

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

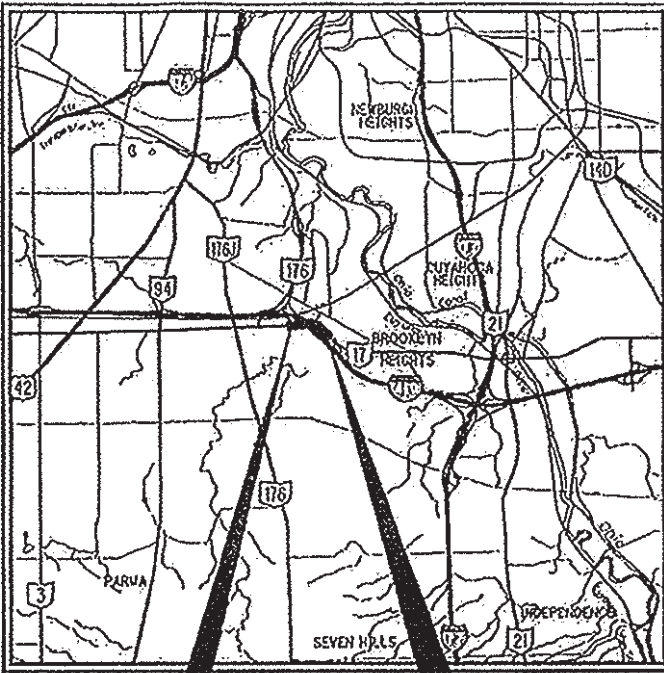
**CUY-17-12.16**

VILLAGE OF BROOKLYN HEIGHTS  
CUYAHOGA COUNTY

PROJECT DESCRIPTION

PLACING AN ASPHALT CONCRETE OVERLAY, PAVEMENT MARKINGS, AND BRIDGE DECK PATCHING ON SR-17 (GRANGER RD.). REPAIRING EXISTING CONCRETE PAVEMENT AND STRUCTURE AND TRAFFIC SIGNAL MODIFICATIONS FOR CURB RAMP UPGRADES IN THE GRANGER RD / TUXEDO AVE. INTERSECTION.

PROJECT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)  
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)



BEGIN PROJECT SR-17 (GRANGER RD.) SLM 12.16  
END PROJECT SR-17 (GRANGER RD.) SLM 12.58

LOCATION MAP  
LATITUDE: N 41°25'10" LONGITUDE: W 81°40'46"



PORTION TO BE IMPROVED	-----
INTERSTATE HIGHWAY	=====
FEDERAL ROUTES	-----
STATE ROUTES	-----
COUNTY & TOWNSHIP ROADS	-----
OTHER ROADS	-----

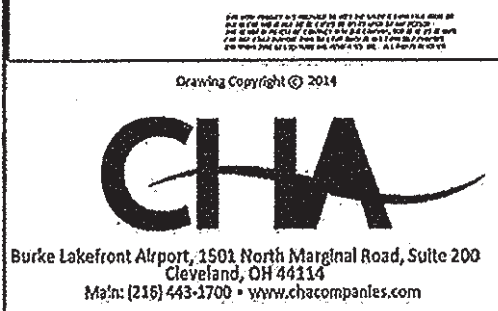
DESIGN DESIGNATION

CURRENT ADT (2014)	-----	17,100
TRUCKS (24 HOUR B&C)	-----	3.5%
DESIGN SPEED	-----	35
LEGAL SPEED	-----	35
DESIGN FUNCTIONAL CLASSIFICATION:		
URBAN MINOR ARTERIAL		
NHS PROJECT	-----	NO

DESIGN EXCEPTIONS

NONE REQUIRED

PLAN PREPARED BY:



SHEETS 1-30  
ENGINEERS SEAL:  
STATE OF OHIO  
L. LANIER  
PROFESSIONAL ENGINEER  
E-59884  
SIGNED: [Signature]  
DATE: 09/23/14

SHEETS 30-43 & 36A  
ENGINEERS SEAL:  
STATE OF OHIO  
ADAM S. DAVIDSON  
REGISTERED PROFESSIONAL ENGINEER  
E-73799  
SIGNED: [Signature]  
DATE: 09/23/14

INDEX OF SHEETS:

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UNDERGROUND UTILITIES

CONTACT BOTH SERVICES  
CALL TWO WORKING DAYS  
BEFORE YOU DIG

CALL 1-800-362-2764 (TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

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

2013 SPECIFICATIONS

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

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY WILL BE AS SET FORTH ON PLANS AND ESTIMATES.

APPROVED: [Signature] DISTRICT DEPUTY DIRECTOR  
DATE 11-18-14

APPROVED: [Signature] DIRECTOR, DEPARTMENT OF TRANSPORTATION  
DATE 11-15-14

STANDARD CONSTRUCTION DRAWINGS

NO.	DATE	DESCRIPTION	DATE	NO.	DATE	DESCRIPTION	DATE	SUPPLEMENTAL SPECIFICATIONS
BP-2.2	7/18/08	MT-95.30	7/18/14	HL-30.11	1/17/14	BR-2-98	7/20/12	800 01/21/15
BP-2.3	7/18/14	MT-95.31	7/18/14			VPF-1-90	4/15/11	832 01/17/14
BP-2.5	7/19/13	MT-95.32	7/18/14					
BP-3.1	7/18/14	MT-95.50	7/19/13					
BP-5.1	7/19/13	MT-98.20	7/18/14					
BP-7.1	7/18/14	MT-98.28	7/18/14					
MCS-1.1	7/19/13	MT-101.90	7/18/14					
MCS-2.1	7/19/13	MT-105.10	7/19/13					
MCS-3.2	1/18/13	MT-110.10	7/19/13					
MCS-4.2	7/19/13							
MCS-4.3	1/18/13							
MCS-5.2	7/19/13							
TC-41.20	10/18/13							
TC-71.10	1/17/14							

SPECIAL PROVISIONS  
OHIO EPA NOTIFICATION OF DEMOLITION & RENOVATION

FEDERAL PROJECT NO. E140354

PID NO. 94721

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

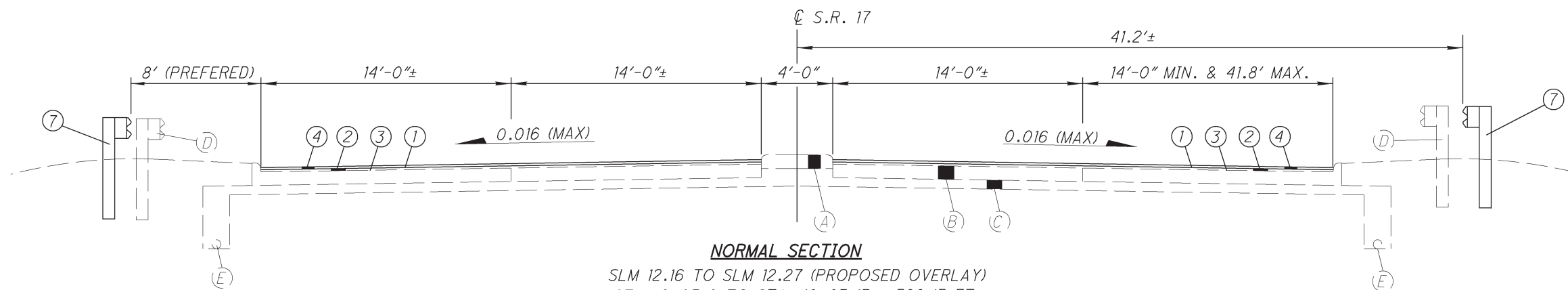
CUY-17-12.16

1/43

CUY - SR 17-12.16  
150168 PID - 94721  
Dist 12 4/9/2015

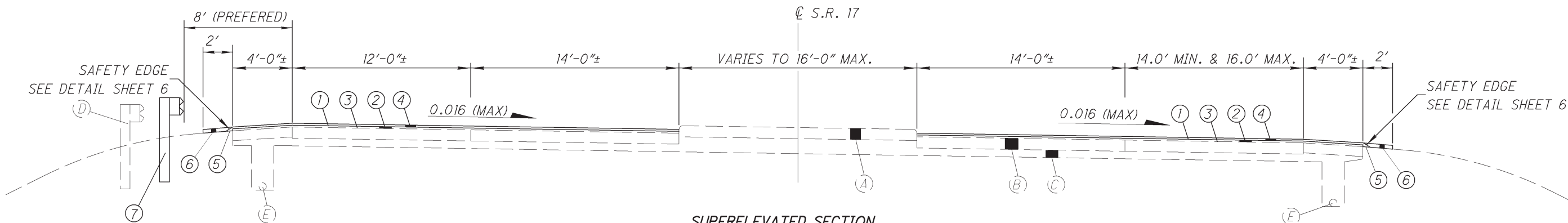
Contract Proposal Available @ www.contracts.dot.state.oh.us/home

SHEET 94721GT001.DGN



**NORMAL SECTION**

SLM 12.16 TO SLM 12.27 (PROPOSED OVERLAY)  
 STA. 6+05.0 TO STA. 12+03.13 = 598.13 FT.  
 SLM 12.27 TO SLM 12.37 (BRIDGE NO CUY-17-1227) (ITEM SPECIAL PATCHING CONCRETE BRIDGE DECK)  
 STA. 12+03.13 TO STA. 17+37.44 = 534.31 FT.  
 SLM 12.37 TO SLM 12.41 (RIGID PAVEMENT REPAIR)  
 STA. 17+37.44 TO STA. 19+40.08 = 202.64 FT.

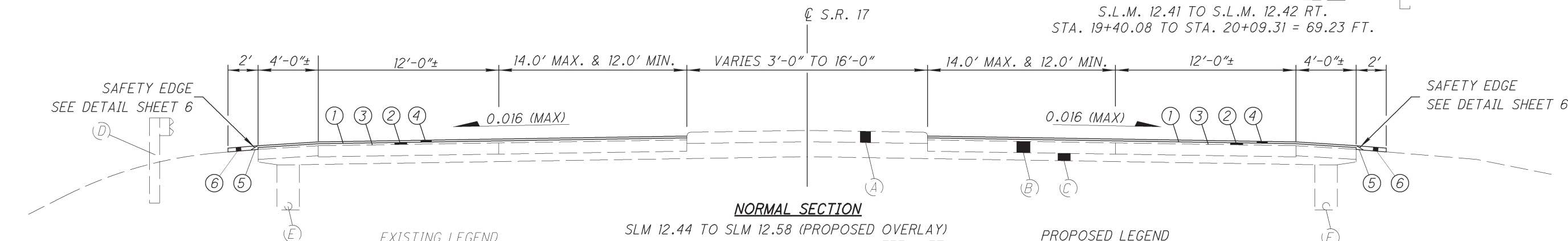


**SUPERELEVATED SECTION**

SLM 12.41 TO SLM 12.44 (PROPOSED OVERLAY)  
 STA. 19+40.08 TO STA. 20+87.18 = 147.10 FT.

**CURBED SHOULDER DETAIL**

S.L.M. 12.41 TO S.L.M. 12.42 RT.  
 STA. 19+40.08 TO STA. 20+09.31 = 69.23 FT.



**NORMAL SECTION**

SLM 12.44 TO SLM 12.58 (PROPOSED OVERLAY)  
 STA. 20+87.18 TO STA. 28+20.29 = 733.11 FT.

**EXISTING LEGEND**

- (A) - CONCRETE MEDIAN
- (B) - 9" REINFORCED CONCRETE PAVEMENT
- (C) - SUBBASE
- (D) - GUARDRAIL, TYPE 5
- (E) - UNDERDRAIN

**PROPOSED LEGEND**

- ① - ITEM SPECIAL - TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE
- ② - ITEM 441 - 1" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)
- ③ - ITEM SPECIAL - TACK COAT, TRACKLESS TACK
- ④ - ITEM 441 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN
- ⑤ - ITEM 209 - PREPARING SUBGRADE FOR SHOULDER PAVING, AS PER PLAN
- ⑥ - ITEM 617 - 3" COMPACTED AGGREGATE, AS PER PLAN
- ⑦ - ITEM 606 - GUARDRAIL TYPE MGS

**UTILITIES**

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

AT&T  
13630 LORAIN AVENUE.  
2ND FLOOR  
CLEVELAND, OH 44111  
PH: (216) 476-6142  
FX: (216) 476-6012

CITY OF CLEVELAND  
DIVISION OF WATER  
1201 LAKESIDE AVENUE  
CLEVELAND, OH 44114  
PH: (216) 664-2444, EXT. 5555  
FX: (216) 664-2378

BP OIL  
EAST 49TH ST.  
CLEVELAND, OH 44109  
PH: (216) 271-8275

DOMINION EAST  
OHIO GAS COMPANY  
320 SPRINGSIDE DRIVE  
FAIRLAWN, OH 44333  
PH: (330) 664-2494

BUCKEYE PIPELINE CO.  
5002 BUCKEYE ROAD  
EMMAUS, PA 18049  
PH: (484) 232-4303  
FX: (484) 232-4289

LEVEL (3) COMMUNICATIONS, LLC.  
1025 EL DORADO BOULEVARD  
BROOMFIELD, CO 80021  
PH: (720) 888-3406  
FX: (720) 888-5223

WIDE OPEN WEST OHIO, LLC  
8868 RIDGE ROAD  
NORTH ROYALTON, OH 44133  
PH: (440) 582-6020  
FX: (440) 582-6006

MCI - WORLDWIDE  
120 RAVINE STREET  
AKRON, OH 44303  
PH: (330) 253-8267

NORTHEAST OHIO  
NATURAL GAS CORP.  
(SPELMA PIPLINE HOLDINGS, LLC)  
9081 STATE ROUTE 250  
STRASBURG, OH 44680  
PH: (330) 878-5589  
FX: (330) 878-5614

HIGHWAY LIGHTING CABLING AND CONDUIT  
O.D.O.T. DISTRICT 12  
ATTN: BRYAN KRALL  
DISTRICT LIGHTING SUPERVISOR  
RIVEREDGE MAINTENANCE YARD  
PH: (212) 676-5295

OHIO OIL & GAS  
PRODUCERS UNDERGROUND PROTECTION SERVICE (OGPUPS)  
PH: (800) 925-0988

O.D.O.T DISTRICT 12  
5500 TRANSPORTATION BLVD.  
GARFIELD HEIGHTS, OH 44125  
ATTN: TONY TOTH (ELECTRICAL)  
PH: (216) 584 - 2220  
ATTN: LOU MINCEK (DRAINAGE)  
PH: (216) 584-2221

NORTHEAST OHIO REGIONAL SEWER DISTRICT (NEORS)  
3900 EUCLID AVENUE  
CLEVELAND, OH 44115  
PH: (216) 881-6600  
FX: (216) 881-2738

VILLAGE OF BROOKLYN HEIGHTS  
233 TUXEDO AVENUE  
BROOKLYN HEIGHTS, OH 44131  
PH: (216) 351-0131  
FX: (216) 351-3534

CUYAHOGA COUNTY  
SANITARY ENGINEER  
6100 WEST CANAL ROAD  
VALLEY VIEW, OH 44125  
PH: (216) 443-8205  
FX: (216) 443-8236

COLUMBIA GAS OF OHIO NISOURCE  
7080 FRY ROAD  
MIDDLEBURG HEIGHTS, OH 44130  
PH: (440) 891-2428  
FX: (440) 891-2477

ILLUMINATING CO.  
6896 MILLER ROAD  
BRECKSVILLE, OH 44141  
PH: (440) 717-6845  
FX: (440) 546-8780

TIME WARNER CABLE  
7 SEVERANCE CIRCLE  
CLEVELAND, OH 44118  
PH: (440) 336-0417  
EXT. 625  
FX: (216) 581-3262

**ITEM 441 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN**  
THE COARSE VIRGIN AGGREGATE FOR THIS ITEM SHALL CONSIST OF A BLEND OF 60% MIN. AIR COOLED BLAST FURNACE SLAG (ACBFS) OR TRAP ROCK FROM ONTARIO WITH LIMESTONE COMPRISING THE REMAINING PERCENTAGE. USE A PG70-22M BINDER FOR THIS ITEM.

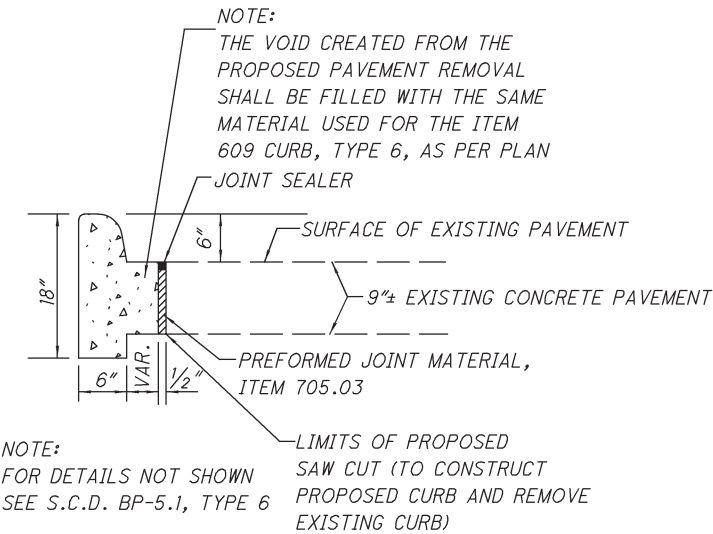
**ITEM 617 COMPACTED AGGREGATE, AS PER PLAN**  
THIS ITEM SHALL BE USED ALONG THE SHOULDER. MATERIAL SHALL BE LIMITED TO RECLAIMED ASPHALT CONCRETE PAVEMENT.

THE ACTUAL DEPTH USED WILL VARY DEPENDING UPON EXISTING CONDITIONS. FOR ESTIMATING PURPOSES, AN AVERAGE DEPTH OF ONE AND A HALF INCHES (1½") WILL BE USED. WATER, IF NEEDED, SHALL BE APPLIED AS PER 617.05 AND INCLUDED FOR PAYMENT UNDER ITEM 607 COMPACTED AGGREGATE, AS PER PLAN.

**ITEM 609 CURB, TYPE 6, AS PER PLAN**  
THIS ITEM SHALL INCLUDE CONSTRUCTING CURB AS PER PLAN AS DETAILED BELOW AND AT THE LOCATIONS AS SHOWN IN THE PLANS.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PERFORM THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR ITEM 609 CURB, TYPE 6, AS PER PLAN.

AN ESTIMATED 10.5 S.Y. OF CONCRETE WILL BE REQUIRED TO PERFORM THE WORK AS DESCRIBED ABOVE.



**ITEM 202 PAVEMENT REMOVED, AS PER PLAN**  
CURB AND PAVEMENT REMOVED SHALL BE PAID FOR UNDER ITEM 202 PAVEMENT REMOVED, AS PER PLAN. FULL DEPTH SAW CUT SHALL ALSO BE PAID FOR UNDER THIS ITEM.

**ITEM SPECIAL TACK COAT, TRACKLESS TACK  
ITEM SPECIAL TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE**

DESCRIPTION: THIS WORK CONSISTS OF PREPARING AND TREATING A PAVED SURFACE WITH NTSS-IHM TRACKLESS TACK PRODUCED BY BLACKLIDGE EMULSIONS, INC. MEET ALL REQUIREMENTS OF CONSTRUCTION AND MATERIAL SPECIFICATIONS ITEM 407 TACK COAT EXCEPT AS NOTED BELOW.

MATERIAL: CONFORM TO THE FOLLOWING TYPICAL PHYSICAL PROPERTIES:

PARAMETER	TEST METHOD	MIN.	MAX.
SAYBOLT FUROL VISCOSITY, SFS @ 25°C	ASTM D88	15	100
STORAGE STABILITY, 24 HRS, %	ASTM D244		1
STORAGE STABILITY, 5 DAYS, %	ASTM D244		5
RESIDUE BY DISTILLATION, %	ASTM D244	50	
OIL DISTILLATE, %	ASTM D244		1
SIEVE TEST, %	ASTM D244		0.3

TEST ON RESIDUE	TEST METHOD	MIN.	MAX.
PENETRATION, @ 25°C	ASTM D5		20
SOFTENING POINT RANGE DEG C	ASTM D36	65	
SOLUBILITY, %	ASTM D2042	97.5	
ORIGINAL BINDER DSR@82°C			
G*/SIN δ, 10 RAD/SEC	AASHTO TIII	1	

NOTE: PRODUCT SHOULD NOT CONTAIN FILLER SUCH AS CLAY, ETC KEEP FROM FREEZING. SUPPLY CERTIFIED TEST DATA TO THE ENGINEER SHOWING THE MATERIAL SUPPLIED WAS TESTED FOR AND MEETS THE ABOVE PROPERTIES.

EQUIPMENT- ALL REQUIREMENTS OF 407.03 APPLY. SEE MANUFACTURER'S REPRESENTATIVE FOR CORRECT DISTRIBUTOR SETTINGS. THOROUGHLY CLEAN ALL EQUIPMENT IF CATIONIC EMULSION WAS PREVIOUSLY USED.

WEATHER LIMITATIONS- ALL REQUIREMENTS OF 407.04 APPLY

PREPARATION OF SURFACE- ALL REQUIREMENTS OF 407.05 APPLY.

APPLICATION OF ASPHALT MATERIAL- UNIFORMLY APPLY THE ASPHALT MATERIAL WITH A DISTRIBUTOR PER THE REQUIREMENTS OF 407.06 EXCEPT AS NOTED.

DILUTION IS NOT ALLOWED.

IF PRODUCT IS STORED FOR AN EXTENDED PERIOD OF TIME, PRIOR TO APPLICATION, AGITATE OR GENTLY CIRCULATE THE MATERIAL.

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

APPLY AT A RATE OF 0.04 TO 0.08 GALLONS PER SQUARE YARD. RECOMMENDED APPLICATION TEMPERATURE IS 160°F TO 180°F. DO NOT EXCEED 180°F.

THE ENGINEER AND MANUFACTURER'S REPRESENTATIVE WILL APPROVE RATE OF APPLICATION, TEMPERATURE, DISTRIBUTOR SETTINGS, AND AREAS TO BE TREATED BEFORE APPLICATION OF THE TACK COAT. THE ENGINEER WILL DETERMINE THE ACTUAL APPLICATION IN GALLONS PER SQUARE YARD BY A CHECK ON THE PROJECT.

THE APPLICATION IS CONSIDERED SATISFACTORY WHEN THE MATERIAL IS APPLIED UNIFORMLY WITH NO VISIBLE EVIDENCE OF STREAKING OR RIDGING AND THE APPLICATION RATE IS ±10% OF THE SPECIFIED RATE.

METHOD OF MEASUREMENT- ALL REQUIREMENTS FO 407.07 APPLY.

BASIS OF PAYMENT- THE DEPARTMENT WILL NOT PAY FOR NON-UNIFORMLY APPLIED MATERIALS AS DEFINED IN 407.06.

THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICES AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
SPECIAL	GALLON	TACK COAT, TRACKLESS TACK
SPECIAL	GALLON	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE

**GAS LINE UTILITY NOTE**

BRYAN DAYTON WITH DOMINION EAST OHIO IS TO BE CONTACTED PRIOR TO CONSTRUCTION AT 330-664-2409.

DOMINION'S 20" HIGH PRESSURE GAS MAIN IS TO BE EXPOSED PRIOR TO THE INSTALLATION OF THE GUARDRAIL AND PEDESTAL FOUNDATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN LATERAL AND SUBJACENT SUPPORT OF DOMINION'S PIPELINE(S) IN COMPLIANCE TO 29 CFR, PART 1926, SUBPART P, SAFE EXCAVATION & SHORING.

ONE-FOOT MINIMUM VERTICAL AND HORIZONTAL CLEARANCE MUST BE MAINTAINED BETWEEN DOMINION EAST OHIO'S (DEO) EXISTING PIPELINE(S) AND ALL OTHER IMPROVEMENTS. EXTREME CARE SHOULD BE TAKEN NOT TO HARM ANY DEO FACILITY (PIPELINES, ETC.) OR APPURTENANCE (PIPE COATING, TRACER WIRE, CATHODIC PROTECTION TEST STATION WIRES & DEVICES, VALVE BOXES, ETC.).

DEO FACILITIES MUST BE PROTECTED WITH A TARP WHEN EXPOSED DURING CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE AND LIABLE FOR ENSURING THAT ALL DEO EXISTING FACILITIES, ABOVE AND BELOW GROUND, REMAIN UNDAMAGED, ACCESSIBLE AND IN WORKING ORDER.

THE CROSSING OF DEO'S PIPELINE WITH ANOTHER STEEL FACILITY MAY CREATE A POTENTIAL CORROSION ISSUE FOR THE PROPOSED FACILITY AND THE EXISTING DEO FACILITY.

PLEASE CONTACT DOMINION'S CORROSION DEPARTMENT: DAVE CUTLIP (330-266-2121), RICK MCDONALD (330-266-2122), OR AL HUMRICHOUER (330-478-3757).

SEE SHEET 21 OF THE PLANS FOR LOCATION.

**ITEM 659 SEEDING AND MULCHING, AS PER PLAN**

THIS ITEM SHALL BE USED TO SEED AND MULCH ALL DISTURBED AREAS ADJACENT TO WORK AREAS, AS DIRECTED BY THE ENGINEER, USE CLASS 1 LAWN MIXTURE. AT DISTURBED AREAS, REMOVE TOP 2" OF SOIL AND REPLACE WITH MATERIAL CONFORMING TO 659.05

PROVIDE A SINGLE APPLICATION OF COMMERCIAL FERTILIZER PER REQUIREMENTS OF 659.04.

PLACEMENT OF TOPSOIL AND APPLICATION OF FERTILIZER ARE INCIDENTAL TO THIS ITEM.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE PROJECT ENGINEER TO CONSTRUCT 1-GR & 2-GR AS SHOWN SHEET 20. THE QUANTITY FOR ITEM 659 SEEDING AND MULCHING SHALL ALSO BE USED AT OTHER LOCATIONS DISTURBED BY CONSTRUCTION AS DIRECTED BY PROJECT ENGINEER.

ITEM 203 EMBANKMENT 100 CU. YD.  
ITEM 659 SEEDING AND MULCHING, AS PER PLAN 500 SQ. YD.

**SURVEYING PARAMETERS**

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE THIS SHEET FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

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

**PROJECT CONTROL**

POSITIONING METHOD: OPUS  
MONUMENT TYPE: 5/8" REBAR

**VERTICAL POSITIONING**

ORTHOMETRIC HEIGHT DATUM: NAVD 88  
GEOID: 12A

**HORIZONTAL POSITIONING**

REFERENCE FRAME: NAD-83 (CORS 2011)  
ELLIPSOID: WGS 1984  
MAP PROJECTION: OHIO NORTH  
COORDINATE SYSTEM: OHIO STATE PLANE NORTH ZONE  
COMBINED SCALE FACTOR: 0.99992750  
ORIGIN OF COORDINATE SYSTEM: 0, 0, 0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

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

**ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE B**

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

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

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

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

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

**ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E**

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

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

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

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

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

**ITEM 626 BARRIER REFLECTOR**

BARRIER REFLECTORS SHALL BE INSTALLED ON ALL PROPOSED GUARDRAIL AND SHALL CONFORM TO C&MS 626. THE BARRIER REFLECTORS SHALL BE INSTALLED AND THE SPACING SHALL BE APPROXIMATELY 50 FEET.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

ITEM 614, BARRIER REFLECTOR 8 EACH

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING AND INSTALLING THE ABOVE ITEM.

**ITEM 209 - PREPARING SUBGRADE FOR SHOULDER PAVING, AS PER PLAN**

PREPARE THE SHOULDER FOR PAVING A CONSISTENT SAFETY EDGE IN BOTH THICKNESS AND WIDTH.

PRIOR TO PAVING THE SAFETY EDGE, GRADE AN AREA 10 INCHES WIDE, BEGINNING AT THE EDGE OF THE PAVED ROADWAY, TO PROVIDE A LEVEL SURFACE FREE OF VEGETATION FOR CONSTRUCTION OF THE SAFETY EDGE. IF NECESSARY, EXCAVATE THE GRADED AREA TO THE NECESSARY TO CONSTRUCT THE SAFETY EDGE. COMPACT THE GRADED SHOULDER ACCORDING TO 617.05, OR AS DIRECTED BY THE PROJECT ENGINEER.

**ASPHALT CONCRETE SURFACE COURSE SEALING REQUIREMENTS**

IN ADDITION TO THE GUTTER SEALING REQUIREMENTS SPECIFIED IN SCD BP-3.1 AND C&MS 401.15, AFTER COMPLETION OF THE SURFACE COURSE, THE CONTRACTOR SHALL USE A CERTIFIED 702.01 PG BINDER TO SEAL THE FOLLOWING LOCATIONS:

- ALL CASTINGS INCLUDING BUT NOT LIMITED TO MONUMENTS, MANHOLES, WATER VALVES, CATCH BAINS, CURB INLETS
- BUTT JOINTS AND FEATHER JOINTS INCLUDING BRIDGE APPROACHES
- FORWARD JOINT FOR DRIVEWAY ASPHALT AND TRAILING JOINT WHEN BUTTING TO EXISTING ASPHALT DRIVE
- PERIMETER OF ALL PAVEMENT REPAIRS OR OTHER ASPHALT INLAYS WHEN PAVEMENT REPAIRS/INLAYS ARE NOT OVERLAID WITH AN ASPHALT CONCRETE SURFACE COURSE
- ALL COLD LONGITUDINAL JOINTS BETWEEN PAVED SHOULDERS AND GUARDRAIL ASPHALT.

THE MATERIAL USED SHALL BE A CERTIFIED 702.01 PG BINDER. THE WIDTH OF THE SEALER SHALL BE 2-3 INCHES.

ANY ADDITIONAL COSTS ASSOCIATED WITH THE WORK IDENTIFIED IN THIS NOTE SHALL BE INCLUDED IN THE APPROPRIATE ASPHALT CONCRETE SURFACE COURSE ITEM OF WORK.

REFERENCE POINTS/BENCH MARKS								
COORDINATE SYSTEM NAME: OHIO NORTH COORDINATES ARE SHOWN IN GROUND SCALE FACTOR: 1.000072505								
MARK	SHEET	STATION S.R. 17	OFFSET		NORTHING	EASTING	ELEVATION	DESCRIPTION
			LEFT	RIGHT				
CP #1	21	17+87.53	71.69		639819.8699	2193672.8140	749.77	IRON PIN
CP #2	21	19+97.83		50.65	639614.3690	2193805.5650	744.89	IRON PIN

**ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN "A"**

THIS ITEM SHALL BE USED FOR THE REPAIR OF UNSOUND, COLD-PATCH, OR POP-OUT AREAS OF LONGITUDINAL JOINTS AS DIRECTED BY THE ENGINEER. THE DEPTH OF THE REPAIR SHALL BE 3" +/- BELOW THE TOP OF THE CONCRETE SURFACE. THE WIDTH OF THE REPAIR SHALL BE 12" CENTERED ON THE EXISTING JOINT.

ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR,  
AS PER PLAN "A". . . . . 170 SY

**ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN "B"**

THIS ITEM SHALL BE USED FOR THE REPAIR OF UNSOUND, COLD-PATCH, OR POP-OUT AREAS OF TRANSVERSE JOINTS AS DIRECTED BY THE ENGINEER. THE DEPTH OF THE REPAIR SHALL BE 3" +/- BELOW THE TOP OF THE CONCRETE SURFACE. THE WIDTH OF THE REPAIR SHALL BE 12" CENTERED ON THE EXISTING JOINT.

ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR,  
AS PER PLAN "B". . . . . 110 SY

**ITEM 253 - PAVEMENT REPAIR, AS PER PLAN "B"**

THIS ITEM SHALL BE USED FOR THE REPAIR OF "EXISTING PRESSURE RELIEF JOINTS" WHERE THE ASPHALT HAS DETERIORATED AND HAS HUMPED UP OVER TIME. THE DEPTH OF THE REPAIR SHALL BE 4" +/- BELOW THE TOP OF THE SURROUNDING CONCRETE ROADWAY PAVEMENT AND THE CONCRETE MEDIAN OR AS DIRECTED BY THE ENGINEER. REPLACEMENT MATERIAL SHALL BE A TYPE 1, 448 MATERIAL.

THE FOLLOWING ESTIMATED QUANTITY IS BEING CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO COMPLETE THE ABOVE NOTED WORK:

ITEM 253 PAVEMENT REPAIR, AS PER PLAN "B". . . . . 30 SY

**ITEM 255 FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC MS, AS PER PLAN**

THIS ITEM SHALL CONSIST OF REPLACING EXISTING PAVEMENT PER ITEM 255 AND THE NOTES BELOW.

EXISTING CONCRETE PAVEMENT THICKNESS MAY VARY FROM THAT SHOWN ON THE TYPICAL SECTIONS. NO ADJUSTMENT IN PAYMENT FOR THIS ITEM SHALL BE MADE PROVIDING THAT THE AVERAGE PAVEMENT THICKNESS IS WITHIN ONE INCH OF THE THICKNESS SHOWN ON THE TYPICAL SECTIONS. ADDITIONAL COMPENSATION SHALL BE MADE BY CHANGE ORDER FOR THE MATERIAL COST OF CONCRETE ONLY WHEN THE AVERAGE THICKNESS EXCEEDS THE ONE INCH MAXIMUM TOLERANCE ABOVE THE VOLUME OF CONCRETE PAID FOR AND SHALL BE BASED UPON THE AMOUNT OF CONCRETE ADDITIONAL ABOVE THE ONE INCH TOLERANCE LIMIT.

PAVEMENT REPAIRS 9" IN DEPTH SHALL BE PAID FOR UNDER FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT, CLASS QC MS, AS PER PLAN.

THE FOLLOWING ESTIMATED QUANTITY IS BEING CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO COMPLETE THE ABOVE NOTED WORK:

ITEM 255 FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT,  
CLASS QC MS, AS PER PLAN . . . . . 150 SY

ITEM 255 FULL DEPTH PAVEMENT SAWING 700 FT.

**ITEM 253 - PAVEMENT REPAIR, AS PER PLAN "A"**

THIS WORK ITEM IS FOR USE AS DIRECTED BY THE ENGINEER FOR THE PURPOSE OF PAVEMENT REPAIR. ALL LABOR AND MATERIAL NECESSARY TO PERFORM THIS WORK AND SECTION 250 OF THE CMS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 253.

DEPTH OF PAVEMENT REPAIR REMOVAL SHALL TYPICALLY BE 6 +/- INCHES. THE MATERIAL ENCOUNTERED TO BE REMOVED COULD BE EXISTING ASPHALT LAYERS. REPLACEMENT MATERIAL SHALL BE 301 MATERIAL.

THIS ITEM OF WORK SHALL REPAIR THE SHOULDER TO A WIDTH OF 6 +/- FEET AND SHALL BE PLACED WITH THE ADDITIONAL HEIGHT OF THE PROPOSED OVERLAY AND SAFETY EDGE TAKEN INTO CONSIDERATION.

THE FOLLOWING ITEM HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 253 PAVEMENT REPAIR, AS PER PLAN "A". . . . . 590 SY

**CURB REPLACEMENT**

THESE ITEMS OF WORK ARE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER FOR THE PURPOSE OF CURB INTEGRAL REPLACEMENT. THIS ITEM OF WORK WILL REQUIRE SAW CUTTING FOR THE REMOVAL OF THE EXISTING INTEGRAL CURB.

THE FOLLOWING ITEMS SHALL BE USED TO COMPLETE THE ABOVE NOTED WORK:

ITEM 202 CURB REMOVED . . . . . 200 FT  
ITEM 609 CURB, TYPE 6 . . . . . 200 FT  
ITEM 255 FULL DEPTH PAVEMENT SAWING . . . 200 FT

**ITEM 209 RESHAPING UNDER GUARDRAIL, AS PER PLAN**

THIS ITEM OF WORK SHALL BE USED TO PREPARE PROPOSED GUARDRAIL RUNS.

FILL ALL HOLES REMAINING AFTER REMOVAL OF GUARDRAIL POSTS AND ANCHOR ASSEMBLIES WITH GRANULAR MATERIAL. DO NOT USE FILL MATERIAL CONTAINING SOD. ALL FILL MATERIAL SHALL BE APPROVED BY THE ENGINEER AND SHALL BE COMPACTED AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE ABOVE IS INCLUDED IN THE APPLICABLE GUARDRAIL ITEM.

ANY DEBRIS COLLECTED SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN SECTION 203.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID PRICE FOR ITEM 209, STA., RESHAPING UNDER GUARDRAIL, AS PER PLAN AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THIS ITEM OF WORK.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE PROJECT ENGINEER.

ITEM 209 RESHAPING UNDER GUARDRAIL, AS PER PLAN 6.2 STATIONS

**ITEM 611 SPECIAL - MISCELLANEOUS METAL**

THIS ITEM SHALL BE USED TO REPLACE WORN MANHOLE CASTINGS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE ENGINEER. THE ENGINEER SHALL DETERMINE WHICH OF THE CASTINGS, IF ANY, SHALL BE REPLACED UNDER THIS ITEM. NEW CASTINGS SHALL BE SET TO GRADE SO THAT THE TOP OF THE COVER IS FLUSH WITH THE FINISHED GRADE PER 611.10.D.1. NO ADJUSTING RINGS ARE PERMITTED.

SEWER MANHOLE CASTINGS SHALL BE REPLACED WITH EAST JORDAN 1700 OR NEENAH R-1729 OR APPROVED EQUAL, AND ALL SEWER WORK SHALL COMPLY WITH THE CUYAHOGA COUNTY UNIFORM STANDARDS. WATER WORK CASTINGS SHALL COMPLY WITH STANDARD DETAIL DRAWINGS OF THE CLEVELAND DIVISION OF WATER. ALL CASTINGS SHALL HAVE THE APPROPRIATE UTILITY NAME STAMPED ON THE LID.

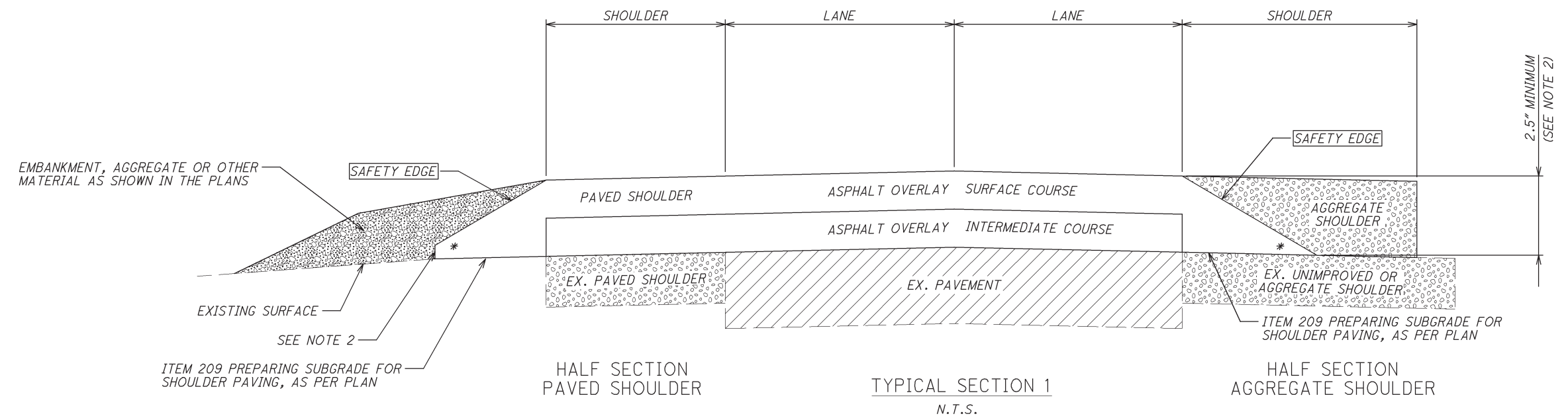
PAYMENT SHALL BE BASED ON METAL WORK ACTUALLY FURNISHED AND PLACED. IN THE COMPUTING OF WEIGHTS, IF NOT DETERMINED BY WEIGHING, ONE (1) CUBIC FOOT OF CAST IRON SHALL BE ASSUMED TO WEIGH FOUR HUNDRED AND FIFTY (450) POUNDS.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

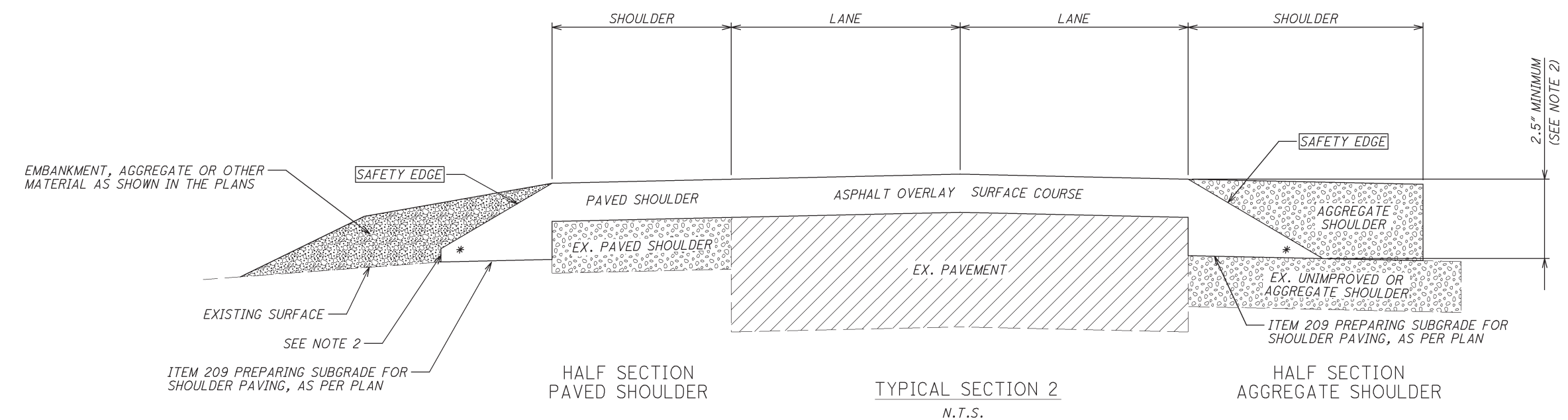
ITEM 611 SPECIAL, MISCELLANEOUS METAL 1,000 POUNDS

**ITEM 201 CLEARING AND GRUBBING**

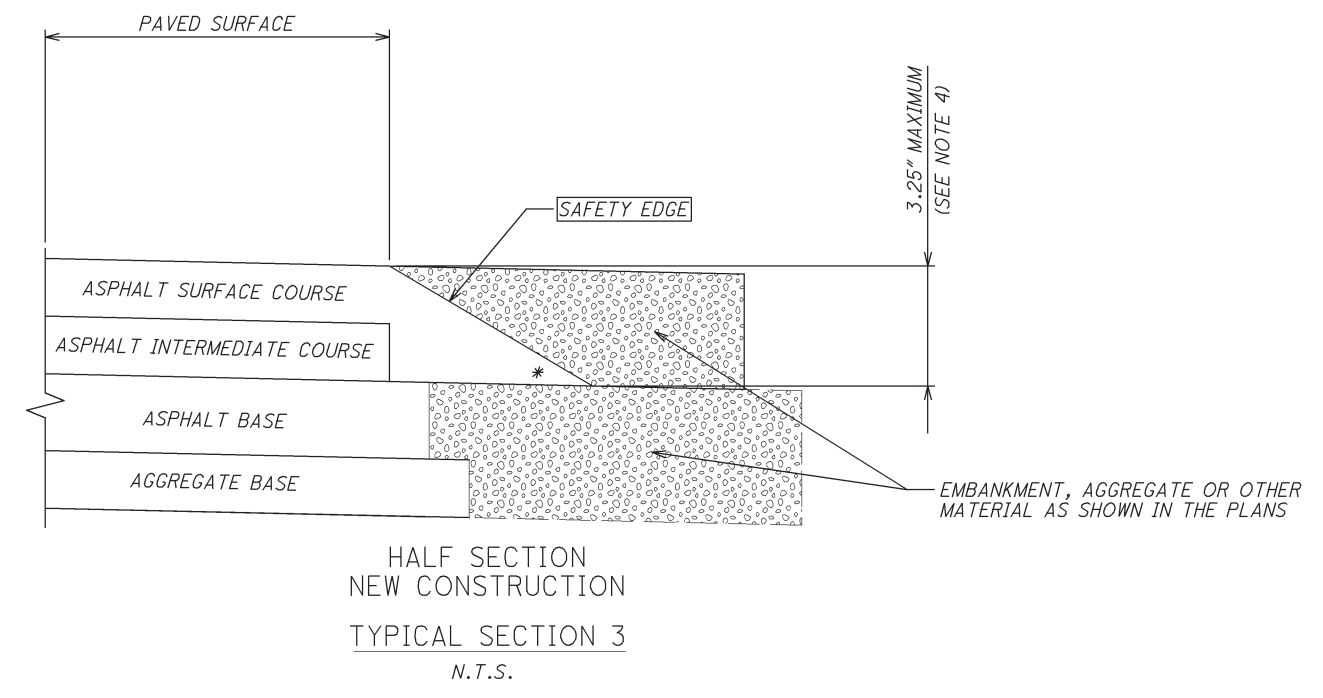
ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.



TYPICAL SECTION 1  
N.T.S.



TYPICAL SECTION 2  
N.T.S.



HALF SECTION  
NEW CONSTRUCTION  
TYPICAL SECTION 3  
N.T.S.

NOTES:

- 1.) SAFETY EDGES ARE REQUIRED AT THE OUTSIDE EDGES OF THE PAVED ROADWAY (EDGE OF TRAVEL LANE OR EDGE OF PAVED SHOULDER).
  - 2.) CONSTRUCT THE SAFETY EDGE THE FULL ASPHALT CONCRETE OVERLAY THICKNESS OR 2.5" (63 MM) WHICHEVER IS GREATER, NOT TO EXCEED THE MAXIMUM SAFETY EDGE THICKNESS OF 6" (150 MM). CONSTRUCT A NEAR-VERTICAL FACE BELOW THE SAFETY EDGE FOR THICKNESS GREATER THAN 6" (150 MM).
  - 3.) BLADE AND SHAPE EXISTING SHOULDER MATERIAL TO FORM A UNIFORM SURFACE UNDER THE SAFETY EDGE PRIOR TO PLACEMENT OF THE ASPHALT CONCRETE OVERLAY.
  - 4.) FOR NEW PAVEMENT CONSTRUCT THE SAFETY EDGE THE FULL THICKNESS OF THE SURFACE AND INTERMEDIATE COURSES, NOT TO EXCEED 3.25" (82 MM).
- \* 40° MAX

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**ITEM 614, MAINTAINING TRAFFIC**

THE CONTRACTOR SHALL CONDUCT OPERATIONS AS TO COMPLETE THE PROPOSED WORK WITH A MINIMUM OF HAZARD, DELAY AND INCONVENIENCE TO THE MOTORIST USING THE HIGHWAY AFFECTED BY THE WORK DONE UNDER THIS CONTRACT. IN ADDITION TO THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE FOLLOWING SPECIFIC PROVISIONS ARE MANDATORY.

**I. MAINTENANCE OF TRAFFIC SYSTEMS**

A. WHEN REQUIRED, WHENEVER ANY PART OF THE TRAVELED SURFACE IS BEING WORKED UPON OR IS OTHERWISE NOT SUITABLE FOR SAFE AND CONVENIENT USE BY VEHICLES, TRAFFIC CONTROL DEVICES SUFFICIENT TO PROTECT SUCH AREAS TO ASSURE SAFE AND CONVENIENT PASSAGE OF VEHICULAR TRAFFIC SHALL BE INSTALLED AND MAINTAINED. SUCH TRAFFIC CONTROL DEVICES AND THE MANNER IN WHICH THEY ARE USED SHALL BE CONSISTENT WITH THESE PLANS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, HEREINAFTER REFERRED TO AS THE "MANUAL". THE TRAFFIC CONTROL DEVICE SYSTEM SHALL CONSTITUTE THE MINIMUM PROVISIONS FOR TRAFFIC CONTROL FOR EACH PARTICULAR SITUATION. WHENEVER THE ENGINEER DEEMS IT NECESSARY ESPECIALLY WHERE A GRADE, CURVE, OR MERGE CONDITION EXISTS HE MAY DIRECT THAT ADDITIONAL OR ALTERNATIVE DEVICES BE USED.

**B. CONDITIONS**

DURING ALL PARTS OF THIS PROJECT, FLAGGER, SIGNING, BARRICADES, ETC. SHALL BE LOCATED AS INDICATED IN THE "MANUAL" OR SHOWN IN THE STANDARD DRAWINGS. TWO WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES.

**C. ADVANCE WARNING SIGNS**

ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTIONS ARE PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHENEVER THEY ARE NOT APPLICABLE.

**D. FLAGGER AND/OR LAW ENFORCEMENT OFFICERS**

AT LEAST TWO FLAGGERS ARE REQUIRED FOR EACH SHORT TERM CLOSURE FOR MOVING OPERATIONS CROSSING STREETS. THE CONTRACTOR SHALL FURNISH ADDITIONAL FLAGGER AS DIRECTED BY THE ENGINEER. LAW ENFORCEMENT OFFICERS (LEO'S) SHALL BE REQUIRED FOR TRAFFIC DIRECTION ONLY UNDER THE FOLLOWING CIRCUMSTANCES: (1) IF EXISTING SIGNALS ARE NONOPERATIONAL, (2) IF TRAFFIC MUST MOVE AGAINST SIGNAL PHASING, OR (3) IF TRAFFIC MUST CROSS A PAINTED CENTERLINE.

**E. PROTECTION OF PUBLIC**

CONTRACTOR'S PERSONAL CARS SHALL NOT BE PARKED WITHIN THE R/W

**F. FAILURE TO COMPLY**

IF THERE IS ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES, OR WITHIN THE PROVISIONS OF THE "MANUAL", THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL NOT BE CONSIDERED IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY, IN THE VICINITY OF THE WORK AREA, IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

**G. FLOODLIGHTING**

FLOODLIGHTING OF THE WORK SITE FOR OPERATIONS CONDUCTED DURING NIGHT TIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE ROADWAY. TO ENSURE THE ADEQUACY OF THE FLOODLIGHT PLACEMENT, THE CONTRACTOR AND THE ENGINEER SHALL DRIVE THROUGH THE WORK SITE EACH NIGHT WHEN THE LIGHTING IS IN PLACE AND OPERATIVE PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED THE LIGHT PLACEMENT AND SHIELDING SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER BEFORE WORK PROCEEDS.

**ITEM 614, MAINTAINING TRAFFIC - CONT.**

**II. MAINTENANCE OF TRAFFIC MATERIALS**

**A. SIGNS**

SIGN DIMENSION AND SPECIFICATION, INCLUDING LETTER SIZES SHALL BE PROVIDED IN ACCORDANCE WITH THE "MANUAL", OR IN DESIGN DRAWING PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER PRIOR TO THE START OF THE PROJECT.

**B. SIGN SUPPORTS**

SIGN SUPPORT SHALL BE OF SUFFICIENT SIZE AND HEIGHT AS TO SUPPORT THE SIGNS AT THE APPROPRIATE HEIGHT. SUPPORTS SHALL BE ADEQUATE IN MASS AND STABILITY TO PREVENT THE SIGN FROM BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE.

**C. DRUMS**

LOCATION AND SIZE OF DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE "MANUAL." ALL COSTS FOR INSTALLING, MAINTAINING, AND SUBSEQUENT REMOVAL OF SAID DRUM SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 MAINTAINING TRAFFIC.

**III. PAYMENT**

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

**COVERING OF GROUND MOUNTED SIGNS - GENERAL**

WHEN REQUIRED BY OTHER ITEMS OR INCIDENTALLY TO ITEM 614 MAINTAINING TRAFFIC, COVER EXISTING GROUND-MOUNTED SIGNS WITH PLYWOOD OR OSB BLANKS (1/2" MINIMUM THICKNESS) COVERING 80% OF THE SIGN AREA AND ALL OF THE SIGN LEGEND. THE USE OF LOW QUALITY MATERIALS SUCH AS DUCT TAPE AND BLACK PLASTIC IS NOT PERMITTED.

**SUSPENSION OF WORK**

IF THE CONTRACTOR FAILS TO COMPLY WITH THE PROVISIONS FOR TRAFFIC CONTROL AS SET FORTH IN THESE PLANS OR WITH PROVISIONS OF THE "MANUAL", THE ENGINEER SHALL SUSPEND WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS.

**ALTERNATE METHODS**

IF THE CONTRACTOR SO ELECTS, AN ALTERNATE MAINTENANCE OF TRAFFIC PLAN MAY BE SUBMITTED FOR CONSIDERATION BY THE DISTRICT OFFICE PROVIDED THE INTENT OF THE PROVISIONS IN THE PLANS ARE FOLLOWED. THE ALTERNATE MAINTENANCE OF TRAFFIC PLANS SHALL NOT BE IMPLEMENTED UNTIL APPROVAL IS GIVEN IN WRITING BY THE PROJECT ENGINEER.

**QUANTITIES FOR MAINTAINING TRAFFIC**

**NOTE:**

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE PROJECT ENGINEER TO PERFORM THE WORK AS SHOWN FOR PHASE 1 AND PHASE 2.

ITEM 614 WORK ZONE EDGE LINE, CLASS 1	0.34 MILE
ITEM 614 WORK ZONE LANE LINE, CLASS 1	0.09 MILE
ITEM 614 BARRIER REFLECTOR, TYPE B	8 EACH
ITEM 614 OBJECT MARKER, ONE WAY	8 EACH
ITEM 614 WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL)	3 EACH
ITEM 622 PORTABLE CONCRETE BARRIER, 32"	210 FT.

**NOTIFICATION OF CONSTRUCTION INITIATION**

AT LEAST FOURTEEN DAYS PRIOR TO STARTING INITIAL CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL ADVISE THE DISTRICT OFFICE OF COMMUNICATIONS VIA EMAIL AT D12.PIO@DOT.STATE.OH.US AND THE DISTRICT WORK ZONE TRAFFIC MANAGER VIA EMAIL AT D12.MOT@DOT.STATE.OH.US OF THE ANTICIPATED START DATE OF ANY CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO THE PLACING OF WORK ZONE SIGNS. THE NOTIFICATION SHALL ALSO INCLUDE THE PROJECT NUMBER, PID, NAME AND PHONE NUMBER OF THE CONTRACTOR, A POINT OF CONTACT AND THE ANTICIPATED IMPACT ON TRAFFIC. THE CONTRACTOR WILL IMMEDIATELY INFORM THE DISTRICT OFFICE OF COMMUNICATIONS AND THE DISTRICT WORK ZONE TRAFFIC MANAGER OF ANY AND ALL DELAYS AND/OR CHANGES REGARDING THE CONSTRUCTION INITIATION DATE.

FIRE, POLICE, EMERGENCY SERVICES, AND LOCAL SCHOOLS SHALL BE NOTIFIED BY THE PROJECT ENGINEER PRIOR TO BEGINNING ANY MAJOR DISRUPTIVE, TIME DELAYING TRAFFIC CONTROL CHANGES OR DETOURS DURING CONSTRUCTION.

**CONTRACTORS EQUIPMENT AND MATERIAL STORAGE**

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC THE CONTRACTORS ATTENTION IS DIRECTED TO 614.03. IN ADDITION THE FOLLOWING PROVISIONS SHALL APPLY:

ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT OF WAY FOR MORE THAN THIRTY (30 ) DAYS.

THE STORAGE OF EQUIPMENT, MATERIALS AND VEHICLES WITHIN THE HIGHWAY RIGHT OF WAY MAY BE PERMITTED IF THERE IS ROOM WITHIN THE PROJECT LIMITS. THE NUMBER OF AREAS OR EXACT LOCATIONS SHALL BE APPROVED BY THE ENGINEER.

ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

**SEQUENCE OF CONSTRUCTION**

**S.R. 17 - PHASE 1**

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES AND ADVANCED WARNING SIGNS. INSTALL WORK ZONE PAVEMENT MARKINGS AND DRUMS PER THE PLANS. CONSTRUCT THE STRUCTURE MODIFICATIONS OF THE SIDEWALK AND CURB RAMPS AT THE WEST SIDE OF THE INTERSECTION OF S.R. 17 AND TUXEDO AVE. ON BOTH THE EASTBOUND LANES AND WESTBOUND LANES.

**S.R. 17 - PHASE 2**

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES AND ADVANCED WARNING SIGNS. INSTALL WORK ZONE PAVEMENT MARKINGS AND DRUMS PER THE PLANS. CONSTRUCT THE STRUCTURE MODIFICATIONS OF THE SIDEWALK AND CURB RAMPS AT THE EAST SIDE OF THE INTERSECTION OF S.R. 17 AND TUXEDO AVE. ON BOTH THE EASTBOUND LANES AND WESTBOUND LANES.

**S.R. 17 - PHASE 3**

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES AND ADVANCED WARNING SIGNS. CONSTRUCT THE THE RIGID PAVEMENT REPAIR AND ITEM SPECIAL PATCHING CONCRETE BRIDGE DECK AT LOCATIONS DIRECTED BY THE PROJECT ENGINEER.

**S.R. 17 - PHASE 4**

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES AS PER STANDARD DRAWING MT-95.30, AND ADVANCED WARNING SIGNS. CONSTRUCT THE RESURFACING OF S.R. 17 AS PER TYPICALS AND DETAILS IN THE PLANS. ACCESS TO ALL SIDE ROADS AND RAMPS MUST BE MAINTAINED DURING THIS PHASE.

**S.R. 17 - PHASE 5**

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES AND ADVANCED WARNING SIGNS. CONSTRUCT THE FINAL PAVEMENT MARKING FOR TRAFFIC CONTROL AS PER DETAILS IN THE PLANS AND S.C.D. MT-99.20.

**ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN**

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN. THE SIGN SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS AVAILABLE ON THE (OFFICE OF MATERIALS MANAGEMENT WEB PAGE). THE LIST CONTAINS CLASS A AND B UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 650 FEET AND 475 FEET, RESPECTIVELY.

EACH SIGN SHALL BE TRAILER-MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM, TO DIM THE SIGN DURING DARKNESS, AND A TAMPER AND VANDAL PROOF ENCLOSURE. EACH SIGN SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY AN ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY. THE PCMS SHALL BE DILINEATED IN ACCORDANCE WITH C&MS 614.03.

THE PROBABLE PCMS LOCATIONS AND WORK LIMITS FOR THOSE LOCATIONS ARE SHOWN ON SHEET(S) OF THE PLAN. PLACEMENT, OPERATION, MAINTENANCE AND ALL ACTIVATION OF THE SIGNS BY THE CONTRACTOR SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION YET PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS SHALL BE TURNED OFF. ADDITIONALLY, WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME, THE PCMS SHALL BE TURNED AWAY FROM ALL TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT, AND TO REVISE SIGN MESSAGES, IF NECESSARY.

(THE CONTRACTOR SHALL IMPLEMENT A SYSTEM WHEREBY CHANGEABLE MESSAGES WILL BE IMPLEMENTED WITHIN 1 HOUR FOLLOWING TELEPHONE NOTIFICATION FROM THE PROJECT ENGINEER TO A DESIGNATED PHONE.)

ALL MESSAGES TO BE DISPLAYED ON THE SIGN WILL BE PROVIDED BY THE ENGINEER. A LIST OF ALL REQUIRED PRE-PROGRAMMED MESSAGES WILL BE GIVEN TO THE CONTRACTOR AT THE PROJECT PRECONSTRUCTION CONFERENCE. THE SIGN SHALL HAVE THE CAPABILITY TO STORE UP TO 99 MESSAGES. MESSAGE MEMORY OR PRE-PROGRAMMED DISPLAYS SHALL NOT BE LOST AS A RESULT OF POWER FAILURES TO THE ON-BOARD COMPUTER. THE SIGN LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD. THREE-LINE PRESENTATION FORMATS WITH UP TO SIX MESSAGE PHASES SHALL BE SUPPORTED. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT LEAST TWICE. THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC WHICH WILL ALLOW THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

(THE PCMS SHALL CONTAIN A CELLULAR TELEPHONE DATA LINK WHICH WILL (IN ACTIVE CELLULAR PHONE AREAS) ALLOW REMOTE SIGN ACTIVATION, MESSAGE CHANGES, MESSAGE ADDITIONS AND REVISIONS TO TIME OF DAY PROGRAMS. THE SYSTEM SHALL ALSO PERMIT VERIFICATION OF CURRENT AND PROGRAMMED MESSAGES. ONE REMOTE DATA INPUT DEVICE (LAPTOP COMPUTER PLUS MODEM OR EQUIVALENT) SHALL BE FURNISHED FOR USE BY THE DISTRICT TRAFFIC ENGINEER, OR EQUIVALENT, AND SHALL BE INSURED AGAINST THEFT.)

**ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN - CONT.**

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF C&MS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS, WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS, TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

THE CONTRACTOR SHALL PROVIDE 2 P.C.M.S. FOR A TOTAL OF 3 MONTHS, FOR THIS PROJECT.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 6 SNMT

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

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

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

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

DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

IN ADDITION TO THE REQUIREMENT OF CMS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) MAY BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS AS DETERMINED AND PRE-APPROVED BY THE ENGINEER. ANY LEO HOURS WHICH ARE NOT PRE-APPROVED FOR THE FOLLOWING PURPOSES SHALL NOT BE COMPENSABLE:

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

WHEN CONSTRUCTION VEHICLES ARE ENTERING/EXITING THE ZONE DIRECTLY FROM/INTO AN OPEN LANE OF TRAFFIC. IF A LANE HAS BEEN CLOSED TO PROVIDE AN ACCELERATION/ DECELERATION LANE FOR THE VEHICLE, THE LEO WILL NOT BE REQUIRED.

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

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

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

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

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE . . . . . 40 HOURS

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

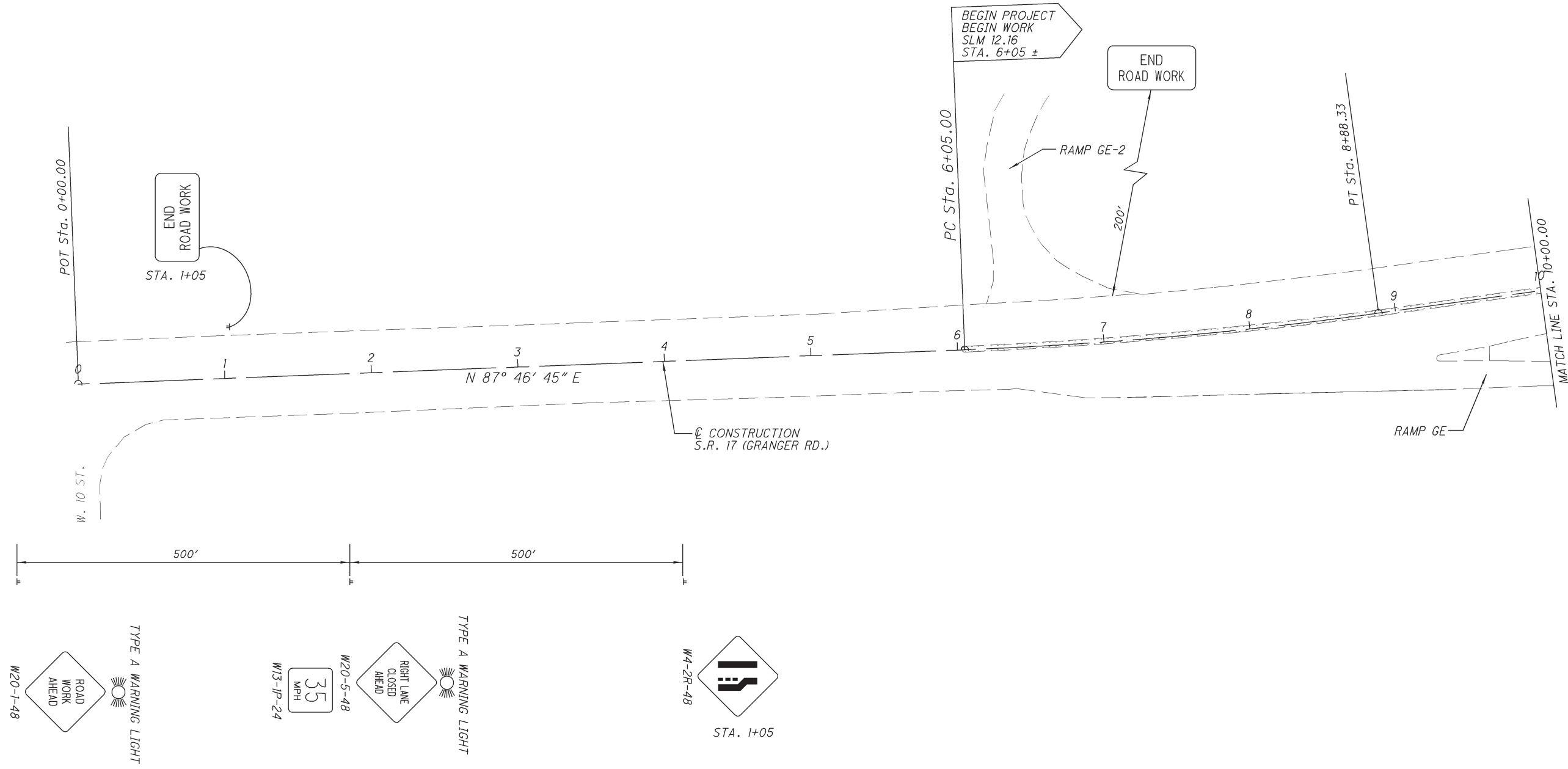
ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

CALCULATED  
BGM  
CHECKED  
ALL

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY - 17 - 12.16





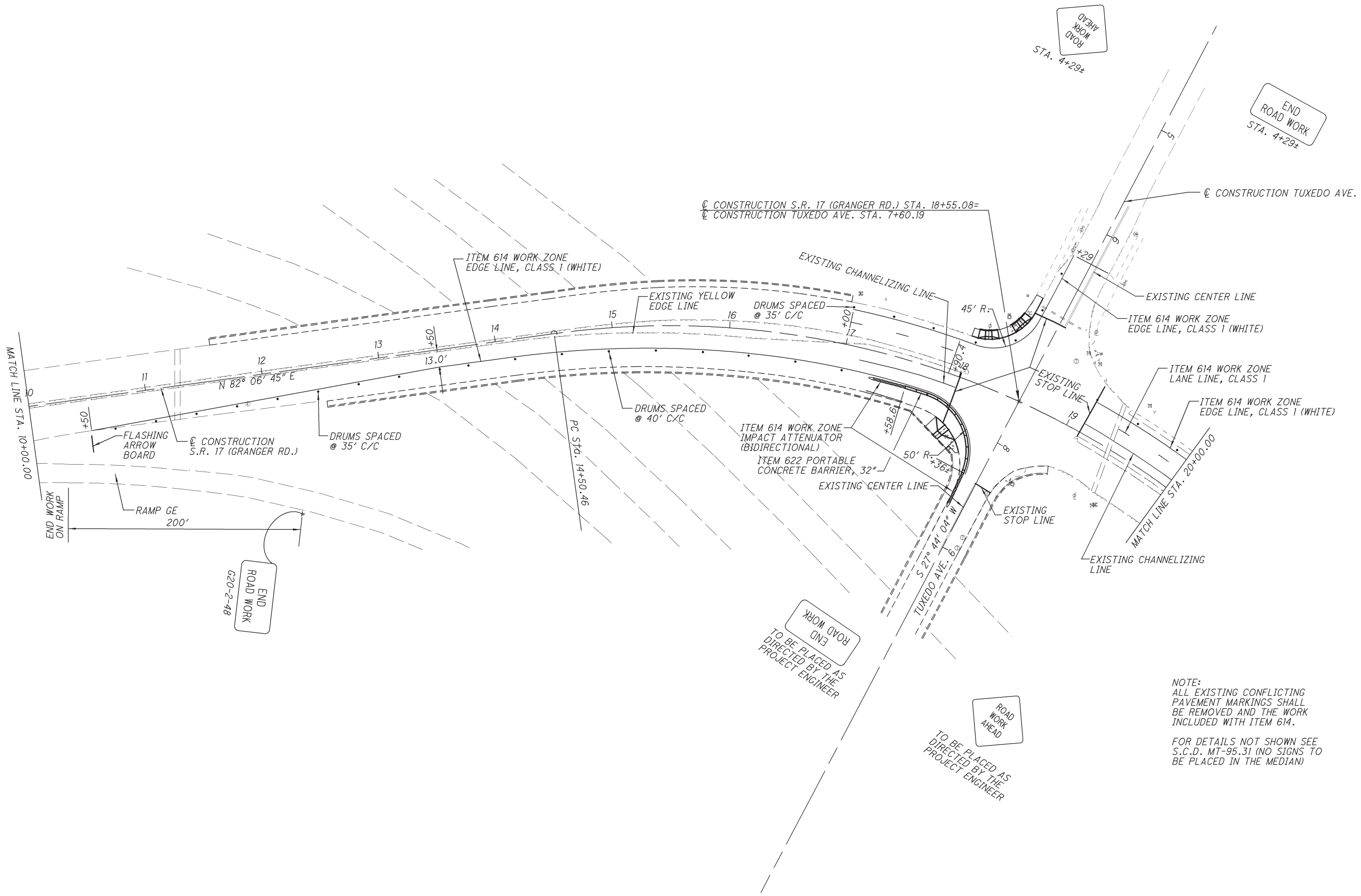


0 20 40 80  
 HORIZONTAL  
 SCALE IN FEET

CALCULATED	BGM
CHECKED	ALL

**MAINTENANCE OF TRAFFIC PHASE 1  
 STA. 10+00.00 TO STA. 20+00.00**

**CUY - 17 - 12.16**



NOTE:  
 ALL EXISTING CONFLICTING  
 PAVEMENT MARKINGS SHALL  
 BE REMOVED AND THE WORK  
 INCLUDED WITH ITEM 614.  
  
 FOR DETAILS NOT SHOWN SEE  
 S.C.D. MT-95.31 (NO SIGNS TO  
 BE PLACED IN THE MEDIAN)

9472IMP002



CALCULATED BGM CHECKED ALL

**MAINTENANCE OF TRAFFIC PHASE 1  
STA. 20+00.00 TO STA. 30+00.00**

**CUY-17-12.16**



W1-4BL-48

STA. 32+29



TYPE A WARNING LIGHT



STA. 37+29



W5-4-48  
SPECIAL 48" x 16"



W13-1P-24



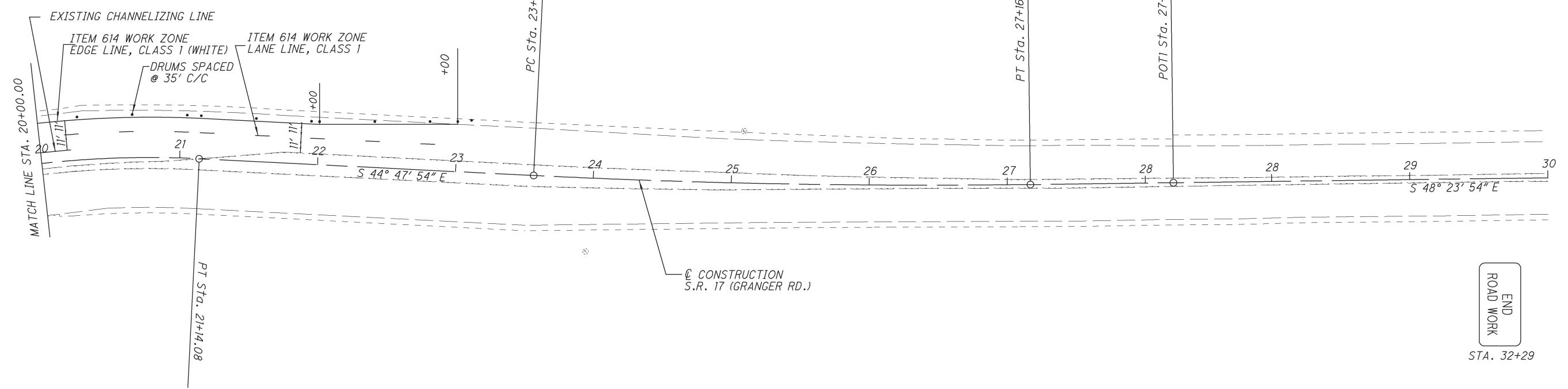
TYPE A WARNING LIGHT



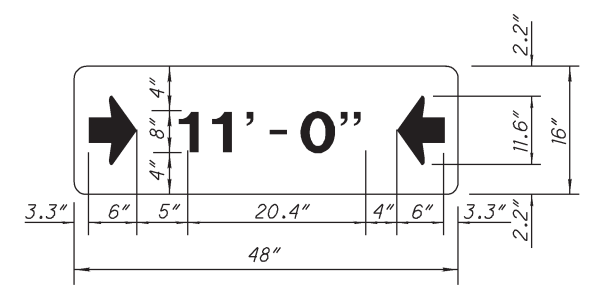
W20-1-48

STA. 42+29

END PROJECT  
END WORK  
SLM 12.58  
STA. 28+20.29±

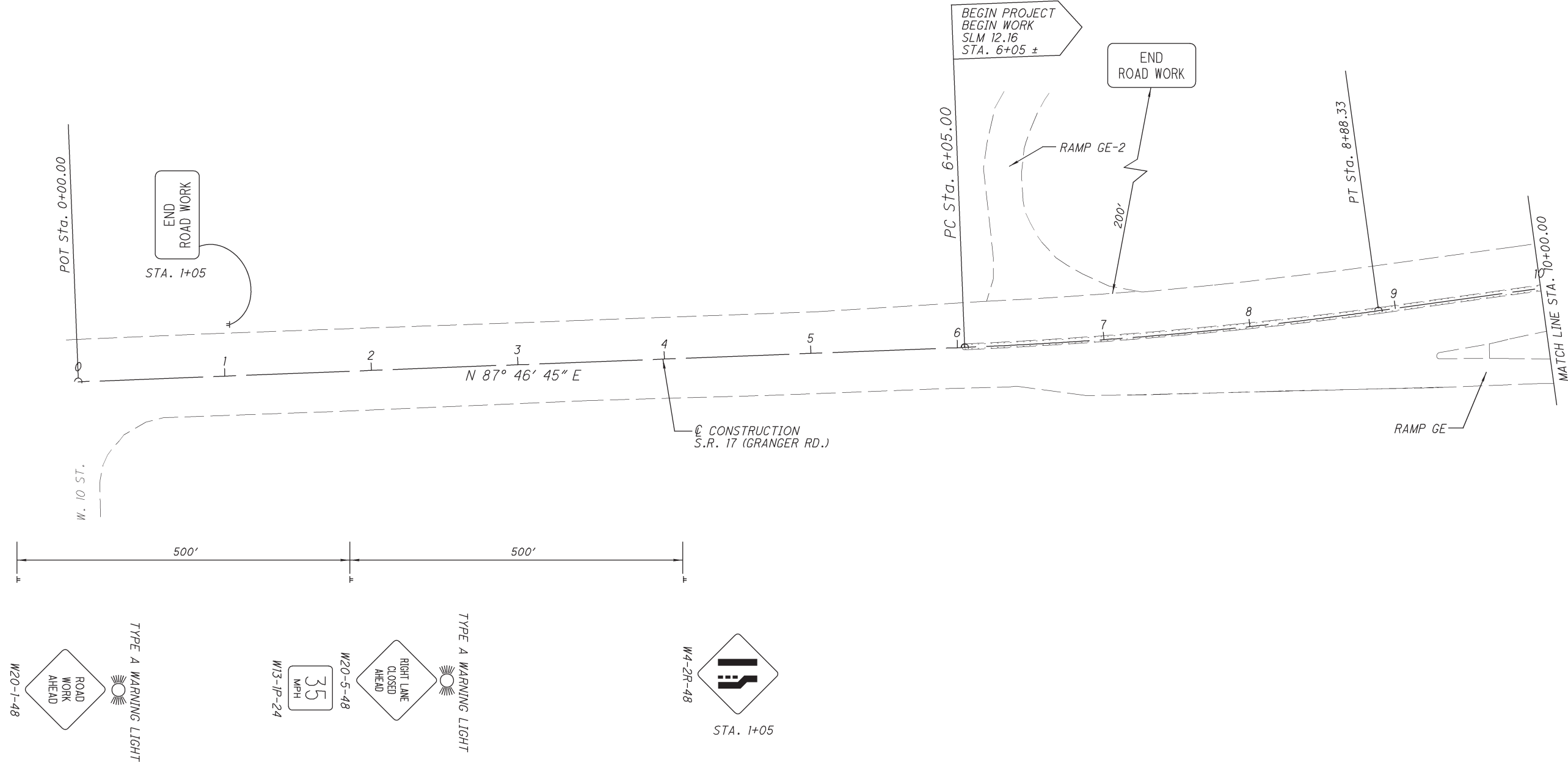


NOTE:  
ALL EXISTING CONFLICTING  
PAVEMENT MARKINGS SHALL  
BE REMOVED AND THE WORK  
INCLUDED WITH ITEM 614.  
  
FOR DETAILS NOT SHOWN SEE  
S.C.D. MT-95.31 (NO SIGNS TO  
BE PLACED IN THE MEDIAN)



SIGN DETAIL  
SPECIAL - 48" x 16"

NARROW WIDTH PLAQUE: 1.5" RADIUS, 0.6" BORDER, 0.4" INDENT, BLACK ON ORANGE  
STANDARD ARROW CUSTOM 6.0" x 1.0' 0°, 11'-0"D, STANDARD ARROW CUSTOM 6.0" x 1.0' 180°

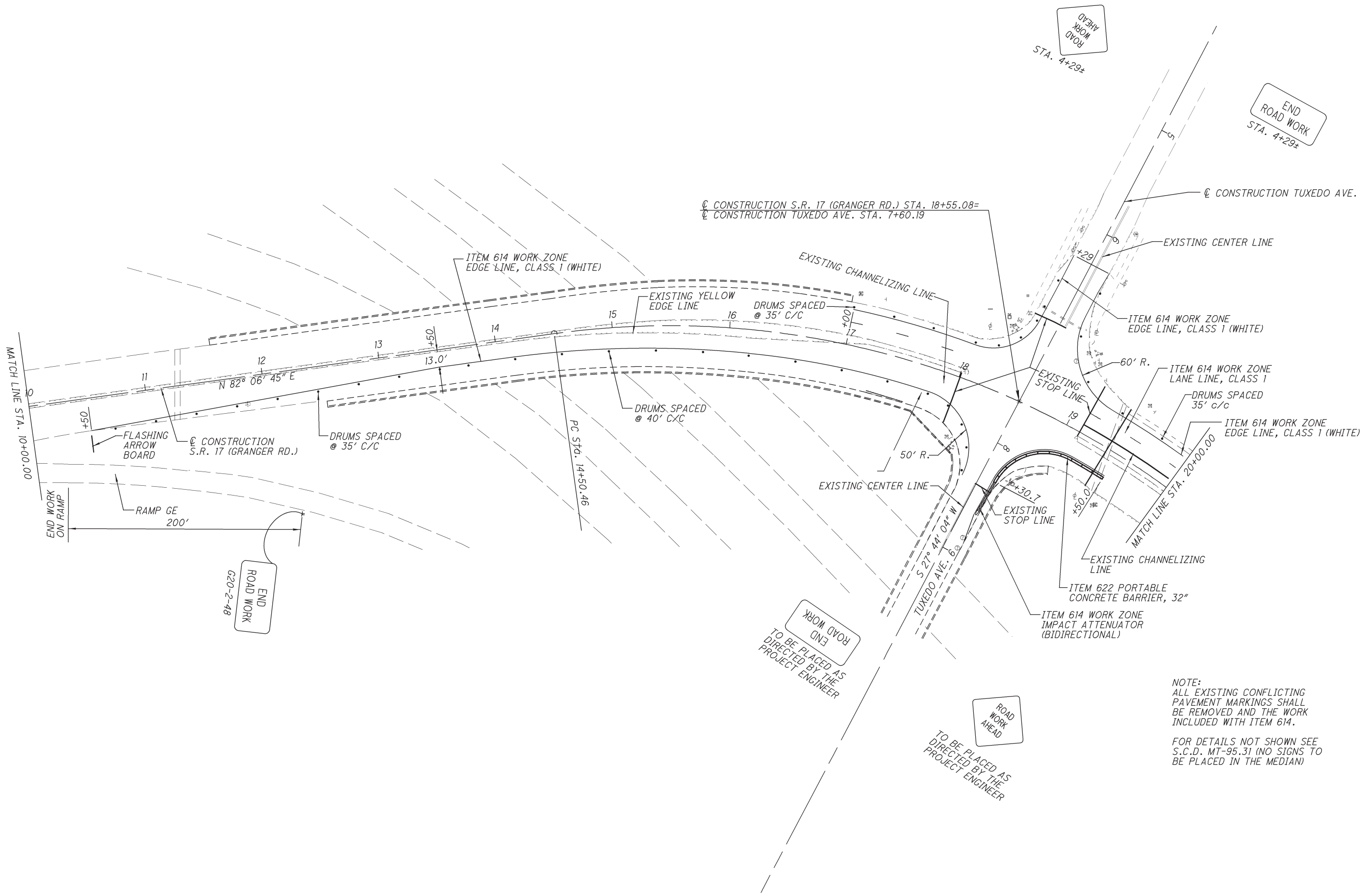




CALCULATED	BGM	CHECKED	ALL
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**MAINTENANCE OF TRAFFIC PHASE 2**  
**STA. 10+00.00 TO STA. 20+00.00**

**CUY - 17 - 12.16**



NOTE:  
 ALL EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED AND THE WORK INCLUDED WITH ITEM 614.  
 FOR DETAILS NOT SHOWN SEE S.C.D. MT-95.31 (NO SIGNS TO BE PLACED IN THE MEDIAN)

TO BE PLACED AS DIRECTED BY THE PROJECT ENGINEER

TO BE PLACED AS DIRECTED BY THE PROJECT ENGINEER



CALCULATED	BGM
CHECKED	ALL

**MAINTENANCE OF TRAFFIC PHASE 2**  
**STA. 20+00.00 TO STA. 30+00.00**

**CUY-17-12.16**



STA. 32+29

TYPE A WARNING LIGHT



STA. 37+29



SPECIAL 48" x 16"

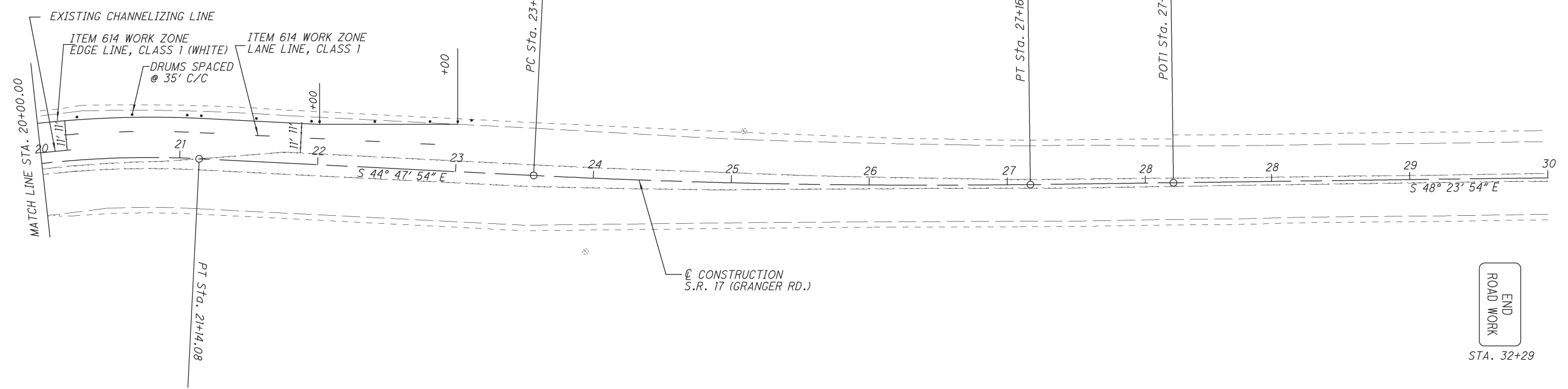


TYPE A WARNING LIGHT

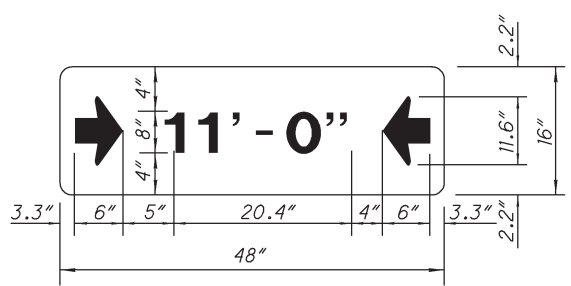


STA. 42+29

END PROJECT  
 END WORK  
 SLM 12.58  
 STA. 28+20.29±



NOTE:  
 ALL EXISTING CONFLICTING  
 PAVEMENT MARKINGS SHALL  
 BE REMOVED AND THE WORK  
 INCLUDED WITH ITEM 614.  
  
 FOR DETAILS NOT SHOWN SEE  
 S.C.D. MT-95.31 (NO SIGNS TO  
 BE PLACED IN THE MEDIAN)



SIGN DETAIL  
 SPECIAL - 48" x 16"  
  
 NARROW WIDTH PLAQUE: 1.5" RADIUS, 0.6" BORDER, 0.4" INDENT, BLACK ON ORANGE  
 STANDARD ARROW CUSTOM 6.0" x 1.0' 0", 11'-0"D, STANDARD ARROW CUSTOM 6.0" x 1.0' 0"

SHEET NUMBER					PARTICIPATION		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
4	5	17	18	30	01/S>2/P V	02/S>2/PV						
											ROADWAY	
	LS				LS		201	11000	LS		CLEARING AND GRUBBING	
			19		2	17	202	23001	19	SY	PAVEMENT REMOVED, AS PER PLAN	3
			278			278	202	30000	278	SF	WALK REMOVED	
	200				200		202	32000	200	FT	CURB REMOVED	
			625		625		202	38000	625	FT	GUARDRAIL REMOVED	
100					100		203	20000	100	CY	EMBANKMENT	
	6.2				6.2		209	15001	6.2	STA	RESHAPING UNDER GUARDRAIL, AS PER PLAN	5
		0.34			0.34		209	72051	0.34	MILE	PREPARING SUBGRADE FOR SHOULDER PAVING, AS PER PLAN	4
			362.5		362.5		606	15050	362.5	FT	GUARDRAIL, TYPE MGS	
			1		1		606	26050	1	EACH	ANCHOR ASSEMBLY, MGS TYPE B	4
			1		1		606	26150	1	EACH	ANCHOR ASSEMBLY, MGS TYPE E	4
			3		3		606	26550	3	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
			1		1		606	35102	1	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	
			3		3		606	35170	3	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE BR-1	25
			436			436	608	10000	436	SF	4" CONCRETE WALK	
			518			518	608	52040	518	SF	CURB RAMP, TYPE B2	
											EROSION CONTROL	
500					500		659	10001	500	SY	SEEDING AND MULCHING, AS PER PLAN	4
							832	30000	1000	EACH	EROSION CONTROL	
											DRAINAGE	
			2			2	611	98634	2	EACH	CATCH BASIN RECONSTRUCTED TO GRADE	
1000					1000		611	99820	1000	LB	SPECIAL - MISCELLANEOUS METAL	
											PAVEMENT	
	170				170		251	01001	170	SY	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN "A"	5
	110				110		251	01001	110	SY	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN "B"	5
	590				590		253	01001	590	SY	PAVEMENT REPAIR, AS PER PLAN "A"	5
	30				30		253	01001	30	SY	PAVEMENT REPAIR, AS PER PLAN "B"	5
		369			369		254	01000	369	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
		649			649		254	01010	649	SY	PAVEMENT PLANING, PORTLAND CEMENT CONCRETE	
	150				150		255	10161	150	SY	FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC MS, AS PER PLAN	5
	900				900		255	20000	900	FT	FULL DEPTH PAVEMENT SAWING	
		421			421		SPECIAL	40720510	421	GAL	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE	3
		842			842		SPECIAL	40720500	842	GAL	TACK COAT, TRACKLESS TACK	3
		440			440		441	10101	440	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN	3
		284			284		441	50200	284	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	
	200				200		609	26000	200	FT	CURB, TYPE 6	
			115		16	99	609	26001	115	FT	CURB, TYPE 6, AS PER PLAN	3
		31			31		617	10101	31	CY	COMPACTED AGGREGATE, AS PER PLAN	3
											TRAFFIC CONTROL	
10					10		626	00100	10	EACH	BARRIER REFLECTOR	
			1.65		1.65		646	10000	1.65	MILE	EDGE LINE, 4"	
			0.80		0.80		646	10100	0.8	MILE	LANE LINE, 4"	
			788		788		646	10300	788	FT	CHANNELIZING LINE, 8"	
			110		110		646	10400	110	FT	STOP LINE	
			462		462		646	10500	462	FT	CROSSWALK LINE	
			61		61		646	10620	61	FT	CHEVRON MARKING	
			5		5		646	20300	5	EACH	LANE ARROW	
			650		650		646	50100	650	FT	REMOVAL OF PAVEMENT MARKING	

GENERAL SUMMARY

CUY - 17 - 12.16

CALCULATED  
BGM  
CHECKED  
ALL

SHEET NUMBER					PARTICIPATION		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	CALCULATED	BGM	CHECKED	ALL
7	8	34	36A	01/S>2/P V	02/S>2/ PV											
											TRAFFIC SIGNALS					
		145			145	625	25400	145	FT	CONDUIT, 2", 725.04						
		10			10	625	25500	10	FT	CONDUIT, 3", 725.04						
		495			495	625	25910	495	FT	CONDUIT CLEANED AND CABLES REMOVED						34
		110			110	625	29000	110	FT	TRENCH						
		2			2	625	30706	2	EACH	PULL BOX, 725.08, 24"						
		1			1	625	31451	1	EACH	PULL BOX, AS PER PLAN						31
		3			3	625	31510	3	EACH	PULL BOX REMOVED						
		5			5	625	32000	5	EACH	GROUND ROD						
		3			3	625	39520	3	EACH	PULL BOX CLEANED						31
		LS			LS	SPECIAL	62540000	LS		MAINTAIN EXISTING LIGHTING						31
		6			6	632	20600	6	EACH	PEDESTRIAN SIGNAL HEAD, TYPE D2						
		6			6	632	25010	6	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD						
		6			6	632	26000	6	EACH	PEDESTRIAN PUSHBUTTON						
		960			960	632	40700	960	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG						
		4			4	632	64020	4	EACH	PEDESTAL FOUNDATION						
		1			1	632	64021	1	EACH	PEDESTAL FOUNDATION, AS PER PLAN						31
		5			5	632	90000	5	EACH	PEDESTAL, 11', TRANSFORMER BASE						
		1			1	632	90101	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN						31
		LS			LS	632	90300	LS		SIGNALIZATION, MISC.:EXISTING CONDUIT AND CABLES						31
											STRUCTURE 20 FOOT SPAN AND OVER					
		LS			LS	202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN						36
		7			7	202	75000	7	FT	FENCE REMOVED						
		4407			4407	509	10001	4407	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN						36
		100			100	509	20001	100	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN						36
		31			31	511	53012	31	CY	CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMPS AND RAILING						
		67			67	512	10050	67	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)						
		27			27	512	10100	27	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)						
		50			50	519	11101	50	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN						36
		10			10	SPECIAL	51912510	10	SY	PATCHING CONCRETE BRIDGE DECK						36
		22			22	607	35001	22	FT	FENCE REMOVED AND REBUILT, AS PER PLAN						36
		200			200	SPECIAL	69070100	200	SF	ASBESTOS ABATEMENT						36A
											MAINTENANCE OF TRAFFIC					
	40				40	614	11110	40	HR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE						8
3					3	614	12338	3	EACH	WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL)						
8					8	614	13300	8	EACH	BARRIER REFLECTOR, TYPE B						
8					8	614	13350	8	EACH	OBJECT MARKER, ONE WAY						
	6				6	614	18601	6	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN						8
0.09					0.09	614	20000	0.09	MILE	WORK ZONE LANE LINE, CLASS I						
0.34					0.34	614	22000	0.34	MILE	WORK ZONE EDGE LINE, CLASS I						
210					210	622	41000	210	FT	PORTABLE BARRIER, 32"						
											INCIDENTALS					
LS					LS	108	30000	LS		CPM PROGRESS SCHEDULE SHORT DURATION PROJECTS						
					LS	614	11000	LS		MAINTAINING TRAFFIC						
					6	619	16010	6	MNTH	FIELD OFFICE, TYPE B						
					LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING						
					LS	624	10000	LS		MOBILIZATION						

GENERAL SUMMARY

CUY - 17 - 12.16



9472IGC001 SHEET 1

STATION TO STATION	SIDE	LENGTH L	AVERAGE WIDTH W	SURFACE AREA A A=LxW	AREA BY COMPUTER	254	254	441	*441	441	SPECIAL	SPECIAL	617	209								
						PAVEMENT PLANNING, ASPHALT CONCRETE	PAVEMENT PLANNING, PORTLAND CEMENT CONCRETE	1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN	1" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	TACK COAT, TRACKLESS TACK @ 0.08 GAL./S.Y.	TACK COAT, TRACKLESS TACK FOR INTERMEDIATE COURSE @ 0.04 GAL./S.Y.	3" COMPACTED AGGREGATE, AS PER PLAN	PREPARING SUBGRADE FOR SHOULDER PAVING AS PER PLAN								
		FT.	FT.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.	CU. YD.	GAL.	GAL.	CU. YD.	MILE								
EASTBOUND LANES																						
5.80.0 - 6+05.0	RT.	25.00	27.7	76.94		76.94		3.21		2.14	6.16	3.08										
6+05.0 - 6+38.7	RT.	33.70	VAR.		99.60			4.15		2.77	7.97	3.98										
6+38.7 - 9+25.4	RT.	286.70	VAR.		1353.72			56.41		37.60	108.30	54.15										
RAMP G-E	RT.		VAR. VAR.		201.03 43.71	43.71		8.38 1.82		5.58 1.21	16.08 3.50	8.04 1.75										
9+25.4 - 11+64.6	RT.	239.20	VAR.		795.88			33.16		22.11	63.67	31.83										
11+64.6 - 12+03.13	RT.	38.53	VAR.		127.41		127.41	5.31		1/2" 1.77	10.19	5.10										
19+40.08 - 19+65.08	RT.	25.00	VAR.		81.97		81.97	3.42		1/2" 1.14	6.56	3.28										
19+65.08 - 28+20.29	RT.	855.21	VAR.		2473.53			103.06		68.71	197.88	98.94										
27+28.79 - 27+53.79	RT.	25.00	24.0	66.67		66.67		2.78		1.85	5.33	2.67										
SHOULDER																						
20+09.1 - 20+45.5	RT.	36.4	VAR.		10.94			0.46	0.03	0.30	0.88	0.44	0.67	0.007								
20+45.5 - 28+20.29	RT.	774.79	4.0	344.35				14.35	0.74	9.56	27.55	13.77	14.35	0.147								
28+20.29 - 27+53.79	RT.	25.0	4.0	11.11		11.11		0.46	0.02	0.31	0.89	0.44	0.46	0.005								
WESTBOUND																						
5+80.0 - 6+05.0	LT.	25.00	30.3	84.17		84.17		3.51		2.34	6.73	3.37										
6+05.0 - 11+41.05	LT.	536.05	28.0	1167.71				48.65		32.44	93.42	46.71										
11+41.05 - 11+82.20	LT.	41.15	VAR.		128.41		128.41	5.35		1/2" 1.78	10.27	5.14										
RAMP GE-2	LT.				193.89		193.89	8.08		1/2" 2.69	15.51	7.76										
19+40.08 - 19+65.08	LT.	25.00	42.2	** 117.22			117.22	4.88	0.02	1/2" 1.63	9.38	4.69	0.46	0.005								
19+65.08 - 21+75.49	LT.	210.41	VAR.		** 944.67			39.36	0.20	26.24	75.57	37.79	3.90	0.040								
21+75.49 - 28+20.29	LT.	644.80	VAR.		** 2109.62			87.90	0.62	58.60	168.77	84.38	11.94	0.122								
27+28.79 - 27+53.79	LT.	25.00	VAR.		** 86.14	86.14		3.59	0.02	2.39	6.89	3.45	0.46	0.005								
DEDUCTED FOR SAFETY EDGE													-1.65									
** AREA INCLUDES SHOULDER * QUANTITY FOR SAFETY EDGE																						
								438.29	1.65													
<b>TOTALS (CARRIED TO GENERAL SUMMARY)</b>						369	649	440	284	842	421	31	0.34									

CALCULATED	BGM
	CHECKED
ALL	
<b>PAVEMENT AND SHOULDER CALCULATIONS</b>	
<b>CUY - 17 - 12.16</b>	
17 43	

94721GCC001 SHEET 2

REF. NO.	SHEET NO.	PLAN SPLIT NO.	STATION TO STATION	SIDE	202	202	202			606	606	606	606	606	606	608	608		609		611			
					GUARDRAIL REMOVED FT.	PAVEMENT REMOVED, AS PER PLAN SQ. YD.	WALK REMOVED SQ. FT.			GUARDRAIL, TYPE MGS FT.	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2 EACH	BRIDGE TERMINAL ASSEMBLY, TYPE BR-1 EACH	ANCHOR ASSEMBLY, MGS TYPE B EACH	ANCHOR ASSEMBLY, MGS TYPE T EACH	ANCHOR ASSEMBLY, MGS TYPE E EACH	4" CONCRETE WALK SQ. FT.	CURB RAMP, TYPE B2 SQ. FT.		CURB, TYPE 6, AS PER PLAN FT.		CATCH BASIN ADJUSTED TO GRADE EACH			
1-R	20	#1	10+76.4 - 12+51.4	RT.	175.0																			
2-R	20	#1	10+46.9 - 11+59.4	LT.	112.5																			
3-R	21	#1	16+97.3 - 6+93.7 TUXEDO RD.	LT.	150.0																			
4-R	21	#2	17+98.29 - 6+72.99 TUXEDO RD.	LT.		5.2	177																	
5-R	21	#2	19+40.08 - 6+65.27 TUXEDO RD.	LT.		12.0	101																	
6-R	21	#1	19+03.07 - 19+19.51	RT.		1.1																		
7-R	21	#1	19+04.8 - 19+58.0	LT.	62.5																			
8-R	21 & 22	#1	19+05.3 - 20+39.0	RT.	125.0																			
1-GR	20	#1	10+77.1± - 12+52.1	RT.					125.0		1				1									
2-GR	20	#1	10+47.5± - 11+60.0	LT.					100.0		1		1											
3-GR	21	#1	16+96.7 - 17+59.2±	LT.					25.0		1	1												
4-GR	21	#1	19+45.5± - 19+58.0±	LT.									1											
5-GR	21 & 22	#1	19+05.2± - 20+36.9±	RT.					112.5	1			1											
1-C	21	#2	17+98.29 - 6+72.99 TUXEDO RD.	LT															40.7					
2-C	21	#2	19+40.08 - 6+68.5 TUXEDO RD.	LT															57.8					
3-C	21	#1	19+03.07 - 19+19.51	RT.															15.9					
1-SW	21	#2	17+98.29 - 6+72.99 TUXEDO RD.	LT												257.2	264.2							
2-SW	21	#2	19+40.32 - 6+68.5 TUXEDO RD.	LT												178.1	253.0							
1-CB	21	#2	6+80.20	RT.																		1		
2-CB	21	#2	6+78.37	LT.																		1		
PLAN SPLIT # 1 TOTAL					625	2			362.5	1	3	1	3	1		436	518		16		2			
PLAN SPLIT # 2 TOTAL						17	278												99					
<b>TOTALS (CARRIED TO GENERAL SUMMARY)</b>					<b>625</b>	<b>19</b>	<b>278</b>		<b>362.5</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>		<b>436</b>	<b>518</b>		<b>115</b>		<b>2</b>			

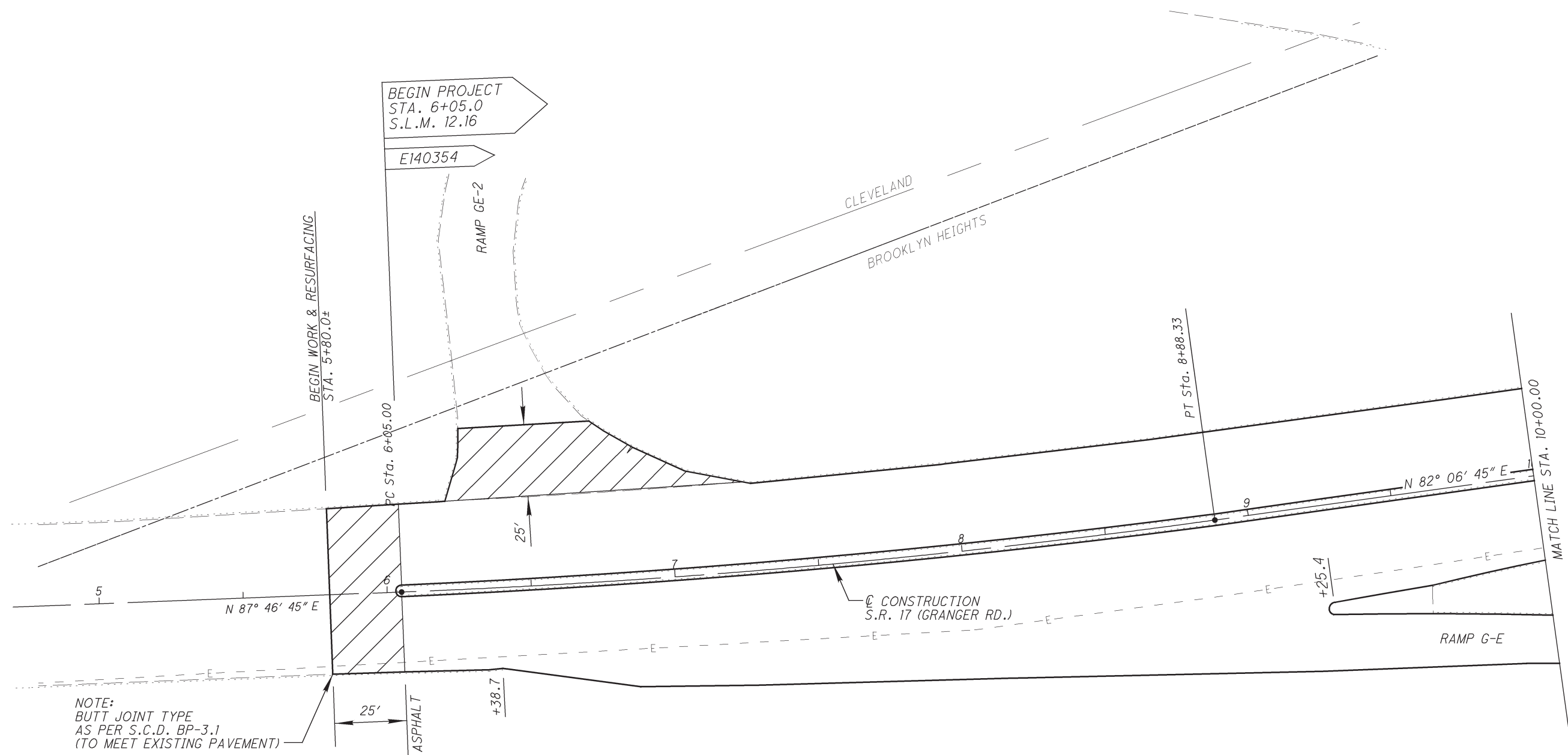
<b>ROADWAY QUANTITIES</b>	CALCULATED
	BGM
CHECKED	
ALL	

<b>CUY - 17 - 12.16</b>
-------------------------


  

18
43



**CURVE DATA**  
 P.I. Sta. 7+46.78  
 $\Delta = 5^\circ 40' 00''$  (LT)  
 $D_c = 2^\circ 00' 00''$   
 $R = 2,864.79'$   
 $T = 141.78'$   
 $L = 283.33'$   
 $E = 3.51'$   
 $e_{max} = NC$   
 $C = 283.22'$   
 C.B. = N 84° 56' 45" E  
 P.C. = Sta. 6+05.00  
 P.T. = Sta. 8+88.33

**LEGEND**

 BUTT JOINT TYPE  
AS PER S.C.D. BP-3.1  
(TO MEET EXISTING PAVEMENT)



0 20 40  
HORIZONTAL  
SCALE IN FEET

CALCULATED  
BGM  
CHECKED  
ALL

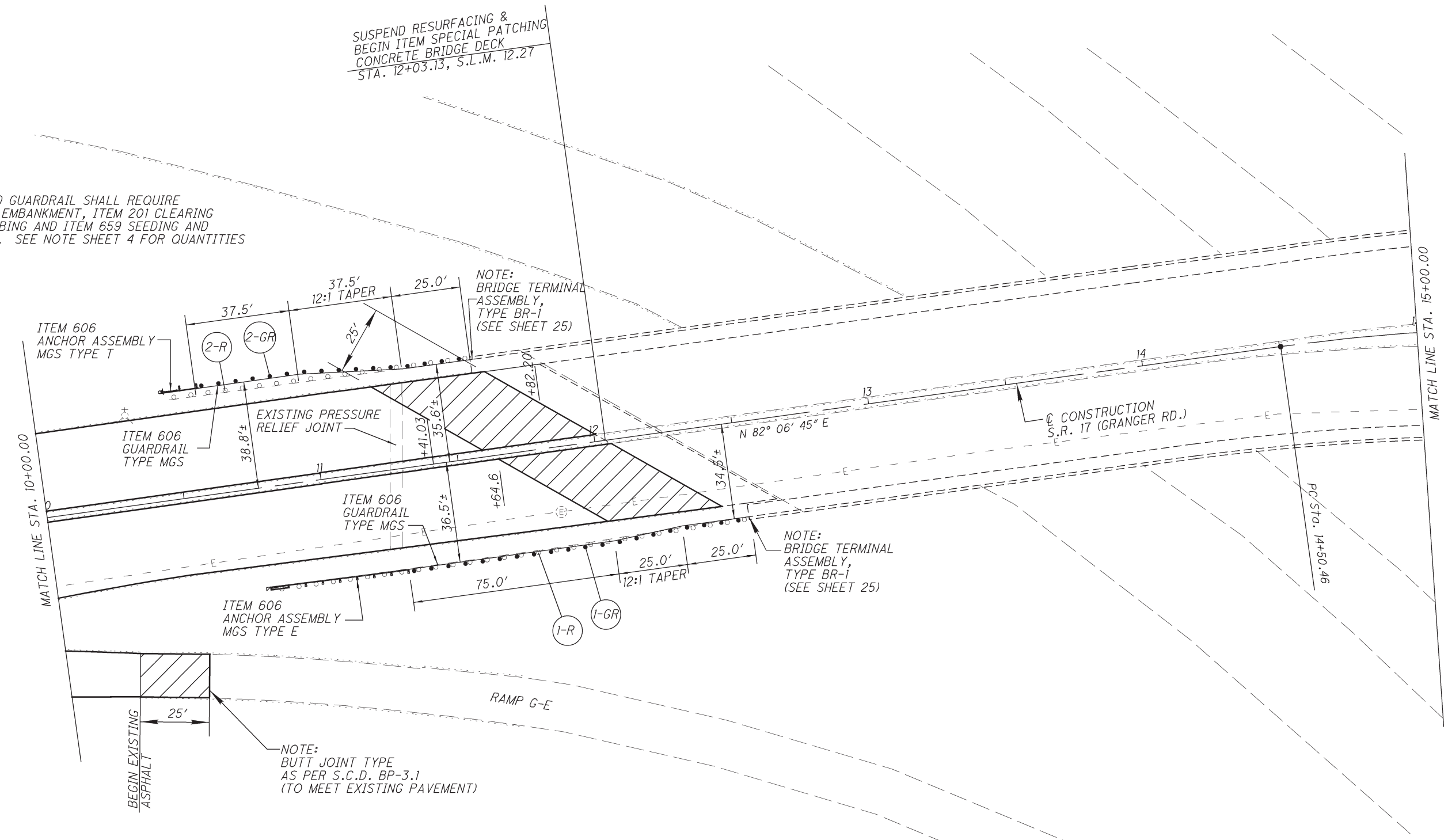
PLAN SHEET  
S.R. 17 (GRANGER RD.)  
STA. 10+00.00 TO STA. 15+00.00


CUY - 17 - 12.16

20  
43

SUSPEND RESURFACING &  
BEGIN ITEM SPECIAL PATCHING  
CONCRETE BRIDGE DECK  
STA. 12+03.13, S.L.M. 12.27

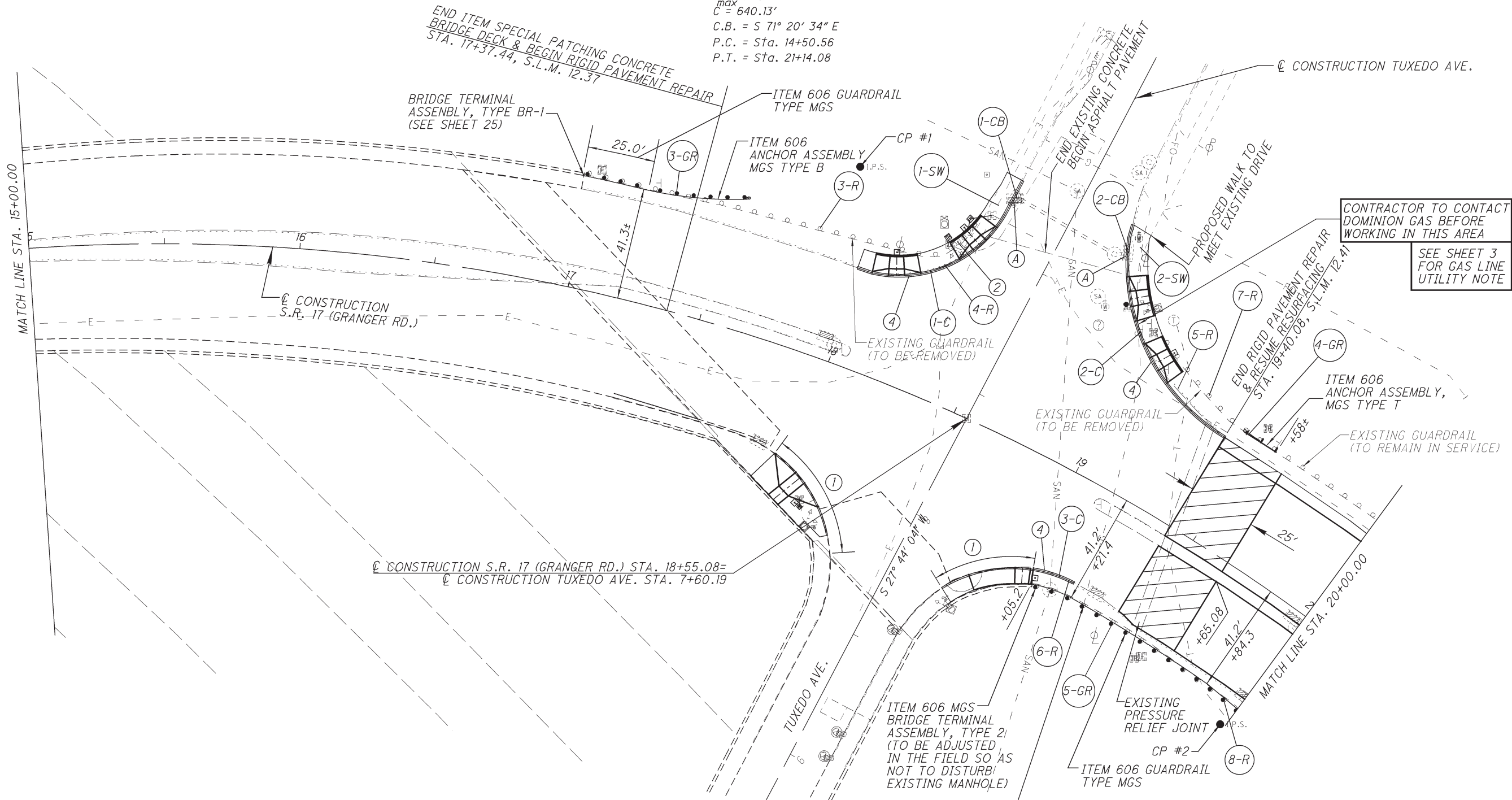
NOTE:  
PROPOSED GUARDRAIL SHALL REQUIRE  
ITEM 203 EMBANKMENT, ITEM 201 CLEARING  
AND GRUBBING AND ITEM 659 SEEDING AND  
MULCHING. SEE NOTE SHEET 4 FOR QUANTITIES



LEGEND  
 BUTT JOINT TYPE  
AS PER S.C.D. BP-3.1  
(TO MEET EXISTING PAVEMENT)

94721GFP002

**CURVE DATA**  
 P.I. Sta. = 18+08.24  
 $\Delta = 53^\circ 05' 21''$  (RT)  
 $Dc = 8^\circ 00' 00''$   
 $R = 716.20'$   
 $T = 357.78'$   
 $L = 663.62'$   
 $E = 84.39'$   
 $e_{max} = 1.60$   
 $C = 640.13'$   
 C.B. = S  $71^\circ 20' 34''$  E  
 P.C. = Sta. 14+50.56  
 P.T. = Sta. 21+14.08



**NOTES:**

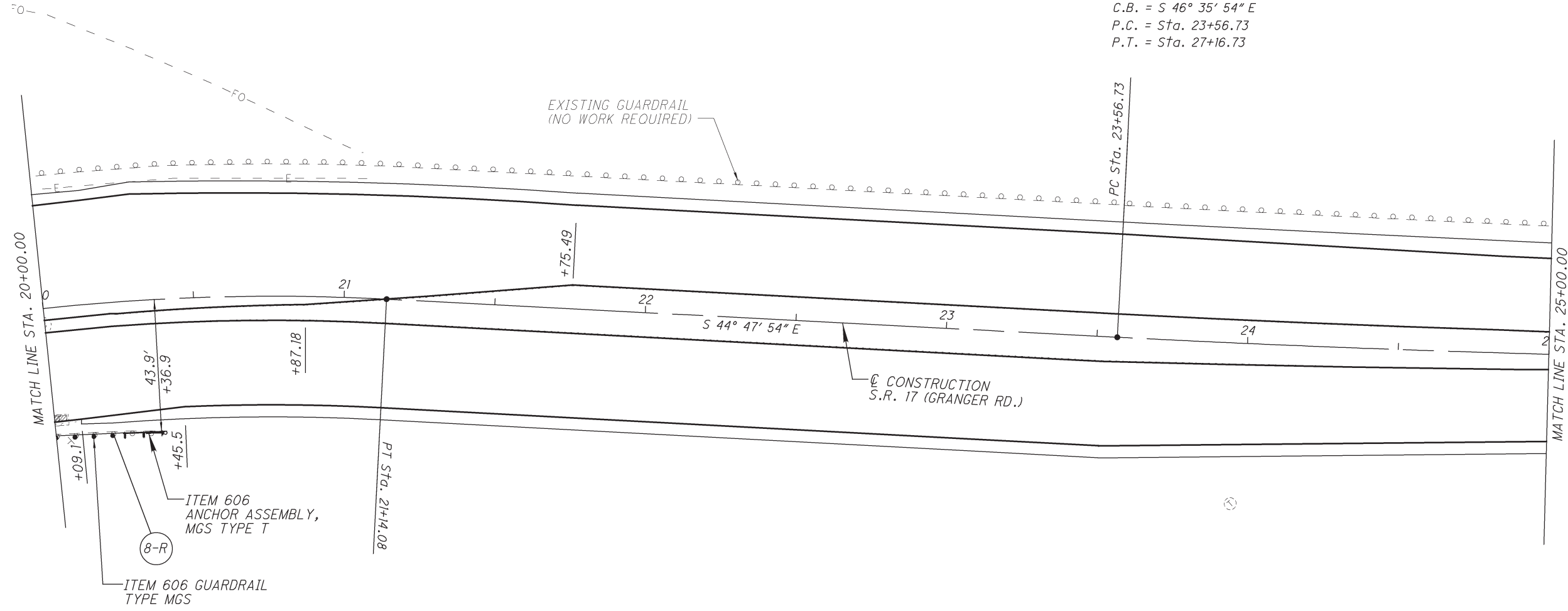
- ① FOR WALK AND CURB REPLACEMENT, SEE STRUCTURE DETAILS SHEET 38/39
- ② FOR RELOCATION OF TRAFFIC CONTROL ITEMS SEE SHEET 29/30
- ③ RIGID PAVEMENT REPAIR LOCATIONS TO BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION
- ④ PROPOSED SAW CUT, REMOVE AND REPLACE WITH ITEM 609 CURB, TYPE 6, AS PER PLAN (SEE DETAILS SHEET 3)
- Ⓐ CATCH BASIN TO BE ADJUSTED TO GRADE

**LEGEND**

BUTT JOINT TYPE AS PER S.C.D. BP-3.1 (TO MEET EXISTING PAVEMENT)

CONTRACTOR TO CONTACT DOMINION GAS BEFORE WORKING IN THIS AREA

SEE SHEET 3 FOR GAS LINE UTILITY NOTE



**CURVE DATA**  
 P.I. Sta. 25+36.79  
 $\Delta = 3^\circ 36' 00''$  (LT)  
 $Dc = 1^\circ 00' 00''$   
 $R = 5,729.58'$   
 $T = 180.06'$   
 $L = 360.00'$   
 $E = 2.83'$   
 $e_{max} = NC$   
 $C = 359.94'$   
 $C.B. = S 46^\circ 35' 54'' E$   
 $P.C. = Sta. 23+56.73$   
 $P.T. = Sta. 27+16.73$

CALCULATED	BGM
	CHECKED
	ALL

0 20 40  
 HORIZONTAL SCALE IN FEET

**PLAN SHEET**  
**S.R. 17 (GRANGER RD.)**  
**STA. 20+00.00 TO STA. 25+00.00**

**CUY - 17 - 12.16**



CALCULATED BGM CHECKED ALL

CURVE DATA  
P.I. Sta. 25+36.79  
 $\Delta = 3^\circ 36' 00''$  (LT)  
 $D_c = 1^\circ 00' 00''$   
 $R = 5,729.58'$   
 $T = 180.06'$   
 $L = 360.00'$   
 $E = 2.83'$   
 $e_{max} = NC$   
 $C = 359.94'$   
C.B. = S 46° 35' 54" E  
P.C. = Sta. 23+56.73  
P.T. = Sta. 27+16.73

END PROJECT  
STA. 28+20.29±  
S.L.M. 12.58

E140354

BEGIN EXISTING ASPHALT  
25'  
END RESURFACING & WORK  
STA. 27+53.79±

PT Sta. 27+16.73

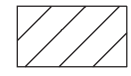
S 48° 23' 54" E

CONSTRUCTION  
S.R. 17 (GRANGER RD.)

BUTT JOINT TYPE  
AS PER S.C.D. BP-3.1  
(TO MEET EXISTING PAVEMENT)

EQUATION:  
Sta 27+28.79 AH  
Sta 28+20.29 BK =

LEGEND



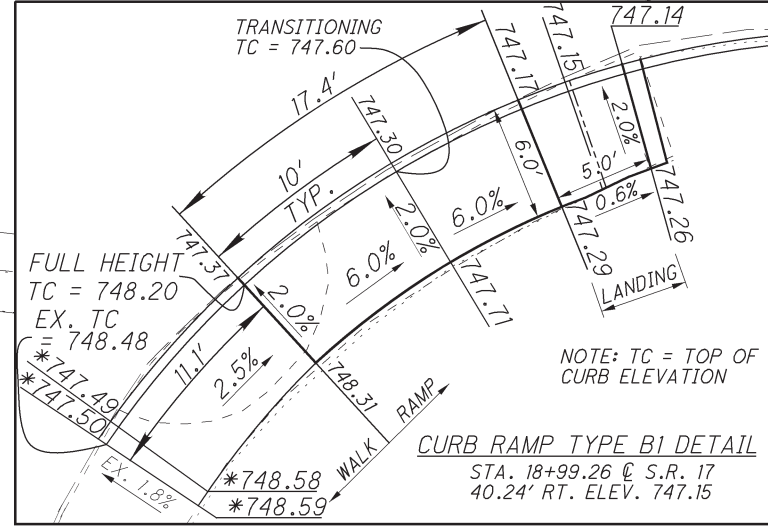
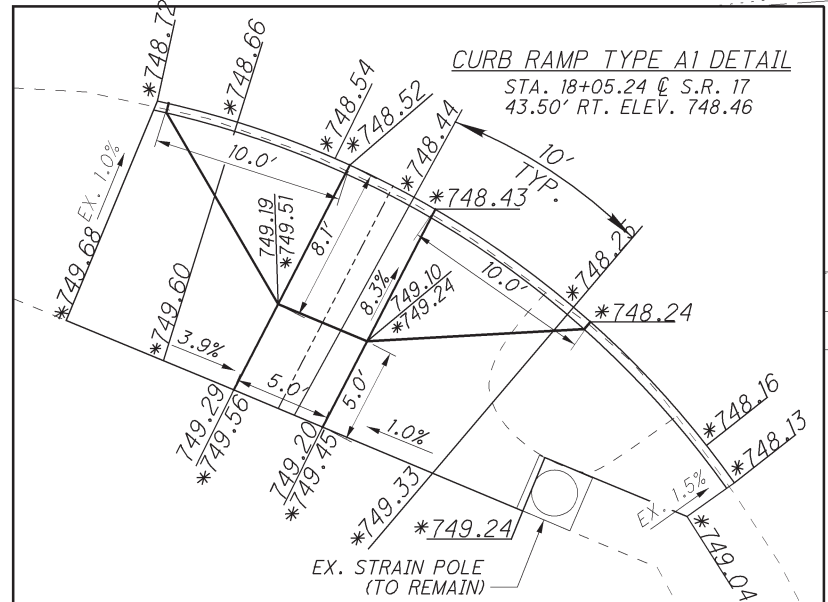
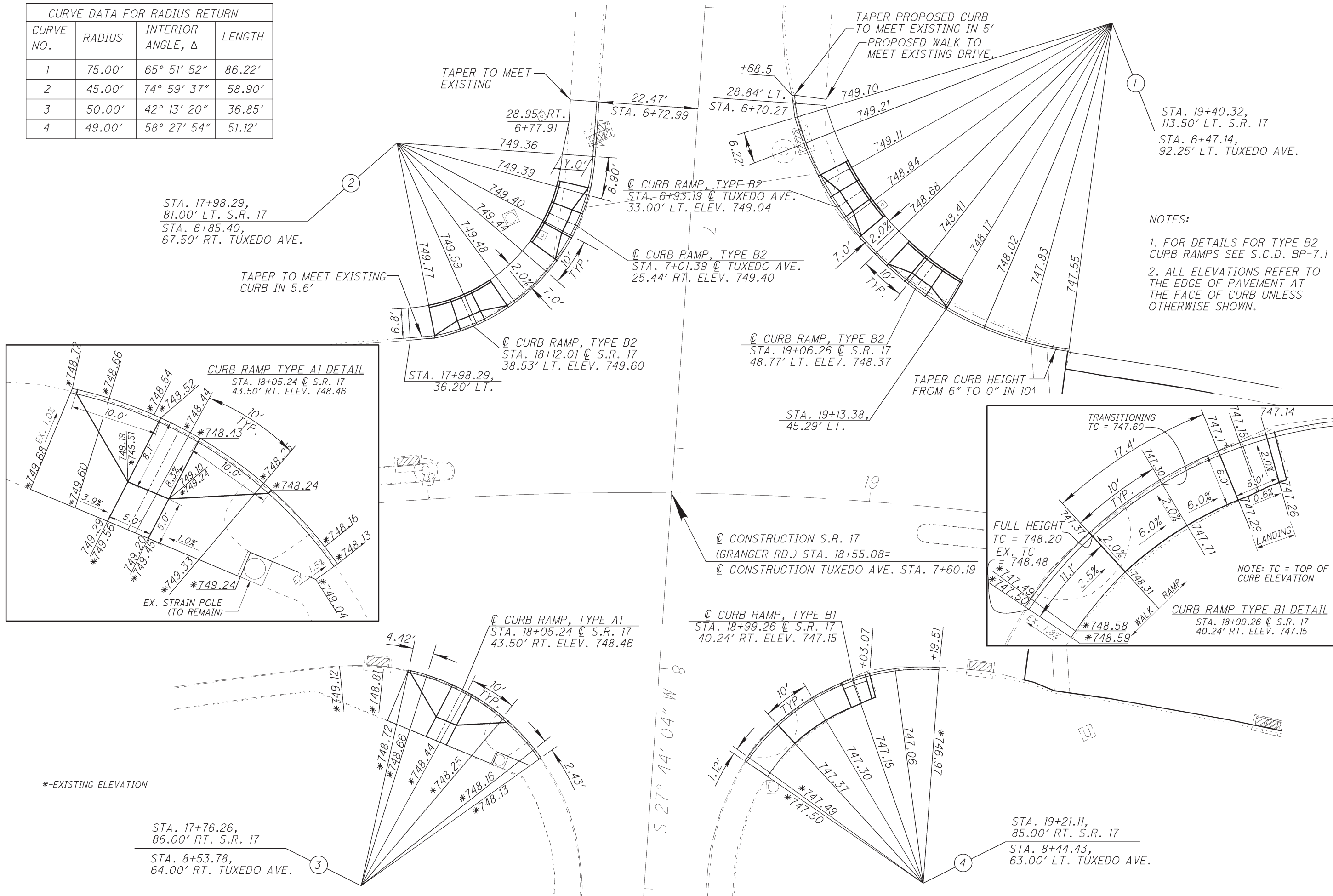
BUTT JOINT TYPE  
AS PER S.C.D. BP-3.1  
(TO MEET EXISTING PAVEMENT)

MATCH LINE STA. 25+00.00

PLAN SHEET  
S.R. 17 (GRANGER RD.)  
STA. 25+00.00 TO STA. 30+00.00

CUY - 17 - 12.16

CURVE DATA FOR RADIUS RETURN			
CURVE NO.	RADIUS	INTERIOR ANGLE, Δ	LENGTH
1	75.00'	65° 51' 52"	86.22'
2	45.00'	74° 59' 37"	58.90'
3	50.00'	42° 13' 20"	36.85'
4	49.00'	58° 27' 54"	51.12'



NOTES:  
 1. FOR DETAILS FOR TYPE B2 CURB RAMPS SEE S.C.D. BP-7.1  
 2. ALL ELEVATIONS REFER TO THE EDGE OF PAVEMENT AT THE FACE OF CURB UNLESS OTHERWISE SHOWN.

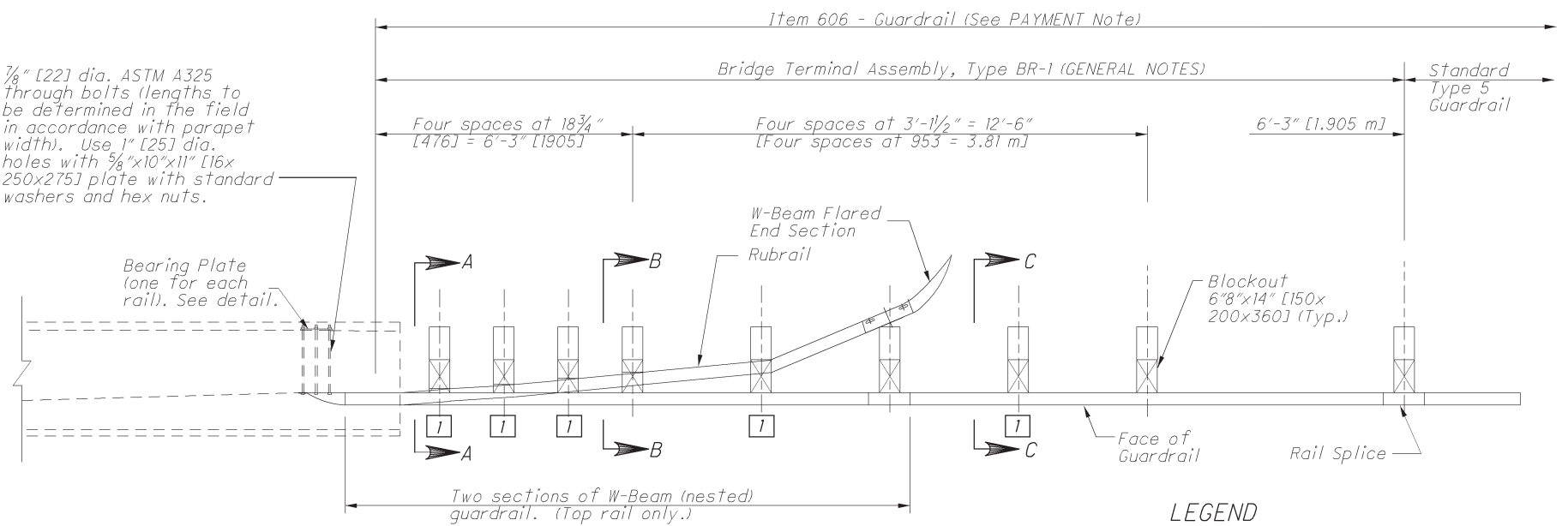


S.R. 17 (GRANGER RD.) AND TUXEDO RD.  
 INTERSECTION DETAILS

CUY-17-12.16

94721G1001

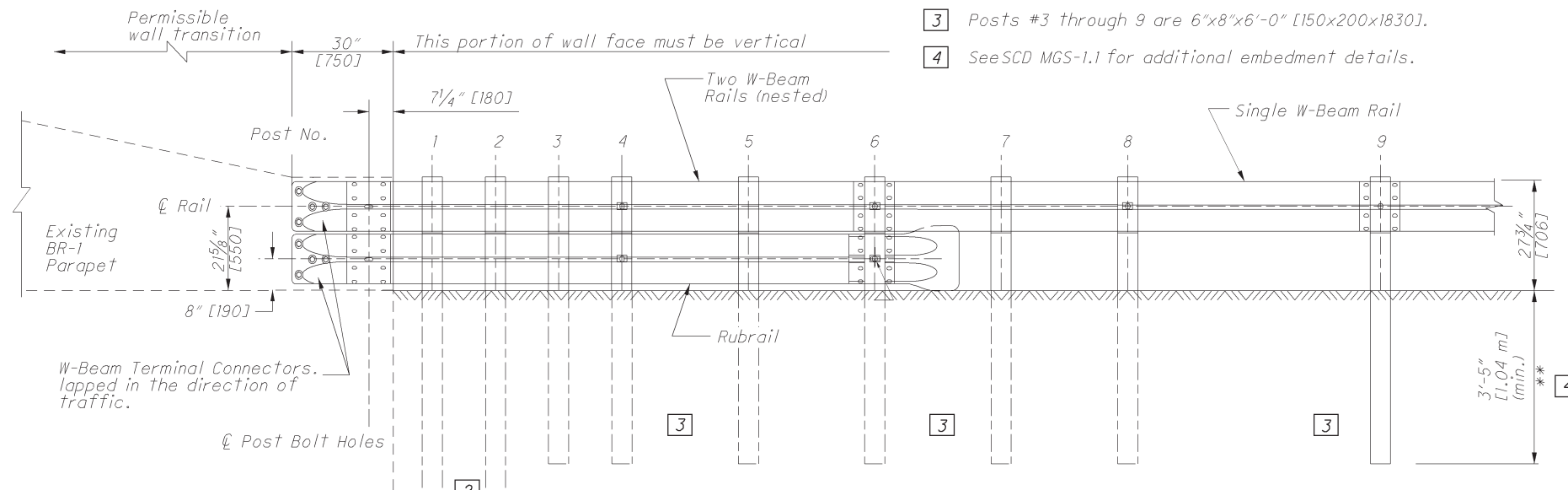




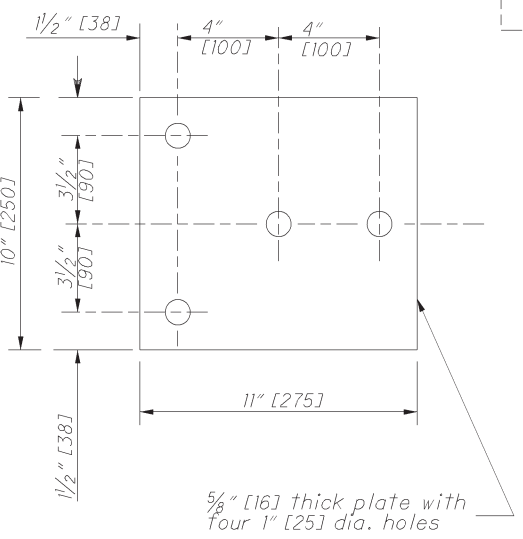
PLAN

LEGEND

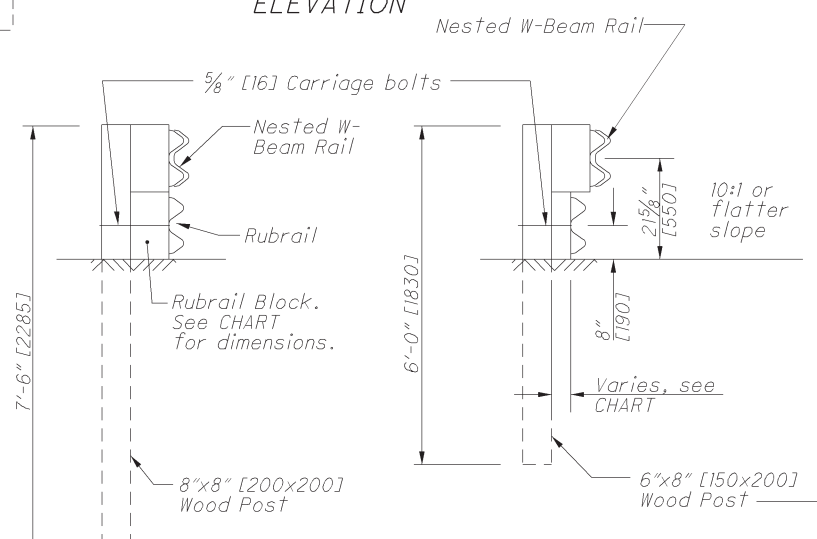
- 1 Guardrail not attached to Posts. Blockout fastened to Post with Standard Post Bolt.
- 2 Posts #1 and 2 are 8"x8"x7'-6" [150x200x2300].
- 3 Posts #3 through 9 are 6"x8"x6'-0" [150x200x1830].
- 4 See SCD MGS-1.1 for additional embedment details.



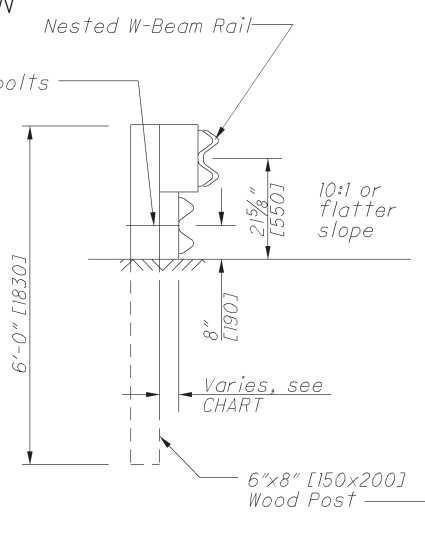
ELEVATION



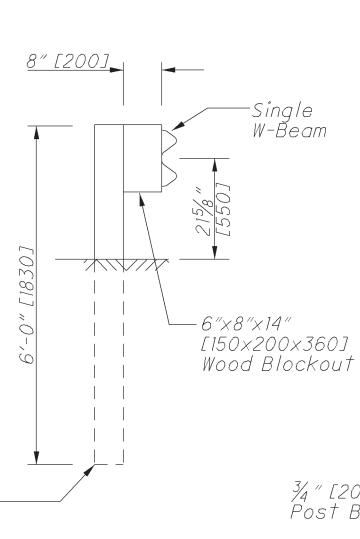
BEARING PLATE  
2 required



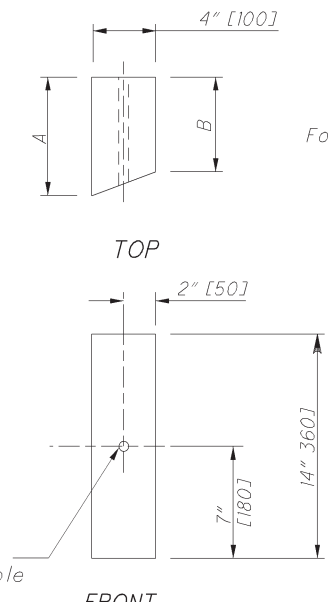
SECTION A-A



SECTION B-B



SECTION C-C



WOOD BLOCK FOR RUBRAIL



All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

NOTES

GENERAL: This design is intended to be used to upgrade bridge terminal assemblies utilizing 27" [786] BR-1 Bridge parapets in effect from 1979 to 1989. This assembly design is approved to NCHRP Report 350, Test Level 3.

This guardrail transition is only appropriate for connection to a vertical concrete end; it should not be connected directly to a concrete safety shape or single slope shape. If attached to a vertical concrete wall (other than a parapet), the wall must be adequately reinforced to resist the lateral and longitudinal forces transmitted through the terminal connectors. If the height of the vertical connection is 32" [813], use Bridge Terminal Assembly, Type 1 (SCD MGS-3.1).

This design utilizes a lower rail (rubrail), and it cannot be used if there is a curb present.

RUBRAIL: The rubrail is a 12'-6" [3.81 m] standard 12 ga. W-Beam rail element. The last 3' [1 m] of the rubrail may be shop bent to facilitate field installation. Field drill rubrail hole at Post 6.

POST ATTACHMENTS: Posts No. 1, 2, 3, 4 and 6 require an additional 1" [25] dia. hole to attach the lower block and/or rubrail.

Do not bolt nested W-Beam or Rubrail to Posts and Blockouts on Posts No. 1, 2, 3, 5 and 7. Bolt blockouts directly to posts at those locations.

Center drill wood block for rubrails to sit squarely on Posts 1 through 4. Secure blocks to Posts No. 1, 2, & 3 with 5/8" [16] carriage bolts. See WOOD BLOCK FOR RUBRAIL Detail.

Use Wood posts only. Steel or plastic blockouts are not permitted. Use of rectangular plate washers is optional.

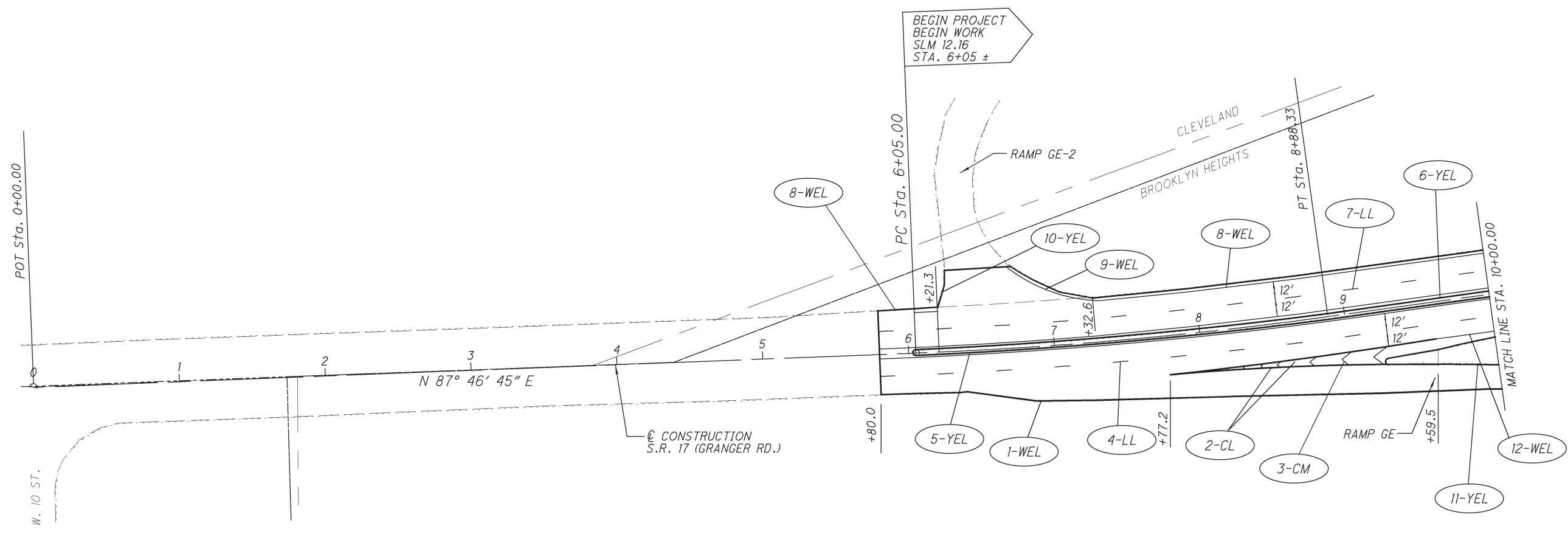
GUARDRAIL CONNECTION: At least one 12'-6" [3.81 m] section of Standard W-Beam Guardrail must be present before attaching any End Anchors. See SCD MGS-2.1 for standard guardrail details. PAYMENT: Item 606 - Bridge Terminal Assembly, Type BR-1, Each, includes the cost of the extra components, in excess of normal guardrail, for additional and different sizes of posts and blockouts, nested rail and rubrail, Bearing Plates, End Section and Connectors, and other hardware.

For A and B dimensions see CHART.

RUBRAIL BLOCK CHART		
POST	A	B
1	6 1/2" [164]	6 1/4" [158]
2	5 1/8" [131]	4 7/8" [125]
3	3 7/8" [99]	3 5/8" [93]
4	2 5/8" [67]	2 3/8" [61]
5	No Block	No Block



CALCULATED	BGM
CHECKED	ALL

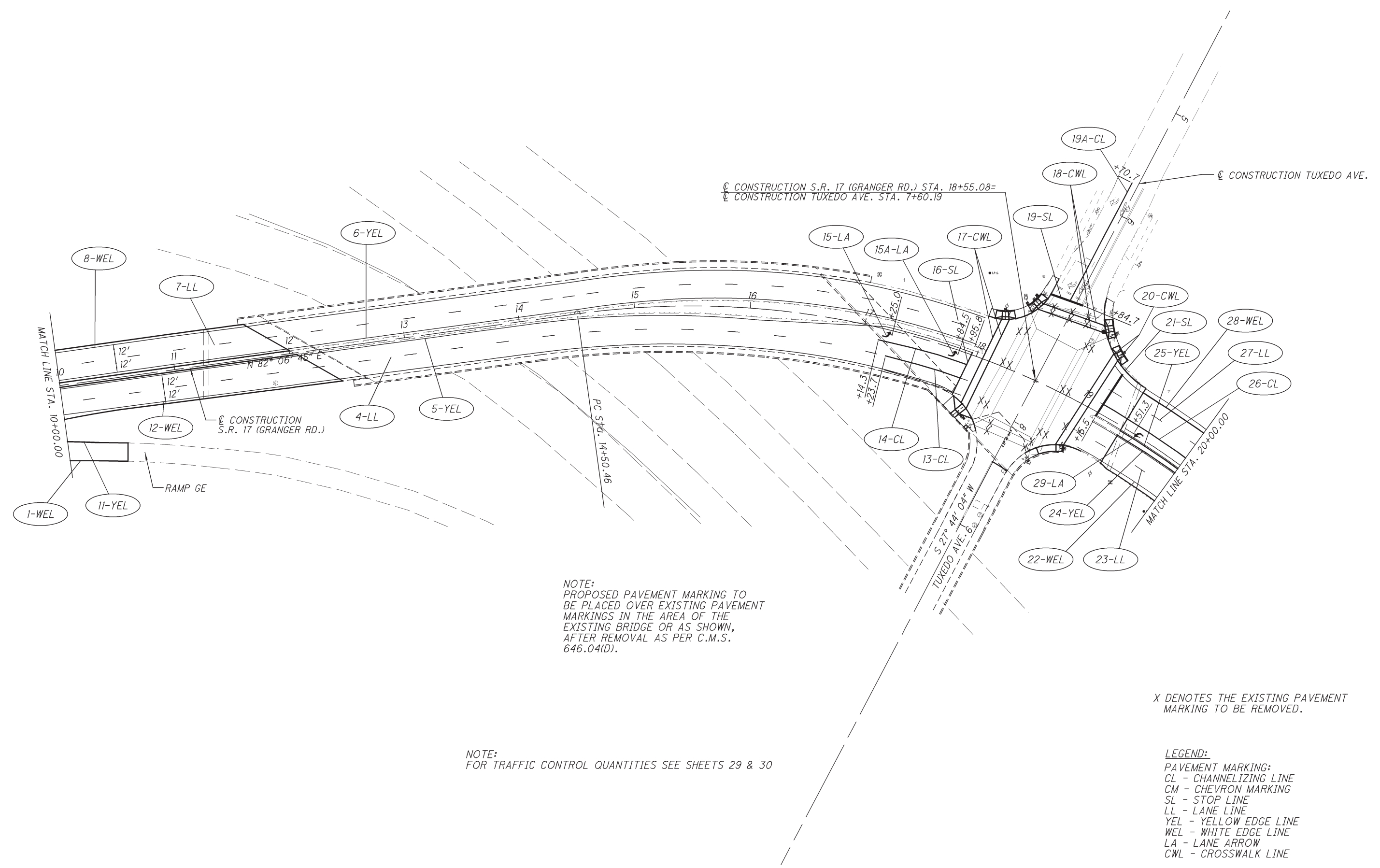


NOTE:  
FOR TRAFFIC CONTROL QUANTITIES SEE SHEETS 29 & 30

- LEGEND:**
- PAVEMENT MARKING:  
 CL - CHANNELIZING LINE  
 CM - CHEVRON MARKING  
 SL - STOP LINE  
 LL - LANE LINE  
 YEL - YELLOW EDGE LINE  
 WEL - WHITE EDGE LINE  
 LA - LANE ARROW  
 CWL - CROSSWALK LINE

**TRAFFIC CONTROL**  
**STA. 0+00.00 TO STA. 10+00.00**

**CUY - 17 - 12.16**



NOTE:  
PROPOSED PAVEMENT MARKING TO  
BE PLACED OVER EXISTING PAVEMENT  
MARKINGS IN THE AREA OF THE  
EXISTING BRIDGE OR AS SHOWN,  
AFTER REMOVAL AS PER C.M.S.  
646.04(D).

NOTE:  
FOR TRAFFIC CONTROL QUANTITIES SEE SHEETS 29 & 30

X DENOTES THE EXISTING PAVEMENT  
MARKING TO BE REMOVED.

LEGEND:  
PAVEMENT MARKING:  
CL - CHANNELIZING LINE  
CM - CHEVRON MARKING  
SL - STOP LINE  
LL - LANE LINE  
YEL - YELLOW EDGE LINE  
WEL - WHITE EDGE LINE  
LA - LANE ARROW  
CWL - CROSSWALK LINE



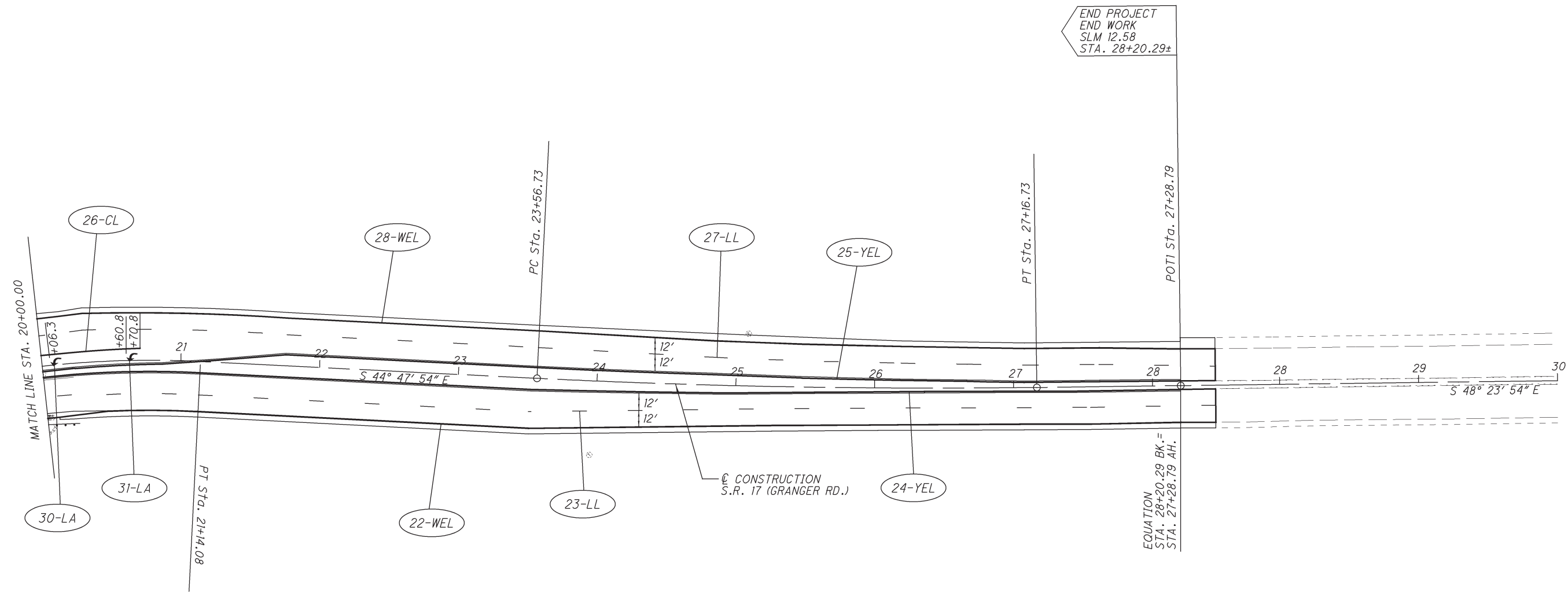
0 20 40 80  
HORIZONTAL  
SCALE IN FEET

CALCULATED  
BGM  
CHECKED  
ALL

TRAFFIC CONTROL  
STA. 20+00.00 TO STA. 30+00.00

CUY - 17 - 12.16

28  
43



NOTE:  
FOR TRAFFIC CONTROL QUANTITIES SEE SHEETS 29 & 30

LEGEND:

PAVEMENT MARKING:  
 CL - CHANNELIZING LINE  
 CM - CHEVRON MARKING  
 SL - STOP LINE  
 LL - LANE LINE  
 YEL - YELLOW EDGE LINE  
 WEL - WHITE EDGE LINE  
 LA - LANE ARROW  
 CWL - CROSSWALK LINE

9472ITP003

SHEET NO.	REF. NO.	STATION TO STATION	SIDE	646	646	646	646	646	646	646	646	646		646				
				EDGE LINE, 4" (WHITE)	EDGE LINE, 4" (YELLOW)		LANE LINE, 4"	CHANNELIZING LINE, 8"	STOP LINE	CROSSWALK LINE	CHEVRON MARKING	LANE ARROW	REMOVAL OF PAVEMENT MARKING					
				MILE	MILE		MILE	FT.	FT.	FT.	FT.	EACH		FT.				
26 & 27	1-WEL	5+80.0 - RAMP GE	RT.	0.081														
26	2-CL	7+77.2 - 9+59.5	RT.					365.0										
26	3-CM	7+77.2 - 9+59.5	RT.								61							
26 & 27	4-LL	5+80.0 - 17+23.7	RT.				0.217											
26 & 27	5-YEL	5+80.0 - 17+95.8	RT.		0.230													
26 & 27	6-YEL	5+80.0 - 17+95.8	LT.		0.230													
26 & 27	7-LL	5+80.0 - 17+95.8	LT.				0.230											
26 & 27	8-WEL	5+80.0 - 6+21.3 7+32.6 - 17+95.8	LT. LT.	0.007 0.201														
26	9-WEL	RAMP GE-2	RT.	0.013														
26	10-YEL	RAMP GE-2	LT.		0.004													
26 & 27	11-YEL	RAMP GE	LT.		0.013													
26 & 27	12-WEL	9+59.5 - 17+95.8	RT.	0.158														
27	13-CL	17+23.7 - 17+95.8	RT.					72.1										
27	14-CL	17+14.3 - 17+95.8	RT.					81.5										
27	15-LA	17+25.0	RT.									1						
27	15A-LA	17+84.5	RT.									1						
27	16-SL	17+95.8	RT.						40.0									
27	17-CWL	18+12.01 LT. - 18+05.24 RT.								164.4								
27	18-CWL	7+01.39 RT. - 6+93.19 LT.								118.5								
27	19-SL	6+84.7	RT.&LT.					28.1										
27	19A-CL	5+70.7 - 6+84.7	RT.					114.0										
		PROJECT												650				
SUB-TOTAL				0.460	0.477							2						
<b>TOTALS (CARRIED TO SHEET 30)</b>				0.937		0.447	632.6	68.1	282.9	61.0	2		650					

CALCULATED	BGM
	CHECKED
ALL	
<b>PAVEMENT MARKING SUB-SUMMARY</b>	
<b>CUY - 17 - 12.16</b>	
	29 43

94721TS001 SHEET 2

SHEET NO.	REF. NO.	STATION TO STATION	SIDE	646	646		646	646	646	646	646	646	646					
				EDGE LINE, 4" (WHITE) MILE	EDGE LINE, 4" (YELLOW) MILE		LANE LINE, 4" MILE	CHANNELIZING LINE, 8" FT.	STOP LINE FT.	CROSSWALK LINE FT.	CHEVRON MARKING FT.	LANE ARROW LEFT TURN EACH		REMOVAL OF PAVEMENT MARKING FT.				
27	20-CWL	19+06.26 LT. - 18+99.26 RT.									179.0							
27	21-SL	19+15.5	RT.&LT.						41.1									
27 & 28	22-WEL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	RT. RT.	0.171 0.005														
27 & 28	23-LL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	RT. RT.				0.171 0.005											
27 & 28	24-YEL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	RT. RT.		0.171 0.005													
27 & 28	25-YEL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	RT.&LT.		0.171 0.005													
27 & 28	26-CL	19+15.5 - 20+70.8	LT.					155.3										
27 & 28	27-LL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	LT. LT.				0.171 0.005											
27 & 28	28-WEL	19+15.5 - 28+20.29 27+28.79 - 27+53.79	LT. LT.	0.171 0.005														
27	29-LA	19+51.3	LT.								1							
28	30-LA	20+06.3	LT.								1							
28	31-LA	20+60.8	LT.								1							
SUB-TOTALS (THIS SHEET)				0.352	0.352													
TOTALS THIS SHEET					0.704		0.352	155.3	41.1	179.0		3						
TOTALS FROM SHEET 29					0.937		0.447	632.6	68.1	282.9	61.0	2		650				
<b>TOTALS (CARRIED TO GENERAL SUMMARY)</b>					1.641		0.799	787.9	109.2	461.9	61.0	5		650				

PAVEMENT MARKING SUB-SUMMARY

CALCULATED  
BGM  
CHECKED  
ALL

**ITEM SPECIAL - MAINTAIN EXISTING LIGHTING**

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF THE EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF EXISTING LIGHTING SHALL BE MADE BY ODOT'S REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE THE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT SHALL BE MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

REPLACEMENT OF DOWNED UNITS SHALL BE DONE ONLY WHEN THE ENGINEER HAS DETERMINED THAT THE REPLACEMENT OF THE KNOCKED DOWN UNIT IS NECESSARY AND SHALL BE PAID SEPARATELY ON A UNIT BASIS.

DURING RECONSTRUCTION OF THE CURB RAMPS AND PARAPET ON THE SOUTH SIDE OF S.R. 17, THE AFFECTED LIGHTING CIRCUITS SHALL BE DE-ENERGIZED. THE LOCATIONS OF ALL EXISTING CONDUITS SHALL BE FIELD VERIFIED PRIOR TO BEGINNING WORK.

ALL MATERIALS NECESSARY TO COMPLETE THE MODIFICATIONS TO THE EXISTING LIGHTING CIRCUITS IN ORDER FOR THE CIRCUIT TO BE FULLY FUNCTIONAL WHEN RE-ENERGIZED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. ANY EXISTING CONDUIT OR CABLES NO LONGER NEEDED SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

THE MAINTAINING AGENCY WILL PAY FOR ELECTRICAL ENERGY CONSUMED BY EXISTING POWER SERVICES AND BY PROPOSED PERMANENT POWER SERVICES AFTER ACCEPTANCE OF THE LIGHTING WORK.

THE UNIT PRICE BID FOR ITEM SPECIAL "REPLACEMENT OF EXISTING LIGHTING UNIT" SHALL BE FULL PAYMENT FOR THE REPLACEMENT OF AN EXISTING LIGHTING UNIT WHICH HAS BEEN KNOCKED DOWN AFTER THE AFOREMENTIONED INSPECTION AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO PROVIDE A REPLACEMENT FOR SUCH UNIT.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL "MAINTAIN EXISTING LIGHTING" SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING AS SPECIFIED HEREIN.

**ITEM 625 - PULL BOX CLEANED**

THIS ITEM OF WORK SHALL CONSIST OF CLEANING AN EXISTING PULL BOX BY REMOVING ANY EXISTING CABLES NOT BEING RECONNECTED, AND DEBRIS SO THAT NEW CABLES CAN BE INSTALLED. ANY UNUSED OPENINGS SHALL BE CLOSED. DISTURBED AREAS NEAR THE PULL BOX SHALL BE CLEARED OF WEEDS OR DEBRIS AND SHALL BE FULLY RESTORED. MATERIAL REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OFF OF THE PROJECT SITE.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625, "PULL BOX CLEANED" FOR EACH PULL BOX CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

**ITEM 625 - CONDUIT CLEANED AND CABLES REMOVED**

THIS ITEM SHALL CONSIST OF CLEANING AN EXISTING CONDUIT BY REMOVING EXISTING CABLES, MUD AND DEBRIS SO THAT NEW CABLE CAN BE INSTALLED. INCIDENTAL TO THE CLEANING IS THE INSTALLATION OF BUSHINGS AND/OR COUPLINGS ON THE ENDS OF EXISTING CONDUIT AS REQUIRED. MATERIALS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF OF THE PROJECT SITE. DISTURBED AREAS SHALL BE PROPERLY RESTORED.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625, "CONDUIT CLEANED AND CABLES REMOVED" PER FOOT OF CONDUIT CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

**ITEM 625 - PULL BOX, AS PER PLAN**

THIS ITEM OF WORK SHALL INCLUDE ALL THE LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO CONSTRUCT THE PULL BOX ON THE SOUTHWEST CORNER. CONCRETE SHALL BE INCLUDED IN ITEM 511 - CLASS QC2 CONCRETE, MISC: SIDEWALK, CURB RAMPS AND RAILING. THE PULL BOX SHALL BE 18" SQUARE AND INTEGRAL TO THE STRUCTURAL SIDEWALK DETAILED ON SHEET 39.

THE SPECIFICATIONS OF STANDARD CONSTRUCTION DRAWING HL-30.11 AND CMS 725.08.B SHALL APPLY WITH THE EXCEPTION OF THE PULL BOX DEPTH. THE METAL LID SHALL BE BONDED BY ATTACHMENT OF THE EQUIPMENT GROUNDING CONDUCTOR TO THE FRAME DIAGONAL.

**ITEM 632 - SIGNALIZATION, MISC.: EXISTING CONDUIT AND CABLES**

THE LOCATION OF EXISTING CONDUITS SHALL BE FIELD VERIFIED PRIOR TO BEGINNING WORK. ALL EXISTING CONDUITS SHALL BE PROTECTED DURING CONSTRUCTION. ANY CONDUIT OR CABLE DAMAGED DURING REMOVAL OF CABLE FOR DISPOSAL OR PULLING OF NEW CABLES THROUGH EXISTING CONDUITS SHALL BE REPAIRED OR REPLACED AT THE DISCRETION OF THE ENGINEER AT NO ADDITIONAL COST TO THE PROJECT.

**ITEM 632 - REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN**

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH CMS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF THE MODIFIED INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO REMAIN IN PLACE AND OPERATIONAL: EXISTING STRAIN POLES, EXISTING CONTROLLER CABINET, AND EXISTING VEHICULAR SIGNAL HEADS.

ITEMS REMOVED FOR DISPOSAL: EXISTING PEDESTRIAN PUSHBUTTONS AND PEDESTRIAN SIGNALS INDICATED FOR REMOVAL.

ITEMS TO BE STORED: NONE

IN THE EVENT THE ITEMS STORED ON THE PROJECT FOR SALVAGE BY THE LOCAL AGENCY ARE NOT REMOVED, THE CONTRACTOR SHALL, WHEN DIRECTED BY THE ENGINEER IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

IN ADDITION TO THE WORK DETAILED ABOVE, THIS ITEM SHALL INCLUDE REPAIR OF THE OPENING IN THE VANDAL PROTECTION FENCE IN FRONT OF POLE C, AS WELL AS CAPS OR PLUGS PLACED ON POLES B, C, AND D AT THE LOCATIONS WHERE PEDESTRIAN SIGNALS AND PUSHBUTTONS ARE REMOVED.

**ITEM 632 - PEDESTAL FOUNDATION, AS PER PLAN**

THIS ITEM OF WORK SHALL INCLUDE ALL THE LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO CONSTRUCT THE PEDESTAL FOUNDATION ON THE SOUTHWEST CORNER. CONCRETE SHALL BE INCLUDED IN ITEM 511 - CLASS QC2 CONCRETE, MISC: SIDEWALK, CURB RAMPS AND RAILING. THE FOUNDATION SHALL BE INTEGRAL TO THE STRUCTURAL SIDEWALK DETAILED ON SHEET 39.

THE SPECIFICATIONS OF STANDARD CONSTRUCTION DRAWING TC-83.20 AND CMS 632.14 SHALL APPLY WITH THE EXCEPTION OF THE EXCAVATION METHODS AND CONCRETE WORK.

**GUARANTEE**

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 60 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

**GROUNDING AND BONDING**

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) 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.
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.

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**GROUNDING AND BONDING (CONT.)**

- 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.	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.

**MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATION**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

1. EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK ACCEPTED.
2. NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE MAINTAINING AGENCY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MIS-ALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK TO SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE. THE CONTRACTOR SHALL ARRANGE FOR FULL TRAFFIC CONTROL UNTIL THE SIGNAL IS BACK IN OPERATION.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT, THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO, OR CANNOT RESPOND TO, AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE OR THE VILLAGE OF BROOKLYN HEIGHTS FOR POLICE SERVICES AND MAINTENANCE SERVICES BY CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 4 HOURS AND SHALL NOT INCLUDING THE HOURS OF 7 AM TO 9 AM OR 4 PM TO 6 PM. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED, BY THE CONTRACTOR, BY THE INSTALLATION OF TEMPORARY "STOP" SIGNS.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.25.

THE CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF MALFUNCTIONS INCLUDING:

1. TIME OF NOTIFICATION OF MALFUNCTION;
2. TIME OF WORK CREWS ARRIVAL TO CORRECT THE MALFUNCTION;
3. ACTIONS TAKEN TO CORRECT THE MALFUNCTION, INCLUDING A LIST OF PARTS REPAIRED OR REPLACED;
4. A DIAGNOSIS OF REASON FOR THE MALFUNCTION AND PROBABILITY OF REOCCURRENCE;
5. TIME OF COMPLETION OF THE REPAIR AND SYSTEM RESTORED TO FULL SERVICE.

A COPY OF THESE RECORDS SHALL BE PROVIDED TO THE ENGINEER WITHIN THREE (3) WORKING DAYS FOLLOWING COMPLETION OF EACH REPAIR.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

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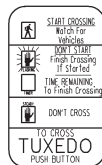
**TRAFFIC SIGNAL NOTES**

**CUY - 17 - 12.16**

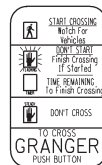




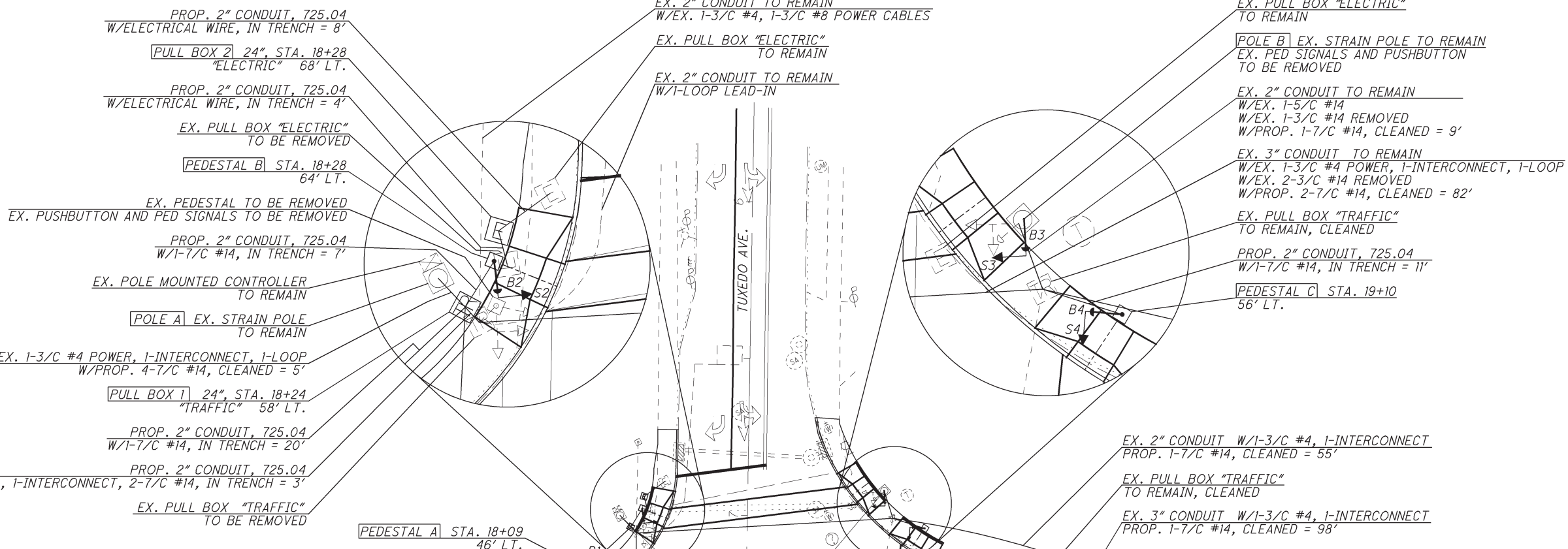
S1, S2, S3,  
S4, S5, S6



R10-3E-9 (MOD.)  
B2, B3



R10-3E-9 (MOD.)  
B1, B4, B5, B6



**ITEM 632 REMOVAL OF TRAFFIC SIGNAL  
INSTALLATION, AS PER PLAN**

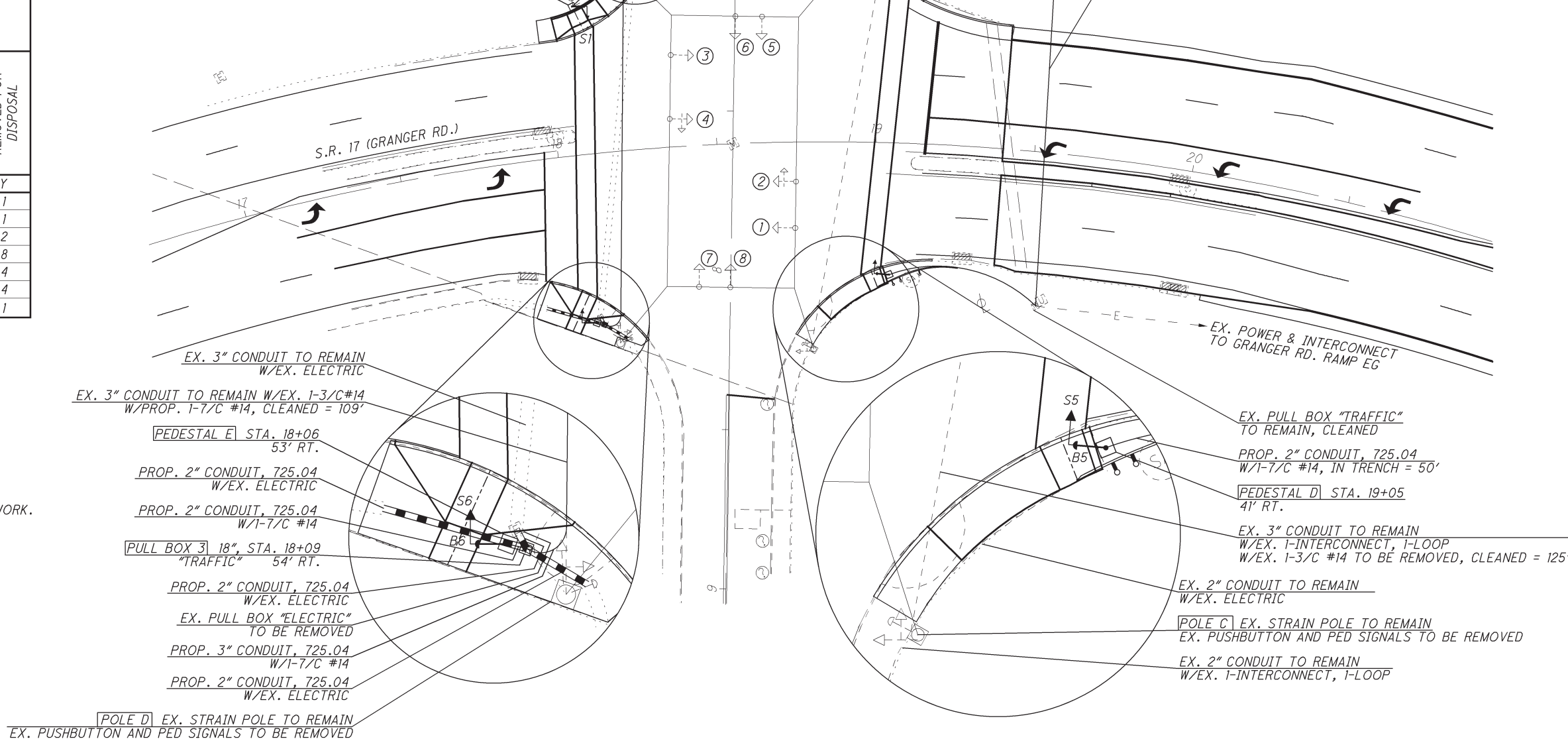
ITEM DESCRIPTION	REMAIN FOR REUSE	REMOVED FOR DISPOSAL
	QUANTITY	
PEDESTRIAN PEDESTAL		1
PULL BOX "ELECTRIC"		1
PULL BOX "TRAFFIC"		2
PEDESTRIAN SIGNALS		8
PEDESTRIAN PUSHBUTTON		4
PEDESTRIAN PUSHBUTTON SIGN		4
PEDESTAL FOUNDATION		1

**NOTES**

1. OPENING IN VANDAL PROTECTION FENCE TO BE COVERED WHEN EXISTING PUSH BUTTON IS REMOVED FROM SOUTHEAST CORNER STRAIN POLE.
2. LOCATION OF EXISTING CONDUITS SHALL BE FIELD VERIFIED PRIOR TO BEGINNING WORK.

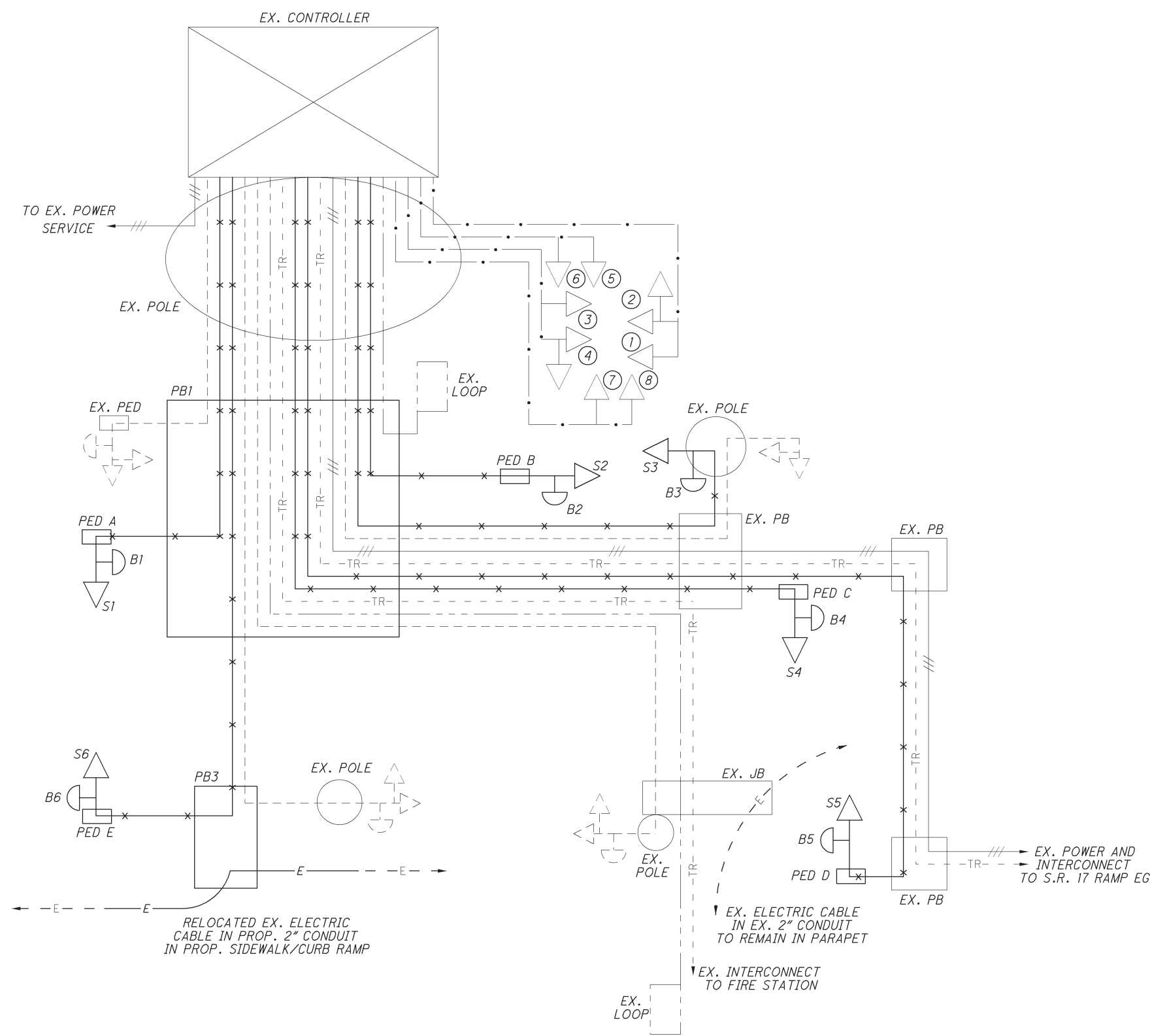
**LEGEND**

- EXISTING CONTROLLER
- EXISTING SIGNAL SUPPORT POLE
- EXISTING PEDESTRIAN PEDESTAL
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PULL BOX
- PROPOSED PEDESTRIAN PEDESTAL
- PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTRIAN SIGNAL HEAD
- PROPOSED PULL BOX



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WIRING DIAGRAM



SUB-SUMMARY OF TRAFFIC SIGNAL ITEMS			
ITEM NUMBER	TOTAL	UNIT	ITEM DESCRIPTION
625	145	FT	CONDUIT, 2", 725.04
625	10	FT	CONDUIT, 3", 725.04
625	495	FT	CONDUIT CLEANED AND CABLES REMOVED
625	110	FT	TRENCH
625	2	EACH	PULL BOX, 725.08, 24"
625	1	EACH	PULL BOX, AS PER PLAN
625	3	EACH	PULL BOX REMOVED
625	5	EACH	GROUND ROD
625	3	EACH	PULL BOX CLEANED
625	LUMP		SPECIAL - MAINTAIN EXISTING LIGHTING
632	6	EACH	PEDESTRIAN SIGNAL HEAD, TYPE D2
632	6	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD
632	6	EACH	PEDESTRIAN PUSHBUTTON
632	960	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
632	4	EACH	PEDESTAL FOUNDATION
632	1	EACH	PEDESTAL FOUNDATION, AS PER PLAN
632	5	EACH	PEDESTAL, 11", TRANSFORMER BASE
632	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN
632	LUMP		SIGNALIZATION, MISC.: EXISTING CONDUIT AND CABLES
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>			

LEGEND

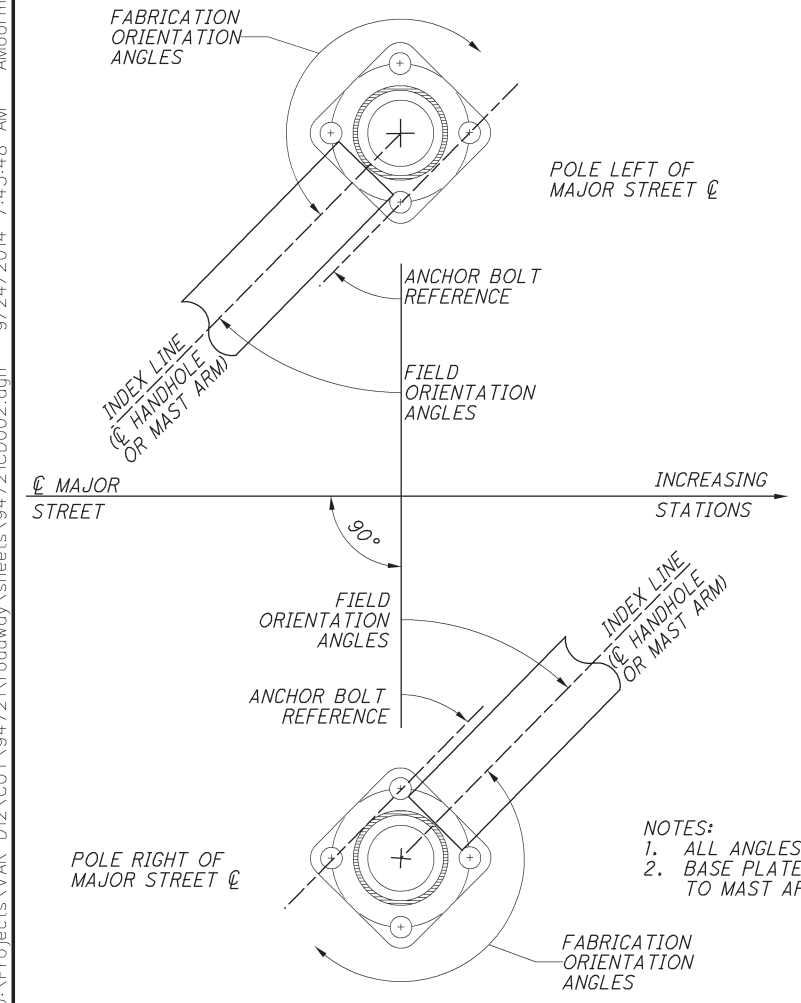
- //--- EX. POWER
- EX. 2/C #14 AWG LOOP LEAD-IN
- - - - - TR - - - - - EX. INTERCONNECT
- - - - - EX. 3/C #14 AWG (REMOVED)
- . - . - . EX. 5/C #14 AWG
- x - x - x PROP. 7/C #14 AWG
- E - - - - EX. ELECTRIC IN PROP. CONDUIT
- - - E - - - - EX. ELECTRIC IN EX. CONDUIT
- ▲ PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSHBUTTON
- PULL BOX
- SIGNAL POLE
- ▲ VEHICULAR SIGNAL HEAD

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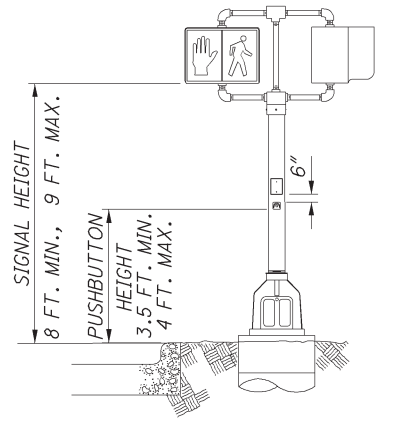
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INTERSECTION	SUPPORT LOCATION				SUPPORT DATA					MAST ARM DATA					FABRICATION ORIENTATION						FIELD ORIENTATION								
	SUPPORT	STATION	OFFSET	ELEVATION	TC-81.21 DESIGN NO.	TC-12.30 DESIGN NO.	ARM ATTACHMENT HEIGHT	BRACKET ARM ATTACHMENT HEIGHT	TOTAL HEIGHT	ARM "A" OR ARM "B"	TC-81.21 DESIGN NO.	OVERALL LENGTH	SIGNAL NO.	DISTANCE ARM BUTT TO CENTER OF HEAD	RADAR DETECTOR NO.	DISTANCE ARM BUTT TO CENTER OF DETECTOR	SIGN NO.	DISTANCE ARM BUTT TO CENTER OF SIGN	HANDHOLE	MAST ARM "B"	LUMINAIRE BRACKET ARM	POWER SERVICE 1/2" B.H.C. 8' FROM BASE	SIGNAL NO.	VEHICULAR SIGNAL 1/2" B.H.C. 11' FROM BASE	PEDESTRIAN SIGNAL 1/2" B.H.C. 8' FROM BASE	PEDESTRIAN PUSHBUTTON WITH SIGN	ORIENTATION ANGLE <sup>1</sup>	ANCHOR BOLT REFERENCE	
							FEET	FEET	FEET			FEET		FEET		FEET		FEET											
S.R. 17 (GRANGER RD.)																													
PEDESTAL A	A	18+09	46' LT																0°				S1	114°	114°		160°	0°	
PEDESTAL B	B	18+28	64' LT																0°				S2	241°	241°		117°	0°	
POLE B - EX. STRAIN POLE	B	18+98	68' LT																0° <sup>2</sup>				S3	266°	266°	90° <sup>2</sup>	90° <sup>2</sup>		
PEDESTAL C	C	19+10	56' LT																0°				S4	241°	241°		211°	0°	
PEDESTAL D	D	19+05	41' RT																0°				S5	116°	116°		157°	0°	
PEDESTAL E	E	18+06	53' RT																0°				S6	70°	70°		206°	0°	
(ORIENTATION ANGLES MEASURED FROM GRANGER ROAD)																													

NOTES: <sup>1</sup> FOUNDATIONS SHALL BE FORMED TO ADJACENT SIDEWALKS. THE BASE PLATE/MAST ARMS MAY NOT BE SQUARE TO THE FOUNDATIONS.  
<sup>2</sup> STRAIN POLE IS EXISTING. FIELD ORIENTATION ANGLE AND HANDHOLE LOCATION ARE ASSUMED BASED ON FIELD OBSERVATION. THE CONTRACTOR SHALL VERIFY FIELD ORIENTATION ANGLE AND MAKE NECESSARY ADJUSTMENTS PRIOR TO DRILLING FOR PROPOSED PEDESTRIAN SIGNAL S3 AND PUSHBUTTON B3.



NOTES:  
 1. ALL ANGLES MEASURED CLOCKWISE.  
 2. BASE PLATE IS ORIENTED SQUARE TO MAST ARM "A"



**STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS**

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):

BR-2-98 REVISED 07/20/2012

VPF-1-90 REVISED 04/15/2011

**REINFORCEMENT COVER**

A MINIMUM OF 2 INCHES CLEAR COVER SHALL BE PROVIDED EVERYWHERE UNLESS NOTED OTHERWISE IN THE PLANS.

**DESIGN DATA**

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SIDEWALK & CURB RAMPS)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

**EXISTING DIMENSIONS**

ALL EXISTING DIMENSIONS ARE ±.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

THE EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE:

OHIO DEPARTMENT OF TRANSPORTATION  
DISTRICT 12 OFFICE  
5500 TRANSPORTATION BOULEVARD  
GARFIELD HEIGHTS, OH 44125

**ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN**

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT ARE NOT SEPARATELY LISTED FOR PAYMENT, EXCEPT FOR WEARING COURSE REMOVAL. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

**CONCRETE REMOVAL**

REMOVE CONCRETE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18 INCH LIMIT, THE CONTRACTOR MAY USE HAMMERS NOT EXCEEDING 90 POUNDS UPON THE APPROVAL OF THE ENGINEER. DO NOT PLACE PNEUMATIC HAMMERS IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

**ITEM SPECIAL - PATCHING CONCRETE BRIDGE DECK**

THE FOLLOWING PROPORTIONS WILL BE USED AS A STARTING CONCRETE MIX DESIGN FOR THIS ITEM:

AGG TYP	FINE AGG	* #8 COURSE AGG	AGG TOTAL	CEMENT CONT	MICRO-SILICA	WATER TO CEMENT RATIO	AIR CONT ±2%	** FIBER (1/4" POLY-PROPYLENE)
	(LB)	(LB)	(LB)	(LB)	(LB)			(LB)
GRAVEL	1410	1430	2840	600	50	0.40	8	1
LIME-STONE	1410	1450	2860	600	50	0.40	8	1
SLAG	1300	1350	2650	600	50	0.40	8	1

\* ALL COARSE AGGREGATE SHALL HAVE AN ABSORPTION OF 1.00% OR GREATER AS DEFINED PER ASTM C127

\*\* FIBER MESH SHALL BE 100% VIRGIN POLYPROPYLENE IN A FIBRILLATED-NETWORK FORM AND SHALL BE 1/4" IN LENGTH. (FIBER MESH WEIGHTS NOT INCLUDED IN MIX DESIGN)

THE WEIGHTS SPECIFIED IN THE CONCRETE TABLE WERE CALCULATED FOR MATERIALS OF THE FOLLOWING BULK SPECIFIC GRAVITIES (SSD):

MATERIAL	BULK SPECIFIC GRAVITY (SSD)
NATURAL SAND AND GRAVEL	2.62
LIMESTONE SAND	2.68
LIMESTONE	2.65
SLAG	2.30
MICRO-SILICA SOLIDS	2.20
PORTLAND CEMENT	3.15

THE WEIGHTS IN THE CONCRETE TABLE SHALL BE CORRECTED FOR ANY MATERIALS DIFFERING BY MORE THAN ±0.02 FROM THE BULK SPECIFIC GRAVITY LISTED ABOVE.

ALL DISTURBED PAVEMENT MARKINGS SHALL BE REPLACED PER CMS 642.

ALL PATCHES SHALL BE INSTALLED ON THE WEEKEND TO ALLOW FOR A 24 HOUR CURE TIME. ALL AFFECTED LANES SHALL BE REOPENED FOR WEEKDAY TRAFFIC BY 5:00 AM MONDAY.

THIS ITEM SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER. ALL EQUIPMENT, LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK, INCLUDING THE INSTALLATION OF PAVEMENT MARKINGS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM SPECIAL PATCHING CONCRETE BRIDGE DECK.

**ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN**

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

THIS ITEM SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN.

**ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN**

REPLACE ALL EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE. REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

**ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN**

IN ADDITION TO THE PROVISIONS OF ITEM 509, FIELD BEND AND/OR CUT THE REINFORCING STEEL DESIGNATED IN THE PLANS AS NECESSARY, IN ORDER TO MAINTAIN THE REQUIRED CLEARANCE AND BAR SPACINGS. REPAIR ALL DAMAGE TO THE EPOXY COATING, AS A RESULT OF THE WORK, ACCORDING TO 709.00.

ALL EXPOSED EXISTING REINFORCING STEEL TO BE REUSED SHALL BE CLEANED AND ALL LOOSE CONCRETE AND DEBRIS REMOVED. ALL EXISTING REINFORCING TO BE REUSED SHALL BE EPOXY COATED IN THE FIELD IN ACCORDANCE WITH 709.00. PAYMENT SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN.

ALL COSTS INCLUDED IN THE INSTALLATION OF DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE ABOVE WORK.

**ITEM 511 - CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMPS AND RAILING**

THIS ITEM SHALL INCLUDE ALL MATERIALS, FORMWORK, LABOR AND ANY OTHER COST ASSOCIATED WITH THE PLACE OF THE PROPOSED SIDEWALK, CURB RAMPS AND RAILING.

PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT COST PER CUBIC FOOT FOR ITEM 511 - CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB AND RAILING.

**CUT LINE CONSTRUCTION JOINT PREPARATION**

SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT, ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACE WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

ALL EQUIPMENT, LABOR, AND MATERIALS REQUIRED TO PERFORM THE ABOVE DESCRIBED WORK SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 511 - CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMP AND RAILING.

**ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)**

ALL PROPOSED SIDEWALK SHALL BE SEALED WITH NON-EPOXY SEALER.

THE COLOR SHALL BE PROVIDED TO THE CONTRACTOR AT THE TIME OF THE PRE-CONSTRUCTION MEETING.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE PER SQUARE YARD FOR ITEM 512 - SEALING OF CONCRETE SURFACE (NON-EPOXY)

**ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)**

ALL PROPOSED CONCRETE RAILING SHALL BE SEALED WITH EPOXY-URETHANE SEALER, UNLESS OTHERWISE NOTED.

THE COLOR SHALL BE PROVIDED TO THE CONTRACTOR AT THE TIME OF THE PRE-CONSTRUCTION MEETING.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE PER SQUARE YARD FOR ITEM 512 - SEALING OF CONCRETE SURFACE (EPOXY-URETHANE)

**ITEM 607 - FENCE REMOVED AND REBUILT, AS PER PLAN**

THIS ITEM SHALL INCLUDE REMOVAL AND REBUILDING OF EXISTING BRIDGE MOUNTED FENCE FABRIC, POSTS, POST BASE PLATES, AND OTHER FENCE COMPONENTS NECESSARY TO COMPLETE THE PROPOSED BRIDGE WORK. THIS ITEM SHALL ALSO INCLUDE REPLACEMENT COSTS FOR FENCE COMPONENTS DEEMED BY THE ENGINEER TO BE UNUSABLE.

CONTRACTOR SHALL FIELD DETERMINE THE FENCE REPAIR LIMITS AND RECEIVE THE ENGINEER'S APPROVAL PRIOR TO REMOVAL AND ORDERING MATERIALS FOR THIS WORK.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER FOOT FOR ITEM 607 - FENCE REMOVED AND REBUILT, AS PER PLAN, AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, DISPOSAL AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

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**STRUCTURAL GENERAL NOTES**

**CUY - 17 - 12.16**

**ITEM SPECIAL - ASBESTOS ABATEMENT**

AN ASBESTOS SURVEY OF BRIDGE WAS COMPLETED ON MARCH 3, 2014 BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY IDENTIFIED THE ASBESTOS CONTAINING MATERIALS:

ACM	LOCATION	AMOUNT TO BE REMOVED
2 LAYERS OF 1/16" SHEET ASBESTOS PACKING	BENEATH CONSTRUCTION JOINT	200 SQ FT

THE REMOVAL AND DISPOSAL OF ALL ASBESTOS CONTAINING MATERIAL WITHIN THE PROJECT WORK LIMITS DURING DEMOLITION OF THE BRIDGE MUST COMPLY WITH THE OHIO ADMINISTRATIVE CODE, THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS, AND THE NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHP) STANDARDS FOR ASBESTOS.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORM WITH SECTIONS I-IV, VI, VII, AND XVI COMPLETED IS INCLUDED WITH THE BID PACKAGE. THE CONTRACTOR SHALL COMPLETE SECTIONS V, VIII-XVIII OF THE SIGNED FORM AND SUBMIT THE COMPLETED FORM TO THE LOCAL AIR AUTHORITY AT LEAST TEN (10) DAYS PRIOR TO DEMOLITION OF THE BRIDGE. THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER. THE LOCAL AIR AUTHORITY IS:

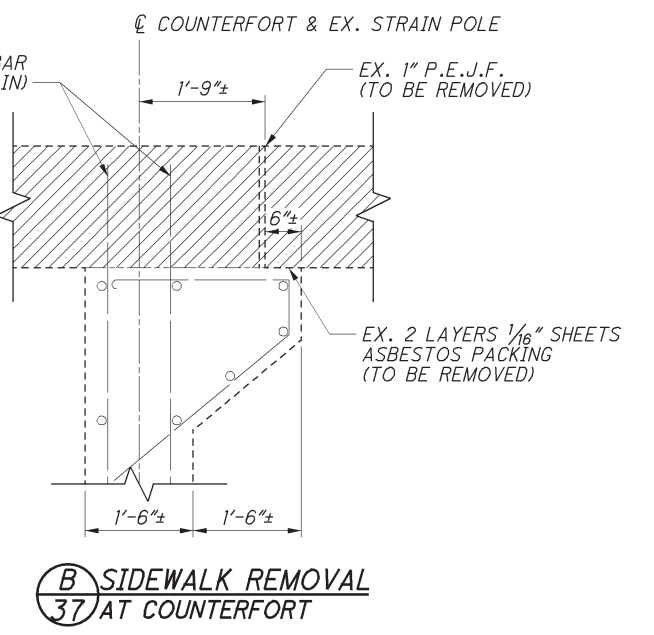
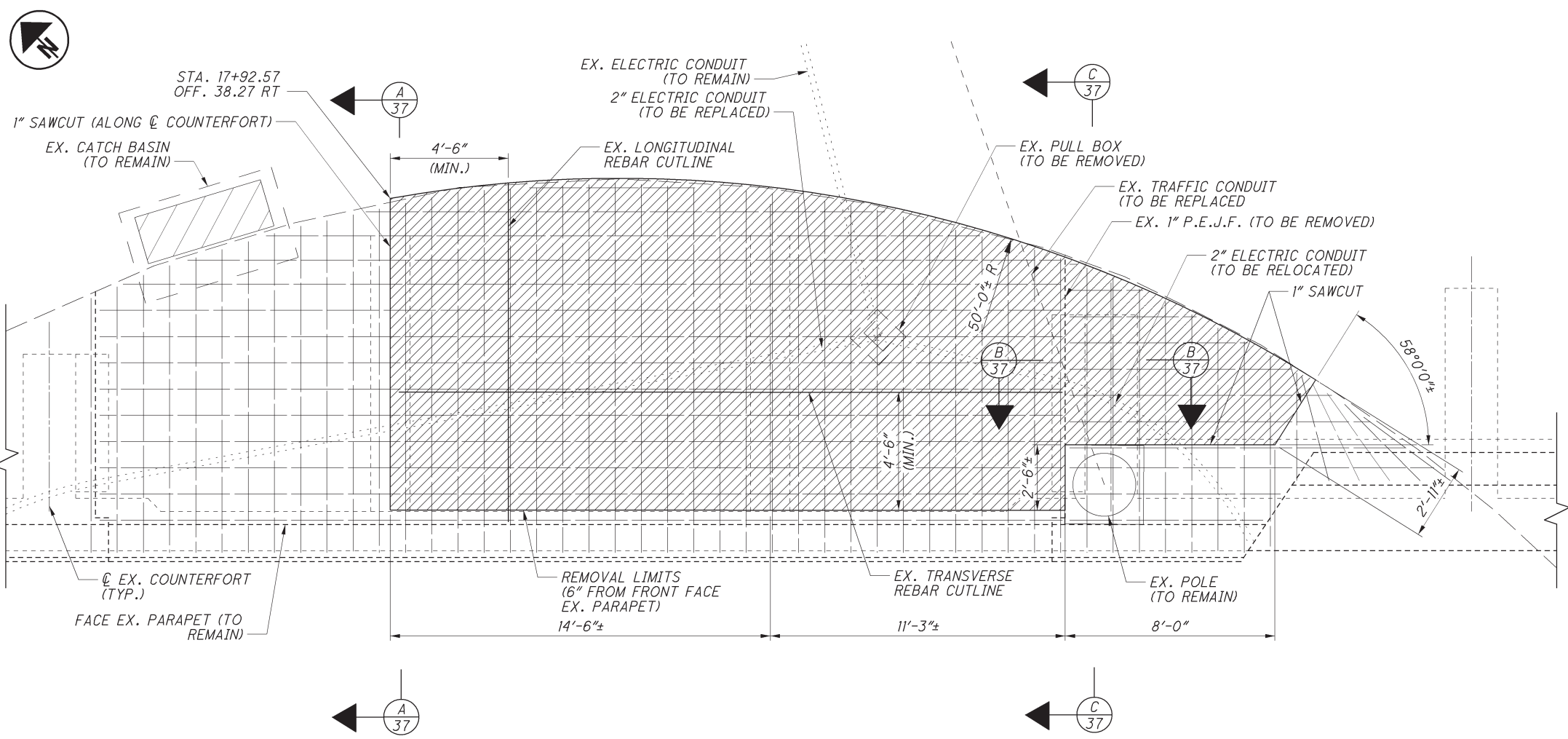
THE DEPARTMENT OF PUBLIC HEALTH  
DIVISION OF ENVIRONMENT  
1925 ST. CLAIR AVENUE  
CLEVELAND, OHIO 44114  
PHONE: (216) 664-2300

THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL TRAINED IN THE PROVISIONS OF NESHP THAT WILL BE ON-SITE DURING REMOVAL OF THE ASBESTOS CONTAINING MATERIALS. IN ADDITION TO THE ASBESTOS CONTAINING MATERIAL IDENTIFIED IN THE ASBESTOS SURVEY REPORT, ANY ADDITIONAL NON-VISIBLE ASBESTOS ENCOUNTERED WITHIN THE PROJECT WORK LIMITS SHALL ALSO BE MONITORED BY THIS INDIVIDUAL.

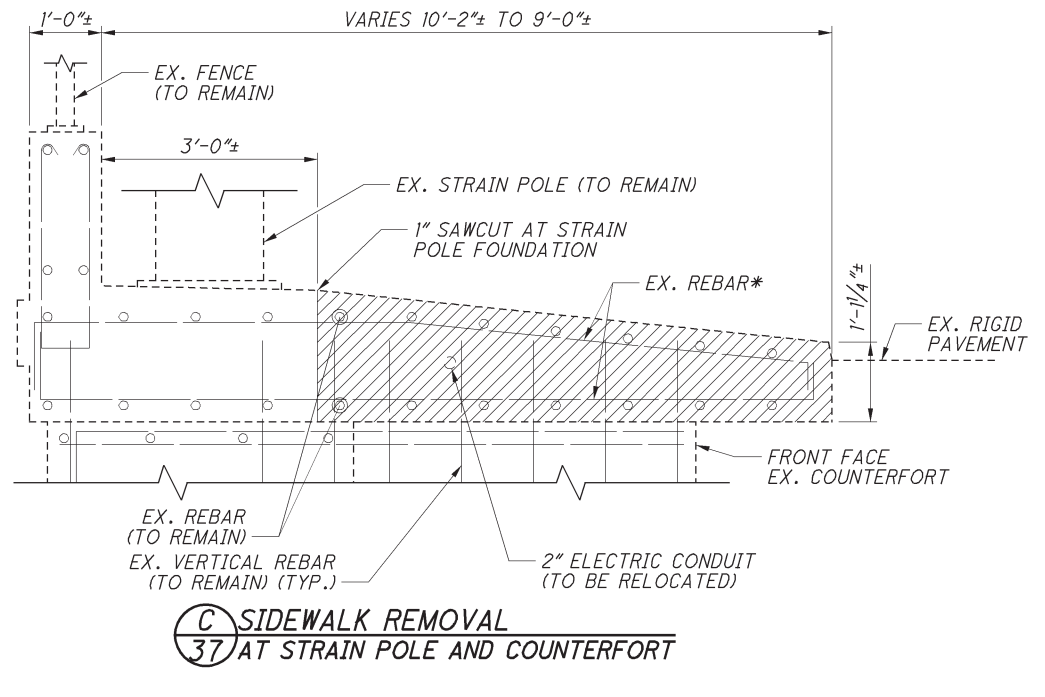
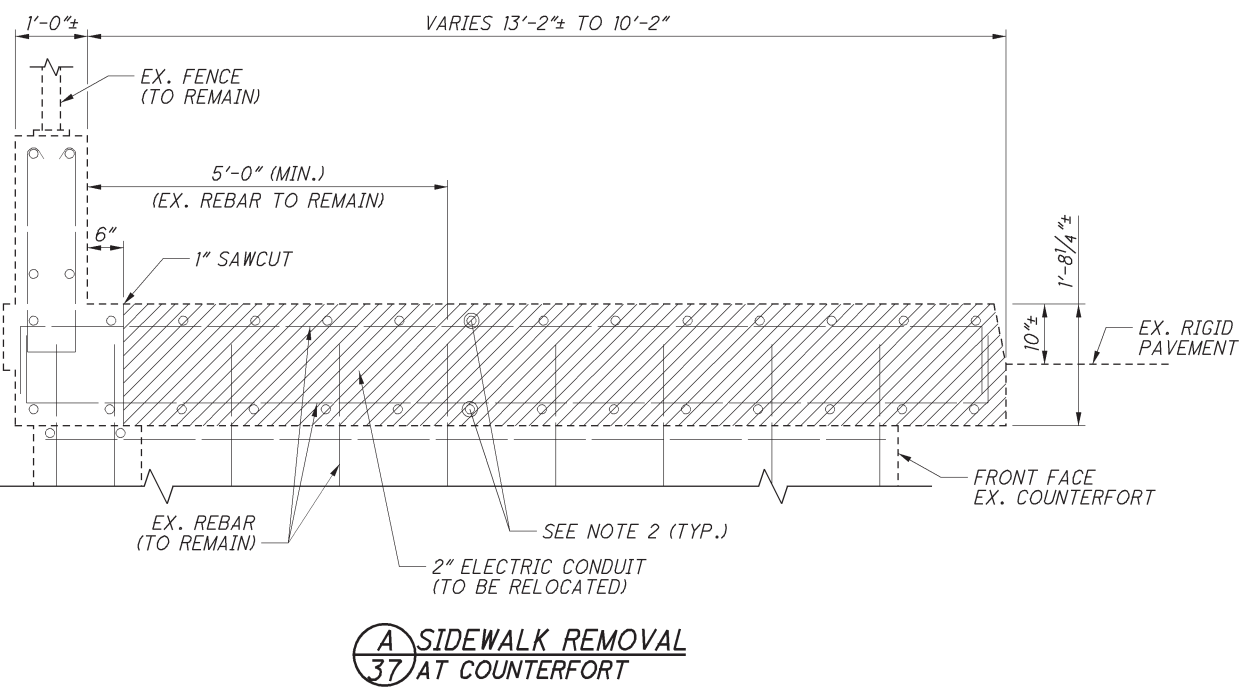
THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE, SUBMIT, AND COMPLY WITH THE OEPA NOTIFICATION FORM AND TO REMOVE, TRANSPORT, AND DISPOSE OF THE MATERIALS CONTAINING ASBESTOS FROM WITHIN THE PROJECT WORK LIMITS. PAYMENT OF THIS WORK SHALL BE INCLUDED IN ITEM SPECIAL - ASBESTOS ABATEMENT.

ESTIMATED QUANTITIES					
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	SHEET #
202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN	36
202	75000	7	FT	FENCE REMOVED	
509	10001	4407	POUND	EPOXY COATED REINFORCING STEEL, AS PER PLAN	36
509	20001	100	POUND	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	36
511	53012	31	CU YD	CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMPS AND RAILING	36
512	10050	67	SQ YD	SEALING OF CONCRETE SURFACES (NON-EPOXY)	
512	10100	27	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
519	11101	50	SQ FT	PATCHING CONCRETE STRUCTURE, AS PER PLAN	36
SPECIAL	51912510	10	SQ YD	PATCHING CONCRETE BRIDGE DECK	36
607	35001	22	FT	FENCE REMOVED AND REBUILT, AS PER PLAN	36
SPECIAL	69070100	200	SQ FT	ASBESTOS ABATEMENT	36A

QUANTITIES CARRIED TO GENERAL SUMMARY

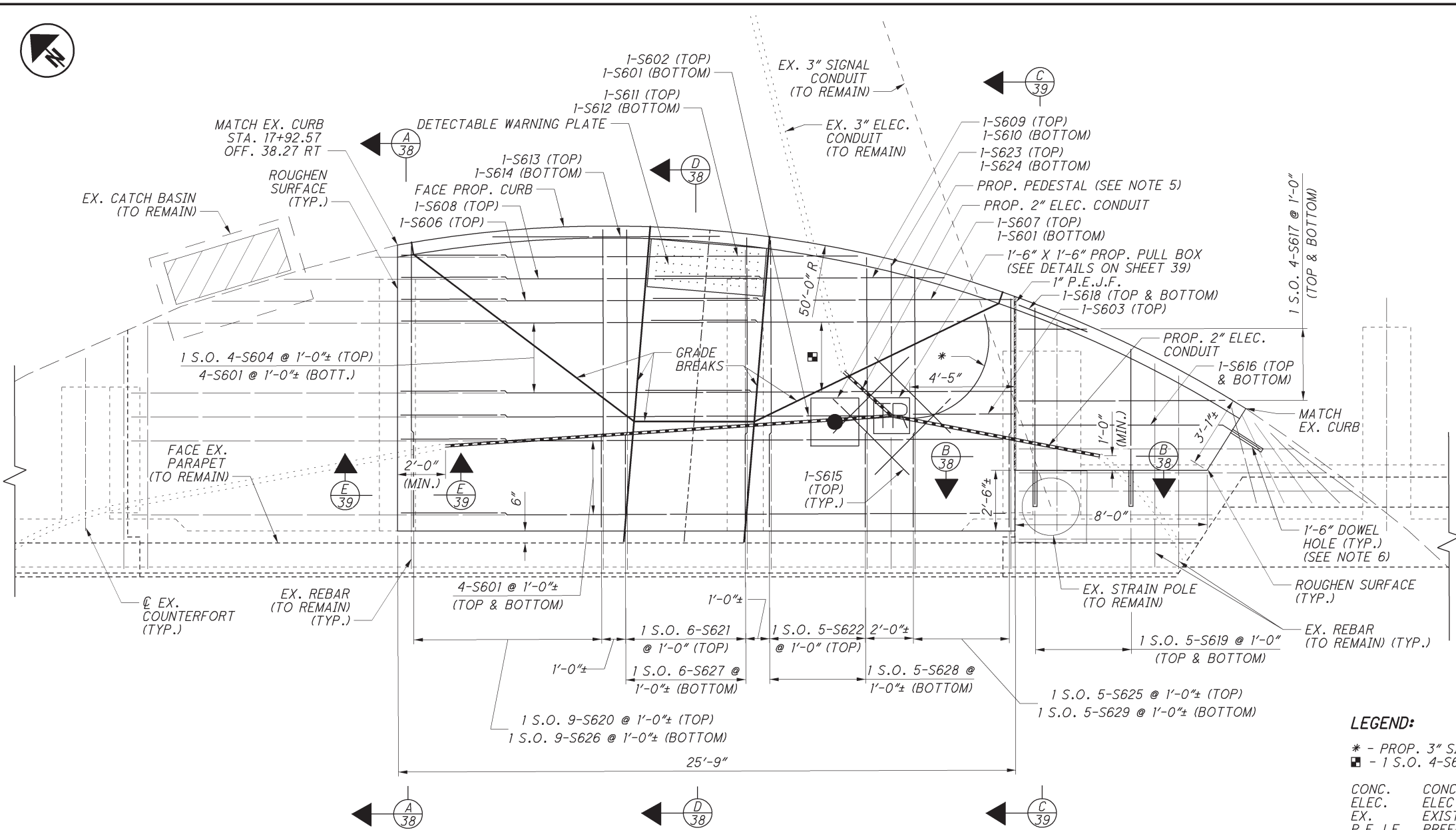


**SOUTHWEST CURB RAMP REMOVAL PLAN**

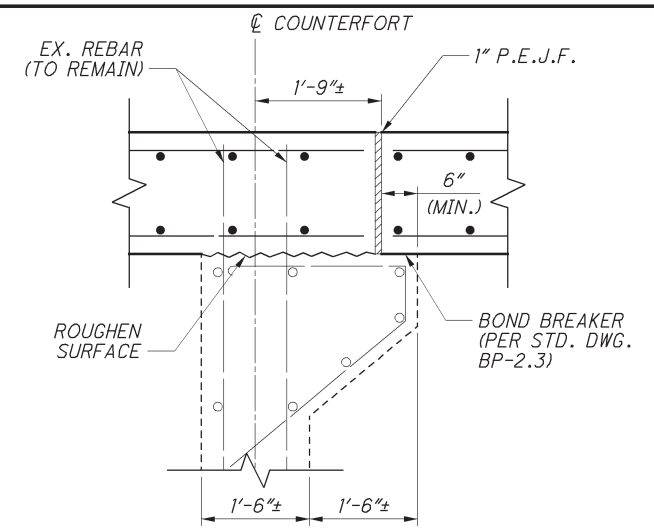


- NOTES:**
- COUNTERFORT LOCATION AND REINFORCEMENT SHOWN IS BASED ON EXISTING PLANS. ACTUAL LOCATION MAY VARY. FIELD VERIFY COUNTERFORT LOCATIONS PRIOR TO BEGINNING DEMOLITION.
  - CUT EXISTING LONGITUDINAL REINFORCEMENT AND TOP MAT TRANSVERSE REINFORCEMENT ALONG THE PARAPET TO PROVIDE A MINIMUM 4'-4" LAP SPLICE WITH PROPOSED REINFORCEMENT. MECHANICAL SPLICE CAN BE USED IF THE SPECIFIED LAP SPLICE CANNOT BE ACHIEVED OR IF EXISTING REINFORCEMENT IS DEEMED TO BE UNUSABLE BY THE ENGINEER.
- LEGEND:**
- LIMITS OF CONCRETE REMOVAL TO BE INCLUDED FOR PAYMENT UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN
  - \* IF ENCOUNTERED, PRESERVE AND REUSE EXISTING TRANSVERSE REINFORCEMENT UNLESS DIRECTED OTHERWISE BY THE ENGINEER

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PROPOSED SOUTHWEST CURB RAMP PLAN



B SIDEWALK JOINT AT COUNTERFORT

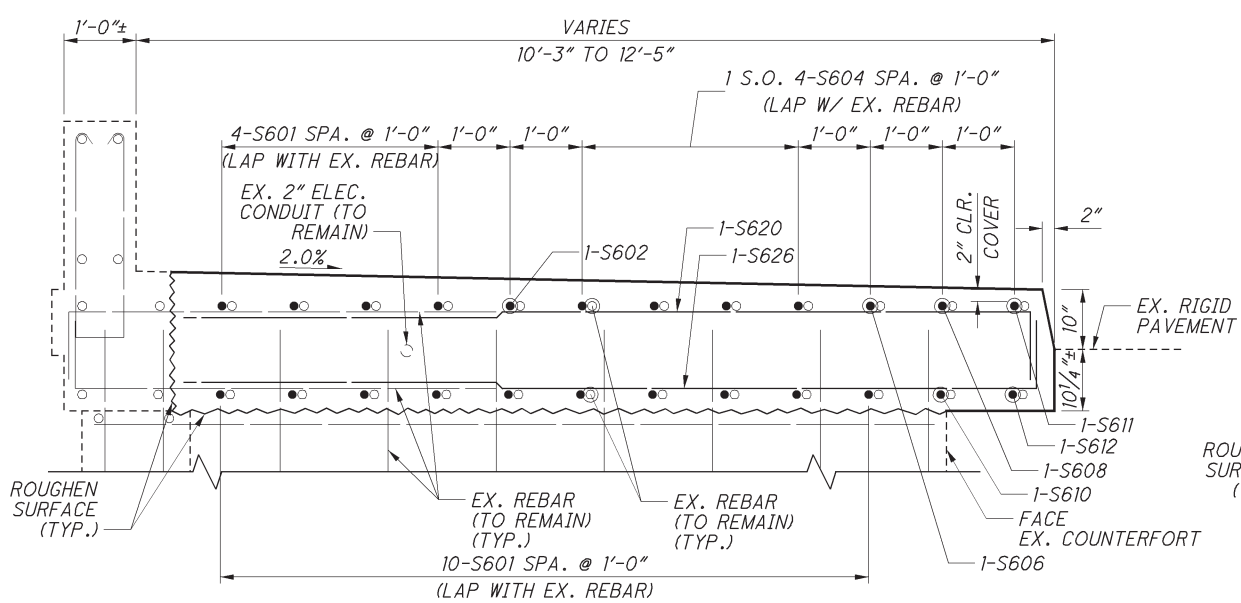
NOTES:

1. REINFORCEMENT SPACING SHOWN IS INTENDED TO LAP WITH EXISTING REINFORCEMENT. ACTUAL SPACING MAY VARY.
2. DOWEL HOLES SHALL BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT.
3. EXISTING REINFORCEMENT SHALL BE CUT AND BENT IN FIELD AS NEEDED TO ACHIEVE THE SHAPE SHOWN IN PROPOSED DETAILS WHILE MAINTAINING 3 INCHES CLEAR COVER ON THE BOTTOM OF THE SLAB AND 2 INCHES CLEAR COVER ON ALL OTHER SURFACES.
4. FOR SIDEWALK AND CURB RAMP GEOMETRY AND SURFACE SLOPES, SEE SHEET 24.
5. FOR ADDITIONAL PULL BOX AND PEDESTAL DETAILS, SEE SHEETS 33, 39 AND STD. DWG. HL-30.11.
6. DOWEL HOLES IN EXISTING STRAIN POLE BASE MAY BE NON-PERFORMED IF EXISTING REINFORCEMENT IS ENCOUNTERED AND DEEMED REUSABLE BY THE ENGINEER. IF DOWELING IS NON-PERFORMED, FIELD CUT REINFORCEMENT AS NEEDED.
7. REINFORCEMENT PLACED UNDER DETECTABLE WARNING PLATES SHALL MAINTAIN A MINIMUM OF 1/2" CLEAR COVER AFTER PLACEMENT OF PLATE.
8. PAYMENT FOR DETECTABLE WARNING PLATE AND LABOR SHALL BE INCLUDED IN ITEM 511, CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMPS AND RAILING.
9. FINISH CONCRETE PER ITEM 608, WALKS, CURB RAMPS, AND STEPS.
10. ALL REINFORCEMENT SPACING IS 1'-0" UNLESS NOTED OTHERWISE.

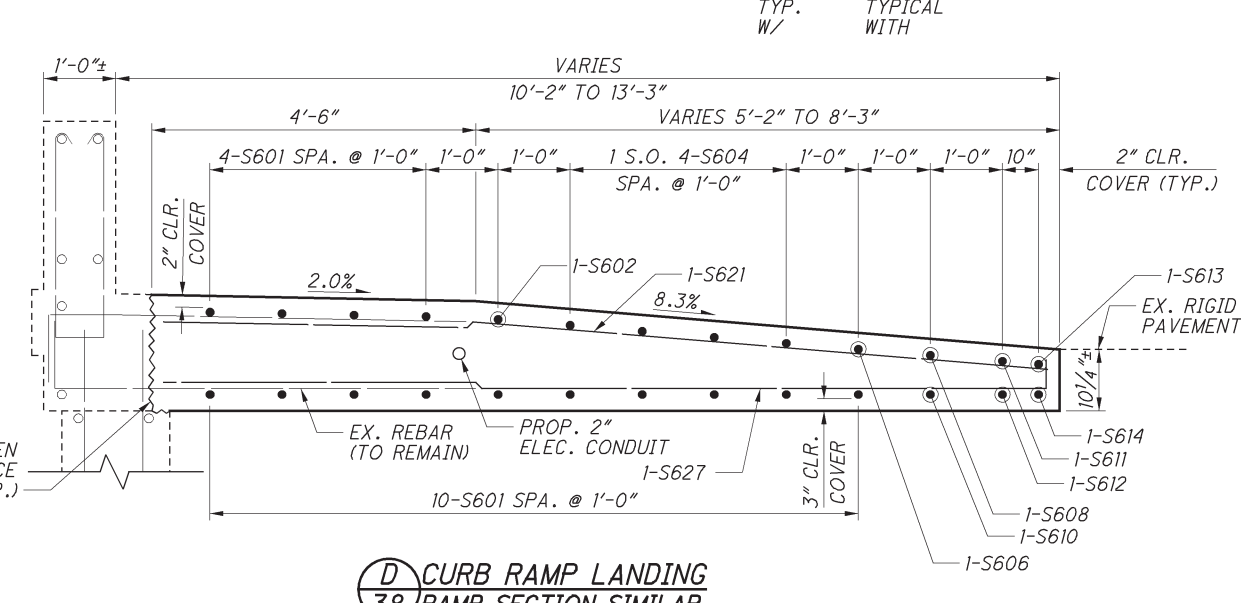
MIN. SPLICE LENGTH:  
#6 = 4'-4"

LEGEND:

- \* - PROP. 3" SIGNAL CONDUIT
- - 1 S.O. 4-S605 @ 1'-0" (TOP.)
- CONC. CONCRETE
- ELEC. ELECTRIC
- EX. EXISTING
- P.E.J.F. PREFORMED EXPANSION JOINT FILLER
- PROP. PROPOSED
- S.O. SERIES OF
- TYP. TYPICAL
- W/ WITH

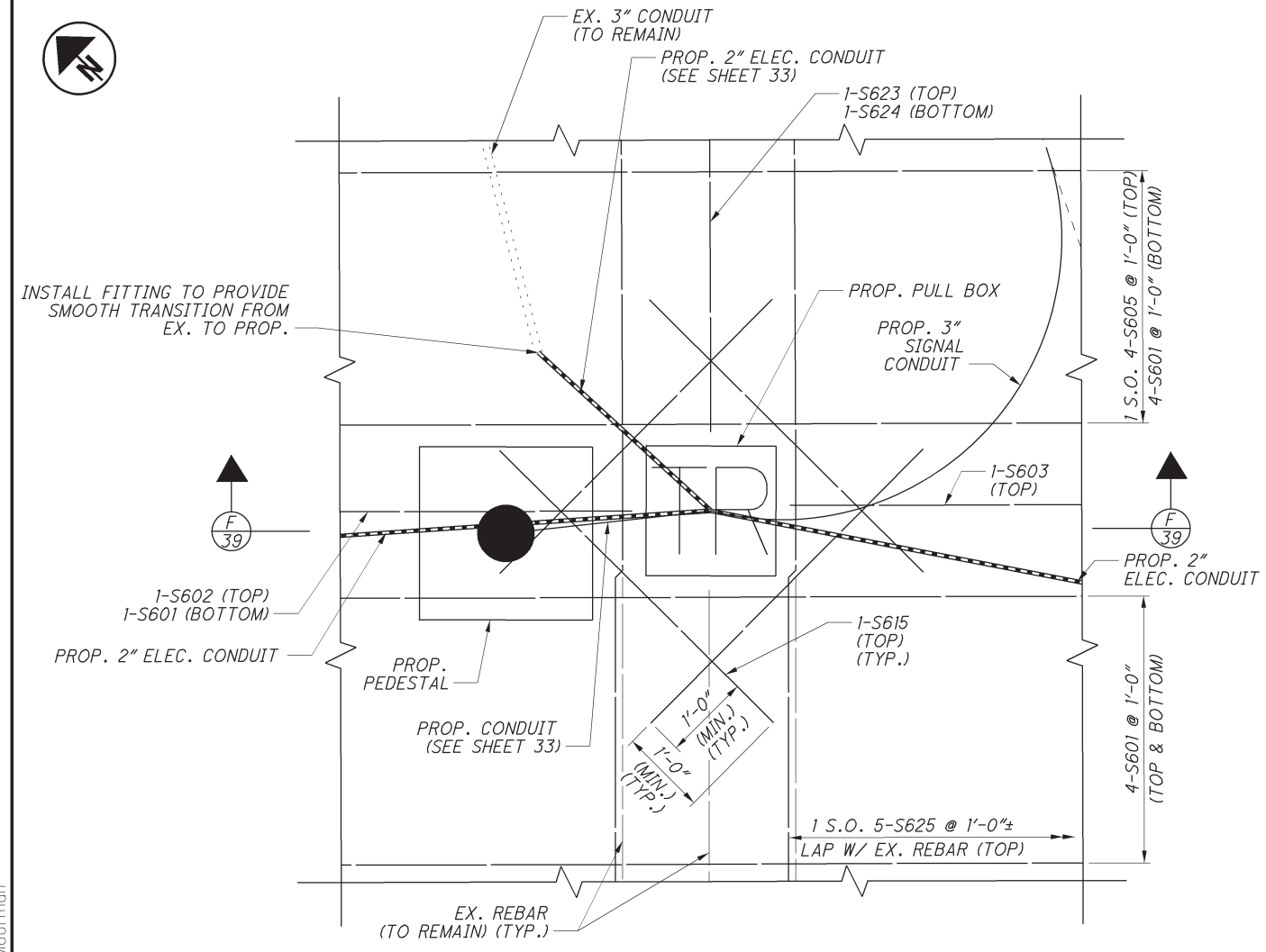


A FULL DEPTH SIDEWALK

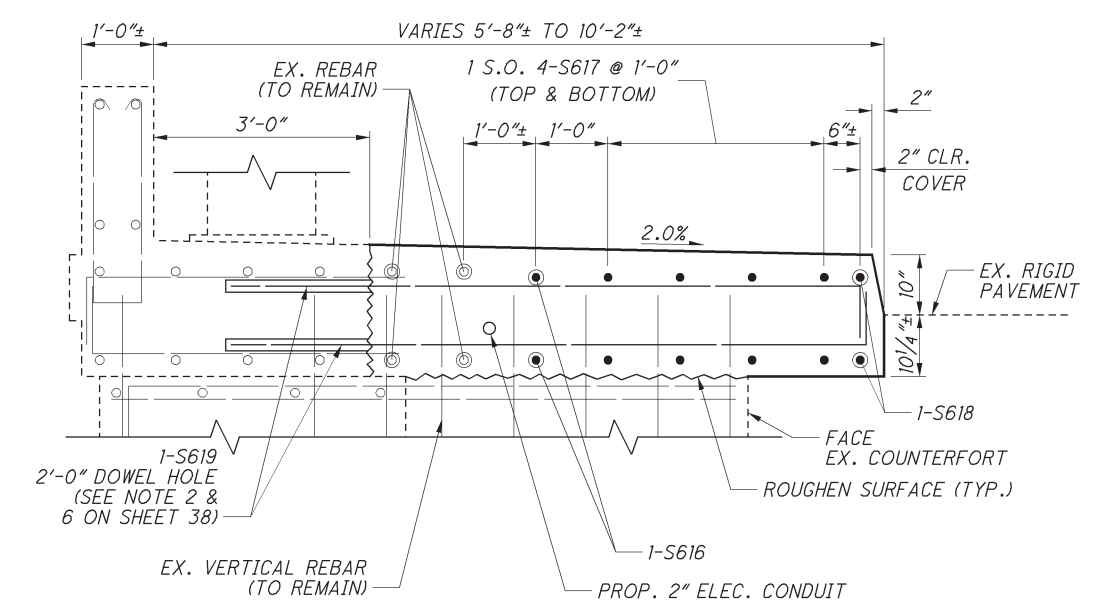


D CURB RAMP LANDING RAMP SECTION SIMILAR

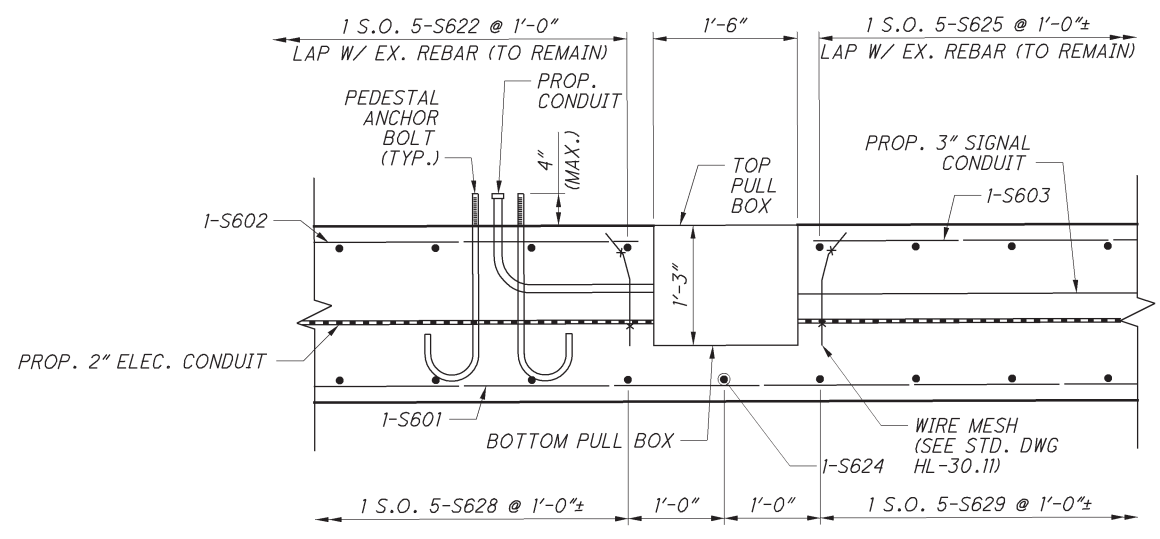
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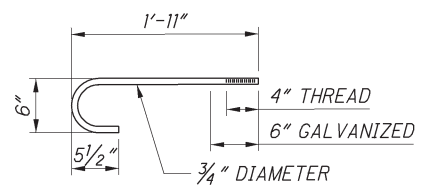
**PULL BOX DETAIL**



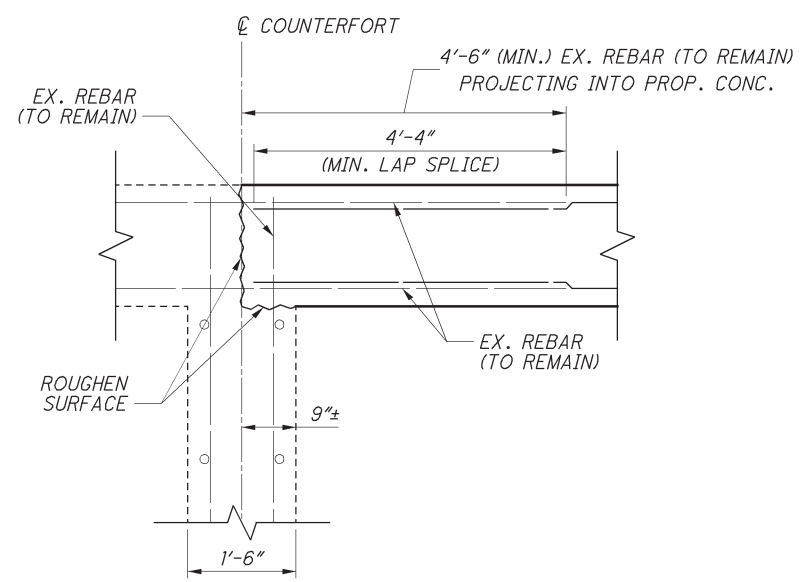
**C FULL DEPTH SIDEWALK**



**F PULL BOX**



**PEDESTAL ANCHOR BOLT**



**E SIDEWALK JOINT AT COUNTERFORT**

NOTE: TRANSVERSE REBAR NOT SHOWN FOR CLARITY

**NOTES:**

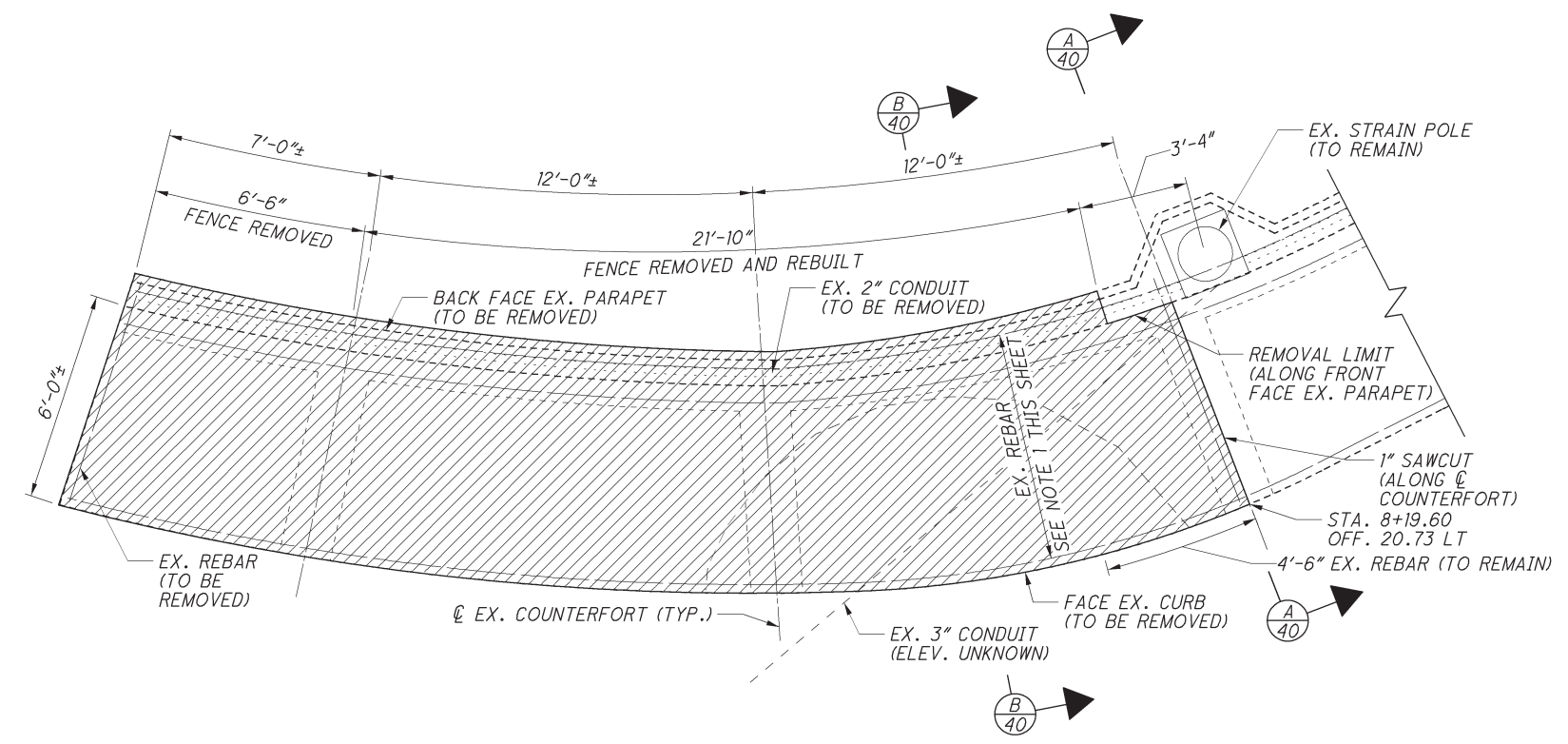
1. REINFORCEMENT SPACING SHOWN IS INTENDED TO LAP WITH EXISTING REINFORCEMENT. ACTUAL SPACING MAY VARY.
2. DOWEL HOLES SHALL BE FILLED WITH NON-SHRINK, NON-METALIC GROUT.
3. EXISTING REINFORCEMENT SHALL BE CUT AND BENT IN THE FIELD AS NEEDED TO ACHIEVE THE SHAPE SHOWN IN THE PROPOSED DETAILS WHILE MAINTAINING 3 INCHES CLEAR COVER ON THE BOTTOM OF THE SLAB AND 2 INCHES CLEAR COVER ON ALL OTHER SURFACES.
4. FOR SIDEWALK AND CURB RAMP GEOMETRY AND SURFACE SLOPES, SEE SHEET 24.
5. FOR ADDITIONAL PULL BOX AND PEDESTAL DETAILS, SEE SHEET 33 AND STD. DWG. HL-30.11.

**LEGEND:**

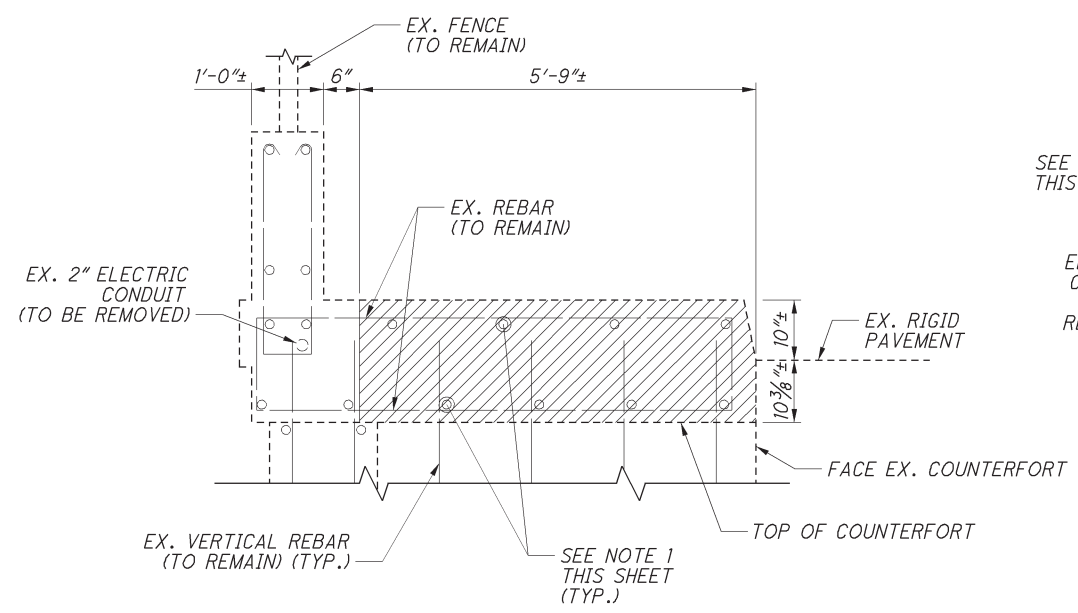
- CONC. - CONCRETE
- EX. - EXISTING
- MIN. - MINIMUM
- P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
- PROP. - PROPOSED
- S.O. - SERIES OF
- TYP. - TYPICAL
- W/ - WITH

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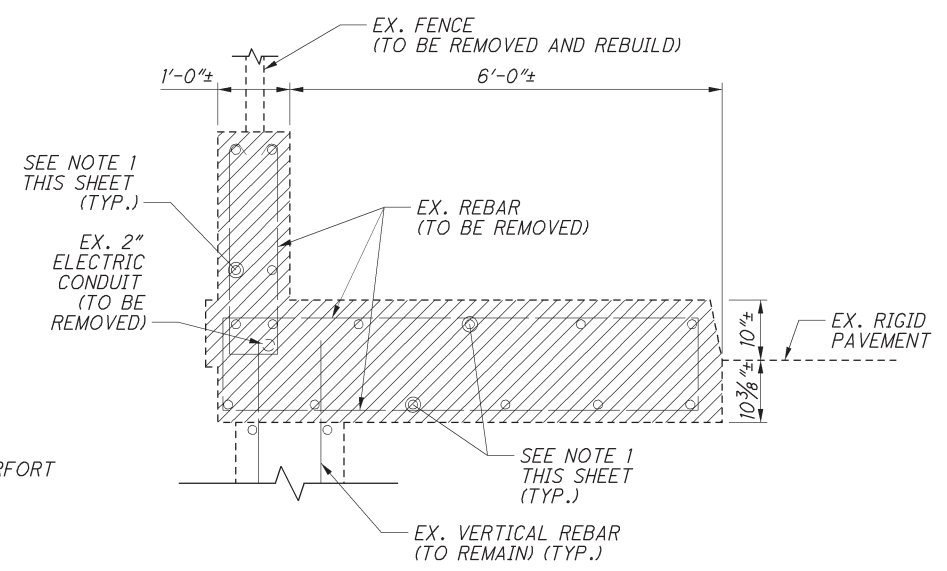




**SOUTHEAST CURB RAMP REMOVAL PLAN**



**A** **SIDEWALK REMOVAL**  
**40** **AT COUNTERFORT**  
**(WITHOUT PARAPET REMOVAL)**



**B** **SIDEWALK REMOVAL**  
**40** **EX. CURB RAMP NOT SHOWN**  
**(WITH PARAPET REMOVAL)**

**NOTE:**

CUT ALL EXISTING LONGITUDINAL REINFORCEMENT IN THE SLAB AND PARAPET TO PROVIDE A MINIMUM 4'-4" LAP SPLICE WITH PROPOSED REINFORCEMENT. MECHANICAL SPLICE CAN BE USED IF THE SPECIFIED LAP SPLICE CANNOT BE ACHIEVED OR IF EXISTING REINFORCEMENT IS DEEMED TO BE UNUSABLE BY THE ENGINEER.

**LEGEND:**

LIMITS OF CONCRETE REMOVAL TO BE INCLUDED FOR PAYMENT UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

- BOTT. BOTTOM
- C.J. CONSTRUCTION JOINT
- ELEV. ELEVATION
- EX. EXISTING
- MIN. MINIMUM
- S.O. SERIES OF
- SPA. SPACING/SPACED
- TYP. TYPICAL
- W/ WITH

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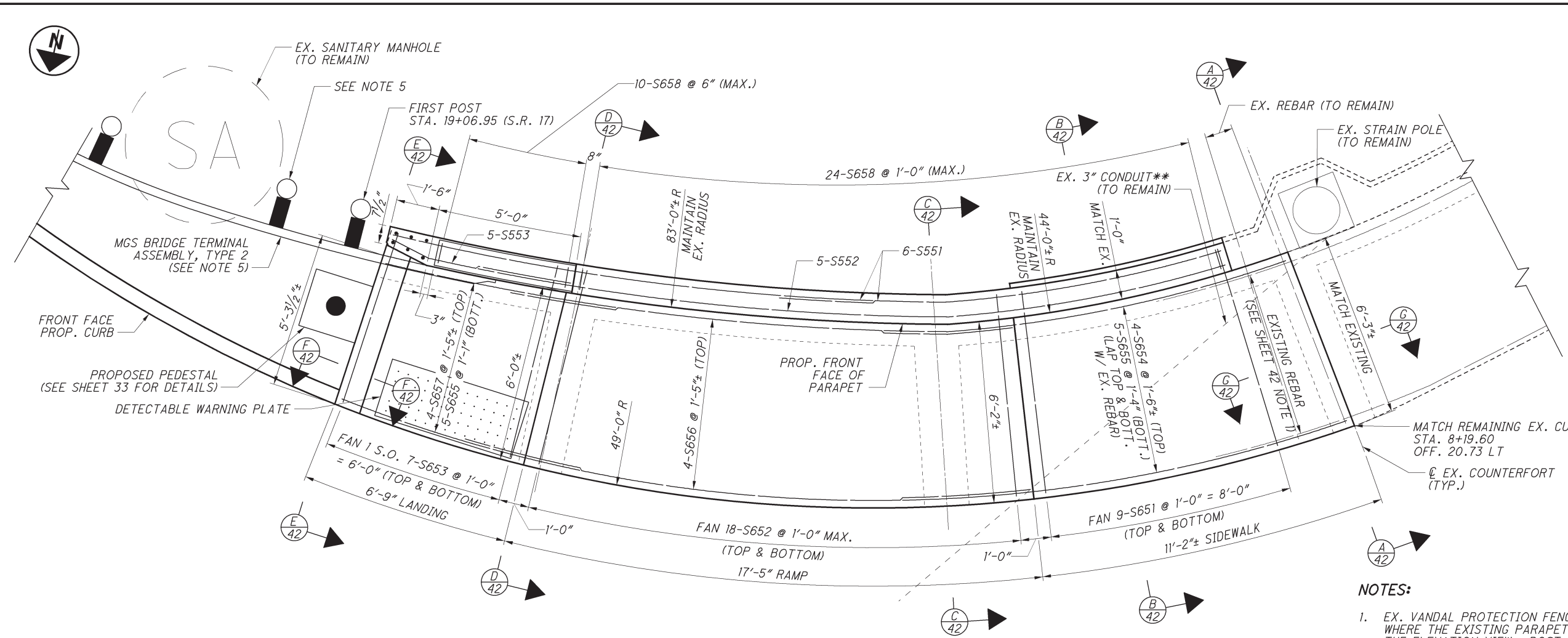
MIN. SPLICE LENGTH:  
#6 = 4'-4"

CALCULATED  
ALM  
CHECKED  
FRR

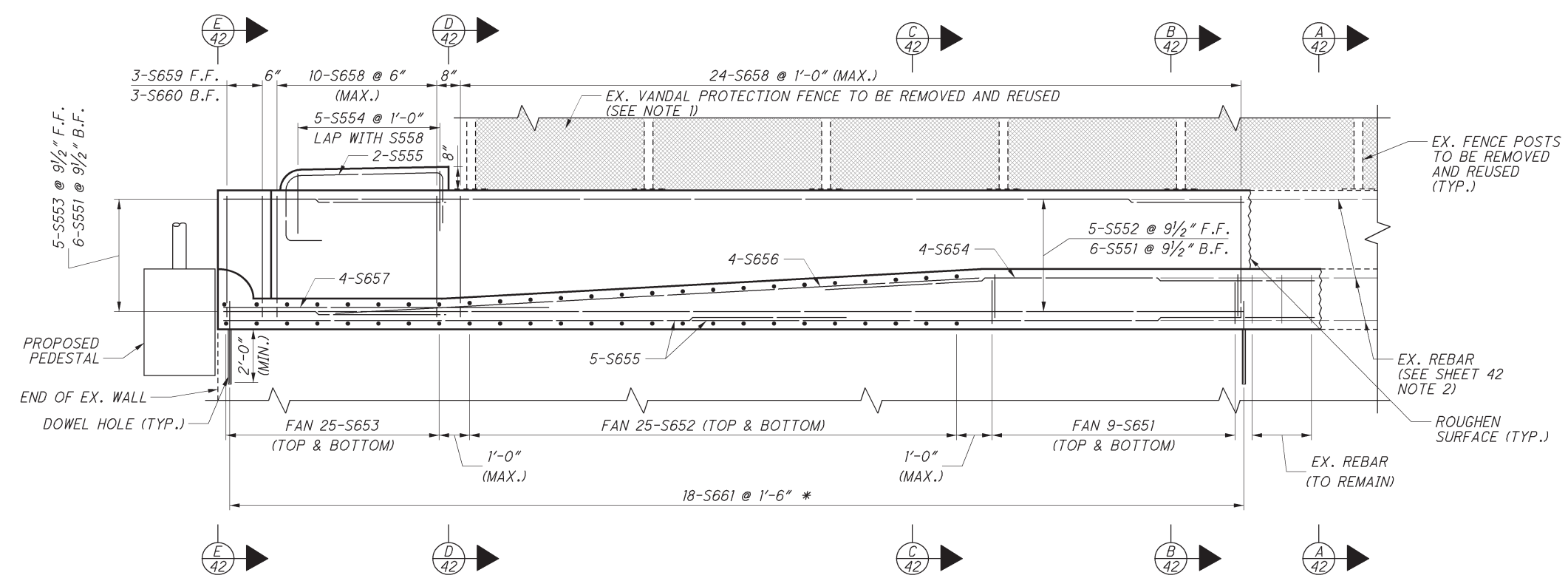
SOUTHEAST CURB RAMP STRUCTURAL DETAILS (1 OF 2)

CUY-17-12.16

41  
43



SOUTHEAST CURB RAMP PLAN



SOUTHEAST CURB RAMP ELEVATION  
(ALONG FRONT FACE PARAPET)  
(COUNTERFORTS AND BRIDGE TERMINAL ASSEMBLY NOT SHOWN FOR CLARITY)

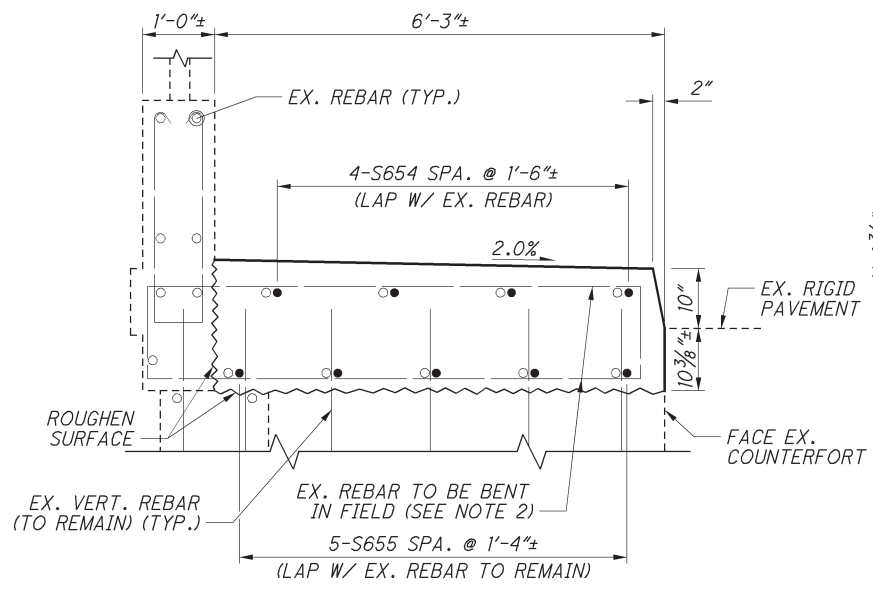
NOTES:

- EX. VANDAL PROTECTION FENCE SHALL BE REMOVED AND REUSED WHERE THE EXISTING PARAPET IS TO BE REPLACED AS SHOWN IN THE ELEVATION VIEW. POST SPACING MAY BE ADJUSTED AS NEEDED TO FIT THE PROPOSED LENGTH AS LONG AS THE MAXIMUM SPACING GIVEN IN STANDARD DRAWING VPF-1-90 IS NOT EXCEEDED.
- EXISTING REINFORCEMENT TO REMAIN SHALL BE CUT AND/OR BENT IN FIELD AS NEEDED TO MAINTAINING 3 INCHES CLEAR COVER ON THE BOTTOM OF THE SLAB AND 2 INCHES CLEAR COVER ON ALL OTHER SURFACES.
- FOR SIDEWALK AND CURB RAMP GEOMETRY AND SURFACE SLOPES, SEE SHEET 24.
- REINFORCEMENT SPACING SHOWN IS INTENDED TO LAP WITH EXISTING REINFORCEMENT. ACTUAL SPACING MAY VARY.
- ADJUST SPACING BETWEEN FIRST AND SECOND PROPOSED GUARDRAIL POSTS IN BRIDGE TERMINAL ASSEMBLY, TYPE 2 TO AVOID EXISTING SANITARY MANHOLE. POST SPACING SHALL NOT EXCEED SPACING PROVIDED IN STANDARD DRAWING MGS-2.1.
- PAYMENT FOR DETECTABLE WARNING PLATE AND LABOR SHALL BE INCLUDED IN ITEM 511, CLASS QC2 CONCRETE, MISC.: SIDEWALK, CURB RAMPS AND RAILING.
- FINISH CONCRETE PER ITEM 608, WALKS, CURB RAMPS, AND STEPS.
- REINFORCEMENT PLACED UNDER DETECTABLE WARNING PLATES SHALL MAINTAIN A MINIMUM OF 1/2" CLEAR COVER AFTER PLACEMENT OF PLATE.

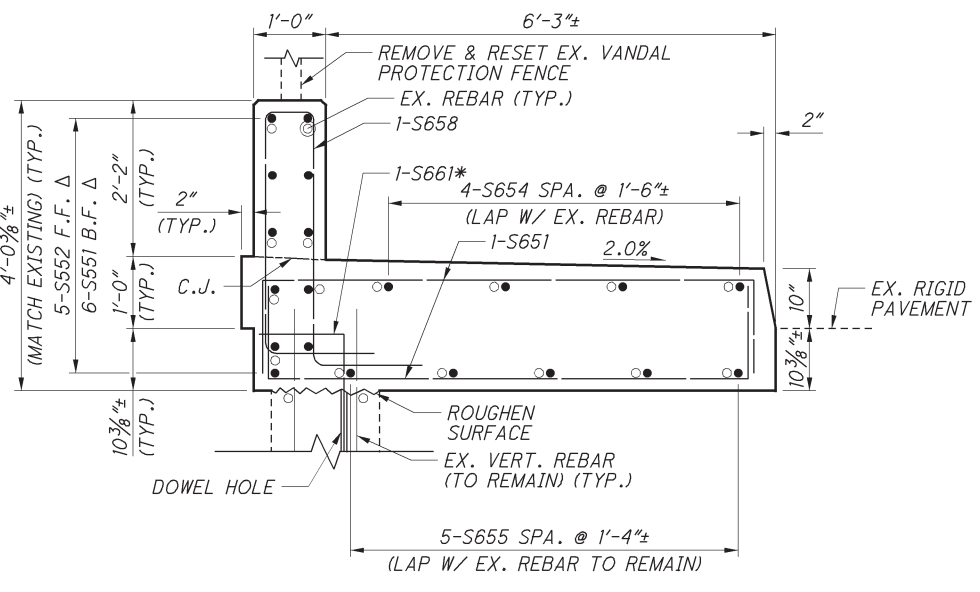
LEGEND:

- \* PLACE S657 BARS HALF-WAY BETWEEN EXISTING VERTICAL BARS IN THE RETAINING WALL
- \*\* SEE NOTE 2 ON SHEET 40
- B.F. BACK FACE
- BOTT. BOTTOM
- C.J. CONSTRUCTION JOINT
- EX. EXISTING
- F.F. FRONT FACE
- MAX. MAXIMUM
- MIN. MINIMUM
- SPA. SPACING/SPACED
- TYP. TYPICAL
- W/ WITH

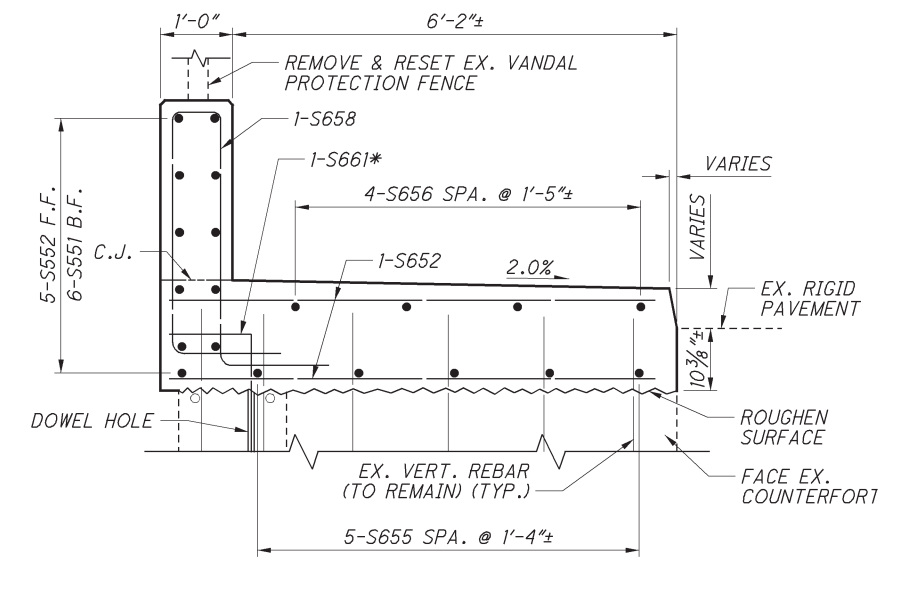
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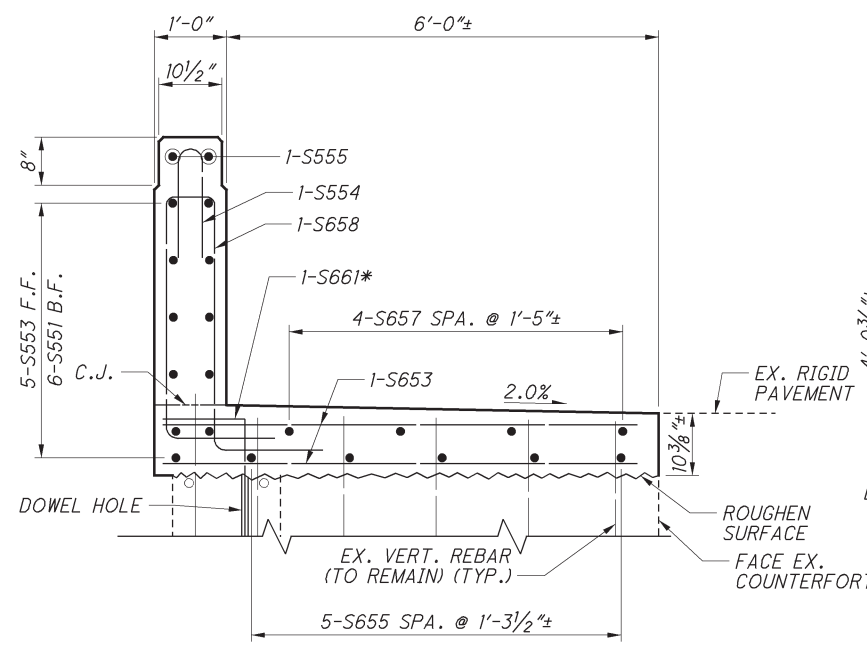
**A** FULL DEPTH SIDEWALK  
41 W/ EX. PARAPET



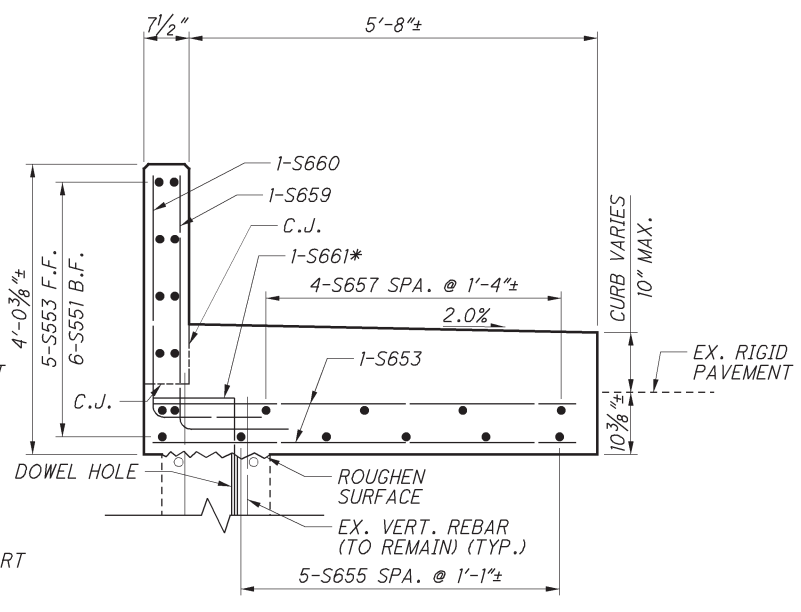
**B** FULL DEPTH SIDEWALK  
41 W/ PROP. PARAPET



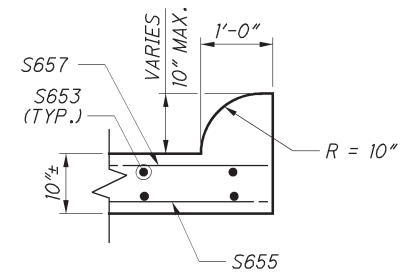
**C** SIDEWALK RAMP SECTION  
41 RAMP TRANSITION



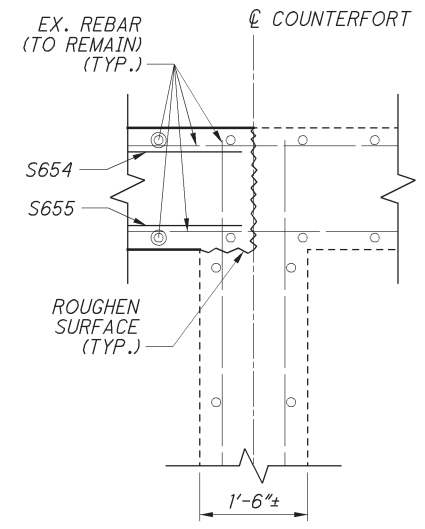
**D** CURB RAMP LANDING  
41 FULL HEIGHT RAILING



**E** CURB RAMP LANDING  
41 END RAILING TRANSITION



**F** END CURB  
41



**G** SIDEWALK JOINT  
41 AT COUNTERFORT

**NOTES:**

1. DOWEL HOLES SHALL BE FILLED WITH NONSHRINK, NONMETALLIC GROUT AND HAVE A MINIMUM DEPTH OF 1'-6".
2. EXISTING REINFORCEMENT TO REMAIN SHALL BE CUT AND/OR BENT IN FIELD AS NEEDED TO MAINTAIN 3 INCHES CLEAR COVER ON THE BOTTOM OF THE SLAB AND 2 INCHES CLEAR COVER ON ALL OTHER SURFACES.
3. REINFORCEMENT SPACING SHOWN IS INTENDED TO LAP WITH EXISTING REINFORCEMENT. ACTUAL SPACING MAY VARY.

**LEGEND:**

- \* - PLACE S661 BARS HALF-WAY BETWEEN EXISTING VERTICAL BARS IN THE RETAINING WALL
- Δ - LAP WITH EXISTING REINFORCEMENT WHERE PRESENT
- B.F. BACK FACE
- BOTT. BOTTOM
- C.J. CONSTRUCTION JOINT
- EX. EXISTING
- F.F. FRONT FACE
- MAX. MAXIMUM
- MIN. MINIMUM
- S.O. SERIES OF
- SPA. SPACING/SPACED
- TYP. TYPICAL
- W/ WITH

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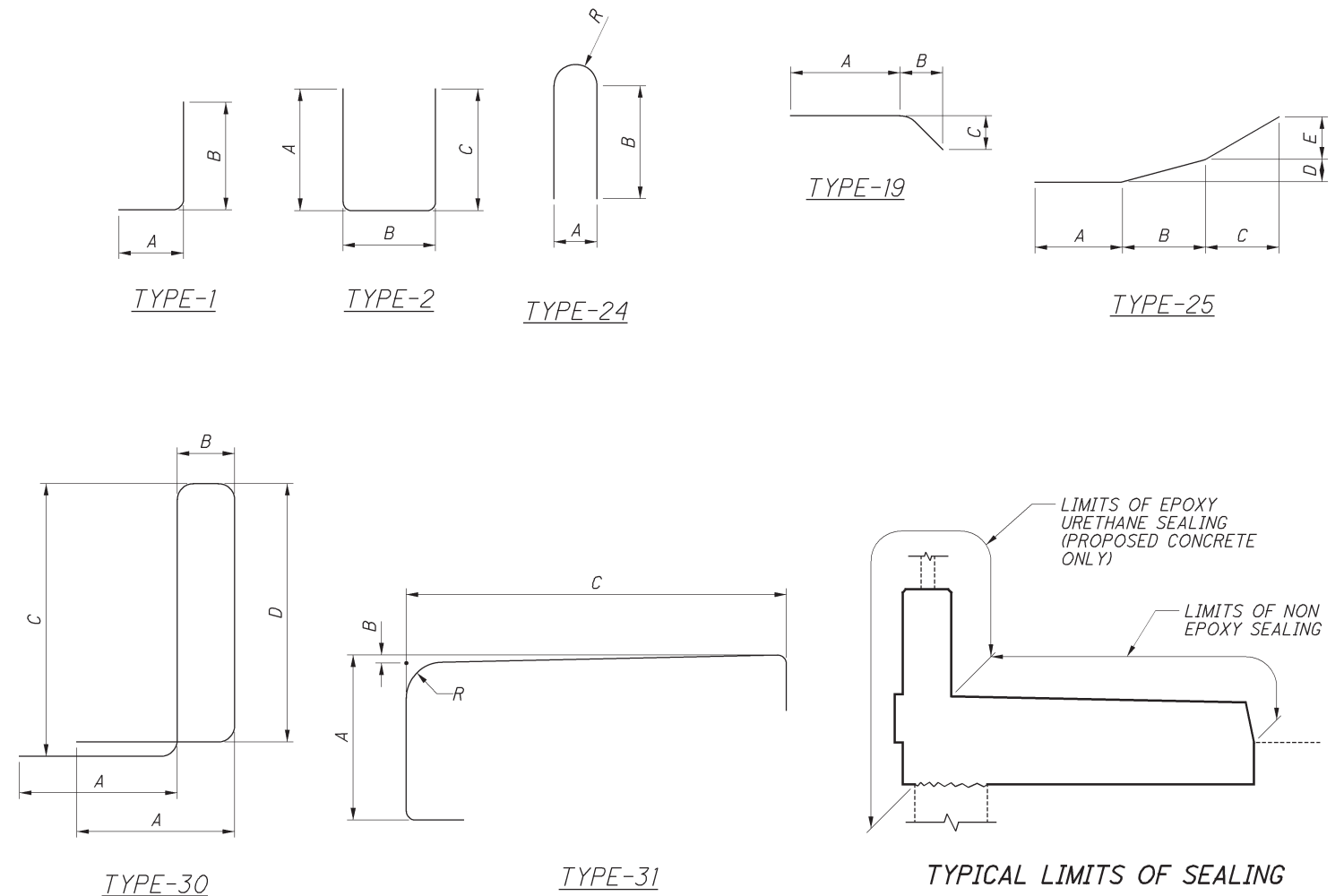
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MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	TOTAL				A	B	C	D	E	R	INC
<b>SOUTHWEST CURB RAMP</b>											
S601	14	25'-5"	534	STR							
S602	1	19'-6"	29	STR							
S603	1	4'-1"	6	STR							
S604	1 SR OF TO 4	14'-0" 14'-8"	88	25	4'-9"	1'-8" TO 5'-9"	8'-1" TO 4'-2"	2" TO 6"	4" TO 2"		Incr B = 1'-4 1/4" Incr C = 1'-3 3/4" Incr D = 3/4" Incr E = 1/2"
S605	1 SR OF 4	15'-3" TO 15'-1"	91	25	4'-9"	2'-5" TO 8'-4"	8'-1" TO 2'-0"	1" TO 4"	1" TO 1/4"		Incr B = 1'-11 3/4" Incr C = 2'-0 1/4" Incr D = 1 1/4" Incr E = 1/4"
S606	1	14'-11"	22	25	4'-9"	7'-0"	3'-1"	0'-1 1/2"	0'-8"		
S607	1	15'-2"	23	25	4'-9"	9'-10"	0'-5"	0'-5"	0'-0"		
S608	1	15'-0"	23	25	4'-9"	8'-4"	1'-10"	0'-1"	0'-8 1/2"		
S609	1	12'-2"	18	19	4'-9"	7'-5"	0'-1"				
S610	1	22'-8"	34	STR							
S611	1	18'-9"	28	19	8'-9"	10'-0"	0'-8"				
S612	1	18'-10"	28	STR							
S613	1	9'-6"	14	19	3'-0"	6'-6"	0'-8"				
S614	1	9'-6"	14	STR							
S615	4	4'-6"	27	STR							
S616	2	10'-4"	31	19	8'-6"	1'-7"	1'-0"				
S617	2 SR OF 4	2'-10" TO 8'-7"	69	STR						1'-11"	
S618	2	3'-0"	9	STR							
S619	2 SR OF 5	6'-5" TO 8'-2"	110	STR						0'-5 1/4"	
S620	1 SR OF 9	13'-0" TO 13'-8"	174	25	11'-4" TO 5'-4"	0'-4" TO 7'-0"	0'-0"	0'-1" TO 0'-9"	1'-5" TO 0'-5"		Incr A = 0'-9" Incr B = 0'-10" Incr D = 0'-1" Incr E = 0'-1 1/2"
S621	1 SR OF 6	12'-5" TO 12'-1"	110	19	4'-8" TO 4'-4"	7'-9" TO 7'-8"	0'-8" TO 0'-10"				Incr A = 0'-3 3/4" Incr B = 0'-1 1/4" Incr C = 0'-0 1/2"
S622	1 SR OF 5	11'-11" TO 11'-2"	86	19	4'-8" TO 6'-8"	7'-2" TO 4'-6"	0'-10" TO 0'-4"				Incr A = 0'-6" Incr B = 0'-8" Incr C = 0'-1 1/2"
S623	1	5'-5"	8	19	1'-7"	3'-10"	0'-3 1/2"				
S624	1	5'-5"	8	STR							
S625	1 SR OF 5	10'-9" TO 9'-6"	76	19	7'-8" TO 9'-3"	3'-1" TO 0'-3"	0'-3" TO 0'-1"				Incr A = 0'-4 3/4" Incr B = 0'-8 1/2" Incr C = 0'-0 1/2"
S626	1 SR OF 9	12'-10" TO 12'-7"	172	1	11'-7" TO 12'-4"	1'-5" TO 0'-5"					Incr A = 0'-1" Incr B = 1 1/2"
S627	1 SR OF 6	12'-3" TO 12'-7"	112	1	12'-0" TO 12'-4"	0'-5"					Incr A = 0'-0 3/4"
S628	1 SR OF 5	11'-5" TO 12'-8"	91	1	11'-2" TO 12'-0"	0'-5" TO 0'-10"					Incr A = 0'-2 1/2" Incr B = 0'-1 1/4"
S629	1 SR OF 5	10'-8" TO 11'-5"	83	1	9'-5" TO 10'-9"	1'-5" TO 0'-10"					Incr A = 0'-4" Incr B = 1 3/4"
SUB-TOTAL			2,118								

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	TOTAL				A	B	C	D	E	R	INC
<b>SOUTHWEST CURB RAMP</b>											
S551	12	15'-8"	196	BNT							83'-0"
S552	5	25'-9"	134	BNT							83'-0"
S553	5	6'-0"	31	19	4'-8"	1'-4"	0'-4"				
S554	5	3'-8"	19	24	0'-6 1/2"	1'-5"					0'-3 1/4"
S555	2	7'-7"	16	31	1'-11"	0'-1"	4'-5"				0'-4 1/4"
S651	18	9'-2"	248	2	1'-5"	6'-8"	1'-5"				
S652	36	6'-8"	360	STR							
S653	2 SR OF 7	5'-11" TO 6'-8"	132	STR							0'-1 1/2"
S654	4	15'-6"	93	19	11'-0"	4'-6"	0'-3"				
S655	10	18'-2"	273	BNT							83'-0"
S656	4	17'-5"	105	BNT							83'-0"
S657	4	7'-7"	46	BNT							83'-0"
S658	34	9'-10"	502	30	1'-6"	0'-8"	3'-4"	3'-6"			
S659	3	5'-0"	23	1	1'-10"	3'-4"					
S660	3	5'-2"	23	1	1'-10"	3'-6"					
S661	18	3'-3"	88	1	1'-2"	2'-3"					
SUB-TOTAL			2,289								

**NOTE:**

RADII PROVIDED FOR BAR MARKS S551, S552, S655, S656 AND S657 SHALL BE FIELD VERIFIED PRIOR TO ORDERING MATERIALS. RADII MAY BE ADJUSTED IN THE FIELD AS NEEDED.



# **SPECIAL PROVISIONS**

**OHIO EPA NOTIFICATION OF  
DEMOLITION AND RENOVATION**

**CO-RT-SEC**

**CUY-17-12.16**

**PID: 94721**

