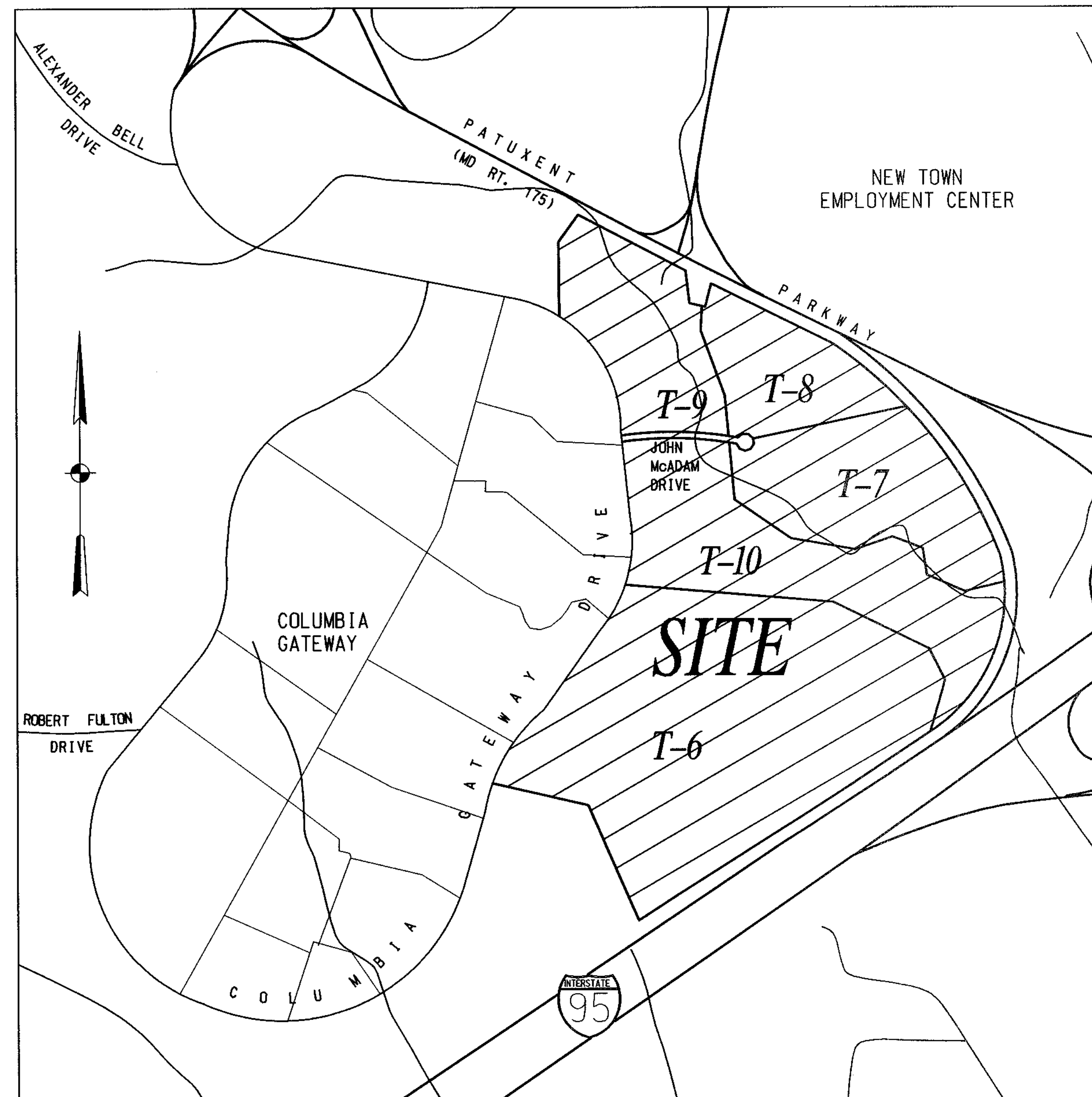
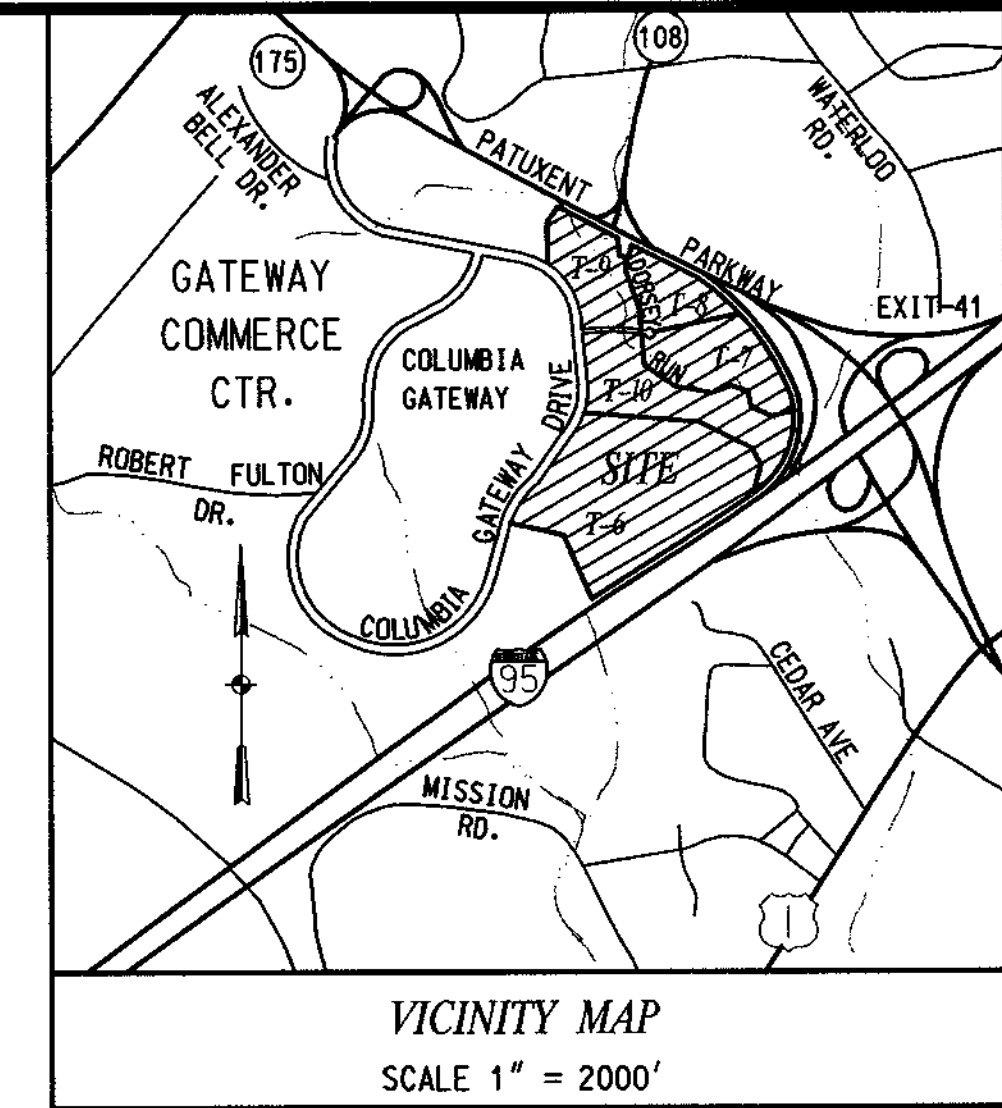


**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARD SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING, CONSTRUCTING INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 5 DAY PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, BUREAU OF UTILITIES AT (410) 313-4900 AT LEAST FIVE DAYS PRIOR TO STARTING ANY EXCAVATION WORK.
- SITE AREA : 133.3504 ACRES.
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- EXISTING TOPOGRAPHY IS SHOWN PER FIELD RUN SURVEYS BY FISHER, COLLINS AND CARTER, DATED OCTOBER 22, 1998 AND BY AERIAL TOPOGRAPHY DATED
- COORDINATES BEARINGS ARE BASED UPON THE MD. STATE PLAN SYSTEM (NAD '27)
- WATER AND SEWER SHOWN IS PUBLIC.
- ALL EXISTING WATER AND SEWER PER CONTRACTS 20-1264 AND 24-1439-D
- ALL EXISTING PUBLIC STORM DRAIN IS PER F-86-127
- USE TRENCH BEDDING CLASS "C" FOR STORM DRAINS.
- PROJECT BACKGROUND: SEE DEPT. OF PLANNING & ZONING FILE NUMBERS: VP-84-150, VP-85-34, VP-85-35, S-84-44, F-85-63, P-86-22, VP-86-61, VP-86-73, F-86-17, S-85-28, F-86-182, VP-86-119 AND WP-88-47
- RECORDING REFERENCE: PLAT BOOK PLAT NO.
- 100 YR. FLOOD PLAIN PREPARED BY WALLACE, MONTGOMERY & ASSOC. DATED OCT. 1998
- WETLANDS SHOWN WERE LOCATED BY R. PAIS AND ASSOCIATES, DATED JULY 1998
- HDE HAS ISSUED A PERMIT FOR THIS PROJECT UNDER TRACKING NUMBER 8996280.

# COLUMBIA GATEWAY

## JOHN McADAM DRIVE STATION 0+00 TO STATION 8+00



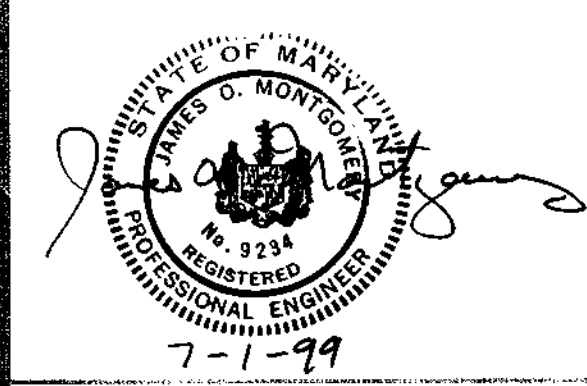
LOCATION MAP  
SCALE 1"=500'

**SHEET INDEX**

- TITLE SHEET
- PLAN & PROFILE
- MEDIAN MODIFICATIONS AND DETAILS
- TYPICAL ROADWAY SECTION AND DETAILS
- EROSION & SEDIMENT CONTROL PLAN
- EROSION & SEDIMENT CONTROL NOTES
- EROSION AND SEDIMENT CONTROL DETAILS
- STORM DRAIN PROFILES AND SCHEDULE
- GENERAL PLAN AND ELEVATION
- GEOMETRIC LAYOUT
- WING WALL DETAILS
- TYPICAL SECTION AND DETAILS
- MISCELLANEOUS DETAILS
- STREAM DIVERSION
- BORINGS AND DRIVE TESTS
- DETAILS
- DETAILS
- DETAILS

**LEGEND**

- EXISTING WATER EX. 12" W
- EXISTING STORM DRAIN =====
- EXISTING SAN. SEWER EX. 15" S
- EXISTING CONTOUR --- 270 ---
- EXISTING MEDIAN TO BE REMOVED [ ]
- PROPOSED PAVING [ ]
- PROPOSED MILLING AND RESURFACING [ ]
- TOP OF CURB ELEVATION (270)
- PROPOSED CONTOUR --- 270 ---
- SUPER SILT FENCE -SSF- - - -
- SILT FENCE -SF- - - -
- FILTER BAG [X]
- LIMIT OF DISTURBANCE --- LOD ---
- FLOW ARROWS → ←
- STREET LIGHT [Symbol]



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Daniels* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blaup* 7/27/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Chris Deussen* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**WALLACE, MONTGOMERY & ASSOCIATES**  
 CIVIL AND STRUCTURAL ENGINEERS  
 110 WEST PLAZA  
 TOWSON, MARYLAND 21284

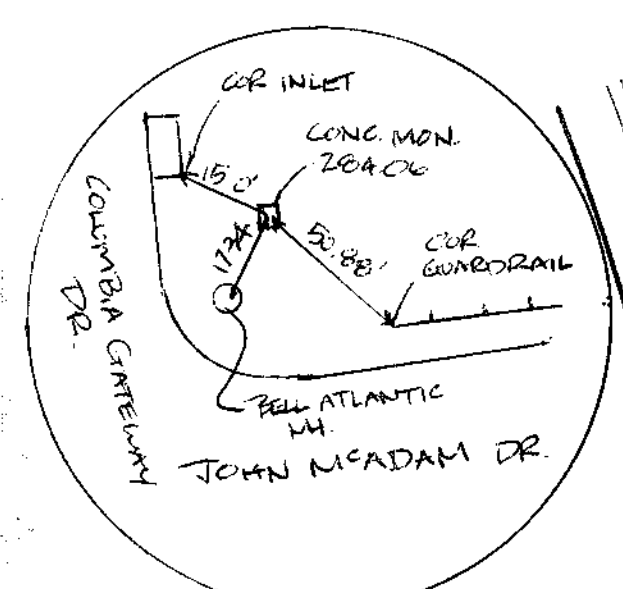
DES.	CSF	DRN.	CCF	CHK.	AAM	DATE	REVISION	BY	APP'R.

PREPARED FOR:  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
 ATTN: MR. GREG KLAR

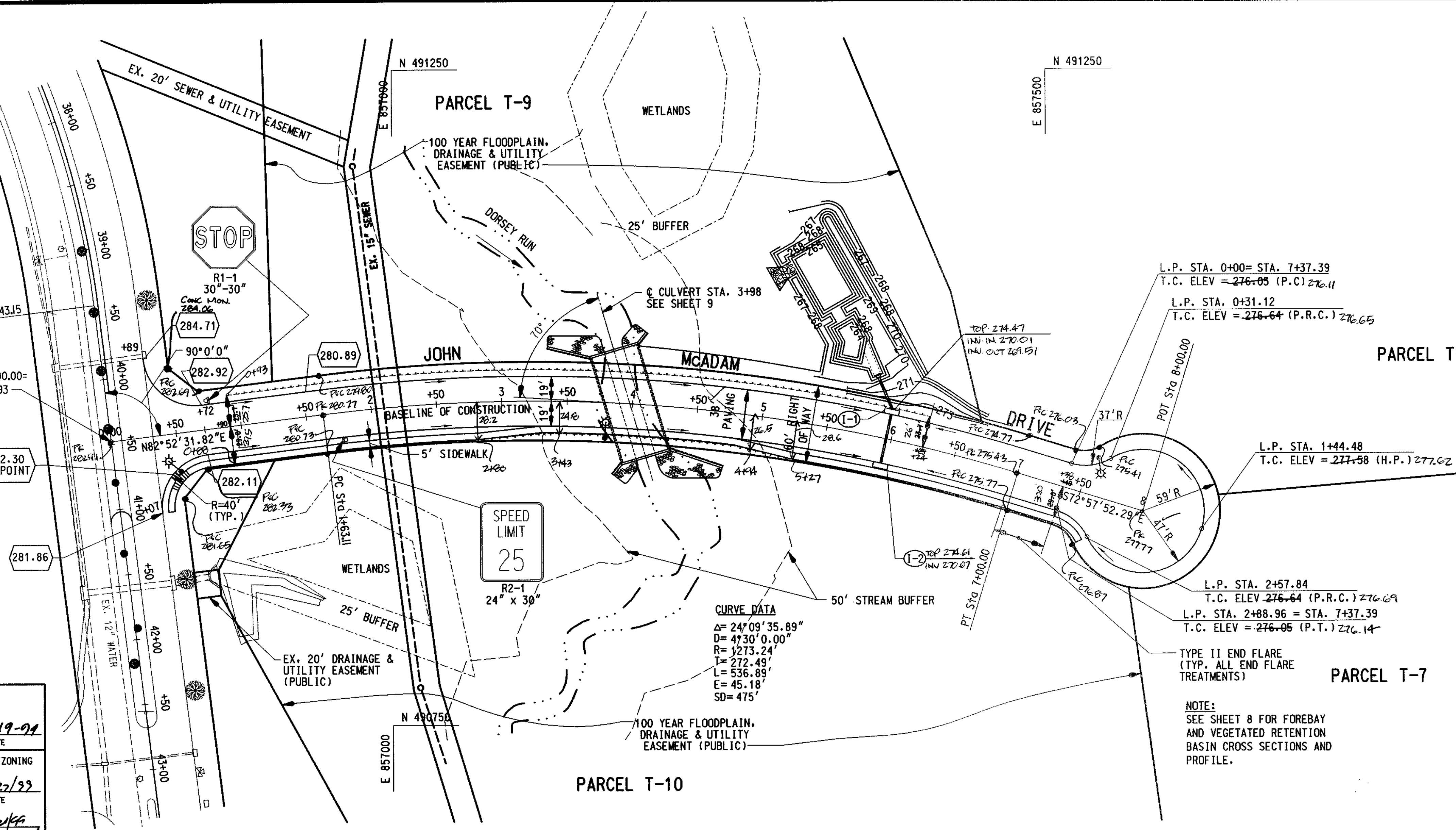
**TITLE SHEET**  
**COLUMBIA GATEWAY**  
 ELECTION DISTRICT NO. 6

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JUNE 1999		1 OF 19

F-99-91



FOR DETAILS OF INTERSECTION AND MEDIAN WORK, SEE SHEET 3 OF 16



STREET LIGHT SCHEDULE			
LOCATION	LAMP TYPE	MOUNTING	POLE TYPE
0+50 RT. 29'	250 WATT HPS VAROR	PENDANT (CUTOFF)	30' BRONZE FIBERGLASS W/ 12' ARM
3+80 RT. 27'	150 WATT HPS VAROR	PENDANT (CUTOFF)	30' BRONZE FIBERGLASS W/ 12' ARM
7+53 LT. 29'	150 WATT MERCURY VAROR	PENDANT (CUTOFF)	30' BRONZE FIBERGLASS W/ 12' ARM

NOTE: ANGLE ARM AS SHOWN ON PLANS

MAINTENANCE OF TRAFFIC REQUIREMENTS	
ACTIVITY	HOWARD COUNTY STD.
ROBERT MCADAM DR. CURBLINES	TE-12
COLUMBIA GATEWAY DR. MEDIAN DEMO	TE-13
COLUMBIA GATEWAY DR. RESURFACING	TE-12, TE-13 AS NEEDED

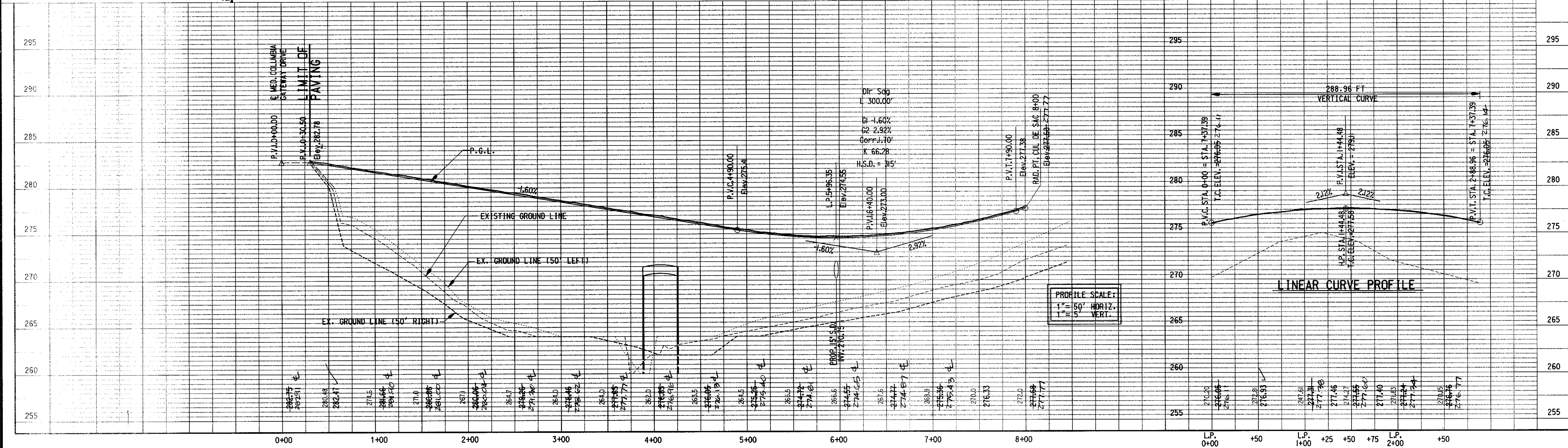
APPROVED: *[Signature]*  
 WALLACE, MONTGOMERY & ASSOCIATES  
 CIVIL AND STRUCTURAL ENGINEERS  
 110 WEST ROAD  
 TOWSON, MARYLAND 21204

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 7-19-91  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 7/27/91  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
*[Signature]* 7/14/91  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DESIGNED: C.S.F.  
 DRAWN: C.S.F.  
 CHECKED: A.A.M.  
 DATE: JUNE '99

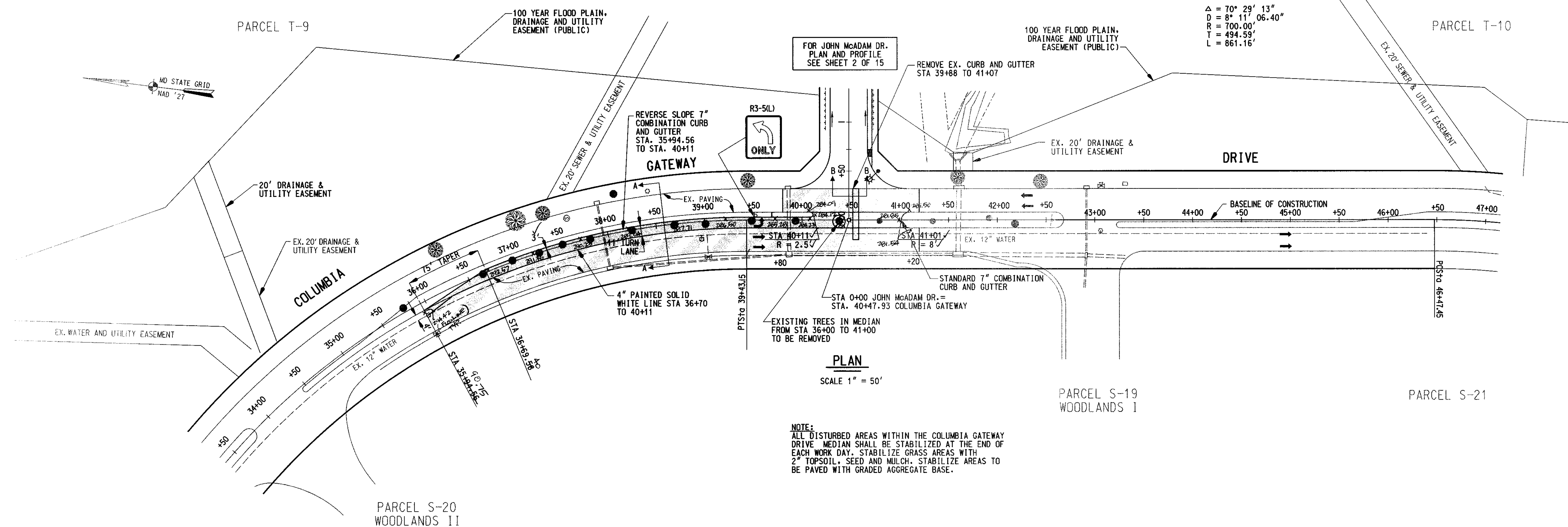
SCALE: 1" = 50'  
 SHEET 2 OF 19  
 ZONING M-1  
 JOB NO. 98010

ROAD CONSTRUCTION PLANS  
**COLUMBIA GATEWAY**  
 JOHN MCADAM DRIVE  
 STATION 0+00 TO STATION 8+00  
 GUILFORD ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND



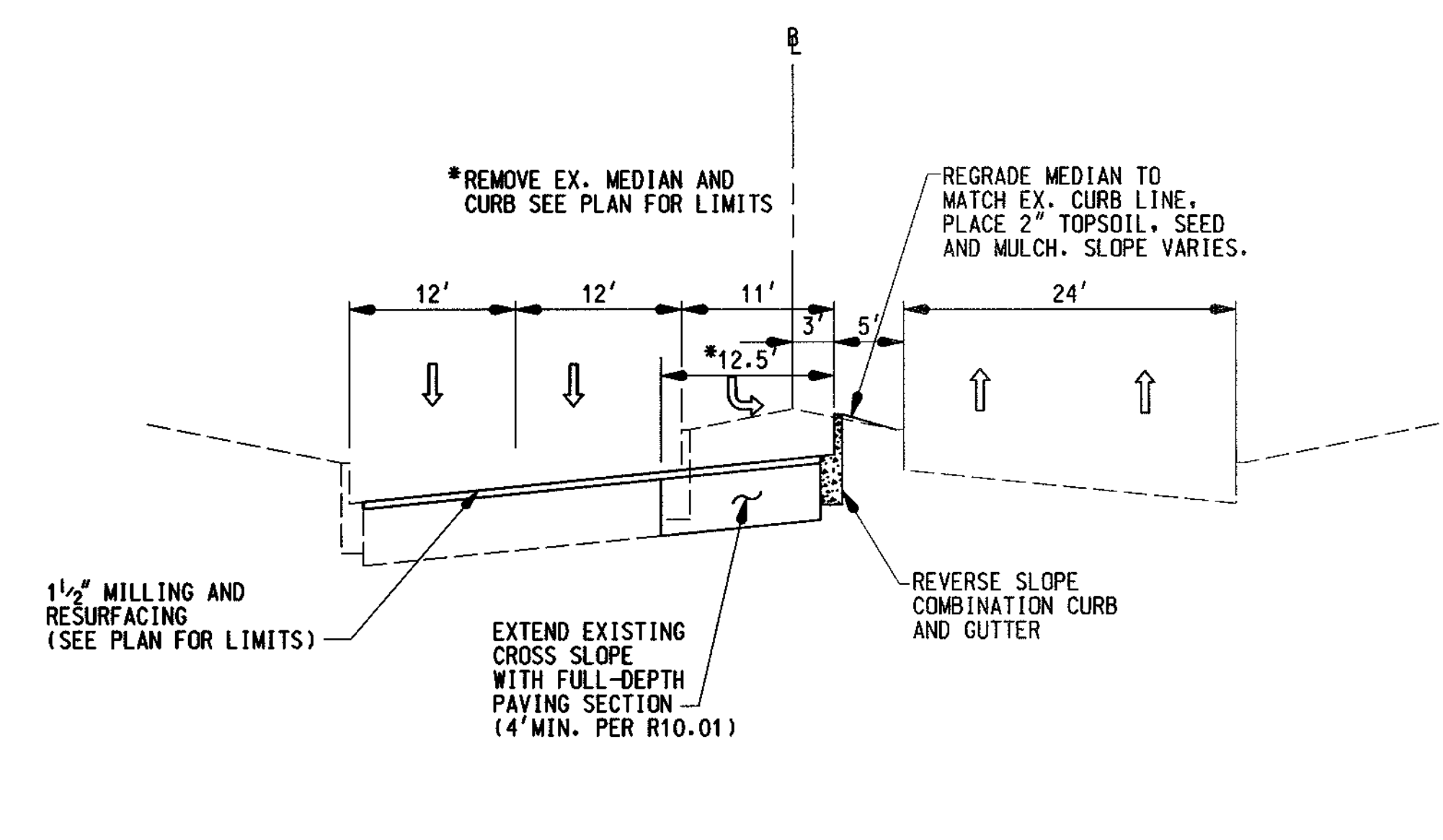
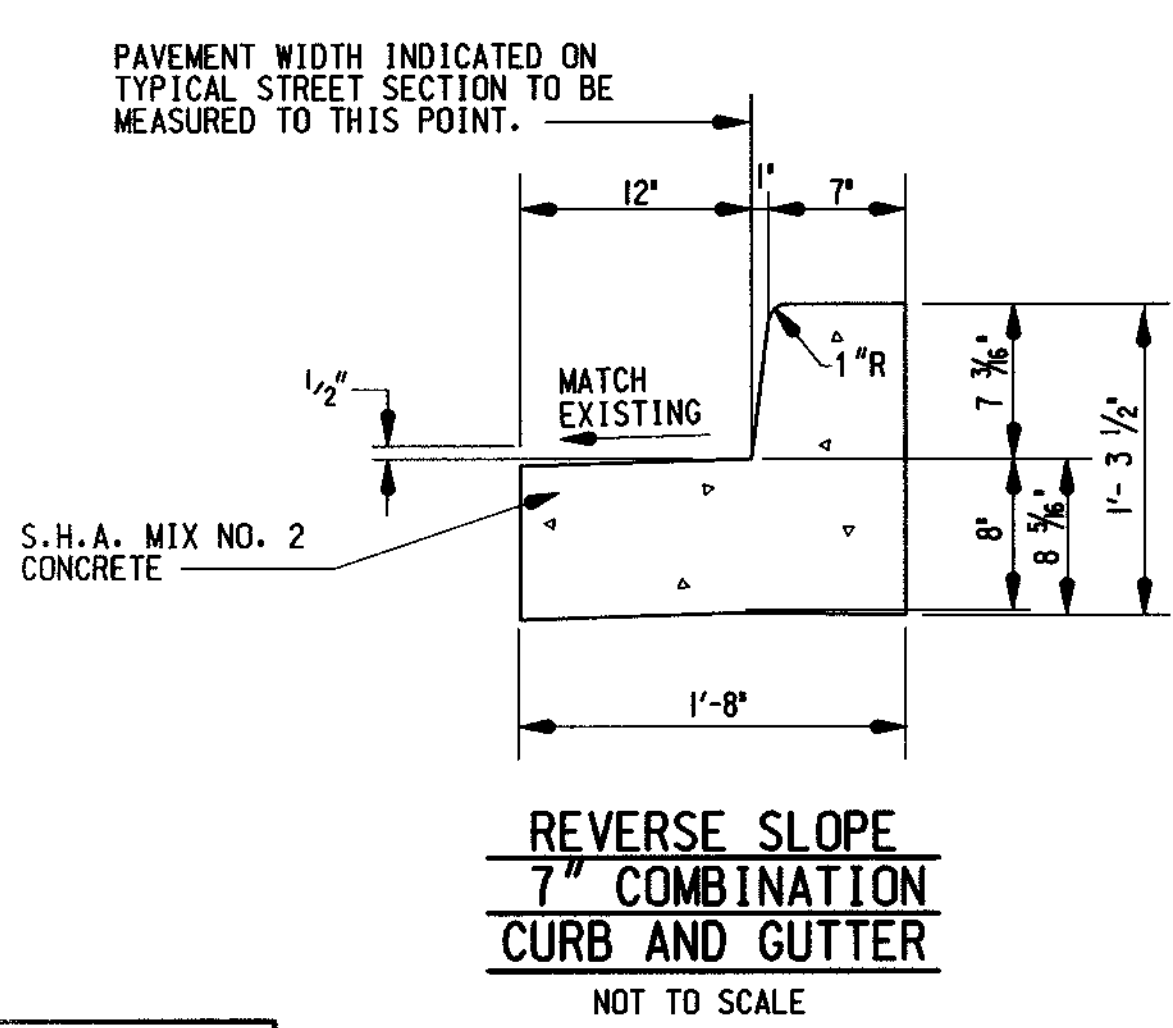
**CURVE DATA  
COLUMBIA GATEWAY DRIVE**

P.C. 30+81.99 TO P.T. 39+43.15  
 $\Delta = 70^\circ 29' 13''$   
 $D = 8^\circ 11' 06.40''$   
 $R = 700.00'$   
 $T = 494.59'$   
 $L = 861.16'$

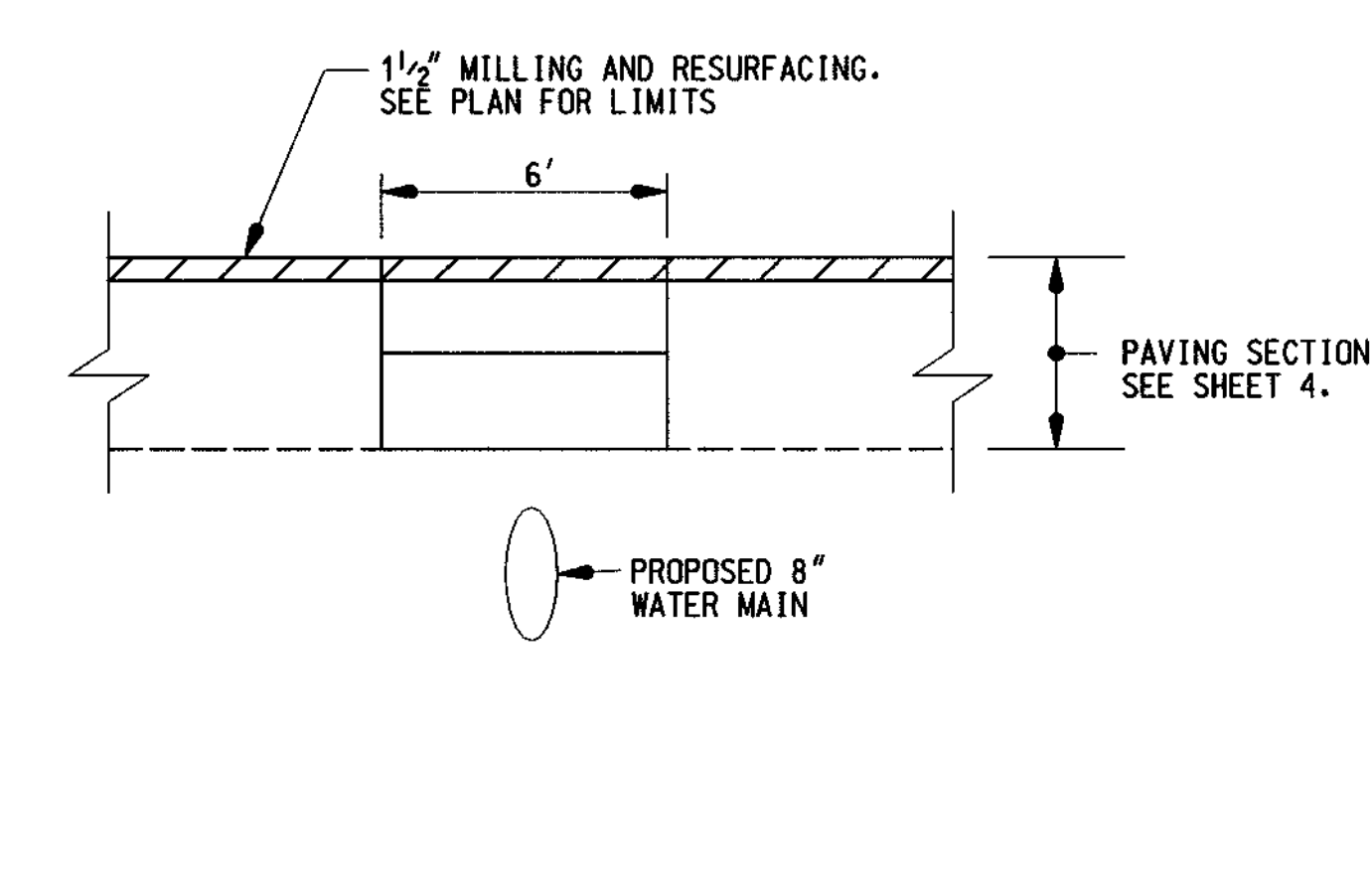


**PLAN**  
SCALE 1" = 50'

**NOTE:**  
 ALL DISTURBED AREAS WITHIN THE COLUMBIA GATEWAY DRIVE MEDIAN SHALL BE STABILIZED AT THE END OF EACH WORK DAY. STABILIZE GRASS AREAS WITH 2" TOPSOIL, SEED AND MULCH. STABILIZE AREAS TO BE PAVED WITH GRADED AGGREGATE BASE.



**SECTION A-A**  
NOT TO SCALE



**SECTION B-B**  
NOT TO SCALE

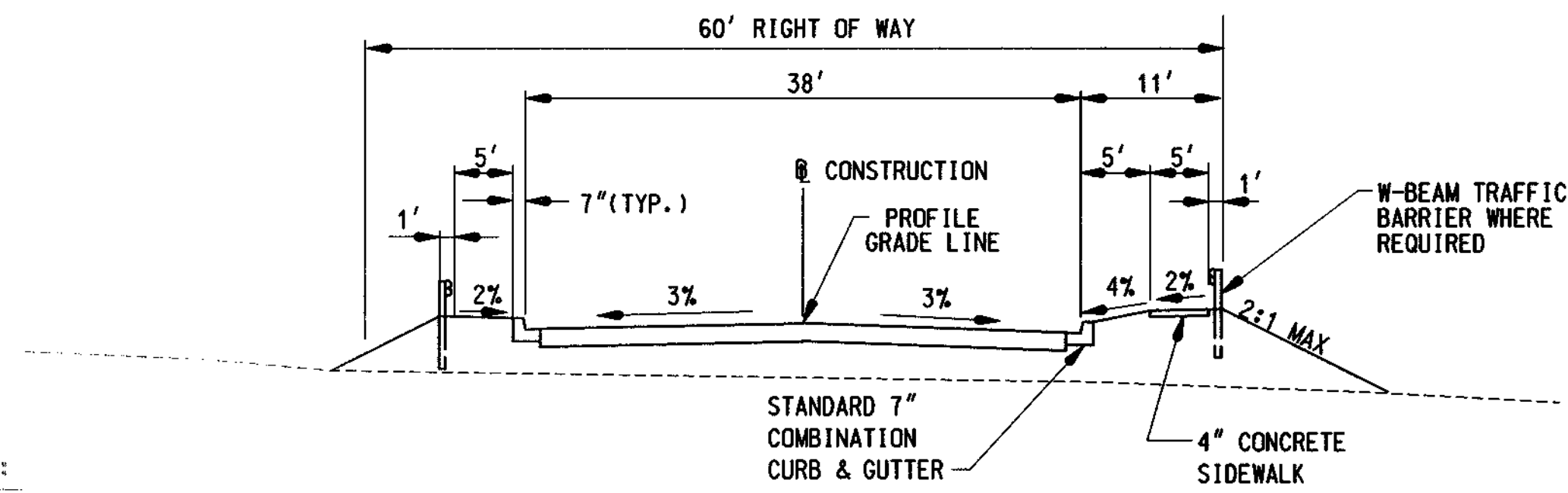
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Daniels* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blazek* 2/29/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Chris Deussen* 2/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

AS-BUILT  
*Scott Shanaberg*  
 G. SCOTT SHANABERG DATE  
 PROF. L.S. # 102849

<p>WALLACE &amp; MONTGOMERY &amp; ASSOCIATES          CIVIL AND STRUCTURAL ENGINEERS          110 WEST ROAD          TOWSON, MARYLAND 21204</p>		PREPARED FOR: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PH: 410-992-6370 ATTN: MR. GREG KLAR		<b>MEDIAN MODIFICATIONS AND DETAILS COLUMBIA GATEWAY</b>			SCALE AS SHOWN	ZONING M-1	W.M.A. FILE NO. 98010
DES. CSF	DRN. RCT	CHK. AAM	DATE	REVISION	BY	APP'R.	DATE	TAX MAP - GRID	SHEET
							JUNE 1999		3 OF 19



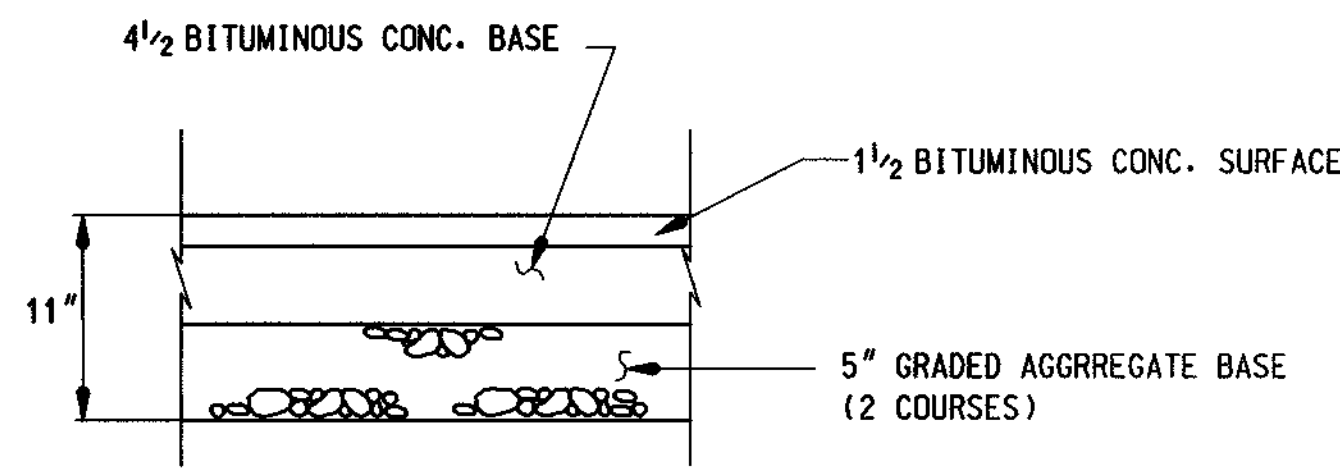
NOTES:

- ROADWAY WIDTHS VARY AT CUL-DE-SAC AND AT COLUMBIA GATEWAY DRIVE INTERSECTION AS PER PLAN.
- CROSS-SLOPES VARY AT CUL-DE-SAC AND AT COLUMBIA GATEWAY DRIVE INTERSECTION. REFER TO TOP OF CURB ELEVATIONS ON PLAN.
- SIDEWALK VARIES FROM STA. 2+80 TO STA. 3+30 AND FROM STA. 4+80 TO 5+30. FOR LIMITS OF CONCRETE SIDEWALK AND W-BEAM TRAFFIC BARRIER, SEE PLAN.

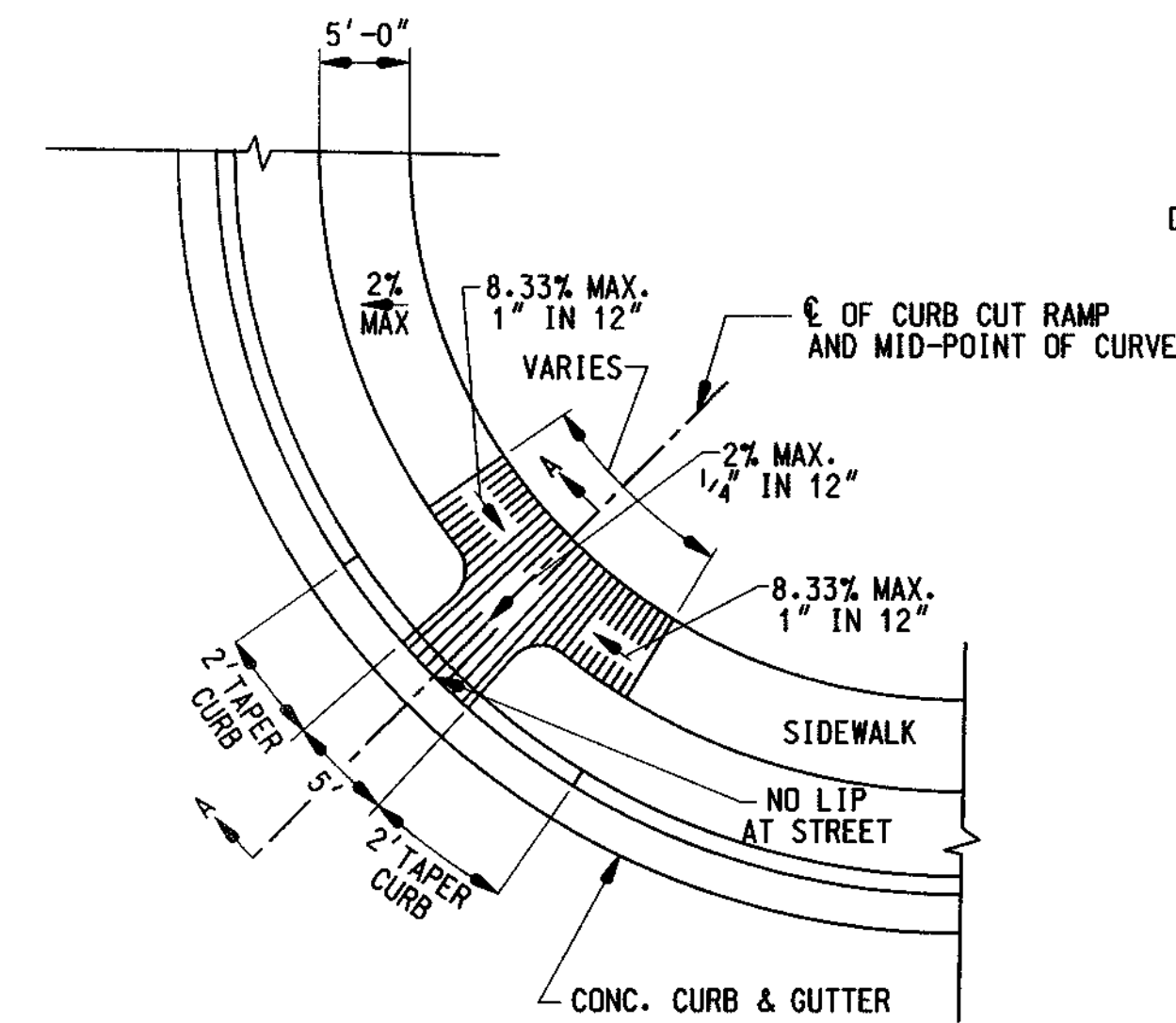
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30 M.P.H.

TYPICAL SECTION

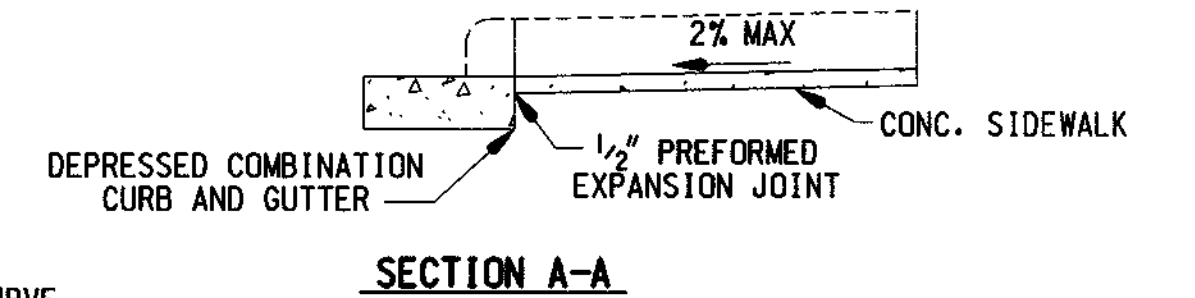
STA. 0+00 TO STA. 3+30  
STA. 4+80 TO STA. 8+00  
SCALE 1' = 10'



PAVING SECTION  
DETAIL  
NOT TO SCALE

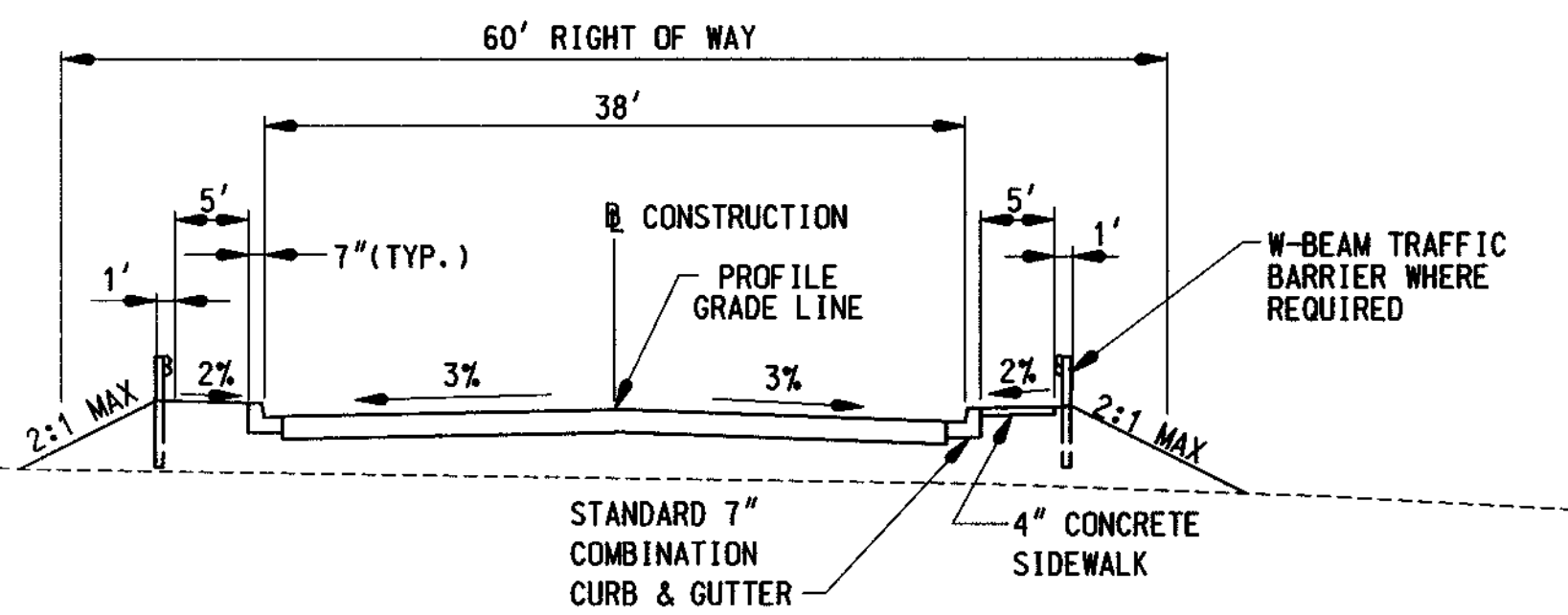


SIDEWALK RAMP  
NOT TO SCALE



NOTES:

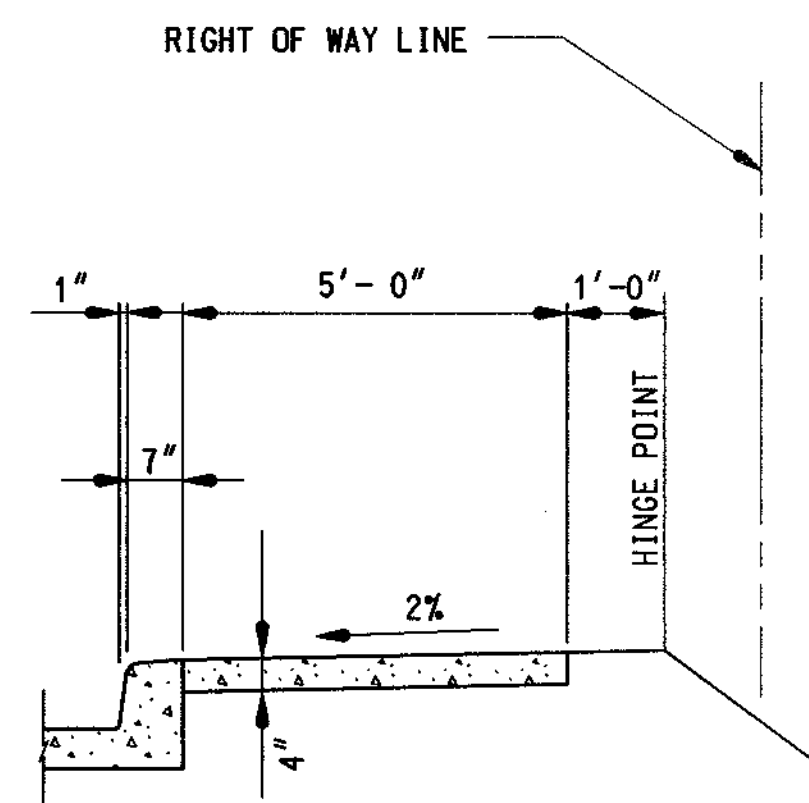
- ALL RAMP SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP.
- GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.



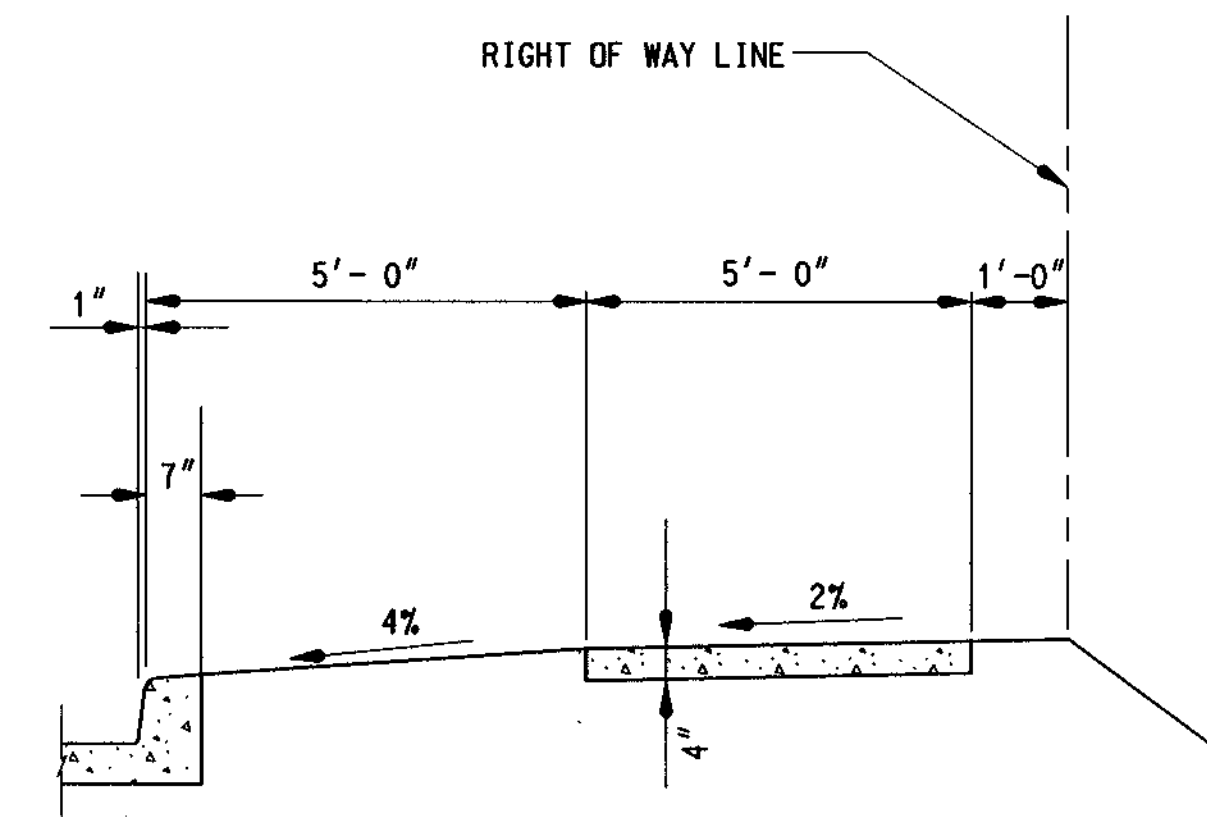
DESIGN SPEED  
30 M.P.H.

TYPICAL SECTION  
AT STRUCTURE

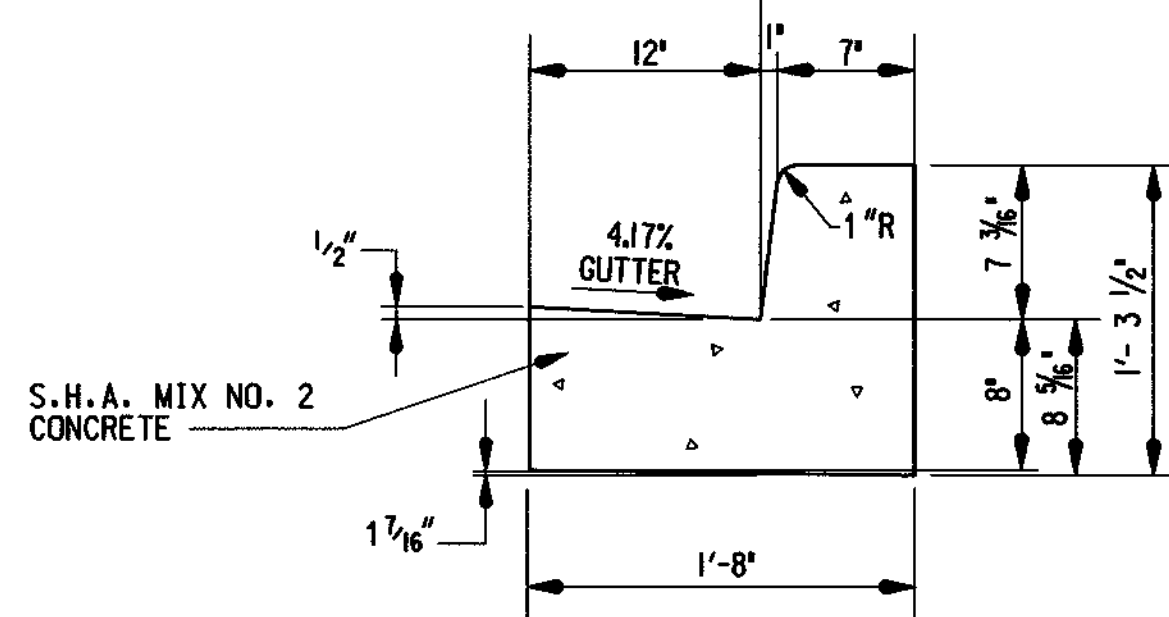
STA. 3+30 TO 4+80  
SCALE 1' = 10'



CONCRETE SIDEWALK  
NOT TO SCALE



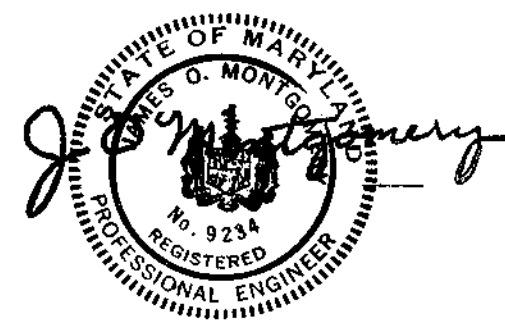
PAVEMENT WIDTH INDICATED ON TYPICAL STREET SECTION TO BE MEASURED TO THIS POINT.



STANDARD 7" COMBINATION  
CURB AND GUTTER  
NOT TO SCALE

NOTES:

- SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
- EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
- 1/2" PREFORMED BITUMINOUS EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK
- CONCRETE TO BE MIX NO. 2.
- WHEN SIDEWALK ABUTS CURB, WALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED BITUMINOUS EXPANSION MATERIAL BETWEEN SIDEWALK AND CURB.



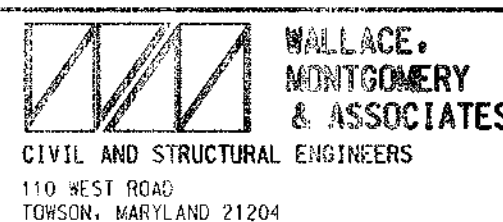
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Andrew M. Danek* 7-19-99  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Richard Blood* 7-22-99  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Chris Dawson* 7-21-99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



DES. CSF DRN. RCT CHK. AAM

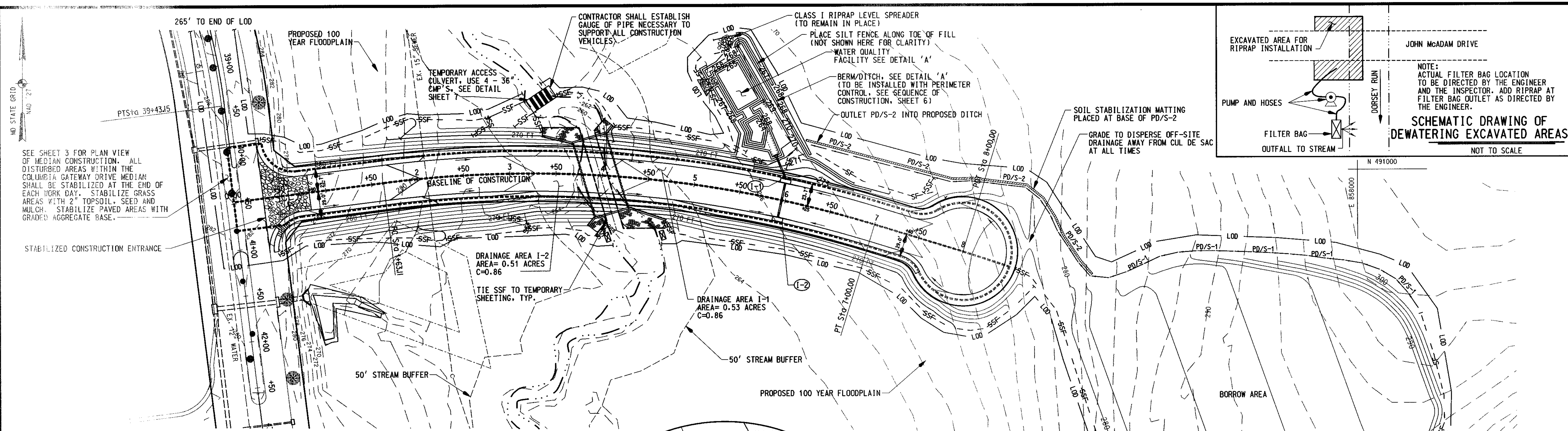
DATE	REVISION	BY	APP'R.

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

TYPICAL ROADWAY SECTION AND DETAILS  
COLUMBIA GATEWAY

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JUNE 1999		4 OF 19

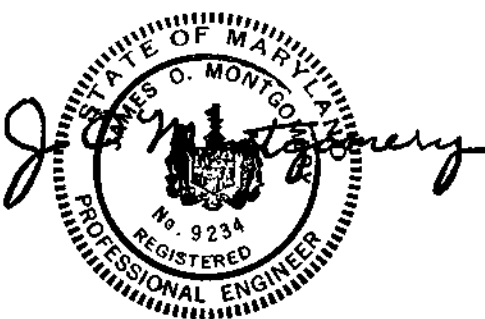
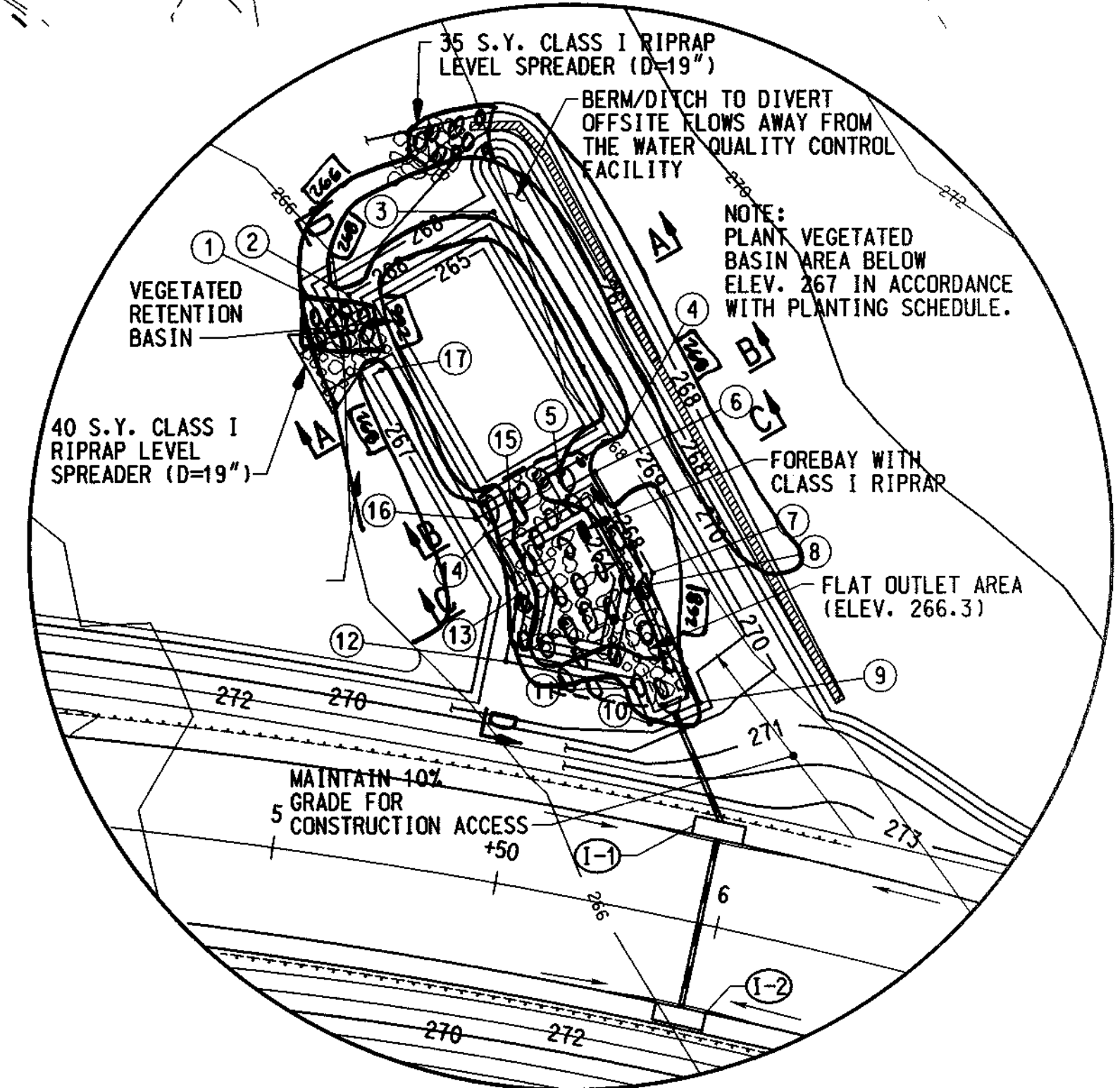
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND



- NOTES:
- SEE SHEET 9 FOR RIPRAP AND SHEETING DETAILS.
  - SEE SHEET 14 FOR STREAM DIVERSION AND SEQUENCE OF CONSTRUCTION.
  - STORM DRAIN OUTFALLS AND LEVEL SPREADER SHALL BE CONSTRUCTED IN ACCORDANCE WITH ROCK OUTLET PROTECTION III DETAIL, SHEET 7.

WATER QUALITY FACILITY PLANTING SCHEDULE					
QTY.	SCIENTIFIC NAME	COMMON NAME	SIZE	COND.	SPACING
40	PONTEDERIA CORDATA	PICKEREL WEED	2"	PEAT POT	3' O.C.
80	SAGGITARIA LATIFOLIA	DUCK POTATO	2"	PEAT POT	3' O.C.
40	SCIRPUS ATROVIRENS	GREEN BULRUSH	2"	PEAT POT	3' O.C.

FOREBAY AND BASIN CONSTRUCTION CHART		
POINT NO.	CONSTR. STA.	OFFSET
1	5+00.7	118.9' LT.
2	4+99.9	123.3' LT.
3	5+26.1	146.3' LT.
4	5+59.3	102.3' LT.
5	5+48.6	90.1' LT.
6	5+55.3	93.5' LT.
7	5+71.0	73.9' LT.
8	5+71.0	71.2' LT.
9	5+86.3	47.8' LT.
10	5+76.7	40.9' LT.
11	5+71.9	48.1' LT.
12	5+43.8	48.6' LT.
13	5+44.2	63.8' LT.
14	5+35.1	75.6' LT.
15	5+39.5	82.0' LT.
16	5+32.7	78.7' LT.
17	5+08.6	107.9' LT.



**LEGEND**

- SF- - - - SILT FENCE
- SSF- - - - SUPER SILT FENCE
- LOD - - - - LIMIT OF DISTURBANCE
- PD/S-1 - - - PERIMETER DIKE/SWALE
- - - - DRAINAGE AREA
- SOIL STAB. MATTING
- ⊠ - - - - FILTER BAG LOCATION
- - - - TEMPORARY SHEETING

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Richard M. Daniels* 7-19-99 DATE  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Richard Blood* 7/22/99 DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Chad Dammann* 7/21/99 DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

OWNER/DEVELOPER CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN AND THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

SIGNATURE(S) OF DEVELOPER/OWNER: *Gregory R. Klar* DATE: 7-2-99

PRINT NAME: Gregory R. Klar TITLE: Asst. Dir. Engg.

COMPANY: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
ADDRESS: 10275 LITTLE PATUXENT PARKWAY, COLUMBIA, MD 21044  
TELEPHONE: (410) 992-6084

ENGINEER/PROF. LAND SURVEYOR CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL MEETS THE REQUIREMENTS, STANDARDS, AND SPECIFICATIONS OF THE HOWARD SOIL CONSERVATION DISTRICT, APPROPRIATE HOWARD COUNTY ORDINANCES, AND THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR CURRENT REVISIONS THEREOF.

SIGNATURE: *James O. Montgomery* DATE: 7-1-99

JAMES O. MONTGOMERY, P.E. 9234  
REG. ENGINEER/PROF. LAND SURVEYOR REG. NO.  
(TYPED OR PRINTED)

REVIEWED FOR HOWARD S.C.D. MEETS TECHNICAL REQUIREMENTS.

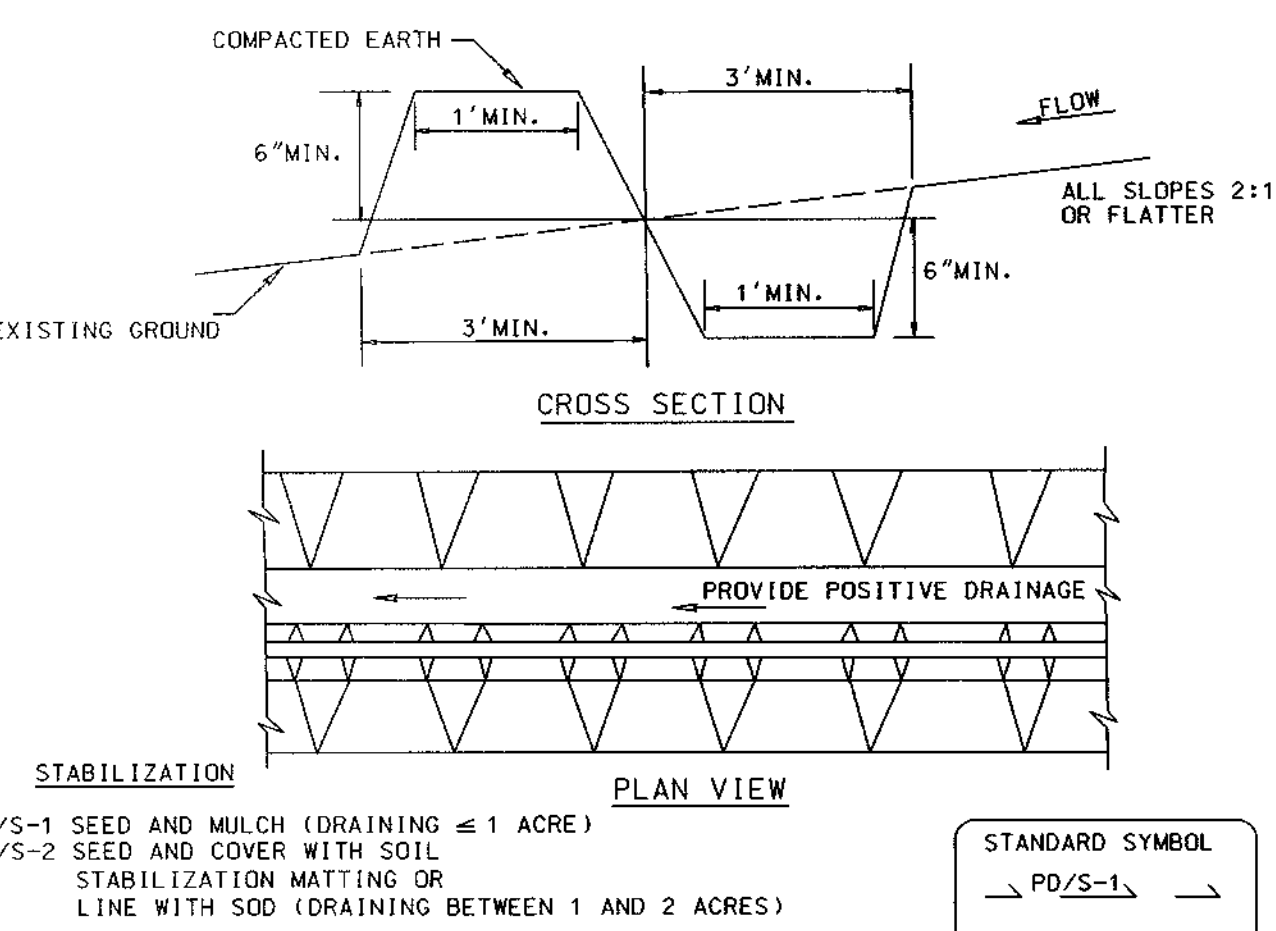
*Carol Simmons* 7/14/99 DATE  
USDA NATURAL RESOURCES CONSERVATION SERVICE

APPROVED SEDIMENT CONTROL PLAN BY HOWARD SOIL CONSERVATION DISTRICT

*Arthur Schleming* 7/14/99 DATE  
DISTRICT MANAGER

AS-BUILT

*Gregory R. Klar* DATE  
PROF. LS # 10849



- Construction Specifications
- All perimeter dikes/swales shall have an uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
  - Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
  - Runoff diverted from an undisturbed area shall outlet into an undisturbed stabilized area at a non-erosive velocity.
  - The swale shall be excavated or shaped to line, grade, and cross-section as required to meet the criteria specified in the standard.
  - Fill shall be compacted by earth moving equipment.
  - Stabilization with seed and mulch or as specified of the area disturbed by the dike and swale shall be completed within 7 days upon removal.
  - Inspection and required maintenance shall be provided after each rain event.
- Note: The maximum drainage area for this practice is 2 acres.

<p>WALLACE MONTGOMERY &amp; ASSOCIATES CIVIL AND STRUCTURAL ENGINEERS 110 WEST ROAD TOWSON, MARYLAND 21284</p>		<p>PREPARED FOR:</p> <p>THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PH: 410-992-6370 ATTN: MR. GREG KLAR</p>		<p>EROSION AND SEDIMENT CONTROL PLAN</p> <p>COLUMBIA GATEWAY</p>		<p>SCALE</p> <p>1" = 50'</p>	<p>ZONING</p> <p>M-1</p>	<p>W.M.A. FILE NO.</p> <p>98010</p>	
DES. CSF	DRN. CSF	CHK. AAM	DATE	REVISION	BY	APP'R.	DATE	TAX MAP - GRID	SHEET
							JUNE 1999		5 OF 19

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

**SEQUENCE OF CONSTRUCTION FOR  
ROADWAY AND TEMPORARY ACCESS CULVERT**

1. OBTAIN A GRADING PERMIT. THE CONTRACTOR IS ADVISED THAT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT PROHIBITS IN-STREAM WORK BETWEEN MARCH 1 AND JUNE 15.
2. NOTIFY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS SEDIMENT CONTROL INSPECTOR AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
3. CLEAR AND GRUB AS NECESSARY TO INSTALL SUPER SILT FENCE ALONG THE PROPOSED ROADWAY BETWEEN COLUMBIA GATEWAY DRIVE AND DORSEY RUN. (3 DAYS)
4. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED ACCORDING TO THE MARYLAND 1994 STANDARDS AND COUNTY REGULATIONS UNTIL THE ENTIRE SITE IS STABILIZED, INSPECTED AND FINAL APPROVAL GIVEN BY THE APPROPRIATE STATE/COUNTY DEPARTMENT.
5. INSTALL TEMPORARY ACCESS CULVERT. (2 DAYS)
6. CLEAR AND GRUB AS NECESSARY TO INSTALL SILT FENCE, SUPER SILT FENCE AND PERIMETER DIKE/SWALES BETWEEN DORSEY RUN AND THE EASTERN LIMIT OF WORK. (5 DAYS)
7. CONSTRUCT PERIMETER DIKE/SWALE (PD/S-1 & PD/S-2) TO DIVERT OFF SITE RUNOFF AWAY FROM THE CONSTRUCTION AREA. CONSTRUCT BERM/DITCH AND RIPRAP LEVEL SPREADER ALONG THE UPGRADE SIDE OF THE WATER QUALITY BASIN TO SERVE AS OUTFALL FOR THE PERIMETER DIKE/SWALE. (10 DAYS)
8. CLEAR AND GRUB ROADWAY AND BORROW AREAS (10 DAYS).
9. CONSTRUCT PRECAST CULVERT IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION FOR CULVERT CONSTRUCTION ON SHEET 14. (60 DAYS)
10. BEGIN EXCAVATION OF THE BORROW AREA AND CONSTRUCTION OF THE ROADWAY EMBANKMENT. (10 DAYS)
11. INSTALL STORM DRAIN SYSTEM, FOREBAY, VEGETATED RETENTION BASIN AND LEVEL SPREADER. IMMEDIATELY STABILIZE DISTURBED AREAS. (30 DAYS)
12. COMPLETE CONSTRUCTION OF THE ROADWAY EMBANKMENT. INSTALL CURB AND GUTTER AND PLACE SUBBASE. PERMANENTLY STABILIZE ROADWAY EMBANKMENTS, BORROW AREA AND ALL OTHER DISTURBED AREAS. (20 DAYS)
13. INSTALL BITUMINOUS CONCRETE PAVEMENT, SIDEWALK AND TRAFFIC BARRIER. (10 DAYS)
14. REMOVE TEMPORARY ACCESS CULVERT. (2 DAYS)
15. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL. ALL GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY INDICATED ON THE PLANS OR APPROVED OTHERWISE.
16. REQUEST AGENCY APPROVAL FOR THE REMOVAL OF THE EROSION AND SEDIMENT CONTROL PRACTICES/DEVICES.
17. REMOVE EROSION AND SEDIMENT CONTROL PRACTICES. STABILIZE WHERE NECESSARY. (3 DAYS)

**STANDARDS AND SPECIFICATIONS  
FOR TOPSOIL DEFINITION**

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

- A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
- B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIED OF MOISTURE AND PLANT NUTRIENTS.
- C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
- D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE RESPECTIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH THE MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

I. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY A ACRONNOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH OR OTHER MATERIALS LARGER THAN 1/2" IN DIAMETER.

II. TOPSOIL MUST BE FREE OF PLANT PARTS SUCH AS BERMUUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE OR OTHERS AS SPECIFIED.

III. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4 - 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

**EROSION AND SEDIMENT CONTROL PLAN NOTES**

1. ALL EXCAVATED AREAS SHALL BE DEWATERED PRIOR TO BACKFILL. THE CONTRACTOR SHALL PROVIDE A FILTER BAG AS NECESSARY TO DEWATER EXCAVATED AREAS.
2. ALL MEDIAN AREAS SHALL BE STABILIZED WITH TOPSOIL SEED AND MULCH IMMEDIATELY UPON COMPLETION OF FINAL GRADING.
3. APPLY PERMANENT SEEDING TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED. THIS WORK SHALL CONSIST OF SOIL PREPARATION, SEEDING, FERTILIZING, MULCHING AND MAINTENANCE IN ACCORDANCE WITH PERMANENT SEEDING NOTES ON THIS SHEET.
4. APPLY TEMPORARY SEEDING TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT TERM VEGETATIVE COVER IS NEEDED. THIS WORK SHALL CONSIST OF SOIL PREPARATION, SEEDING, FERTILIZING, MULCHING AND MAINTENANCE IN ACCORDANCE WITH TEMP. SEEDING NOTES ON THIS SHEET.
5. THE CONTRACTOR SHALL ESTABLISH STAGING AND STOCKPILE AREAS AT LOCATIONS APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. THE CONTRACTOR SHALL PROVIDE SILT FENCE ON THE DOWNGRADE SIDE OF ALL STAGING AND STOCKPILE AREAS.
6. THE CONTRACTOR SHALL NOT DISTURB ANY AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS SHOWN ON THIS PLAN.
7. SILT FENCE AND THE LIMIT OF DISTURBANCE SHALL BE CONTIGUOUS WITH THE TOE OF SLOPE AND THE TOP OF CUT, EACH IS SHOWN SEPARATELY FOR CLARITY.
8. UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE SITE AND DEPOSITED IN A SPOIL AREA APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

II. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION-SECTION I-METHODS AND MATERIALS.

V. TOPSOIL APPLICATION

I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSION, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.

III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER.

IV. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

VI. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:

I. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

a. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.

b. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.

c. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.

IV. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT A RATE OF 4LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING, MD-VA PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES, REVISED 1973.

**EROSION AND SEDIMENT CONTROL GENERAL NOTES**

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1. 8-14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:
 

TOTAL AREA OF SITE	= 133.4 ACRES
AREA DISTURBED	= 5.8 ACRES
AREA TO BE ROOFED OR PAVED	= 1.2 ACRES
AREA TO BE VEGETATIVELY STABILIZED	= 4.6 ACRES
TOTAL CUT	= 24,500 CU. YDS.
TOTAL FILL	= 24,500 CU. YDS.
OFF SITE WASTE AREA LOCATION:	AT A LOCATION DETERMINED BY THE CONTRACTOR WITH AN ACTIVE GRADING PERMIT.
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

**TEMPORARY SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION - LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS - APPLY 60 LBS PER ACRE 10-10-10 FERTILIZER (4 LBS/1000 SQ.FT.).

SEEDING - FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (32 LBS/1000 SQ.FT.). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (0.07 LBS/1000 SQ.FT.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FT OR HIGHER, USE 348 GAL PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

REFER TO THE '1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL' FOR RATE AND METHODS NOT COVERED.

**PERMANENT SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

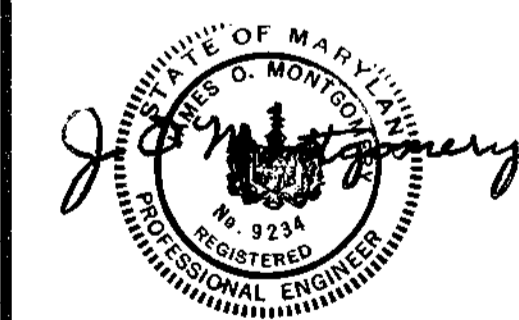
SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- 1) PREFERRED - APPLY 2 TONS PER ACRES DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (4 LBS/1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ.FT.)
- 2) ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

SEEDING - FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS PER ACRE (4 LBS/1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.05 LBS/1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, AS POSSIBLE IN THE SPRING, OPTION (2) USE SOD, OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

MAINTENANCE - INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Danks* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blazel* 7/22/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*John Damman* 7/22/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**OWNER/DEVELOPER CERTIFICATION STATEMENT:**

"HEREBY CERTIFY THAT I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN AND THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

SIGNATURE(S) OF DEVELOPER/OWNER: *Gregory R. Klar* DATE: 7-2-99  
 PRINT: NAME: *Gregory R. Klar* TITLE: *Asst. Dir. Eng.*  
 COMPANY: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 ADDRESS: 10275 LITTLE PATUXENT PARKWAY, COLUMBIA, MD 21044  
 TELEPHONE: (410) 992-6084

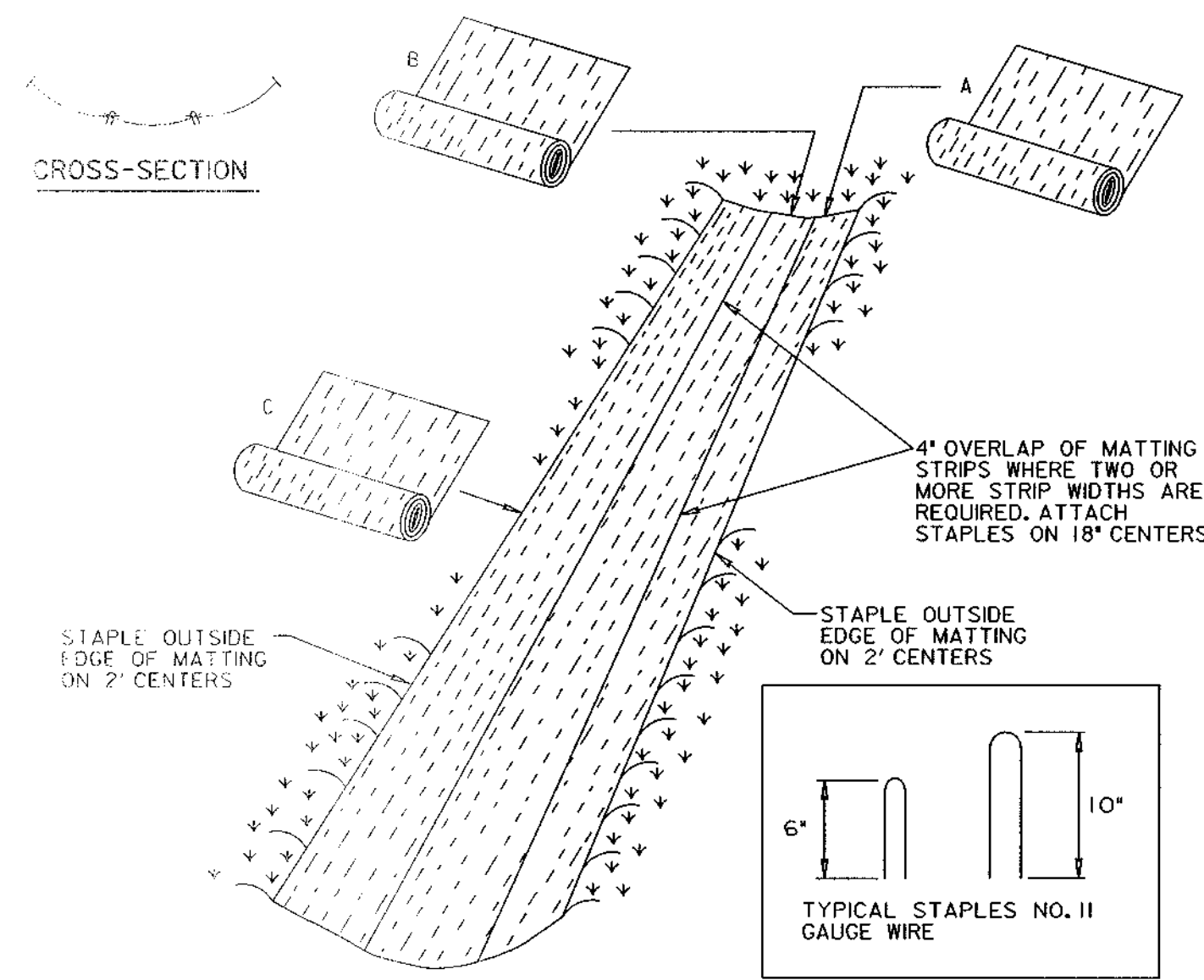
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ENGINEER/PROF. LAND SURVEYOR CERTIFICATION: *James O. Montgomery* 7-1-99  
 SIGNATURE: DATE: 7-1-99  
 JAMES O. MONTGOMERY, P.E. 9234  
 REG. ENGINEER/PROF. LAND SURVEYOR (TYPED OR PRINTED) REC. NO.

REVIEWED FOR HOWARD S.C.D. MEETS TECHNICAL REQUIREMENTS.  
*Gregory R. Klar* 7/14/99  
 USDA NATURAL RESOURCES CONSERVATION SERVICE DATE: 7/14/99

APPROVED SEDIMENT CONTROL PLAN BY HOWARD SOIL CONSERVATION DISTRICT  
*Heffley Schoning* 7/14/99  
 DISTRICT ENGINEER DATE: 7/14/99

WALLACE MONTGOMERY & ASSOCIATES CIVIL AND STRUCTURAL ENGINEERS 110 WEST ROAD TOWSON, MARYLAND 21284	DESIGN	DRN.	CSF	CHK.	JOM	DATE	REVISION	BY	APP'R.	PREPARED FOR: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PH: 410-992-6370 ATTN: MR. GREG KLAR	EROSION AND SEDIMENT CONTROL NOTES <b>COLUMBIA GATEWAY</b> ELECTION DISTRICT NO. 6	SCALE 1" = 50'	ZONING M-1	W.M.A. FILE NO. 98010
										DATE JUNE 1999	TAX MAP - GRID 6 OF 19	SHEET 6 OF 19		



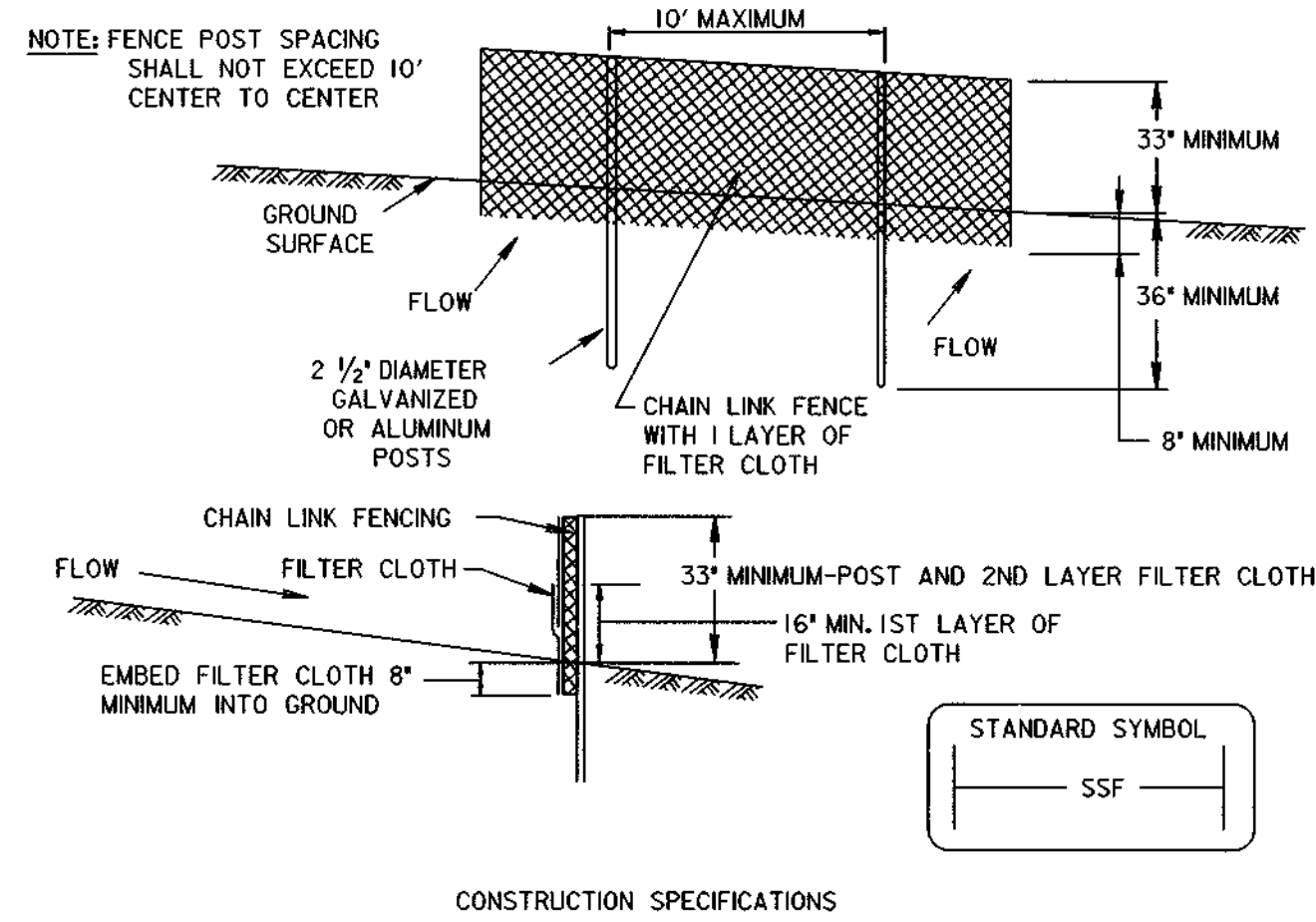
**CONSTRUCTION SPECIFICATIONS**

- KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH, BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IS 6".
- STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.
- BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
- STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
- WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIRLAP FASHION, REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6' APART IN A STAGGERED PATTERN ON EITHER SIDE.
- THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEVED-IN.

**SOIL STABILIZATION MATTING**

NOT TO SCALE



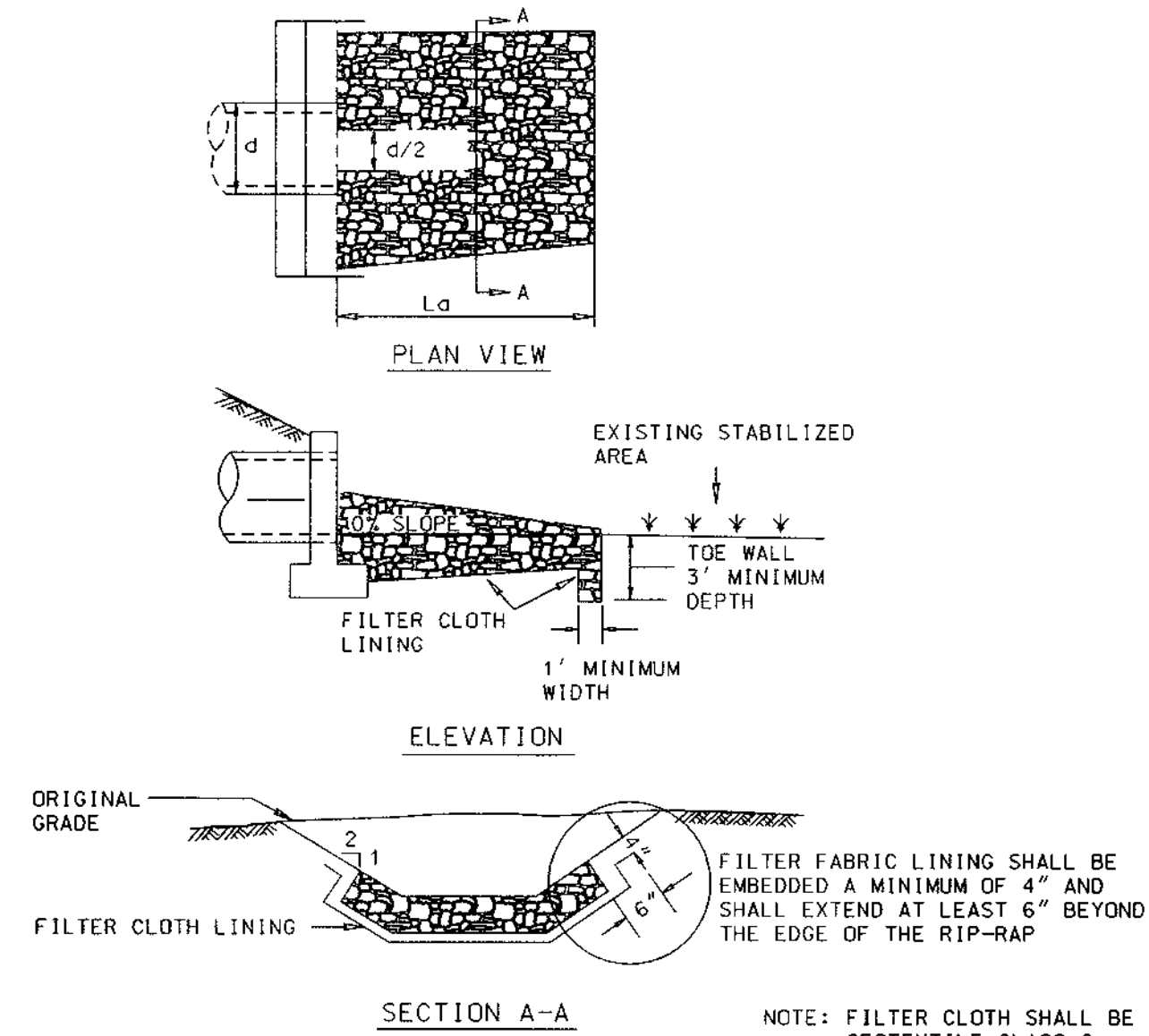
**CONSTRUCTION SPECIFICATIONS**

- FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATIONS FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.
- CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.
- FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
- FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BULGDUPS REMOVED WHEN 'BULGES' DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT.
- FILTER CLOTH SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:
 

TENSILE STRENGTH	50 lbs/in (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 lbs/in (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 gal/ft <sup>2</sup> / minute (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

**SUPER SILT FENCE**

NOT TO SCALE

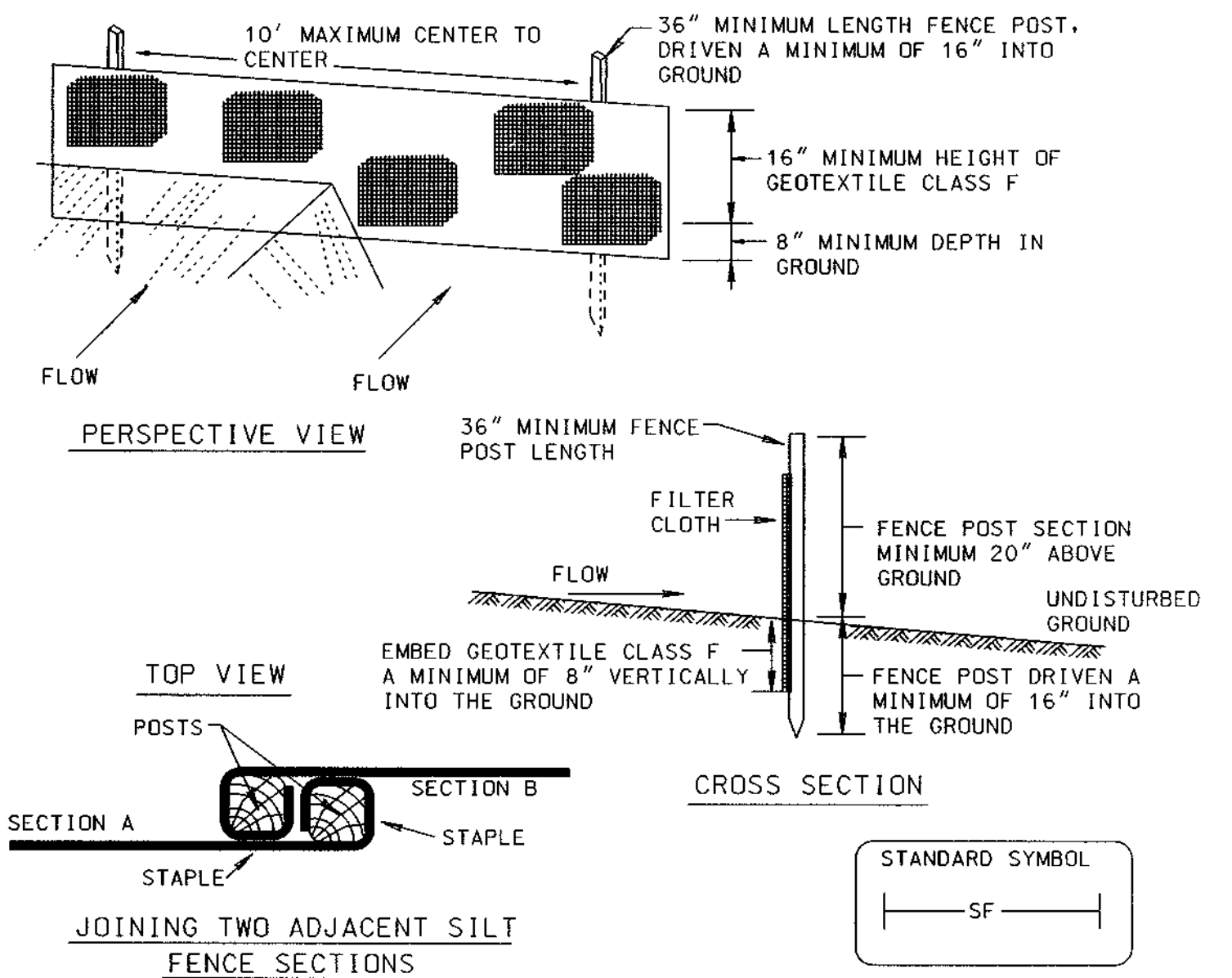


**CONSTRUCTION SPECIFICATIONS**

- THE SUBGRADE FOR THE FILTER, RIPRAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIPRAP OR FILTER.
- GEOTEXTILE SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.
- STONE FOR THE RIPRAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIPRAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIPRAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
- THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

**ROCK OUTLET PROTECTION III**

NOT TO SCALE



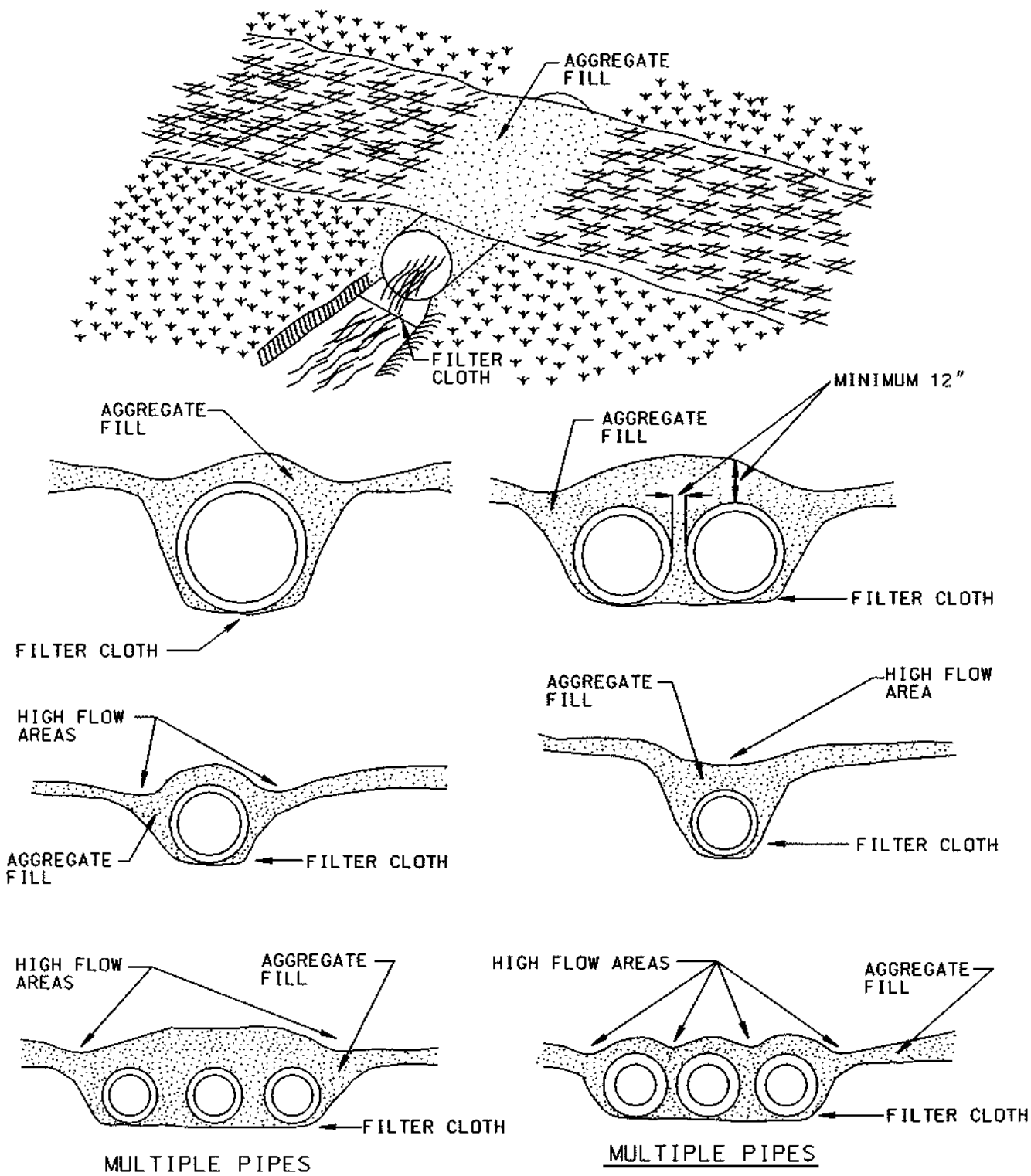
**CONSTRUCTION SPECIFICATIONS**

- FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1 1/2" X 1 1/2" SQUARE (MINIMUM CUT, OR 1 3/4" DIAMETER (MINIMUM ROUND) AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
- GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:
 

TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL FT <sup>2</sup> / MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322
- WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.
- SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.

**SILT FENCE**

NOT TO SCALE

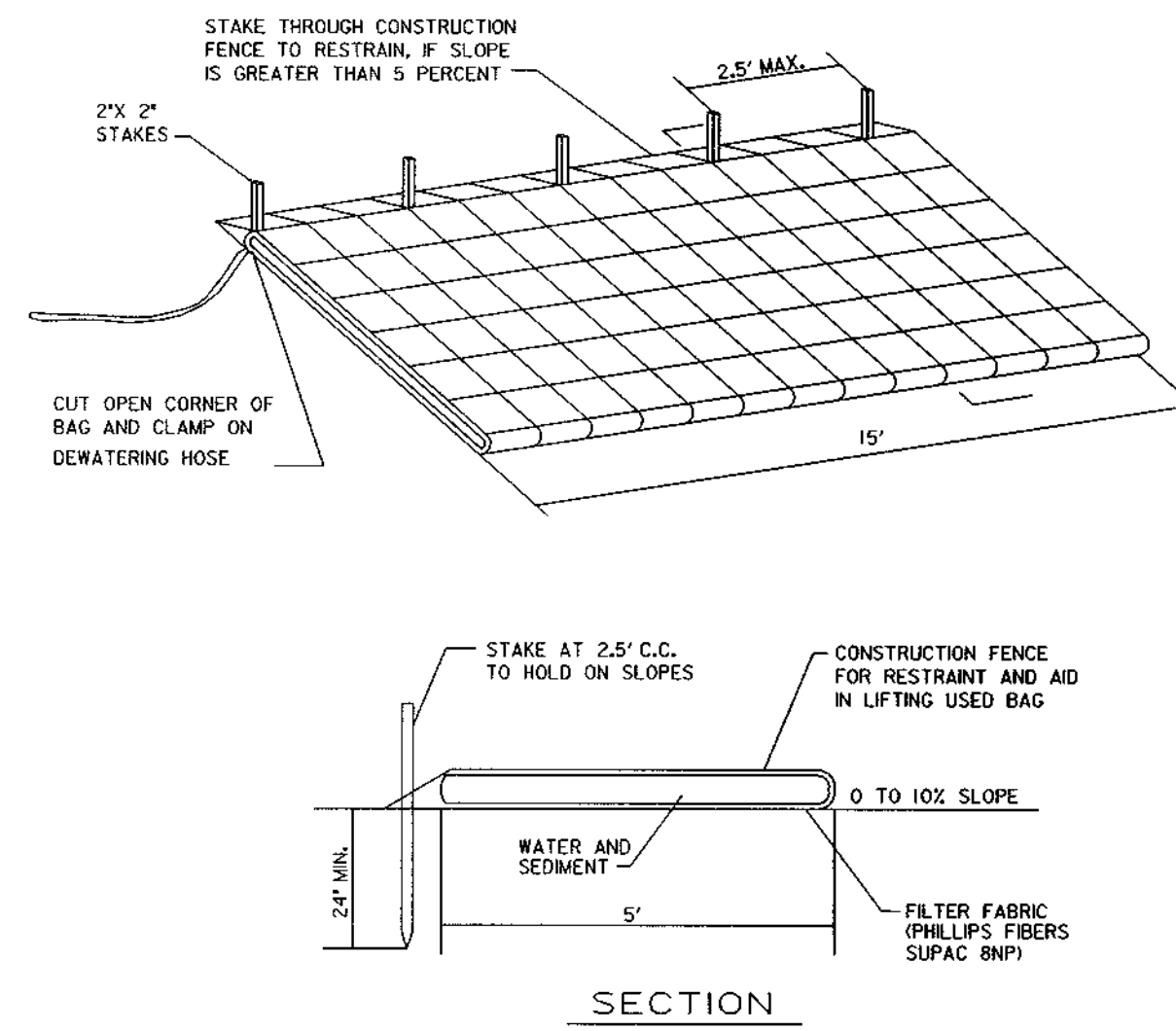


**Construction Specifications**

- Restrictions - No Construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 through June 15 for non-trout waterways.
- Culvert Strength - All culverts shall be strong enough to support their cross sectional area under maximum expected loads.
- Culvert Size - The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. The minimum size culvert that may be used is a 12" diameter pipe. In all cases, the pipe(s) shall be large enough to convey normal stream flows.
- Culvert Length - The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe to the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.
- Filter Cloth - Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces settlement and improves crossing stability.
- Culvert Placement - The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).
- Culvert Protection - The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used they shall be separated by at least 12" of compacted aggregate fill.
- Stabilization - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."

**TEMPORARY ACCESS CULVERT**

NOT TO SCALE

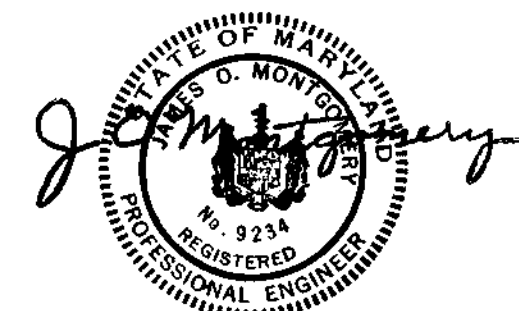


**NOTES:**

- FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
- WIDTH AND LENGTH SHALL BE AS SHOWN IN THE TABLE.
- THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
- FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
- DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.

**FILTER BAG**

NOT TO SCALE



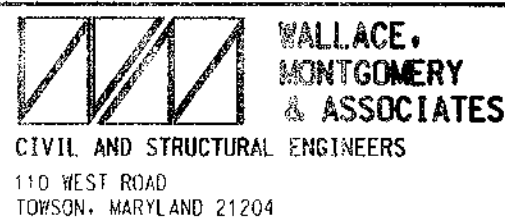
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Andrew M. Daniels* 7-19-99  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Richard Blood* 7/22/99  
CHIEF, DIVISION OF LAND DEVELOPMENT

*John P. ...* 7/21/99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



DES. G.M.	DRN. CSF	CHK. JOM	DATE	REVISION	BY	APP'R.

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

**EROSION AND SEDIMENT CONTROL DETAILS**  
**COLUMBIA GATEWAY**

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SCALE	ZONING	W.M.A. FILE NO.
NOT TO SCALE	M-1	98010
DATE	TAX MAP - GRID	SHEET
JUNE 1999		7 OF 19

**OWNER/DEVELOPER CERTIFICATION STATEMENT:**

"HEREBY CERTIFY THAT I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN AND THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT."

SIGNATURE OF DEVELOPER/OWNER: *Gregory R. Klar* DATE: 7-2-99  
PRINT NAME: Gregory R. Klar TITLE: Asst. Dir. of Engg.  
COMPANY: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
ADDRESS: 10275 LITTLE PATUXENT PARKWAY, COLUMBIA, MD 21044  
TELEPHONE: (410) 992-6084

**ENGINEER/PROF. LAND SURVEYOR CERTIFICATION**

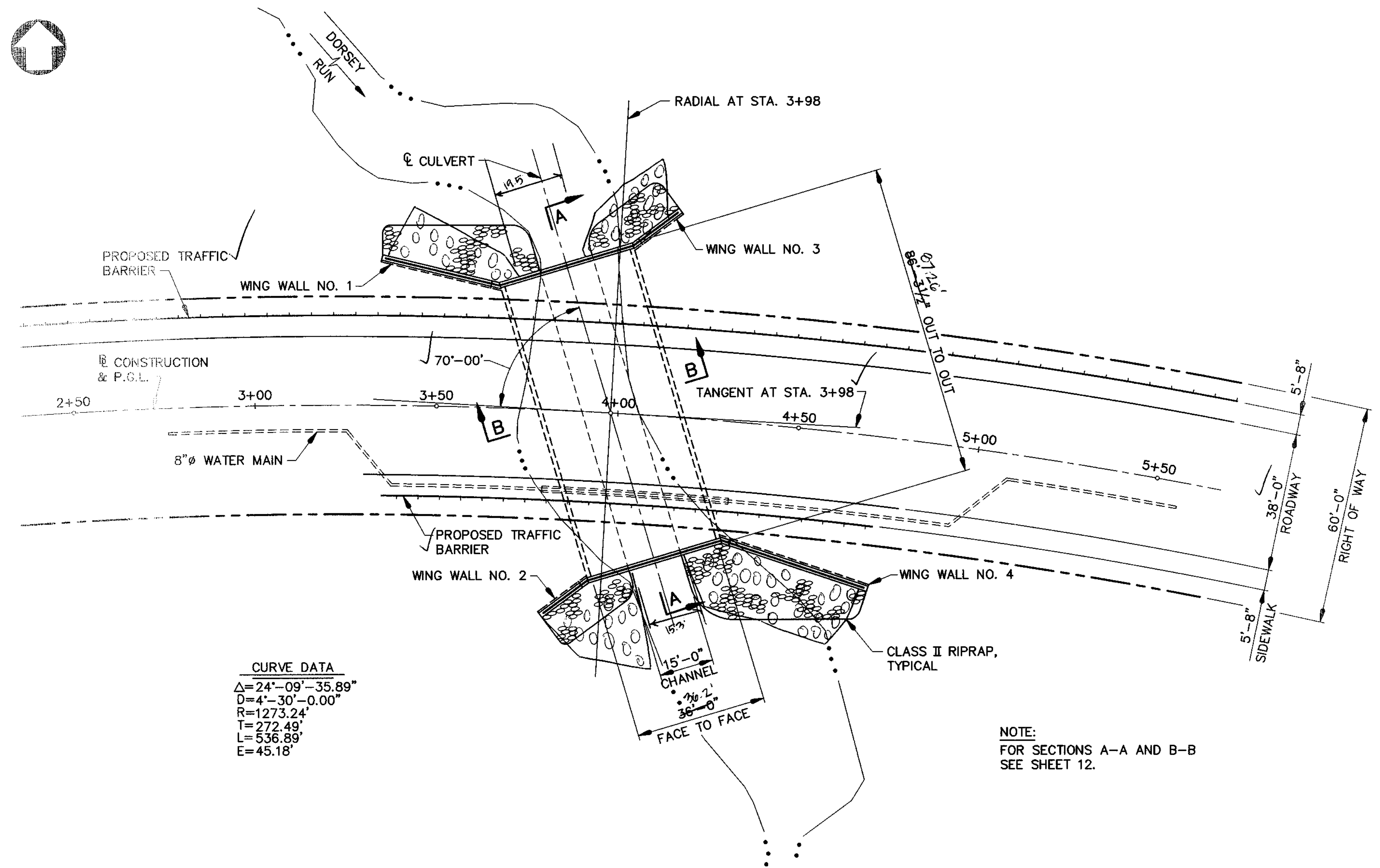
"HEREBY CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL MEETS THE REQUIREMENTS, STANDARDS, AND SPECIFICATIONS OF THE HOWARD SOIL CONSERVATION DISTRICT, APPROPRIATE HOWARD COUNTY ORDINANCES, AND THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR CURRENT REVISIONS THEREOF."

SIGNATURE: *James O. Montgomery* DATE: 7-1-99  
JAMES O. MONTGOMERY, P.E. 9234 REG. NO.  
REG. ENGINEER/PROF. LAND SURVEYOR (TYPED OR PRINTED)

REVIEWED FOR HOWARD S.C.D. MEETS TECHNICAL REQUIREMENTS.  
*Gregory R. Klar* 7/14/99 DATE  
USDA NATURAL RESOURCE CONSERVATION SERVICE  
APPROVED SEDIMENT CONTROL PLAN BY HOWARD SOIL CONSERVATION DISTRICT  
*Gregory R. Klar* 7/14/99 DATE



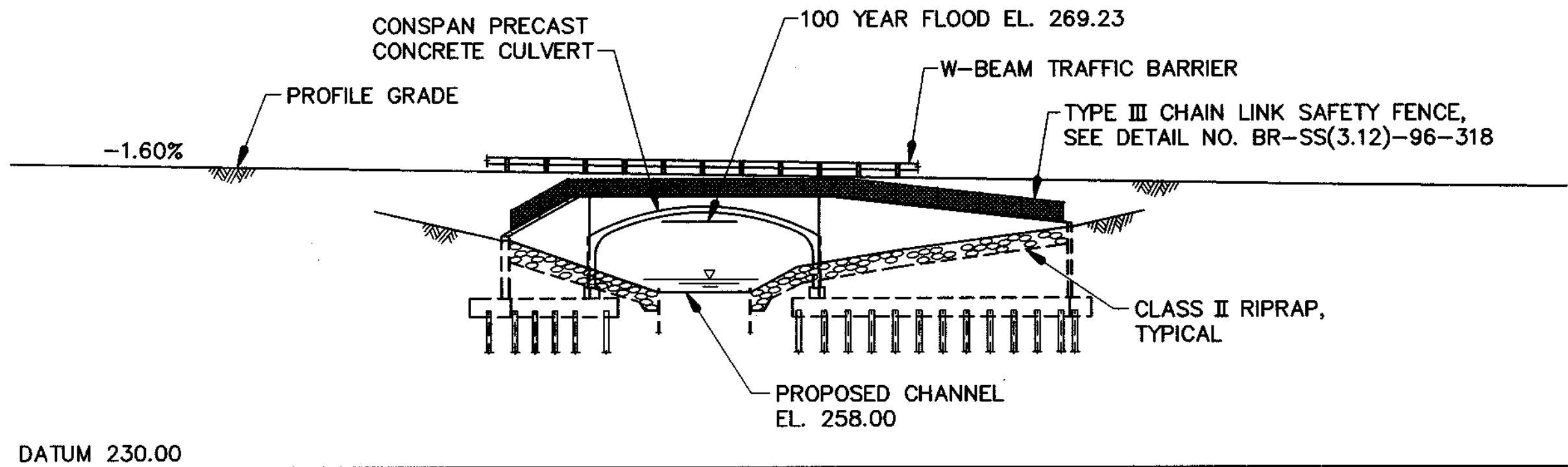




**CURVE DATA**  
 $\Delta = 24^\circ - 09' - 35.89''$   
 $D = 4' - 30' - 0.00''$   
 $R = 1273.24'$   
 $T = 272.49'$   
 $L = 536.89'$   
 $E = 45.18'$

**P L A N**  
 SCALE: 1"=20'

NOTE:  
 FOR SECTIONS A-A AND B-B  
 SEE SHEET 12.



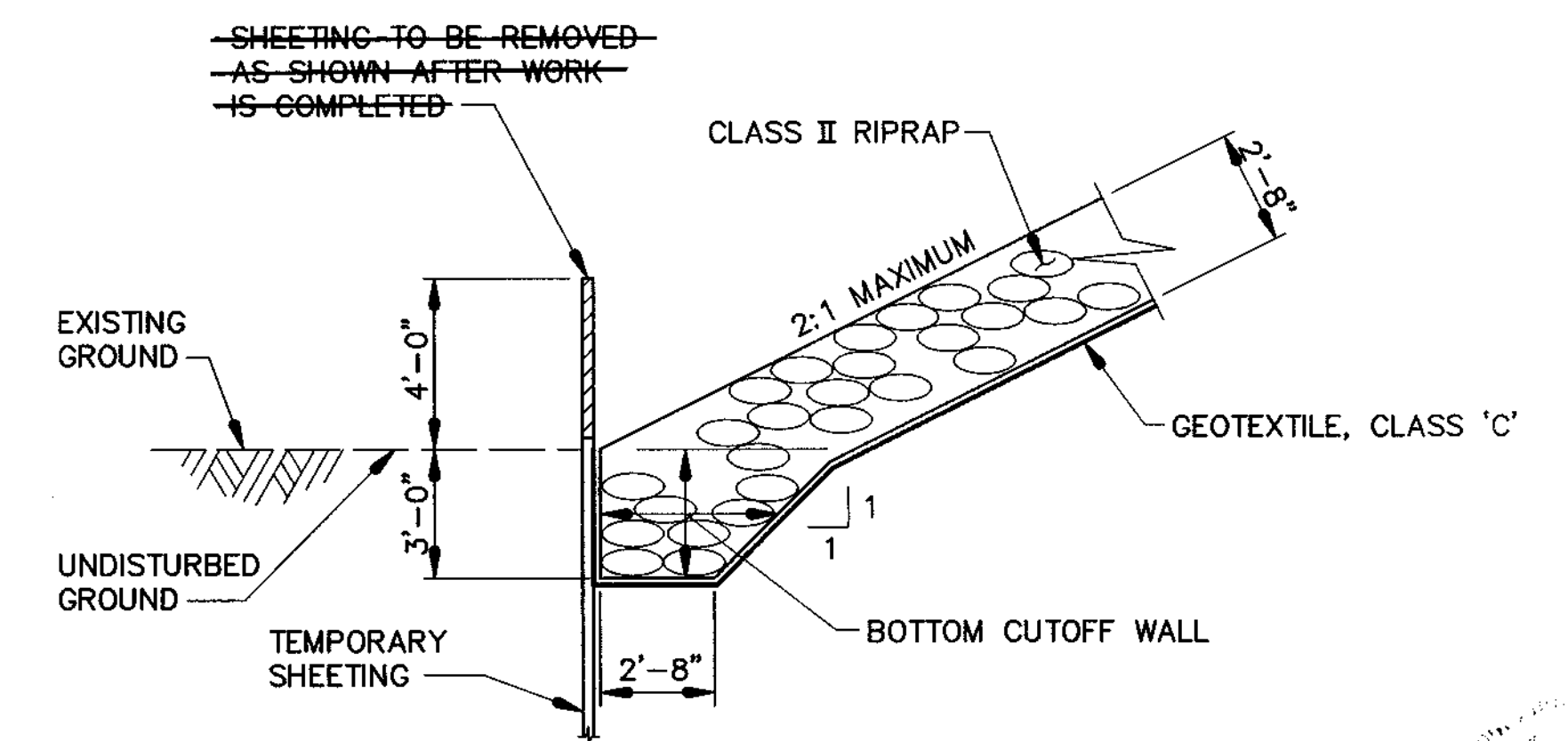
**E L E V A T I O N**  
 SCALE: 1"=20'

NOTE:  
 APPROXIMATE NORMAL WATER  
 EL. 260.29 AS OBSERVED ON  
 AUGUST 13, 1998.

**GENERAL NOTES:**

- SPECIFICATIONS:**
- HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
  - REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
  - AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1996 FOR DESIGN INCLUDING ALL INTERIM SPECIFICATIONS THROUGH 1997.
  - CONCRETE DESIGN: SERVICE LOAD DESIGN METHOD  $f_c = 1200$  PSI
  - REINFORCING STEEL DESIGN:  $f_s = 24,000$  P.S.I.
- LOADING:** HS25
- CONCRETE:** ALL CONCRETE FOR PRECAST CONCRETE CULVERT UNITS SHALL BE MIX NO. 6 (4,500 PSI). CONCRETE FOR WING WALLS, ALL OTHER STRUCTURE CONCRETE SHALL BE MIX NO. 3 (3,500 P.S.I.).
- REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60. ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS WHICH SHALL HAVE 3" MINIMUM COVER.
- FOR TIES AND STIRRUPS; STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCES.  
 ONLY GRADE 60 CAN BE USED FOR THIS PROJECT.
- KEYS:** ALL KEYS ARE NOMINAL SIZE.
- EROSION AND SEDIMENT CONTROL:** FOR EROSION AND SEDIMENT CONTROL MEASURES, REFER TO THE EROSION AND SEDIMENT CONTROL PLAN. EROSION AND SEDIMENT CONTROL MEASURES IN THE VICINITY OF THE CULVERT SHALL BE INSTALLED BEFORE ANY DISTURBANCE TO THE GROUND. CARE SHALL BE TAKEN BY THE CONTRACTOR TO ENSURE THAT NO CONSTRUCTION DEBRIS FALLS INTO THE CHANNEL AND THAT THE STREAM CHANNEL IS NOT DISTURBED IN ANY WAY.
- STEEL BEARING PILES:** STEEL BEARING PILES AND STEEL BEARING PILE SPLICE MATERIAL SHALL CONFORM TO A 36.

UPON COMPLETION OF WORK THE CONTRACTOR HAS THE OPTION OF REMOVING THE TEMPORARY SHEETING OR CUTTING THE SHEETING OFF AT THE STREAM BOTTOM  
 8-11-99



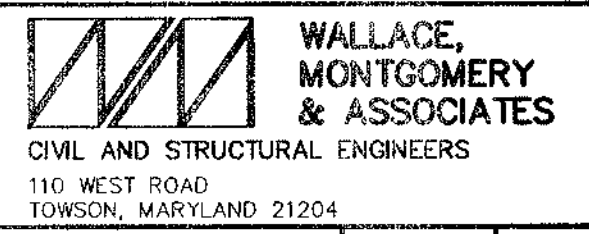
**RIPRAP AND SHEETING DETAIL**  
 NOT TO SCALE

AS BUILT  
 G. SCOTT SHAW ROADWORK DATE  
 PROJ. LB. # 10849

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Daniels* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Beard* 7/27/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*John Dammann* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



REVISION	DATE	BY	APP'R.
8-11-99			

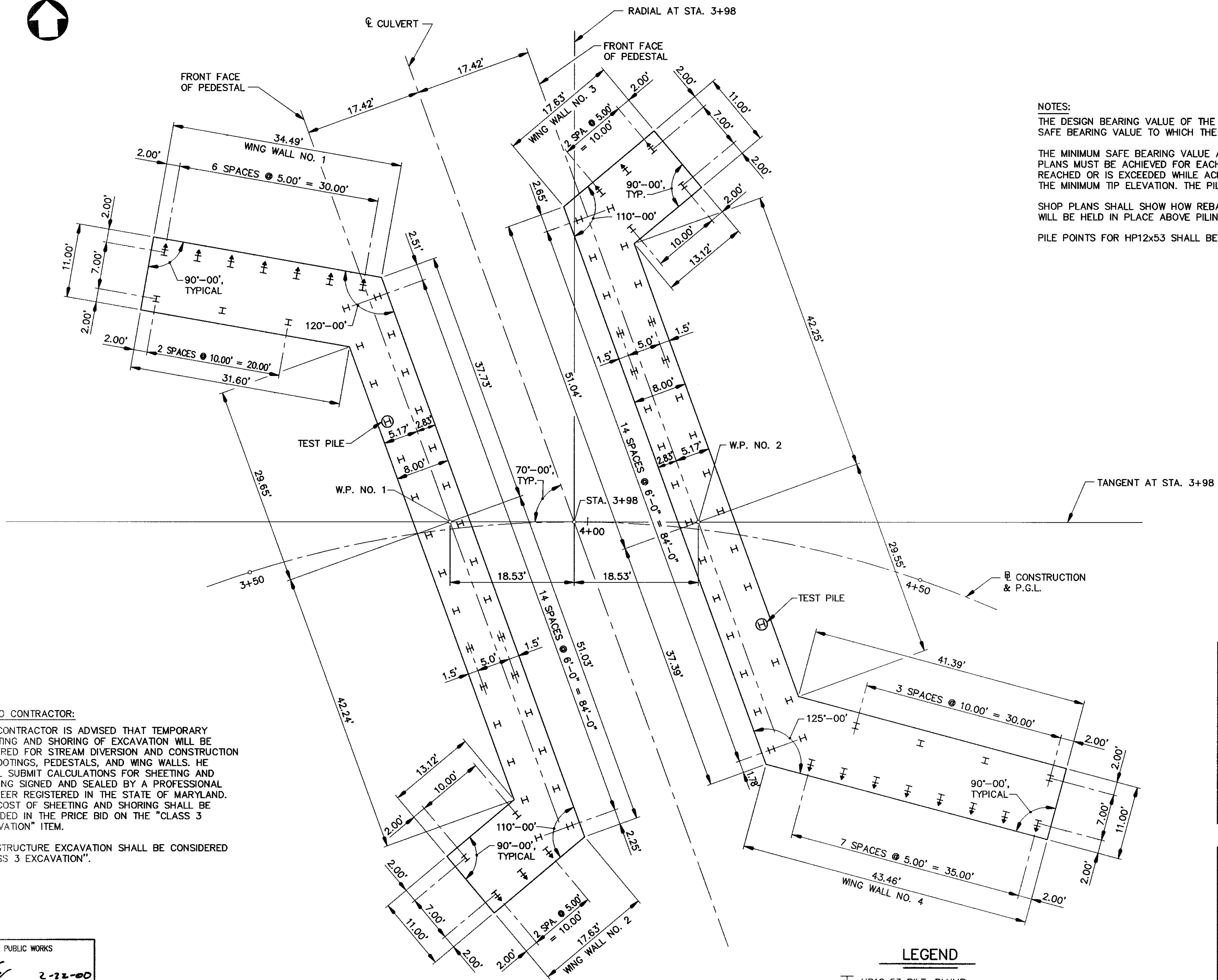
PREPARED FOR:  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
 ATTN: MR. GREG KLAR

**COLUMBIA GATEWAY  
 GENERAL PLAN AND ELEVATION**

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRD	SHEET
JULY, 1999		9 OF 19

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND



**NOTES:**  
 THE DESIGN BEARING VALUE OF THE HP12x53 PILING IS 70 TONS. THE MINIMUM SAFE BEARING VALUE TO WHICH THE HP12x53 PILING IS TO BE DRIVEN IS 84 TONS.  
 THE MINIMUM SAFE BEARING VALUE AND MINIMUM TIP ELEVATION SHOWN ON THESE PLANS MUST BE ACHIEVED FOR EACH PILE. IF THE ESTIMATED TIP ELEVATION IS NOT REACHED OR IS EXCEEDED WHILE ACHIEVING THE MINIMUM SAFE BEARING VALUE AND THE MINIMUM TIP ELEVATION, THE PILE WILL BE CONSIDERED SATISFACTORY.  
 SHOP PLANS SHALL SHOW HOW REBARS ARE TO BE TIED AS WELL AS HOW THEY WILL BE HELD IN PLACE ABOVE PILING WHILE POUR IS BEING MADE.  
 PILE POINTS FOR HP12x53 SHALL BE USED.

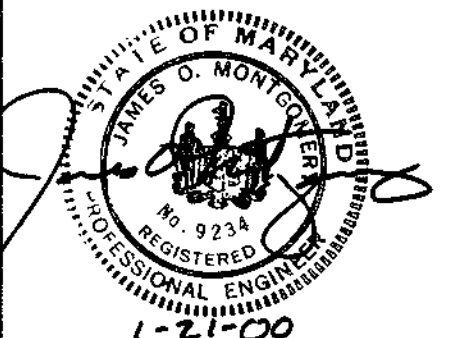
**NOTES TO CONTRACTOR:**  
 1. THE CONTRACTOR IS ADVISED THAT TEMPORARY SHEETING AND SHORING OF EXCAVATION WILL BE REQUIRED FOR STREAM DIVERSION AND CONSTRUCTION OF FOOTINGS, PEDESTALS, AND WING WALLS. HE SHALL SUBMIT CALCULATIONS FOR SHEETING AND SHORING SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND. THE COST OF SHEETING AND SHORING SHALL BE INCLUDED IN THE PRICE BID ON THE "CLASS 3 EXCAVATION" ITEM.  
 2. ALL STRUCTURE EXCAVATION SHALL BE CONSIDERED "CLASS 3 EXCAVATION".

PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP12x53
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
AVERAGE ACTUAL BLOWS/FT.:	
PILE HAMMER ENERGY:	
SPECIAL DRIVING CONDITIONS AND COMMENTS:	

SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	MINIMUM TIP ELEVATION	ESTIMATED TIP ELEVATION	AVERAGE ACTUAL MIN. TIP ELEVATION	AVERAGE ACTUAL MAX. TIP ELEVATION
ABUTMENT 'A'	232.5	232.5		
ABUTMENT 'B'	232.5	232.5		
WING WALL I	232.5	232.5		
WING WALL II	232.5	232.5		
WING WALL III	232.5	232.5		
WING WALL IV	232.5	232.5		

**NOTE:**  
 PILE TIP DATA AND DRIVING INFORMATION TABLES SHALL BE COMPLETED IN THE FIELD AFTER THE PILES ARE DRIVEN.

**LEGEND**  
 [Symbol] HP12x53 PILE, PLUMB  
 [Symbol] HP12x53 PILE BATTERED (3:1) ARROW INDICATES DIRECTION OF BATTER, TYPICAL  
 [Symbol] TEST PILE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Decker* 2-22-00  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Cindy Harvath* 2/6/00  
 CHIEF, DIVISION OF PLANNING AND DEVELOPMENT  
 APPROVED: *[Signature]* 2/10/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK

REVISED PLAN REQUIRED TO REFLECT SUBSTITUTION OF PRECAST WING WALLS AND HEADWALLS IN PLACE OF CAST-IN-PLACE MEMBERS.

**GEOMETRIC LAYOUT**  
 SCALE: 1/8"=1'-0"

**WALLACE MONTGOMERY & ASSOCIATES**  
 CIVIL AND STRUCTURAL ENGINEERS  
 116 WEST ROAD  
 TOWSON, MARYLAND 21284

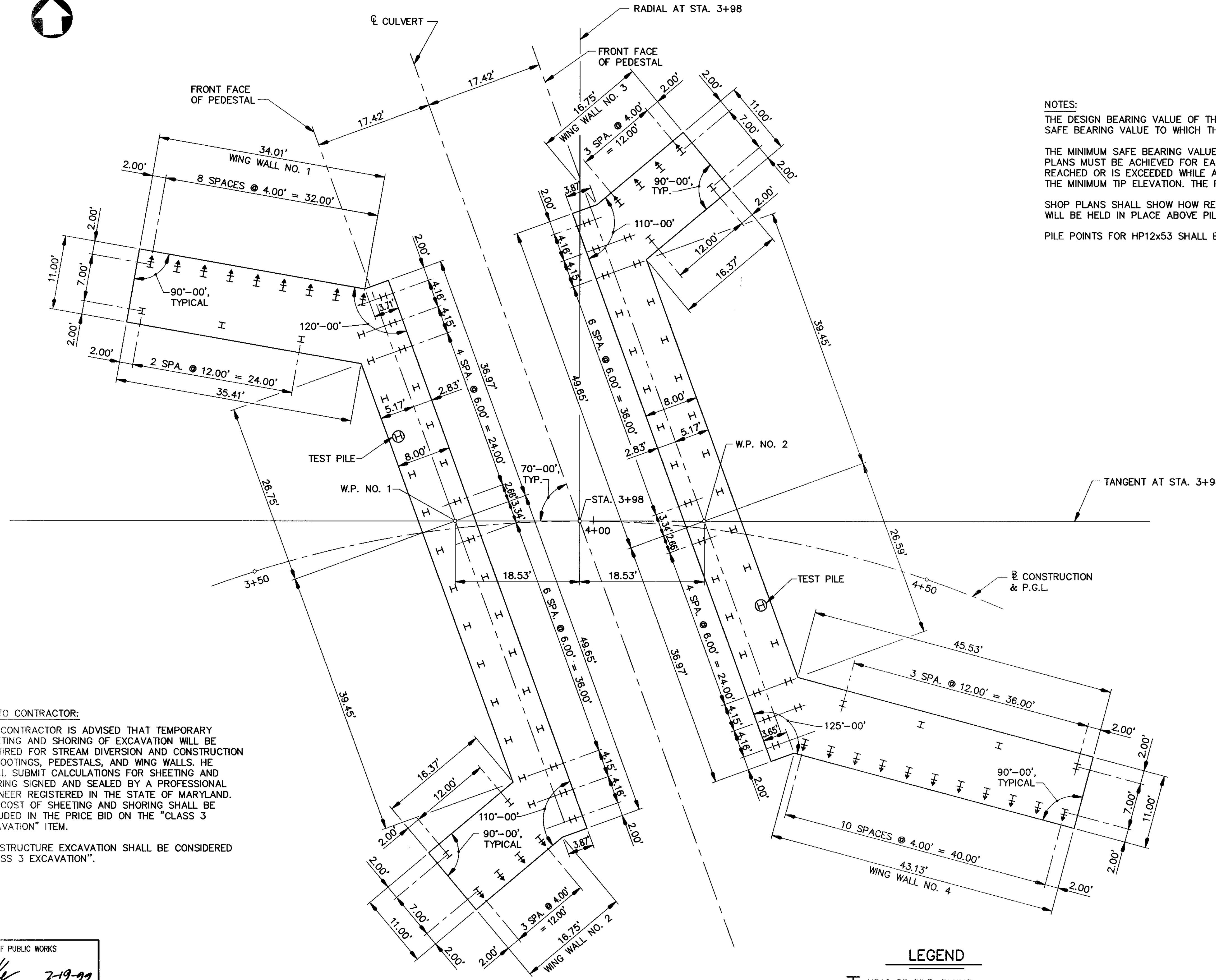
NO.	DATE	REVISION	BY	APP'R.
1-18-00		REVISED PLAN	GCN	SBT

PREPARED FOR:  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
 ATTN: MR. GREG KLAR

**COLUMBIA GATEWAY  
 GEOMETRIC LAYOUT**

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JAN., 2000		10.1 OF 19

HOWARD COUNTY, MARYLAND



**NOTES:**  
 THE DESIGN BEARING VALUE OF THE HP12x53 PILING IS 70 TONS. THE MINIMUM SAFE BEARING VALUE TO WHICH THE HP12x53 PILING IS TO BE DRIVEN IS 84 TONS.  
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 SHOP PLANS SHALL SHOW HOW REBARS ARE TO BE TIED AS WELL AS HOW THEY WILL BE HELD IN PLACE ABOVE PILING WHILE POUR IS BEING MADE.  
 PILE POINTS FOR HP12x53 SHALL BE USED.

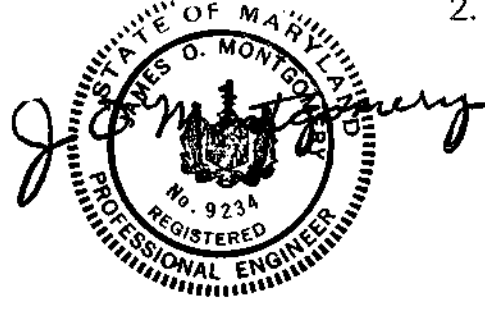
**NOTES TO CONTRACTOR:**  
 1. THE CONTRACTOR IS ADVISED THAT TEMPORARY SHEETING AND SHORING OF EXCAVATION WILL BE REQUIRED FOR STREAM DIVERSION AND CONSTRUCTION OF FOOTINGS, PEDESTALS, AND WING WALLS. HE SHALL SUBMIT CALCULATIONS FOR SHEETING AND SHORING SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND. THE COST OF SHEETING AND SHORING SHALL BE INCLUDED IN THE PRICE BID ON THE "CLASS 3 EXCAVATION" ITEM.  
 2. ALL STRUCTURE EXCAVATION SHALL BE CONSIDERED "CLASS 3 EXCAVATION".

PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP12x53
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
AVERAGE ACTUAL BLOWS/FT.:	
PILE HAMMER ENERGY:	
SPECIAL DRIVING CONDITIONS AND COMMENTS:	

SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	MINIMUM TIP ELEVATION	ESTIMATED TIP ELEVATION	AVERAGE ACTUAL MIN. TIP ELEVATION	AVERAGE ACTUAL MAX. TIP ELEVATION
ABUTMENT 'A'	232.5	232.5		
ABUTMENT 'B'	232.5	232.5		
WING WALL I	232.5	232.5		
WING WALL II	232.5	232.5		
WING WALL III	232.5	232.5		
WING WALL IV	232.5	232.5		

**LEGEND**  
 I HP12x53 PILE, PLUMB  
 I HP12x53 PILE BATTERED (3:1) ARROW  
 INDICATES DIRECTION OF BATTER, TYPICAL  
 ⊕ TEST PILE

**NOTE:**  
 PILE TIP DATA AND DRIVING INFORMATION TABLES SHALL BE COMPLETED IN THE FIELD AFTER THE PILES ARE DRIVEN.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Daniels* 7/19/99  
 CHIEF, BUREAU OF HIGHWAYS DATE  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blood* 7/22/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*W. D. Dawson* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**GEOMETRIC LAYOUT**  
 SCALE: 1/8"=1'-0"

**WALLACE, MONTGOMERY & ASSOCIATES**  
 CIVIL AND STRUCTURAL ENGINEERS  
 110 WEST ROAD  
 TOWSON, MARYLAND 21284

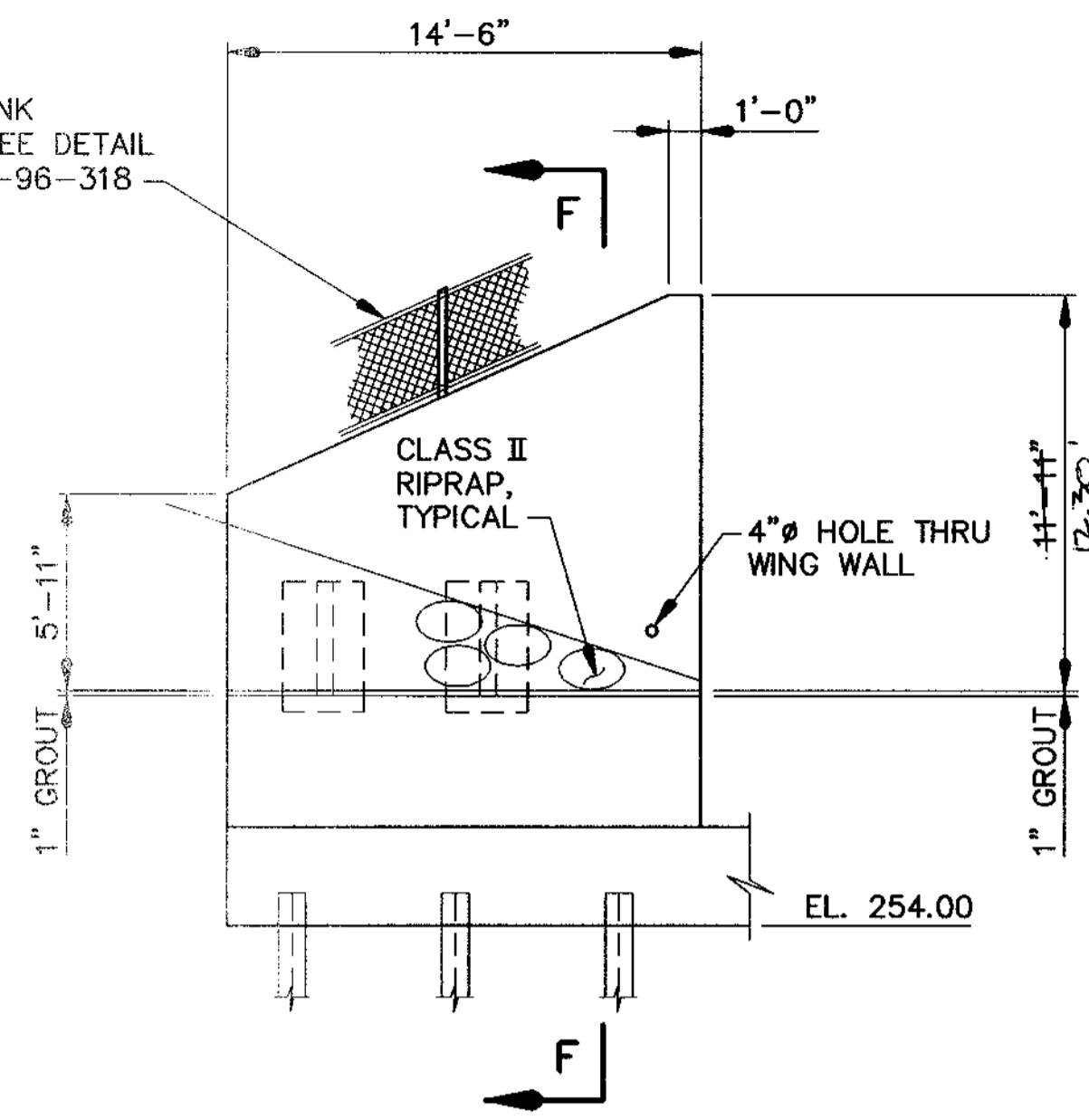
DES. G.C.N.	DRN. D.E.D.	CHK. S.B.T.	DATE	REVISION	BY	APPR.

PREPARED FOR:  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 10275 LITTLE PATUENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
 ATTN: MR. GREG KLAR

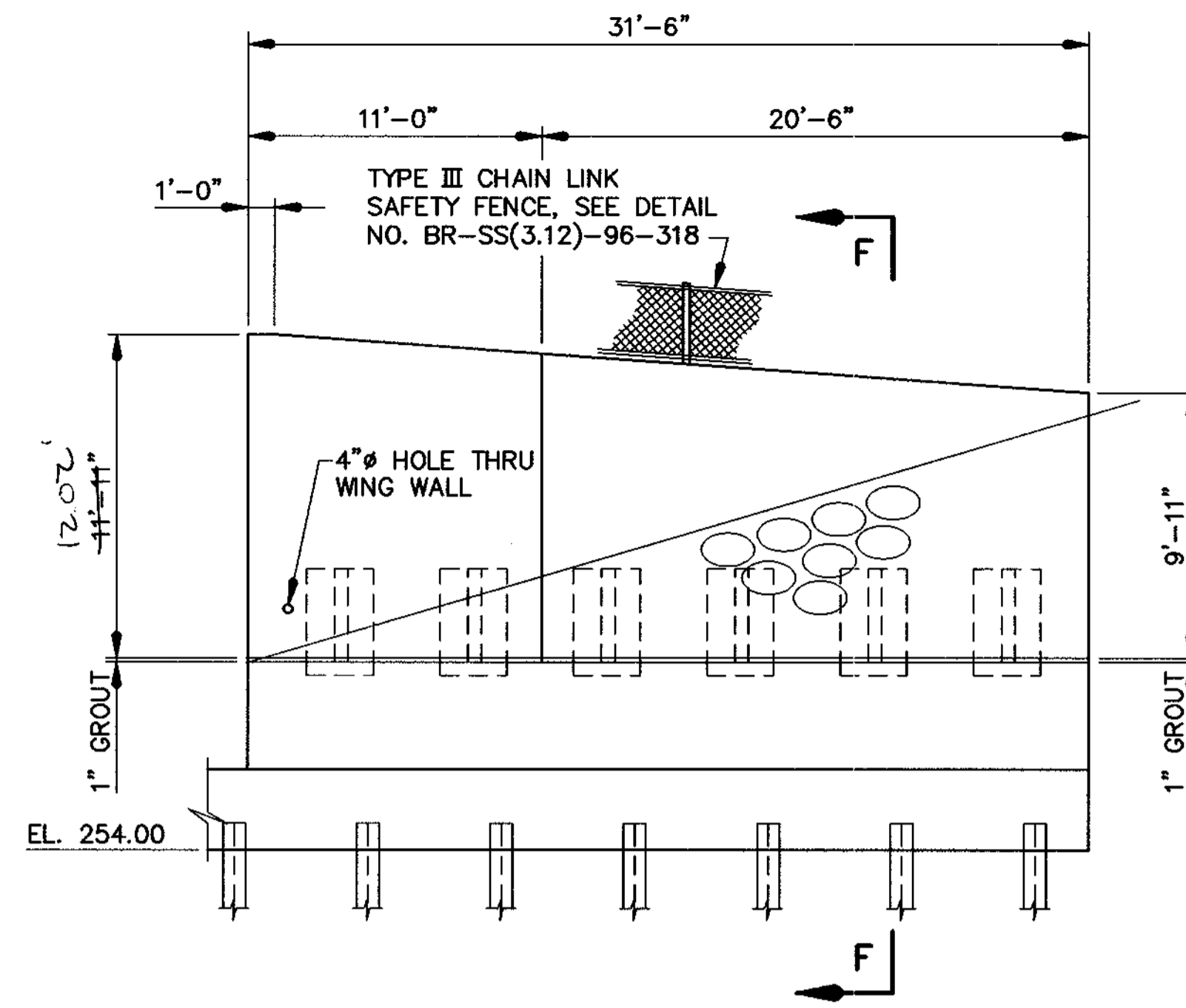
**COLUMBIA GATEWAY**  
 GEOMETRIC LAYOUT  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		10 OF 19

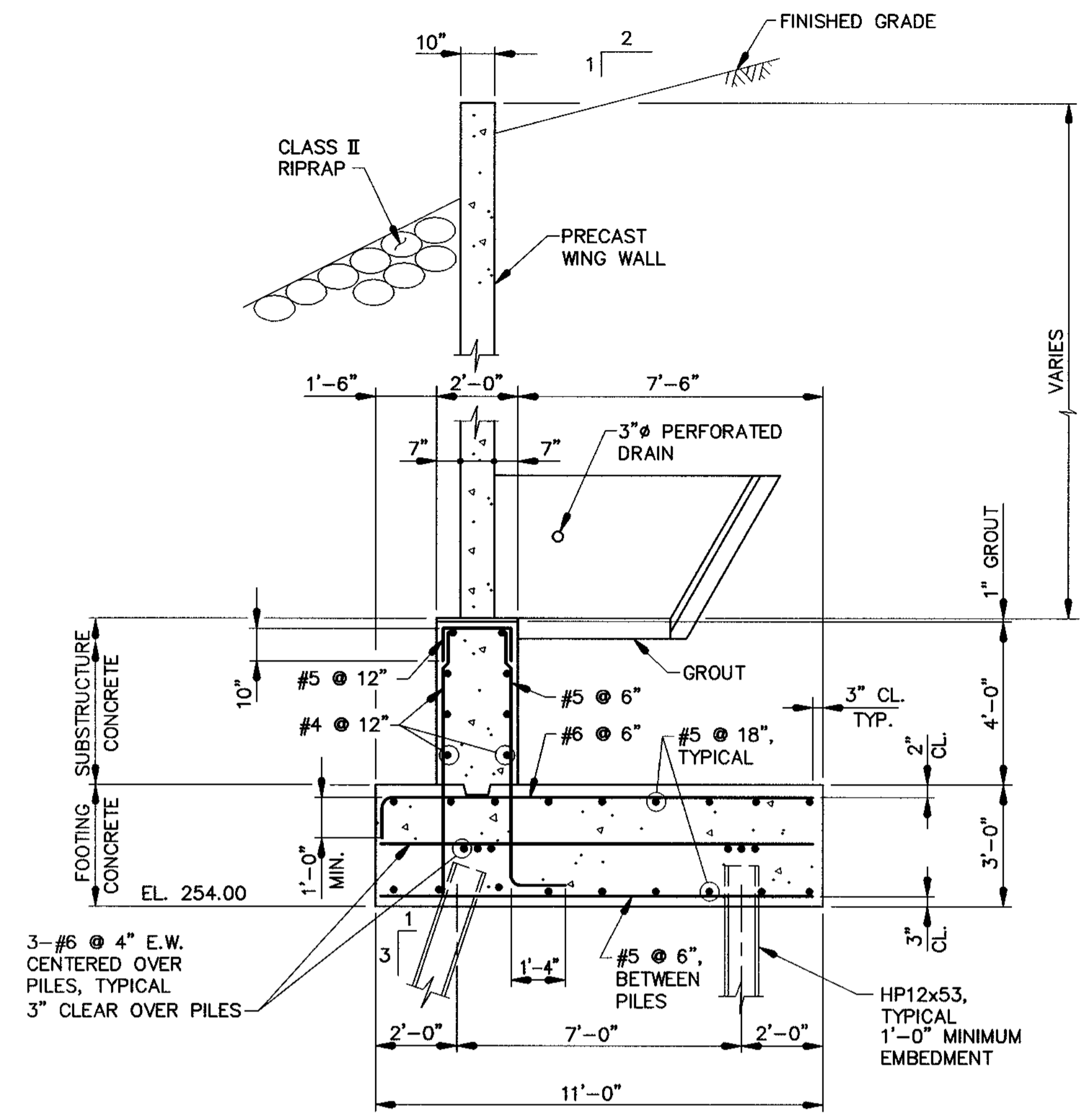
TYPE III CHAIN LINK SAFETY FENCE, SEE DETAIL NO. BR-SS(3.12)-96-318



ELEVATION - WING WALL NO. 3  
SCALE: 3/16"=1'-0"

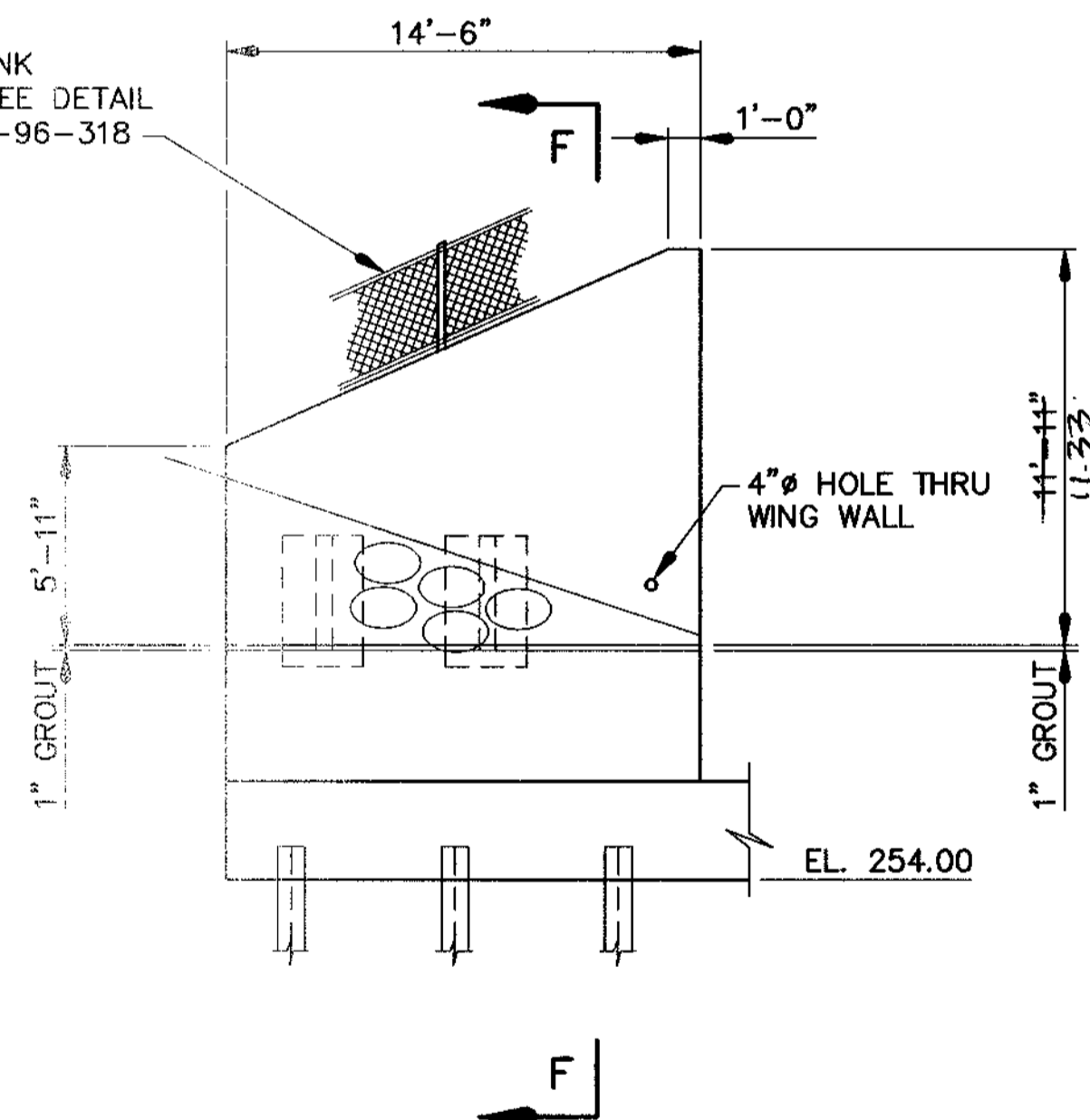


ELEVATION - WING WALL NO. 1  
SCALE: 3/16"=1'-0"

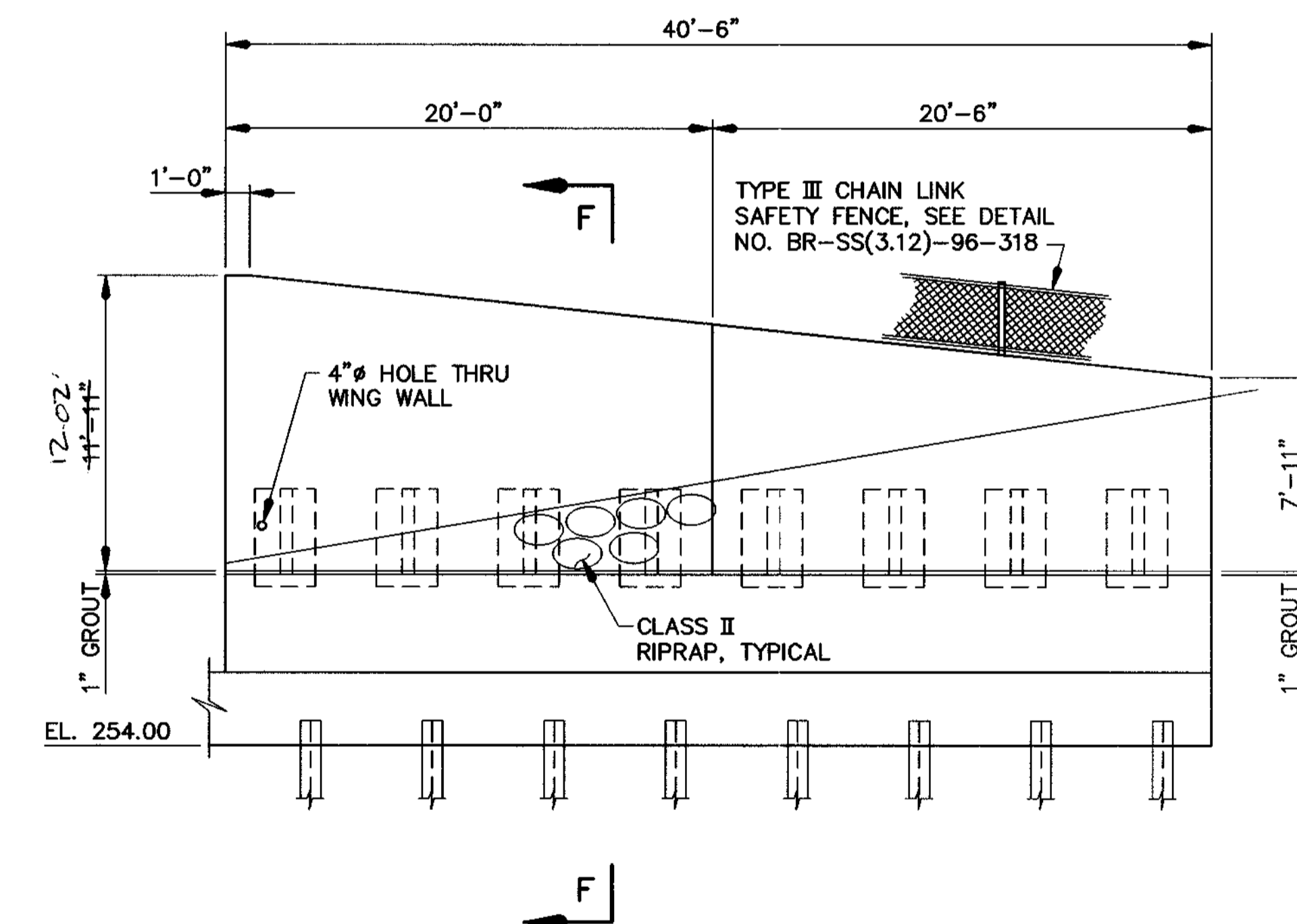


SECTION F-F  
SCALE: 3/8"=1'-0"

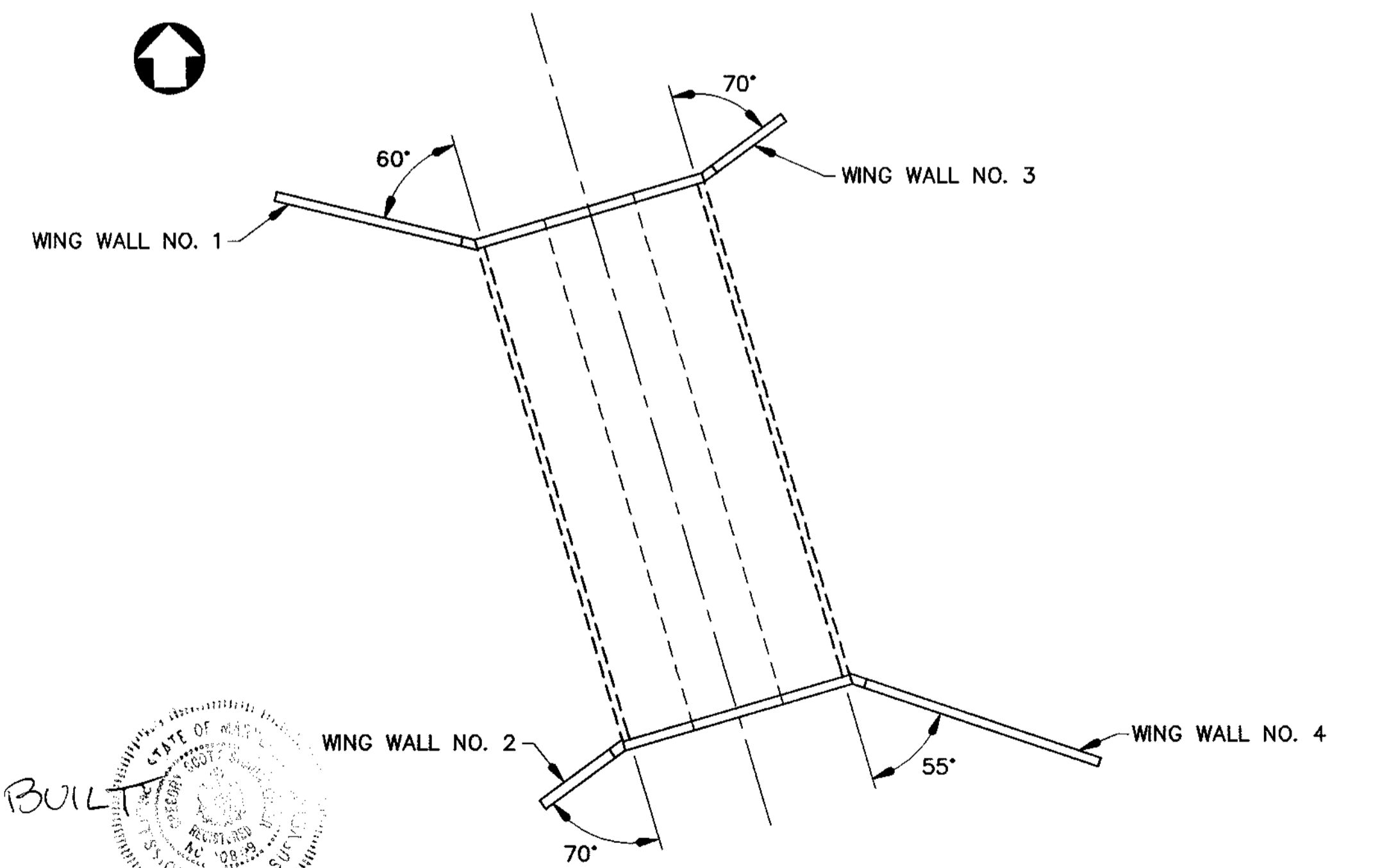
TYPE III CHAIN LINK SAFETY FENCE, SEE DETAIL NO. BR-SS(3.12)-96-318



ELEVATION - WING WALL NO. 2  
SCALE: 3/16"=1'-0"



ELEVATION - WING WALL NO. 4  
SCALE: 3/16"=1'-0"



WING WALL LAYOUT  
SCALE: 1"=20'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*James M. Davelle* 2-27-00  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Cindy Hamada* 2/25/00  
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: *MK* 2/16/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

REVISED PLAN REQUIRED TO REFLECT SUBSTITUTION OF PRECAST WING WALLS AND HEADWALLS IN PLACE OF CAST-IN-PLACE MEMBERS.

AS BUILT  
*Greg Klar*  
G. KLAR MANAGER DATE  
PROJ. U.S. # 10299

WALLACE, MONTGOMERY & ASSOCIATES  
CIVIL AND STRUCTURAL ENGINEERS  
110 WEST ROAD  
TOWSON, MARYLAND 21284

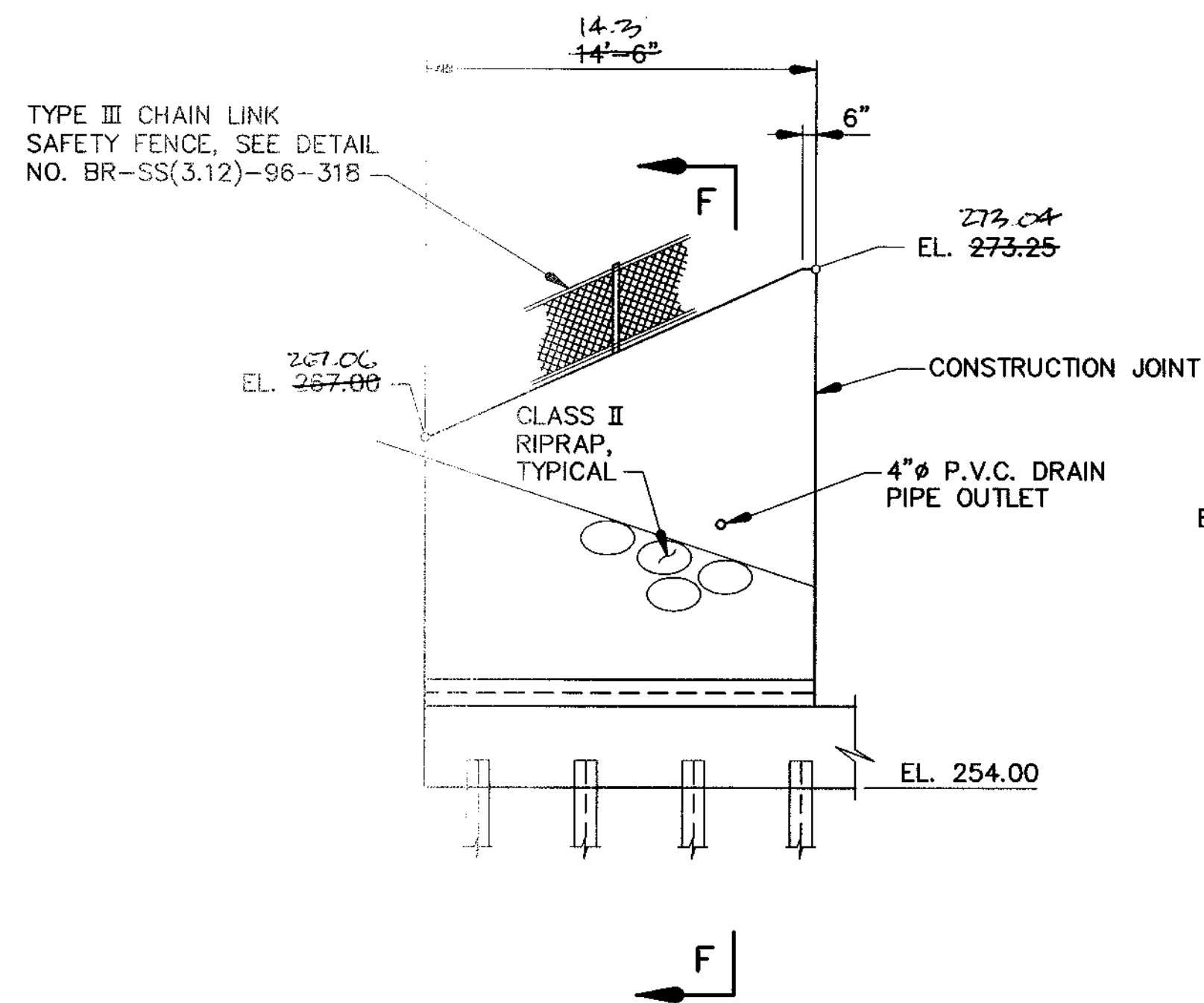
DES. G.C.N. DRN. D.E.D. CHK. S.B.T.  
DATE REVISION BY APPR.

1-18-00	REVISED PLAN	GCN	SBT

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

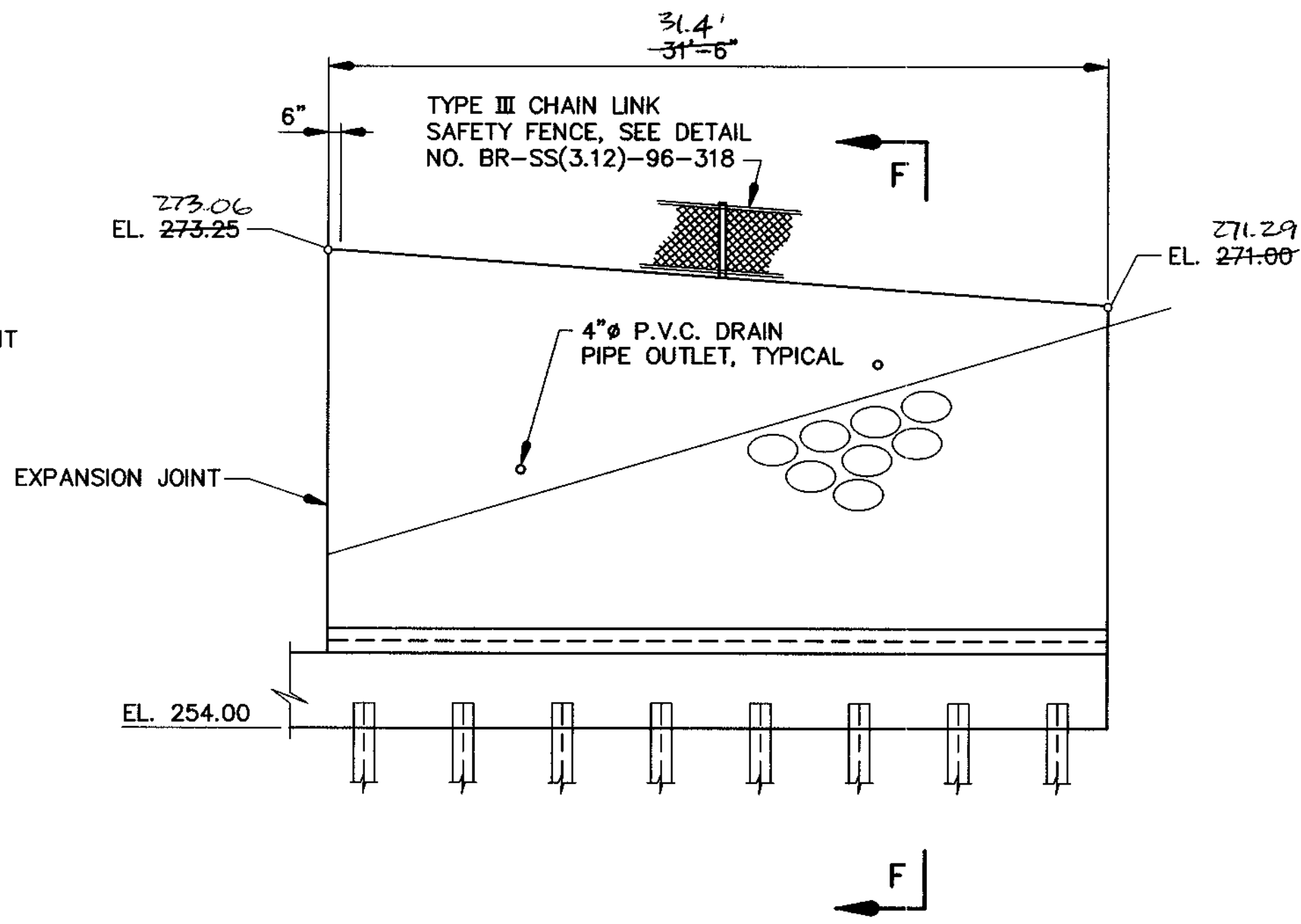
COLUMBIA GATEWAY  
WING WALL DETAILS  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JAN., 2000		11.1 OF 19



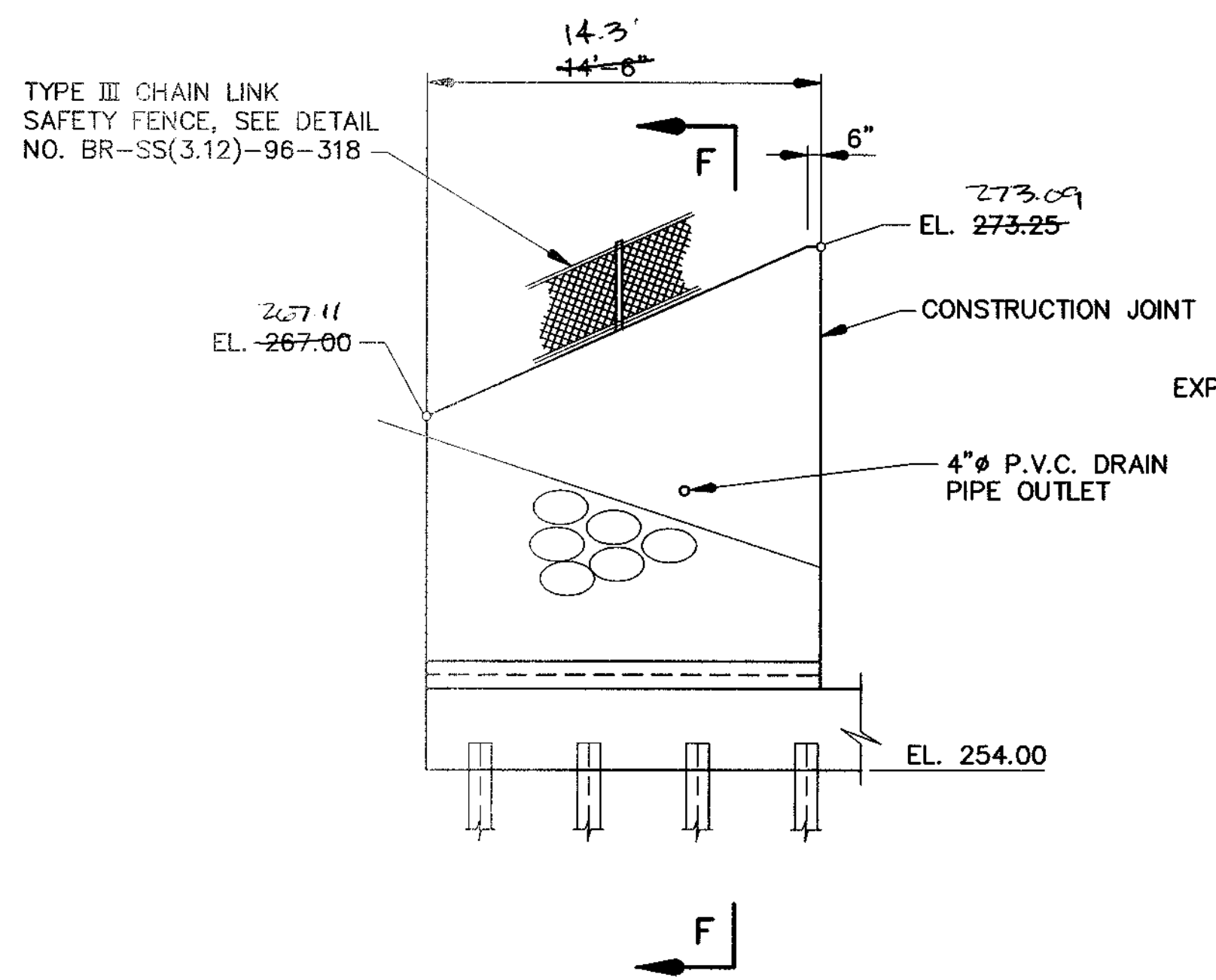
ELEVATION - WING WALL NO. 3

SCALE: 3/16"=1'-0"



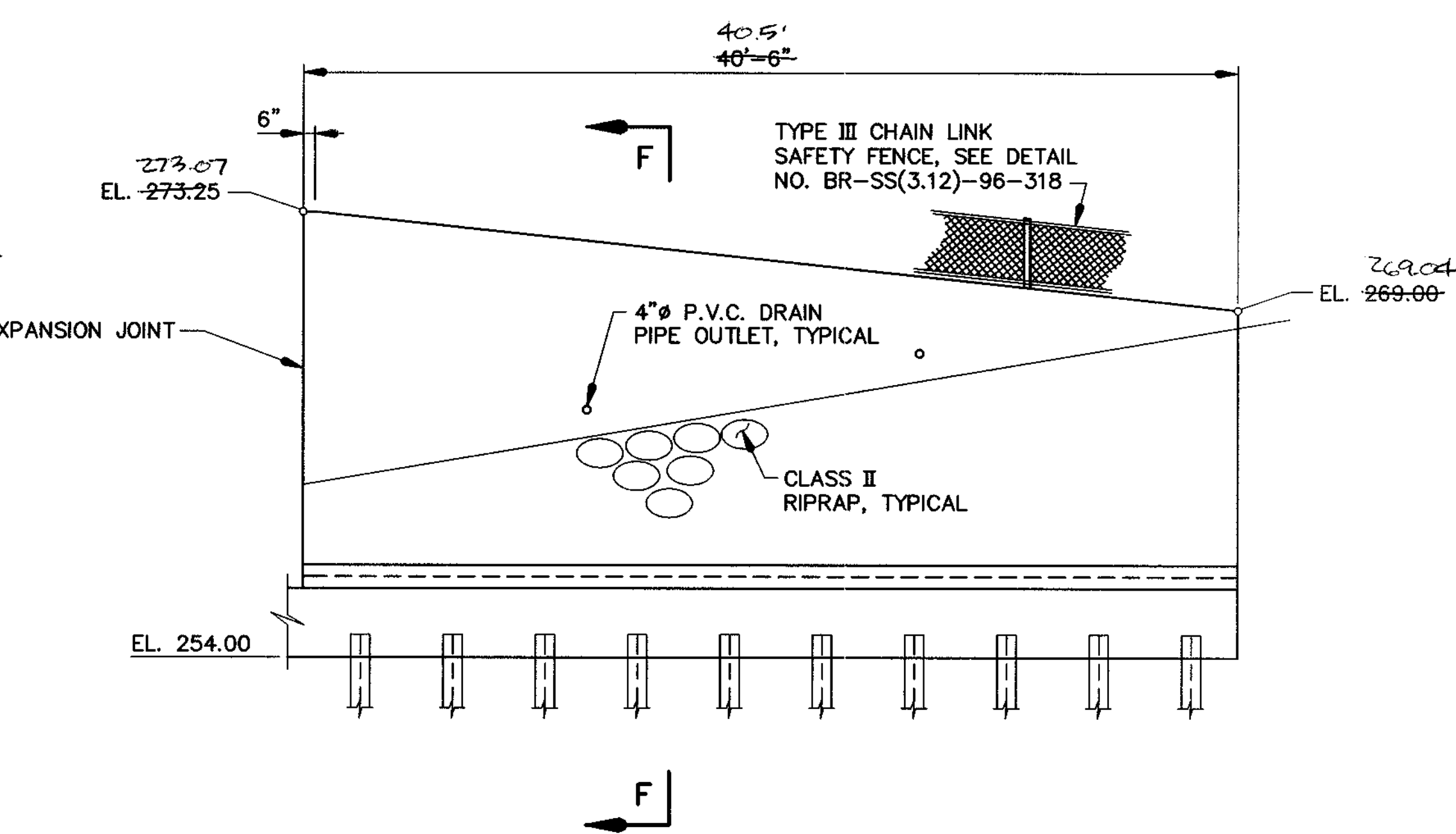
ELEVATION - WING WALL NO. 1

SCALE: 3/16"=1'-0"



ELEVATION - WING WALL NO. 2

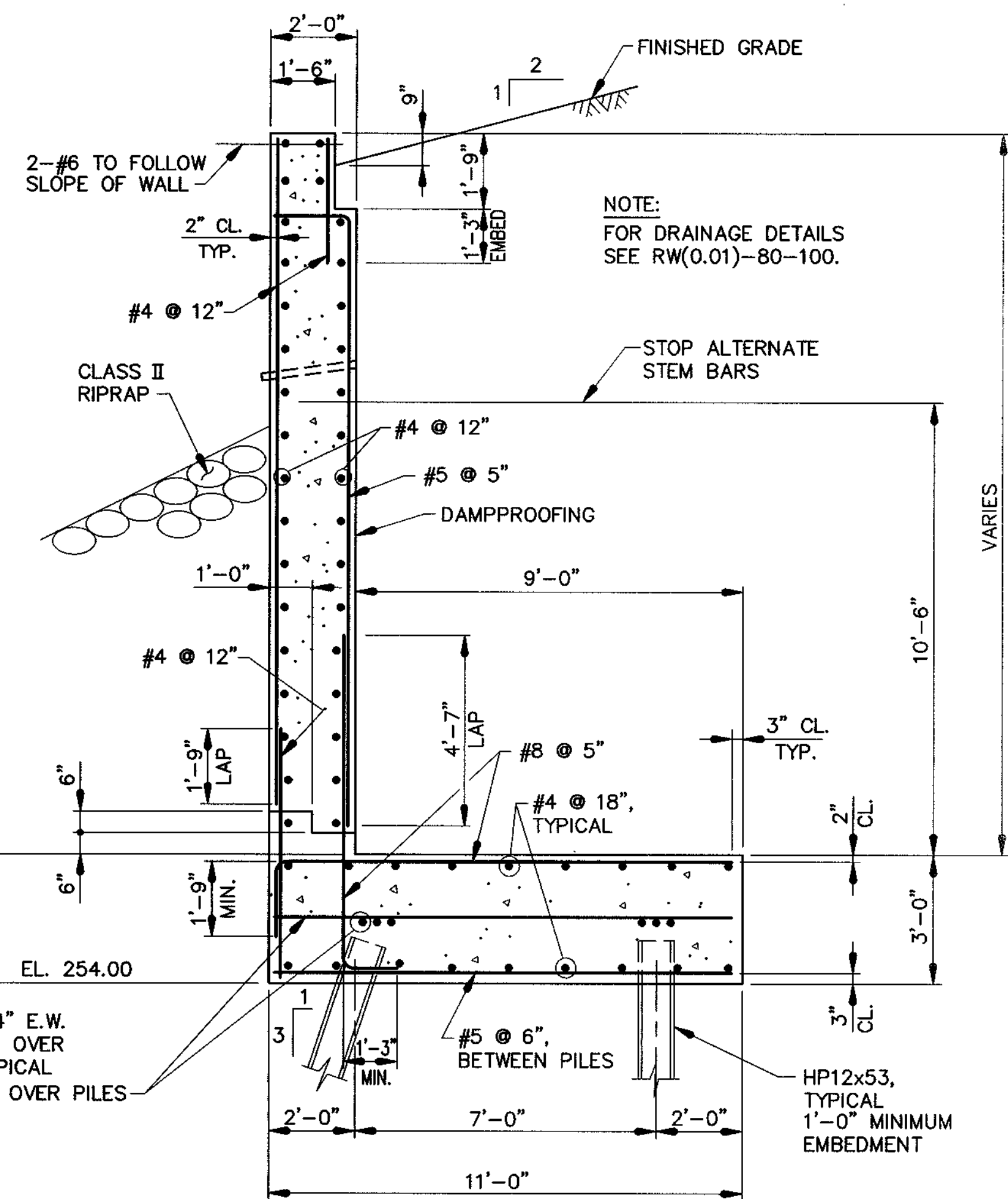
SCALE: 3/16"=1'-0"



ELEVATION - WING WALL NO. 4

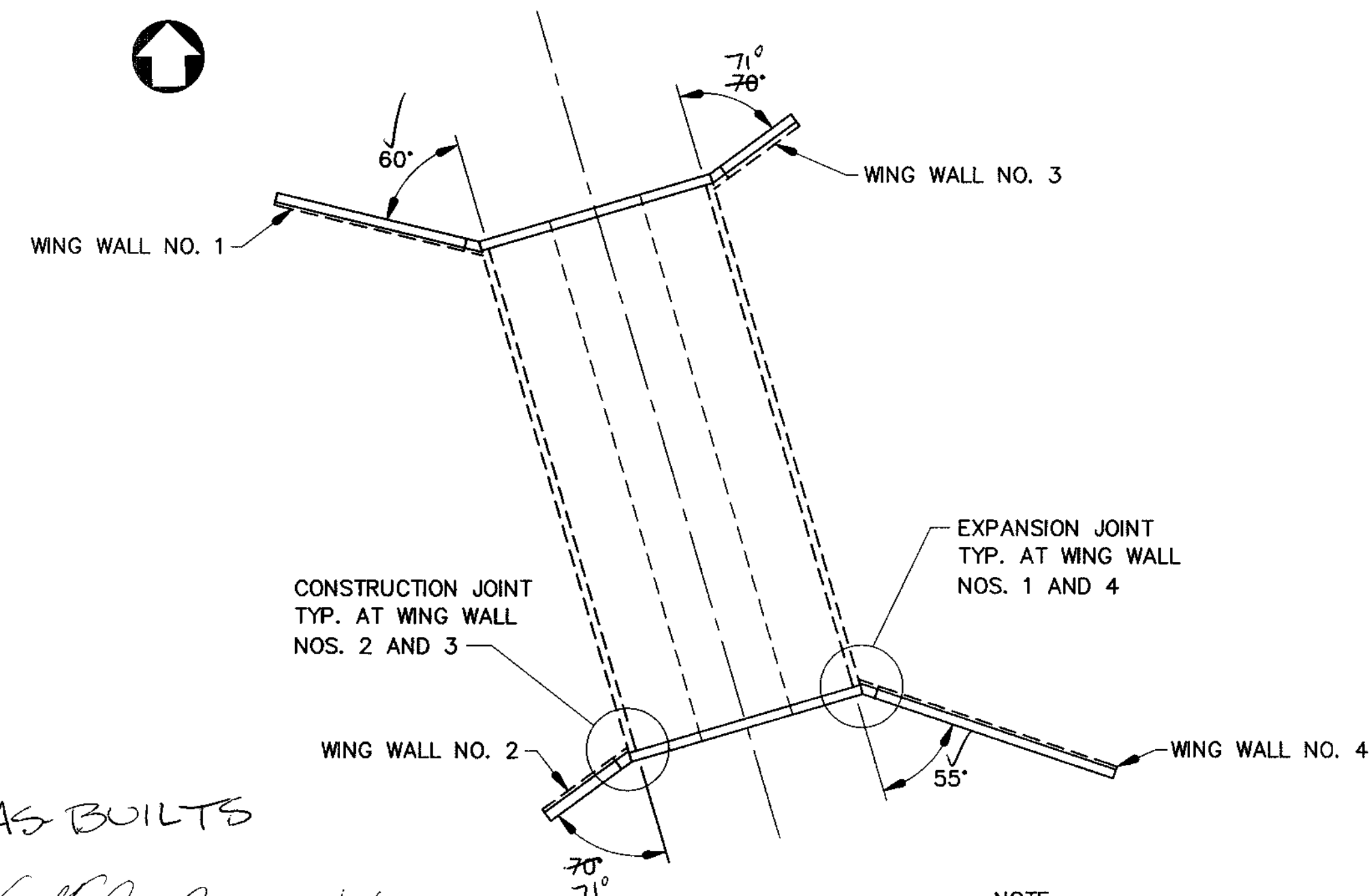
SCALE: 3/16"=1'-0"

NOTE:  
CONTRACTOR HAS THE OPTION OF LAPPING STEM REINFORCEMENT WITH TOE REINFORCEMENT AND/OR DOWELS AS SHOWN; OR BY EXTENDING THE TOE AND/OR DOWEL REINFORCEMENT WITH NO SPLICING. HOWEVER NO ADDITIONAL COMPENSATION TO CONTRACTOR WILL BE ALLOWED FOR WHICHEVER ALTERNATIVE IS SELECTED.



SECTION F - F

SCALE: 3/8"=1'-0"



WING WALL LAYOUT

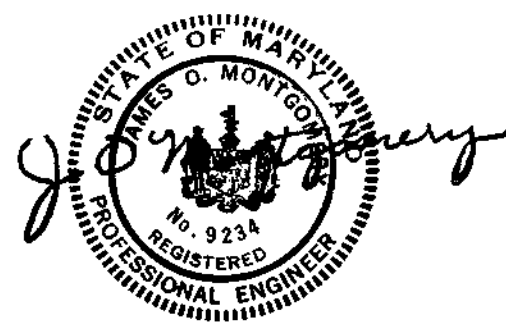
SCALE: 1"=20'

NOTE:  
FOR WING WALL EXPANSION JOINT AND CONSTRUCTION JOINT DETAIL, SEE SHEET 13.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Richard M. Canale* 7-10-99  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blood* 7/27/99  
CHIEF, DIVISION OF LAND DEVELOPMENT

*William Danner* 7/21/99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



AS BUILTS

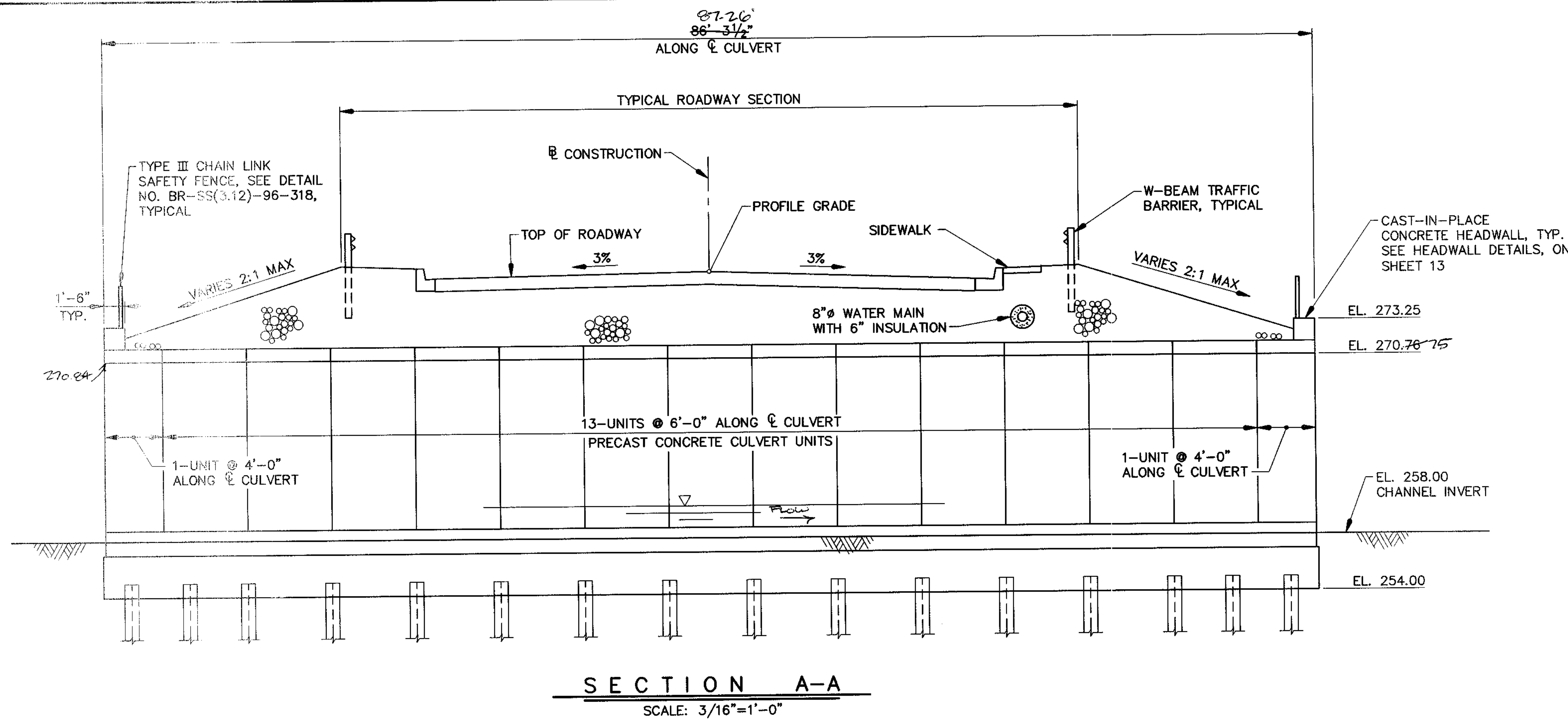
*Greg Klar* 1/2/2001  
PROJECT MANAGER  
PROJ. NO. # 100249

COLUMBIA GATEWAY  
WING WALL DETAILS

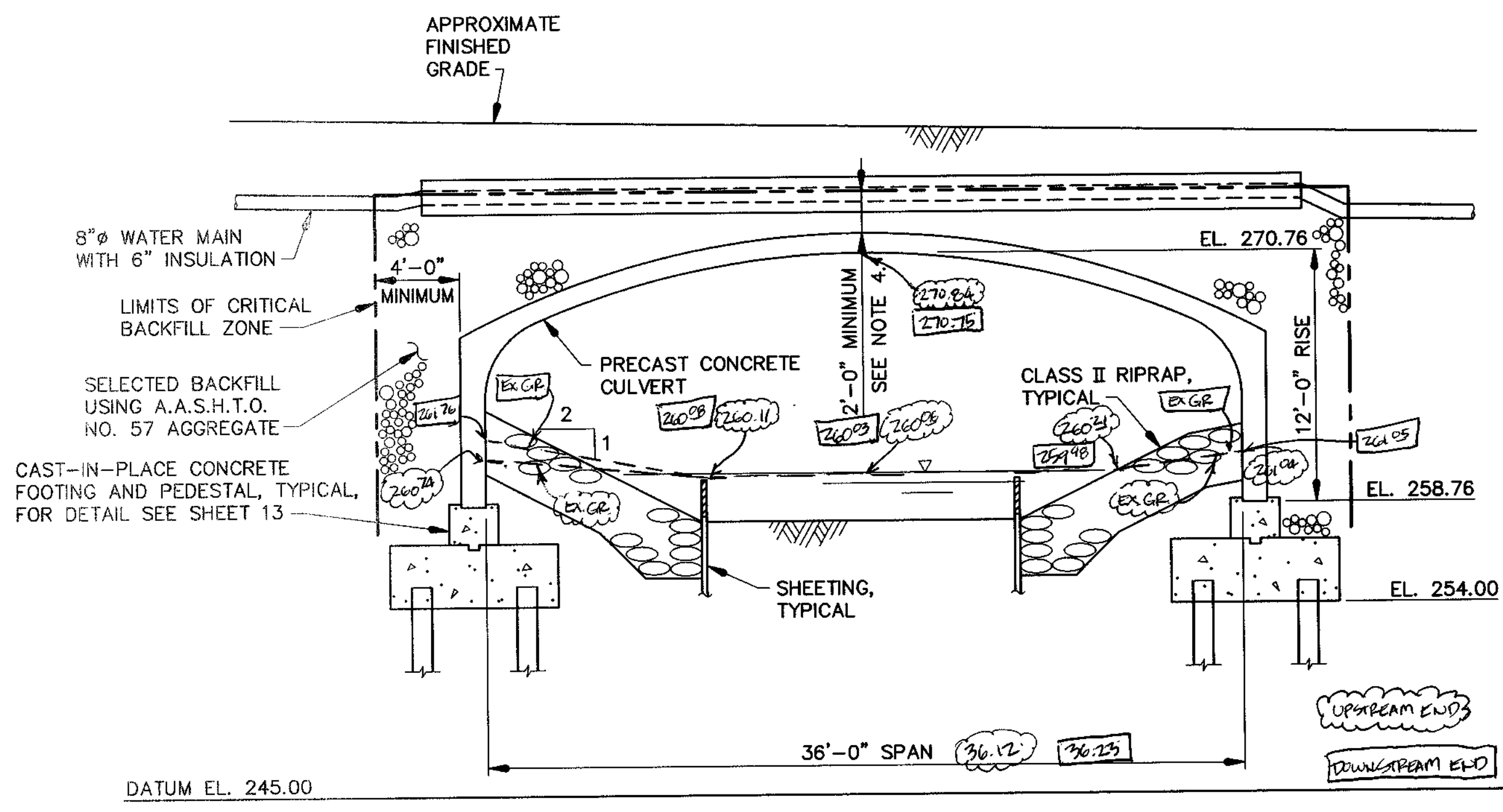
ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

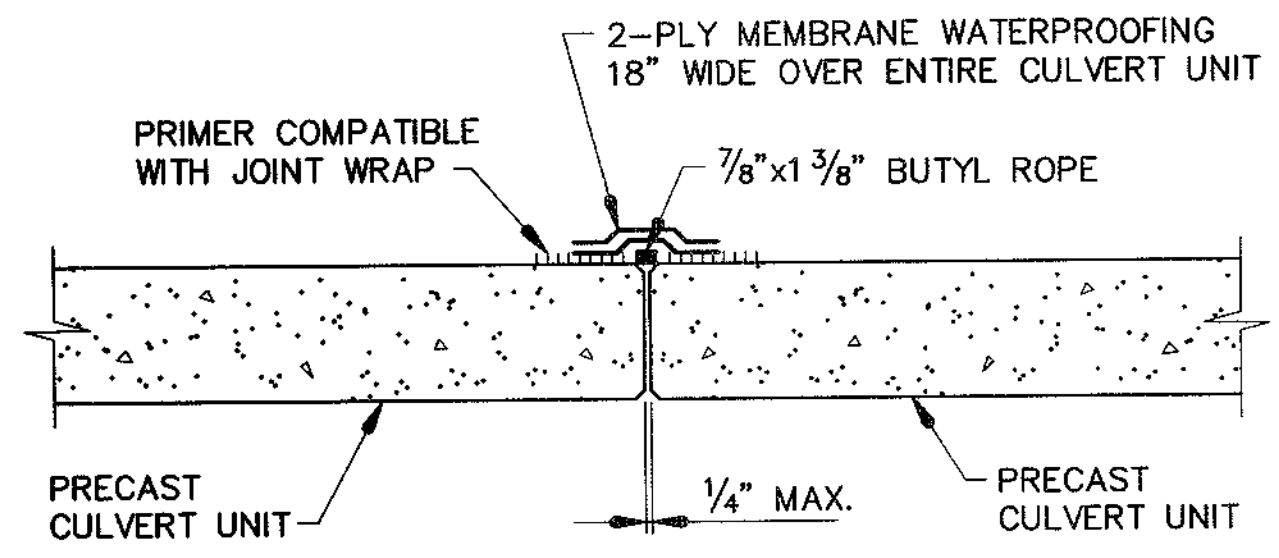
SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		11 OF 19



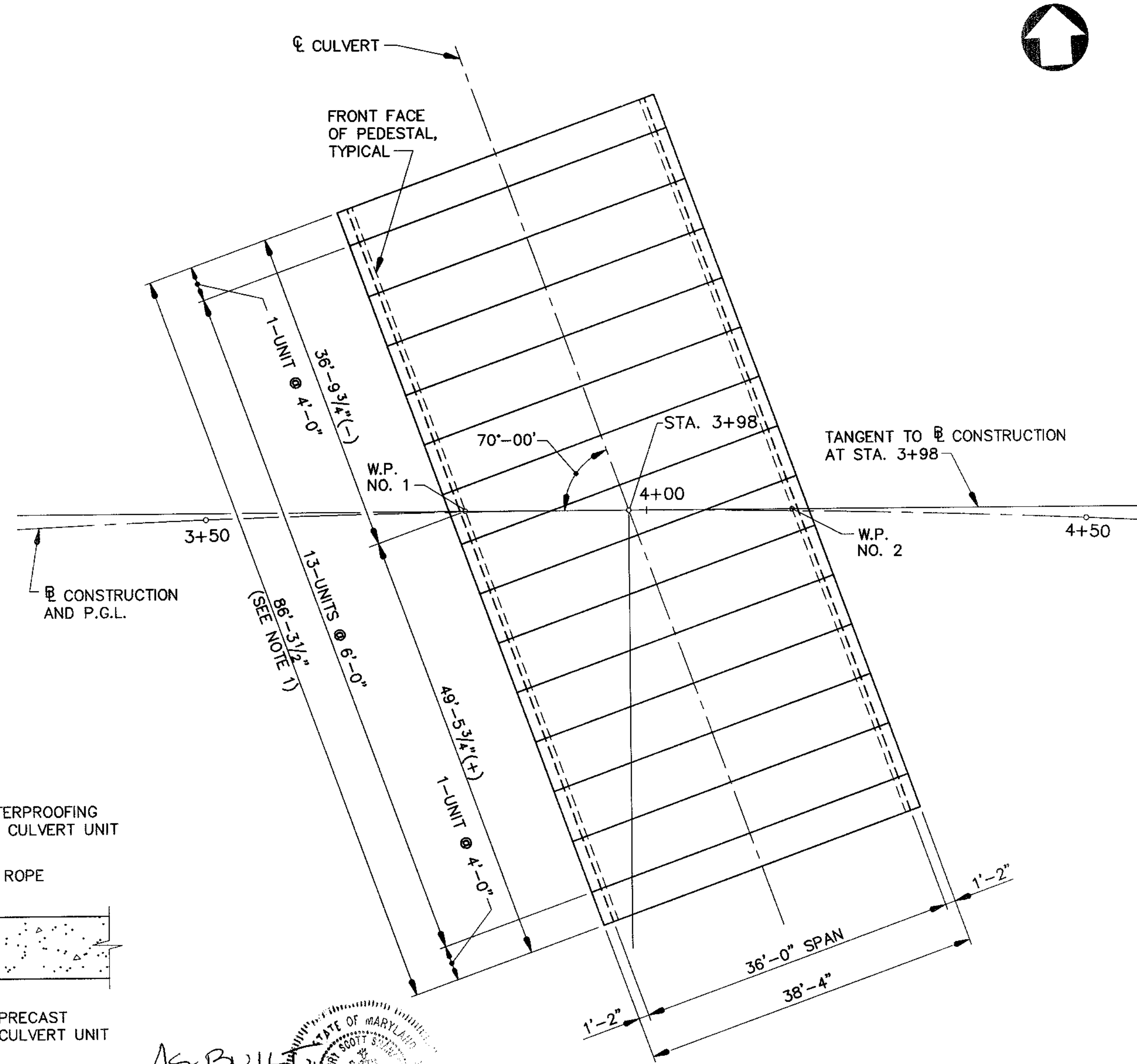
SECTION A-A  
SCALE: 3/16"=1'-0"



SECTION B-B  
SCALE: 3/16"=1'-0"



CULVERT JOINT DETAIL  
NOT TO SCALE



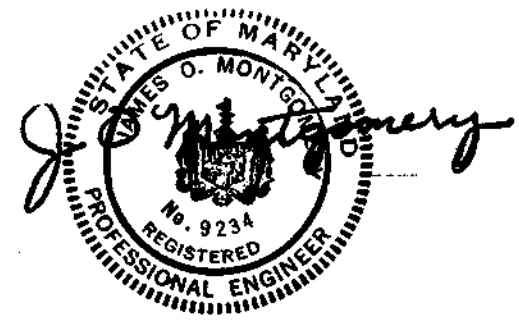
CULVERT UNIT LAYOUT  
SCALE: 1"=10'

- NOTES:
1. FINAL CULVERT LENGTH INCLUDES 1/4" GAP AT EACH JOINT.
  2. CULVERT SHALL BE SET ON 6" X 6" MASONITE OR STEEL SHIMS WITH A 1/2" GAP BETWEEN TOP OF PEDESTAL AND BOTTOM OF CULVERT UNIT LEG. THE GAP SHALL BE FILLED WITH CEMENT ALL IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS, SEE SPECIAL PROVISIONS.
  3. MECHANICAL TAMPERS OR APPROVED COMPACTING EQUIPMENT SHALL BE USED TO COMPACT ALL BACKFILL AND EMBANKMENT IMMEDIATELY ADJACENT TO EACH SIDE OF THE CULVERT AND OVER THE TOP OF THE CULVERT UNTIL IT IS COVERED TO A MINIMUM DEPTH OF 1'-0".
  4. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER. BACKFILL SHALL BE PLACED EVENLY ON BOTH SIDES OF THE CULVERT IN MAXIMUM LIFTS OF 8". UNBALANCED FILL HEIGHT ON OPPOSITE SIDES OF THE CULVERT SHALL NOT EXCEED 2'-0".
- HEAVY COMPACTION EQUIPMENT SHALL NOT BE OPERATED IN THIS AREA OR OVER THE CULVERT UNTIL IT IS COVERED TO 1'-0".
- LIGHTWEIGHT DOZERS AND GRADERS MAY BE OPERATED OVER CULVERTS HAVING ONE FOOT OF COMPACTED COVER, BUT HEAVY EARTH MOVING TRACK PRESSURES OF EIGHT PSI OR GREATER SHALL REQUIRE TWO FEET OF COVER UNLESS THE DESIGN COVER IS LESS THAN TWO FEET. IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HS20 OR HS25) BE PERMITTED OVER THE CULVERT UNLESS APPROVED BY THE ENGINEER.
- MINIMUM GRAVEL FILL HEIGHT OVER CULVERT WITHIN TYPICAL ROADWAY SECTION = 2'-0".  
MINIMUM GRAVEL FILL HEIGHT OVER CULVERT OUTSIDE OF TYPICAL ROADWAY SECTION = 6".

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Donak* 7-19-99  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard B. Blair* 7/22/99  
CHIEF, DIVISION OF LAND DEVELOPMENT

*William D. ...* 7/21/99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



**WALLACE, MONTGOMERY & ASSOCIATES**  
CIVIL AND STRUCTURAL ENGINEERS  
110 WEST ROAD  
TOWSON, MARYLAND 21284

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

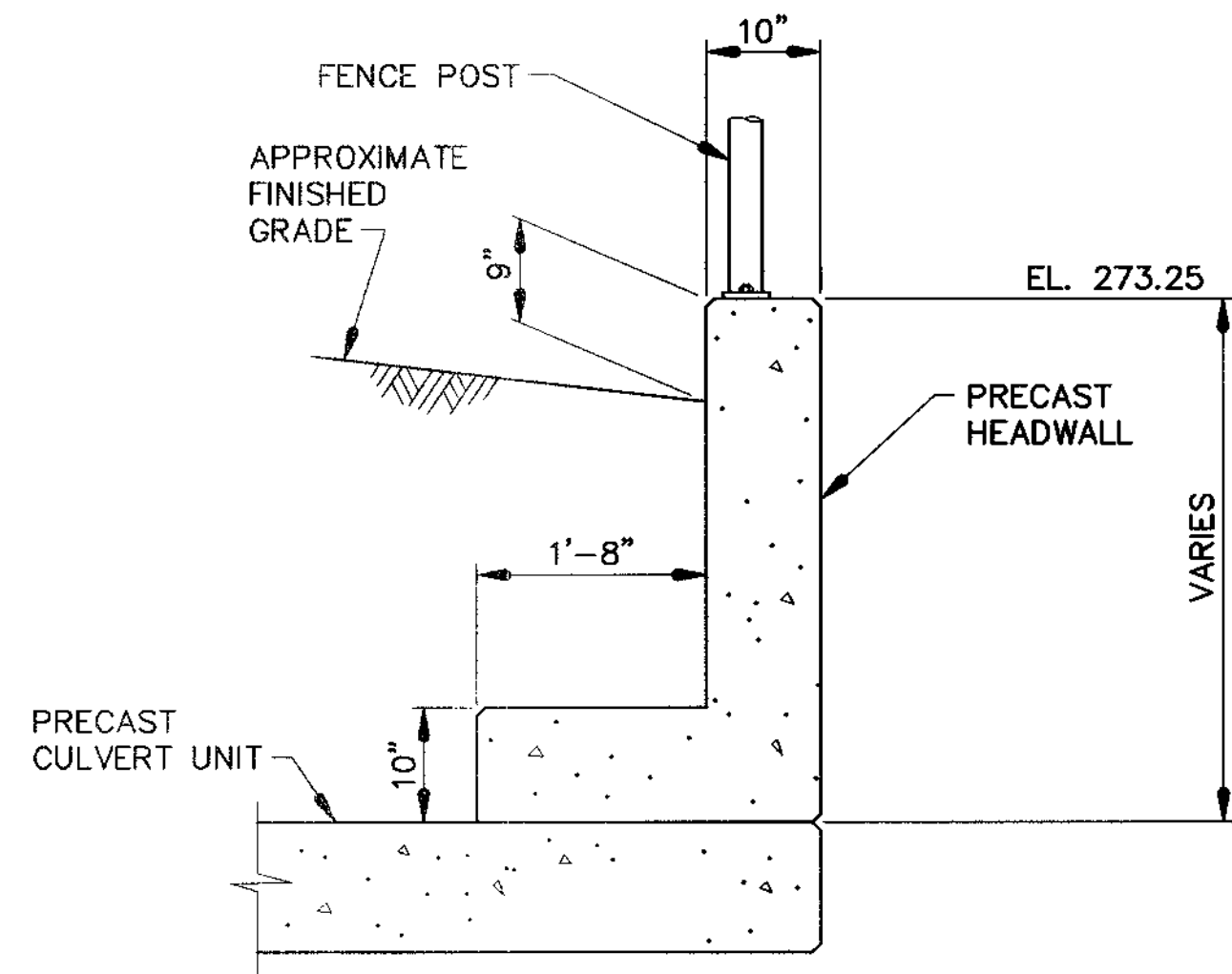
**COLUMBIA GATEWAY**  
TYPICAL SECTION AND DETAILS

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		12 OF 19

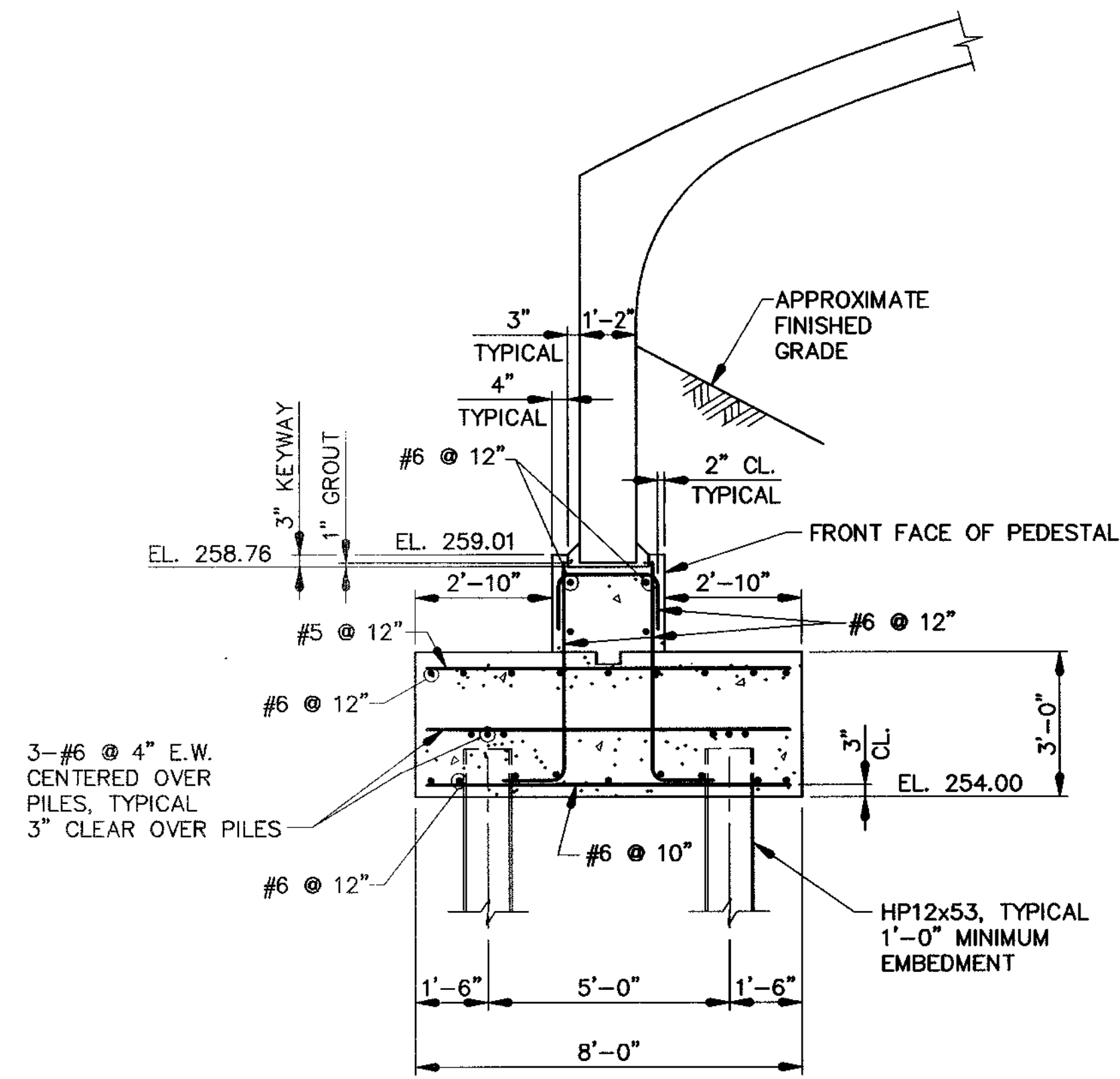
DES. G.C.N.	DRN. D.E.D.	CHK. S.B.T.	DATE	REVISION	BY	APP'R.

ELECTION DISTRICT NO. 6

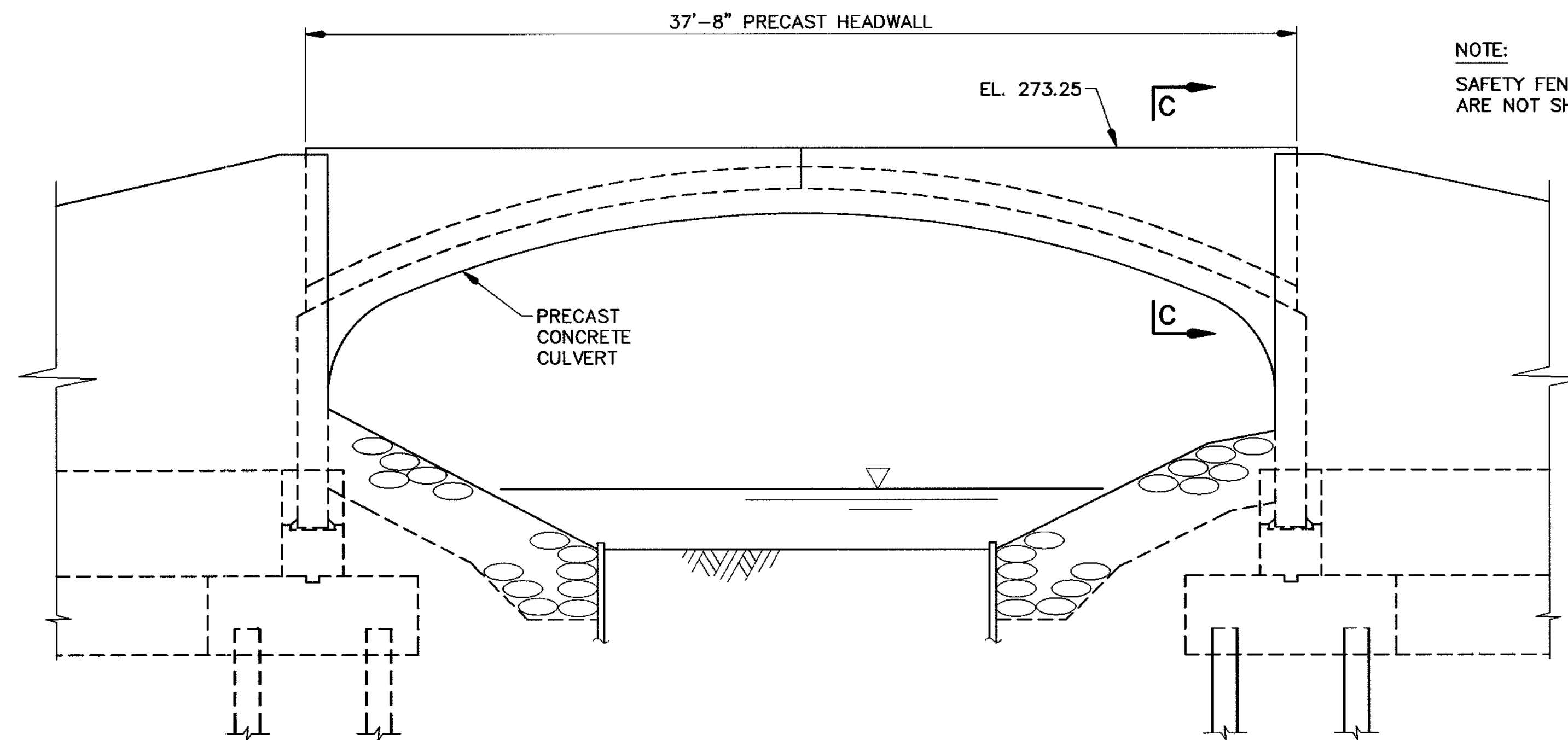
HOWARD COUNTY, MARYLAND



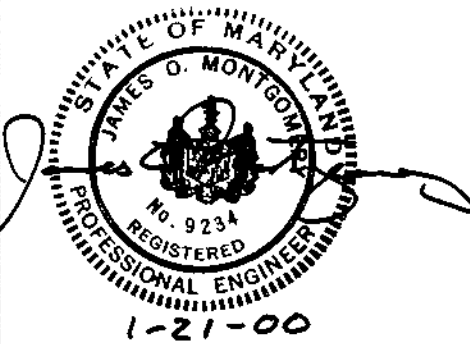
**SECTION C-C**  
SCALE: 3/4"=1'-0"



**FOOTING PEDESTAL DETAIL**  
SCALE: 3/8"=1'-0"



**HEADWALL ELEVATION**  
SCALE: 1/4"=1'-0"



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Donato* 2-22-00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Cindy Hamilton* 2/24/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*MK* 2/10/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

REVISED PLAN REQUIRED TO REFLECT SUBSTITUTION OF PRECAST WING WALLS AND HEADWALLS IN PLACE OF CAST-IN-PLACE MEMBERS.

**WALLACE, MONTGOMERY & ASSOCIATES**  
CIVIL AND STRUCTURAL ENGINEERS  
110 WEST ROAD  
TOWSON, MARYLAND 21284

DES: G.C.N. DRN: D.E.D. CHK: S.B.T.

NO.	DATE	REVISION	BY	APP'R.
1-18-00		REVISED PLAN	GCN	SBT

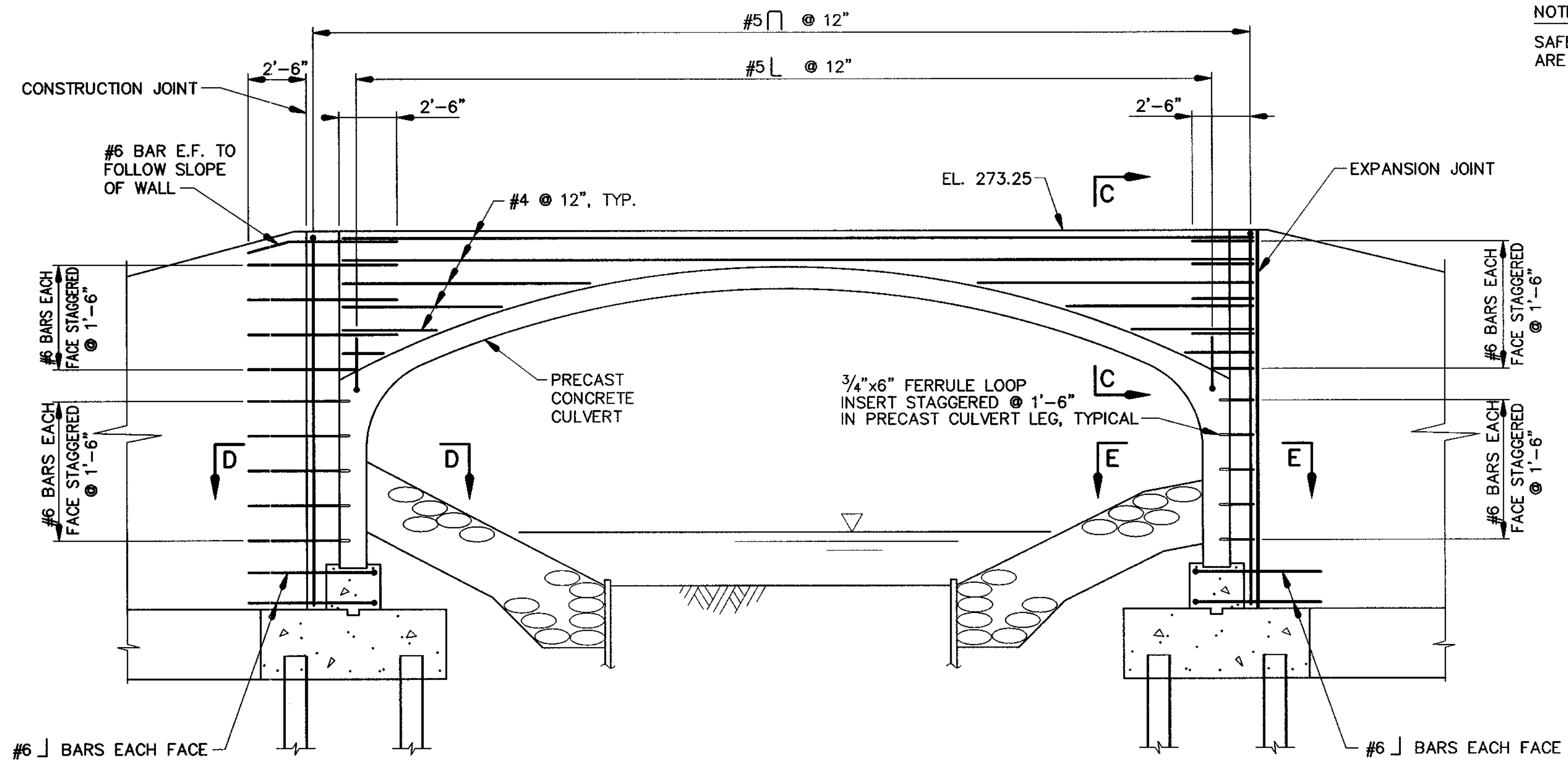
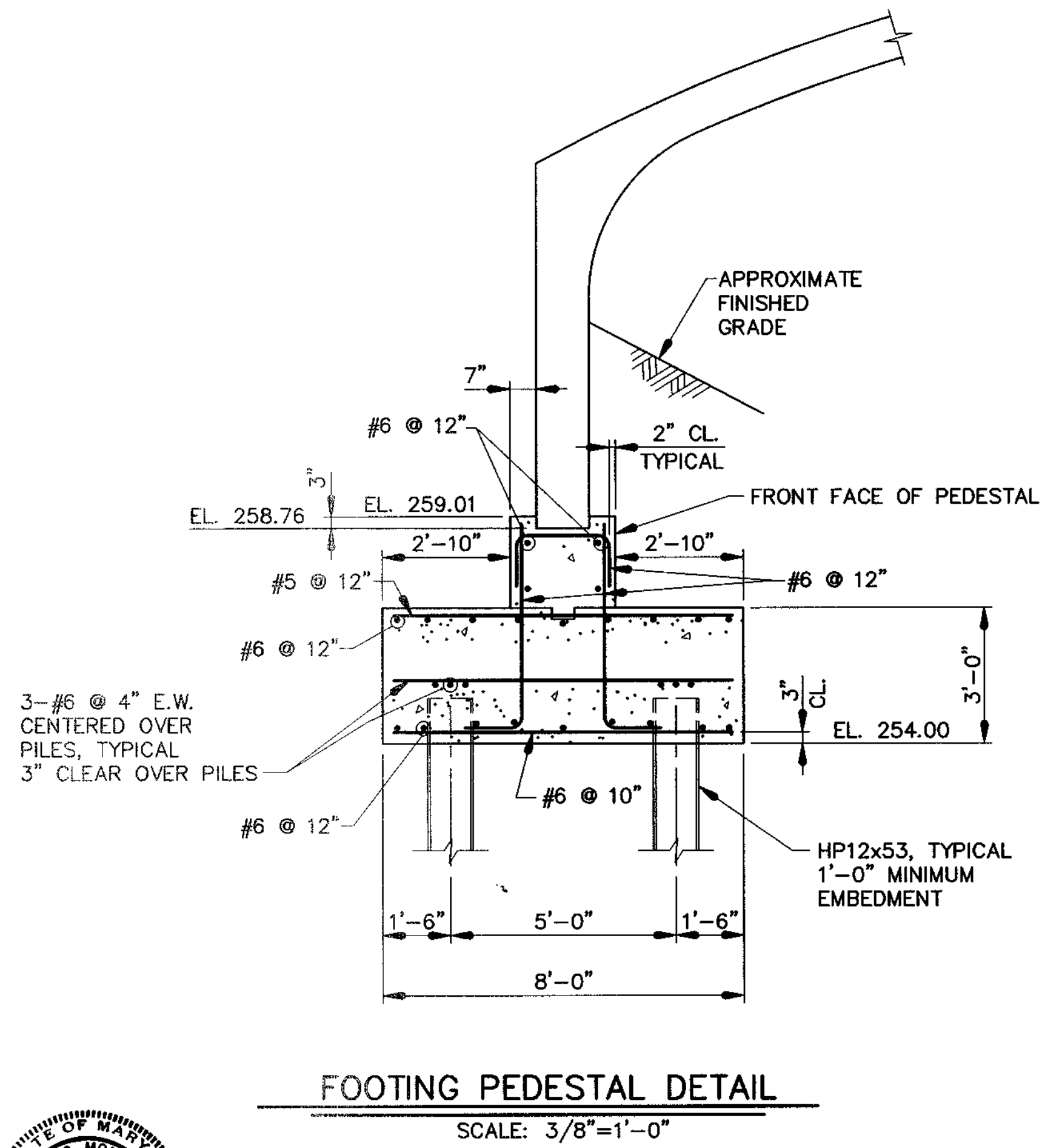
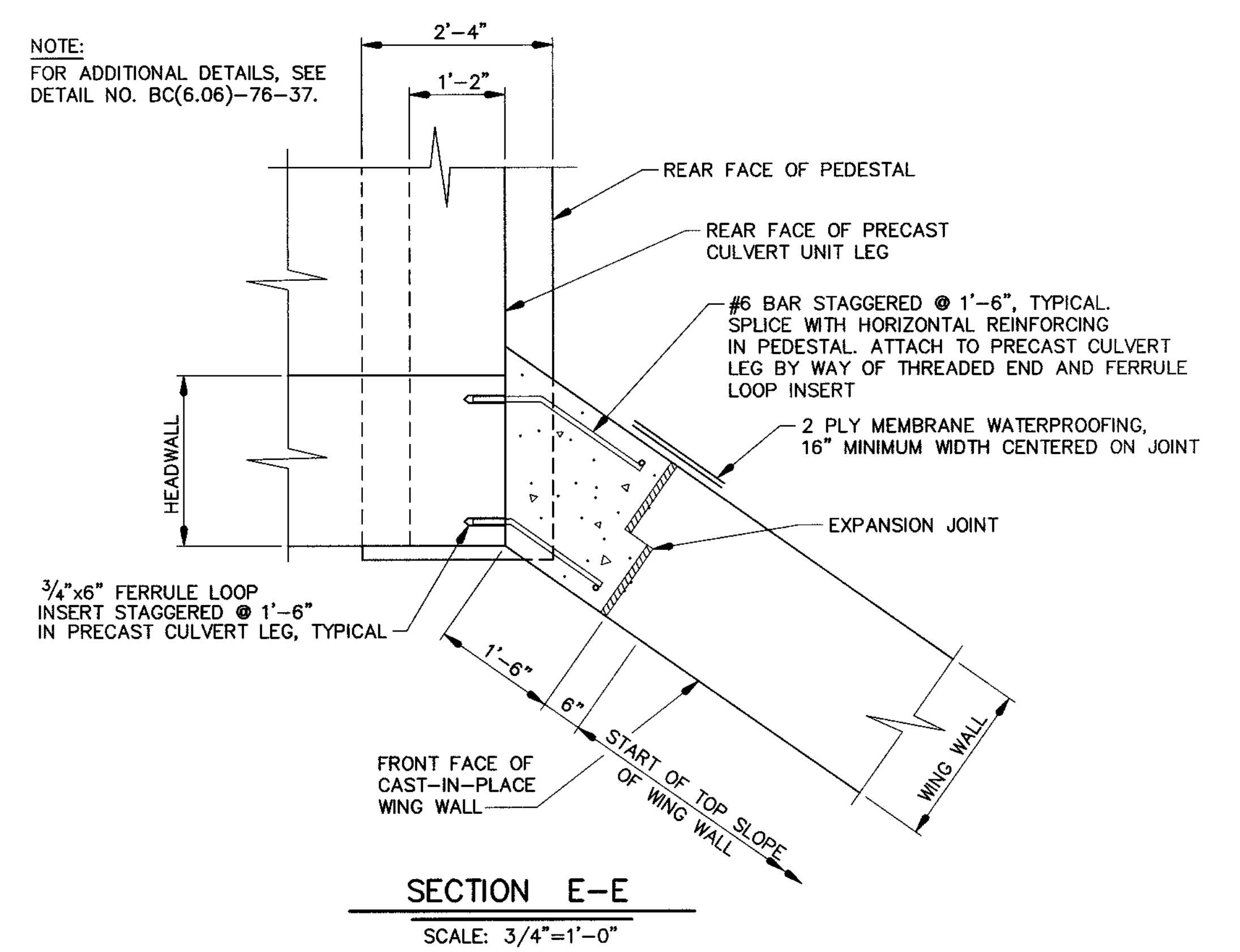
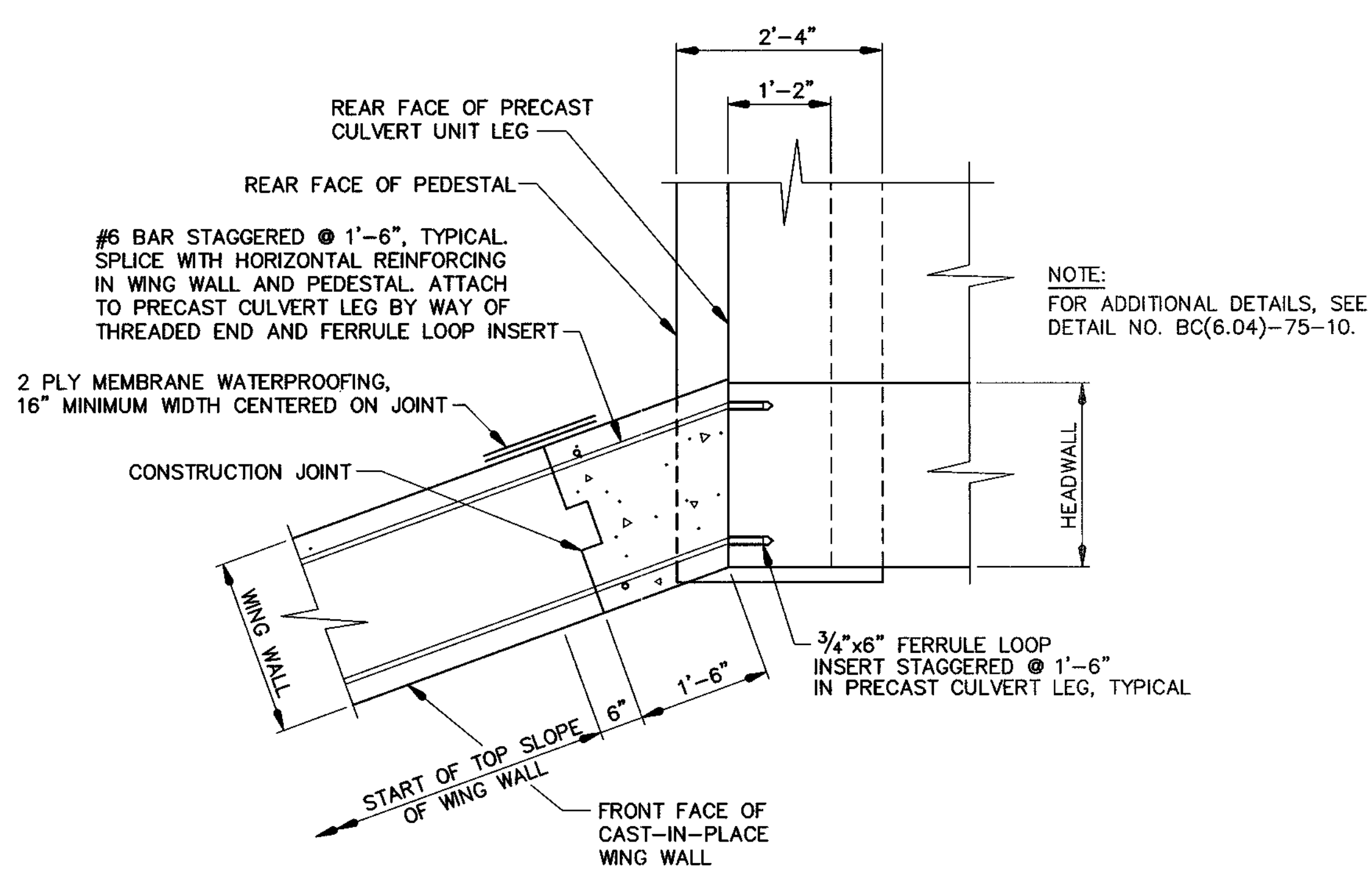
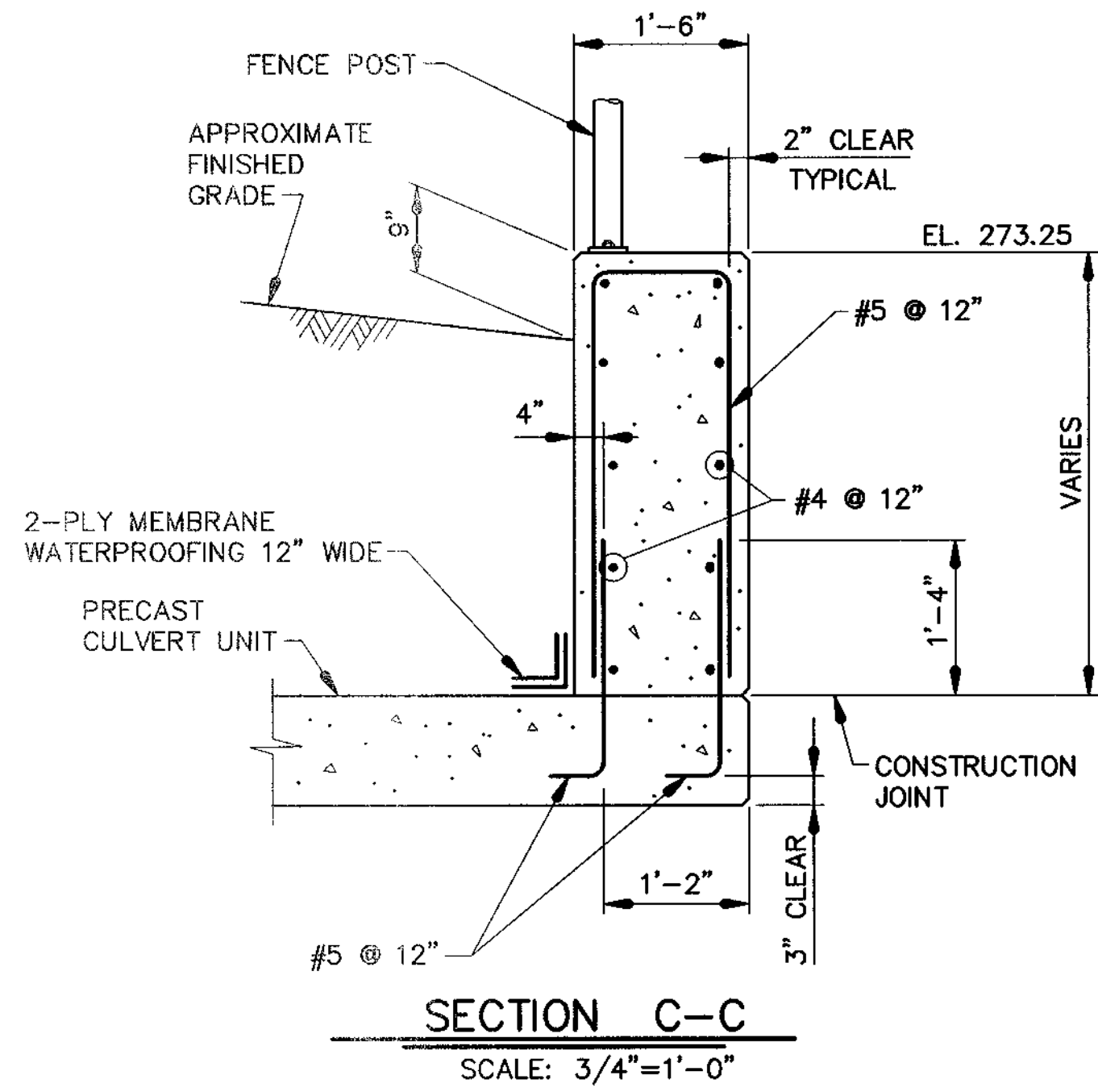
PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

**COLUMBIA GATEWAY**  
MISCELLANEOUS DETAILS

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JAN., 2000		13.1 OF 19



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Danzker* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blumel* 7/21/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*W.D. Danzker* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**WALLACE, MONTGOMERY & ASSOCIATES**  
 CIVIL AND STRUCTURAL ENGINEERS  
 110 WEST ROAD  
 TOWSON, MARYLAND 21284

PREPARED FOR:  
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 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
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**COLUMBIA GATEWAY**  
**MISCELLANEOUS DETAILS**

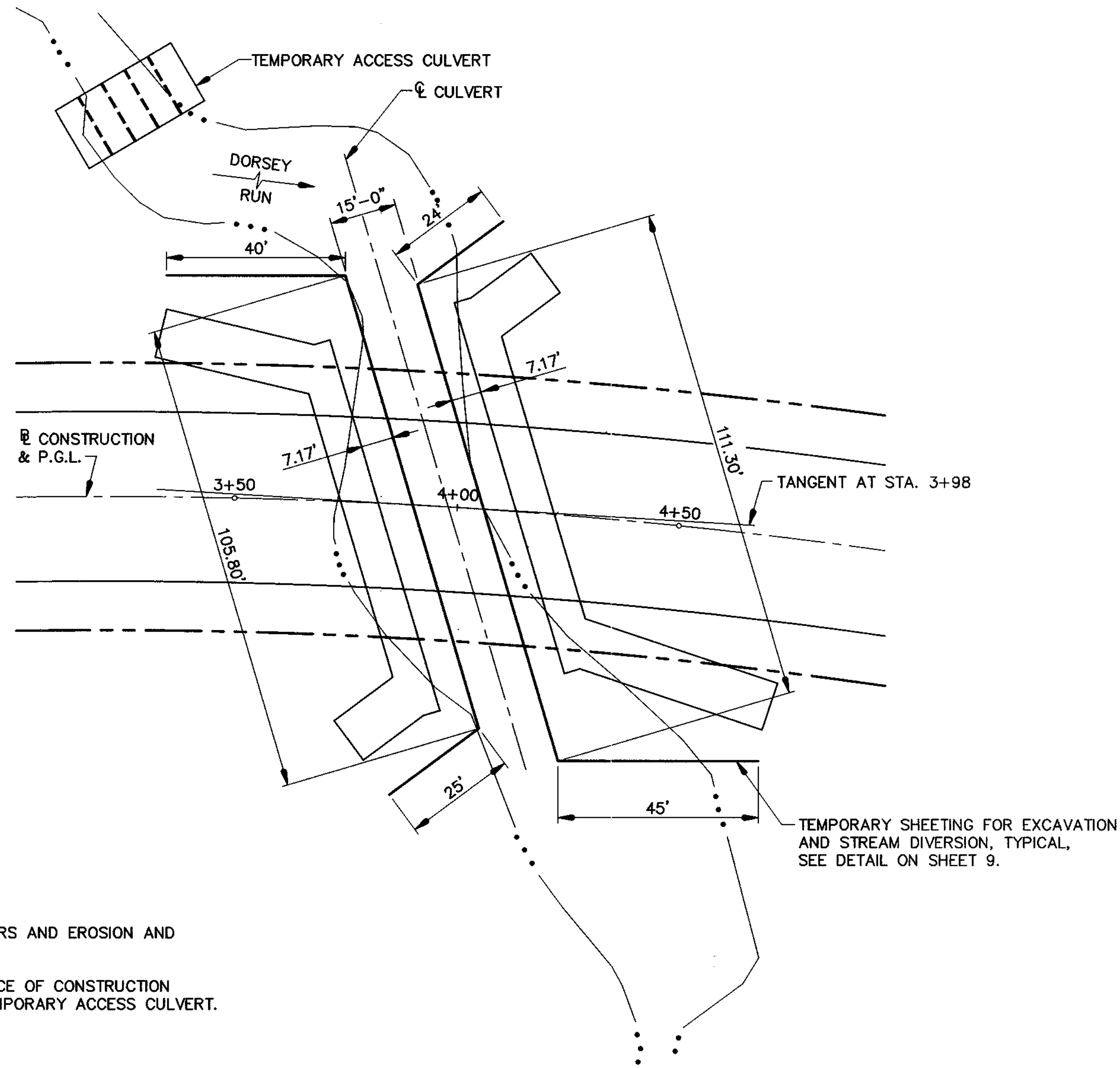
SCALE AS SHOWN	ZONING M-1	W.M.A. FILE NO. 98010
DATE JULY, 1999	TAX MAP - GRID	SHEET 13 OF 19

DES. G.C.N.	DRN. D.E.D.	CHK. S.B.T.	DATE	REVISION	BY	APP'R.
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ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND





**STREAM DIVERSION**

SCALE: 1"=20'

**NOTES:**

1. SEE SHEET 5 FOR CONTOURS AND EROSION AND SEDIMENT CONTROLS.
2. SEE SHEET 6 FOR SEQUENCE OF CONSTRUCTION OF THE ROADWAY AND TEMPORARY ACCESS CULVERT.

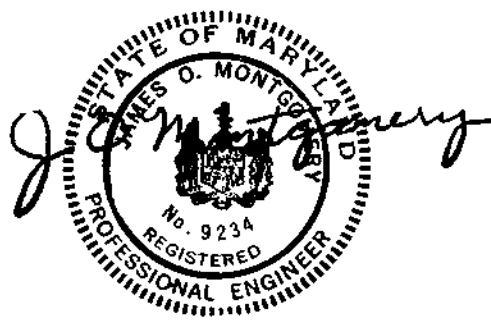
**GENERAL NOTES:**

1. THE CONTINUOUS FLOW OF DORSEY RUN SHALL BE MAINTAINED AT ALL TIMES.
2. THESE STREAM MAINTENANCE DETAILS ARE SUGGESTED METHODS OF CONSTRUCTION ONLY. THE CONTRACTOR HAS THE OPTION OF SUBMITTING A WRITTEN PLAN OF HIS OWN DESIGN TO THE ENGINEER, M.D.E. AND H.S.C.D., SEE SPECIAL PROVISIONS, FOR APPROVAL.
3. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF IN A S.C.D. APPROVED DISPOSAL AREA OUTSIDE THE 100 YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS BY THE M.D.E./W.M.A.
4. ALL RUNOFF COLLECTING IN THE CONSTRUCTION AREA SHALL BE PUMPED TO A FILTER BAG PRIOR TO REENTERING THE STREAM.
5. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.
6. ALL DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITHIN 7 DAYS OF THE INITIAL DISTURBANCE.
7. ALL CONSTRUCTION SHALL REMAIN WITHIN LIMITS OF DISTURBANCE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN.
8. THE DETAILS SHOWN ON THESE PLANS SHALL BE WORKED WITH EROSION AND SEDIMENT CONTROL PLANS, SEE SEQUENCE OF CONSTRUCTION, THIS SHEET AND EROSION AND SEDIMENT CONTROL PLAN.
9. MAINTENANCE OF THE STREAM DIVERSION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST SHALL BE INCIDENTAL TO THE "MAINTENANCE OF STREAM FLOW" ITEM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR REESTABLISHING THE TEMPORARY SHEETING, IF WASHED OUT DUE TO FLOODING.
10. THE STREAM DIVERSION HAS BEEN SIZED TO CARRY 225 CFS OR 78% OF THE 2 YEAR STORM FLOW (USGS REGRESSION EQNS.) ASSUMING A HEADWATER DEPTH EQUAL TO THE TOP OF THE TEMPORARY SHEETING.

**SEQUENCE OF CONSTRUCTION FOR CULVERT CONSTRUCTION:**

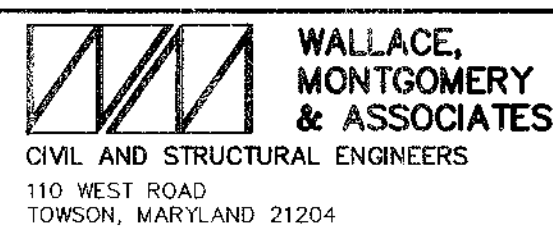
1. NOTIFY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS SEDIMENT CONTROL INSPECTOR AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
2. CLEAR ONLY WHERE NECESSARY TO INSTALL REQUIRED EROSION AND SEDIMENT CONTROL PRACTICES. (3 DAYS)
3. INSTALL EROSION AND SEDIMENT CONTROL PRACTICES WHERE INDICATED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. (3 DAYS)
4. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED ACCORDING TO THE MARYLAND 1994 STANDARDS AND COUNTY REGULATIONS UNTIL THE ENTIRE SITE IS STABILIZED, INSPECTED, AND FINAL APPROVAL GIVEN BY THE APPROPRIATE STATE/COUNTY DEPARTMENT.
5. INSTALL TEMPORARY SHEETING AND SHORING. EXCAVATE AND CONSTRUCT FOOTINGS FOR PRECAST CONCRETE ARCH AND WING WALLS. DEWATER ALL EXCAVATED AREAS TO A FILTER BAG AS DIRECTED BY THE ENGINEER. (15 DAYS)
6. EXCAVATE AND GRADE AS NECESSARY TO PLACE RIPRAP SLOPE PROTECTION ALONG ARCH FOOTINGS. DEWATER ALL EXCAVATED AREAS TO A FILTER BAG AS DIRECTED BY THE ENGINEER. (3 DAYS)
7. CONSTRUCT PRECAST CONCRETE ARCH, CAST IN PLACE CONCRETE WING WALLS AND HEAD WALLS. (15 DAYS)
8. PLACE RIPRAP SLOPE PROTECTION AT ALL WING WALLS. (5 DAYS)
9. BACKFILL PRECAST CONCRETE ARCH AND WING WALLS. BEGIN GRADING AND SHAPING ROADWAY EMBANKMENT AND STREAM BANKS AS DIRECTED BY THE ENGINEER. STABILIZE FINISHED GRADES WITH TOPSOIL, SEED AND MULCH. (5 DAYS)
10. COMPLETE GRADING AND SHAPING OF CHANNEL EMBANKMENT THROUGH ARCH AND STREAM EMBANKMENTS. DEWATER ALL EXCAVATED AREAS TO A FILTER BAG AS DIRECTED BY THE ENGINEER. (3 DAYS)
11. COMPLETE BACKFILL, GRADING AND SHAPING ROADWAY EMBANKMENTS AS DIRECTED BY THE ENGINEER. ~~OUT OFF TEMPORARY SHEETING AT STREAM BOTTOM. (5 DAYS)~~
12. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL. ALL GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY INDICATED ON THE PLANS APPROVED OTHERWISE.
13. REQUEST AGENCY APPROVAL FOR THE REMOVAL OF EROSION AND SEDIMENT CONTROL PRACTICES/DEVICES.
14. REMOVE EROSION AND SEDIMENT CONTROL PRACTICES. STABILIZE WHERE NECESSARY. (3 DAYS)

REMOVE THE TEMPORARY SHEETING OR CUT THE SHEETING OFF AT THE STREAM BOTTOM (5 DAYS)  
8-11-99



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Daniels* 7-19-99  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard B. Boyd* 7/22/99  
CHIEF, DIVISION OF LAND DEVELOPMENT  
*William J. ...* 7/21/99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



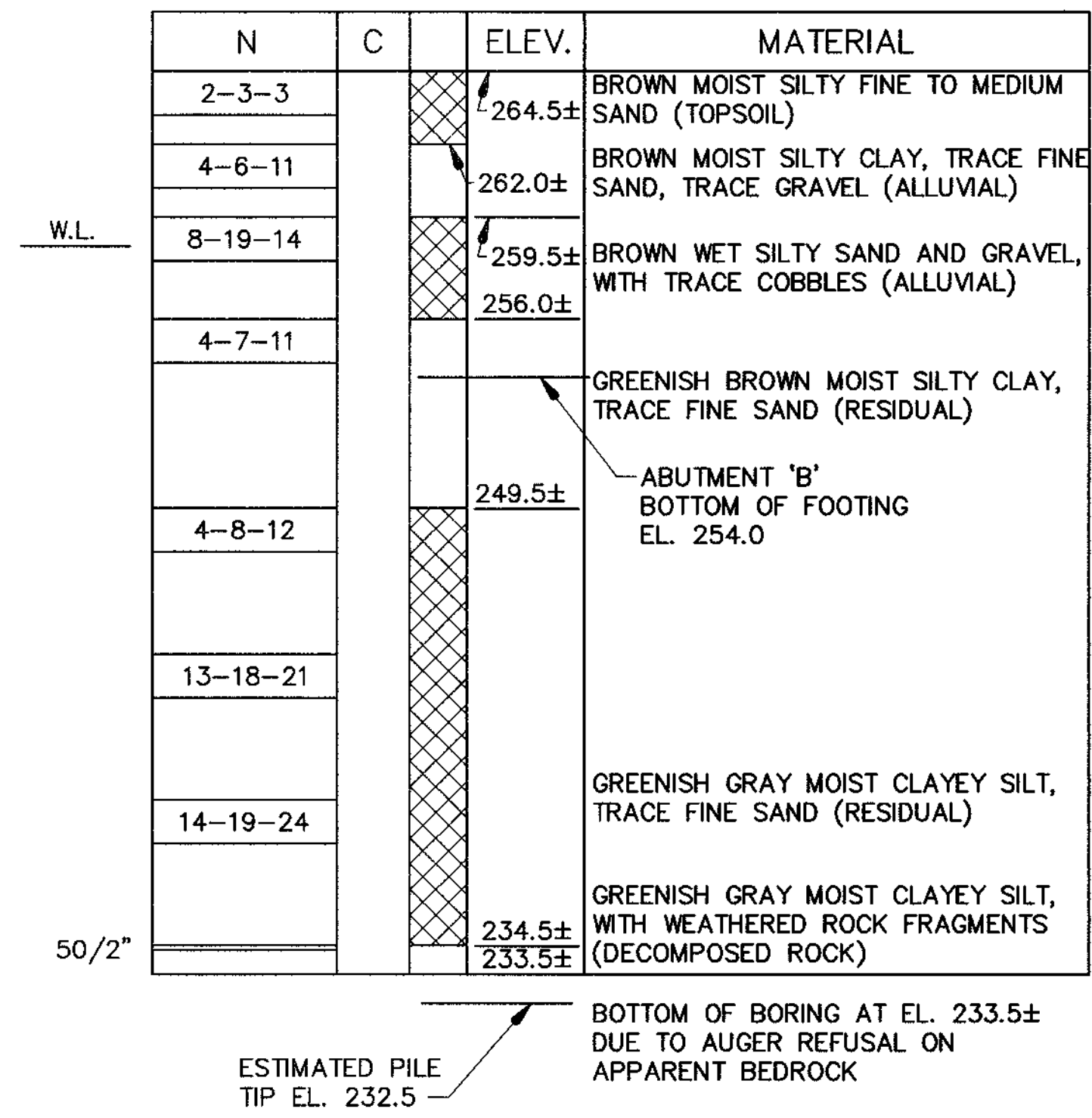
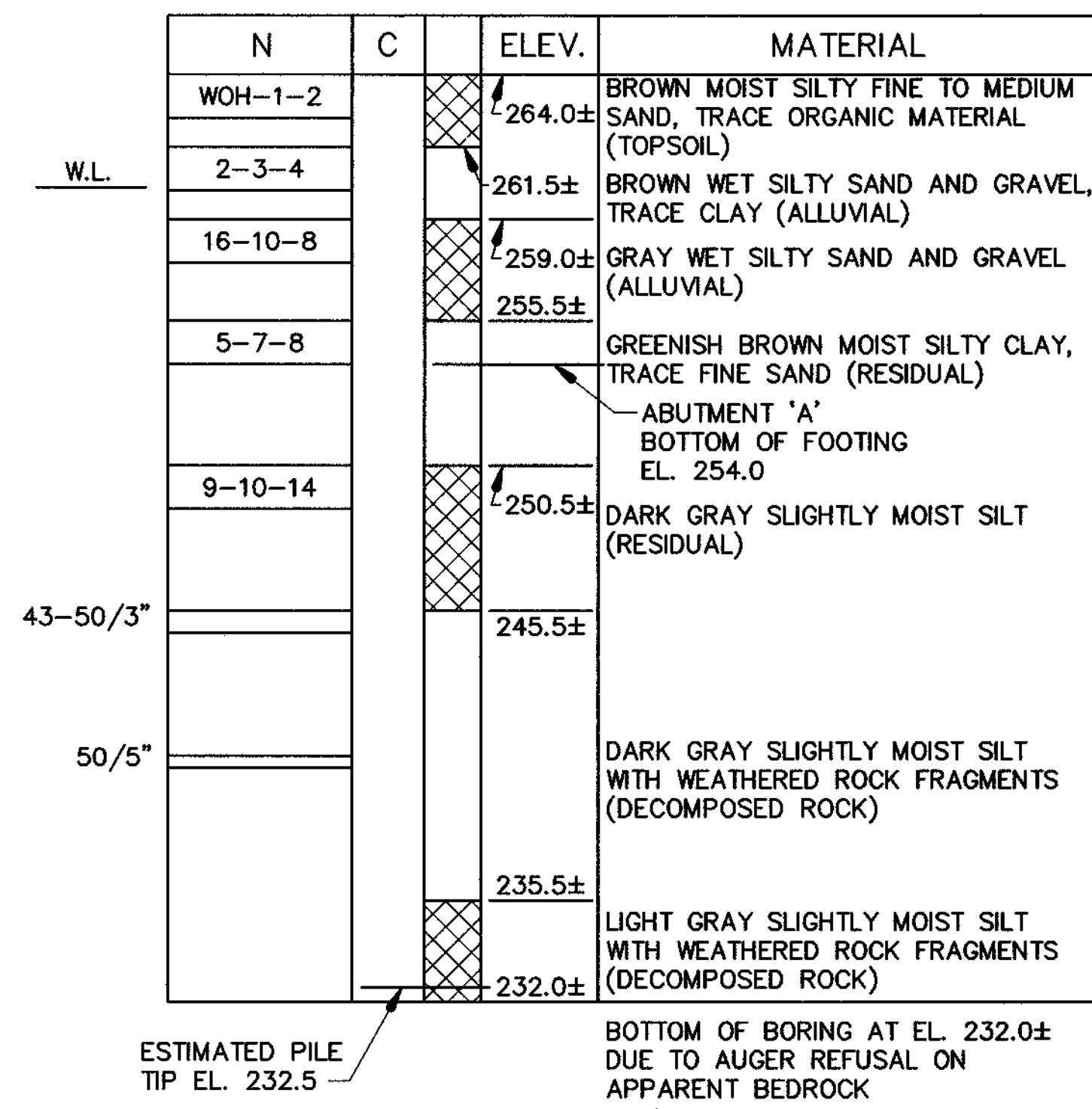
DES. G.C.N.	DRN. D.E.D.	CHK. S.B.T.	DATE	REVISION	BY	APP'R.

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

ELECTION DISTRICT NO. 6

**COLUMBIA GATEWAY  
STREAM DIVERSION**

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		14 OF 19

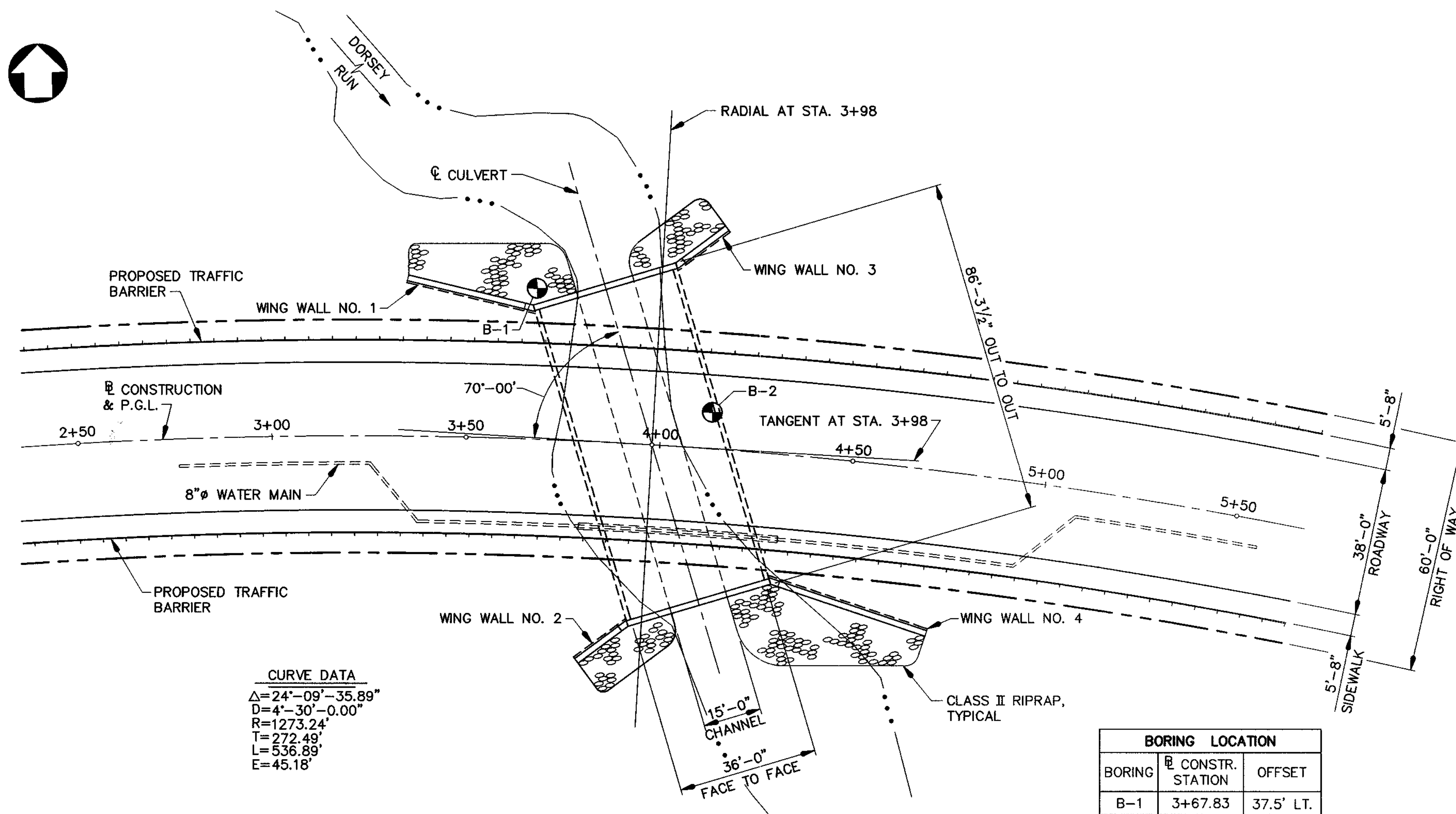


**BORING AND DRIVE TEST B-1**

SCALE: 1"=5' (VERTICAL)

**BORING AND DRIVE TEST B-2**

SCALE: 1"=5' (VERTICAL)

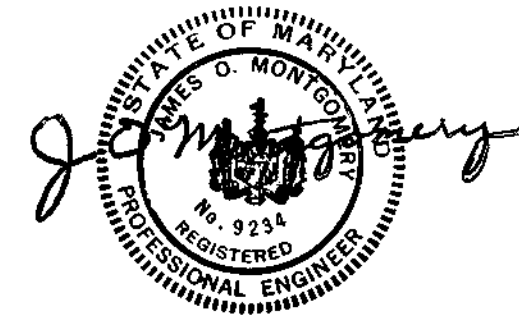


**CURVE DATA**  
 $\Delta = 24^{\circ}-09'-35.89"$   
 $D = 4^{\circ}-30'-0.00"$   
 $R = 1273.24'$   
 $T = 272.49'$   
 $L = 536.89'$   
 $E = 45.18'$

BORING LOCATION		
BORING	CONSTR. STATION	OFFSET
B-1	3+67.83	37.5' LT.
B-2	4+11.15	6.64' LT.

**NOTES:**

- BORINGS AND DRIVE TESTS TAKEN BY EARTH ENGINEERING & SCIENCES, INC. AS FOLLOWS: B-1: 10/24/98 AND B-2: 10/23/98
- N = BLOWS ON SAMPLING SPOON BY 140 POUND WEIGHT FALLING 30" INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENETRATION. PENETRATION LESS THAN 6" IS INDICATED BY ACTUAL LENGTH IN INCHES.
- C = BLOWS PER FOOT ON 2 1/2" CASING BY 300 POUND WEIGHT FALLING 30".
- W.L. = WATER TABLE LEVEL
- BORING LOCATION
- W.O.H. = WEIGHT OF HAMMER



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Danek* 7/19/99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Blood* 7/22/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*William Dammann* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**WALLACE, MONTGOMERY & ASSOCIATES**  
 CIVIL AND STRUCTURAL ENGINEERS  
 110 WEST ROAD  
 TOWSON, MARYLAND 21284

PREPARED FOR:  
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 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
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**COLUMBIA GATEWAY  
 BORINGS AND DRIVE TESTS**

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		15 OF 19

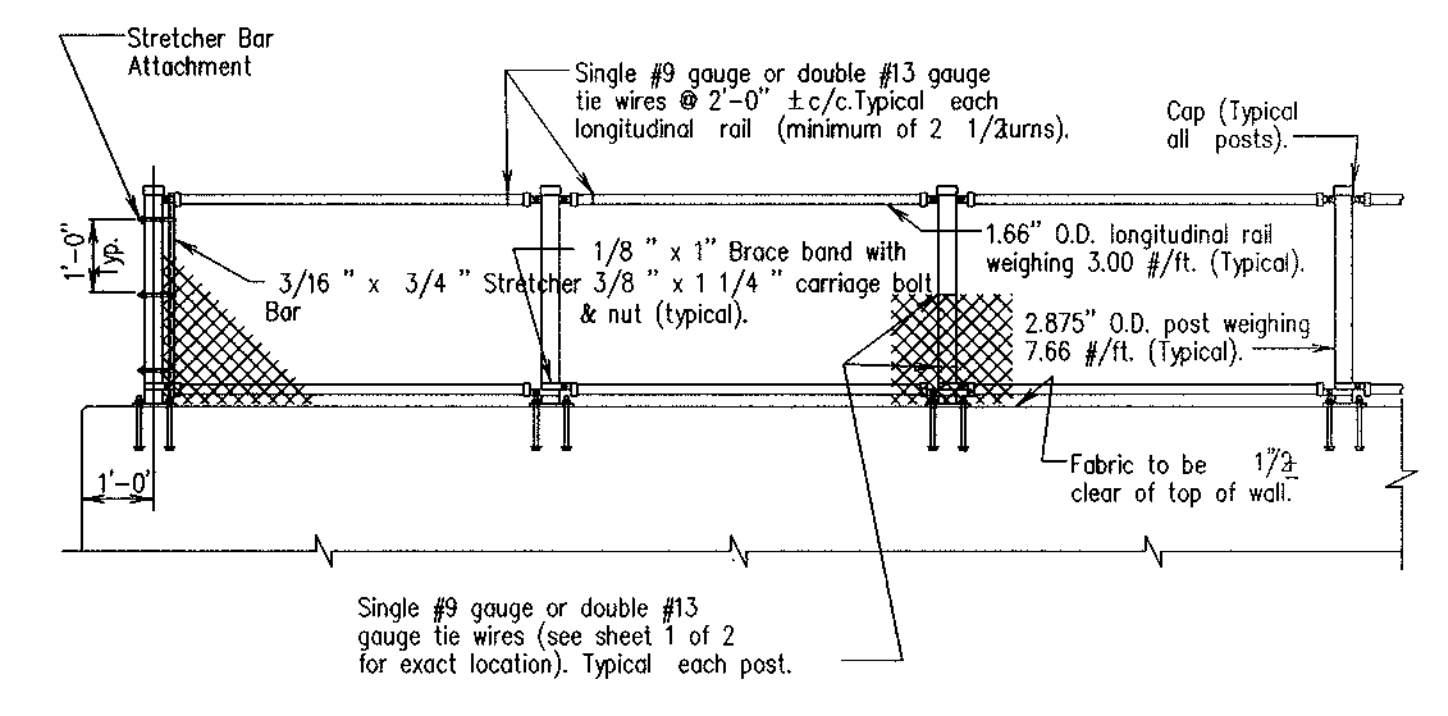
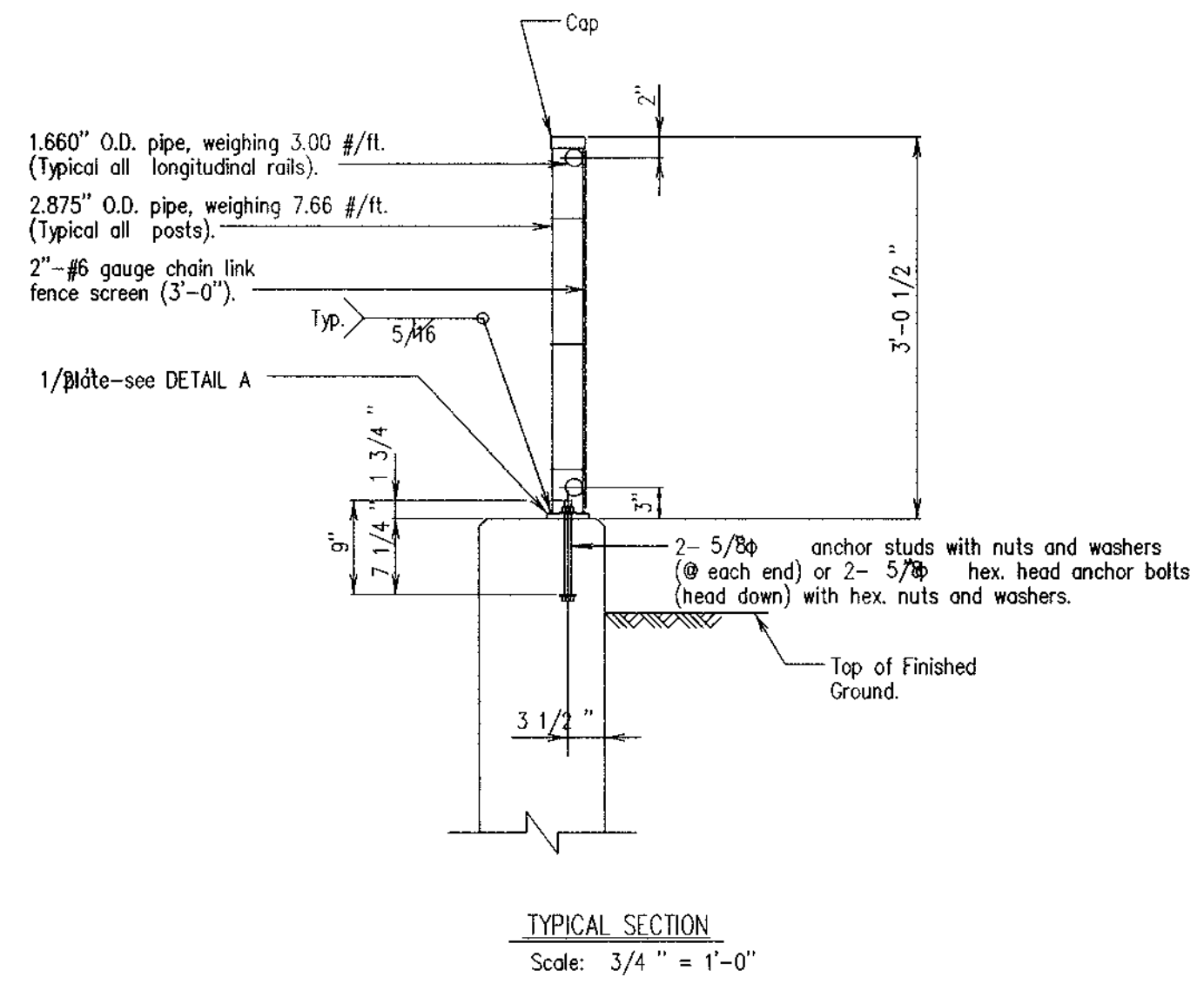
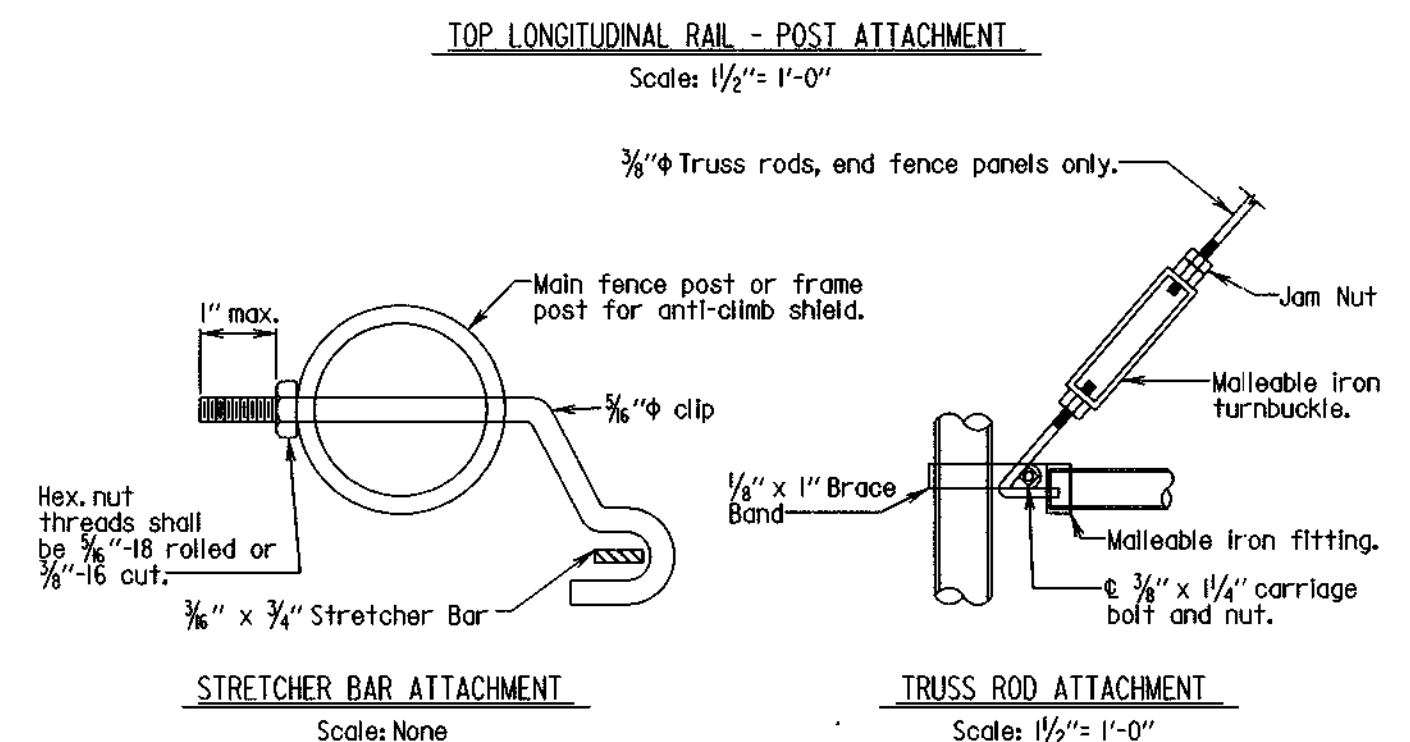
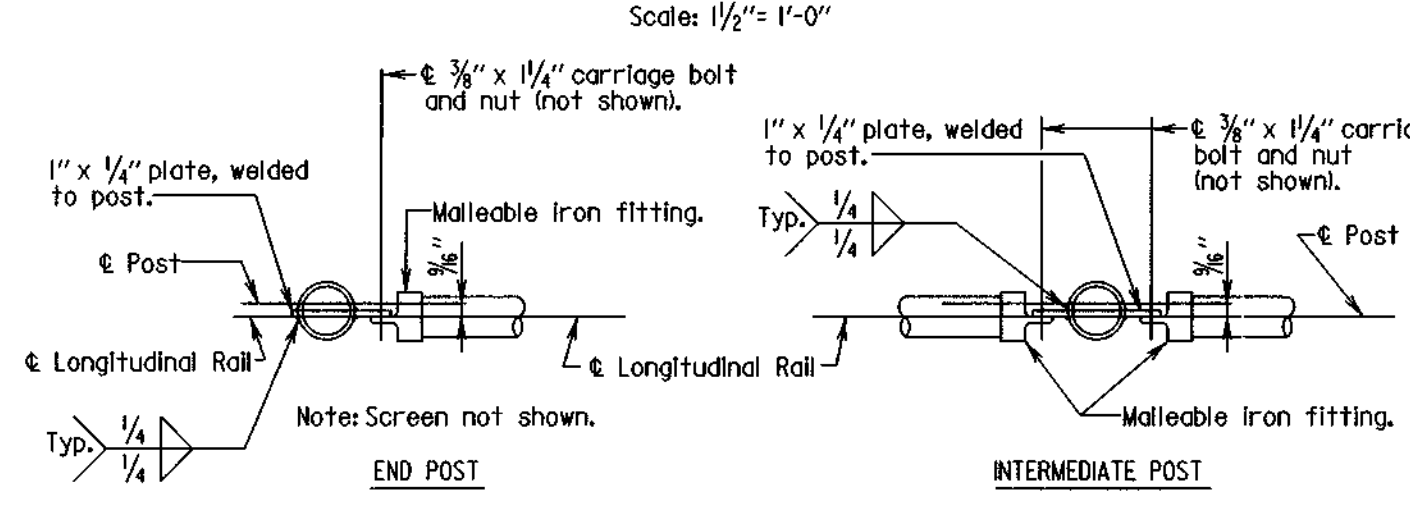
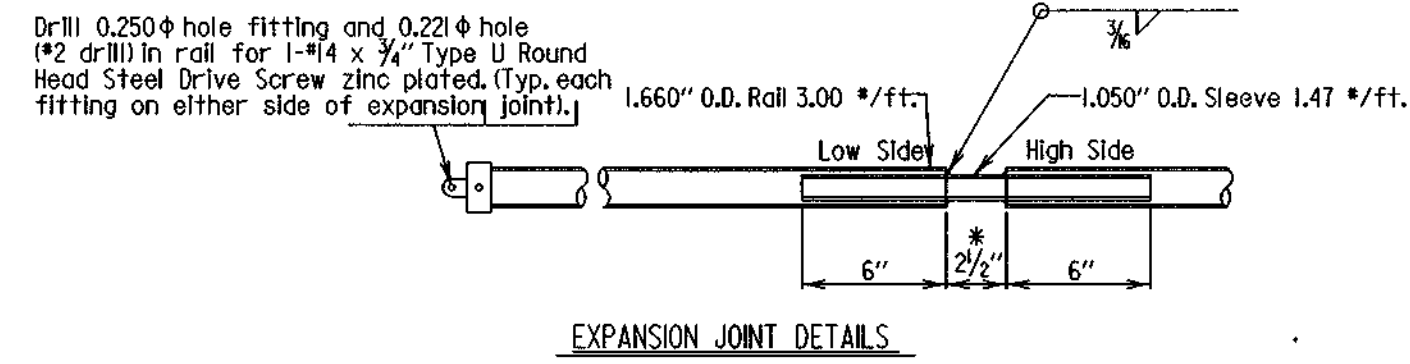
DES. G.C.N.	DRN. D.E.D.	CHK. S.B.T.	DATE	REVISION	BY	APP'R.

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

GENERAL NOTES

Specifications: Latest SHA Specifications and Special Provisions for materials and construction. Latest AASHTO Standard Specifications for Highway Bridges for design.
Materials: Posts and rails shall meet the requirements of F-1083, Schedule 80. Fabric shall be 6 gauge, 2" PVC coated mesh conforming to 914.01.
Construction: All longitudinal rails shall be parallel to top of wall.
Measurement and Payment: The furnishing, fabricating, erecting, etc., of all new chain link fence on the retaining wall or culvert headwalls and wing walls, complete in place, will not be measured for payment but all costs thereof shall be included in the Contract lump sum prices for the pertinent Retaining Wall or Box Culvert Item(s).



STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT CHAIN LINK SAFETY FENCE RETAINING WALLS AND BOX CULVERTS GENERAL NOTES SHEET 1 OF 1

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT CHAIN LINK SAFETY FENCE - NEW STRUCTURES MISCELLANEOUS DETAILS NO. BR-SS3.04-75-24 SHEET 1 OF 1

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT TYPE III CHAIN LINK SAFETY FENCE RETAINING WALLS AND BOX CULVERTS SHEET 1 OF 2

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT TYPE III CHAIN LINK SAFETY FENCE RETAINING WALLS AND BOX CULVERTS SHEET 2 OF 2

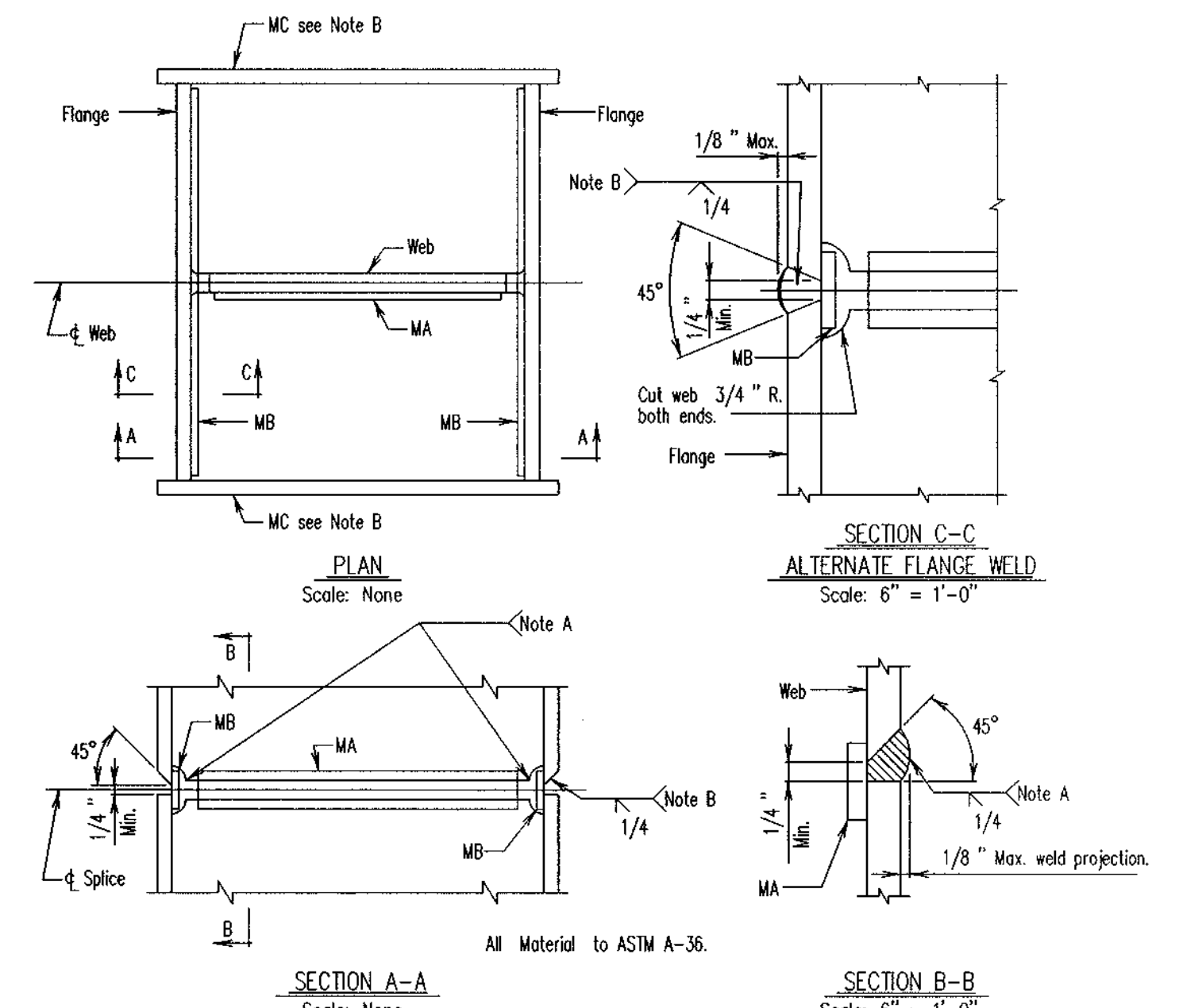
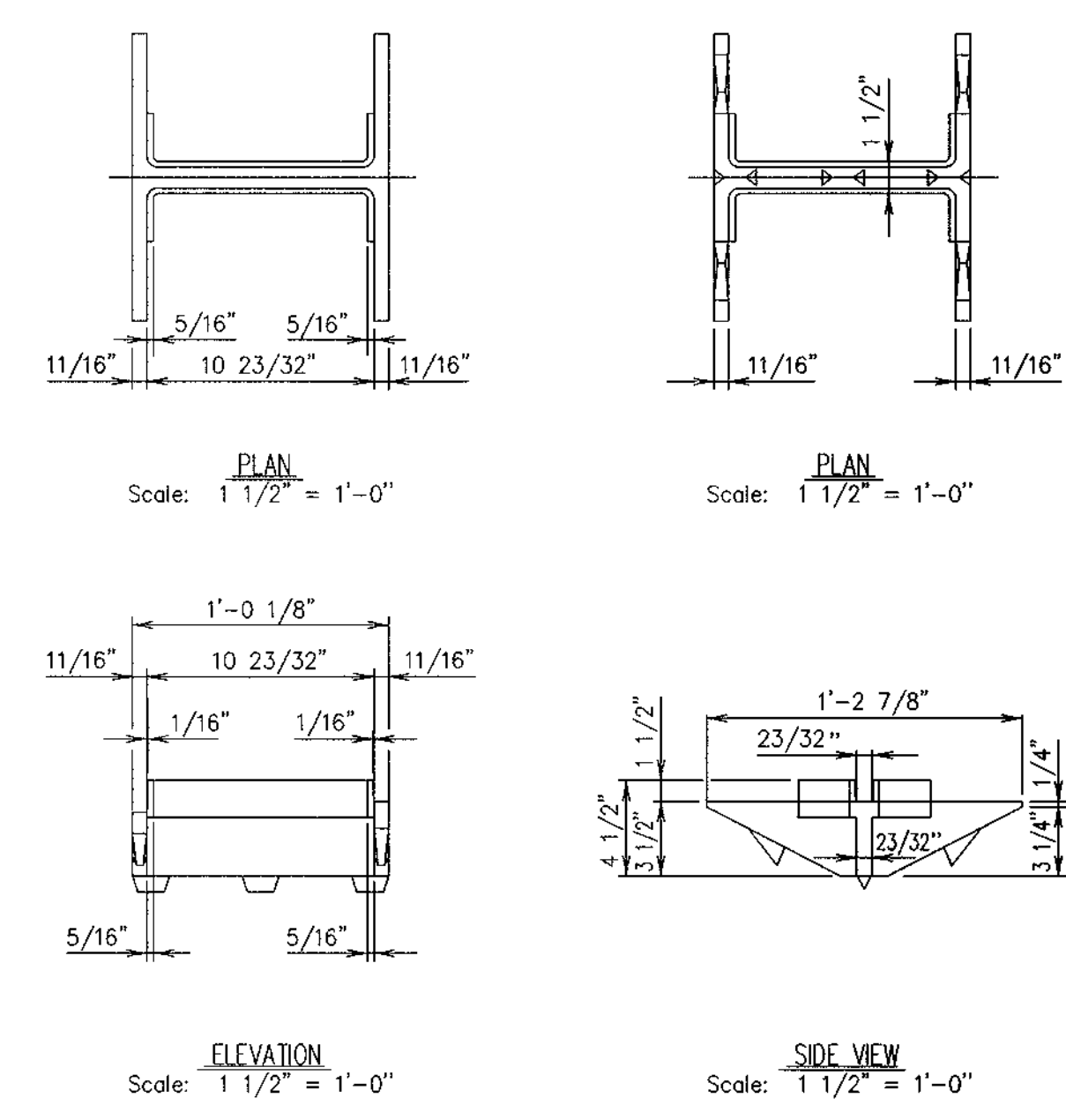
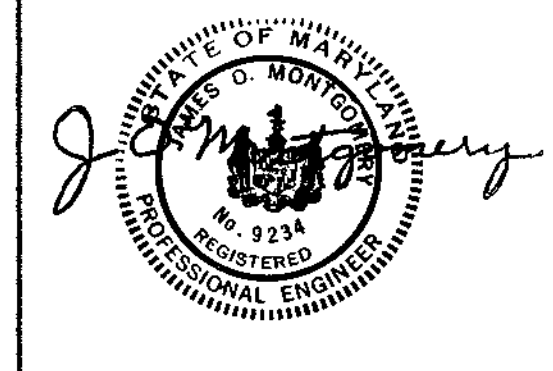


Table with 3 columns: Size of Pile (12 x 53, 12 x 74), Size of 45 Bevel (1/4, 5/16), Size of Groove Weld (5/16, 5/16).

- Note: 1. Material: Cast Steel A27 65/35. All fillets 3/8. 2. Point to be welded to pile with a continuous single bevel groove weld along outside face of flange. Exterior face of flange to be flame cut beveled at 45, prior to welding. 3. For each shipment of points a foundry certificate verifying material meets the Specifications is required.

APPROVAL: STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT TOOTHED PILE POINT FOR 12" H PILE SHEET 1 OF 1

Material Required: 1 Bar MA 1" x 3/16" x 7 1/4", 1 Bar MA 1" x 3/16" x 9 3/8", 1 Bar MA 1" x 3/16" x 1'-0". For HP 10 Piles: 2 Bars MB 1" x 3/16" x 10# HP 12 Piles, 2 Bars MB 1" x 3/16" x 1'-2 1/2", 2 Bars MC 3" x 3/8" x 11", 2 Bars MC 3" x 3/8" x 1'-1", 2 Bars MC 3" x 3/8" x 1'-3".



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, Andrew M. Daniels, 7-19-99. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, Richard Blood, 7/24/99. APPROVED: HOWARD COUNTY DEPARTMENT OF ENGINEERING, [Signature], 7/26/99.

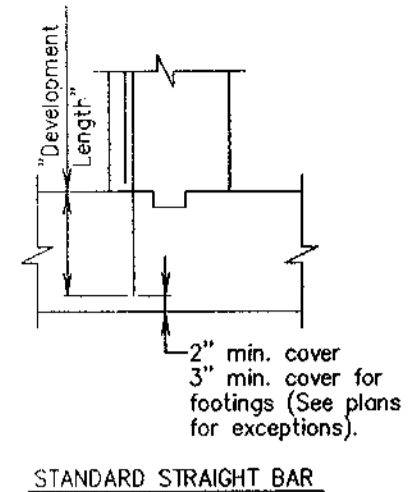
WALLACE, MONTGOMERY & ASSOCIATES CIVIL AND STRUCTURAL ENGINEERS 110 WEST ROAD TOWSON, MARYLAND 21284

PREPARED FOR: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PH: 410-992-6370 ATTN: MR. GREG KLAR

COLUMBIA GATEWAY DETAILS

Table with 3 columns: SCALE (AS SHOWN), ZONING (M-1), W.M.A. FILE NO. (98010), DATE (JULY, 1999), TAX MAP - GRID, SHEET (16 OF 19).





BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	1'-5"	1'-0"	1'-0"
#5	1'-9"	1'-3"	1'-0"
#6	2'-2"	1'-6"	1'-3"
#7	2'-7"	1'-10"	1'-6"
#8	3'-4"	2'-5"	1'-11"
#9	4'-3"	3'-0"	2'-5"
#10	5'-4"	3'-10"	3'-1"
#11	6'-7"	4'-8"	3'-9"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6" apart.  
 C-All bars not in Category A spaced 6" inches or more apart.

- Note:  
 1. When development length is not specified on the plans, the above dimensions shall be used.  
 2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.  
 3. These development lengths only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.  
 4. If depth of member does not allow bar development length indicated in Categories A, B, and C, then hook shall be added to all bars not conforming, as per D, E, and F per Std. No. M(6.10)-86-180.

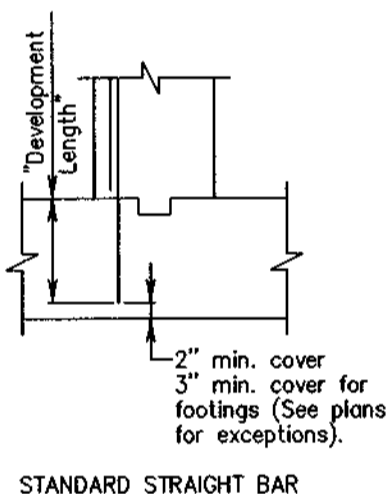
APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
REVISIONS SHA FHWA 11-23-93	NO. M(6.16)-90-216 SHEET 1 OF 3
FHWA APPROVAL DATE: 2-22-90	

BAR SIZE	* LOCATION CATEGORY			3 Times Bar Diameter	6 Times Bar Diameter = c/c Spacing
	A	B	C		
#4	2'-11"	2'-7"	2'-1"	1 1/2"	3"
#5	3'-8"	3'-3"	2'-7"	1 7/8"	3 3/4"
#6	4'-5"	3'-10"	3'-1"	2 1/4"	4 1/2"
#7	5'-3"	4'-7"	3'-8"	2 5/8"	5 1/4"
#8	6'-10"	6'-1"	4'-10"	3"	6"
#9	8'-8"	7'-8"	6'-1"	3 3/8"	6 3/4"
#10	11'-0"	9'-8"	7'-9"	3 3/4"	7 5/8"
#11	13'-6"	11'-11"	9'-6"	4 1/4"	8 1/2"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6 inches apart.  
 C-All bars not in Category A spaced 6 inches or more apart.

- Note:  
 1. When bar lap is not specified on the plans, the above dimensions shall be used.  
 2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.  
 3. These bar laps only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.

APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO. 1
REVISIONS SHA FHWA 2-10-92 11-23-93	NO. M(6.05)-80-122 SHEET 2 OF 3
FHWA APPROVAL DATE: 11-23-93	



BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	1'-5"	1'-0"	1'-0"
#5	1'-9"	1'-3"	1'-0"
#6	2'-2"	1'-6"	1'-3"
#7	2'-7"	1'-10"	1'-6"
#8	3'-4"	2'-5"	1'-11"
#9	4'-3"	3'-0"	2'-5"
#10	5'-4"	3'-10"	3'-1"
#11	6'-7"	4'-8"	3'-9"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6" apart.  
 C-All bars not in Category A spaced 6" inches or more apart.

- Note:  
 1. When development length is not specified on the plans, the above dimensions shall be used.  
 2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.  
 3. These development lengths only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.  
 4. If depth of member does not allow bar development length indicated in Categories A, B, and C, then hook shall be added to all bars not conforming, as per D, E, and F per Std. No. M(6.10)-86-180.

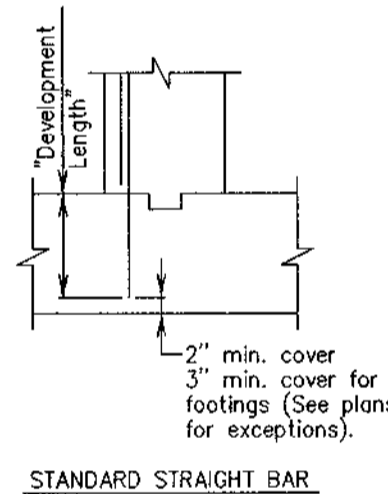
APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
REVISIONS SHA FHWA 11-23-93	NO. M(6.16)-90-216 SHEET 1 OF 3
FHWA APPROVAL DATE: 2-22-90	

BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	2'-9"	2'-0"	1'-7"
#5	3'-6"	2'-6"	2'-0"
#6	4'-2"	3'-0"	2'-5"
#7	4'-11"		2'-10"
#8	6'-6"	Does Not Exist	3'-9"
#9	8'-2"		4'-8"
#10	10'-5"		6'-8"
#11	12'-9"		7'-4"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6 inches apart.  
 C-All bars not in Category A spaced 6 inches or more apart.

- Note:  
 1. When bar lap is not specified on the plans, the above dimensions shall be used.  
 2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.  
 3. These bar laps only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.

APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO. 2
REVISIONS SHA FHWA 2-10-92 11-23-93	NO. M(6.05)-80-122 SHEET 3 OF 3
FHWA APPROVAL DATE: 11-23-93	

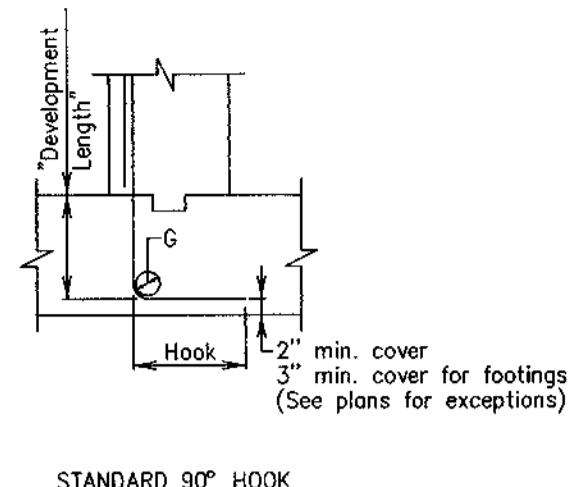


BAR SIZE	* LOCATION CATEGORY			3 Times Bar Diameter	6 Times Bar Diameter = c/c Spacing
	A	B	C		
#4	1'-9"	1'-3"	1'-6"	1 1/2"	3"
#5	2'-2"	1'-6"	1'-10"	1 7/8"	3 3/4"
#6	2'-7"	2'-3"	2'-10"	2 1/4"	4 1/2"
#7	3'-1"	2'-9"	2'-2"	2 5/8"	5 1/4"
#8	4'-1"	3'-7"	2'-10"	3"	6"
#9	5'-1"	4'-6"	3'-5"	3 3/8"	6 3/4"
#10	6'-6"	5'-9"	4'-7"	3 3/4"	7 5/8"
#11	7'-11"	7'-0"	5'-7"	4 1/4"	8 1/2"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6" apart.  
 C-All bars not in Category A spaced 6" inches or more apart.

- Note:  
 1. When development length is not specified on the plans, the above dimensions shall be used.  
 2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.  
 3. These development lengths only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.

APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO. 1
REVISIONS SHA FHWA 2-10-92 11-23-93	NO. M(6.16)-90-216 SHEET 2 OF 3
FHWA APPROVAL DATE: 11-23-93	

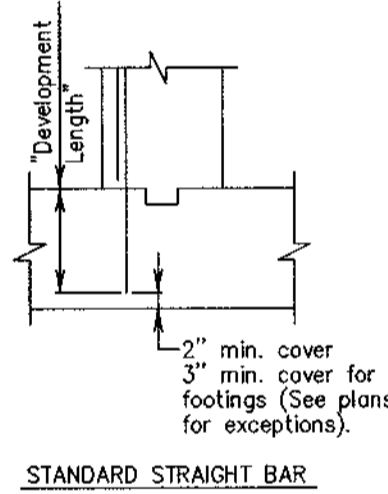


BAR SIZE	* LOCATION CATEGORY		
	D	E	F
#4	7"	9"	8"
#5	8"	1'-0"	9"
#6	10"	1'-2"	11"
#7	1'-1"	1'-6"	1'-3"
#8	1'-3"	1'-9"	1'-5"
#9	1'-4"	1'-11"	1'-2"
#10	1'-6"	2'-2"	1'-9"

\* LOCATION CATEGORY:  
 D-All bars terminating with a standard 180 hook with side cover (normal to plane of hook) not less than 2 1/2 "d, and for 90 deg. hook, cover on bar extension beyond hook not less than 2".  
 E-All bars not in Category D.  
 F-All bars with hook enclosed vertically or horizontally within ties or stirrup-ties spaced along the full development length not greater than 3d where d is the diameter of the hooked bar.

- Note:  
 1. When development length is not specified on the plans, the above dimensions shall be used.  
 2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.  
 3. These development lengths only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.  
 4. If depth of member does not allow bar development length indicated in Categories A, B, and C, then hook shall be added to all bars not conforming, as per D, E, and F.

APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 4/4/86	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT DEVELOPMENT LENGTH DIMENSIONS OF HOOKED BARS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE
REVISIONS SHA FHWA 12-22-86 2-2-90 6-8-90	NO. M(6.10)-86-180 SHEET 1 OF 1
FHWA APPROVAL DATE: 6-8-90	

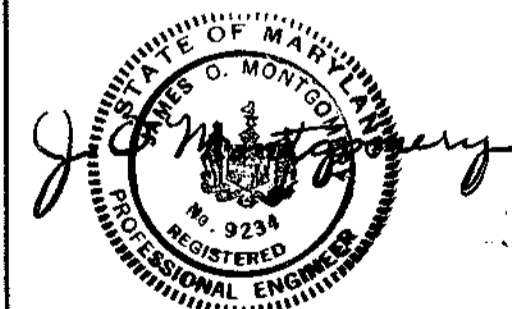


BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	1'-8"	1'-2"	1'-0"
#5	2'-1"	1'-6"	1'-2"
#6	2'-5"	1'-9"	1'-5"
#7	2'-11"		1'-8"
#8	3'-10"	Does Not Exist	2'-3"
#9	4'-10"		2'-9"
#10	6'-2"		3'-6"
#11	7'-6"		4'-4"

\* LOCATION CATEGORY:  
 A-Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.  
 B-All bars not in Category A spaced less than 6" apart.  
 C-All bars not in Category A spaced 6" inches or more apart.

- Note:  
 1. When development length is not specified on the plans, the above dimensions shall be used.  
 2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.  
 3. These development lengths only apply where the General Notes indicate Reinforcing Steel Design, f<sub>s</sub> = 24,000 p.s.i.

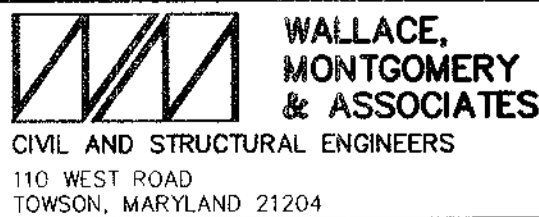
APPROVAL <i>[Signature]</i> CHIEF ENGR. BRIDGE DEVL. DATE: 2/2/99	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF BRIDGE DEVELOPMENT DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO. 2
REVISIONS SHA FHWA 11-23-93	NO. M(6.16)-90-216 SHEET 3 OF 3
FHWA APPROVAL DATE: 2-22-90	



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 7-19-99  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 7/22/99  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 7/21/99  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



DES.	G.C.N.	DRN.	D.E.D.	CHK.	S.B.T.	DATE	REVISION	BY	APPR.

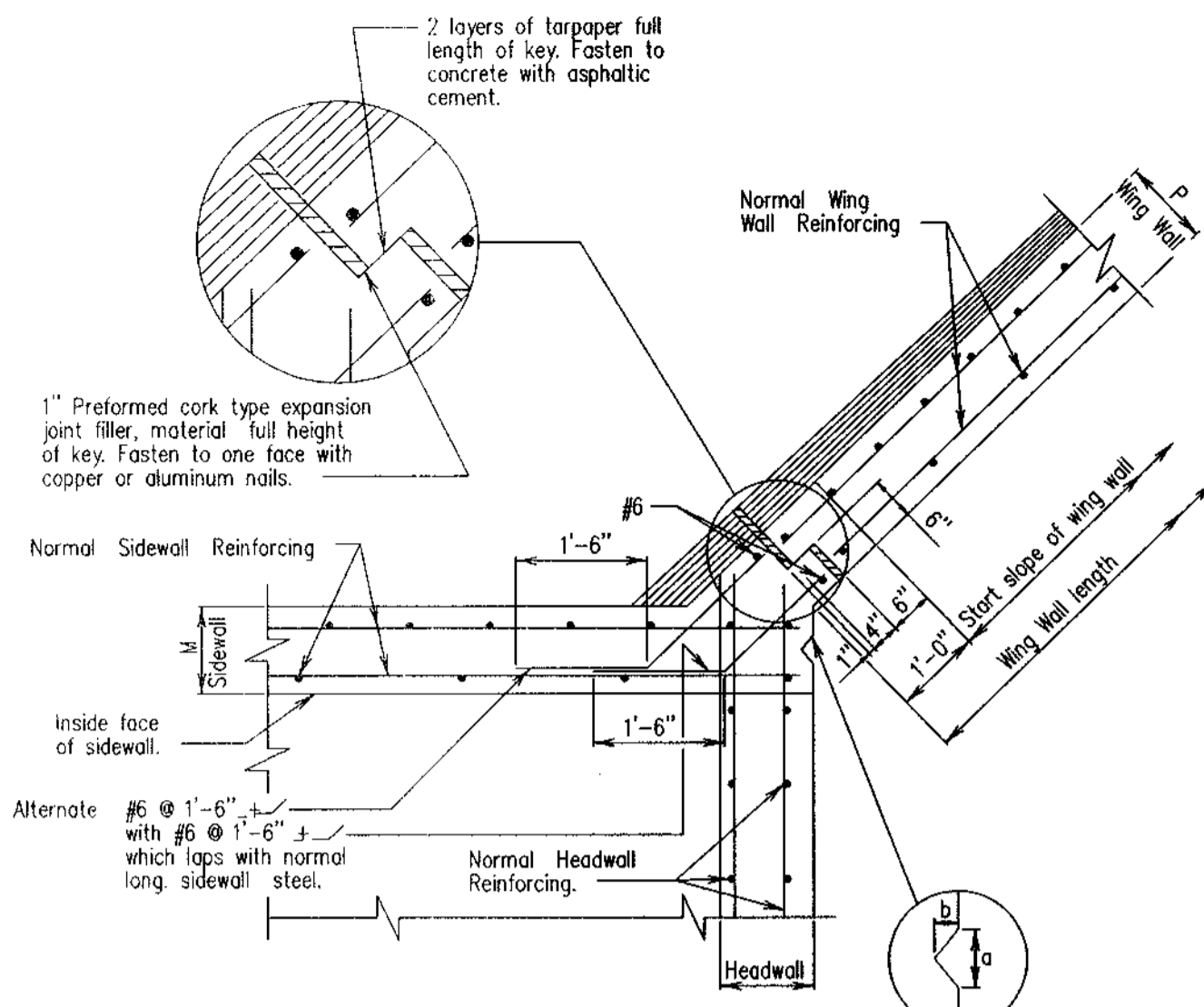
PREPARED FOR:  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PH: 410-992-6370  
 ATTN: MR. GREG KLAR

COLUMBIA GATEWAY  
 DETAILS

ELECTION DISTRICT NO. 6

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		18 OF 19

F-99-91



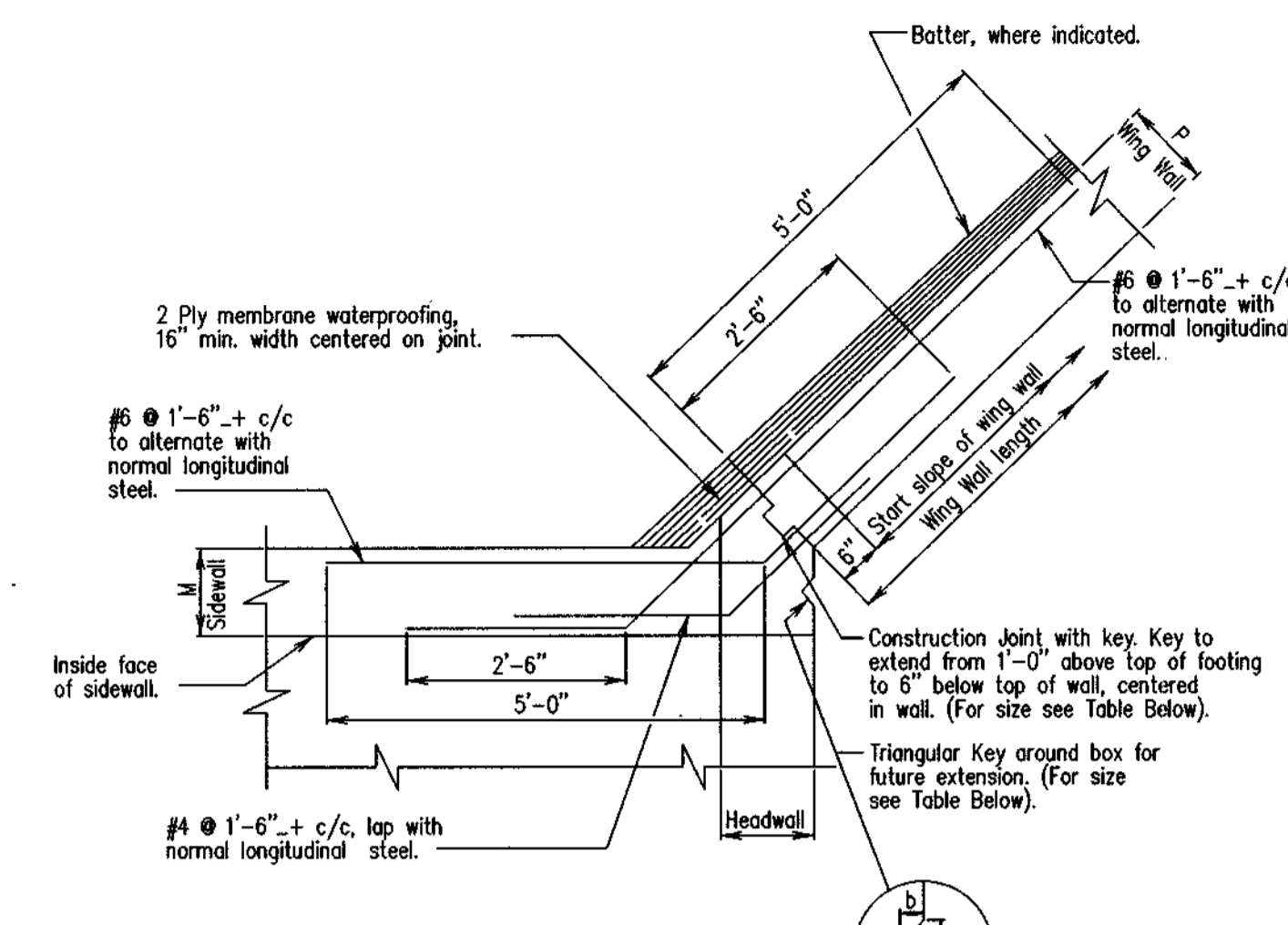
M or P	Triangular Key Size	a	b
Less than 12"	3"	1 1/2"	
12" to 18"	4"	2"	
18" or over	6"	3"	

PLAN Scale: 1/2" = 1'-0"

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

BOX CULVERT WING WALL EXPANSION JOINT

SHEET 1 OF 1



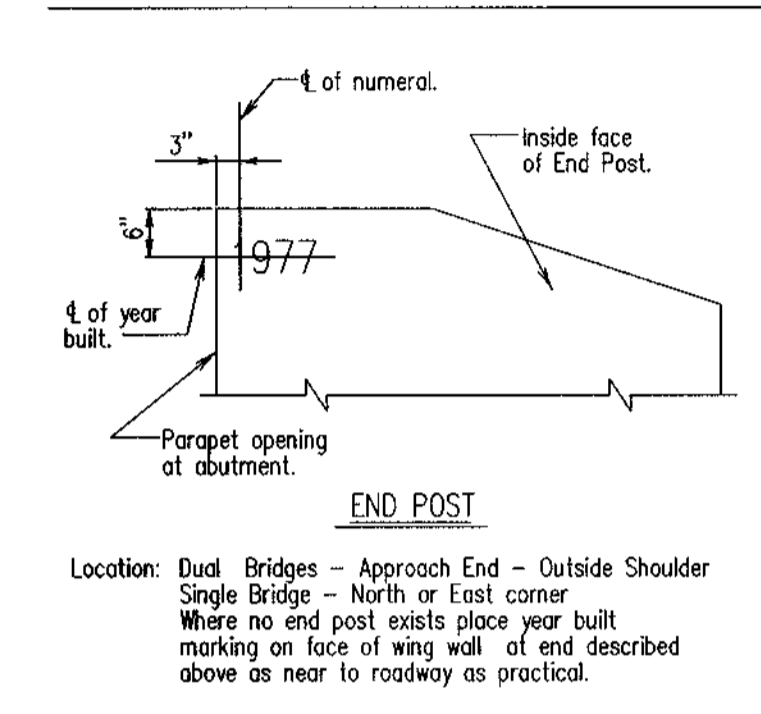
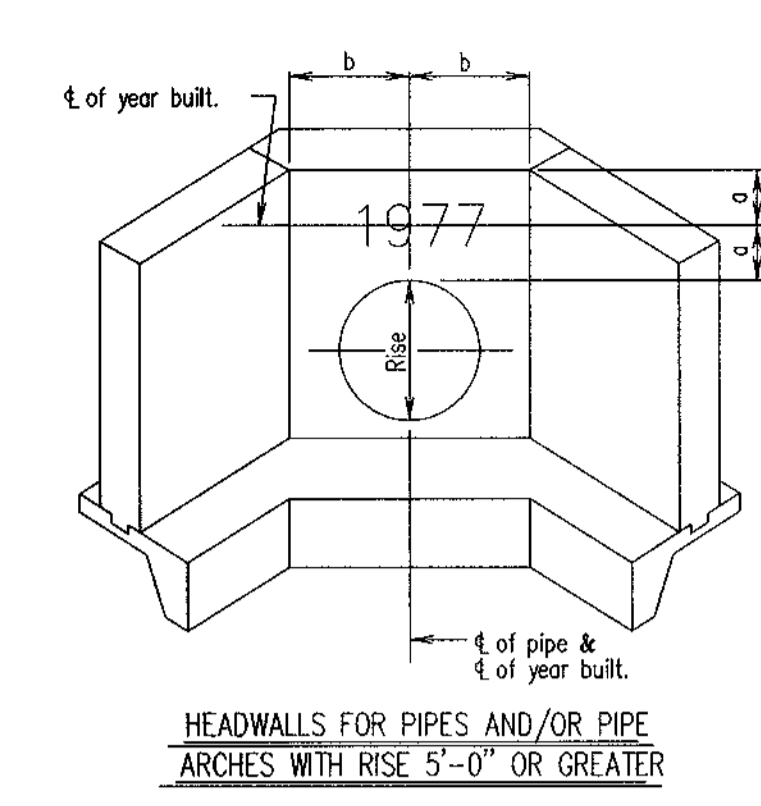
M or P	Triangular Key Size	a	b	Wing Wall Key Size
Less than 12"	3"	1 1/2"	3"	3" x 1 1/2"
12" to 18"	4"	2"	4"	4" x 2"
18" or over	6"	3"	6"	6" x 3"

- Notes:
- Normal reinforcing steel not shown.
  - All keys are nominal size.
  - This joint detail to be used for all walls less than 15' in length.

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

BOX CULVERT WING WALL CONSTRUCTION

SHEET 1 OF 1

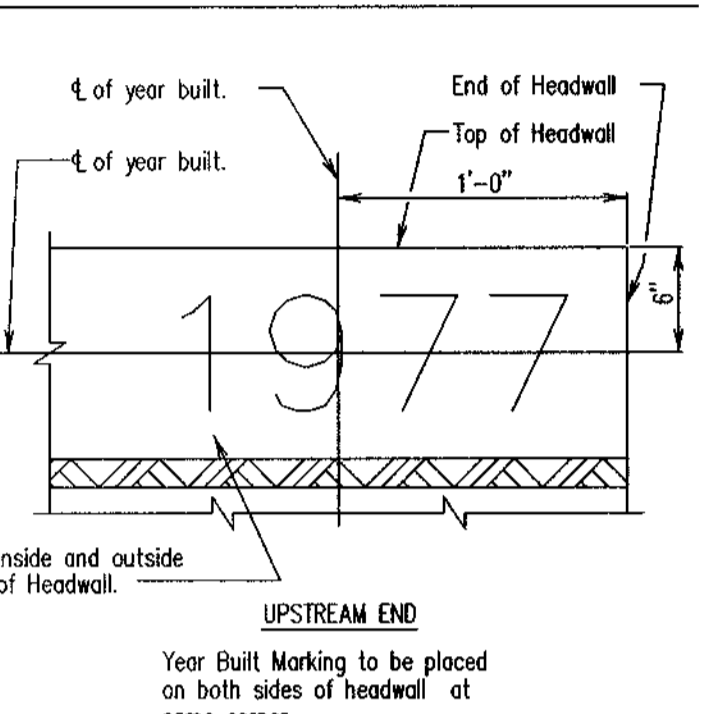
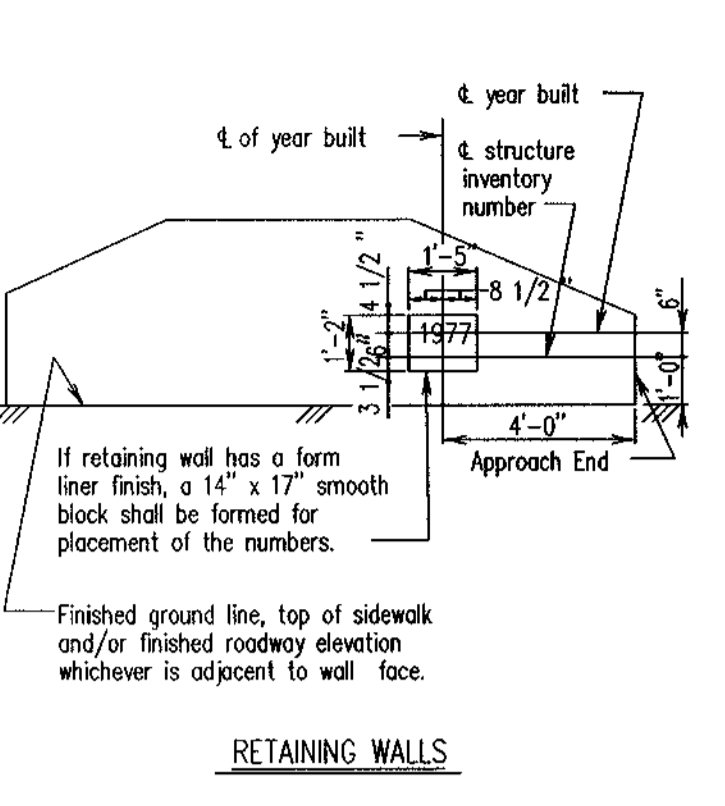


APPROVAL  
DATE: 4/12/78  
REVISIONS  
SHA FHWA  
11-14-78 12-14-78  
1-4-80 1-23-80  
FHWA APPROVAL DATE: 10-17-78 11-17-97

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

LOCATIONS OF YEAR BUILT MARKING

NO. M(0.02)-78-74 SHEET 1 OF 1

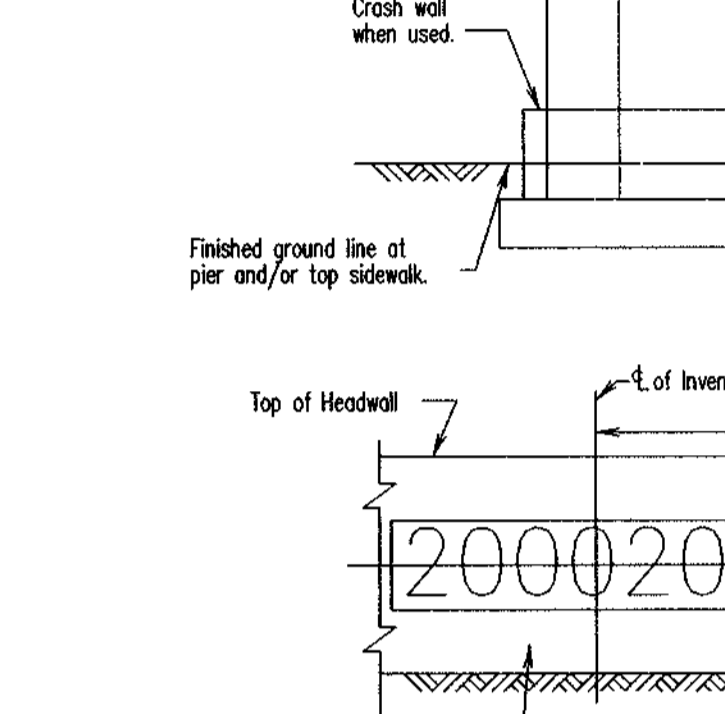
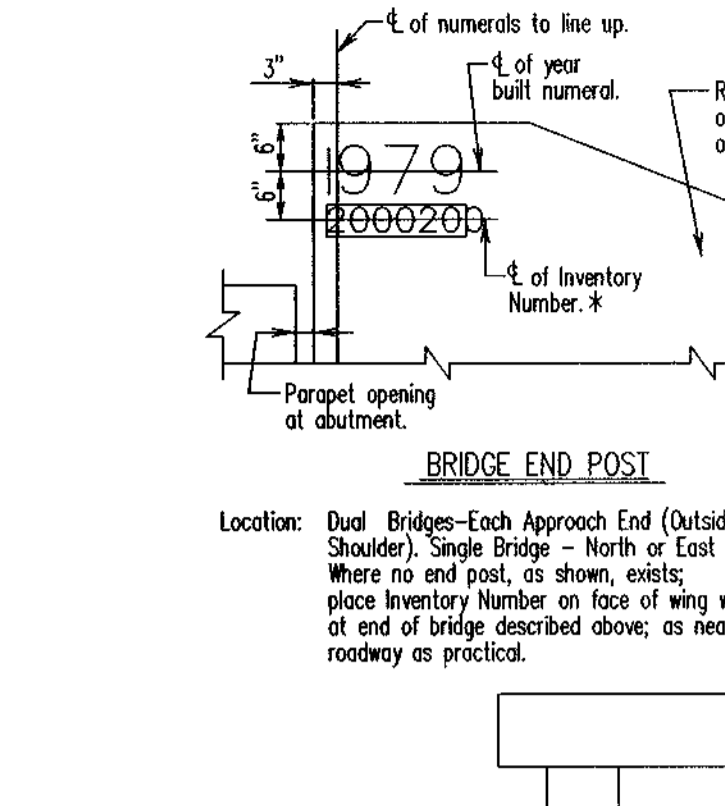


APPROVAL  
DATE: 12/19/79  
REVISIONS  
SHA FHWA  
11-22-83  
2-11-97  
FHWA APPROVAL DATE: 1-16-80

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

LOCATION OF STRUCTURE INVENTORY NUMBER

NO. BR-MAINT(0.01)-79-99 SHEET 1 OF 1

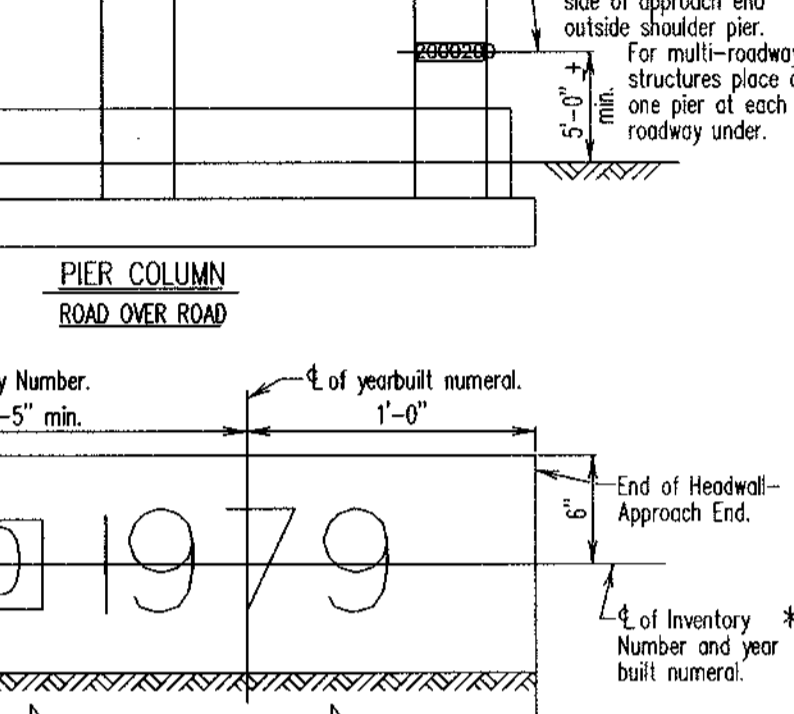
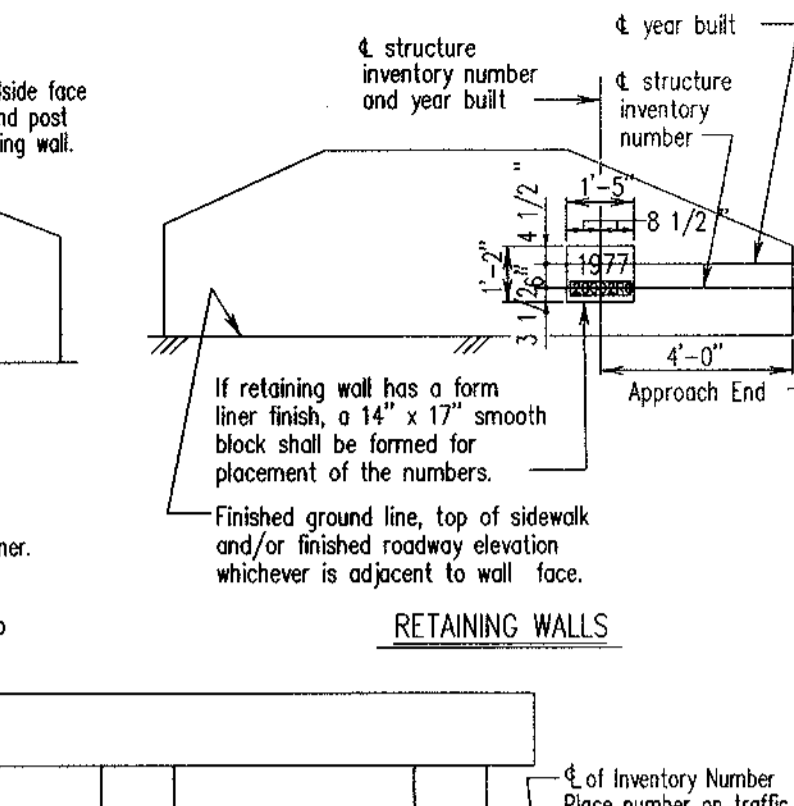


APPROVAL  
DATE: 12/19/79  
REVISIONS  
SHA FHWA  
11-22-83  
2-11-97  
FHWA APPROVAL DATE: 1-16-80

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

LOCATION OF STRUCTURE INVENTORY NUMBER

NO. BR-MAINT(0.01)-79-99 SHEET 1 OF 1

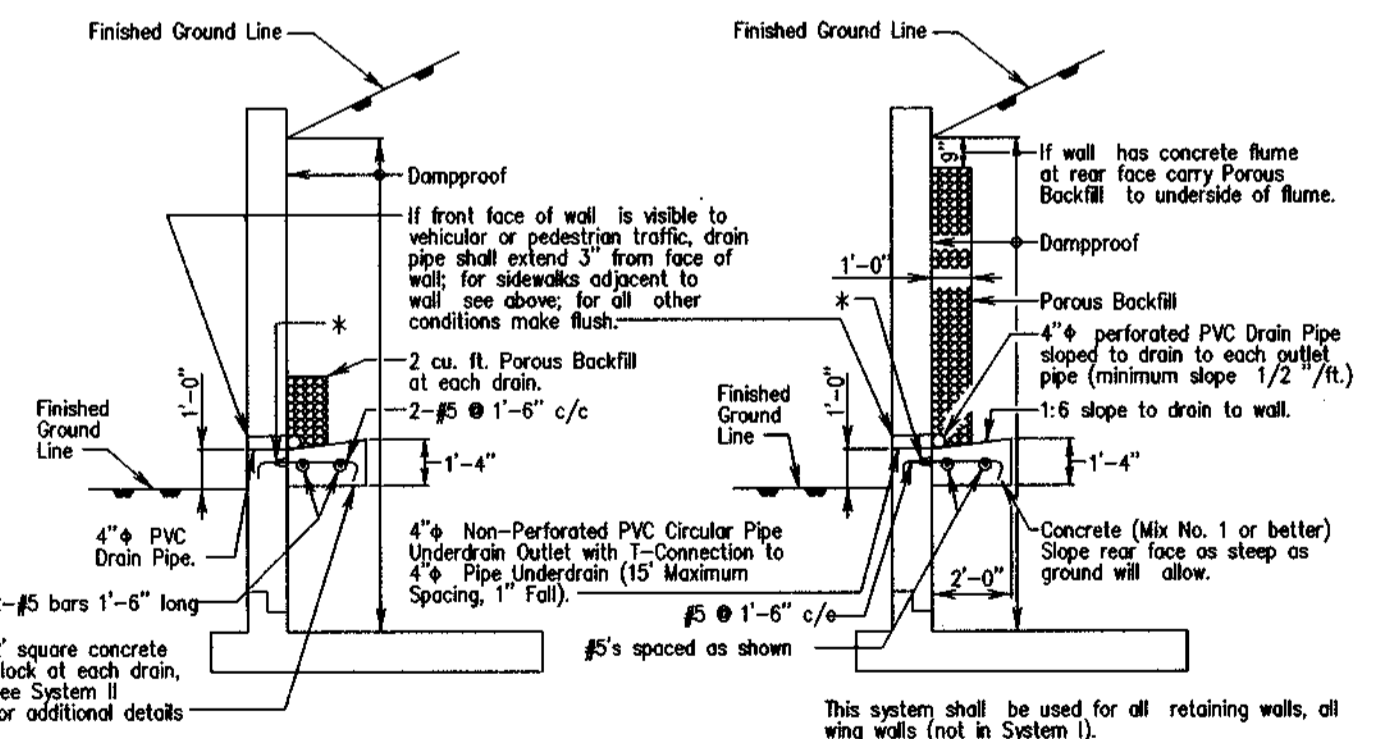
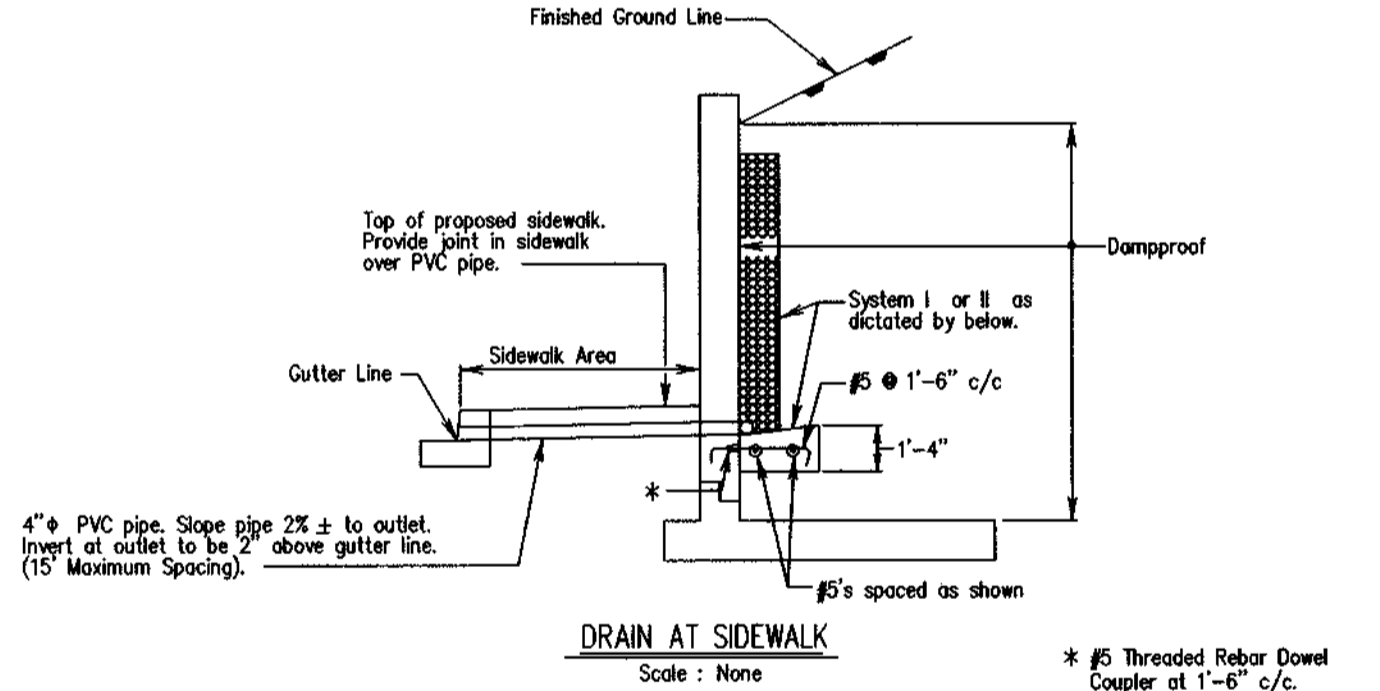


APPROVAL  
DATE: 12/19/79  
REVISIONS  
SHA FHWA  
11-22-83  
2-11-97  
FHWA APPROVAL DATE: 1-16-80

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

LOCATION OF STRUCTURE INVENTORY NUMBER

NO. BR-MAINT(0.01)-79-99 SHEET 1 OF 1

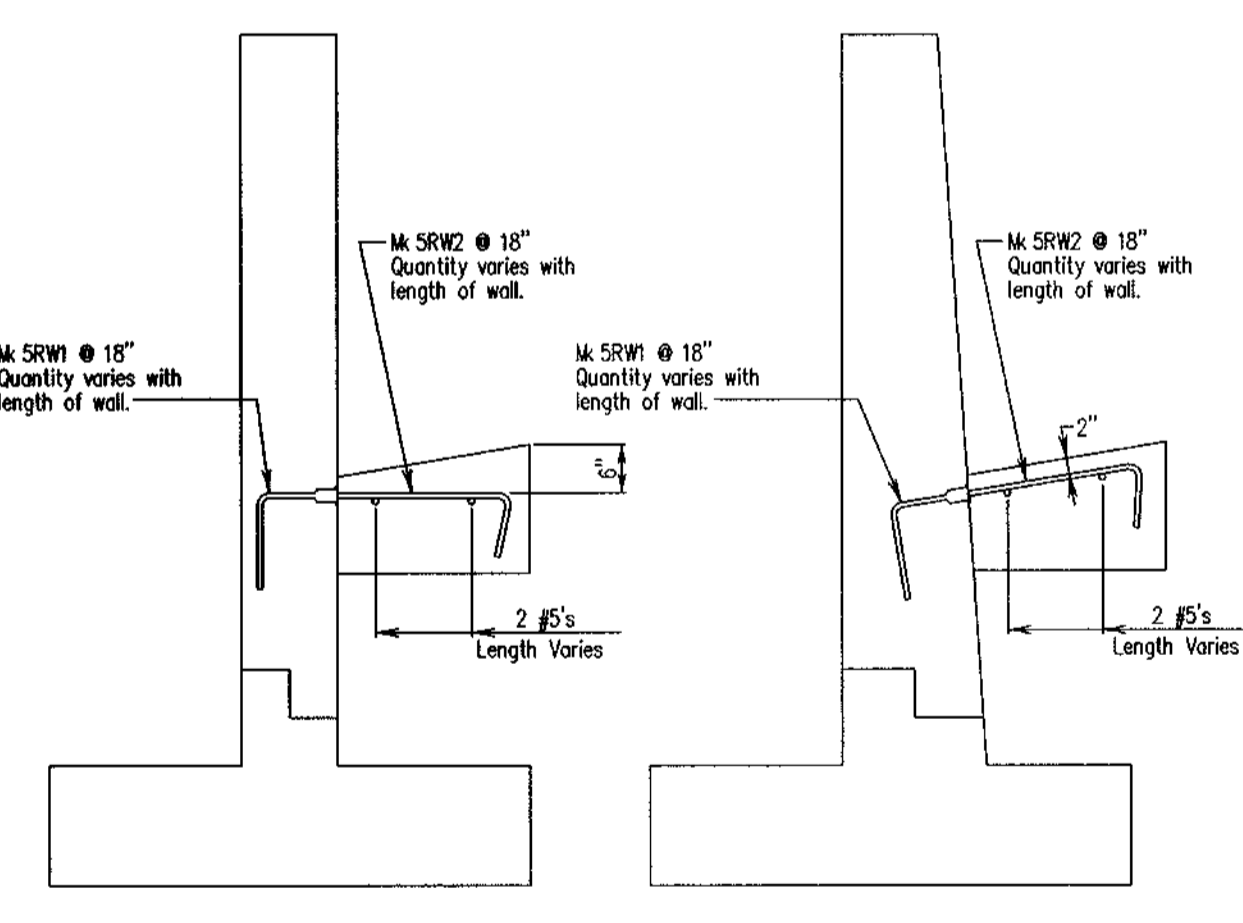


APPROVAL  
DATE: 8/26/80  
REVISIONS  
SHA FHWA  
4-14-92  
2-19-93  
FHWA APPROVAL DATE: 8-20-80 11-17-97

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

REINFORCING BAR STANDARD DRAINAGE SYSTEM

NO. RW(0.01)-80-100 SHEET 1 OF 1

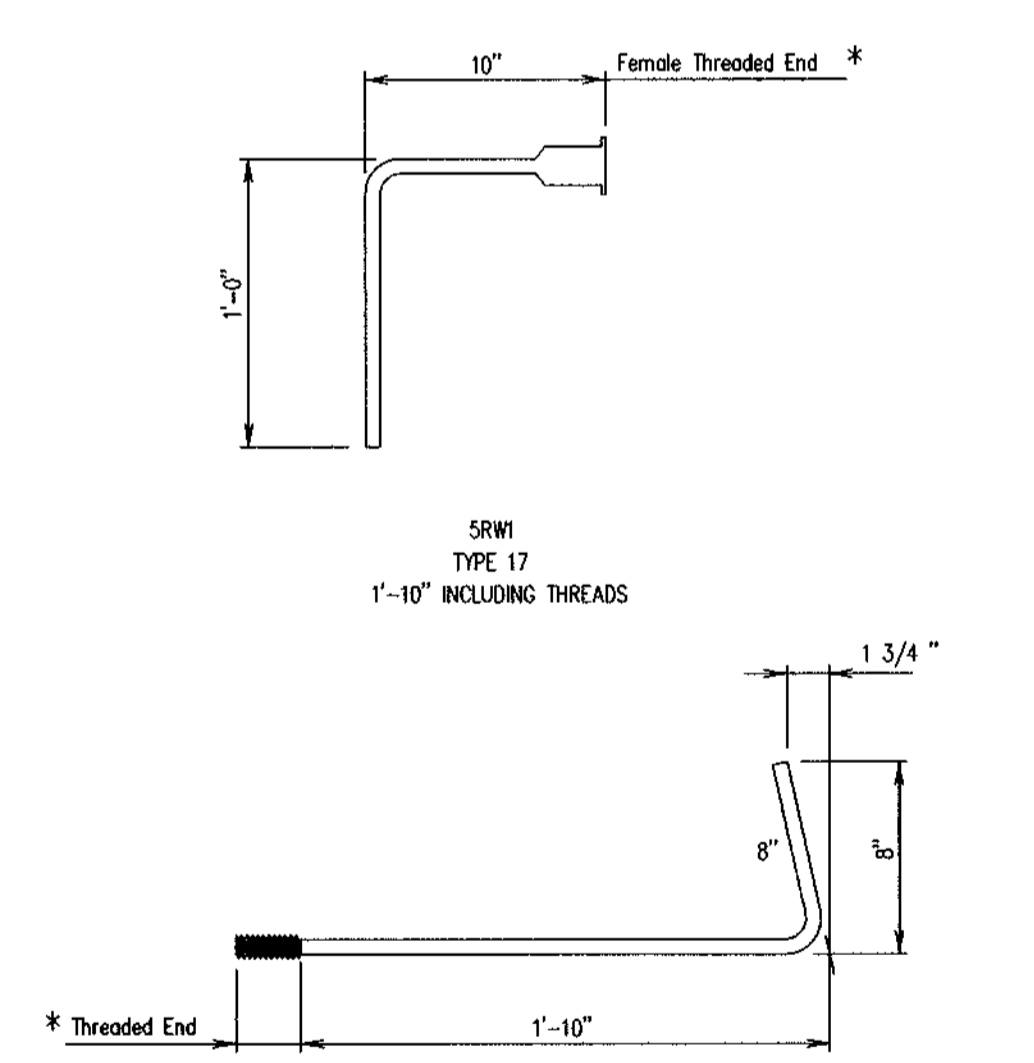


APPROVAL  
DATE: 8/17/84  
REVISIONS  
SHA FHWA  
4-14-92  
2-19-93  
FHWA APPROVAL DATE: 8-20-80 11-17-97

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

REINFORCING BAR STANDARD DRAINAGE SYSTEM

NO. REBAR-BD(2.21)-93-285 SHEET 1 OF 1

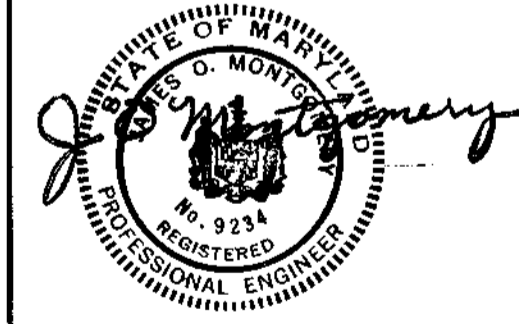


APPROVAL  
DATE: 8/17/84  
REVISIONS  
SHA FHWA  
4-14-92  
2-19-93  
FHWA APPROVAL DATE: 8-20-80 11-17-97

STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF BRIDGE DEVELOPMENT

REINFORCING BAR STANDARD DRAINAGE SYSTEM

NO. REBAR-BD(2.21)-93-285 SHEET 1 OF 1



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
DATE: 7-19-99

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 7/22/95

APPROVED: DATE: 7/24/99

WALLACE, MONTGOMERY & ASSOCIATES  
CIVIL AND STRUCTURAL ENGINEERS  
110 WEST ROAD  
TOWSON, MARYLAND 21284

DES.	CHK.	DATE	REVISION	BY	APPR.
G.C.N.	D.R.N.	D.E.D.			

PREPARED FOR:  
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PH: 410-992-6370  
ATTN: MR. GREG KLAR

PREPARED FOR:  
COLUMBIA GATEWAY  
DETAILS

SCALE	ZONING	W.M.A. FILE NO.
AS SHOWN	M-1	98010
DATE	TAX MAP - GRID	SHEET
JULY, 1999		19 OF 19

HOWARD COUNTY, MARYLAND