

STATE OF OHIO  
 DEPARTMENT OF TRANSPORTATION  
**GEA-COUNTY-WIDE  
 SAFETY PROJECTS  
 PART 1**

**GEAUGA COUNTY, OHIO**

FOR PART 2, SEE GEA-87-19.75  
 FOR PART 3, SEE GEA-608-3.09

**PROJECT DESCRIPTION**

CONSTRUCT SAFETY IMPROVEMENTS FOR MOTORIZED VEHICLES, AMISH BUGGIES AND PEDESTRIANS. INCLUDES INCREASED SHOULDER WIDTHS, INSTALLATION OF ADVANCED DETECTION SYSTEMS, CONFLICT WARNING SYSTEMS WITH FLASHING BEACONS, SCHOOL ZONE SIGNS, PEDESTRIAN WARNING SIGNS/BEACONS AND NEW PAVEMENT MARKINGS ALONG VARIOUS ROADWAYS IN GEAUGA COUNTY. INCLUDES RECONSTRUCTION OF NEWCOMB ROAD AND NASH ROAD.

PROJECT EARTH DISTURBED AREA: 29.25 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.63 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: 29.88 ACRES

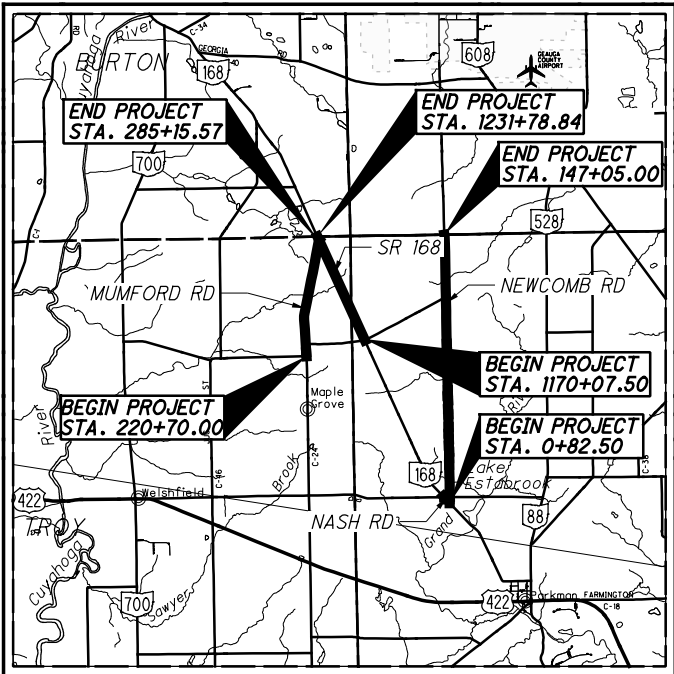
**2019 SPECIFICATIONS**

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 REQUIRE THE PART TIME CLOSING OF THE HIGHWAY TO TRAFFIC, AS NOTED ON SHEETS 16 - 17 . DURING WHICH TIME DETOURS WILL BE PROVIDED AS SHOWN HEREIN. PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED  
 DATE 7/17/20 DISTRICT DEPUTY DIRECTOR

APPROVED  
 DATE \_\_\_\_\_ DIRECTOR, DEPARTMENT OF TRANSPORTATION



**LOCATION MAP**

LATITUDE: 41°24'37" LONGITUDE: 81°05'48" - MUMFORD RD



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

**DESIGN DESIGNATION**  
 SEE SCHEMATIC PLANS

**DESIGN EXCEPTIONS**

LANE WIDTH, SHOULDER WIDTH, HORIZONTAL CURVE RADIUS, SSD (CREST VERTICAL)

APPROVAL DATE - 8/18/2020

**UNDERGROUND UTILITIES**  
 Contact Two Working Days Before You Dig

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

PLAN PREPARED BY:

**CMT**  
 CRAWFORD, MURPHY & TILLY, INC.  
 6055 ROCKSIDE WOODS BOULEVARD NORTH  
 SUITE 321  
 INDEPENDENCE, OHIO 44131  
 PH (440)462-4020  
 www.cmtengr.com

**INDEX OF SHEETS:**

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**ENGINEERS SEAL:**

FOR ALL PART 1 SHEETS EXCEPT THOSE NOTED BELOW

SIGNED: Jacob W. Barbour  
 DATE: 7/15/2020

**ENGINEERS SEAL:**

FOR PART 1 SHEETS: 7-8, 10, 17, 22-23, 43-46, 200-267, 294, 314-316, 318, 320, 323-329

SIGNED: Joseph Robert Espelage  
 DATE: 7-15-20

**PARTS 1, 2 AND 3**

STANDARD CONSTRUCTION DRAWINGS										SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS	
BP-3.1	01/17/20	DM-4.3	1/15/16	HW-2.1	7/20/18	TC-41.30	10/18/13			800-2020	7/17/20	WATERWAY PERMITS CONDITIONS 10/05/2020
BP-3.2	1/18/19	DM-4.4	1/15/16	HW-2.2	7/20/18	TC-41.40	10/18/13			809	1/17/20	
						TC-42.10	10/18/13			821	4/20/19	
						TC-42.20	10/18/13			825	1/17/20	
CB-1.1	7/19/19	BP-4.1	7/19/13	MT-97.10	4/19/19	TC-52.20	10/18/13			832	10/19/18	
CB-1.2	1/15/16	BP-5.1	1/18/19	MT-97.11	1/20/17	TC-52.10	10/18/13			836	1/19/18	
CB-2.1	7/20/18			MT-97.12	1/20/17	TC-52.20	7/20/18			875	1/18/19	
CB-2.2	7/20/18	MGS-1.1	1/19/18	MT-99.20	4/19/19	TC-61.30	7/19/19			921	4/20/12	
CB-2.3	1/15/16	MGS-2.1	1/19/18	MT-101.60	1/17/20	TC-65.10	1/17/14					
CB-4.2	1/18/13			MT-101.70	1/17/20	TC-65.11	7/21/17					
		MGS-4.2	7/19/13	MT-101.75	1/17/20	TC-71.10	1/19/18					
MH-1.2	1/15/16	MGS-4.3	1/18/13	MT-101.90	7/21/17	TC-81.22	4/17/20					
		MGS-5.3	7/15/16	MT-105.10	1/17/20	TC-85.10	4/17/20					
DM-1.1	7/21/17			MT-120.00	1/19/18							
DM-1.2	1/18/13	RM-1.1	7/18/14			RM-4.1	1/17/20					
DM-3.1	1/18/13	RM-4.2	4/17/20	TC-21.21	4/17/20							
DM-4.2	7/20/12	RM-7.1	7/18/14	TC-41.20	10/18/13							

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FEDERAL PROJECT NO. E190506

PID NO. 110164

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

GEA-COUNTY WIDE SAFETY

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**ITEM SPECIAL - PIPE CLEANOUT**

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

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

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK TO BE USED AT THE DIRECTION OF THE ENGINEER:

SPECIAL, PIPE CLEANOUT, 24" AND UNDER 100 FT.  
SPECIAL, PIPE CLEANOUT, 27" TO 48" 100 FT.  
SPECIAL, PIPE CLEANOUT, OVER 48" 100 FT.

**SEEDING AND MULCHING**

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, SOIL ANALYSIS TEST 2 EACH  
659, TOPSOIL 7,502 CU. YD.  
659, SEEDING AND MULCHING 67,586 SQ. YD.  
659, REPAIR SEEDING AND MULCHING 3,379 SQ. YD.  
659, COMMERCIAL FERTILIZER 9.13 TON  
659, LIME 13.96 ACRES  
659, WATER 365 M. GAL.

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

**POST CONSTRUCTION STORM WATER TREATMENT**

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

**VEGETATED BIOFILTER**

THIS PLAN UTILIZES VEGETATED BIOFILTER(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AS SHOWN IN THE PLANS TO ANY DISTURBED AREA ON THE SHOULDER AND FORESLOPE DRAINING TO A VEGETATED BIOFILTER. THE DITCH FOR EACH VEGETATED BIOFILTER SHALL BE TRAPEZOIDAL, AS SHOWN IN THE PLAN CROSS SECTIONS. PROVIDE ITEM 670 (NEWCOMB ROAD, MUMFORD ROAD) OR ITEM 836 (SR 168) AS SPECIFIED IN THE PLANS.

**VEGETATED FILTER STRIP**

THIS PLAN UTILIZES VEGETATED FILTER STRIP(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AND ITEM 670, SLOPE EROSION PROTECTION TO ALL DISTURBED AREAS DESIGNATED AS VEGETATED FILTER STRIPS, THE EDGE OF SHOULDER, AND THE FORESLOPE AS SPECIFIED IN THE PLANS.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE WITH VEGETATED FILTER STRIPS.

ITEM 670, SLOPE EROSION PROTECTION MAT, TYPE A 202 SQ YD

**GEAUGA COUNTY GENERAL NOTES (APPLICABLE TO MUMFORD ROAD, NEWCOMB ROAD AND NASH ROAD)**

ALL WORK ON THIS PROJECT SHALL AT ALL TIMES BE SUBJECT TO THE DIRECT INSPECTION OF THE GEAUGA COUNTY ENGINEER OR AUTHORIZED REPRESENTATIVE OF THE ENGINEER.

ALL CONSTRUCTION AND MATERIALS INCLUDED IN THIS PROJECT SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF OHIO DEPARTMENT OF TRANSPORTATION'S CONSTRUCTION AND MATERIAL SPECIFICATIONS UNLESS SUPERCEDED BY THE MODIFICATIONS TO THE OHIO DEPARTMENT OF TRANSPORTATION'S CONSTRUCTION AND MATERIAL

SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS FOR GEAUGA COUNTY AND THE STANDARD SPECIFICATIONS AND PROCEDURES FOR THE DESIGN AND CONSTRUCTION OF SUBDIVISION ROADS IN GEAUGA COUNTY.

THE STATIONING AND CENTERLINE INFORMATION SHOWN ON THE DRAWINGS ARE FOR CONSTRUCTION PURPOSES ONLY AND ARE NOT TO BE USED FOR RECORD PURPOSES.

ALL QUANTITIES LISTED ARE AN ESTIMATE FOR BIDDING PURPOSES. ACTUAL FINAL QUANTITIES MAY BE MORE OR LESS AS DEEMED NECESSARY BY THE ENGINEER FOR PROPER CONSTRUCTION.

THE BEDDING FOR THE TYPE "A" CULVERTS SHALL BE CLASS "B" AND THE SIZE NO. 57 AGGREGATE SHALL BE INSTALLED TO A DEPTH OF AT LEAST ONE-HALF THE DIAMETER OF THE CULVERT. ON MUMFORD ROAD, BACKFILL FOR THE REMAINING TRENCH SHALL LSM TYPE 100. ON NEWCOMB ROAD, BACKFILL FOR THE REMAINING TRENCH SHALL LSM TYPE 100 OR 304 AGGREGATE TAMPED OR COMPACTED EVERY 6 INCHES. RECYCLED CONCRETE, SLAG, OR SAND IS NOT ALLOWED.

THE ROADWAY SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH O.D.O.T. ITEM 203 - ROADWAY EXCAVATION AND EMBANKMENT. SUBGRADE SHALL BE PROOF ROLLED IN ACCORDANCE WITH ITEM 204

SOIL STABILIZATION PARAMETERS SHALL BE APPROVED BY THE GEAUGA COUNTY ENGINEER PRIOR TO THE STABILIZING OF THE SUBBASE.

A PROFESSIONAL GEOTECHNICAL ENGINEER SHALL BE REQUIRED FOR SOIL BORINGS, SOIL ANALYSIS, AND SOIL COMPACTION WHERE THE GEAUGA COUNTY ENGINEER DEEMS NECESSARY.

GUARDRAIL LOCATIONS MAY BE ADJUSTED IN THE FIELD DURING CONSTRUCTION BY THE GEAUGA COUNTY ENGINEER.

MONUMENT ASSEMBLIES SHALL BE BOXLESS PAVEMENT MONUMENTS PER THE GEAUGA COUNTY ENGINEER'S STANDARD CONSTRUCTION DRAWINGS. BOXLESS MONUMENTS SHALL BE INSTALLED AFTER FINAL SURFACE COURSE OF ASPHALT CONCRETE.

ITEM 441 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448) MAY BE PLACED, WITHOUT ITEM 407, IMMEDIATELY AFTER ITEM 301 ASPHALT CONCRETE BASE UNLESS SURFACE OF ITEM 301 IS NOT ACCEPTABLE TO THE ENGINEER.

ITEM 617, COMPACTED AGGREGATE, SHALL BE PLACED AFTER SURFACE COURSE.

EXCELISOR MATTING SHALL BE USED IN ALL DITCHES. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE IN DITCHES.  
ITEM 670, DITCH EROSION PROTECTION MAT, TYPE G 36,000 SQ YD

**ITEM 441 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22, AS PER PLAN**

IN ADDITION TO THE REQUIREMENTS OF ITEM 441 THE FOLLOWING SHALL APPLY.

PRIOR TO OR AT THE PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT A JOB MIX FORMULA IN A FORMAT APPROVED BY THE ENGINEER SHOWING THE DESIGN OF ALL MIXES, SOURCE AND GRADATION OF AGGREGATE AND PROPOSED ASPHALT CONTENT FOR THE ASPHALT COURSE OR COURSES PROPOSED TO BE USED FOR A PROJECT. THE PROPOSED SOURCE (ASPHALT PLANT) OF THE ASPHALT MIX MUST HAVE AN APPROVED QUALITY CONTROL PROGRAM ON FILE WITH THE GEAUGA COUNTY ENGINEER.

GRAVEL SHALL NOT BE PERMITTED IN ANY ODOT ITEM 441 SURFACE COURSES. AGGREGATE GRADATION FOR ALL MIXES SHALL MEET ODOT C&MS REQUIREMENTS.

NO MORE THAN 10% RECLAIMED ASPHALT CONCRETE PAVEMENT (RAP) (MEASURED BY DRY WEIGHT OF MIX) SHALL BE ALLOWED IN THE SURFACE COURSE. RECLAIMED ASPHALT SHINGLES (RAS) ARE NOT PERMITTED.

POLYMER MODIFIED SURFACE COURSES SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IS LESS THAN 60° F. BITUMINOUS PLANT MIXTURES SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IS BELOW THE MINIMUM ESTABLISHED AS FOLLOWS:

COURSE THICKNESS	AIR TEMPERATURE
3.0 INCHES AND OVER	40° F
1.5 TO 2.9 INCHES	45° F
1.0 TO 1.4 INCHES	50° F
LESS THAN 1.0 INCHES	60° F

**PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, VBL WIDTH, VBL DEPTH**

IN ADDITION TO THE REQUIREMENTS OF ITEM 254, THE FOLLOWING REQUIREMENTS APPLY TO THIS WORK.

BUGGY TRAFFIC IS KNOWN TO CAUSE RUTTING NEAR THE EDGE OF PAVEMENT LANES. PRIOR TO CONSTRUCTION, THE CONTRACTOR AND THE ENGINEER SHALL MEET IN THE FIELD TO IDENTIFY LOCATIONS ON MUMFORD ROAD THAT REQUIRE SPOT MILLING. PAVEMENT SHALL BE MILLED WITHIN THE LIMITS IDENTIFIED AND TO SUFFICIENT DEPTH TO PROVIDE A CONSISTENT PAVEMENT CROSS SLOPE. VARIABLE DEPTH ASPHALT SHALL BE PLACED UNDER A SEPARATE PAY ITEM.

**ITEM 441 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), AS PER PLAN (VARIABLE DEPTH)**

IN ADDITION TO THE REQUIREMENTS OF ITEM 441 THE FOLLOWING SHALL APPLY. CONTRACTOR SHALL PLACE VARIABLE DEPTH INTERMEDIATE COURSE IN THE LOCATIONS IDENTIFIED FOR VARIABLE WIDTH, VARIABLE DEPTH PAVEMENT PLANING AND/OR AT OTHER LOCATIONS IDENTIFIED IN THE FIELD AT THE DIRECTION OF THE ENGINEER. VARIABLE DEPTH INTERMEDIATE COURSE SHALL BE PLACED IN A MANNER TO PROVIDE A CONSISTENT PAVEMENT CROSS SLOPE READY TO RECEIVE A SURFACE COURSE.

**REMOVAL, MISC.**

IN ADDITION TO THE REQUIREMENTS OF ITEM 202, THE FOLLOWING REQUIREMENTS APPLY. PRIOR TO REMOVAL, THE CONTRACTOR SHALL OFFER TO RETURN THE ITEMS TO THE ADJACENT PROPERTY OWNER. ITEMS NOT ACCEPTED BY THE OWNER SHALL BE REMOVED AND PROPERLY DISPOSED. PAYMENT SHALL BE MADE AT THE UNIT PRICE BID AND SHALL BE CONSIDERED FULL COMPENSATION FOR THE LABOR, MATERIAL, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

ITEM 202, REMOVAL MISC.: 24 INCH ROCK AND OVER, PER EACH  
ITEM 202, REMOVAL MISC.: WOOD POST REMOVED, PER EACH

**EARTHWORK CALCULATIONS**

EXCAVATION AND EMBANKMENT QUANTITIES WERE DETERMINED FROM THE TOP OF EXISTING GROUND SURFACE TO THE BOTTOM OF THE PAVEMENT BASE/TOP OF SUBGRADE OR THE FINISHED GRADE. SOIL STABILIZATION IS NOT INCLUDED IN THE EARTHWORK QUANTITIES AND IS PAID FOR SEPARATELY. ADJUSTMENTS FOR TOPSOIL STRIPPING / PLACEMENT HAVE NOT BEEN MADE. CONTRACTOR MAY ELECT TO STRIP AND STOCKPILE TOPSOIL FOR REUSE. NO ADDITIONAL PAYMENT SHALL BE MADE, BEYOND THAT MADE FOR ITEM 659 TOPSOIL, FOR STRIPPING, STOCKPILING, FURNISHING, SPREADING, PLACING, HAULING AND/OR DISPOSING TOPSOIL. EXCAVATION FOR OTHER MISCELLANEOUS ITEMS (E.G. DRAINAGE STRUCTURES, PIPES, ETC.) IS INCLUDED IN THE COST OF THAT ITEM UNLESS OTHERWISE NOTED IN THE PLANS.

CALCULATED  
LDW  
CHECKED  
JWB

GENERAL NOTES

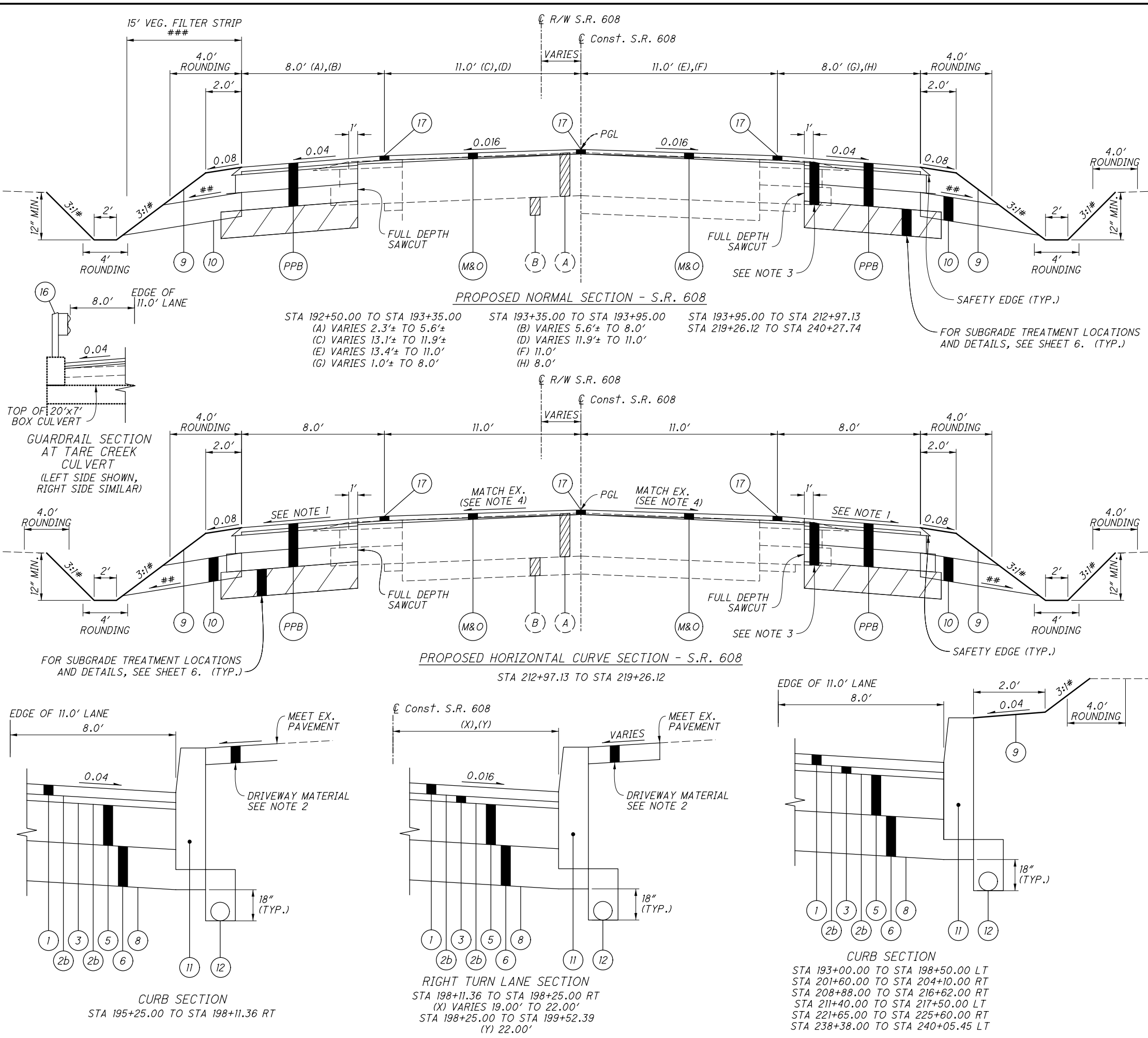
GEAUGA COUNTY  
WIDE SAFETY







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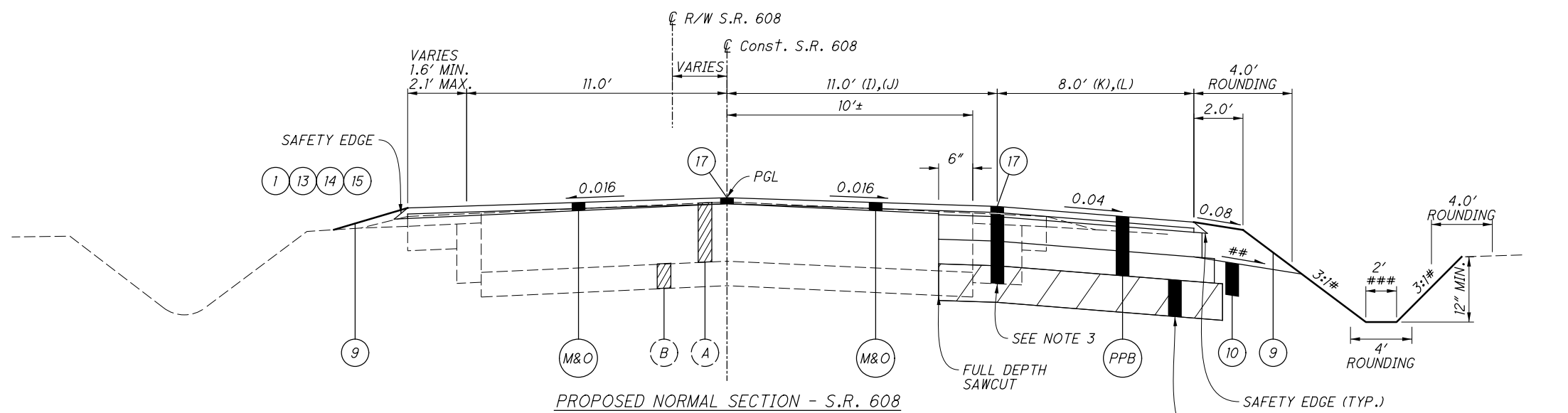


- LEGEND**
- SEE SHEET 5 FOR PROPOSED PAVEMENT BUILDUP (PPB) AND PROPOSED PAVEMENT PLANING & LEVELING DETAILS (M&O).
- EXISTING LEGEND:**
- (A) 12" TO 14"± ASPHALT CONCRETE
  - (B) 6"± ASPHALT CONCRETE
- PROPOSED LEGEND:**
- (1) ITEM 441 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN, PG70-22M
  - (2a) ITEM 407 - NON-TRACKING TACK COAT (MILLED ASPHALT SURFACE)
  - (2b) ITEM 407 - NON-TRACKING TACK COAT (NEW ASPHALT SURFACE)
  - (3) ITEM 441 - 1" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), PG64-22
  - (4) ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), AS PER PLAN (VARIABLE DEPTH, 6.5" MAX.), PG64-22 (PLACE IN MULTIPLE LIFTS)
  - (5) ITEM 301 - 6" ASPHALT CONCRETE BASE, PG64-22
  - (6) ITEM 304 - 6" AGGREGATE BASE
  - (7) ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (T = 1/2")
  - (8) ITEM 204 - SUBGRADE COMPACTION
  - (9) ITEM 659 - SEEDING AND MULCHING
  - (10) ITEM 605 - AGGREGATE DRAINS
  - (11) ITEM 609 - CURB, TYPE 6
  - (12) ITEM 605 - 4" BASE PIPE UNDERDRAINS
  - (13) ITEM 209 - LINEAR GRADING, AS PER PLAN
  - (14) ITEM 209 - PREPARE SUBGRADE FOR SHOULDER PAVING, AS PER PLAN
  - (15) ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN
  - (16) ITEM 606 - GUARDRAIL, TYPE MGS OR ITEM 606 - GUARDRAIL, TYPE 5
  - (17) ITEM 875 - LONGITUDINAL JOINT ADHESIVE
- NOTES:**
1. SHOULDER CROSS SLOPE SHALL MATCH CROSS SLOPE OF ADJACENT TRAVEL LANE OR 0.04, WHICHEVER IS GREATER.
  2. SEE DRIVEWAY DETAILS FOR PAVEMENT MATERIAL BEHIND CURB.
  3. FULL DEPTH SAWCUT AND EXISTING PAVEMENT TO BE REMOVED SHALL BE INCLUDED IN ITEM 203 EXCAVATION AS PER CMS 203.04E.
  4. TRANSITION CROSS SLOPES FROM 0.016 TO MATCH EXISTING AND FROM MATCH EXISTING TO 0.016 OVER 65' BEFORE AND AFTER THE HORIZONTAL CURVES, RESPECTIVELY.
- # SLOPE SHALL BE 3:1 UNLESS SHOWN OTHERWISE ON THE CROSS SECTIONS.
- ## 0.08 SLOPE PREFERRED, 0.04 SLOPE MINIMUM.
- ### VEGETATED FILTER STRIP, 15' WIDTH  
 STA 201+00.00 TO STA 211+40.00

TYPICAL SECTIONS

GEA-608-3.09

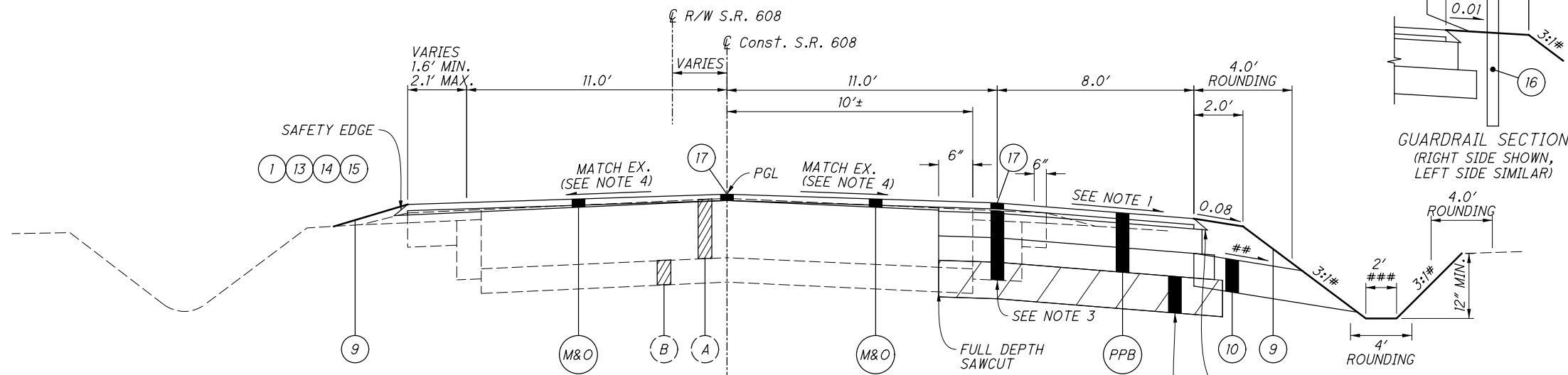
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PROPOSED NORMAL SECTION - S.R. 608

STA 240+27.74 TO STA 249+19.44  
 STA 253+37.55 TO STA 265+00.00  
 STA 265+00.00 TO STA 266+25.00  
 (I) 11.0' (J) VARIES 11.0' TO 12.3'  
 (K) VARIES 8.0'± TO 4.2'± (L) VARIES 4.2'± TO 2.2'

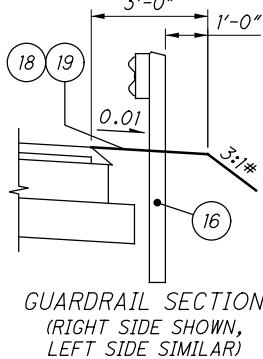
FOR SUBGRADE TREATMENT LOCATIONS AND DETAILS, SEE SHEET 6.



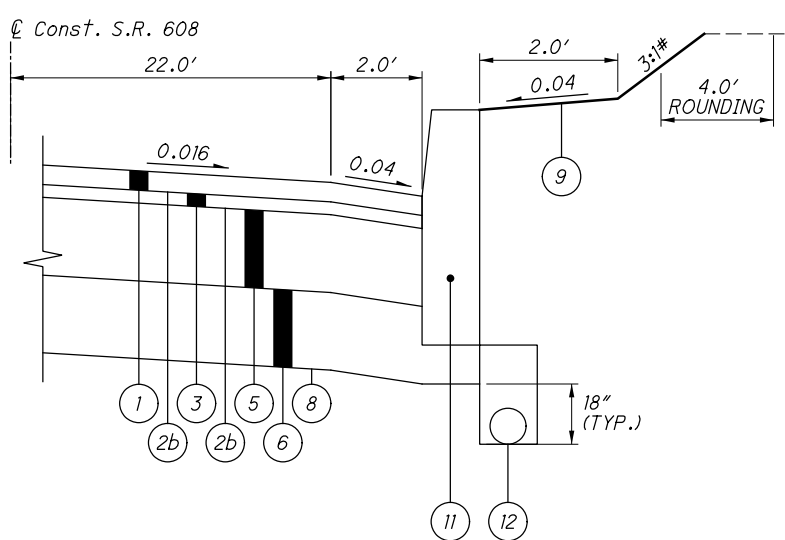
PROPOSED HORIZONTAL CURVE SECTION - S.R. 608

STA 249+19.94 TO STA 253+37.55

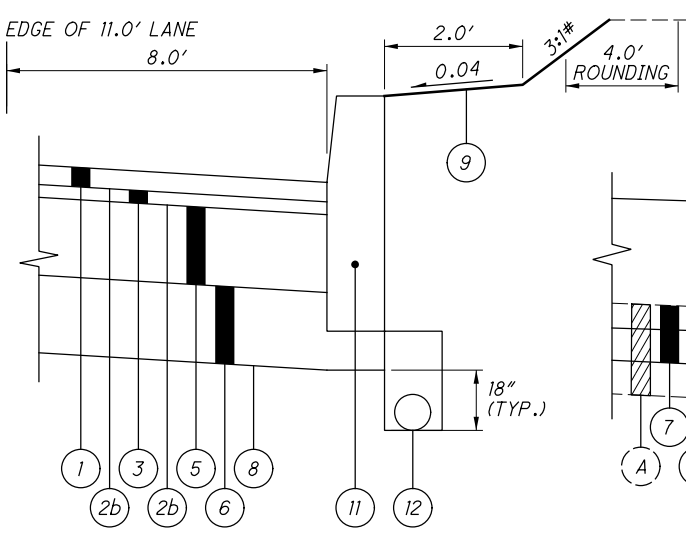
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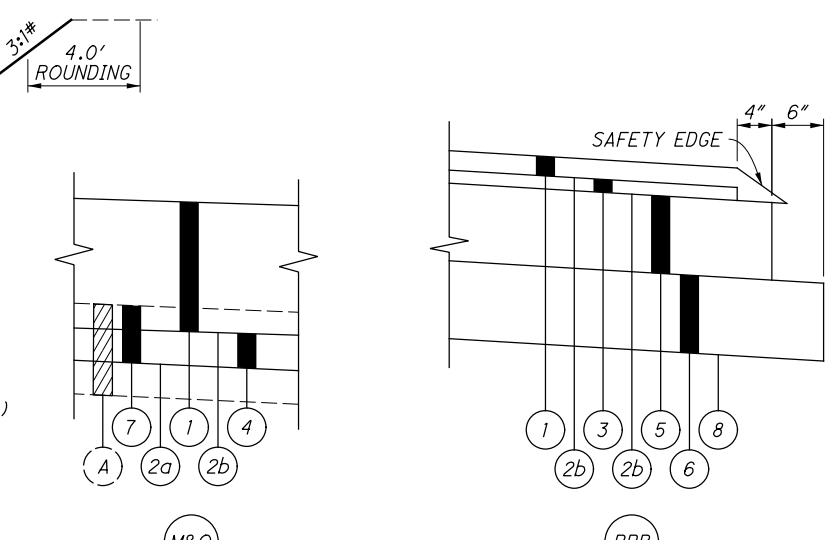
GUARDRAIL SECTION (RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



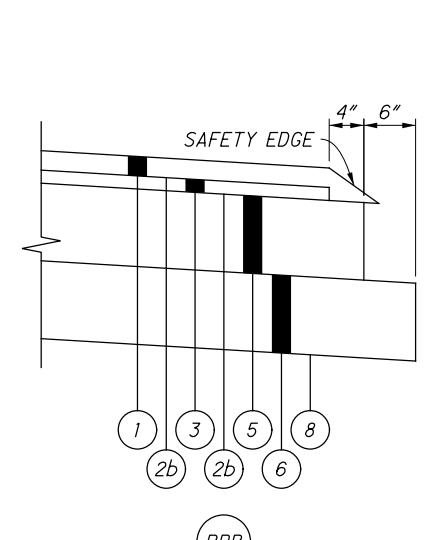
RIGHT TURN LANE SECTION  
 STA 238+50.00 TO STA 239+79.26 RT



CURB SECTION  
 STA 240+60.74 TO STA 250+62.00 RT



PROPOSED PAVEMENT PLANING AND LEVELING DETAIL



PROPOSED FULL-DEPTH PAVEMENT BUILDUP DETAIL

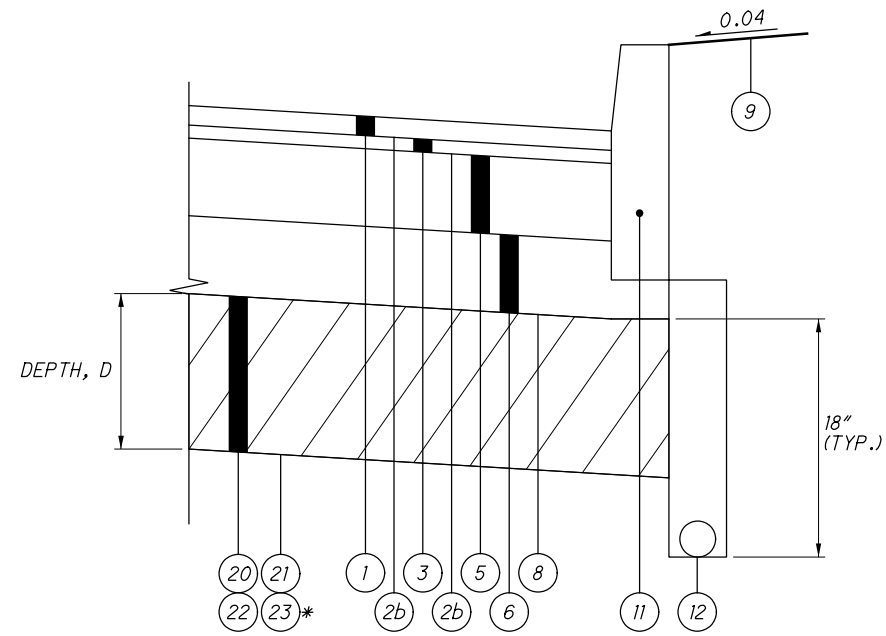
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  - (13) ITEM 209 - LINEAR GRADING, AS PER PLAN
  - (14) ITEM 209 - PREPARE SUBGRADE FOR SHOULDER PAVING, AS PER PLAN
  - (15) ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN
  - (16) ITEM 606 - GUARDRAIL, TYPE MGS OR ITEM 606 - GUARDRAIL, TYPE 5
  - (17) ITEM 875 - LONGITUDINAL JOINT ADHESIVE
  - (18) ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL), AS PER PLAN, PG 64-22
  - (19) ITEM 209 - RESHAPING UNDER GUARDRAIL, AS PER PLAN

- NOTES:
1. SHOULDER CROSS SLOPE SHALL MATCH CROSS SLOPE OF ADJACENT TRAVEL LANE OR 0.04, WHICHEVER IS GREATER.
  2. SEE DRIVEWAY DETAILS FOR PAVEMENT MATERIAL BEHIND CURB.
  3. FULL DEPTH SAWCUT AND EXISTING PAVEMENT TO BE REMOVED SHALL BE INCLUDED IN ITEM 203 EXCAVATION AS PER CMS 203.04E.
  4. TRANSITION CROSS SLOPES FROM 0.016 TO MATCH EXISTING AND FROM MATCH EXISTING TO 0.016 OVER 65' BEFORE AND AFTER THE HORIZONTAL CURVES, RESPECTIVELY.
- # SLOPE SHALL BE 3:1 UNLESS SHOWN OTHERWISE ON THE CROSS SECTIONS.  
 ## 0.08 SLOPE PREFERRED, 0.04 SLOPE MINIMUM.  
 ### VEGETATED BIOFILTER, 4' WIDTH, STA 250+50 TO STA 257+50, RT.

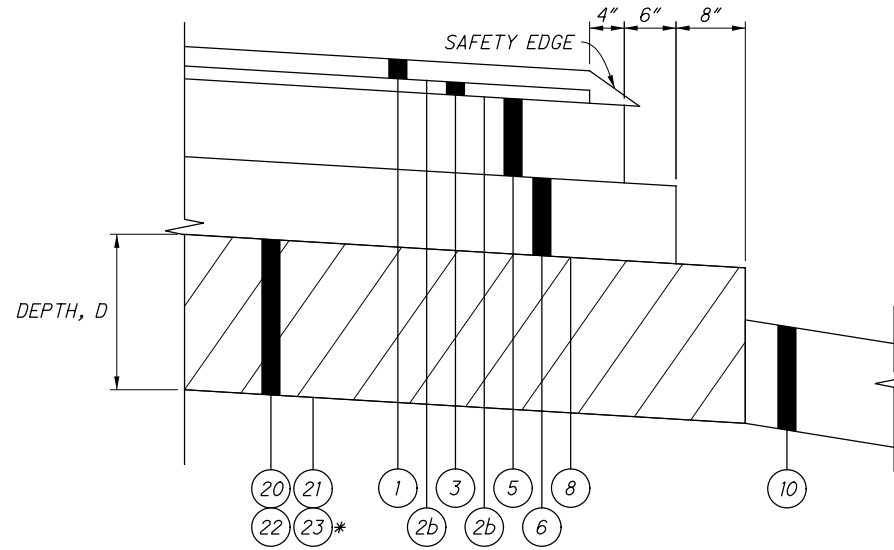
TYPICAL SECTIONS

GEA - 608 - 3.09

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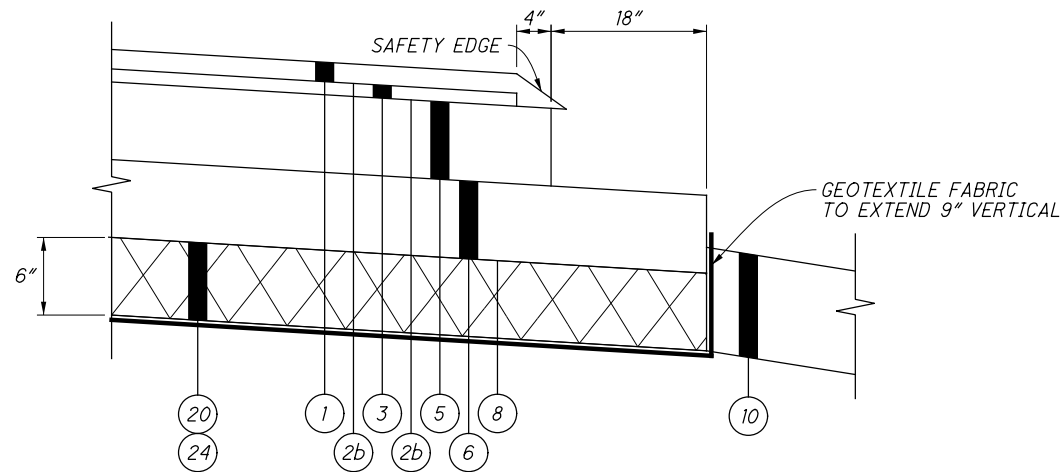
CURB SECTION  
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



NON-CURB SECTION  
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

UNDERCUT DETAILS

STA 194+50.00 TO STA 209+75.00, BOTH SIDES, D = 12"  
 STA 209+75.00 TO STA 218+00.00, BOTH SIDES, D = 12" \*(NO GEOGRID REQUIRED)  
 STA 218+00.00 TO STA 226+50.00, BOTH SIDES, D = 15"  
 STA 231+25.00 TO STA 237+00.00, BOTH SIDES, D = 12"  
 STA 242+00.00 TO STA 246+00.00, RIGHT SIDE, D = 12"  
 STA 253+75.00 TO STA 258+00.00, RIGHT SIDE, D = 12" \*(NO GEOGRID REQUIRED)  
 STA 258+00.00 TO STA 262+50.00, RIGHT SIDE, D = 12"



GEOCELLULAR CONFINEMENT SYSTEM DETAIL  
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

STA 226+50.00 TO STA 231+25.00, BOTH SIDES

LEGEND

SEE SHEET 5 FOR PROPOSED PAVEMENT BUILDUP (PPB) AND PROPOSED PAVEMENT PLANING & LEVELING DETAILS (M&O).

EXISTING LEGEND:

- (A) 12" TO 14"± ASPHALT CONCRETE
- (B) 6"± ASPHALT CONCRETE

PROPOSED LEGEND:

- (1) ITEM 441 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN, PG70-22M
- (2a) ITEM 407 - NON-TRACKING TACK COAT (MILLED ASPHALT SURFACE)
- (2b) ITEM 407 - NON-TRACKING TACK COAT (NEW ASPHALT SURFACE)
- (3) ITEM 441 - 1" ASPHALT CONCRETE INTERMEDIATE COURSE (TYPE 1), (448), PG64-22
- (4) ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), AS PER PLAN (VARIABLE DEPTH, 6.5" MAX.), PG64-22 (PLACE IN MULTIPLE LIFTS)
- (5) ITEM 301 - 6" ASPHALT CONCRETE BASE, PG64-22
- (6) ITEM 304 - 6" AGGREGATE BASE
- (7) ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (T = 1/2")
- (8) ITEM 204 - SUBGRADE COMPACTION
- (9) ITEM 659 - SEEDING AND MULCHING
- (10) ITEM 605 - AGGREGATE DRAINS
- (11) ITEM 609 - CURB, TYPE 6
- (12) ITEM 605 - 4" BASE PIPE UNDERDRAINS
- (13) ITEM 209 - LINEAR GRADING, AS PER PLAN
- (14) ITEM 209 - PREPARE SUBGRADE FOR SHOULDER PAVING, AS PER PLAN
- (15) ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN
- (16) ITEM 606 - GUARDRAIL, TYPE MGS OR  
ITEM 606 - GUARDRAIL, TYPE 5
- (17) ITEM 875 - LONGITUDINAL JOINT ADHESIVE
- (18) ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL), AS PER PLAN, PG 64-22
- (19) ITEM 209 - RESHAPING UNDER GUARDRAIL, AS PER PLAN
- (20) ITEM 204 - EXCAVATION OF SUBGRADE
- (21) ITEM 204 - GRANULAR MATERIAL, TYPE B
- (22) ITEM 204 - GEOTEXTILE FABRIC
- (23) ITEM 204 - GEOGRID
- (24) ITEM SPECIAL - GEOCELLULAR CONFINEMENT SYSTEM

TYPICAL SECTIONS

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**EROSION CONTROL**

**POST CONSTRUCTION STORM WATER TREATMENT**

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

**VEGETATED FILTER STRIP**

THIS PLAN UTILIZES VEGETATED FILTER STRIP(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AND ITEM 670, SLOPE EROSION PROTECTION TO ALL DISTURBED AREAS DESIGNATED AS VEGETATED FILTER STRIPS, THE EDGE OF SHOULDER, AND THE FORESLOPE AS SPECIFIED IN THE PLANS.

**VEGETATED BIOFILTER**

THIS PLAN UTILIZES VEGETATED BIOFILTER(S) FOR POST CONSTRUCTION STORM WATER TREATMENT. PLACE EITHER ITEM 660 SODDING OR ITEM 659 SEEDING AND MULCHING WITH A 4-INCH LIFT OF TOPSOIL AS SHOWN IN THE PLANS TO ANY DISTURBED AREA ON THE SHOULDER AND FORESLOPE DRAINING TO A VEGETATED BIOFILTER. THE DITCH FOR EACH VEGETATED BIOFILTER SHALL BE TRAPEZOIDAL, AS SHOWN IN THE PLAN CROSS SECTIONS. PROVIDE ITEM 670 AS SPECIFIED IN THE PLANS.

**SEEDING AND MULCHING**

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, TOPSOIL, FURNISHED AND PLACED	1789 CU. YD.
659, SEEDING AND MULCHING	16117 SQ. YD.
659, REPAIR SEEDING AND MULCHING	806 SQ. YD.
659, COMMERCIAL FERTILIZER	2.18 TON
659, LIME	3.33 ACRES
659, WATER	87 M. GAL.

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

**DRAINAGE**

**ITEM 605 - AGGREGATE DRAINS**

AGGREGATE DRAINS SHALL BE PLACED AT 50 FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT 25 FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

**CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES**

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

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

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

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

**FARM DRAINS**

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 611 - CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 611 - TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY ITEM 611 - TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS. EROSION CONTROL PADS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-1.1, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE.

PAYMENT FOR THE EROSION CONTROL PADS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEMS.

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

611 6" CONDUIT, TYPE B	50 FT.
611 6" CONDUIT, TYPE E	50 FT.
611 6" CONDUIT, TYPE F	50 FT.

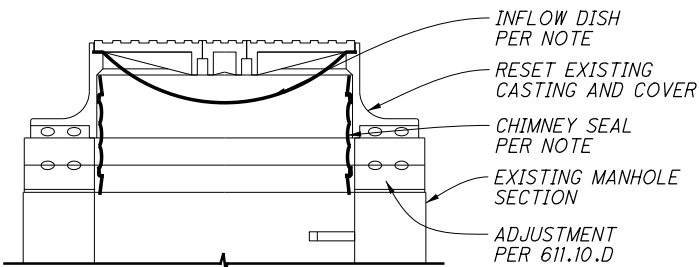
601 ROCK CHANNEL PROTECTION TYPE C WITH FILTER  
10 CU. YD.

**DRAINAGE**

**ITEM 611 - MANHOLE ADJUSTED TO GRADE, AS PER PLAN**

THIS ITEM SHALL CONSIST OF ADJUSTING SANITARY MANHOLES AND VAULTS TO GRADE PER ITEM 611 WITH THE FOLLOWING MODIFICATIONS:

ONCE ADJUSTMENT HAS BEEN COMPLETED PER ITEM 611, INSTALL CHIMNEY SEAL AND INFLOW DISH PER MANUFACTURER PROCEDURES AND RECOMMENDATIONS. ALL EQUIPMENT MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED IN THIS NOTE, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 611, MANHOLE ADJUSTED TO GRADE, AS PER PLAN.



CHIMNEY SEAL SHALL SPAN THE ENTIRE VERTICAL LENGTH OF THE ADJUSTMENT BY CONNECTING THE BOTTOM OF THE FRAME CASTING AND TOP THE MANHOLE CONE. CHIMNEY SEAL SHALL CONSIST OF A RUBBER SLEEVE AND EXPANSION BANDS TO COMPRESS THE SEAL TO THE MANHOLE.

CHIMNEY SEAL SHALL REMAIN FLEXIBLE THROUGHOUT A 50 YEAR DESIGN LIFE, ALLOWING REPEATED VERTICAL MOVEMENT OF THE FRAME OF NOT LESS THAN 2 INCHES AND/OR REPEATED HORIZONTAL MOVEMENT OF NOT LESS THAN 1/2 INCH. THE SLEEVE PORTION OF THE SEAL SHALL BE DOUBLE, TRIPLE OR QUADRUPLE PLEATED WITH A MINIMUM UNEXPANDED VERTICAL HEIGHT OF 8 INCHES, 10 INCHES OR 13 INCHES RESPECTIVELY. THE SLEEVE AND ANY EXTENSIONS SHALL HAVE A MINIMUM THICKNESS OF 3/16 INCHES AND SHALL BE MADE FROM A HIGH QUALITY RUBBER COMPOUND CONFORMING TO THE APPLICABLE MATERIAL REQUIREMENTS OF ASTM C-923, WITH A MINIMUM 1500 PSI TENSILE STRENGTH, A MAXIMUM 18% COMPRESSION SET AND A HARDNESS (DUROMETER) OF 48\*5. THE AREA OF THE SEAL OR EXTENSION THAT COMPRESSES AGAINST THE MANHOLE FRAME CASTING AND THE CHIMNEY/CONE SHALL HAVE A SERIES OF SEALING FINS TO FACILITATE A WATERTIGHT SEAL.

EXPANSION BANDS SHALL BE INTEGRALLY FORMED FROM 16 GAUGE STAINLESS STEEL CONFORMING TO THE APPLICABLE MATERIAL REQUIREMENTS OF ASTM C-923, TYPE 304, WITH NO WELDED ATTACHMENTS. THE EXPANSION BANDS SHALL HAVE A MINIMUM ADJUSTMENT RANGE OF 2-1/2 DIAMETER INCHES AND A POSITIVE LOCKING MECHANISM WHICH SECURES THE BAND IN ITS EXPANDED POSITION AFTER TIGHTENING.

INFLOW DISH SHALL BE MANUFACTURED FROM A DURABLE HIGH DENSITY POLYETHYLENE COPOLYMER MATERIAL THAT MEETS ASTM D-1248 CLASS A, CATEGORY 5, TYPE III SPECIFICATION. THIS MATERIAL SHALL HAVE SUPERIOR STRESS CRACK RESISTANCE, COMBINED WITH A HIGH IMPACT STRENGTH AND SHALL HAVE A MINIMUM IMPACT BRITTLENESS TEMPERATURE OF 105° F IN ACCORDANCE WITH ASTM D 746-70. THE DISH SHALL HAVE A TENSILE STRENGTH OF 3700 PSI AND AN ELONGATION FACTOR OF 800% MEETING ALL REQUIREMENTS OF ASTM D 638-71A. THE THICKNESS OF THE DISH SHALL BE A UNIFORM 1/8".

THE DISH SHALL HAVE TWO 3/26" HOLES INSTALLED 180° APART, APPROXIMATELY 1" FROM THE TOP OF THE INSERT, TO ALLOW FOR CONSTANT VENTILATION. THIS "NO VALVE" METHOD OF VENTILATION SHOULD NOT BE AFFECTED BY GRIT ACCUMULATION, NOR HAVE ANY MOVING PARTS SUBJECT TO CORROSION. THE VENTING SYSTEM SHALL NOT ALLOW WATER TO COMPLETELY FILL THE INSERT, WHICH DURING COLD WEATHER COULD FREEZE AND LIFT THE MANHOLE COVER.

THE INFLOW DISH SHALL HAVE A CORROSION RESISTANT NYLON STRAP INSTALLED INTO THE DISH FOR EASY REMOVAL AND RE-INSTALLATION INTO THE MANHOLE FRAME.

**PAVEMENT**

**PAVEMENT RESTORATION FOR PIPE INSTALLATIONS AND/OR REMOVALS**

THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION AND/OR REMOVAL OF PIPES.

ITEM 301 - ASPHALT CONCRETE BASE, PG64-22 21 CU. YDS.

THE ABOVE QUANTITY IS BASED ON A 301 THICKNESS OF 6 INCHES AND A PAVEMENT RESTORATION WIDTH THAT INCLUDES THE TRENCH WIDTH PLUS TWO FEET ON EACH SIDE OF THE TRENCH.

PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

**PAVEMENT RESTORATION FOR MONUMENT ASSEMBLY INSTALLATIONS**

THE FOLLOWING QUANTITY IS PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION OF ITEM 623, MONUMENT ASSEMBLIES.

ITEM 301, ASPHALT CONCRETE BASE, PG64-22 3 CU. YDS.

THE ABOVE QUANTITY IS BASED ON A 301 THICKNESS OF 6 INCHES AND A WIDTH OF TWO FEET AROUND THE PERIMETER OF THE MONUMENT ASSEMBLIES.

PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

**ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN, PG70-22M**

THE COARSE VIRGIN AGGREGATE FOR THIS ITEM SHALL CONSIST OF A BLEND OF 60% MINIMUM AIR COOLED BLAST FURNACE SLAB (ACBFS) OR TRAP ROCK FROM ONTARIO WITH LIMESTONE COMPRISING THE REMAINING PERCENTAGE.

**ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), AS PER PLAN (VARIABLE DEPTH, 6.5" MAX), PG 64-22**

THIS MATERIAL SHALL VARY IN LAYER THICKNESS AS INDICATED IN THE TYPICAL SECTIONS. INSTALL IN MULTIPLE LIFTS AS NECESSARY.

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CALCULATED SAC CHECKED BJB  
**GENERAL NOTES**  
**GEA - 608 - 3.09**  
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