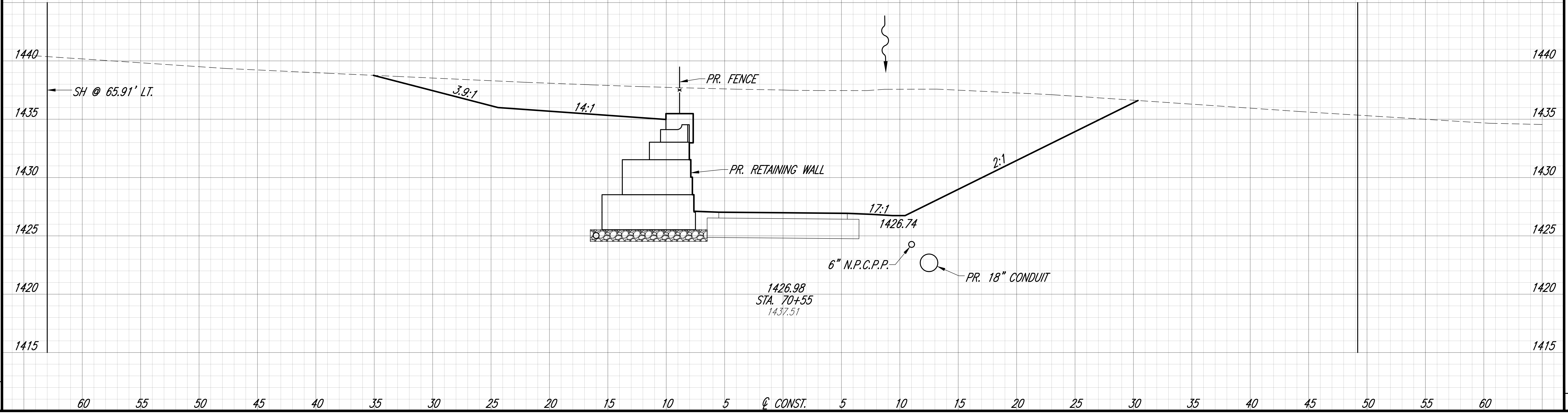
SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	



1427.20
STA. 70+77 BEGIN TUNNEL
1439.88



1427.13
STA. 70+70
1438.70



1426.98
STA. 70+55
1437.51

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
501	46		
		127	13
475	49		
		266	14
482	0		
		267	0
SHEET TOTAL		660	27

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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CROSS SECTIONS
70+55.00 TO 70+77.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

DESIGNED CJS
REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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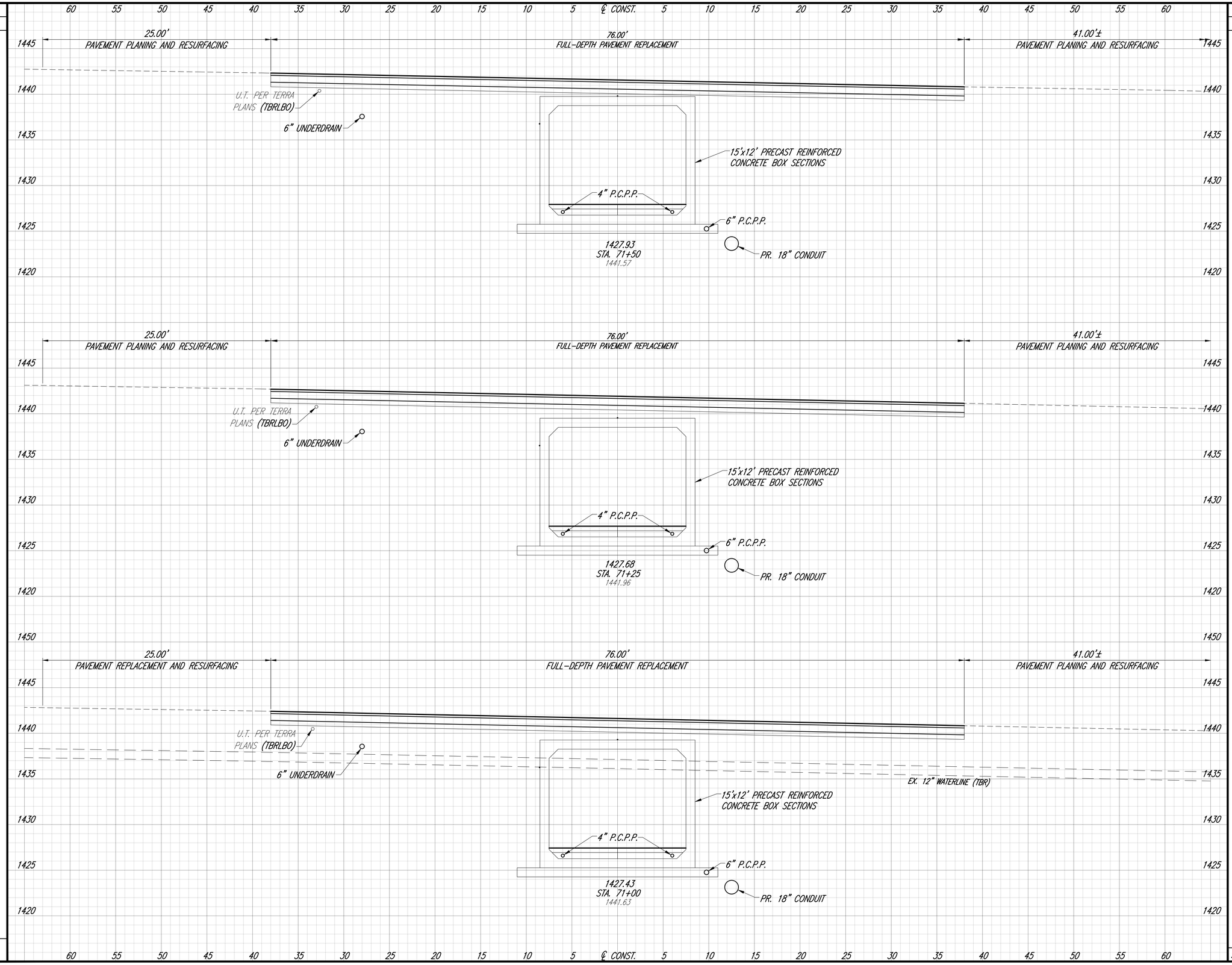

SHEET TOTAL				SHEET TOTAL			

CROSS SECTIONS
71+00.00 TO 71+50.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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SEEDING	
END WIDTH	SQ. YDS.

END AREA	
CUT	FILL
1024	0
975	0
888	0
SHEET TOTAL	

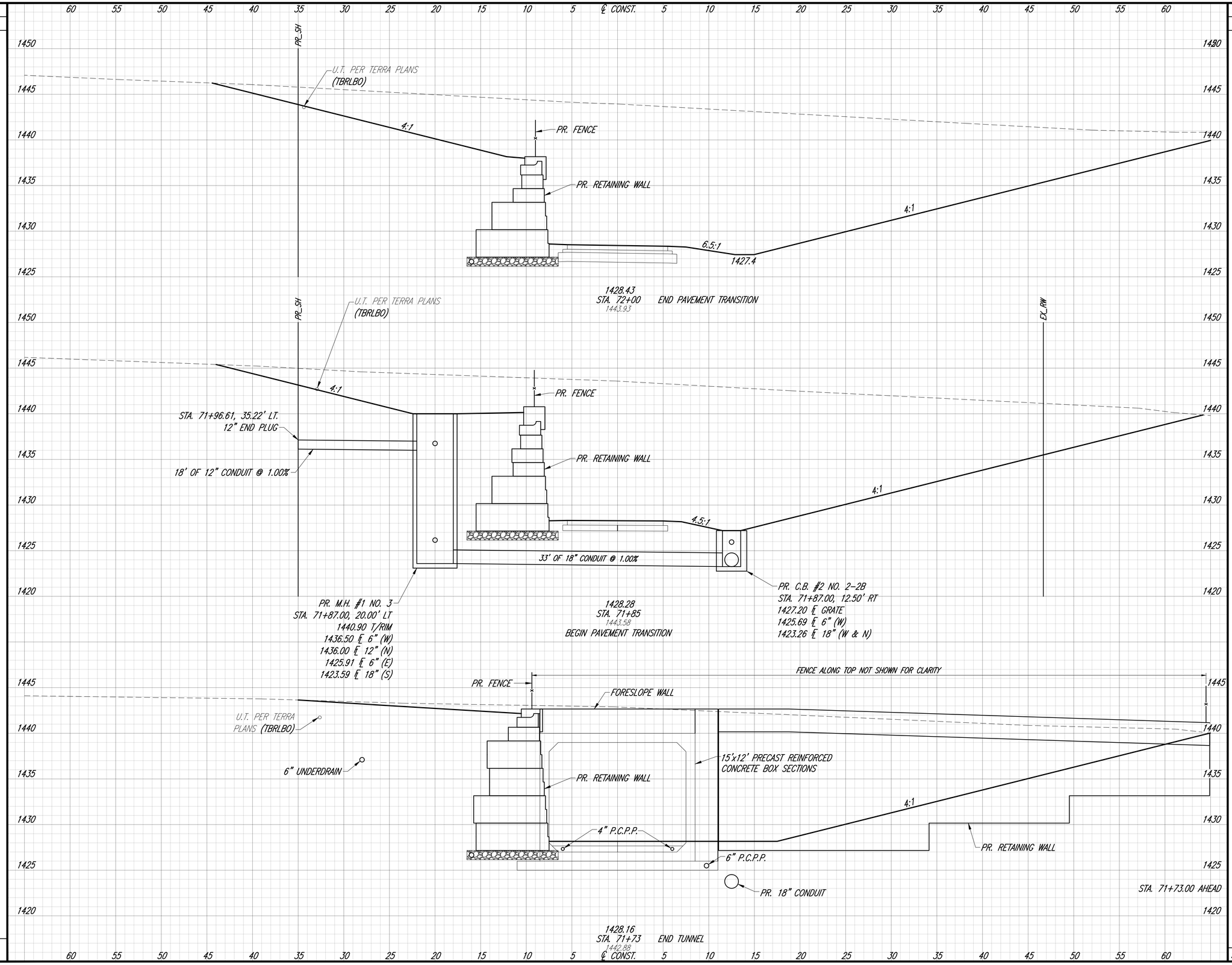
VOLUME	
CUT	FILL
556	0
414	0
970	0

DESIGNED CJS
REVIEWED JDB

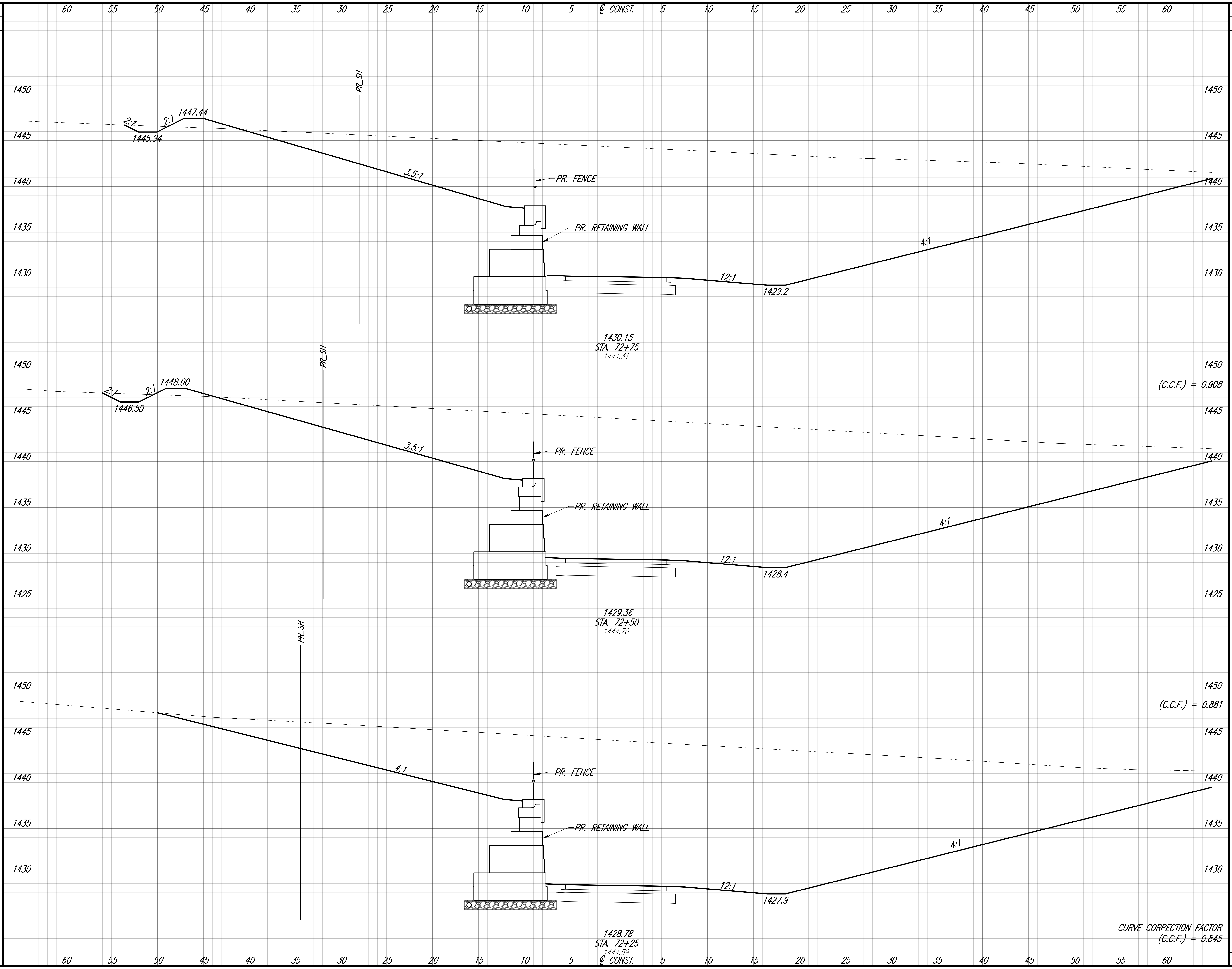
K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

CROSS SECTIONS 71+73.00 TO 72+00.00

RIC-B&O CONNECTOR TRAIL TRIMBLE ROAD TUNNEL



SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
988	6		
		865	5
1069	4		
		893	2
1118	0		
		839	0
SHEET TOTAL		2597	7

DESIGNED CJS
REVIEWED JDB

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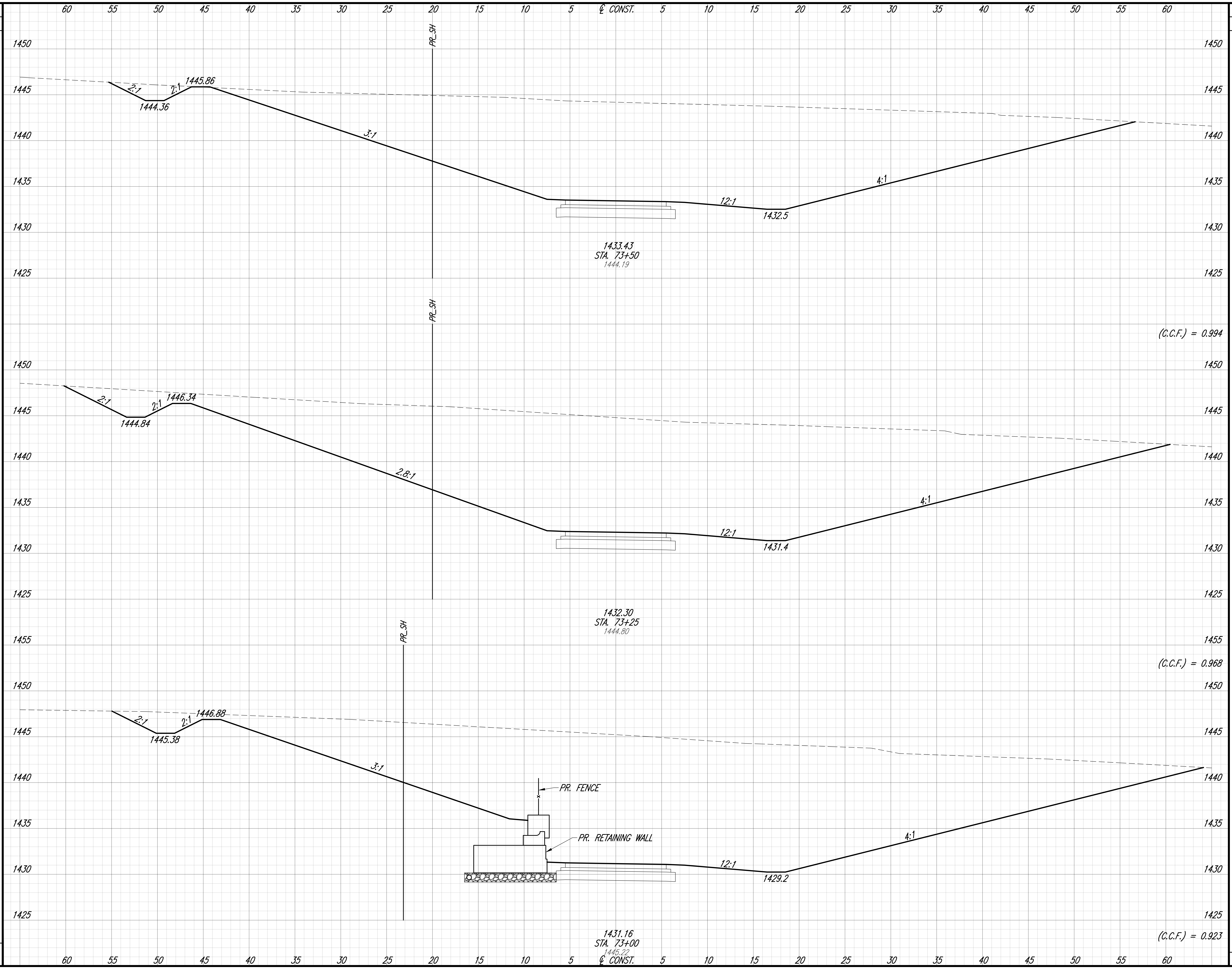
CROSS SECTIONS
72+25.00 TO 72+75.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

DRAFTED BY K.E. McCARTNEY & ASSOCIATES, Z:\HY\HY-262 Trimble Rd Multi Use Path to B&O\Plan Sheets\Tunnel\HY-262-XS_Tunnel.dwg\XS05\ Mar 01,2024 – 5:03pm

SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
731	1		
		756	1
911	0		
		853	0
992	0		
		847	3
SHEET TOTAL		2456	4

DESIGNED CJS
REVIEWED JDB

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CROSS SECTIONS
73+00.00 TO 73+50.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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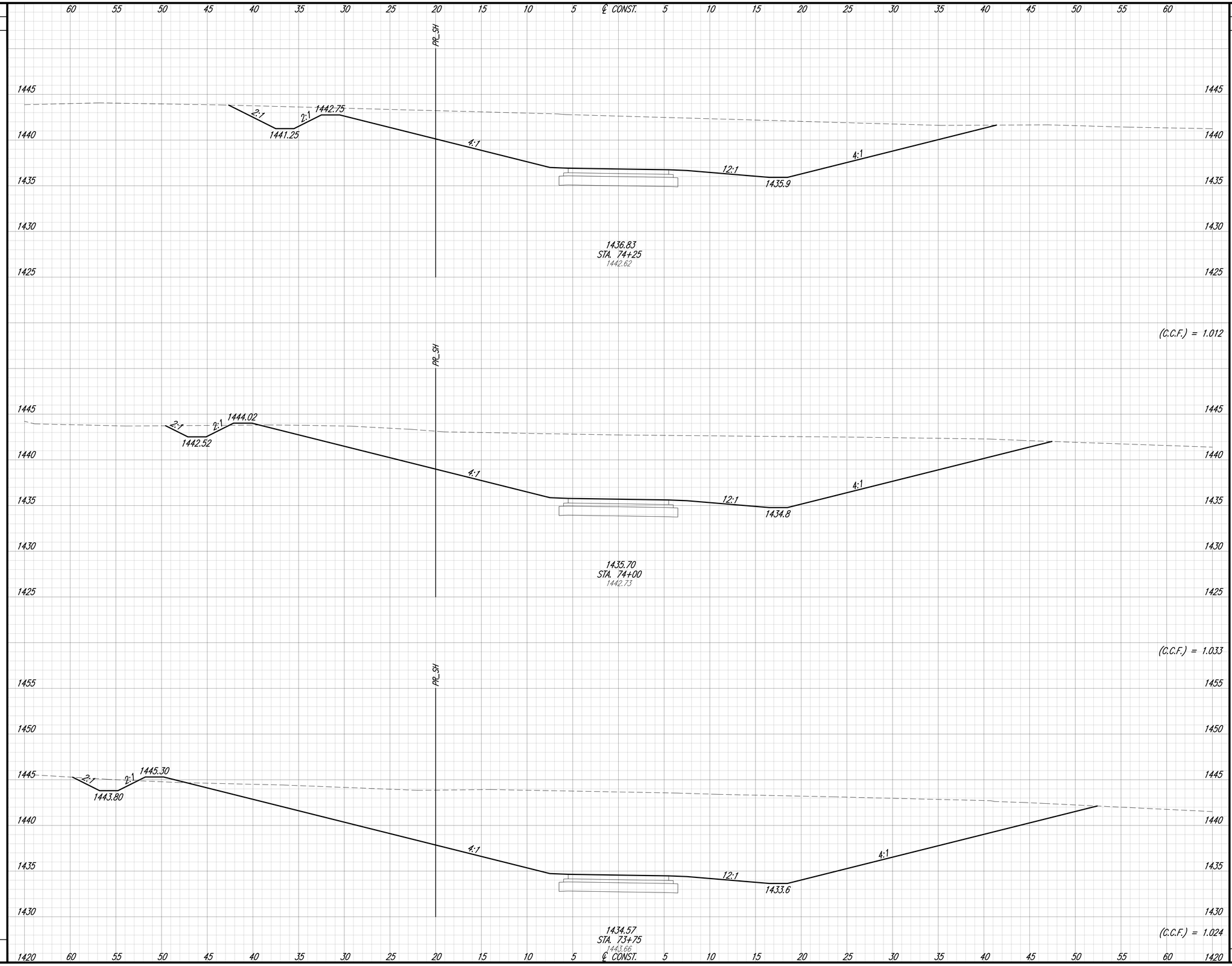
SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL
340	0		
		368	1
445	1		
		507	2
613	2		
		638	2
SHEET TOTAL		1513	5

DESIGNED CJS
REVIEWED JDB

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CROSS SECTIONS
73+75.00 TO 74+25.00

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

19
37

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SHEET TOTAL

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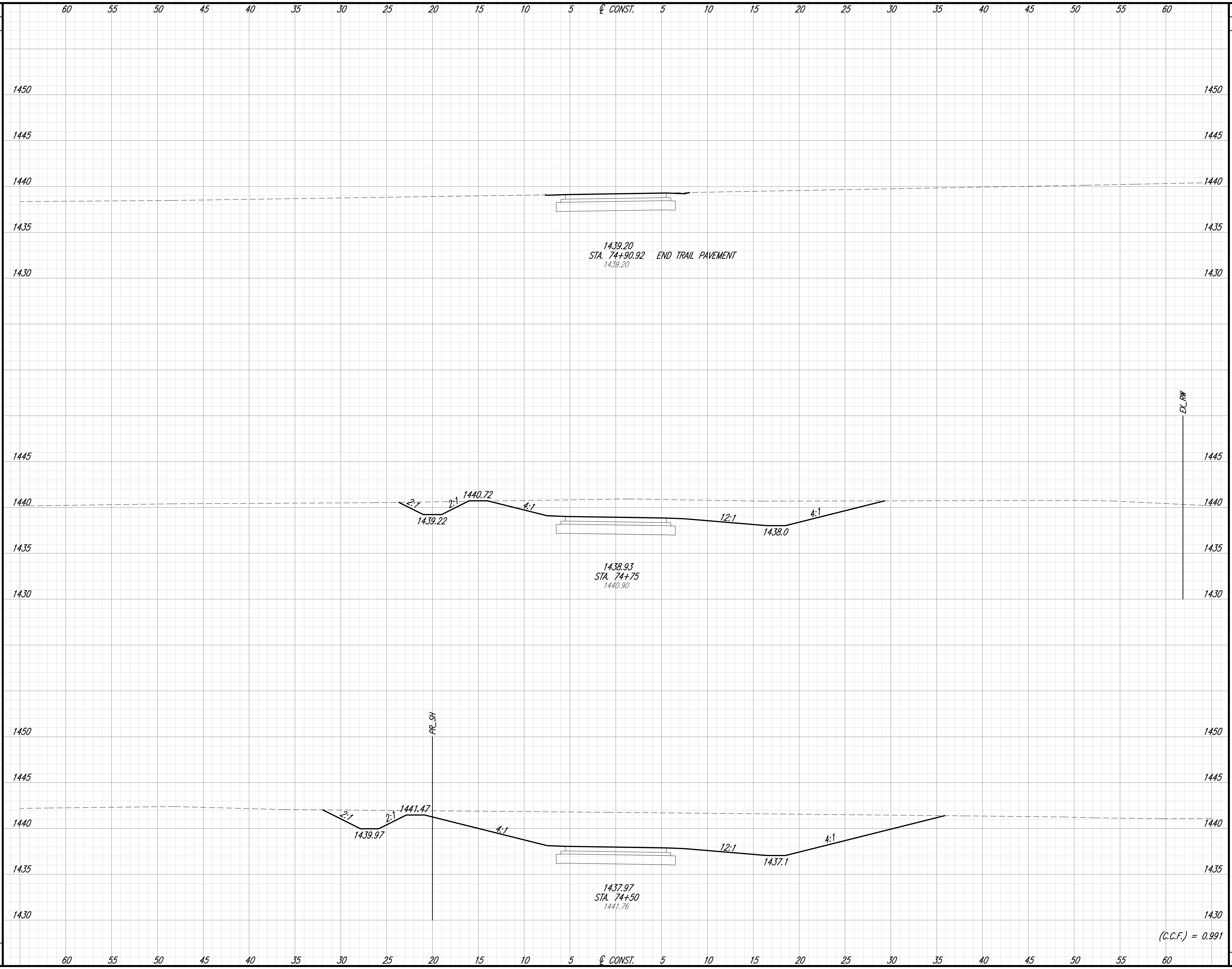
SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
25	0		
		39	1
107	1		
		146	1
208	0		
		252	0
SHEET TOTAL		437	2

DESIGNED CJS

REVIEWED JDB

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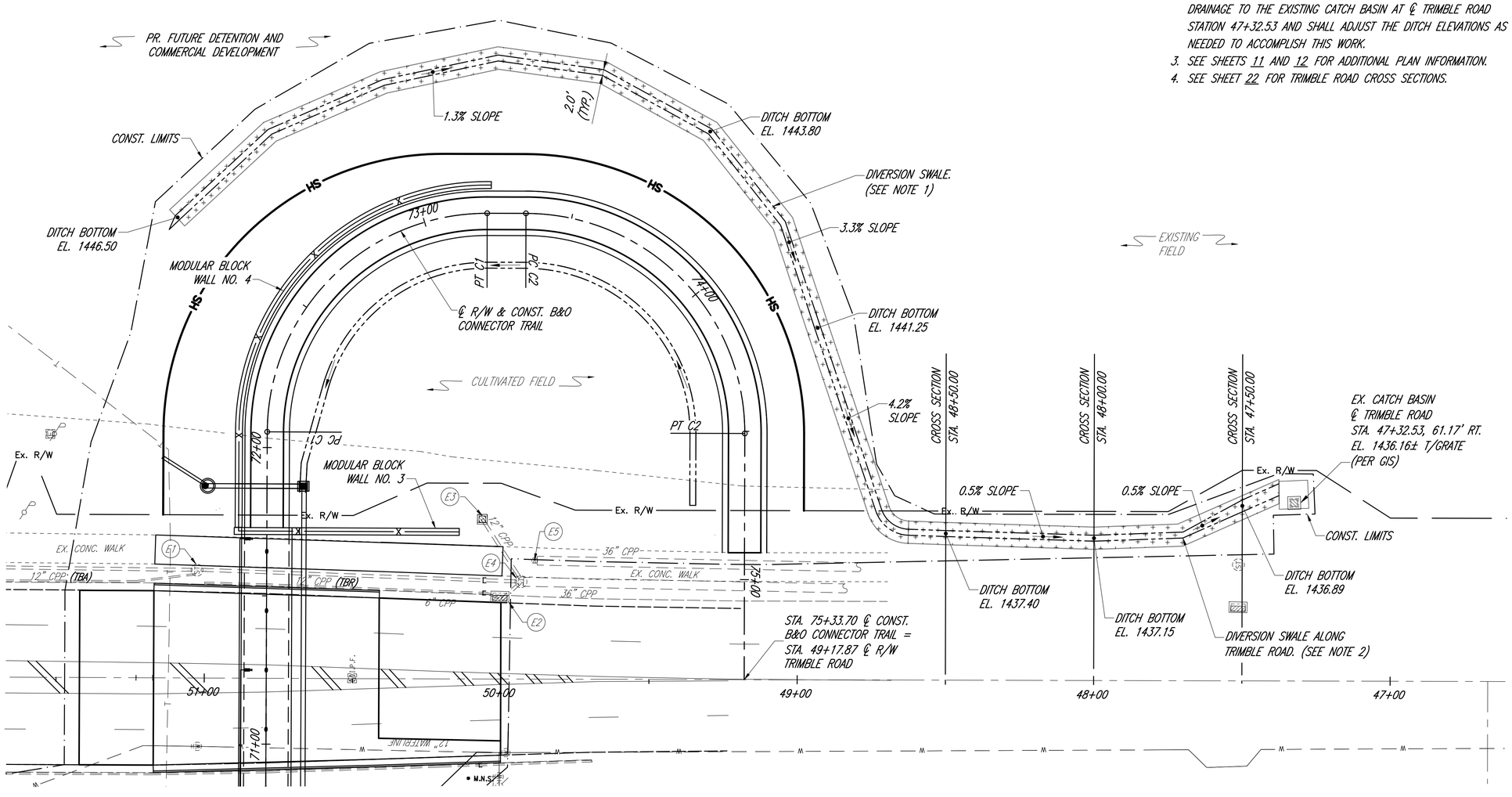
CROSS SECTIONS
74+50.00 TO 74+90.92

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



LEGEND

DITCH EROSION PROTECTION

NOTES:

1. SEE CROSS SECTION SHEETS 17 THROUGH 20 FOR ADDITIONAL DIVERSION DITCH GRADING.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE TO THE EXISTING CATCH BASIN AT ℄ TRIMBLE ROAD STATION 47+32.53 AND SHALL ADJUST THE DITCH ELEVATIONS AS NEEDED TO ACCOMPLISH THIS WORK.
3. SEE SHEETS 11 AND 12 FOR ADDITIONAL PLAN INFORMATION.
4. SEE SHEET 22 FOR TRIMBLE ROAD CROSS SECTIONS.

0 10 20 40 HORIZONTAL SCALE IN FEET

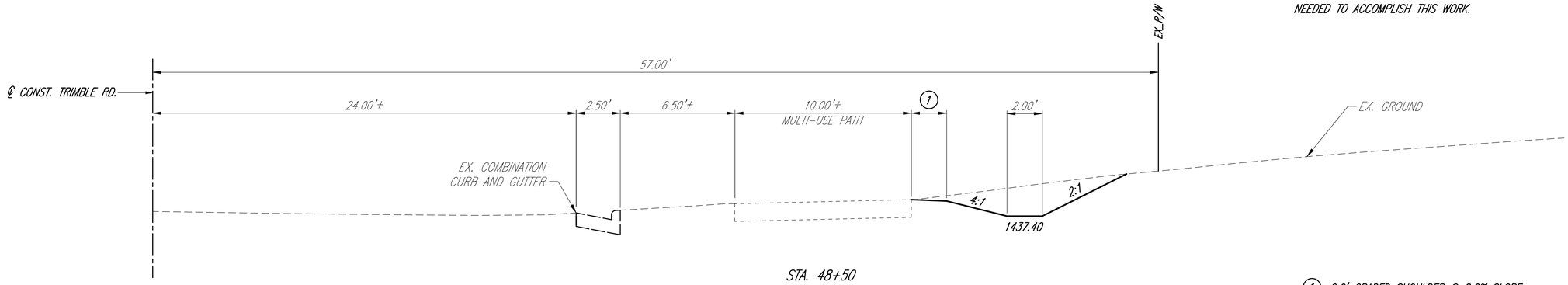
DESIGNED CJS | REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES ENGINEERS • PLANNERS • SURVEYORS

DITCH PLAN - 1

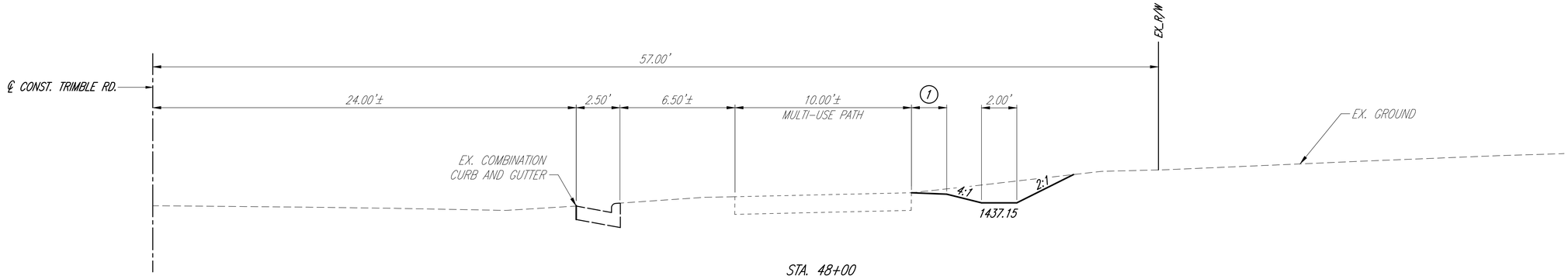
RIC-B&O CONNECTOR TRAIL TRIMBLE ROAD TUNNEL

NOTES:
1. SEE SHEET 21 FOR CROSS SECTION LOCATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE TO THE EXISTING CATCH BASIN AT ℄ TRIMBLE ROAD STATION 47+32.53 AND SHALL ADJUST THE DITCH ELEVATIONS AS NEEDED TO ACCOMPLISH THIS WORK.

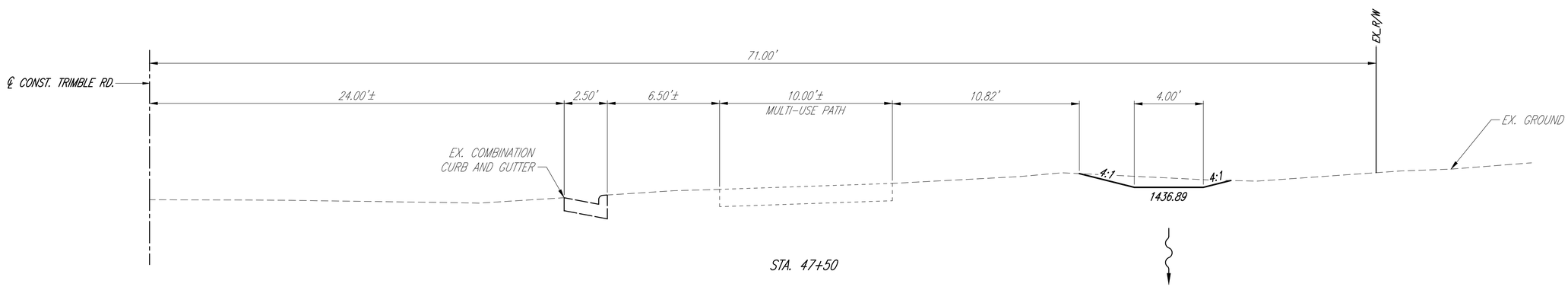


STA. 48+50

1 2.0' GRADED SHOULDER @ 8.0% SLOPE.



STA. 48+00



STA. 47+50

DESIGNED CJS
REVIEWED JDB

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DITCH PLAN - 2

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

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CONSTRUCTION MANAGEMENT
THE CONTRACTOR IS RESPONSIBLE FOR SELECTION AND CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES AND SAFETY PRECAUTIONS. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE INDUSTRIAL COMMISSION OF OHIO RULES CONCERNING THE SUPPORT OF TRENCHES AND EXCAVATION.

DEWATERING
THE CONTRACTOR SHALL, AT ALL TIMES DURING CONSTRUCTION, PROVIDE PROPER AND SATISFACTORY MEANS AND DEVICES FOR THE REMOVAL OF ALL WATER ENTERING THE EXCAVATIONS AND SHALL REMOVE ALL SUCH WATER AS FAST AS IT MAY COLLECT IN SUCH A MANNER AS SHALL NOT INTERFERE WITH THE PROSECUTION OF THE WORK OR THE PROPER PLACING OF MASONRY OR OTHER WORK.

WORK ZONE
THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING HIS WORK AREA CLEAN AND SAFE. THE CONTRACTOR SHALL CLEAN-UP ANY DEBRIS AT THE END OF EACH DAY. WORK ZONE SHALL REMAIN PASSABLE AT ALL TIMES BY BOTH VEHICULAR AND FOOT TRAFFIC AND REMAIN FREE OF DEBRIS AND OBSTRUCTIONS. SIDEWALKS WHICH ARE CLOSED SHALL BE SIGNED ACCORDINGLY.

ITEM 638 - WATER MAINS AND HYDRANTS, AS PER PLAN

1. WATER MAIN SHALL BE ODOT 748.01, CEMENT LINED, DUCTILE IRON, CLASS 53. FURNISH WATER MAINS CONFORMING TO ANSI/AWWA C151/A21.51 AND TO ANSI/AWWA C150/A21.50.

2. FITTINGS SHALL BE DUCTILE IRON, MECHANICAL RESTRAINED JOINTS, CONFORMING TO ANSI/AWWA C111/A21.11 AND SHALL HAVE A MINIMUM PRESSURE RATING OF 350 PSI. PIPE JOINTS WITHIN TWO PIPE LENGTHS OF A FITTING SHALL BE BOLTLESS RESTRAINED JOINT TYPE (FIELD LOK 350 GASKETS OR APPROVED EQUAL).

3. ALL BURIED JOINTS ON BENDS, TEES, CROSSES, VALVES, SPECIAL FITTINGS, AND PIPE BETWEEN OFFSETS OR BENDS, SHALL BE RESTRAINED MECHANICAL JOINTS. JOINT RESTRAINT SHALL BE "EBBA IRON-MEGA LUG" OR ENGINEER APPROVED EQUAL. NUTS AND BOLTS FOR ALL MECHANICAL JOINT ASSEMBLIES SHALL BE STAINLESS STEEL, TYPE 316. PROVIDE CONCRETE THRUST BLOCKING, IN ADDITION TO MECHANICAL JOINTS, AT ALL JOINTS SPECIFIED ABOVE UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

4. CUT-IN SLEEVES SHALL BE DUCTILE IRON, MECHANICAL RESTRAINED JOINTS, CONFORMING TO ANSI/AWWA C111/A21.11

5. HYDRANT SHALL BE AWWA C502, MODEL A423 SUPER CENTURION AS MANUFACTURED BY, "MUELLER COMPANY", NATIONAL STANDARD THREAD, CITY OF MANSFIELD STANDARD, COUNTERCLOCKWISE OPENING, WITH THE BODY PAINTED YELLOW.

6. ALL NEW MAIN, FITTINGS, VALVES, AND SLEEVES SHALL BE POLYETHYLENE WRAPPED PER ODOT 748.07, ANSI/AWWA C105/A21.5 (MINIMUM THICKNESS OF 8 MILS).

7. TRENCHES AND INSTALLATION. TRENCHES FOR WATER MAINS SHALL BE EXCAVATED AND BACKFILLED IN CONFORMANCE WITH ODOT 638. DUCTILE IRON PIPE SHALL BE TOTALLY ENCASED IN AGGREGATE. A TRACING TAPE MARKED "BURIED WATERLINE BELOW" SHALL BE PLACED 1 FOOT BELOW GROUND SURFACE OVER THE FULL LENGTH OF ALL DUCTILE IRON PIPE WATER MAIN.

8. THE MINIMUM DEPTH OF WATER MAIN SHALL BE 4.5 FEET MEASURED FROM THE TOP OF THE PIPE TO THE FINISHED GRADE OR PAVEMENT. THE DEPTH MAY BE GREATER WHERE IT IS NECESSARY TO MODIFY THE DEPTH TO CLEAR OTHER STRUCTURES OR TIE INTO EXISTING WATER MAINS. MAXIMUM JOINT DEFLECTION SHALL BE NO MORE THAN ½ THE MANUFACTURERS ALLOWABLE DEFLECTION.

9. AN 18-INCH MINIMUM VERTICAL SEPARATION (MEASURED OUT-TO-OUT) SHALL BE MAINTAINED BETWEEN THE WATER MAINS AND SANITARY SEWERS AT ALL CROSSINGS. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET (MEASURED OUT-TO-OUT) MUST BE MAINTAINED BETWEEN THE WATER MAIN AND SANITARY SEWER IN PARALLEL INSTALLATION.

10. HYDROSTATIC TESTING SHALL BE PER ODOT ITEM 638.09, AWWA C600. PRESSURE TEST THE WATER MAINS ONLY AFTER THE TRENCH IS BACKFILLED. THE TEST PRESSURE SHALL BE GREATER THAN 150 PSI BUT SHALL NOT EXCEED THE PRESSURE RATING OF THE PIPE OR FITTING. THE CONTRACTOR SHALL SUPPLY ALL TEST EQUIPMENT AND LABOR. THE CITY OF MANSFIELD WILL SUPPLY THE WATER. ANY DAMAGES CAUSED TO THE EXISTING WATER SYSTEM RESULTING FROM THE PRESSURE TESTING WORK OF THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIX.

ITEM 638 - WATER MAINS AND HYDRANTS, AS PER PLAN (CONTINUED)

11. DISINFECT THE PROPOSED WATER MAIN PER AWWA C651.

12. EXISTING WATER VALVES SHALL ONLY BE OPERATED BY CITY OF MANSFIELD PERSONNEL.

THE UNIT PRICE PER LINEAL FOOT OF DUCTILE IRON WATER MAIN, CLASS 53, IRRESPECTIVE OF DEPTH, SHALL INCLUDE BUT NOT LIMITED TO THE FURNISHING AND LAYING OF PIPE, FITTINGS, TEES, CROSSES, REDUCERS, BENDS AND ANY OTHER FITTINGS WHERE SHOWN ON THE DRAWINGS, BEDDING, COMPACTED BACKFILL, SPECIAL BACKFILL, SURFACE RESTORATION (INCLUDING PAVEMENT MARKINGS), JOINTING MATERIAL, BLOCKING, RESTRAINTS, COUPLINGS, POLYETHYLENE ENCASEMENT, SHEETING, SHORING, EARTHWORK, INSPECTION, LINE ACCEPTANCE TESTING (BACTERIA AND PRESSURE TEST), TEST PLUGS AND CAPS AND BLOWOFF PIPING, DISPOSAL OF MATERIAL, AND ANY DISTURBED EXISTING UTILITIES, UNLESS OTHERWISE ITEMIZED.

OHIO EPA REQUIREMENTS
IN REFERENCE TO THE 2012 EDITION OF THE RECOMMENDED STANDARDS FOR WATER WORKS (COMMONLY REFERRED TO AS THE "TEN STATE STANDARDS") THE FOLLOWING SHALL APPLY:

1. REF. 8.1 - EXCEPT AS OTHERWISE NOTED, ALL MATERIALS UTILIZED ON THIS PROJECT SHALL COMPLY WITH THE LATEST REVISION OF THE APPLICABLE AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS. PARTICULAR EMPHASIS ON THIS PROJECT SHALL INCLUDE BUT NOT BE LIMITED TO:

ITEM	STANDARD
WATER MAIN	AWWA C-150, C-151
DISINFECTION OF WATER MAIN	AWWA C-651
FIRE HYDRANTS	AWWA C-502
FITTINGS	AWWA C-111 OR C-153
INSTALLATION AND PRESSURE TESTING	AWWA C-600

2. REF. 8.2.1 - THE NORMAL WORKING PRESSURE OF ALL WATER MAINS WILL BE NO LESS THAN 35 P.S.I.

3. REF. 8.7.3 - ALL WATER MAINS (INCLUDING SERVICE CONNECTIONS) SHALL BE INSTALLED WITH A MINIMUM OF 4.5 FEET OF GROUND COVER, AS MEASURED FROM THE TOP OF THE PIPE TO FINISHED GRADE. THIS ALSO APPLIES TO SERVICE CONNECTION "GOOSENECKS".

4. REF. 8.7.6 - ALL NEWLY INSTALLED WATER MAINS SHALL BE TESTED IN ACCORDANCE WITH AWWA C-600 FOR DUCTILE IRON PIPE. TESTING SHALL BE CARRIED OUT BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

5. REF. 8.7.7 - ALL NEWLY INSTALLED WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C-651. DISINFECTION SHALL BE CARRIED OUT BY THE CONTRACTOR.

6. REF. 8.8.2 - A TEN (10) FOOT HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE TO OUTSIDE EDGE SHALL BE MAINTAINED BETWEEN ANY EXISTING OR PROPOSED WATER MAINS AND SANITARY SEWERS AND STORM SEWERS.

7. REF. 8.8.3. - WATER MAINS CROSSING EITHER ABOVE OR BELOW A SEWER SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES (MEASURED FROM OUTSIDE EDGE TO OUTSIDE EDGE) AT CROSSINGS, ONE FULL LENGTH OF WATER MAIN SHALL BE LOCATED SUCH THAT BOTH JOINTS ARE LOCATED AS FAR FROM THE SEWER AS POSSIBLE. STRUCTURAL SUPPORTS FOR THE WATER MAIN AND/OR SEWER PIPE WILL BE REQUIRED TO MAKE THE COMPLETE INSTALLATION FIRM AND WELL SUPPORTED.

8. REF. 8.6.6 - NO WATER MAIN OR APPURTENANCES TO THE POTABLE WATER SYSTEM SHALL BE ALLOWED TO DIRECTLY ENTER OR CONTACT A SANITARY OR STORM SEWER OR MANHOLE. A SUITABLE AIR-GAP SHALL BE PROVIDED WHERE ITEMS SUCH AS TANK DRAINS, ETC. MUST BE INSTALLED.

9. REF. 8.11.2 - INDIVIDUAL BOOSTER PUMPS WILL NOT BE ALLOWED FOR ANY INDIVIDUAL RESIDENTIAL SERVICE FROM THE PUBLIC WATER SYSTEM.

BEDDING AND BACKFILL
ALL BACKFILL SHALL BE COMPACTED AS PER ODOT 611.06. PLACES WHERE SETTLEMENT OCCURS AFTER THE SURFACE HAS BEEN RESTORED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE. THE PRICE OF ALL MATERIAL, LABOR, AND EQUIPMENT SHALL BE INCLUDED IN THE PERTINENT ITEMS. NO SEPARATE PAYMENT WILL BE MADE.

SHEETING AND SHORING
ALL SHEETING AND SHORING REQUIRED TO SUPPORT ALL TRENCHES AND EXCAVATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION PUBLICATION 4121:1-2 AND SHALL BE PROVIDED BY THE CONTRACTOR AND PAID FOR UNDER THE VARIOUS ITEMS BID FOR WATER MAIN. SEPARATE PAYMENT WILL NOT BE MADE.

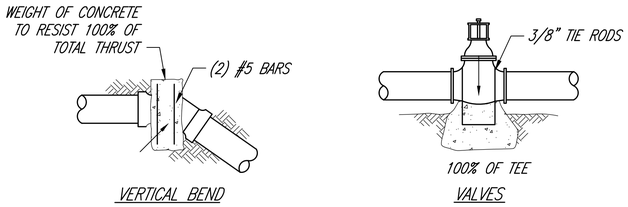
WORK RESTRICTIONS
THE CONTRACTOR SHALL COORDINATE WATER MAIN CONSTRUCTION WITH THE CITY OF MANSFIELD. ISOLATION OF THE WATER MAIN SHALL ONLY OCCUR ON SUNDAYS, WEEKDAYS BETWEEN THE HOURS OF 10 PM AND 5 AM, OR AS APPROVED BY THE ENGINEER.

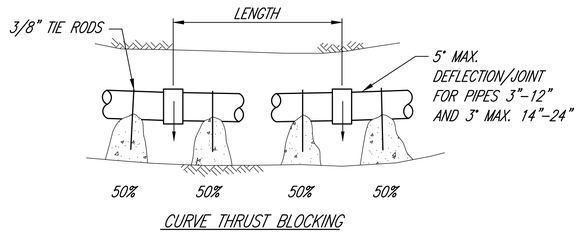
DESIGNED C.J.S | REVIEWED M.K.W

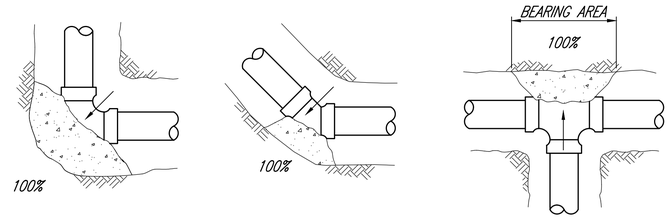
K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

WATERLINE NOTES

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL







PLANS

NOTE:
FIGURE (100%) AT THRUST BLOCK INDICATES PERCENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.

THRUST DIRECTION ⟶

THRUST PER PSI OF WATER PRESSURE AT VARIOUS FITTINGS				
SIZE OF PIPE (D)	DEGREE OF BEND			
	DEAD END OR TEE	90°	45°	22.5°
4"	19	27	15	7
6"	39	55	30	15
8"	67	94	51	26
10"	109	154	84	43
12"	155	218	119	61
14"	210	298	161	82
16"	275	383	209	106
18"	351	494	269	137
20"	434	611	333	169
24"	623	878	478	244

EXAMPLE:
8", 90° ELBOW, PRESSURE = 200 PSF
FROM TABLE: THRUST = 94X200 = 18,800lb.
ASSUME BEARING STRENGTH OF SOIL = 2,000PSF

$\frac{18,800}{2,000}$ = 9.4 SQ.FT. = BEARING AREA REQUIRED FOR THRUST BLOCK

CONCRETE THRUST BLOCKS FOR BENDS

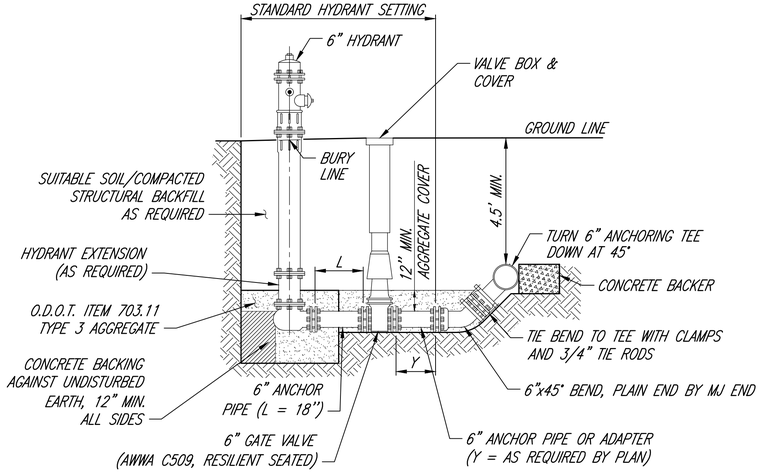
NOT TO SCALE

SIDE THRUST PER 100 PSI PER DEGREE OF DEFLECTION			
SIZE OF PIPE (D)	SIDE THRUST–lb.	SIZE OF PIPE (D)	SIDE THRUST–lb.
4"	35	14"	377
6"	72	16"	486
8"	122	18"	665
10"	197	20"	790
12"	278	24"	1150

MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST

NOTES:

1. IN USING THE TABLES, USE THE MAXIMUM INTERNAL PRESSURE ANTICIPATED (i.e. HYDROSTATIC TEST PRESSURE POSSIBLE SURGE PRESSURE DUE TO PUMP SHUT–OFF, ETC.)
2. SEE SOILS REPORT FOR BEARING STRENGTH OF SOIL IN THE ABSENCE OF A SOILS REPORT AN AVERAGE SOIL (SPADABLE MEDIUM CLAY) CAN BE ASSUMED TO HAVE A BEARING STRENGTH OF 2,000 PSF.
3. WITH SOLVENT WELDED JOINTS.
4. USE LIGHTWEIGHT CONCRETE FOR HILL THRUST BLOCK.
5. CONCRETE FOR THRUST BLOCKS TO BE 2,000 PSI.

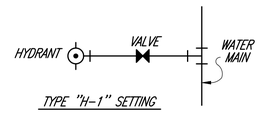


NOTES:

THE COST OF ALL WORK SHOWN AND DESCRIBED HEREIN, INCLUDING FURNISHING & INSTALLING THE ADDITIONAL BEND AND FITTINGS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR WATER MAINS, NO SEPARATE PAYMENT WILL BE MADE.

TYPICAL BLOW-OFF HYDRANT SETTING DETAIL

NOT TO SCALE



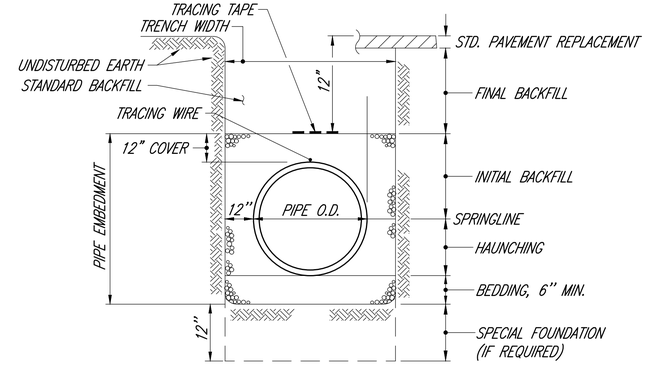
TYPE "H–1" SETTING

PLAN VIEW

FIRE HYDRANT & VALVE ASSEMBLY

NOT TO SCALE

* ALL COMPONENTS SHOWN ABOVE, FROM AND INCLUDING THE MAINLINE TEE TO THE HYDRANT, SHALL BE INCLUDED IN THE UNIT PRICE (EA.) FOR 6" HYDRANT ASSEMBLY, COMPLETE, AS PER PLAN.

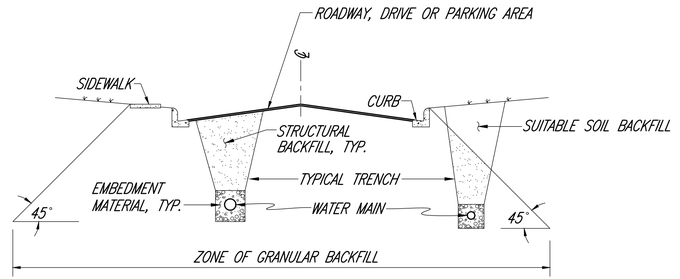


NOTES:

1. FOUNDATION SHALL BE FIRM, STABLE, UNIFORM SUPPORT. SPECIAL FOUNDATION, IF REQUESTED BY THE ENGINEER, SHALL BE COMPACTED BEDDING MATERIAL. SPECIAL FOUNDATION, NOT TO EXCEED A DEPTH OF 12" SHALL BE INCLUDED IN THE BID PRICE OF 638 WATER MAIN. THE COST OF OVEREXCAVATION IN EXCESS OF 12" SHALL BE PAID AS OVER EXCAVATION.
2. PIPE EMBEDMENT FOR ALL WATER MAINS SHALL BE A.S.T.M. #57 OR #67 CRUSHED GRADED GRAVEL OR LIMESTONE AGGREGATE AS DEFINED IN A.S.T.M. D2321 (CLASS 1).
3. ALL HAUNCHING AGGREGATE SHALL BE SHOVEL SLICED TO FILL VOIDS, AND COMPACTED IN PLACE.
4. FINAL BACKFILL AT ALL ROADWAYS, DRIVES, WALKS, BERMS AND PARKING AREAS SHALL BE COMPACTED STRUCTURAL BACKFILL AS SHOWN ON THE "TRENCH BACKFILL REQUIREMENTS" DETAIL.
5. WARNING TAPE SHALL BE 3"x5 MIL, DETECTABLE, BLUE, MARKED "WATER LINE BELOW" AS PER "NORTH TOWN COMPANY" OR ENGINEER APPROVED EQUAL. TRACING WIRE TO BE INSTALLED PER GENERAL NOTES.

TYPICAL TRENCH FOR WATER MAINS

OPEN CUT CONSTRUCTION ONLY



NOTES:

1. ALL BACKFILL WITHIN THE DESCRIBED ZONE BELOW THE 45° LINE SHALL BE O.D.O.T. ITEM No. 703.11 TYPE 1, STRUCTURAL MATERIAL.
2. BACKFILL ABOVE THE 45° LINE SHALL BE SUITABLE SOIL OR STRUCTURAL MATERIAL.
3. ALL STRUCTURAL AND SOIL BACKFILL MATERIAL SHALL BE MECHANICALLY COMPACTED PER ODOT ITEM 603.11

TRENCH BACKFILL REQUIREMENTS

DESIGNED C.J.S. REVIEWED M.K.W.

K.E. McCARTNEY & ASSOCIATES ENGINEERS • PLANNERS • SURVEYORS

WATERLINE DETAILS

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

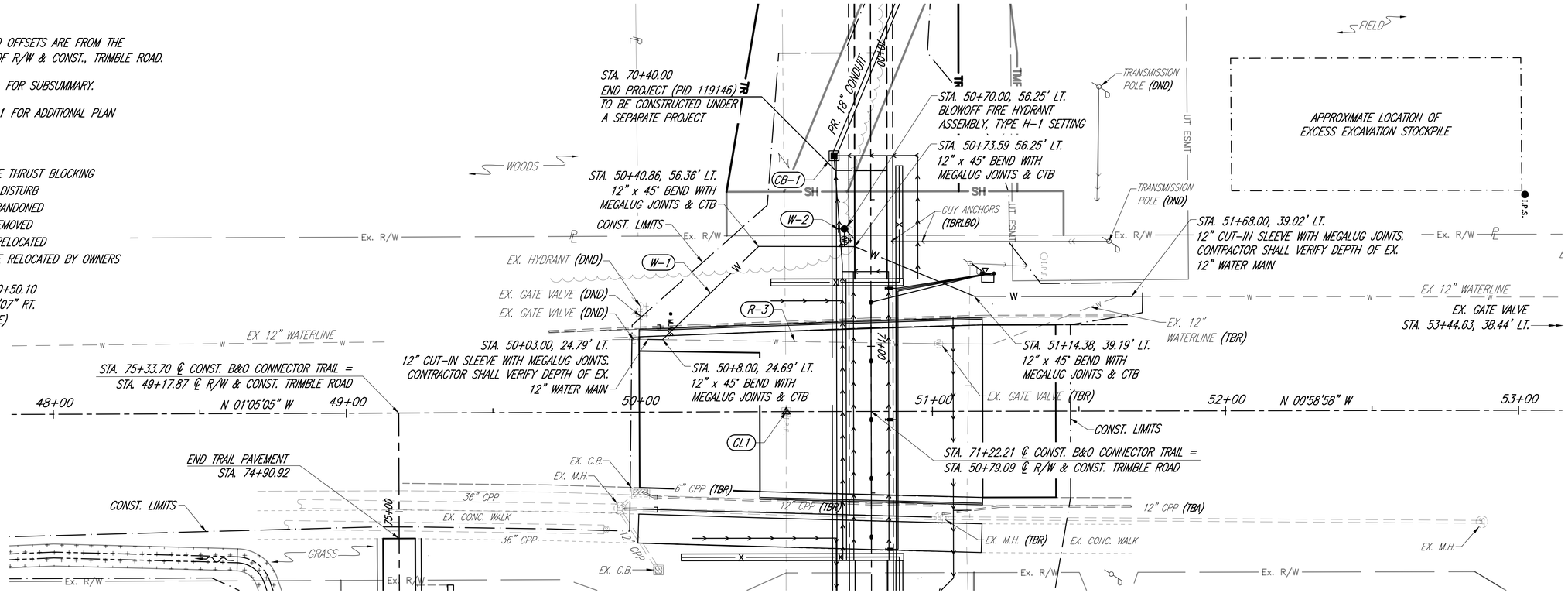
NOTE

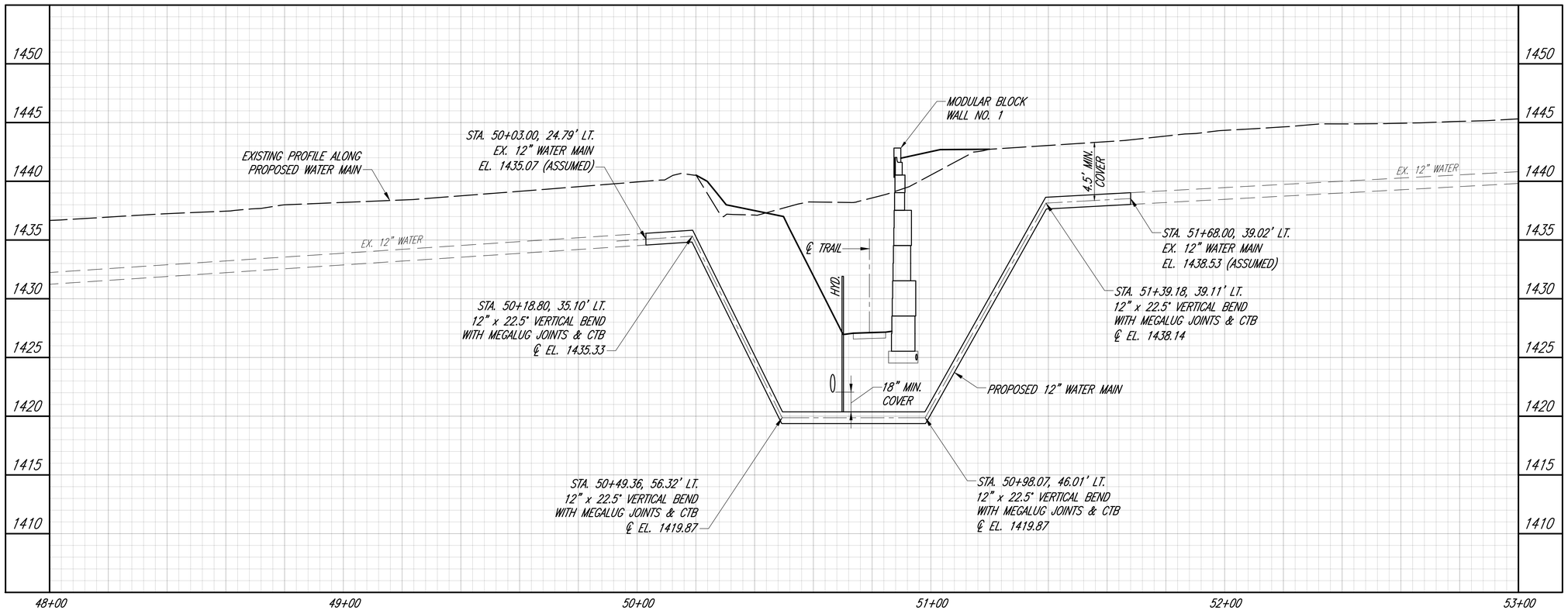
1. STATIONS AND OFFSETS ARE FROM THE CENTERLINE OF R/W & CONST., TRIMBLE ROAD.
2. SEE SHEET 9 FOR SUBSUMMARY.
3. SEE SHEET 11 FOR ADDITIONAL PLAN INFORMATION.

LEGEND

CTB = CONCRETE THRUST BLOCKING
DND = DO NOT DISTURB
TBA = TO BE ABANDONED
TBR = TO BE REMOVED
TBRL = TO BE RELOCATED
TBRLBO = TO BE RELOCATED BY OWNERS

(CL1) PI STA. 50+50.10
Δ = 0°06'07" RT.
(NO CURVE)





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SCALE IN FEET

DESIGNED C.J.S
REVIEWED M.K.W

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

WATER MAIN PLAN & PROFILE
STA. 48+00 TO STA. 53+00

RIC-TRAIL EXTENSION
B&O CONNECTOR TRAIL

SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 725 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS. REFERENCE SHALL BE MADE TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET AND IN THE NOTES OF THESE PLANS.

UNDERGROUND AND OVERHEAD UTILITIES

VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE WORK LIMITS. NOTIFY ALL OVERHEAD UTILITY COMPANIES AT LEAST TWO WORKING DAYS BEFORE INSTALLING LIGHT POLES. TAKE SPECIAL CARE WHEN SETTING THE POLES DUE TO THE CLOSE PROXIMITY OF OVERHEAD UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR MEETING OSHA REGULATIONS DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL INCUR COSTS FOR UTILITY VERIFICATION AND NOTIFICATION AND MAKE INCIDENTAL TO THE COST OF THE PROJECT.

CROSSING 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 SEWER OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO INSTALL 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 LOCATION, 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 625 CONDUIT ITEM.

ITEM 625 – LUMINAIRE, TUNNEL, SOLID STATE (LED), AS PER PLAN

THE LUMINAIRES FOR THIS PROJECT SHALL BE TOP TIER PARKING GARAGE LUMINAIRE, TYPE V, SURFACE MOUNTED, 4000 KELVIN, MOTION AND DAYLIGHT DIMMING, BLUETOOTH PROGRAMABLE, AND BLACK IN COLOR AS MANUFACTURED BY MCGRAW-EDISON, MODEL #: TT-D1-740-U-WO-BK-ZW-WOBWH

IN ADDITION TO THE LUMINAIRE THIS ITEM SHALL ALSO INCLUDE A 4" DEEP, METAL LIGHTING RECEPTACLE WHICH SHALL BE SURFACE MOUNTED TO THE CEILING OF THE BOX TUNNEL AT THE LIGHTING LOCATIONS IDENTIFIED IN THE PLANS. THE LIGHTING RECEPTACLE SHALL BE PAINTED BLACK TO MATCH THE GARAGE LUMINAIRE. THE CONTRACTOR SHALL COORDINATE THE FINAL LAYOUT OF THE CONDUITS ENTERING THE BOX TO WORK WITH THE LIGHTING RECEPTACLE KNOCKOUTS. THE INTENT IS THAT THERE SHALL BE NO CONDUIT VISIBLE ON THE INTERIOR OF THE TUNNEL. THE GARAGE LUMINAIRE SHALL BE ATTACHED TO THE LIGHTING RECEPTACLE PER THE MANUFACTURERS RECOMMENDATIONS. ALL ELECTRICAL CONNECTIONS AND MOUNTING HARDWARE REQUIRED TO INSTALL THIS ITEM TO THE SATISFACTION OF THE ENGINEER SHALL BE INCLUDED IN THIS ITEM.

THE FINAL OPERATION OF THE LUMINAIRES SHALL BE AS FOLLOWS:
DAYTIME OPERATION: CONTINUOUS "ON" AT FULL BRIGHTNESS
NIGHTTIME OPERATION: CONTINUOUS "ON" IN FULLY DIMMED MODE, WHEN MOTION DETECTED SWITCH TO FULL BRIGHTNESS FOR 20 MINUTES.

THE LUMINARES SHALL BE CONNECTED AND SET UP SO THAT WHEN THE ONE LIGHT DETECTS MOTION OR DAYLIGHT IT TURNS ALL THE LIGHTS ON SIMULTANEOUSLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING UP THE LIGHTING CONTROL AS DEFINED ABOVE AND SHALL CONFIRM NIGHTTIME DIMMING LEVEL AND MOTION "ON" TIMING WITH THE CITY OF MANSFIELD PRIOR TO FINAL ACCEPTANCE.

PAYMENT WILL BE MADE AT THE UNIT CONTRACT PRICE FOR EACH ITEM 625, LUMINAIRE, TUNNEL, SOLID STATE (LED), AS PER PLAN AND SHALL BE FULL COMPENSATION FOR ALL LABOR. MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY WORKMANLIKE MANNER.

ITEM 625 – POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ITEM 625, THE FOLLOWING IS ADDED.

THE POWER SUPPLY AGENCY FOR THIS PROJECT IS: OHIO EDISON

THE POWER SERVICE SHALL BE A GROUND MOUNTED INSTALLATION TYPE 120/240 VOLT GROUNDED NEUTRAL SUPPLY MEETING THE SPECIFICATIONS OF SCD HL-40.20 AND HL-60.31. IN ADDITION TO THE C&MS 625 THE POWER SERVICE SHALL INCLUDE ALL REQUIRED CONDUITS, CONDUIT RISERS, AND WIRING FROM THE POWER SERVICE TO THE POINT OF CONNECTION WITH THE POWER COMPANY AS INDICATED IN THESE PLANS. ALL ABOVE GRADE COMPONENTS COMPRISING THE POWER SERVICE SHALL BE PAINTED BLACK IN COLOR. THIS SHALL INCLUDE THE CABINET, METER BASE, DISCONNECT SWITCH, MOUNTING PIPES AND RAILS AND ANY CONDUITS ABOVE GROUND LEVEL. THE METERBASE SHALL BE INCLUDED WITH THE COST OF THE POWER SERVICE AND SHALL BE ATTACHED TO THE GROUND MOUNTED INSTALLATION AS PER THE SCD. THE CONTRACTOR SHALL COORDINATE THE WITH THE CITY AND OHIO EDISON TO APPLY AND SET UP A NEW SERVICE AT THIS LOCATION.

THE POWER SERVICE WIDTH SHALL BE WIDE ENOUGH TO ACCOMMODATE THE STANDARD METERBASE, DISCONNECT SWITCH, CIRCUIT PANEL, ITS CABINET, AND ANY ADDITIONAL COMMUNICATION CABINETS REQUIRED BY THE DATA COMMUNICATION COMPANY. A 1" CONDUIT, 725.051, SHALL BE RUN FROM THE CIRCUIT PANEL TO THE ITS CABINET TO SUPPLY POWER TO 2~GFCI OUTLETS ON CIRCUIT S-1 AS DEFINED IN THESE DETAILS.

THE CONTRACTOR SHALL ALSO INSTALL A CONCRETE WORKPAD IN CONFORMANCE WITH SCD TC-83.20. THE WORKPAD SHALL BE A MINIMUM OF 50" LONG BY 30" WIDE. THE LENGTH OF THE WORKPAD SHALL BE ADJUSTED TO MATCH THE WIDTH OF THE FINAL POWER SERVICE RACK BUT SHALL BE A MINIMUM 30" WIDE. COST FOR THE WORKPAD SHALL BE INCLUDED IN THE COST OF THE POWER SERVICE ITEM.

PAYMENT WILL BE MADE AT THE UNIT CONTRACT PRICE FOR EACH ITEM 625, POWER SERVICE, AS PER PLAN AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY WORKMANLIKE MANNER.

ITEM 809 – ITS CABINET, GROUND MOUNTED, AS PER PLAN

THIS ITEM SHALL CONFORM TO SS 809 WITH THE FOLLOWING EXCEPTIONS:

1. THE CABINET SHALL BE PAINTED BLACK TO MATCH THE POWER SERVICE EQUIPMENT.
2. THE CABINET SHALL BE MOUNTED ON AND ADJACENT TO THE POWER SERVICE.
3. THE ITS CABINET SHALL INCLUDE 2~GFCI OUTLETS MOUNTED INSIDE THE CABINET TO PROVIDE POWER TO THE ITS EQUIPMENT (POE SWITCH, FIREWALL SWITCH, COMMUNICATION MODEM, ETC.)
4. THE SIZE OF THE CABINET SHALL BE LARGE ENOUGH TO HOUSE THE FIBER COMMUNICATION EQUIPMENT AND CONNECTIONS, THE POWER OVER ETHERNET (POE) SWITCH, THE FIREWALL SWITCH, AND ANY ADDITIONAL COMMUNICATION EQUIPMENT NECESSARY TO PROVIDE AN OPERATIONAL SURVEILLANCE SYSTEM WITH COMMUNICATIONS BACK TO THE CITY OF MANSFIELD.
5. THE POE AND FIREWALL SWITCHES SHALL BE PROVIDED BY THE CITY OF MANSFIELD IT DEPARTMENT.
6. THE ITS CABINET SHALL BE NEMA STYLE AND SHALL WEATHER TIGHT AND RATED FOR OUTDOOR EXPOSURE.
7. THE CABINET SHALL BE LOCKABLE AND KEYED TO THE CITY'S SIGNAL CONTROLLER MASTER.
8. THE CABINET SHALL HAVE 1~1" CONDUIT ENTRANCE FOR POWER SUPPLY AND 3~ 3/4" CONDUIT ENTRANCES FOR ETHERNET COMMUNICATION TO THE CAMERAS. ALL CONDUIT ENTRANCES SHALL BE SEALED AND WATERTIGHT.

PAYMENT WILL BE MADE AT THE UNIT CONTRACT PRICE FOR EACH ITEM 809, ITS CABINET, GROUND MOUNTED, AS PER PLAN AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY WORKMANLIKE MANNER

ITEM 625 – CONDUIT, BY SIZE, 725.051, AS PER PLAN

THIS ITEM SHALL CONFORM TO C&MS 625 AND 725.051 WITH THE EXCEPTION THAT ALL CONDUIT SHALL BE SCHEDULE 80 AND ALL CONDUIT INSTALLED ABOVE GRADE SHALL BE 725.051 (PVC) SCHEDULE 80 CONDUIT. NO ADDITIONAL COMPENSATIONS WILL BE MADE FOR CHANGE IN CONDUIT TYPE INSTALLED ABOVE GRADE.

THIS ITEM SHALL ALSO INCLUDE THE COST TO INSTALL THE CONDUIT IN A TRENCH WITH THE UNDERGROUND WARNING AND MARKING TAPE AS PER 725.22. THE UNDERGROUND WARNING TAPE SHALL ALSO BE INSTALLED ABOVE THE CONDUITS ATTACHED TO THE TOP OF THE BOX TUNNEL. ALL COSTS FOR CONNECTING CONDUITS TO THE EXTERIOR OF THE BOX SHALL BE INCLUDED IN THIS ITEM.

THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE FINAL CONDUIT PASS THRU LOCATIONS WITH THE BOX SECTION MANUFACTURER. THESE PASS THRU'S MAY BE PRECAST OR FIELD DRILLED. REINFORCING STEEL SHALL BE ADJUSTED BY THE BOX MANUFACTURER TO ACCOUNT FOR THESE CONDUIT PASS THRU LOCATIONS. FINAL CONNECTIONS OF THE CONDUIT AND THE PASS THRU LOCATIONS SHALL BE SEALED AND WATERTIGHT. ALL COSTS FOR COORDINATION SHALL BE INCIDENTAL TO THE PERTINENT ITEMS.

PAYMENT WILL BE MADE AT THE UNIT CONTRACT PRICE BID PER LINEAR FOOT FOR ITEM 625, CONDUIT, BY SIZE, 725.051, AS PER PLAN AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY WORKMANLIKE MANNER.

ITEM 809 – SPECIAL-ITS: SURVEILLANCE SYSTEM

THIS ITEM SHALL INCLUDE A COMPLETE SURVEILLANCE SYSTEM WITH EQUIPMENT AS SPECIFIED BY:

SCHMIDT SECURITY PRO
241 MANSFIELD INDUSTRIAL PARKWAY,
MANSFIELD, OH 44903
CONTACT: DAN OSBORNE
419-526-4747 EXT. 127

THIS ITEM SHALL INCLUDE BUT IS NOT LIMITED TO:

1. 3 ~ DWC-PDS10WI28A SECURITY CAMERAS AND WALL MOUNT BRACKET AND JUNCTION BOXES
2. 3 ~ VERIFACT FULL DUPLEX SPEAKER MICROPHONES WITH METAL 3 GANG OUTLET BOX FOR WALL MOUNT.
3. ALL MOUNTING HARDWARE AS REQUIRED BY THE MANUFACTURER AND SCHMIDT SECURITY PRO.
4. A 3/4" METAL CONDUIT AND SPEAKER WIRE PER THE MANUFACTURER AND SCHMIDT SECURITY PRO FROM THE CAMERAS TO THE SPEAKERS.
5. EACH CAMERA WILL HAVE A SEPARATE 3/4" CONDUIT RUN FROM THE ITS CABINET TO THE CAMERA LOCATION IDENTIFIED IN THESE PLANS. CONDUIT SHALL BE 725.01, AS PER PLAN AS INDICATED IN THESE NOTES.
6. EACH CAMERA SHALL USE A RUGGED DB CAT6E NETWORK CABLE AS SPECIFIED BY SCHMIDT SECURITY RUN INSIDE THE 3/4" CONDUIT BACK TO THE POE SWITCH INSIDE THE ITS CABINET.

THE SPEAKERS SHALL BE MOUNTED DIRECTLY ADJACENT TO THE CAMERAS AS SPECIFIED BY SCHMIDT SECURITY PRO.

PAYMENT WILL BE MADE AT THE LUMP SUM CONTRACT PRICE BID FOR ITEM 809, SPECIAL-ITS: SURVEILLANCE SYSTEM AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY WORKMANLIKE MANNER AS DESCRIBED ABOVE

LIGHTING & SECURITY SUBSUMMARY

NOTES	LIGHTING	SECURITY	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
	558	30	625	23309	588	FT	NO. 12 AWG 600 VOLT DISTRIBUTION CABLE	
	121		625	25105	121	FT	CONDUIT, 1", 725.051, AS PER PLAN	26
	5		625	27505	5	EACH	LUMINAIRE, TUNNEL, SOLID STATE (LED), AS PER PLAN	26
	1		625	32000	1	EACH	GROUND ROD	
	1		625	34001	1	EACH	POWER SERVICE, AS PER PLAN	26
		1	809	65001	1	EACH	ITS CABINET – GROUND MOUNTED, AS PER PLAN	26
		LS	809	99000	LS		SPECIAL – ITS: SURVEILLANCE SYSTEM	26

DESIGNED JDL REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES
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LIGHTING & SECURITY NOTES - 1

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

26
37

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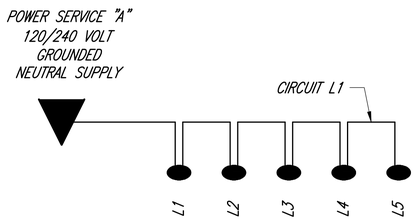


CIRCUIT DIAGRAM: L-1 LIGHTING CIRCUITS

LEGEND

TUNNEL LIGHTING FIXUTRE

POWER SERVICE

#12 AWG CIRCUIT

LIGHTING CABLE SIZING (VOLTAGE DROP) CALCULATION

RIC-B&O CONNECTOR TRAIL-TUNNEL LIGHTING
POWER SERVICE: A, CIRCUITS: L-1
SUPPLY VOLTAGE: 120 VOLTS (3-WIRE GND NEUTRAL) NO. OF WIRES FOR CALC. PURPOSES: 2
WIRE RESISTANCES USED: NO. 12 AWG - 2 OHMS/FT.

SECTION								AMPERES		AMPERE-	VOLTAGE DROP		
FROM	STA.	OFF.	TO	STA.	OFF.	WIRE	LENGTH	AT PT.	ACCUM.	FEET	IN SEC.	ACCUM.	AS %
CIRCUIT - L-1													
L5	71+65.00	CL	L4	71+45.00	CL	12	123.00	0.30	0.30	37	0.15	2.79	2.32%
L4	71+45.00	CL	L3	71+25.00	CL	12	130.30	0.30	0.60	78	0.31	2.64	2.20%
L3	71+25.00	CL	L2	71+05.00	CL	12	161.50	0.30	0.90	145	0.58	2.33	1.94%
L2	71+05.00	CL	L1	70+85.00	CL	12	161.50	0.30	1.20	194	0.78	1.74	1.45%
L1	70+85.00	CL	PS-1	70+75.00	40.00 LT	12	161.50	0.30	1.50	242	0.97	0.97	0.81%
PS-1	70+75.00	40.00 LT											

PROPOSED POWER SERVICE DATA

POWER SERVICE	LINE VOLTAGE (VOLTS)	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CABLE (AWG)	ENCLOSURE RATING (AMPS)	CIRCUIT NO.	CIRCUIT LOAD (AMPS)	CIRCUIT FUSE SIZE (AMPS)	CIRCUIT CABLE SIZE (AWG)	MAINTAINING AGENCY	POWER SERVICE AGENCY
PS-1	120	0.5	AS PER POWER COMPANY	60	L-1	1.5	20	12	CITY OF MANSFIELD	FIRST ENERGY
					S-1 *	3.0	20	12		

* CIRCUIT S-1 IS THE POWER SUPPLIED TO THE ITS CABINET FOR SURVEILLANCE AND NETWORK EQUIPMENT

VOLTAGE DROP STUDY

CABLE SIZING CALCULATIONS (VOLTAGE DROP)

1. VOLTAGE DROP ON CIRCUIT NOT TO EXCEED 5% NOMINAL CIRCUIT VOLTAGE IN STEADY STATE SINCE EQUIPMENT CAN GENERALLY TOLERATE A VOLTAGE VARIATION OF 10%.

   BECAUSE OF THE SMALL WIRE SIZES INVOLVED AND THE HIGH POWER FACTOR OF THE LIGHTING LOAD, THE REACTANCE IS CONSIDERED NEGLIGBLE IN THIS COMPUTATION. (AIEE PUB. NO. 952 DATED OCTOBER 1956)

2. OPERATING CURRENT FOR TYPICAL LUMINAIRES IN ODOT HIGHWAY LIGHTING SYSTEMS LINE AMPERES OPERATING = (LAMP WATT + BALLAST WATTS) / LINE VOLTAGE BALLAST WATTS MAY BE AS MUCH AS 30% LAMP WATTS FOR TERTIARY WINDING BALLAST

LAMP WATTAGE	LINE AMPS, OPERATING		
	480 VOLTS	240 VOLTS	120 VOLTS
75	0.21	0.41	0.8
100	0.27	0.54	1.1
150	0.41	0.81	1.6
175	0.48	0.96	1.9
200	0.54	1.1	2.2
250	0.68	1.4	2.7
310	0.84	1.7	3.4
400	1.1	2.2	4.3
1000	2.7	5.4	11

3. OBTAIN WIRE RESISTANCE FROM PUBLISHED DATA (ENGINEERING HANDBOOKS, MANUFACTURER'S DATA SHEETS, ETC.)

WIRE SIZE	OHMS PER 1000 FT
14	3.1
12	2.0
10	1.2
8	0.78
6	0.49
4	0.31
2	0.19
1/0	0.12
2/0	0.10
4/0	0.079

4. VOLTAGE DROP IN A LIGHTING CIRCUIT SECTION = AMPERES IN AND BEYOND THE SECTION x (LENGTH OF THE SECTION IN FEET x 2 WIRES / 1000) x RESISTANCE WIRE PER 1000

   INCLUDE IN LENGTH OF SECTION AN ALLOWANCE FOR CORRECTION AT EACH END AND SLACK. FREQUENTLY THIS IS DONE BY ALLOWING 5-10 FEET AT EACH END AND ROUNDING UP SECTION LENGTHS IN INCREMENTS OF 5.

GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) AND THE TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.
   a. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.
   b. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.
   c. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.
   d. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
   e. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.
   f. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

GROUNDING AND BONDING (CONTINUED)

2. CONDUITS.
   a. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.
   b. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.
   c. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
   d. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
3. WIRE FOR GROUNDING AND BONDING.
   a. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:
      i. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.
      ii. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.a.i ABOVE.
      iii. USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.a.i ABOVE.
      iv. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.
   b. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.
4. GROUND ROD.
   a. A 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.
   b. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.
5. THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE	YELLOW BALL	#2 DW/FDW
6	BLUE	GREEN ARROW	#2 WALK
7	WHITE/BLACK STRIPE	YELLOW ARROW	NOT USED

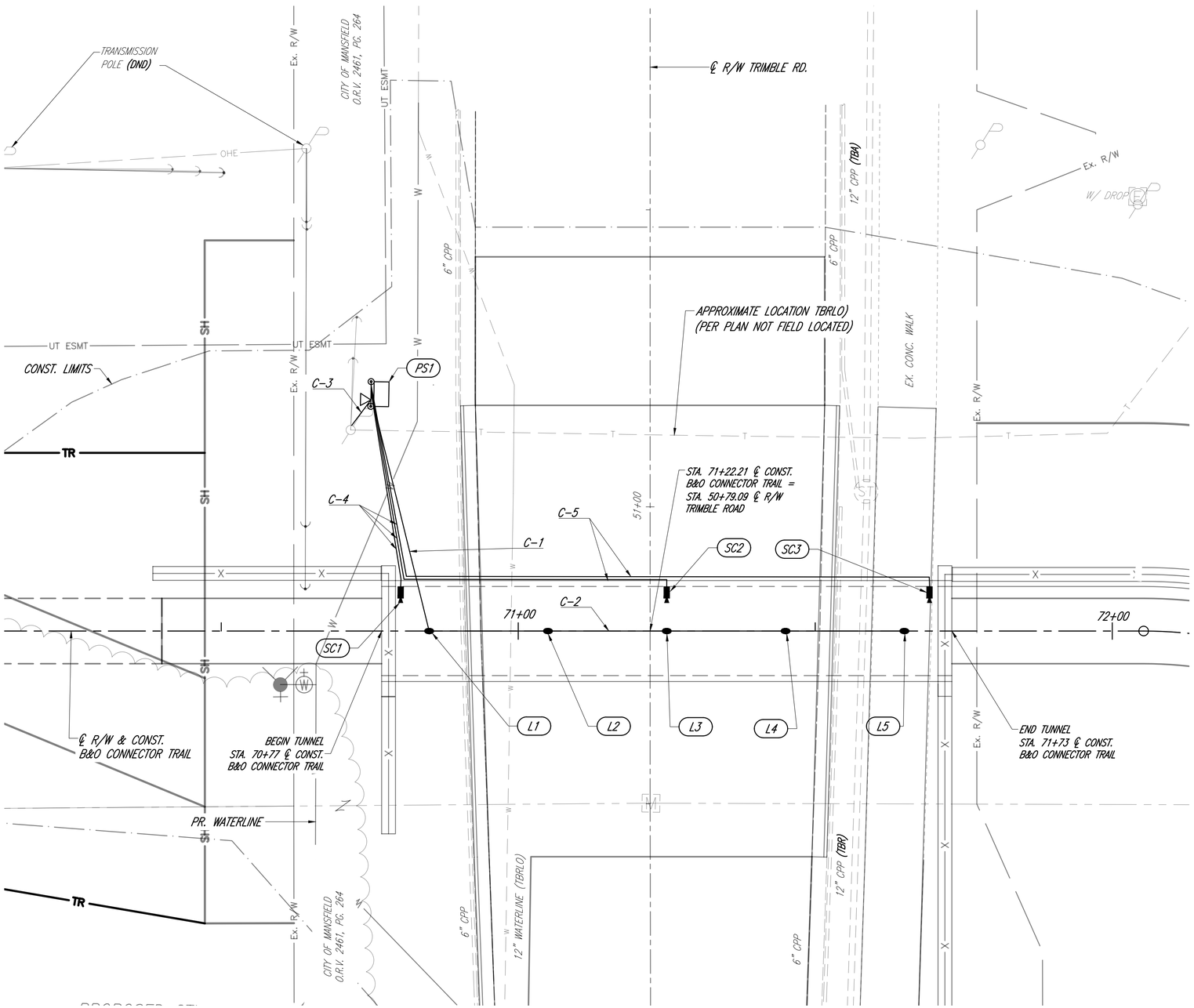
6. POWER SERVICE AND DISCONNECT SWITCH.
   a. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPLICE.
   b. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.
   i. NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC-) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS-2, FIGURE 5-4.
   ii. IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC-) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.
7. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

DESIGNED JDL REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES ENGINEERS • PLANNERS • SURVEYORS

LIGHTING & SECURITY NOTES - 2

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



LEGEND

- PROPOSED TUNNEL LUMINAIRES (28W, LED, CEILING MOUNTED) (SEE SHEET 29 FOR INSTALLATION DETAILS)
- (L1) PROP. LUMINAIRE, STA. 70+85.00, ℄ B&O CONNECTOR TRAIL MOUNTED TO CEILING OF BOX (SEE SHEET 29)
- (L2) PROP. LUMINAIRE, STA. 71+05.00, ℄ B&O CONNECTOR TRAIL MOUNTED TO CEILING OF BOX (SEE SHEET 29)
- (L3) PROP. LUMINAIRE, STA. 71+25.00, ℄ B&O CONNECTOR TRAIL MOUNTED TO CEILING OF BOX (SEE SHEET 29)
- (L4) PROP. LUMINAIRE, STA. 71+45.00, ℄ B&O CONNECTOR TRAIL MOUNTED TO CEILING OF BOX (SEE SHEET 29)
- (L5) PROP. LUMINAIRE, STA. 71+65.00, ℄ B&O CONNECTOR TRAIL MOUNTED TO CEILING OF BOX (SEE SHEET 29)
- (SC1) PROP. SECURITY CAMERA STA. 70+80.00, 7.50' LT., ℄ B&O CONNECTOR TRAIL MOUNTED TO SIDE OF BOX (SEE SHEET 29)
- (SC2) PROP. SECURITY CAMERA STA. 71+25.00, 7.50' LT., ℄ B&O CONNECTOR TRAIL MOUNTED TO SIDE OF BOX (SEE SHEET 29)
- (SC3) PROP. SECURITY CAMERA STA. 71+70.00, 7.50' LT., ℄ B&O CONNECTOR TRAIL MOUNTED TO SIDE OF BOX (SEE SHEET 29)
- (PS1) PROP. POWER SERVICE, AS PER PLAN WITH CONC. WORKPAD (SEE NOTES 1-3) STA. 70+75, 40.0' LT., ℄ B&O CONNECTOR TRAIL
- C-1 PROP. 1" CONDUIT, 725.051, AS PER PLAN LIGHTING CIRCUIT, W/ 3 - #12 AWG WIRES, INSTALLED IN TRENCH WITH UNDERGROUND WARNING/ MARKING TAPE AS PER C&MS 625.
- C-2 PROP. 1" CONDUIT, 725.051, AS PER PLAN LIGHTING CIRCUIT, W/ 3 - #12 AWG WIRES, INSTALLED ON TOP OF BOX TUNNEL WITH UNDERGROUND WARNING/ MARKING TAPE AS PER C&MS 625. (SEE SHEET 29 FOR ADDITIONAL INSTALLATION DETAILS)
- C-3 PROP. 2" CONDUIT RISER AND UNDERGROUND CONDUIT (INCLUDED WITH POWER SERVICE, AS PER PLAN) POWER SERVICE, W/ 3 WIRES SIZED PER POWER COMPANY, UNDERGROUND INSTALLED WITH WARNING/ MARKING TAPE AS PER C&MS 625.
- C-4 PROP. 3/4" CONDUIT, 725.051, AS PER PLAN SURVEILLANCE CIRCUIT INSTALLED IN TRENCH WITH UNDERGROUND WARNING/ MARKING TAPE AS PER C&MS 625.
- C-5 PROP. 3/4" CONDUIT, 725.051, AS PER PLAN SURVEILLANCE CIRCUIT ATTACHED TO OUTSIDE WALL OF BOX TUNNEL WITH UNDERGROUND WARNING/ MARKING TAPE AS PER C&MS 625. (SEE SHEET 29 FOR ADDITIONAL INSTALLATION DETAILS)

NOTES

1. SEE ODOT SCD HL-60.31 CONTROL CENTER WIRING FOR 120 VOLT CONNECTIONS
2. SEE ODOT SCD HL-40.20 FOR GROUND MOUNTED POWER SERVICE
3. PROVIDE CONCRETE WORKPAD AS PER ODOT SCD TC-83.20

N

0 5 10 20 HORIZONTAL SCALE IN FEET

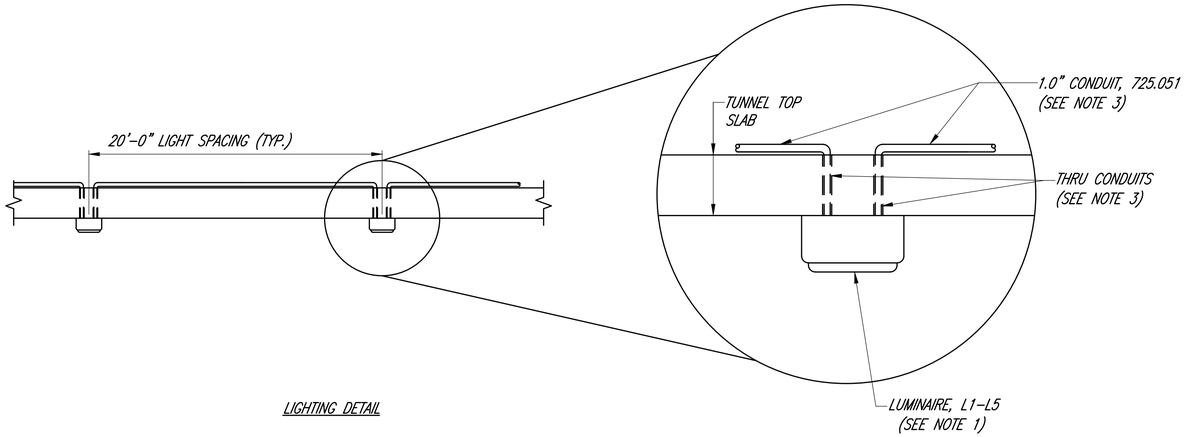
DESIGNED JDL REVIEWED JDB

K.E. McCARTNEY & ASSOCIATES ENGINEERS • PLANNERS • SURVEYORS

LIGHTING & SECURITY PLAN

RIC-B&O CONNECTOR TRAIL TRIMBLE ROAD TUNNEL

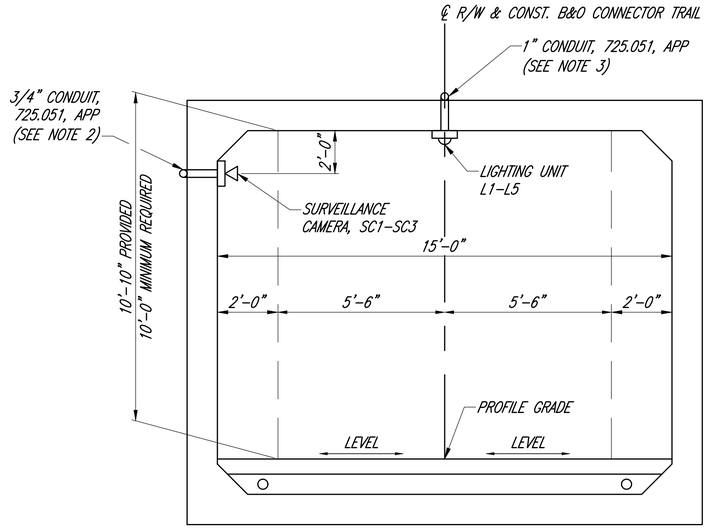
28
15



LIGHTING DETAIL

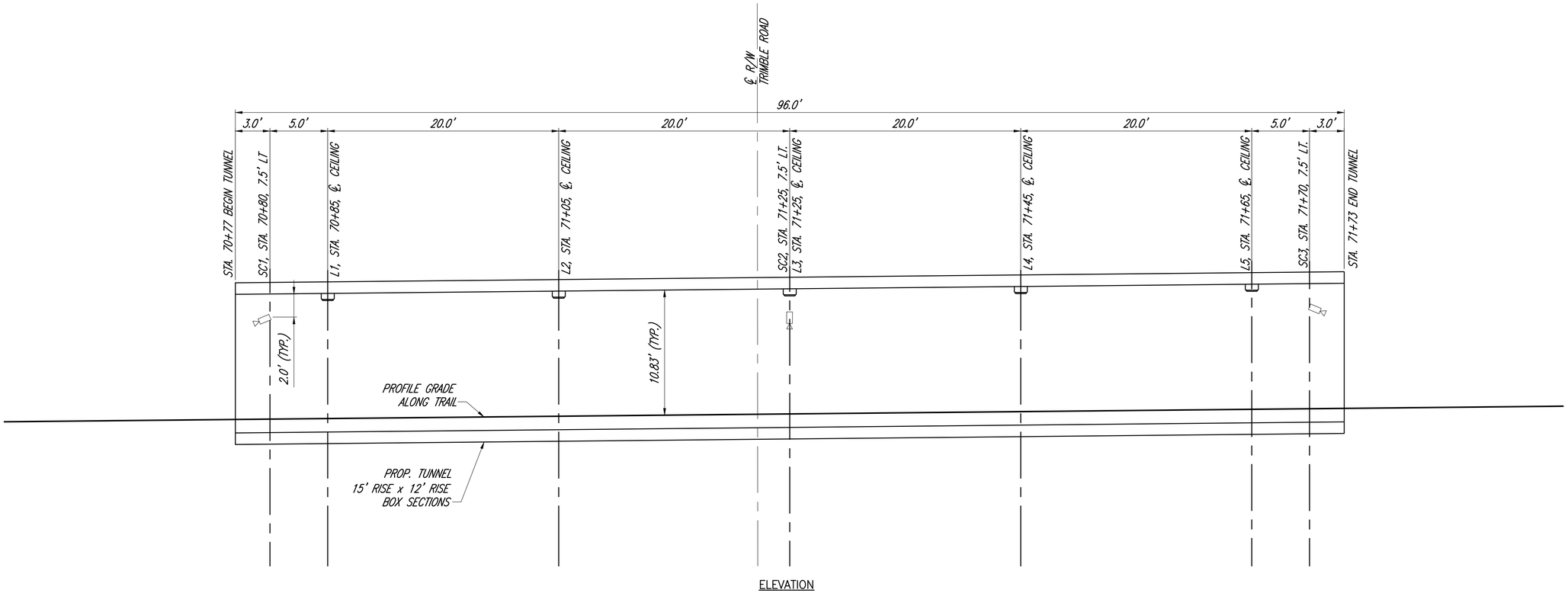
NOTES

1. CEILING MOUNT PROPOSED LIGHTING UNIT. MAKE CONNECTIONS TO LIGHTING UINT AS PER MANUFACTURER.
2. RUN CONDUIT ON OUTSIDE OF TUNNEL WALL. CONTRACTOR TO COORDINATE LOCATIONS OF 3/4" THRU CONDUITS WITH BOX MANUFACTURER FOR PRECAST OR FIELD DRILLED INSTALLATION TO AVOID DAMAGING REINFORCING. FINAL THROUGH CONDUIT INSTALLATION SHALL BE WATERTIGHT.
3. RUN CONDUIT ON OUTSIDE OF TUNNEL TOP. CONTRACTOR TO COORDINATE LOCATIONS OF 1" THRU CONDUITS WITH BOX MANUFACTURER FOR PRECAST OR FIELD DRILLED INSTALLATION TO AVOID DAMAGING REINFORCING. FINAL THROUGH CONDUIT INSTALLATION SHALL BE WATERTIGHT.



INTERIOR OF TUNNEL SECTION

SECTION SHOWN FOR ILLUSTRATION OF LUMINARIES AND SURVEILLANCE CAMERA LOCATIONS ONLY, SEE STRUCTURE DETAILS FOR ACTUAL CONSTRUCTION



ELEVATION

DESIGNED JDL
REVIEWED JDB

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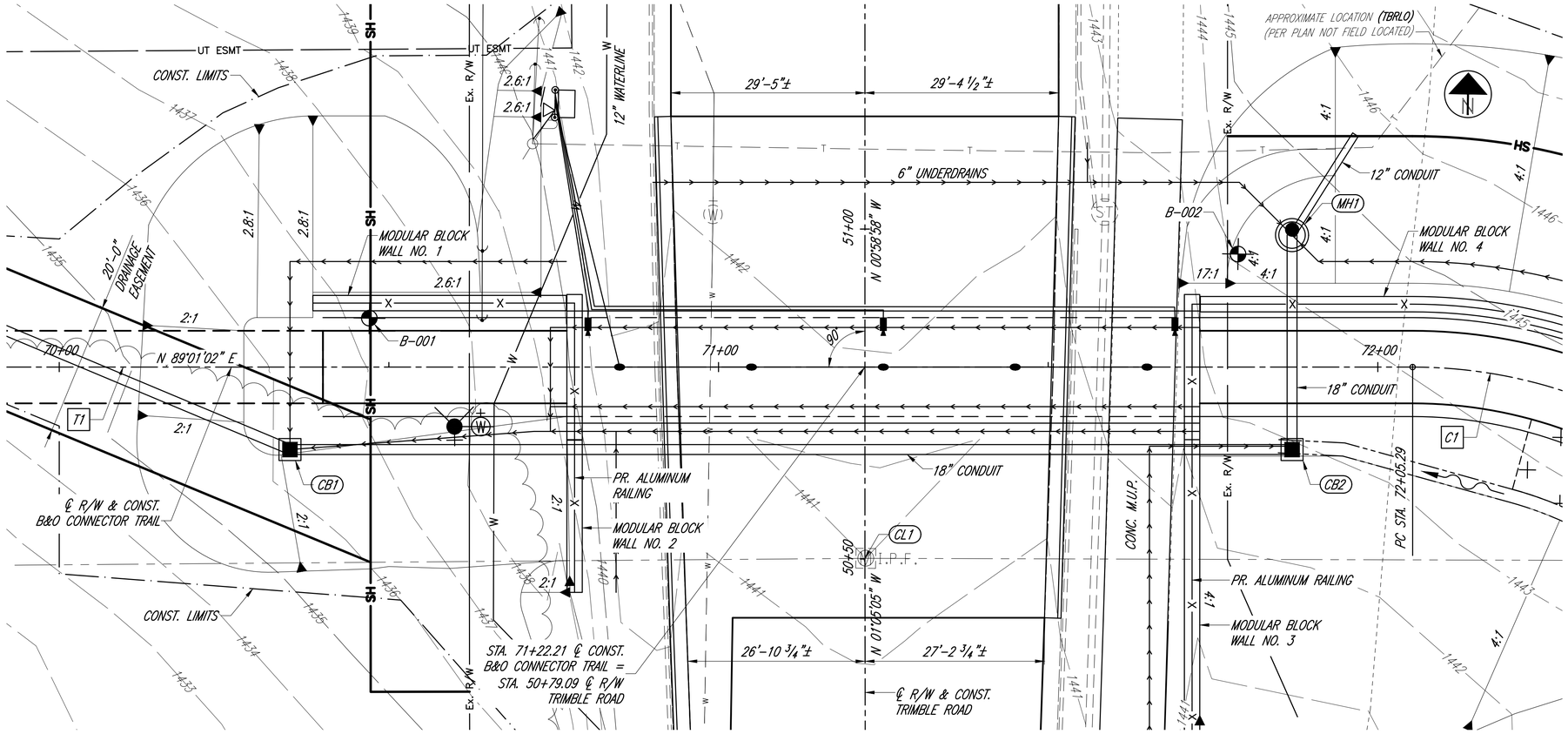
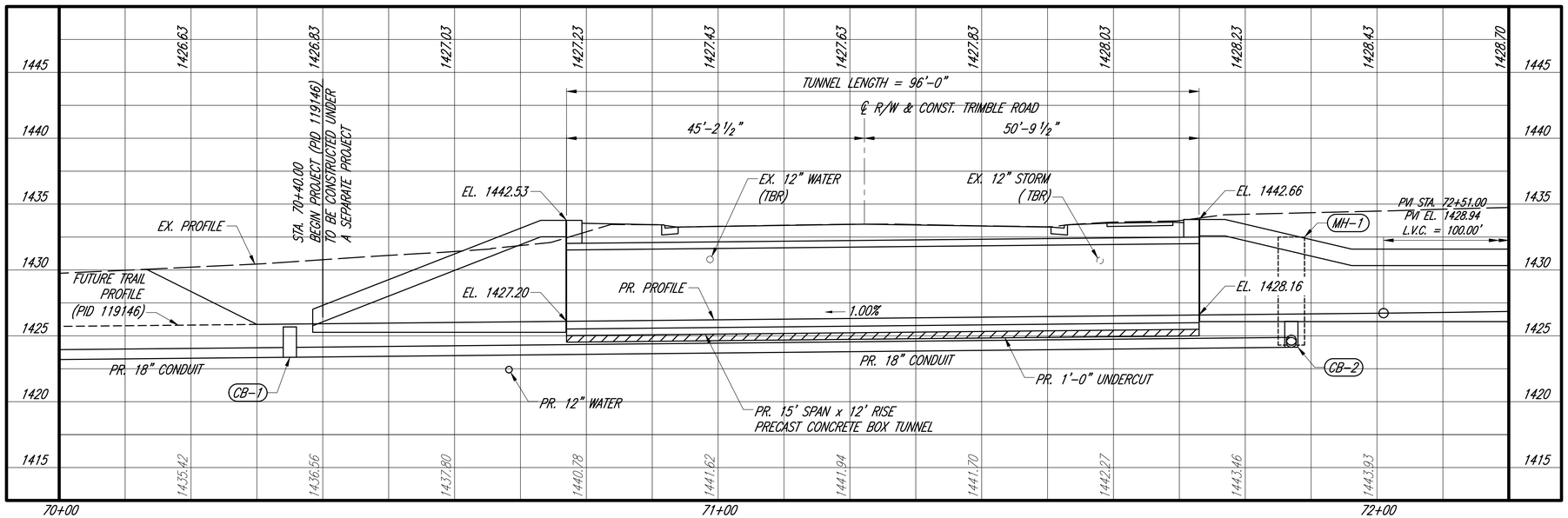
LIGHTING & SECURITY DETAILS

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



PLAN



PROFILE

ALONG ℄ CONST. B&O CONNECTOR TRAIL

INDEX OF SHEETS FOR STRUCTURE

NOTES

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

SEE SHEET 11 FOR STORM SEWER INFORMATION.

LEGEND

SOIL BORING LOCATIONS

B-001 – STA. 70+47.04, 7.42' LT.
B-002 – STA. 71+78.81, 17.13' LT.

T1 P.T. STA. 69+22.94
P.C. STA. 72+05.29
L = 282.35'
BRG. = N 89°01'02" E

C1 P.I. STA. 72+79.15
P.T. STA. 73+21.39
Δ = 89°53'53" RT.
Dc = 77°25'36"
R = 74.00'
T = 73.87'
L = 116.11'
LC = 104.56'
C.B. = S 46°02'01" E

CL1 PI STA. 50+50.10
Δ = 0°06'07" RT.
(NO CURVE)

PROPOSED STRUCTURE

TYPE: PRECAST REINFORCED CONCRETE BOX TUNNEL, TYPE A, 706.05
SIZE: 15'–0" SPAN x 12'–0" RISE
TRAIL: 11'–0" PAVEMENT
LOADING: HL–93
SKEW: NONE
LENGTH: 96'–0"
ALIGNMENT: TANGENT
EARTH COVER: 1'–8 7/8" MIN., 2'–5 1/2" MAX.
COORDINATES: LATITUDE: 40°43'57" N
LONGITUDE: 82°33'06" W

KEM
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DESIGNED	DRAWN	REVIEWED	DATE
C.J.S	C.J.S	J.D.B	2/29/24
CHECKED	REVISED	NEW STRUCTURE FILE NO.	
T.G.W			

SITE PLAN
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL
RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

1 / 8

30
37

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS

940 DATED 4/17/15

DESIGN SPECIFICATIONS

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

DESIGN LOADING

HL-93 + FUTURE WEARING SURFACE

DESIGN DATA

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI (FOOTING, FORESLOPE WALL, & WINGWALLS)

REINFORCING STEEL - ASTM A615, A616, OR A617 GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI (ALL REINFORCING SHALL BE EPOXY COATED)

PRECAST STRUCTURE - ODOT SUPPLEMENTAL SPECIFICATION 940

BACKFILL LIMITATION

WHEN THE DESIGN HEIGHT IS GREATER THAN 10 FT, THE BACKFILL BEHIND THE WINGWALLS AND RETAINING WALLS SHALL NOT BE PLACED HIGHER THAN THE ELEVATION OF THE SOIL ABOVE THE TOE. WHEN THE SOIL ABOVE THE TOE IS AT ITS FINISHED ELEVATION, THE REMAINDER OF THE BACKFILL MAY BE PLACED.

ELECTRIC DISTRIBUTION LINES

OVERHEAD ELECTRIC DISTRIBUTION LINES (7.2/12.47 KV PRIMARY CONDUCTORS) ARE LOCATED ALONG THE WEST SIDE OF TRIMBLE ROAD. THE CONTRACTOR SHALL MAINTAIN MINIMUM OSHA REQUIRED CLEARANCES AT ALL TIMES DURING CONSTRUCTION. COORDINATE WITH TRAVIS BALLOG AT OHIO EDISON DISTRIBUTION AS NEEDED.

ITEM 503 UNCLASSIFIED EXCAVATION

THIS ITEM SHALL CONFORM TO CMS 503. UNCLASSIFIED EXCAVATION SHALL INCLUDE THE 1'-0" UNDERCUT WITH LIMITS THAT EXTEND AT A 1:1 SLOPE FROM THE EDGES OF THE UNDERCUT TO THE BOTTOM OF SUBGRADE FOR TRIMBLE ROAD.

ITEM 530 - SPECIAL - STRUCTURES - PRECAST CONCRETE HEADWALLS

PRECAST HEADWALLS (FORESLOPE AND WINGWALLS) SHALL BE PROVIDED AS SHOWN ON SHEET 8 OF 8. THE CITY WILL PAY FOR PRECAST CONCRETE HEADWALLS AS A LUMP SUM BID FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO MANUFACTURE AND INSTALL THE PRECAST CONCRETE HEADWALLS. PRECAST FORESLOPE WALLS AND WINGWALLS SHALL BE ANCHORED TO THE TOP SLAB AND SIDE WALLS OF THE END BOX SECTIONS. REINFORCING STEEL AND CONNECTIONS SHALL BE DESIGNED BY THE PRECAST CONCRETE BOX MANUFACTURER.

ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20. PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 530.

THREADED INSERTS OR NONPROTRUDING MECHANICAL CONNECTORS CAPABLE OF DEVELOPING AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCEMENT ARE AN ACCEPTABLE ALTERNATIVE TO RESIN BONDING. MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE TOP SLAB AND THE INTERIOR SIDE WALLS. MECHANICAL CONNECTORS SHALL HAVE AN "L-SHAPED" BAR INSIDE THE BOX SECTIONS WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. THE CITY WILL CONSIDER PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS AS INCIDENTAL TO ITEM 611.

ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER PER ITEM 512. SEALER SHALL BE TINTED SO THE FINAL COLOR IS FEDERAL COLOR STANDARD NO. 20122 - DARK BROWN. PIGMENT CONTENT SHALL BE LIMITED SO AS NOT TO REDUCE SEALING EFFECTIVENESS OF THE CONCRETE SEALER. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN.

ITEM 512 - SEALING OF CONCRETE SURFACES, AS PER PLAN, (PERMANENT GRAFFITI PROTECTION)

APPLY A PERMANENT GRAFFITI PROTECTION COATING QUALIFIED ACCORDING TO SUPPLEMENT 1083 THAT IS COMPATIBLE WITH THE CONCRETE SEALER OVER WHICH IT IS APPLIED. APPLY THE GRAFFITI PROTECTION COATING IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.

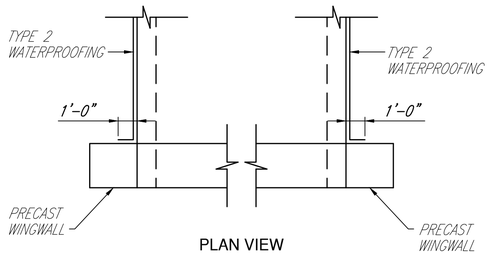
PRODUCTS USED TO COAT THE CONCRETE SURFACES SHALL BE AS MANUFACTURED BY CHEMMASTERS/MADISON (1-440-428-2105) GRAFFITI STOPPER, OR AN APPROVED EQUAL.

THE CONTRACTOR SHALL ALSO SUPPLY THE CITY WITH ENOUGH UNOPENED SEALER TO COAT ALL EXPOSED INTERIOR SURFACES OF THE BOX TUNNEL FOR USE AFTER THE COMPLETION OF A MURAL WITHIN THE BOX. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED TO COVER THE ADDITIONAL SEALER:

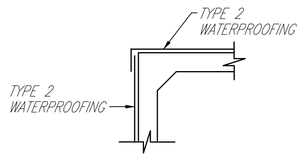
ITEM 512 - SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION) 379 SY

ITEM 512 - TYPE 2 WATERPROOFING

TYPE 2 WATERPROOFING, PER CMS 512.08.G AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST TUNNEL SECTIONS FOR ALL PORTIONS OF THE TUNNEL WHICH SHALL BE IN CONTACT WITH THE BACKFILL AND SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST TUNNEL SECTIONS AND OVERLAP ONE FOOT VERTICALLY DOWN THE SIDES. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512 - TYPE 2 WATERPROOFING.



PLAN VIEW



SECTION VIEW

WATERPROOFING DETAILS

ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED BETWEEN THE PRECAST CONCRETE WINGWALLS AND THE MODULAR BLOCK RETAINING WALLS AT LOCATIONS INDICATED IN THE PLANS.

PAYMENT FOR THE JOINT FILLER SHALL BE AT THE CONTRACT PRICE BID PER SQUARE FOOT FOR ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER.

ITEM 517 - RAILING, ALUMINUM, AS PER PLAN

THE CONTRACTOR SHALL ERECT ALUMINUM RAILINGS ON TOP OF THE PRECAST CONCRETE TUNNEL FORESLOPE WALLS, WINGWALLS, AND MODULAR RETAINING WALLS AS PER RAILING AND RETAINING WALL MANUFACTURERS RECOMMENDATIONS.

- THE RAILING SYSTEM SHALL BE REGENCY ALUMINUM FENCE "WINDSOR" STYLE INDUSTRIAL SERIES #202 FB AS MANUFACTURED BY JERITH MANUFACTURING CO., INC., OR AN APPROVED EQUAL.
- THE NOMINAL HEIGHT SHALL BE 4 FEET WITH A MAXIMUM PICKET SPACING OF 4", MAXIMUM POST SPACING OF 6 FEET, AND 3 HORIZONTAL RAILS WITH A FLUSH BOTTOM STYLE.
- PICKETS SHALL BE 1" SQUARE (0.062" THICK MINIMUM).
- RAILS SHALL BE 1 5/8" SQUARE (0.100" THICK MINIMUM SIDEWALL X 0.070" THICK MINIMUM TOP WALL).
- POSTS SHALL BE 2 1/2" SQUARE (0.075" THICK MINIMUM).
- FINISH SHALL BE BLACK POWDER COATED (2.0 MILS MINIMUM).
- VERTICAL WEIGHT SUPPORTED PER SECTION SHALL BE 500 POUNDS MINIMUM.

THE RAILING WILL BE MEASURED AND PAID FOR PER FOOT AT THE TOP OF THE RAILING. THE BID PRICE PER FOOT SHALL INCLUDE ALL MATERIALS AND WORK REQUIRED TO CONSTRUCT THE RAILING AS DETAILED IN THESE PLANS.

ITEM 870 - PREFABRICATED MODULAR RETAINING WALL, AS PER PLAN

THE CONTRACTOR SHALL ERECT A RETAINING WALL PER ODOT SS870, MANUFACTURERS RECOMMENDATIONS, AND AS INDICATED ON SHEETS 5-8. CONSTRUCTION OF THE WALL IS TO INCLUDE RETAINING WALL BLOCKS, CAST-IN-PLACE CONCRETE COPING, GRANULAR MATERIAL (203.07) OR CONCRETE LEVELING PAD (PER MANUFACTURER'S RECOMMENDATIONS), 6" UNDERDRAIN PIPE (707.33), EXCAVATION, AND POROUS BACKFILL (518.03) WITH GEOTEXTILE FABRIC (712.09).

- ALL RETAINING WALL BLOCKS SHALL BE REDI-ROCK GRAVITY WALL WITH COBBLESTONE TEXTURE OR APPROVED EQUAL.
- BLOCK MANUFACTURING PLANT SHALL BE ODOT APPROVED AND NPCA CERTIFIED.
- ALL BLOCKS ARE TO BE 5 DEGREE BATTER UNLESS NOTED OTHERWISE.
- EXTREME CARE SHOULD BE TAKEN TO PREVENT WEAKENING OF THE FOUNDATION BEARING MATERIALS CAUSED BY PROLONGED ATMOSPHERIC EXPOSURE, CONSTRUCTION ACTIVITY DISTURBANCE, OR AN INCREASE IN MOISTURE CONTENT. THE AGGREGATE BASE AND BLOCKS SHALL BE LAID WITHIN 7 DAYS OF EXCAVATION, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- ONCE THE WALL IS BUILT, OVER COMPACTION OF THE MATERIALS AGAINST THE WALL IS TO BE AVOIDED UNDER ALL CIRCUMSTANCES SO AS TO PREVENT UNDUE LATERAL EARTH PRESSURES. COMPACTION TESTING SHALL BE DONE IN ACCORDANCE WITH ODOT SS878.
- EXCAVATION BRACING (AS PER 503.03) IS TO BE INCIDENTAL TO THE RETAINING WALL CONSTRUCTION.
- ITEM 203, EXCAVATION, HAS BEEN INCLUDED IN THE PLANS FOR THE LIMITS SHOWN ON THE CROSS SECTIONS. ANY ADDITIONAL EXCAVATION REQUIRED FOR THE WALL CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE WALL CONSTRUCTION AND SHALL BE INCLUDED IN THE UNIT COST OF THE WALL FOR PAYMENT. AN ESTIMATED QUANTITY OF 1,168 CY HAS BEEN CALCULATED, ASSUMING 1:1 SLOPES FROM THE HEEL OF THE WALL, FOR USE IN PRICE ESTIMATION OF THE EXCAVATION DESCRIBED ABOVE.
- THE WALL HAS BEEN SHOWN IN THE PLANS FOR LOCATION AND HEIGHT BUT FINAL WALL DESIGN SHALL BE AS PER THE MANUFACTURERS RECOMMENDATIONS AND DESIGN.
- PROPOSED UNDERDRAIN OUTLET LOCATION HAVE BEEN SHOWN IN THE PLANS BUT MAY BE ALTERED PER THE WALL MANUFACTURERS RECOMMENDATIONS AND AS APPROVED BY THE ENGINEER.
- CAST-IN-PLACE CONCRETE COPINGS SHALL BE INCLUDED IN THE UNIT COST OF THE WALL FOR PAYMENT. AN ESTIMATED QUANTITY OF 280 FT HAS BEEN CALCULATED FOR ESTIMATION PURPOSES.
- SEAL EXTERIOR SURFACES OF ALL CONCRETE MODULAR UNITS WITH AN EPOXY-URETHANE SEALER PER ITEM 512 AFTER COMPLETION OF WALL CONSTRUCTION. SEALER SHALL BE TINTED SO THE FINAL COLOR IS FEDERAL COLOR STANDARD NO. 33448 - DARK YELLOW. PIGMENT CONTENT SHALL BE LIMITED SO AS NOT TO REDUCE SEALING EFFECTIVENESS OF THE CONCRETE SEALER.
- SEAL EXTERIOR SURFACES OF ALL CAST-IN-PLACE CONCRETE COPINGS WITH AN EPOXY-URETHANE SEALER PER ITEM 512 AFTER COMPLETION OF WALL CONSTRUCTION. SEALER SHALL BE TINTED SO THE FINAL COLOR IS FEDERAL COLOR STANDARD NO. 20122 - DARK BROWN. PIGMENT CONTENT SHALL BE LIMITED SO AS NOT TO REDUCE SEALING EFFECTIVENESS OF THE CONCRETE SEALER.

THE RETAINING WALL WILL BE MEASURED BY SQUARE FOOT (SF) OF THE WALL FACE AND PAID FOR AT THE UNIT BID PRICE PER SQUARE FOOT FOR ALL BLOCKS LAID AS REQUIRED BY THE MANUFACTURER RECOMMENDATIONS. THE BID PRICE WILL INCLUDE ALL WORK ASSOCIATED WITH CONSTRUCTING THE WALL AS SHOWN IN THE PLANS. THE BID PRICE WILL ALSO INCLUDE DESIGN, WALL EXCAVATION AND EXCAVATION BRACING, CAST-IN-PLACE CONCRETE COPING, 6" UNDERDRAIN CONDUIT (PERFORATED PORTION LOCATED BEHIND THE WALLS), GRANULAR MATERIAL OR CONCRETE LEVELING PAD, POROUS BACKFILL WITH GEOTEXTILE FABRIC, SOIL FOR BACKFILL, TINTED CONCRETE SURFACE SEALING, ON-SITE ASSISTANCE, INSPECTION AND COMPACTION TESTING, AND ANY OTHER LABOR, EQUIPMENT, MATERIALS, OR INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM TO THE SATISFACTION OF THE ENGINEER.

K.E. McCARTNEY & ASSOCIATES
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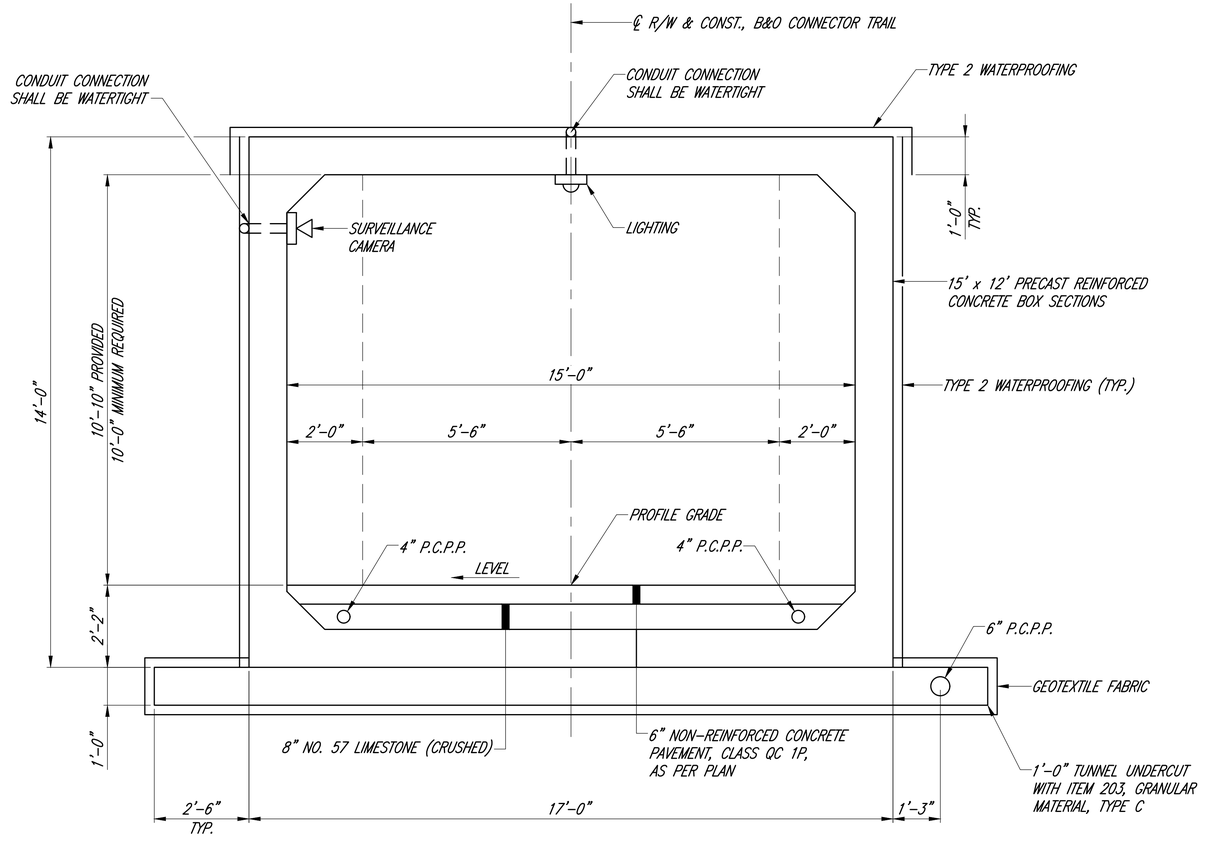
REVIEWED JDB DATE 2/29/24 NEW STRUCTURE FILE NO.
DRAWN CJS REVISED
DESIGNED CJS CHECKED TGW

STRUCTURE NOTES
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

ESTIMATED QUANTITIES

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
203	35120	79	CY	GRANULAR MATERIAL, TYPE C	
204	50000	310	SY	GEOTEXTILE FABRIC	
304	20000	33	CY	AGGREGATE BASE (NO. 57 CRUSHED LIMESTONE)	
452	10011	160	SY	6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P, AS PER PLAN	4/38
503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
503	21100	1229	CY	UNCLASSIFIED EXCAVATION	2/8
512	10001	803	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	2/8
512	10101	424	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	2/8
512	33000	484	SY	TYPE 2 WATERPROOFING	
516	13600	136	SF	1" PREFORMED EXPANSION JOINT FILLER	
517	75001	324	FT	RAILING, ALUMINUM, AS PER PLAN	2/8
518	39800	192	FT	4" PERFORATED CORRUGATED PLASTIC PIPE	
518	39900	21	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
518	40000	96	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
518	40010	97	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
530	00200	LS		SPECIAL - STRUCTURES - PRECAST CONCRETE HEADWALLS	2/8
611	97400	96	FT	CONDUIT, MISC.: 15'x12' CONDUIT, TYPE A, 706.05	
870	10001	2765	SF	PREFABRICATED MODULAR RETAINING WALL, AS PER PLAN	2/8



PRECAST CONCRETE BOX TUNNEL
TYPICAL SECTION

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

DESIGNED CJS | DRAWN CJS | REVIEWED JDB | DATE 2/29/24
CHECKED TGW | REVISED | NEW STRUCTURE FILE NO.

QUANTITIES & TYPICAL SECTION
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

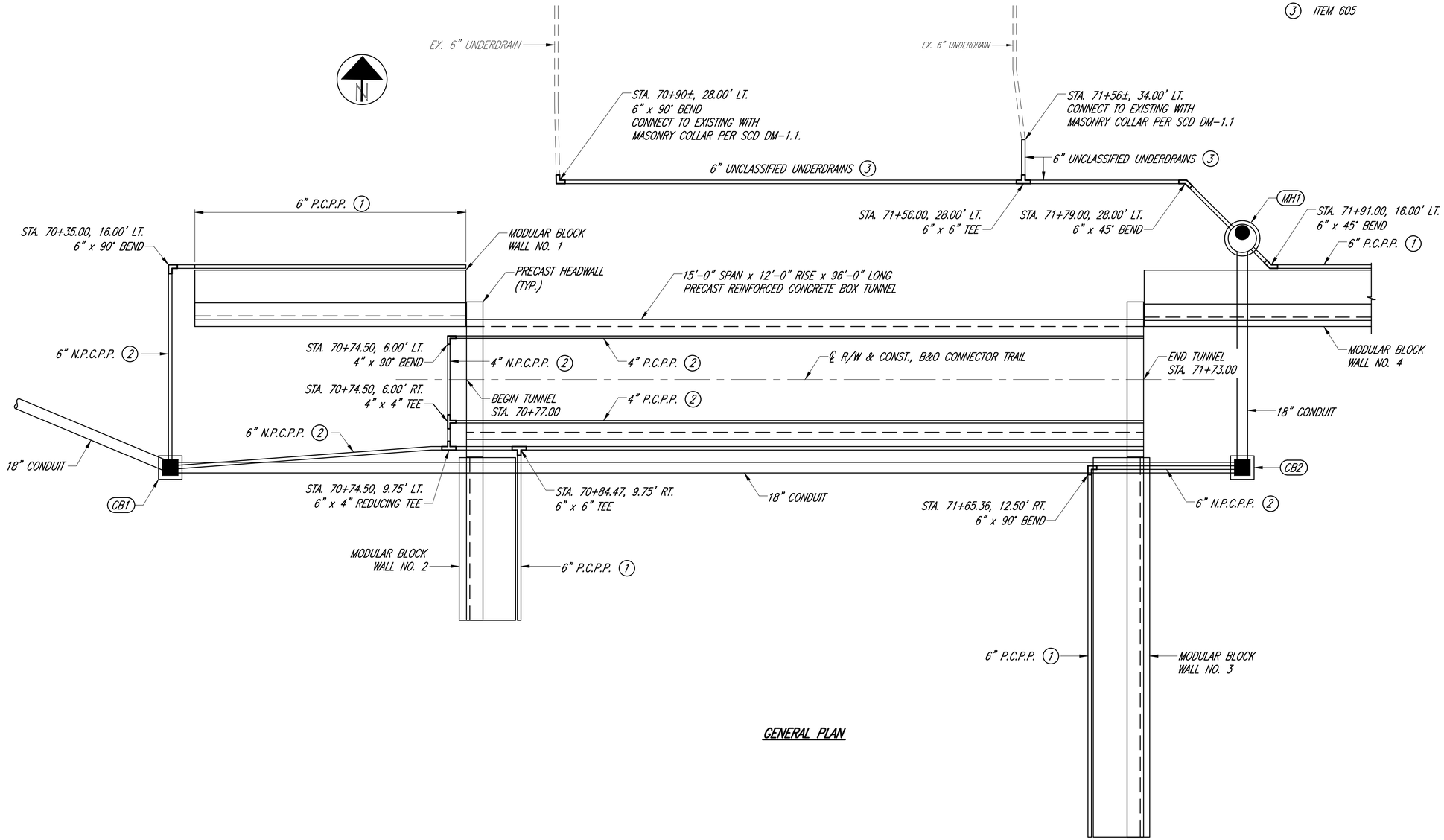
RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

NOTES

1. FOR ADDITIONAL INFORMATION, SEE SHEETS 10 THROUGH 12 OF 37.

N.P.C.P.P. = NON-PERFORATED CORRUGATED PLASTIC PIPE
P.C.P.P. = PERFORATED CORRUGATED PLASTIC PIPE

(1) INCLUDE WITH ITEM 870 FOR PAYMENT.
(2) ITEM 518
(3) ITEM 605



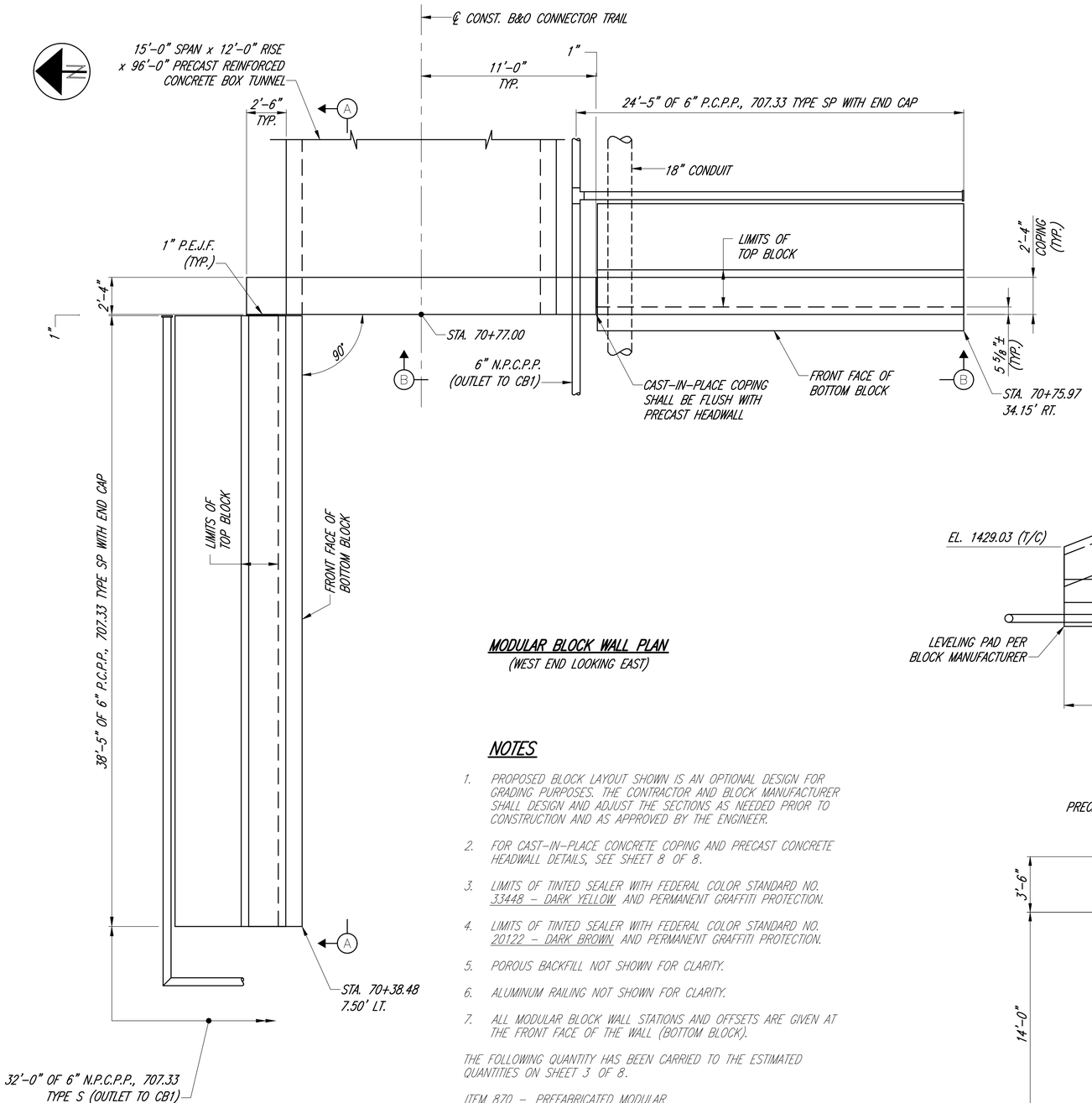
GENERAL PLAN

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

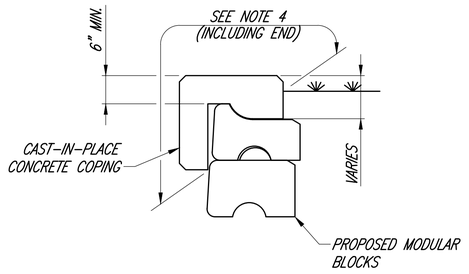
DESIGNED	DRAWN	REVIEWED	DATE
CJS	CJS	JDB	2/29/24
CHECKED	REVISED	NEW STRUCTURE FILE NO.	
TGW			

GENERAL PLAN
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

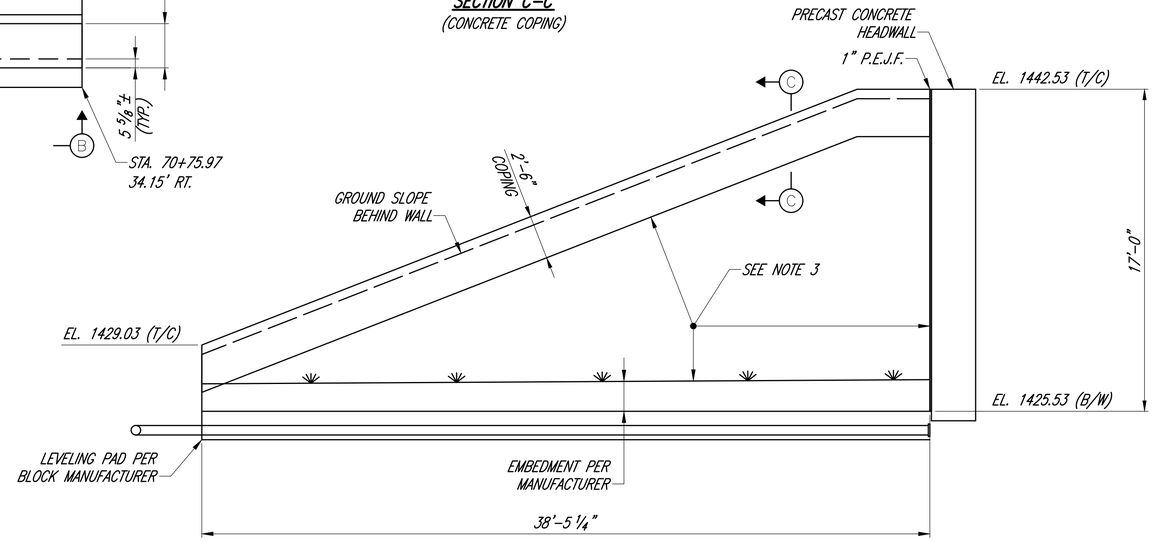
RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



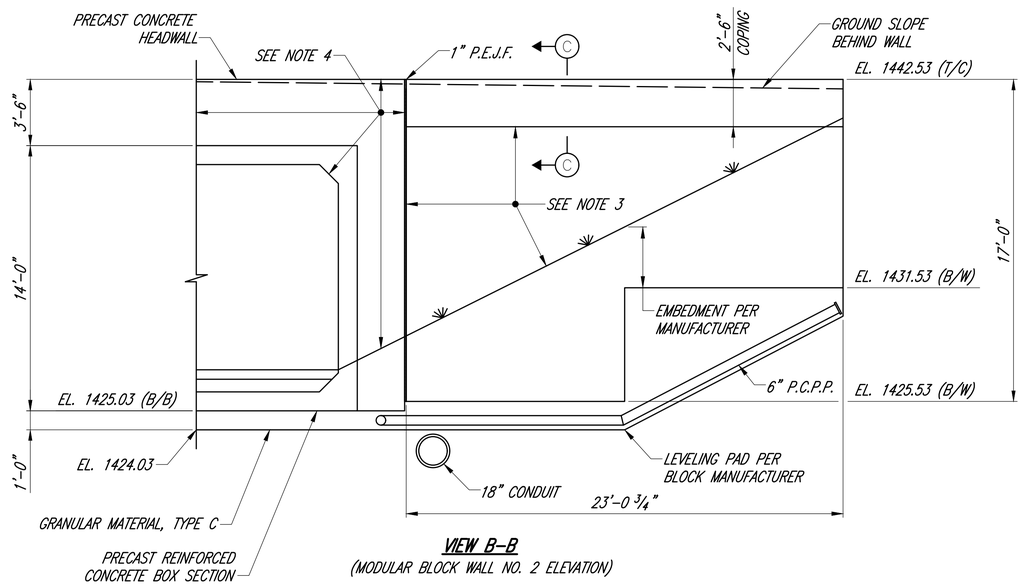
MODULAR BLOCK WALL PLAN
(WEST END LOOKING EAST)



SECTION C-C
(CONCRETE COPING)



VIEW A-A
(MODULAR BLOCK WALL NO. 1 ELEVATION)



VIEW B-B
(MODULAR BLOCK WALL NO. 2 ELEVATION)

NOTES

1. PROPOSED BLOCK LAYOUT SHOWN IS AN OPTIONAL DESIGN FOR GRADING PURPOSES. THE CONTRACTOR AND BLOCK MANUFACTURER SHALL DESIGN AND ADJUST THE SECTIONS AS NEEDED PRIOR TO CONSTRUCTION AND AS APPROVED BY THE ENGINEER.
2. FOR CAST-IN-PLACE CONCRETE COPING AND PRECAST CONCRETE HEADWALL DETAILS, SEE SHEET 8 OF 8.
3. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 33448 – DARK YELLOW AND PERMANENT GRAFFITI PROTECTION.
4. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 20122 – DARK BROWN AND PERMANENT GRAFFITI PROTECTION.
5. POROUS BACKFILL NOT SHOWN FOR CLARITY.
6. ALUMINUM RAILING NOT SHOWN FOR CLARITY.
7. ALL MODULAR BLOCK WALL STATIONS AND OFFSETS ARE GIVEN AT THE FRONT FACE OF THE WALL (BOTTOM BLOCK).

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES ON SHEET 3 OF 8.

ITEM 870 – PREFABRICATED MODULAR
RETAINING WALL, AS PER PLAN 686 SF

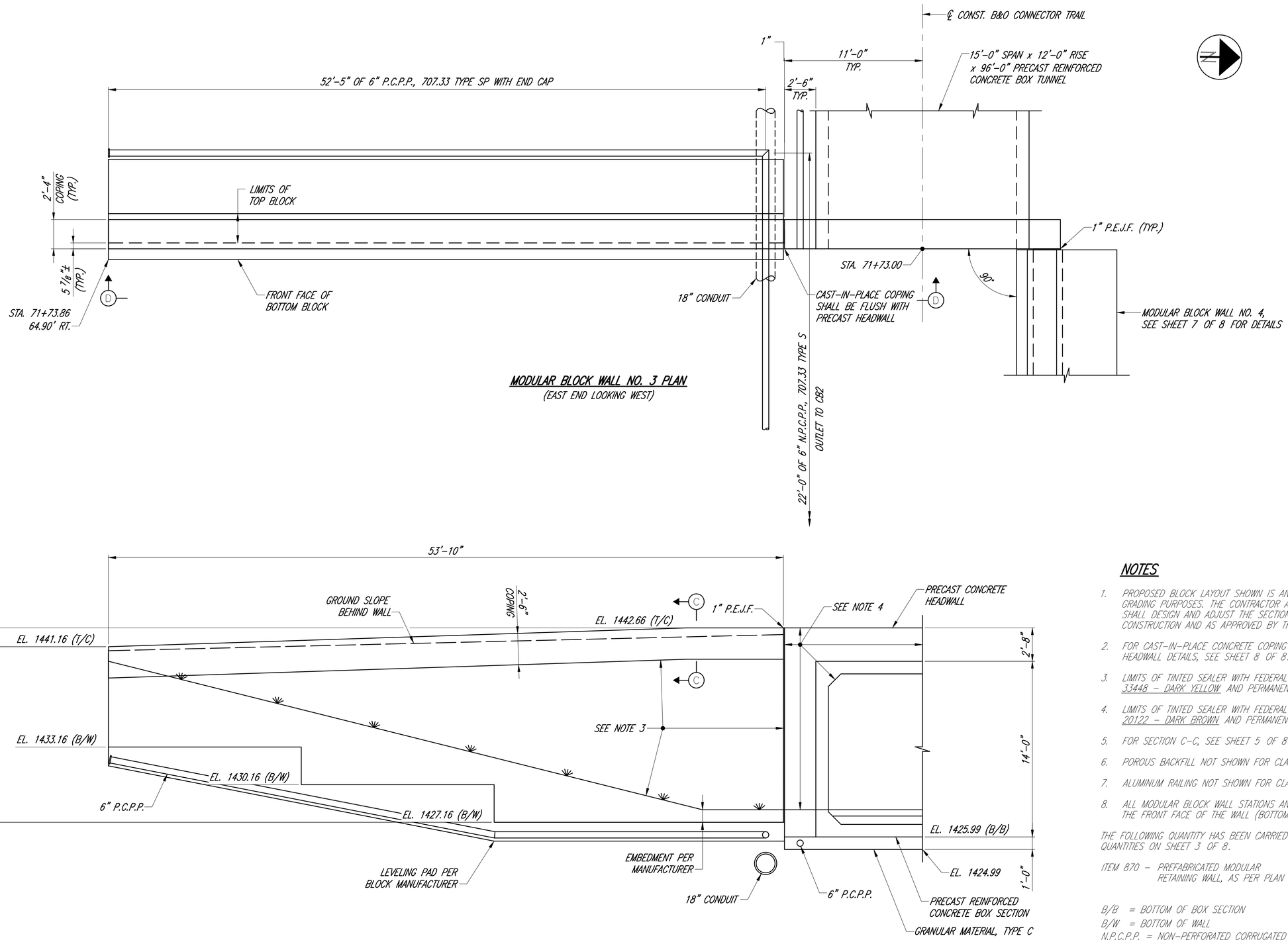
B/B = BOTTOM OF BOX SECTION
B/W = BOTTOM OF WALL
N.P.C.P.P. = NON-PERFORATED CORRUGATED PLASTIC PIPE
P.C.P.P. = PERFORATED CORRUGATED PLASTIC PIPE
T/C = TOP OF COPING

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

REVIEWED	DATE
JDB	2/29/24
NEW STRUCTURE	FILE NO.
DRAWN	
CJS	
REVISED	
DESIGNED	
CJS	
CHECKED	
TGW	

RETAINING WALL DETAILS - 1
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



MODULAR BLOCK WALL NO. 3 PLAN
(EAST END LOOKING WEST)

VIEW D-D
(MODULAR BLOCK WALL NO. 3 ELEVATION)

NOTES

1. PROPOSED BLOCK LAYOUT SHOWN IS AN OPTIONAL DESIGN FOR GRADING PURPOSES. THE CONTRACTOR AND BLOCK MANUFACTURER SHALL DESIGN AND ADJUST THE SECTIONS AS NEEDED PRIOR TO CONSTRUCTION AND AS APPROVED BY THE ENGINEER.
2. FOR CAST-IN-PLACE CONCRETE COPING AND PRECAST CONCRETE HEADWALL DETAILS, SEE SHEET 8 OF 8.
3. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 33448 – DARK YELLOW AND PERMANENT GRAFFITI PROTECTION.
4. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 20122 – DARK BROWN AND PERMANENT GRAFFITI PROTECTION.
5. FOR SECTION C-C, SEE SHEET 5 OF 8.
6. POROUS BACKFILL NOT SHOWN FOR CLARITY.
7. ALUMINUM RAILING NOT SHOWN FOR CLARITY.
8. ALL MODULAR BLOCK WALL STATIONS AND OFFSETS ARE GIVEN AT THE FRONT FACE OF THE WALL (BOTTOM BLOCK).

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES ON SHEET 3 OF 8.

ITEM 870 – PREFABRICATED MODULAR RETAINING WALL, AS PER PLAN 600 SF

B/B = BOTTOM OF BOX SECTION
B/W = BOTTOM OF WALL
N.P.C.P.P. = NON-PERFORATED CORRUGATED PLASTIC PIPE
P.C.P.P. = PERFORATED CORRUGATED PLASTIC PIPE
T/C = TOP OF COPING

K.E. McCARTNEY & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

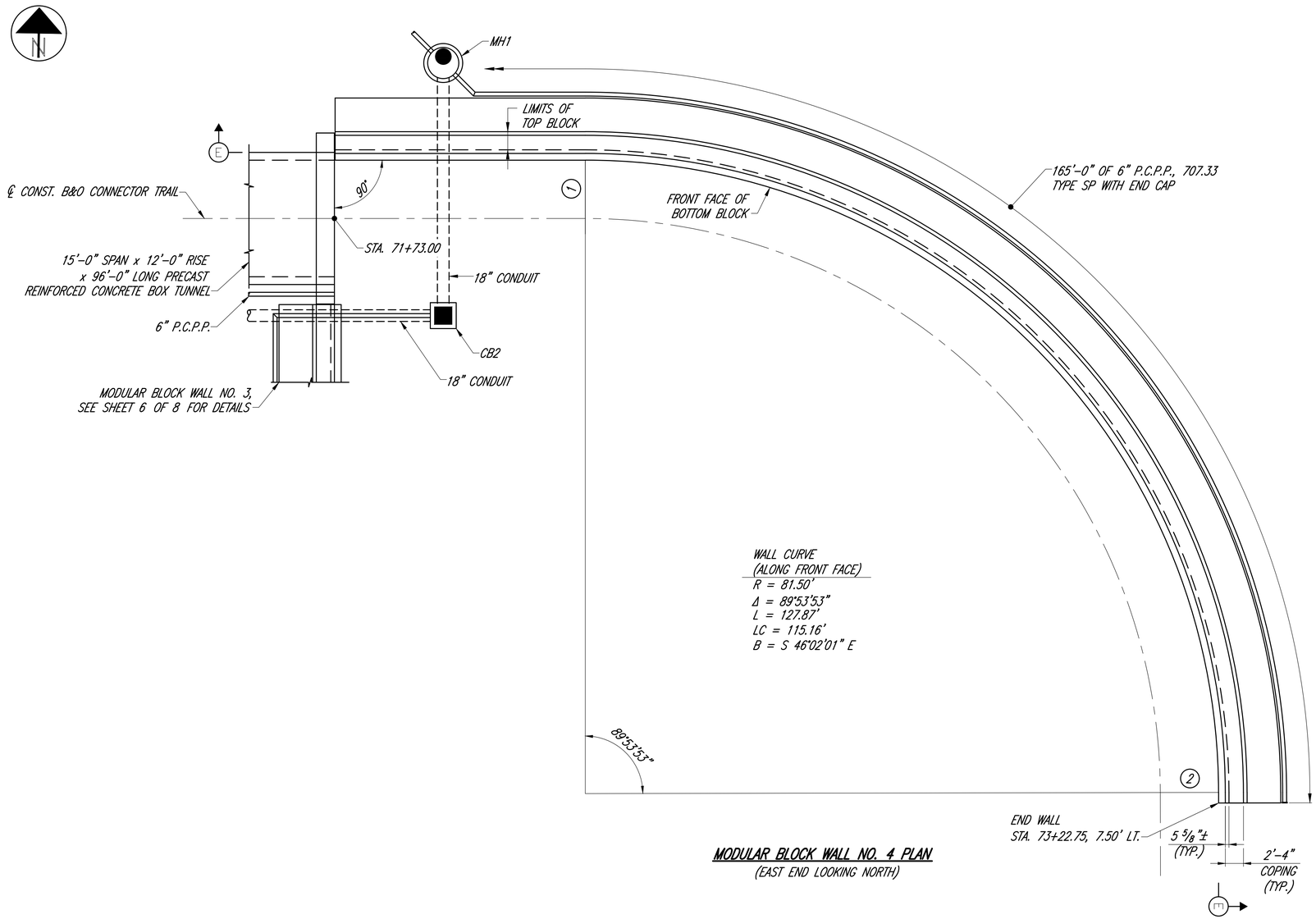
DESIGNED	DRAWN	REVIEWED	DATE
CJS	CJS	JDB	2/29/24
CHECKED	REVISED	NEW STRUCTURE FILE NO.	
TGW			

RETAINING WALL DETAILS - 2
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

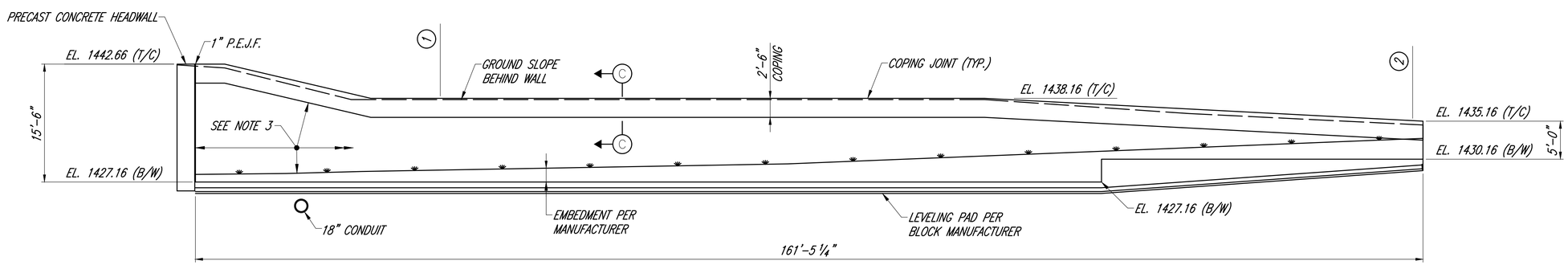
RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL

6 / 8

35
37



MODULAR BLOCK WALL NO. 4 PLAN
(EAST END LOOKING NORTH)



VIEW E-E
(MODULAR BLOCK WALL NO. 4 ELEVATION)

NOTES

1. PROPOSED BLOCK LAYOUT SHOWN IS AN OPTIONAL DESIGN FOR GRADING PURPOSES. THE CONTRACTOR AND BLOCK MANUFACTURER SHALL DESIGN AND ADJUST THE SECTIONS AS NEEDED PRIOR TO CONSTRUCTION.
2. FOR CAST-IN-PLACE CONCRETE COPING AND PRECAST CONCRETE HEADWALL DETAILS, SEE SHEET 8 OF 37.
3. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 33448 – DARK YELLOW.
4. FOR SECTION C-C, SEE SHEET 5 OF 8.
5. POROUS BACKFILL NOT SHOWN FOR CLARITY.
6. ALUMINUM RAILING NOT SHOWN FOR CLARITY.
7. ALL MODULAR BLOCK WALL STATIONS AND OFFSETS ARE GIVEN AT THE FRONT FACE OF THE WALL (BOTTOM BLOCK).

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES ON SHEET 3 OF 8.

ITEM 870 – PREFABRICATED MODULAR RETAINING WALL, AS PER PLAN 1479 SF

B/F = BOTTOM OF FOOTING
B/W = BOTTOM OF WALL
N.P.C.P.P. = NON-PERFORATED CORRUGATED PLASTIC PIPE
P.C.P.P. = PERFORATED CORRUGATED PLASTIC PIPE
T/C = TOP OF COPING

(1) BEGIN WALL CURVE
STA. 72+05.29, 7.50' LT.

(2) END WALL CURVE
STA. 73+21.39, 7.50' LT.

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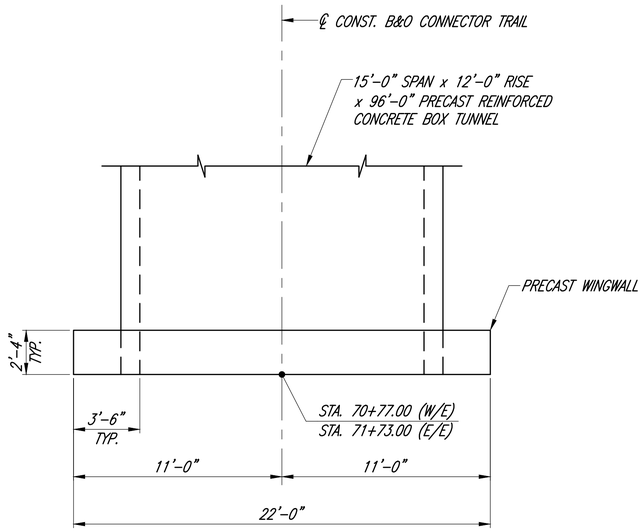
DESIGNED	DRAWN	REVIEWED	DATE
C.J.S	C.J.S	J.D.B	2/29/24
CHECKED	REVISED	NEW STRUCTURE FILE NO.	
T.G.W			

RETAINING WALL DETAILS - 3
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL



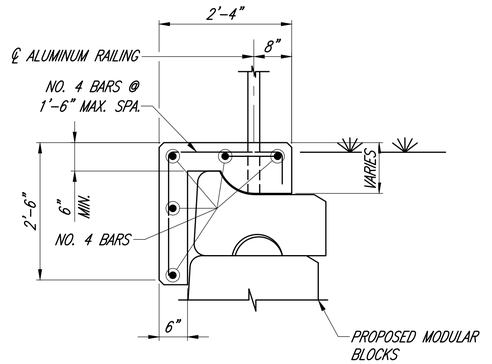
HEADWALL PLAN

NOTES

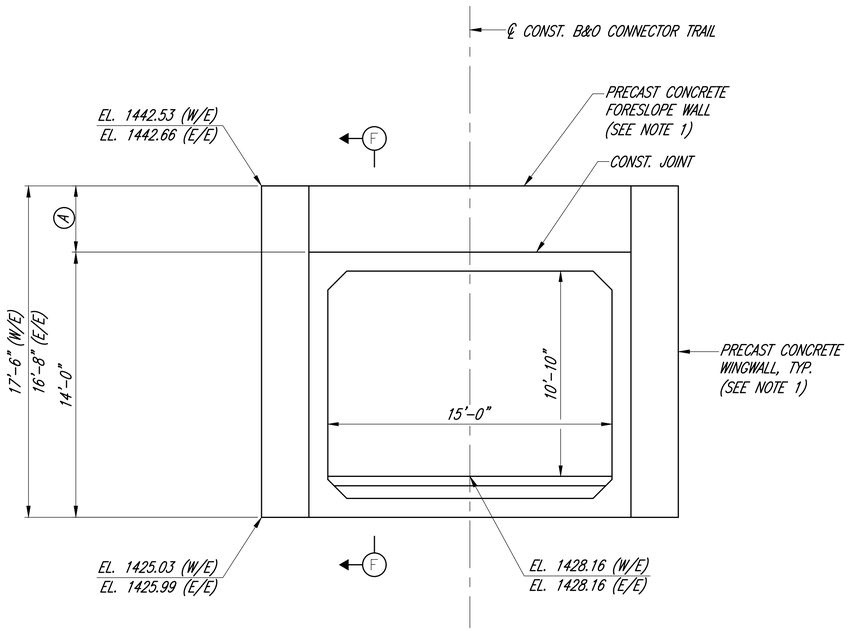
1. PRECAST FORESLOPE AND WINGWALLS SHALL BE PROVIDED AS SHOWN ON THIS SHEET. REINFORCING STEEL AND CONNECTIONS SHALL BE DESIGNED BY THE PRECAST CONCRETE BOX MANUFACTURER.
2. LIMITS OF TINTED SEALER WITH FEDERAL COLOR STANDARD NO. 20122 – DARK BROWN AND PERMANENT GRAFFITI PROTECTION (INCLUDING ENDS).
3. CONTRACTOR SHALL PROVIDE COPING JOINTS PLACED AT A MAXIMUM 20 FOOT SPACING. JOINTS SHALL BE LOCATED SO THEY ARE VERTICAL AND ALIGN WITH THE JOINTS BETWEEN THE MODULAR UNITS. DO NOT RUN BAR STEEL THROUGH JOINTS.
4. THE CONTRACTOR SHALL OMIT THE SPIGOT (TONGUE) AND BELL (GROOVE) ENDS IN THE FIRST AND LAST PRECAST CONCRETE BOX SECTIONS.
5. ALUMINUM RAILING NOT SHOWN IN PLAN AND ELEVATION FOR CLARITY. ALUMINUM RAILING SHALL BE INSTALLED PER RAILING AND MODULAR BLOCK WALL MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL ACCURATELY PLACE REINFORCING IN THE CONCRETE COPING TO AVOID INTERFERENCE WITH THE DRILLING OF HOLES FOR RAILING POSTS.

W/E = WEST END
E/E = EAST END

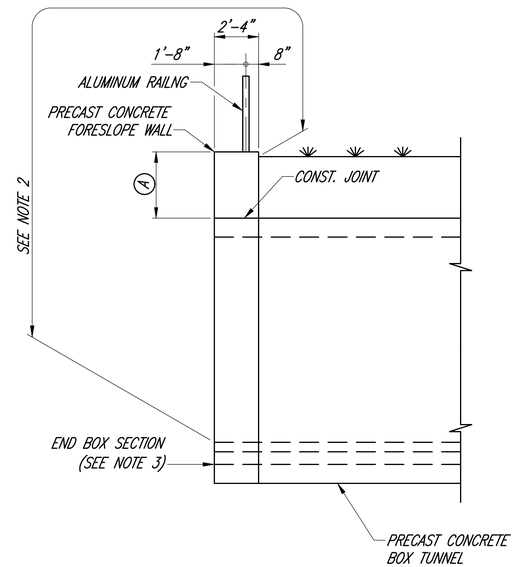
(A) – 3'-6" (WEST END SECTION)
2'-8" (EAST END SECTION)



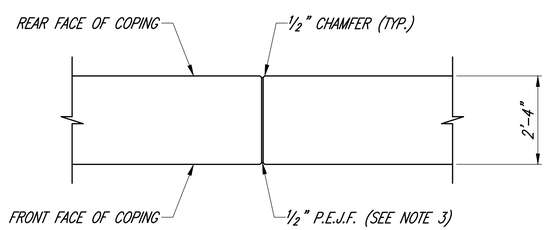
COPING DETAIL



HEADWALL ELEVATION
WEST HEADWALL LOOKING AHEAD STATION
EAST HEADWALL LOOKING BACK STATION



SECTION F-F



COPING JOINT DETAIL

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DESIGNED	DRAWN	REVIEWED	DATE
CJS	CJS	JDB	2/29/24
CHECKED	REVISED	NEW STRUCTURE FILE NO.	
TGW			

RETAINING WALL DETAILS - 4
TRIMBLE ROAD TUNNEL
TRIMBLE ROAD OVER B&O CONNECTOR TRAIL

RIC-B&O CONNECTOR TRAIL
TRIMBLE ROAD TUNNEL