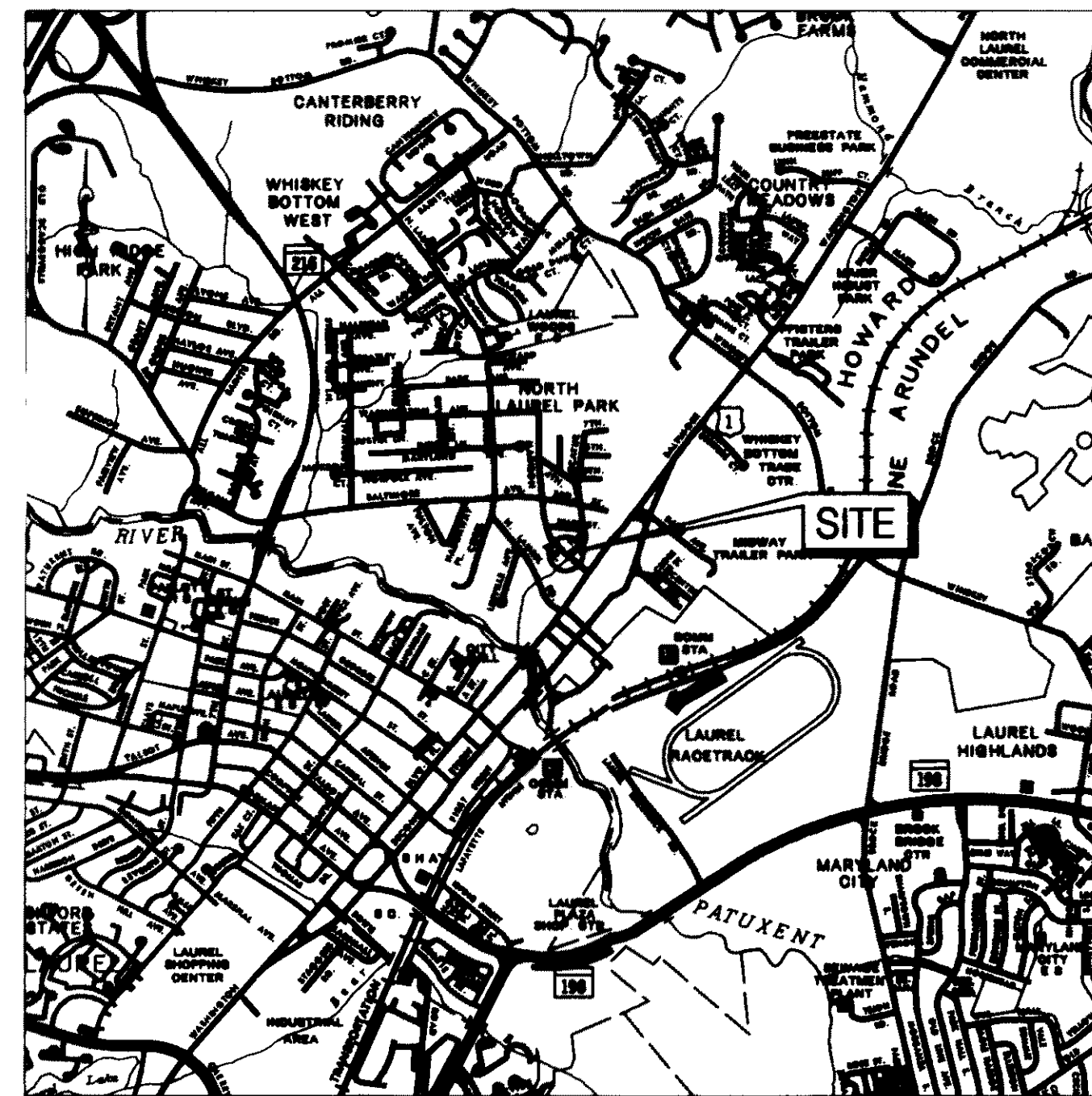


HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS REPLACEMENT OF CULVERT MADISON AVENUE OVER TRIBUTARY TO PATUXENT RIVER HOWARD COUNTY CAPITAL PROJECT D-1156

GENERAL NOTES

1. This contract shall be constructed under provisions of the Howard County Volume V Design Manual Standard Specifications and Details for Construction, dated May 2007 and the Maryland Department of Transportation, State Highway Administration (SHA) Standard Specifications for Construction and Materials, dated JANUARY 2008, including all revisions thereof and additions thereto, except where noted otherwise.
2. The Contractor shall notify the Howard County Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1830 at least five (5) working days prior to the start of work.
3. The Contractor shall notify 'Miss Utility' at 1-800-257-7777 at least forty-eight (48) hours prior to any excavation work. The Contractor shall contact the following utilities at least 5 days prior to beginning any work under this contract. For additional information and requirements with respect to utilities, see Special Provisions.
BGE Gas Division (410) 291-5834
BGE Electric Division (410) 855-6958
Bell Atlantic (410) 224-9980
4. Project Background:
Location: Laurel, Maryland
Tax Map: 50
Election District: 6
5. Traffic control devices, markings, and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
6. Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curb and gutter, existing utilities, etc. shall be corrected at the Contractor's expense.
7. The existing utilities shown hereon are located from the best information available, but no guarantee is made to their accuracy. The approximate location of existing utilities are shown for the Contractor's information and convenience. The Contractor shall locate existing utilities to his own satisfaction and well in advance of any construction activities. Additionally, the Contractor shall take all necessary precautions to protect all existing utilities and maintain uninterrupted service.
8. Horizontal and vertical datums are related to the Maryland State Plane Coordinate System as projected from Howard County Survey Control 5085.
9. Clearing shall be limited to the "Limit of Disturbance" as shown on the erosion and sediment control plan. Grading shall be done in such a manner as to provide positive drainage. Contractor shall seed and mulch all disturbed areas except as otherwise directed.
10. The contractor shall take extreme caution not to disturb the existing vegetation outside the limits of construction. Soil stabilization shall conform to "Maryland Standards and Specifications for Soil Erosion and Sediment Control," dated 1994, published jointly by Water Management Administration, Soil Conservation Service, and State Soil Conservation Committee.
11. All fill areas shall be compacted to a minimum of 95% of the maximum dry density as determined and verified in accordance with AASHTO T-180.



LOCATION MAP
SCALE: 1" = 2000'

TRAFFIC DATA

| ROADWAY CLASSIFICATION | LOCAL ROAD |
|------------------------|------------|
| DESIGN SPEED | 30 M.P.H. |

Charles S. Nolan

CHARLES S. NOLAN, P.E. 6/19/09
DATE

*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15212, EXPIRATION DATE: 12/24/2010 *

INDEX OF DRAWINGS

| SHEET NO. | TITLE |
|-----------|--|
| 1 | TITLE SHEET |
| 2 | DETOUR PLAN |
| 3 | ROADWAY PROFILE AND TYPICAL ROADWAY SECTION |
| 4 | ROADWAY PLAN |
| 5 | EROSION AND SEDIMENT CONTROL PLAN AND MAINTENANCE OF STREAM FLOW STAGE 1 |
| 6 | EROSION AND SEDIMENT CONTROL PLAN AND MAINTENANCE OF STREAM FLOW STAGE 2 |
| 7 | EROSION AND SEDIMENT CONTROL NOTES AND DETAILS |
| 8 | EROSION AND SEDIMENT CONTROL DETAILS |
| 9 | 6" WATER RELOCATION PLAN AND PROFILE |
| 10 | GENERAL PLAN |
| 11 | CULVERT SECTIONS |
| 12 | WINGWALL DETAILS |

By the Owner/Developer:
I/We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I/also authorize periodic on-site inspections by the Howard Soil Conservation District.

Steve Sharar

Signature of Owner/Developer Date
STEVE SHARAR

By the Engineer:
I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District.

Charles S. Nolan

Signature of Engineer 6/19/09
CHARLES S. NOLAN Date

These plans are approved for soil erosion and sediment control by the Howard Soil Conservation District.

John R. Robertson

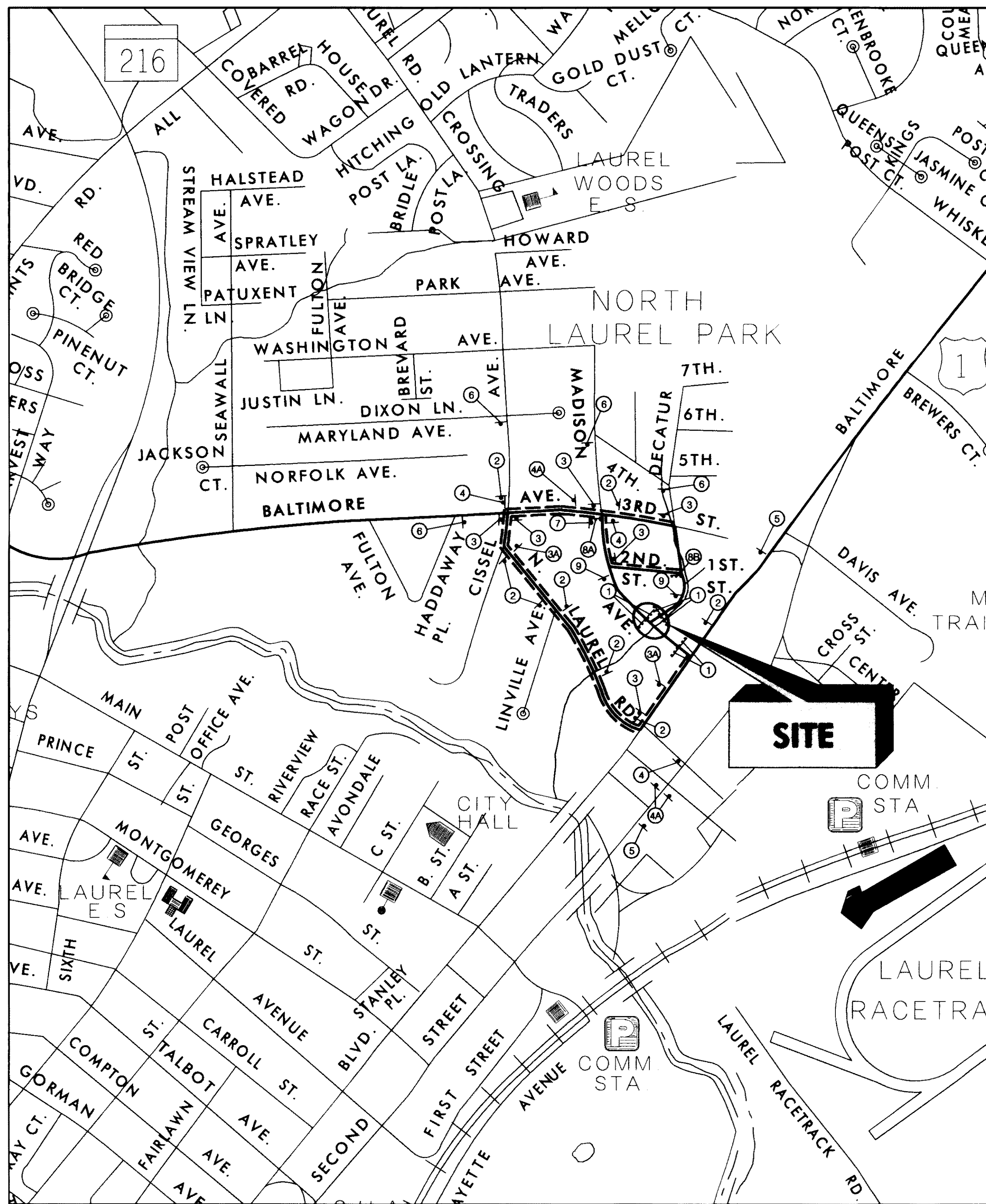
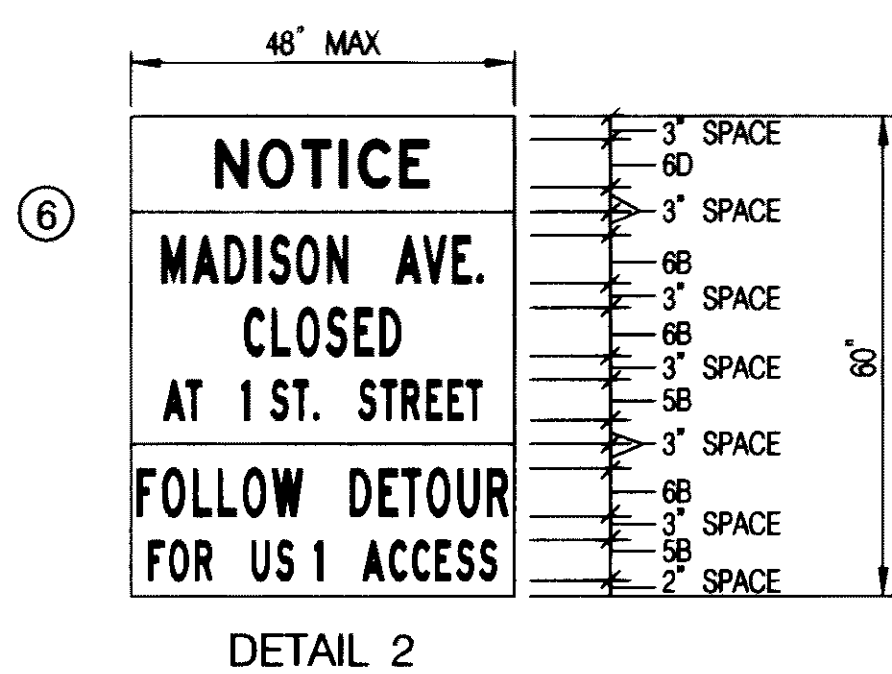
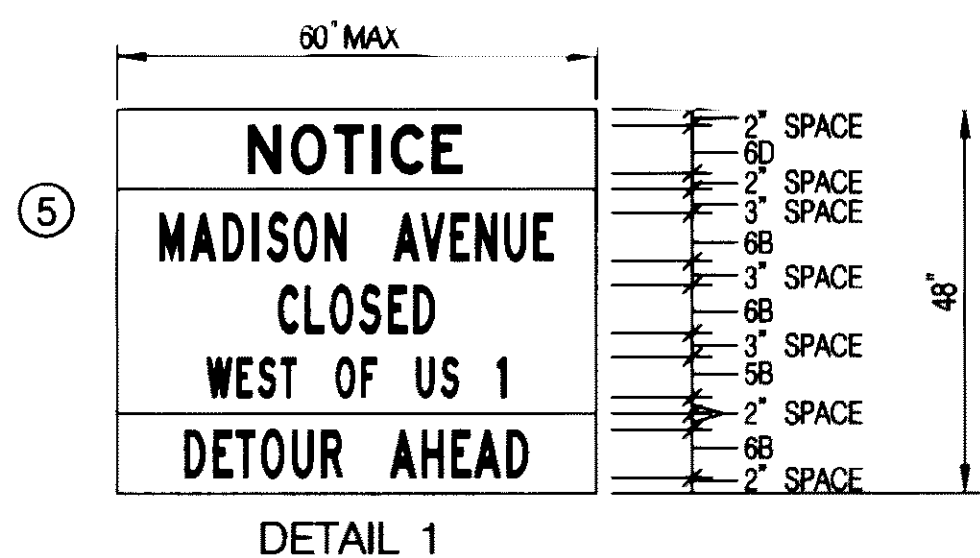
Howard S.C.D. 6/30/09
Date

EP-09-05

| | | | | | | |
|---|---|--|---|-------------|---|--|
| DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Charles S. Nolan</i> _____ DIRECTOR OF PUBLIC WORKS 6/19/09 DATE <i>Steve Sharar</i> _____ CHIEF, BUREAU OF ENGINEERING 6/17/10 DATE <i>Steve Sharar</i> _____ CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION 6/17/10 DATE | QOLA Associates, Inc. Engineers - Civil/Structural/Inspections 4785 Dorsey Hall Drive Suite 124 Ellicott City, Maryland 21042 Phone: (410) 995-3651 Fax: (410) 995-1363 | | DES: CSN DRN: BSB CHK: CSN DATE: JUNE 2009 | TITLE SHEET | REPLACEMENT OF CULVERT MADISON AVENUE OVER TRIBUTARY TO PATUXENT RIVER CAPITAL PROJECT D-1156 ELECTION DISTRICT NO. 6 LAUREL, MARYLAND | SCALE: AS SHOWN SHEET 1 OF 12 |
|---|---|--|---|-------------|---|--|

| TEMPORARY TRAFFIC CONTROL SIGN TABLE | | | | | | |
|--------------------------------------|---|--|-----------------------------|----------|---------------------------|-------------------------|
| SYMBOL | MD. M.U.T.C.D. DESIGNATION | MESSAGE | SIZE | QUANTITY | COLOR | |
| | | | | | BACKGROUND | CHARACTERS |
| ①* | R11-2 (2 SIGNS & BARRICADES, EACH APPROACH) | | 48" X 30" | 6 | WHITE | BLACK |
| ② | M4-9 W/ROAD NAME PANEL | | 3" LETTERS 30" X 24" | 4 | WHITE ORANGE | BLACK |
| ③ | M4-9R W/ROAD NAME PANEL | | 3" LETTERS 30" X 24" | 7 | WHITE ORANGE | BLACK |
| ③A | M4-9R (MODIFIED) W/ROAD NAME PANEL | | 3" LETTERS 30" X 24" | 7 | WHITE ORANGE | BLACK |
| ④ | M4-9L W/ROAD NAME PANEL | | 3" LETTERS 30" X 24" | 2 | WHITE ORANGE | BLACK |
| ④A | M4-9L (MODIFIED) W/ROAD NAME PANEL | | 3" LETTERS 30" X 24" | 3 | WHITE ORANGE | BLACK |
| ⑤ | | NOTICE MADISON AVENUE CLOSED WEST OF US 1 DETOUR AHEAD | 60" X 48" (SEE DETAIL 1) | 1 | YELLOW WHITE ORANGE | BLACK BLACK BLACK |
| ⑥ | | NOTICE MADISON AVENUE CLOSED AT 1ST. STREET DETOUR AHEAD | 48" X 60" (SEE DETAIL 2) | 2 | YELLOW WHITE ORANGE | BLACK BLACK BLACK |
| ⑦ | M4-8A | | 24" X 36" | 2 | ORANGE | BLACK |
| ⑧A* | M11-3A | | 60" X 30" | 2 | ORANGE | BLACK |
| ⑧B* | M11-3A | | 60" X 30" | 2 | ORANGE | BLACK |
| ⑨ | W20-3 | | 36" X 36" | 2 | ORANGE | BLACK |

* MOUNT ON TYPE III BARRICADE



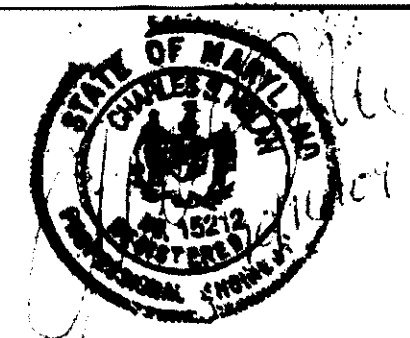
DETOUR PLAN
SCALE 1" = 500'

NOTES:

- ALL SIGN LOCATIONS SHALL BE APPROVED BY HOWARD COUNTY TRAFFIC PRIOR TO THE INSTALLATION OF ANY OF THE ABOVE SIGNS (CALL 410-313-5752).
- VARIABLE MESSAGE SIGN BOARDS SHALL BE PLACED A MINIMUM OF 2 WEEKS IN ADVANCE OF THE ROAD CLOSURE. TRAFFIC DIVISION WILL DETERMINE LOCATION & MESSAGE (410-313-5752).
- TYPE III BARRICADES SHALL EXTEND THE FULL WIDTH OF ROADWAY AT CLOSURE POINT.
- DRIVEWAY ACCESS TO BE MAINTAINED THROUGHOUT CONSTRUCTION AREA

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: *Mark D. ...* DATE: 6/7/10
CHIEF, BUREAU OF ENGINEERING: *Steve Shuman* DATE: 6/7/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

LOLA associates, inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone: (410) 995-3651 Fax: (410) 995-1363

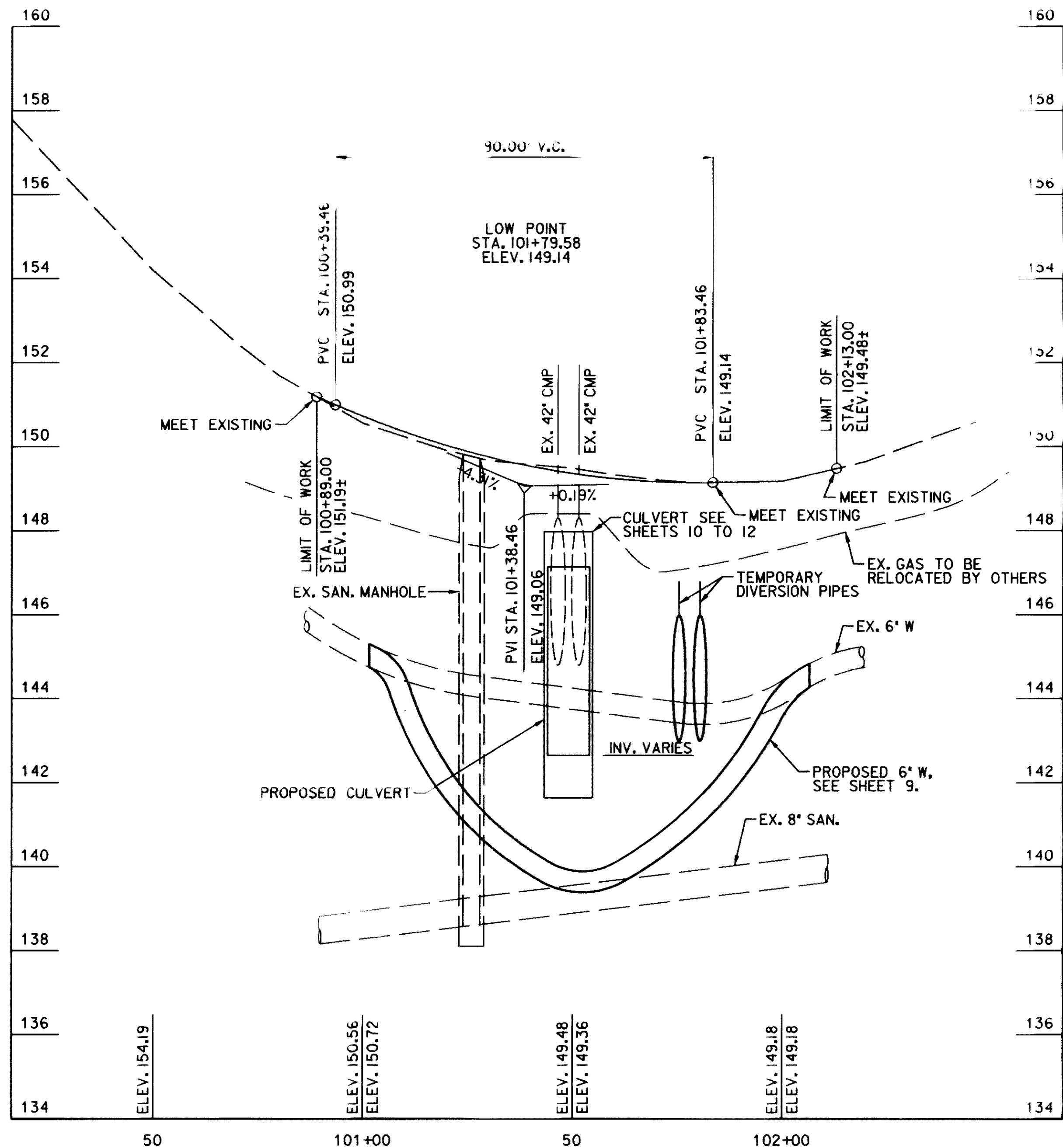


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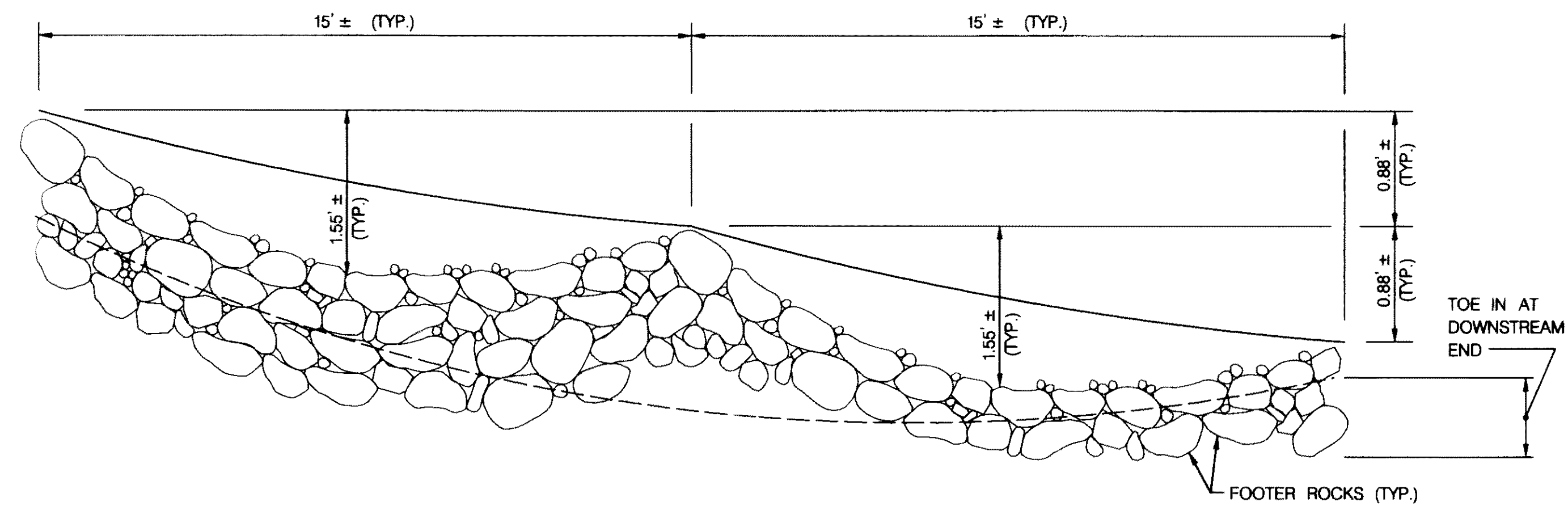
DETOUR PLAN

REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-1156
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN
SHEET
2 OF 12

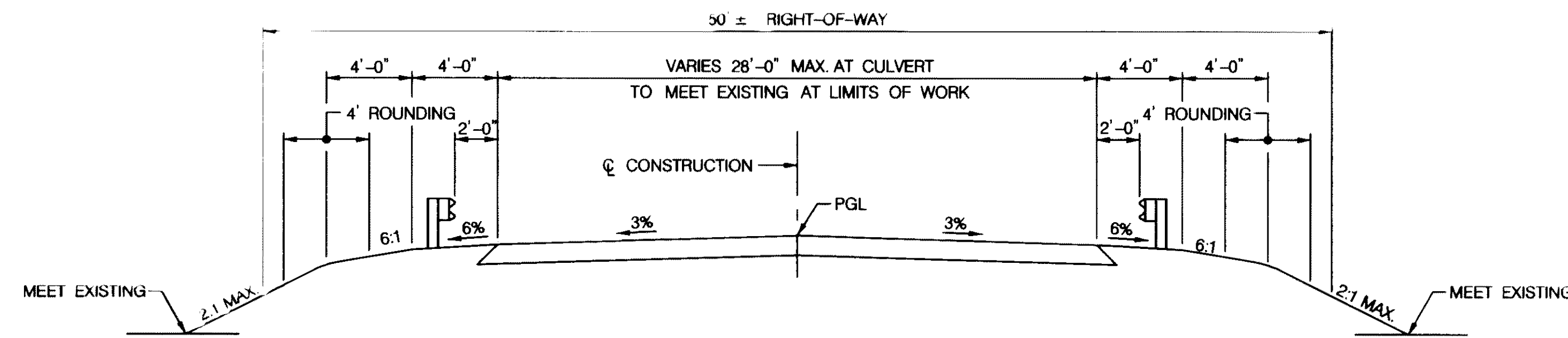


ROADWAY PROFILE
 SCALE: HOR. 1" = 20'
 VERT. 1" = 2'

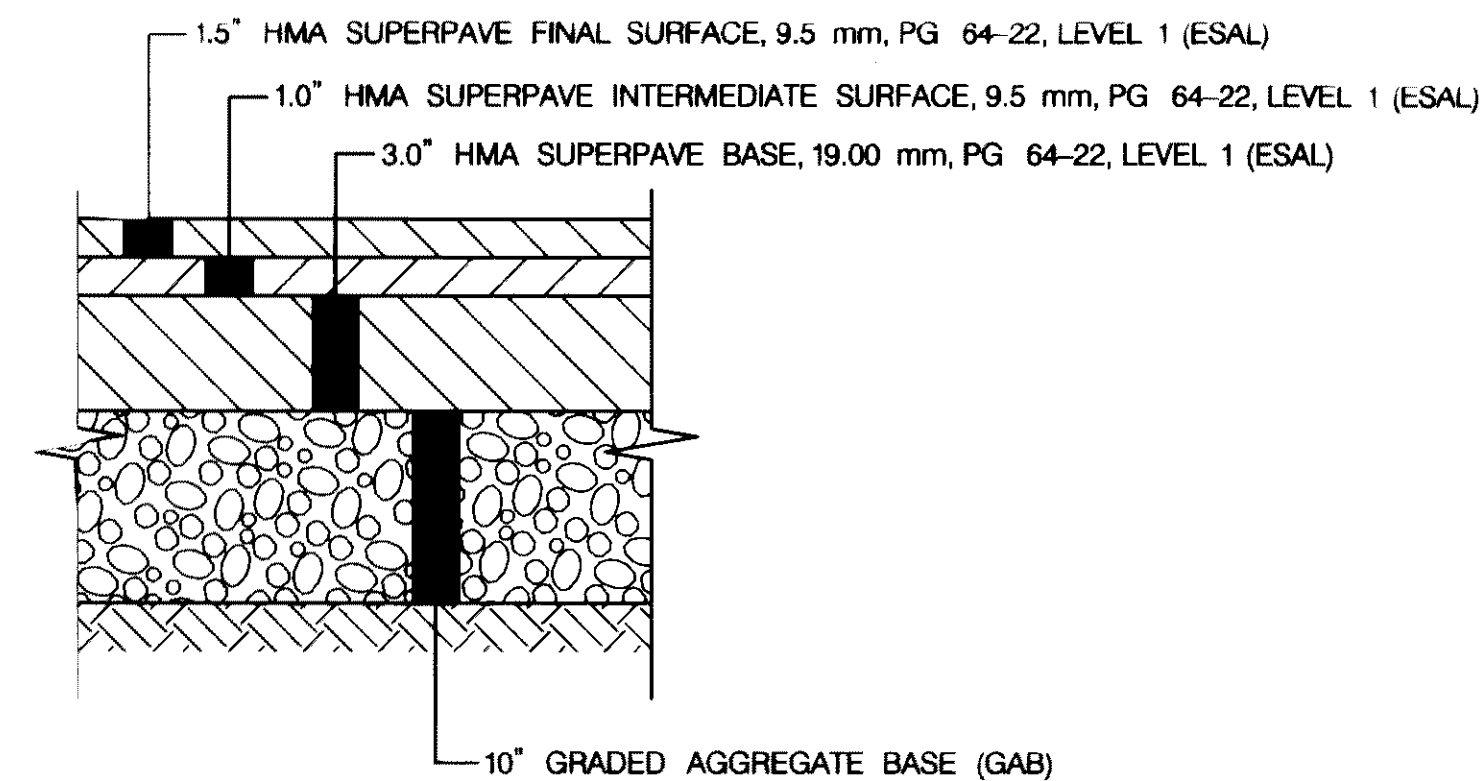


- NOTES:**
- STEP POOLS SHALL BE CONSTRUCTED USING BOULDERS WITH SIZE AND GRADATION TO MEET SPECIFICATIONS FOR CLASS 2 RIPRAP. BOULDERS/RIPRAP SHALL INCORPORATE ANGULAR ROCK TO PROMOTE INTERLOCKING.
 - STEP POOL ROCKS SHALL BE PLACED ON FOOTER ROCKS SO THAT THEY REST ON TWO HALVES OF EACH FOOTER ROCK BELOW AND SO THE STEP ROCK IS OFFSET IN THE UPSTREAM DIRECTION, AND THE BOULDERS/RIPRAP AT THE DOWNSTREAM END SHALL BE TOED IN TO THE STREAM BOTTOM.
 - FOOTER ROCKS SHALL EXTEND TO BELOW THE BOTTOM OF THE EXISTING STREAM/SCOUR HOLE.
 - STEP POOLS, ONCE CONSTRUCTED WITH ADEQUATE PLACEMENT OF FOOTER ROCKS AND BOULDERS, SHALL BE SUPPLEMENTED WITH NATURAL STREAM STONES, LOGS, LARGE WOODY DEBRIS AND CLASS 1 SIZE STONE.

STEP POOL TYPICAL SECTION
 SCALE: NOT TO SCALE



TYPICAL ROADWAY SECTION
 SCALE: 1" = 5'



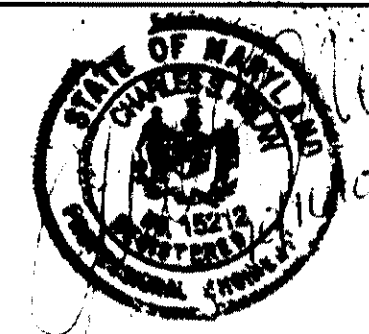
ROADWAY PAVEMENT DETAIL
 SCALE: NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Mark D. ... 6/7/10
 DIRECTOR OF PUBLIC WORKS DATE

Steve Shuman 6/7/10
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

OLA
 Associates, Inc.
 Engineers - Civil/Structural/Inspections
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 990-3851 Fax: (410) 990-1363



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| DRN: | BSB | | | | |
| CHK: | CSN | | | | |
| DATE: | JUNE 2009 | BY: | NO. | REVISION | DATE |

**ROADWAY PROFILE
 AND TYPICAL ROADWAY
 SECTION**

REPLACEMENT OF CULVERT
 MADISON AVENUE OVER
 TRIBUTARY TO PATUXENT RIVER
 CAPITAL PROJECT D-II56
 ELECTION DISTRICT NO. 6
 LAUREL, MARYLAND

SCALE:
 AS SHOWN

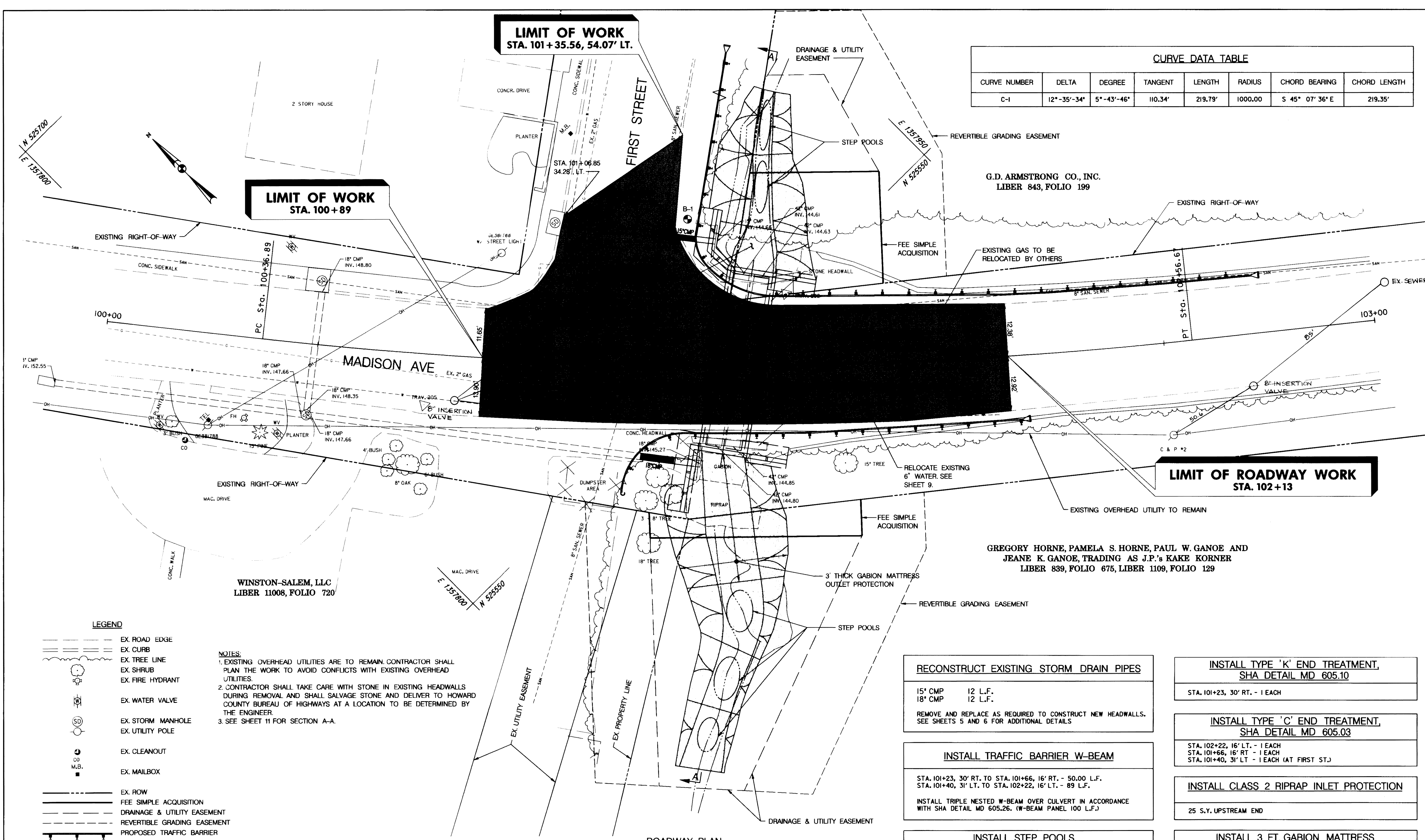
SHEET
 3 OF 12

LIMIT OF WORK
STA. 101+35.56, 54.07' LT.

LIMIT OF WORK
STA. 100+89

LIMIT OF ROADWAY WORK
STA. 102+13

| CURVE DATA TABLE | | | | | | | |
|------------------|-------------|------------|---------|---------|---------|-----------------|--------------|
| CURVE NUMBER | DELTA | DEGREE | TANGENT | LENGTH | RADIUS | CHORD BEARING | CHORD LENGTH |
| C-1 | 12°-35'-34" | 5°-43'-46" | 110.34' | 219.79' | 1000.00 | S 45° 07' 36" E | 219.35' |



- LEGEND**
- EX. ROAD EDGE
 - EX. CURB
 - EX. TREE LINE
 - EX. SHRUB
 - EX. FIRE HYDRANT
 - EX. WATER VALVE
 - EX. STORM MANHOLE
 - EX. UTILITY POLE
 - EX. CLEANOUT
 - EX. MAILBOX
 - EX. ROW
 - FEE SIMPLE ACQUISITION
 - DRAINAGE & UTILITY EASEMENT
 - REVERTIBLE GRADING EASEMENT
 - PROPOSED TRAFFIC BARRIER
 - PROPOSED RIPRAP/GABION
 - FULL DEPTH PAVING

NOTES:

- EXISTING OVERHEAD UTILITIES ARE TO REMAIN. CONTRACTOR SHALL PLAN THE WORK TO AVOID CONFLICTS WITH EXISTING OVERHEAD UTILITIES.
- CONTRACTOR SHALL TAKE CARE WITH STONE IN EXISTING HEADWALLS DURING REMOVAL AND SHALL SALVAGE STONE AND DELIVER TO HOWARD COUNTY BUREAU OF HIGHWAYS AT A LOCATION TO BE DETERMINED BY THE ENGINEER.
- SEE SHEET 11 FOR SECTION A-A.

RIGHT OF WAY AND EASEMENT LINES SHOWN ON THESE PLANS ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT OFFICIAL. FOR OFFICIAL FEE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE RIGHT OF WAY PLATS.

ROADWAY PLAN
SCALE: 1" = 10'

RECONSTRUCT EXISTING STORM DRAIN PIPES

15" CMP 12 L.F.
18" CMP 12 L.F.

REMOVE AND REPLACE AS REQUIRED TO CONSTRUCT NEW HEADWALLS. SEE SHEETS 5 AND 6 FOR ADDITIONAL DETAILS.

INSTALL TRAFFIC BARRIER W-BEAM

STA. 101+23, 30' RT. TO STA. 101+66, 16' RT. - 50.00 L.F.
STA. 101+40, 31' LT. TO STA. 102+22, 16' LT. - 89 L.F.

INSTALL TRIPLE NESTED W-BEAM OVER CULVERT IN ACCORDANCE WITH SHA DETAIL MD 605.26. (W-BEAM PANEL 100 L.F.)

INSTALL STEP POOLS
(SEE SHEET 3 FOR DETAILS)

70 S.Y. UPSTREAM END
90 S.Y. DOWNSTREAM END

INSTALL TYPE 'K' END TREATMENT
SHA DETAIL MD 605.10

STA. 101+23, 30' RT. - 1 EACH

INSTALL TYPE 'C' END TREATMENT
SHA DETAIL MD 605.03

STA. 102+22, 16' LT. - 1 EACH
STA. 101+66, 16' RT. - 1 EACH
STA. 101+40, 31' LT. - 1 EACH (AT FIRST ST.)

INSTALL CLASS 2 RIPRAP INLET PROTECTION

25 S.Y. UPSTREAM END

INSTALL 3 FT. GABION MATTRESS OUTLET PROTECTION

100 S.Y. DOWNSTREAM END

GREGORY HORNE, PAMELA S. HORNE, PAUL W. GANOE AND JEANE K. GANOE, TRADING AS J.P.'s KAKE KORNER
LIBER 839, FOLIO 675, LIBER 1109, FOLIO 129

WINSTON-SALEM, LLC
LIBER 11008, FOLIO 720

G.D. ARMSTRONG CO., INC.
LIBER 843, FOLIO 199

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

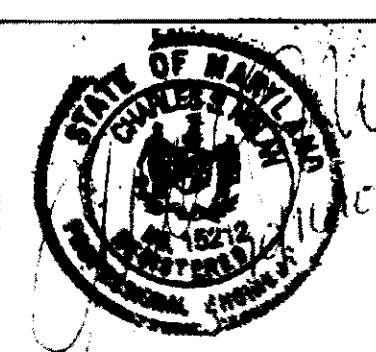
Michael D. Ryan 6/17/10
DIRECTOR OF PUBLIC WORKS DATE

Steve Shanon 6/17/10
CHIEF, BUREAU OF ENGINEERING DATE

Michelle Z. Hall 6-7-10
CHIEF, BUREAU OF HIGHWAYS DATE

Steve Shanon 6/17/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

LOLA
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone (410) 995-3801 Fax (410) 995-1383



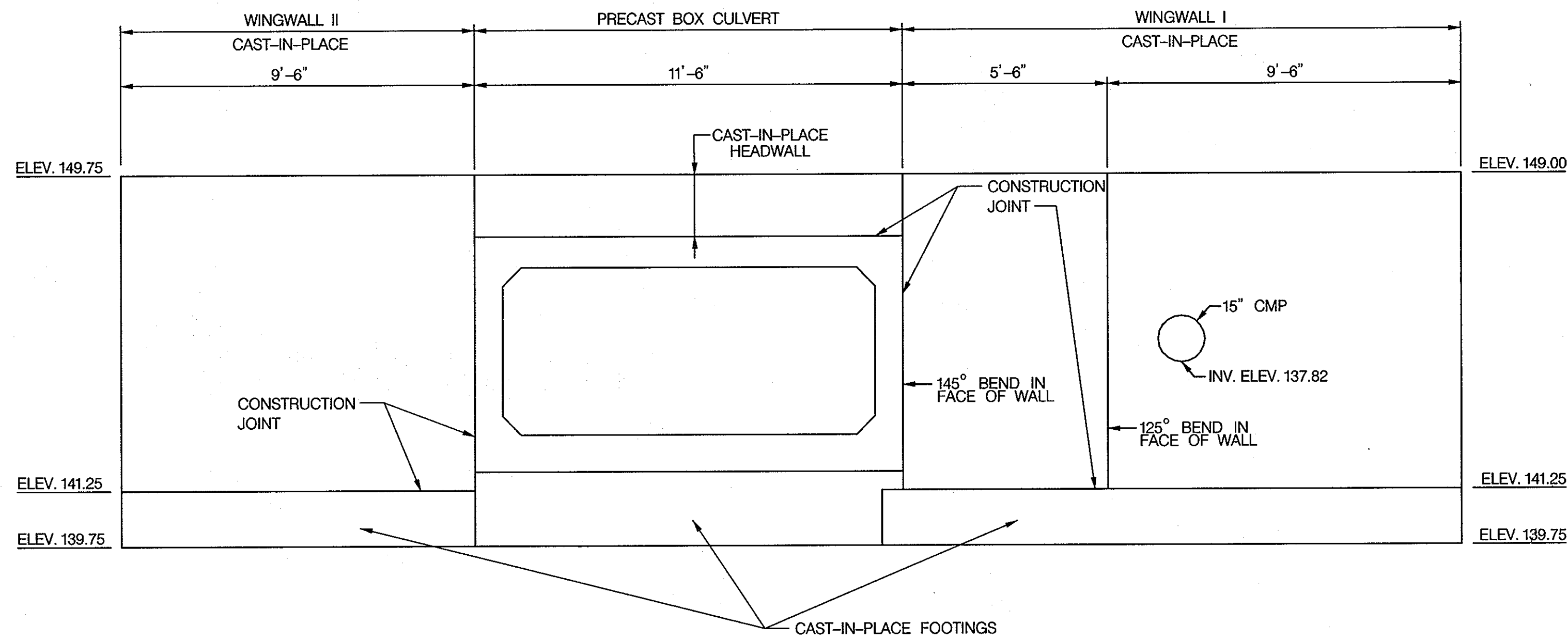
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| CHK: CSN | | | | | |
| DATE: JUNE 2009 | KCI | 1 | AS-BUILT REVISIONS | 12-1-10 | |
| | BY | NO. | REVISION | DATE | |

ROADWAY PLAN

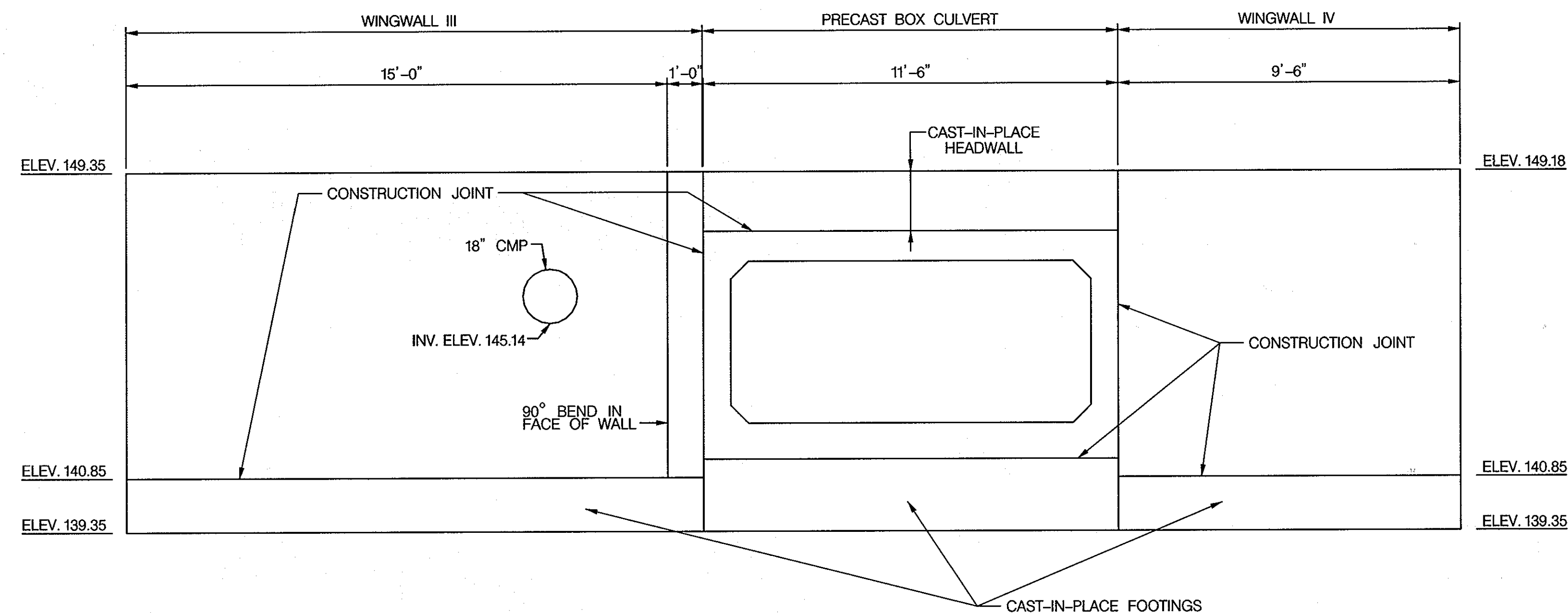
REPLACEMENT OF CULVERT
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-II56
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

SHEET
4 OF 12

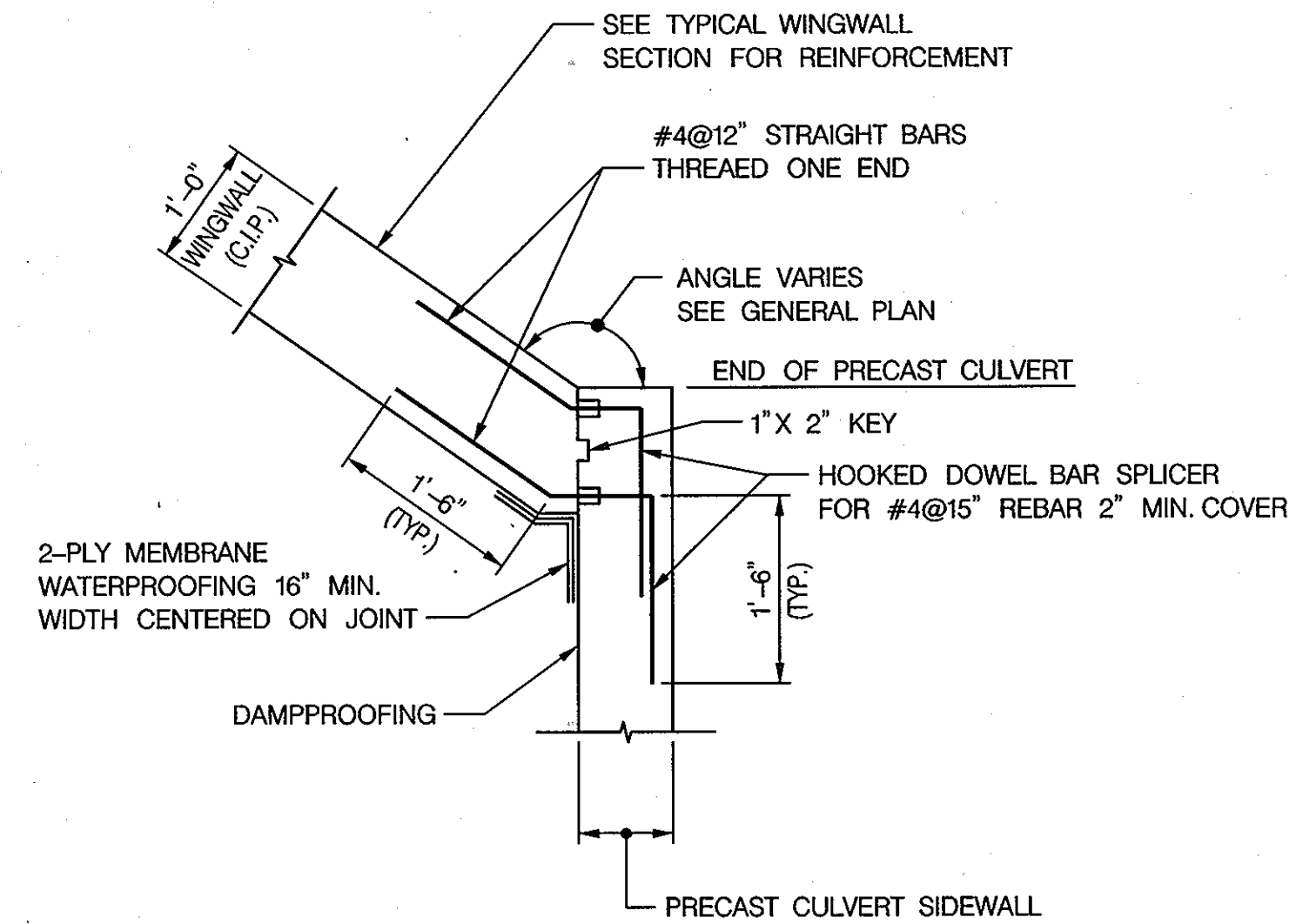


DEVELOPED HEADWALL ELEVATION (NORTH END)
SCALE: 3/8" = 1'-0"

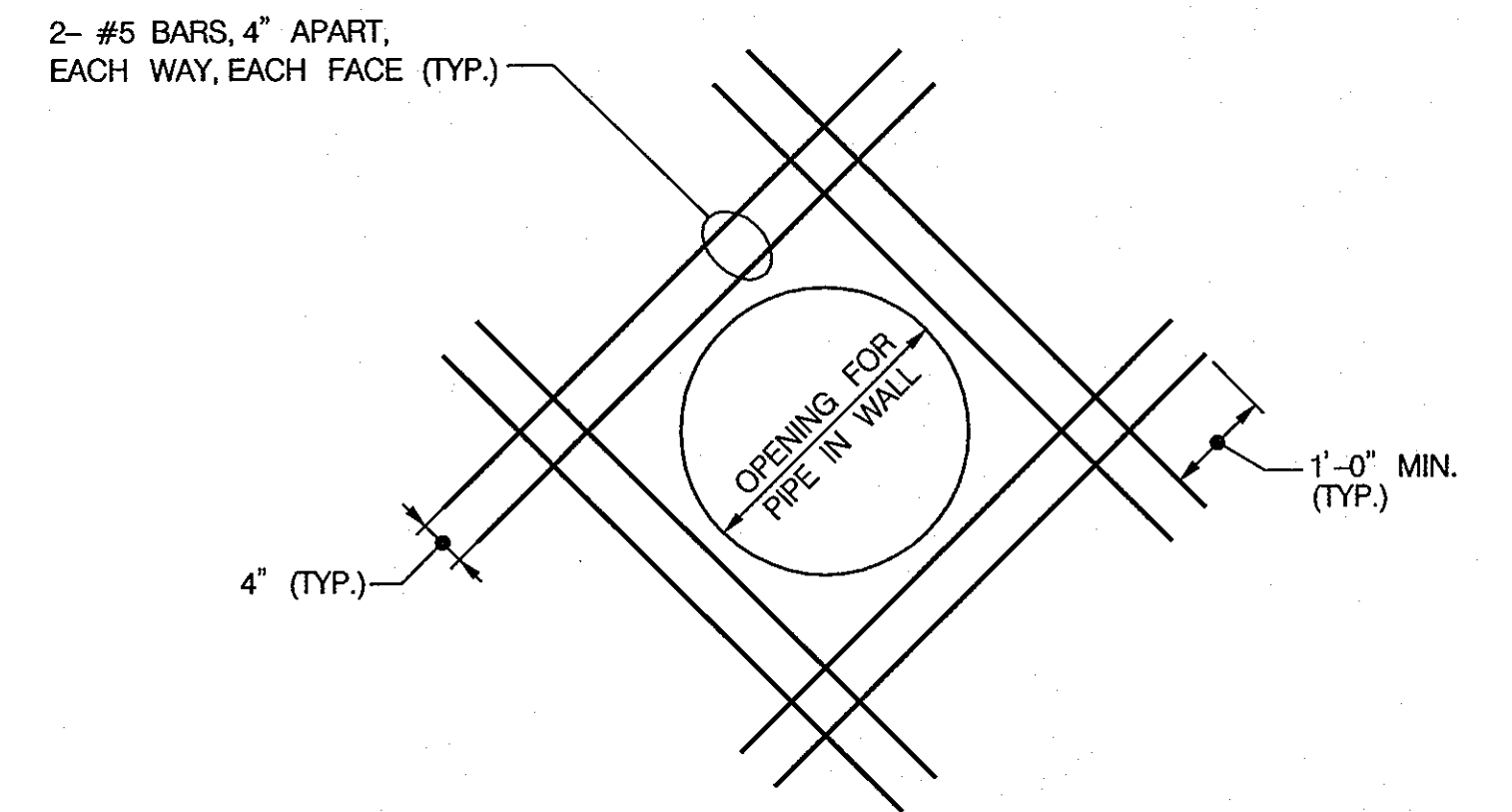


DEVELOPED HEADWALL ELEVATION (SOUTH END)
SCALE: 3/8" = 1'-0"

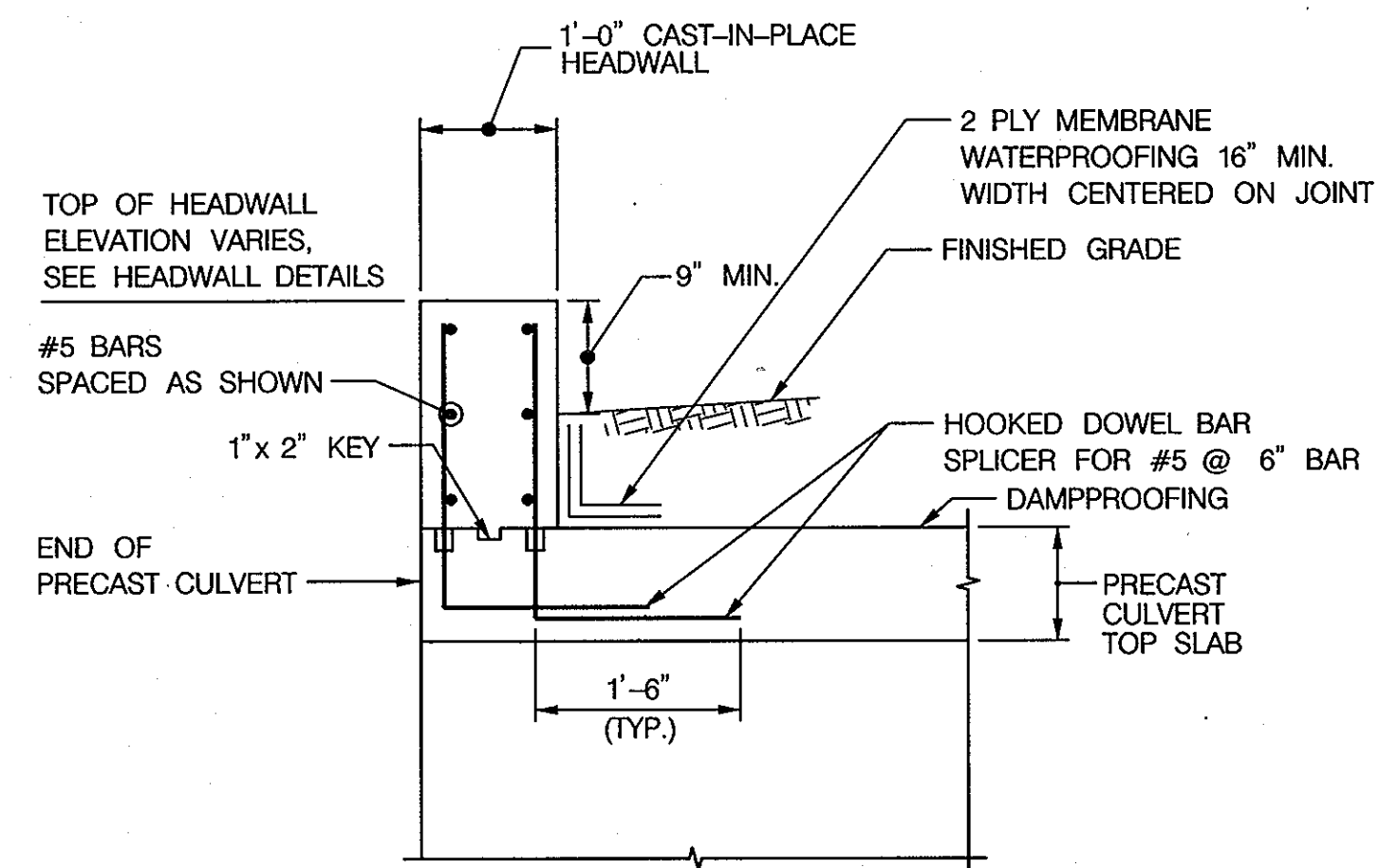
NOTE:
SEE WEEP HOLE NOTE
ON SHEET 10 OF 12.



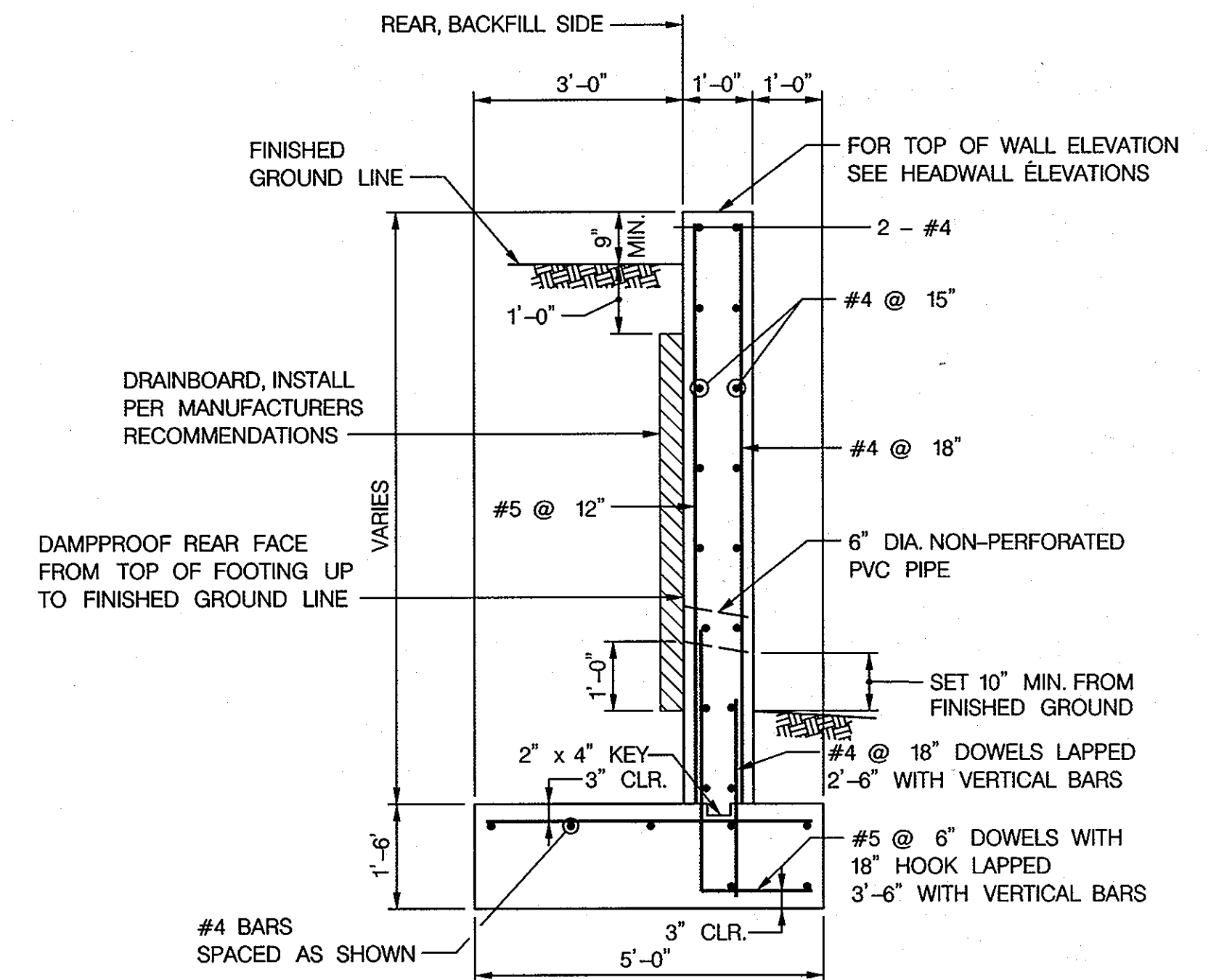
TYPICAL DETAIL
CIP WINGWALL TO CULVERT SIDEWALL CONNECTION
SCALE: 3/4" = 1'-0"



ADDITIONAL REINFORCING AT
OPENING FOR 18" RCCP
NOT TO SCALE



TYPICAL DETAIL
CIP WINGWALL TO CULVERT CONNECTION
SCALE: 3/4" = 1'-0"



TYPICAL WINGWALL SECTION
SCALE: 1/2" = 1'-0"

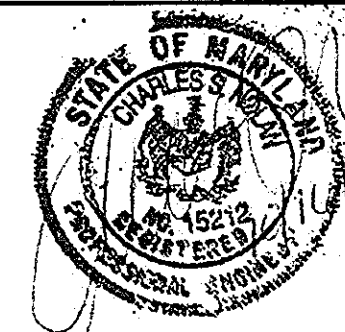
FOUNDATION

FOUNDATIONS HAVE BEEN DESIGNED FOR A BEARING PRESSURE OF 2,000 PSF. THE SUBGRADE SHALL BE OBSERVED AND TESTED BY THE CONTRACTOR TO VERIFY THAT THE PRESSURE IS AVAILABLE AND RESULTS SUBMITTED TO THE ENGINEER. THE ENGINEER MAY, DURING THE PERIOD OF CONSTRUCTION ORDER CHANGES IN DIMENSIONS AND ELEVATIONS OF FOOTINGS TO SECURE A SATISFACTORY FOUNDATION.

FOR OBSERVATION, EVALUATION AND RECOMMENDATIONS FOR FOUNDATION SUBGRADES, SUBSURFACE WATER CONDITIONS DURING CONSTRUCTION AND DRAINAGE, CONSULT WITH THE GEOTECHNICAL INVESTIGATION COMPLETED BY EBA ENGINEERING, INC. AND DATED APRIL 28, 2008.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *Michael J. DeLuca* 6/7/10
Chief, Bureau of Engineering: *Michael J. DeLuca* 6/7/10
Chief, Bureau of Highways: *Michael J. DeLuca* 6-2-10
Chief, Transportation and Special Projects Division: *Steve Sharpe* 6/7/10

NOLAN
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone: (410) 995-3651 Fax: (410) 995-1963

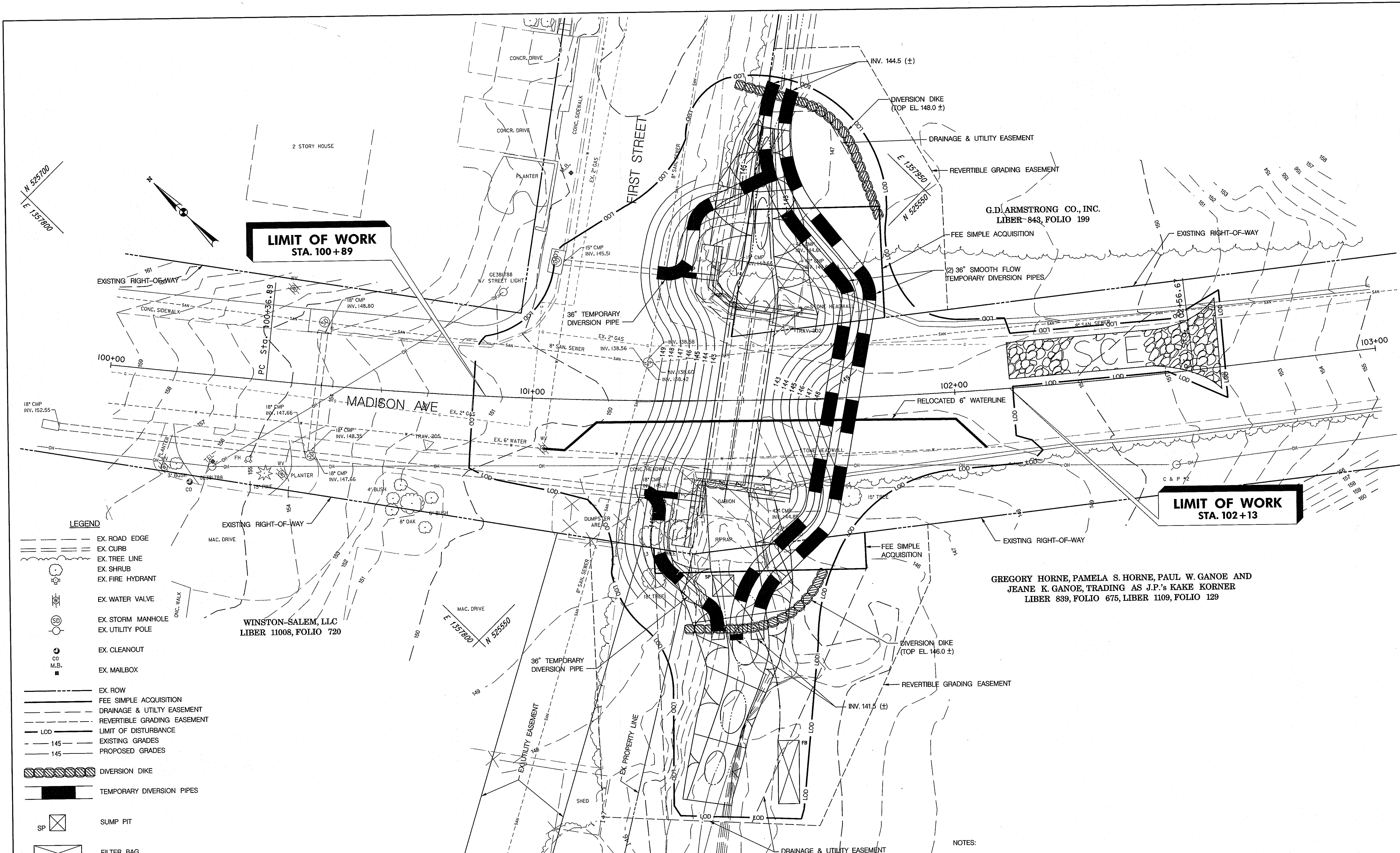


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| DRN: | BSB | | | | |
| CHK: | CSN | | | | |
| DATE: | JUNE 2009 | BY | NO. | REVISION | DATE |

WINGWALL DETAILS

REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-1156
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN
SHEET
12 OF 12



- LEGEND**
- EX. ROAD EDGE
 - EX. CURB
 - EX. TREE LINE
 - EX. SHRUB
 - EX. FIRE HYDRANT
 - EX. WATER VALVE
 - EX. STORM MANHOLE
 - EX. UTILITY POLE
 - EX. CLEANOUT
 - EX. MAILBOX
 - EX. ROW
 - FEE SIMPLE ACQUISITION
 - DRAINAGE & UTILITY EASEMENT
 - REVERTIBLE GRADING EASEMENT
 - LOD --- LIMIT OF DISTURBANCE
 - 145 --- EXISTING GRADES
 - 145 --- PROPOSED GRADES
 - DIVERSION DIKE
 - TEMPORARY DIVERSION PIPES
 - SUMP PIT
 - FILTER BAG
 - STABILIZED CONSTRUCTION ENTRANCE

RIGHT OF WAY AND EASEMENT LINES SHOWN ON THESE PLANS ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT OFFICIAL FOR OFFICIAL FEE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE RIGHT OF WAY PLATS.

GRADING PLAN
SCALE: 1" = 10'

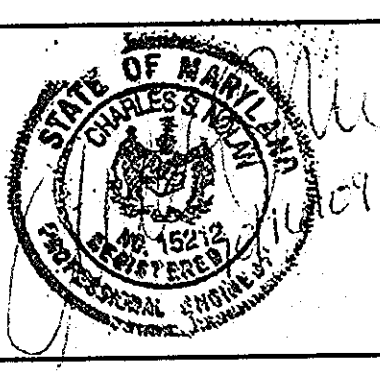
- NOTES:**
- SEE SHEET 7 FOR SEQUENCE
 - SEE SHEET 6 FOR STAGE 2 PLAN
 - SEE SHEETS 7 AND 8 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

W. J. Zabel 6-2-10
DIRECTOR OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS

Steve Shuman 6/2/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

NOLAN
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone: (410) 995-3851 Fax: (410) 995-1368



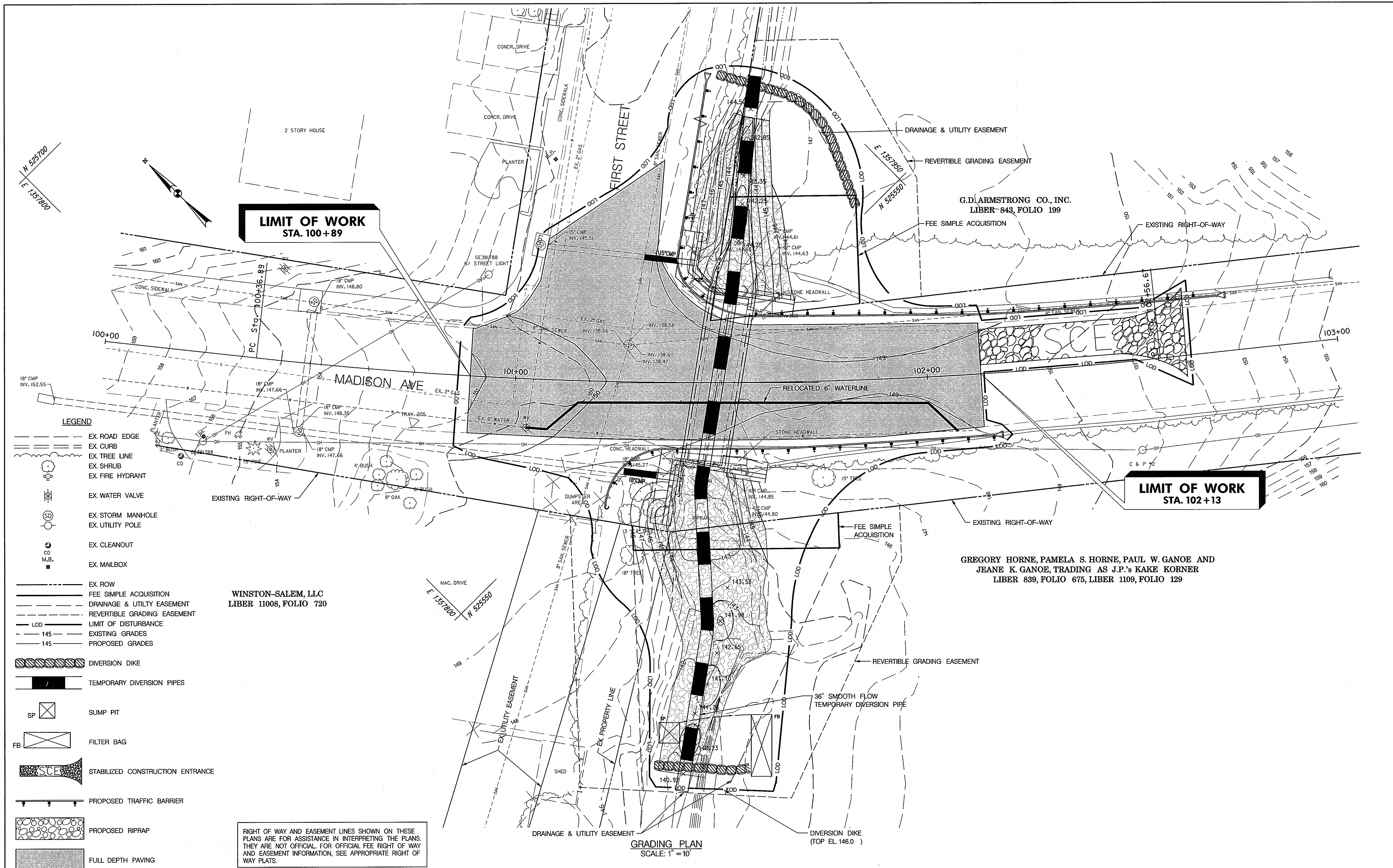
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| DRN: | BSB | | | | |
| CHK: | CSN | | | | |
| DATE: | JUNE 2009 | BY: | NO. | REVISION | DATE |

EROSION AND SEDIMENT CONTROL PLAN AND MAINTENANCE OF STREAM FLOW STAGE I

REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-1156
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

SHEET
5 OF 12



**LIMIT OF WORK
STA. 100+89**

**LIMIT OF WORK
STA. 102+13**

- LEGEND**
- EX. ROAD EDGE
 - EX. CURB
 - EX. TREE LINE
 - EX. SHRUB
 - EX. FIRE HYDRANT
 - EX. WATER VALVE
 - EX. STORM MANHOLE
 - EX. UTILITY POLE
 - EX. CLEANOUT
 - M.B.
 - EX. MAILBOX
 - EX. ROW
 - FEE SIMPLE ACQUISITION
 - DRAINAGE & UTILITY EASEMENT
 - REVERTIBLE GRADING EASEMENT
 - LOD
 - 145
 - 145
 - DIVERSION DIKE
 - TEMPORARY DIVERSION PIPES
 - SP
 - FB
 - SCE
 - PROPOSED TRAFFIC BARRIER
 - PROPOSED RIPRAP
 - FULL DEPTH PAVING

WINSTON-SALEM, LLC
LIBER 11008, FOLIO 720

G.D. ARMSTRONG CO., INC.
LIBER 843, FOLIO 199

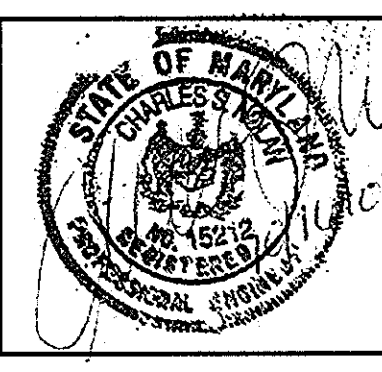
GREGORY HORNE, PAMELA S. HORNE, PAUL W. GANOE AND
JEANE K. GANOE, TRADING AS J.P.'s KAKE KORNER
LIBER 839, FOLIO 675, LIBER 1109, FOLIO 129

RIGHT OF WAY AND EASEMENT LINES SHOWN ON THESE PLANS ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT OFFICIAL. FOR OFFICIAL FEE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE RIGHT OF WAY PLATS.

GRADING PLAN
SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael J. Russo 6/7/10
DIRECTOR OF PUBLIC WORKS DATE
Steve Shuman 6/7/10
CHIEF, BUREAU OF ENGINEERING DATE
Steve Shuman 6/7/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

NOLAN
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone: (410) 995-9851 Fax: (410) 995-1363



| | | | | | |
|-------|-----------|-----|-----|----------|------|
| DES: | CSN | | | | |
| DRN: | BSB | | | | |
| CHK: | CSN | | | | |
| DATE: | JUNE 2009 | BY: | NO. | REVISION | DATE |

EROSION AND SEDIMENT CONTROL PLAN AND MAINTENANCE OF STREAM FLOW STAGE 2

REPLACEMENT OF CULVERT MADISON AVENUE OVER TRIBUTARY TO PATUXENT RIVER CAPITAL PROJECT D-1156 ELECTION DISTRICT NO. 6 LAUREL, MARYLAND

SCALE: AS SHOWN
SHEET 6 OF 12

SPECIFICATIONS FOR VEGETATION ESTABLISHMENT

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 acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs per acre 10-10-10 fertilizer (14 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 (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue and 2 lbs per acre (.05 lbs/1000 sq. ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) - 2 tons per acre of well anchored straw mulch and seed as soon 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 1-12 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 seeding areas and make needed repairs, replacements and reseeds.

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 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Seeding—For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2-12 bushel per acre of annual ryegrass (3.2 lbs/1000 sq. ft.). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.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 1-12 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed free 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 additional rates and methods not covered.

STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 24 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, (313-1850).
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 most current "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", and revisions thereto.
3. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 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 12, 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 (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can 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 | 0.42 | Acres |
| Area Disturbed | 0.42 | Acres |
| Area to be rooted or paved | 0.10 | Acres |
| Area to be vegetatively stabilized | 0.30 | Acres |
| Total Cut | 300 | Cu. Yds. |
| Total Fill | 400 | Cu. Yds. |

Offsite Waste/Borrow Area Location To Be Determined By Contractor at a site with an active grading permit.
8. *It is the responsibility of the contractor to identify the soil/borrow site and notify and gain the approval from the sediment control inspector of the site and its grading permit number at the time of construction.
9. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
10. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL PURPOSE ONLY

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 supplies 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.

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 representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.
- II. Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - 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 an agronomist 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 1/2" in diameter.
 - ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nulesedge, 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.
- III. 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 - Vegetative Stabilization Methods and Materials.
- IV. For sites having disturbed areas over 5 acres:
 - i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - b. Organic content of topsoil shall be not less than 1.5 percent by weight.
 - c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by appropriate authority, may be used in lieu of natural topsoil.

- i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

Topsoil Application

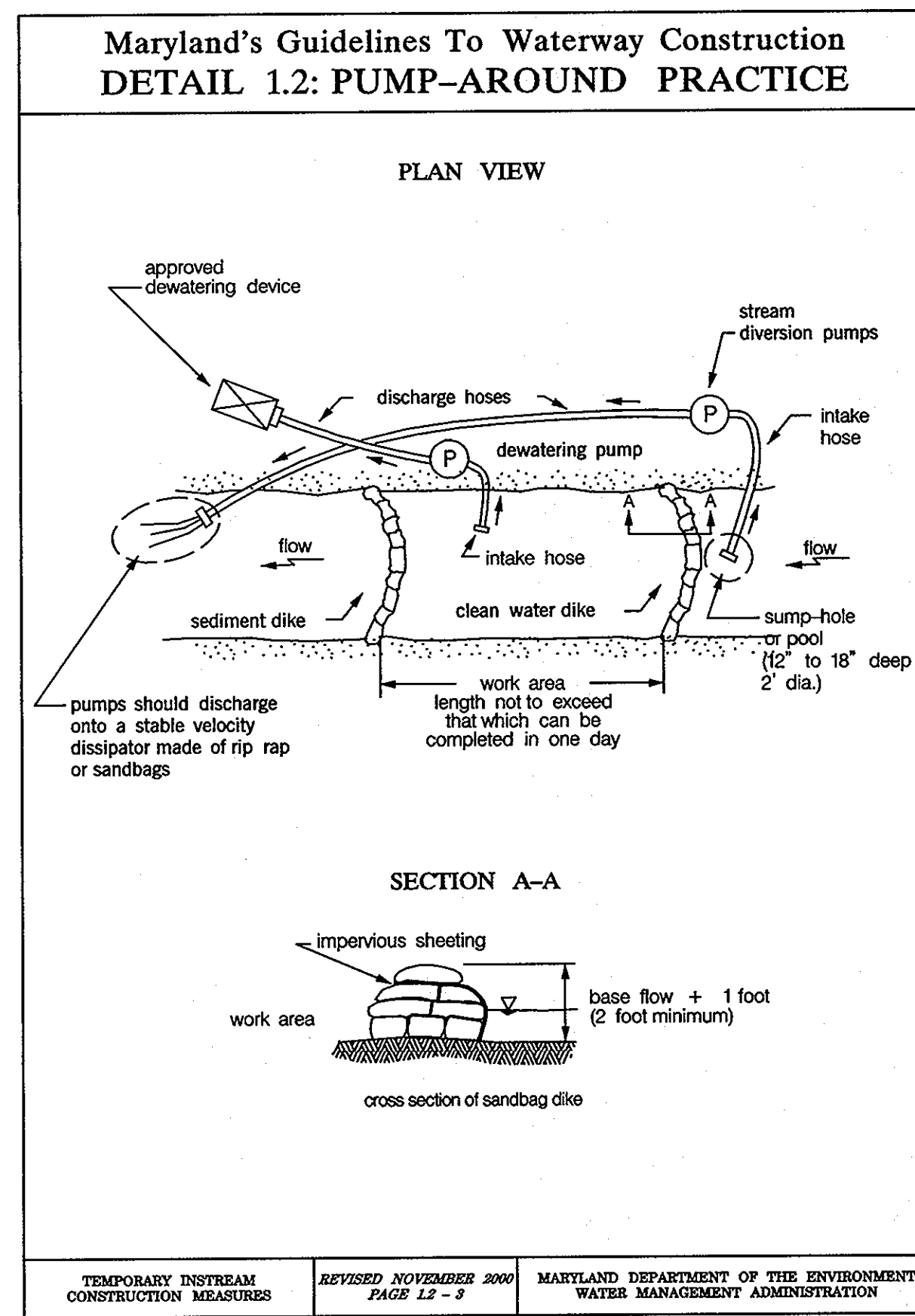
- i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
- ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 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 pockets.
- iv. Topsoil shall not be placed while the topsoil or subsoil is in a 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.
- V. 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 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 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 the rate of 1 ton/1,000 square feet.
 - ii. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1000 square feet, and 1/3 the normal lime application rate.

| ENGINEER'S CERTIFICATE | |
|---|---------|
| "I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT." | |
| <i>Charles S. Nolan</i> | 6/19/09 |
| CHARLES S. NOLAN | DATE: |
| DEVELOPER'S CERTIFICATE | |
| "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT THE DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT." | |
| <i>Steve Sharar</i> | 6/24/09 |
| DEVELOPER | DATE: |
| STEVE SHARAR | |

SEQUENCE OF CONSTRUCTION

DURATION

1. OBTAIN GRADING PERMIT.
2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 48 HOURS BEFORE STARTING ANY WORK.
3. DELINEATE LIMITS OF DISTURBANCE. 1 DAY
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE. 1 DAY
5. WATER LINE RELOCATION:
6. INSTALL UPSTREAM AND DOWNSTREAM DIVERSION DIKES SET UP PUMP AROUND OPERATION AND REMOVE PORTIONS OF EXISTING CULVERT PIPES TO ALLOW FOR CONSTRUCTION OF THE WATER LINE RELOCATION EXISTING CULVERT HEADWALLS SHALL REMAIN IN PLACE. INSTALL 36 INCH TEMPORARY SMOOTH FLOW DIVERSION PIPE THROUGH CONSTRUCTION WORK AREA AT THE END OF THE WORK DAY. 1 DAY
7. USING PUMP AROUND OPERATIONS DURING THE WORK DAY AND INSTALLING 36 INCH TEMPORARY SMOOTH FLOW DIVERSION PIPE THROUGH THE CONSTRUCTION ZONE AT THE END OF EACH WORK DAY, CONSTRUCT WATER LINE RELOCATION. 2 DAYS
8. STAGE 1 CULVERT CONSTRUCTION:
9. USING PUMP AROUND OPERATIONS AS REQUIRED, INSTALL (2) - 36 INCH DIAMETER SMOOTH FLOW TEMPORARY DIVERSION PIPES AROUND EXISTING CULVERT AND HEADWALLS. REMOVE PORTIONS OF EXISTING STORM DRAIN PIPES AT CULVERT HEADWALLS AND INSTALL TEMPORARY DIVERSION PIPES AT ENDS OF EXISTING STORM DRAIN PIPES. 2 DAYS
10. REMOVE REMAINING PORTIONS OF EXISTING CULVERT PIPES, REMOVE EXISTING HEADWALLS AND EXISTING RIPRAP AND/OR STONE AS REQUIRED FOR NEW CONSTRUCTION. 2 DAYS
11. CONSTRUCT NEW CONCRETE CULVERT AND HEADWALLS. 4 WEEKS
12. STAGE 2 CULVERT CONSTRUCTION:
13. REMOVE (2) - 36 INCH DIVERSION PIPES, SHIFT DOWNSTREAM DIVERSION DIKE TO BEYOND LIMITS OF PROPOSED RIPRAP AND INSTALL SINGLE 36 INCH DIAMETER SMOOTH FLOW DIVERSION PIPE THROUGH NEW CULVERT, INCLUDING CONNECTIONS FROM TEMPORARY DIVERSION PIPES FROM EXISTING STORM DRAIN PIPES. 1 DAY
14. USING PUMP AROUND OPERATIONS AS REQUIRED DURING THE WORK DAY, PLACE BACKFILL AT CULVERT AND CONSTRUCT RIPRAP/STEP POOLS AT UPSTREAM AND DOWNSTREAM ENDS OF THE EXISTING CULVERT, RESTORE THE 36 INCH DIVERSION PIPE THROUGH THE CONSTRUCTION AREA AT THE END OF EACH WORK DAY. 4 DAYS
15. PERMANENTLY STABILIZE DISTURBED AREA AT UPSTREAM AND DOWNSTREAM ENDS OF THE CULVERT AND STABILIZE THE AREA TO BE PAVED BY PLACING THE STONE BASE FOR THE PAVING. 1 DAY
16. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, INSTALL REPLACEMENT STORM DRAIN PIPES THROUGH EXISTING HEADWALLS AND REMOVE EXISTING DIVERSION DIKES AND PIPES TO RESTORE FLOW THROUGH THE CULVERT. USE PUMP AROUND OPERATIONS AS REQUIRED TO COMPLETE THE WORK. STABILIZE ALL AREAS DISTURBED BY THE REPLACEMENT OF THE STORM DRAIN PIPES AND REMOVAL OF THE DIVERSION DIKES AND TEMPORARY PIPE(S). 1 DAY
17. CONSTRUCT FINAL PAVEMENT AND STABILIZE ALL REMAINING DISTURBED AREAS. 3 DAYS



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark DeLuca 6/2/10
DIRECTOR OF PUBLIC WORKS DATE

Steve Sharar 6/2/09
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

NOLAN
Associates, Inc.

Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042

Phone: (410) 995-3651 Fax: (410) 995-1563

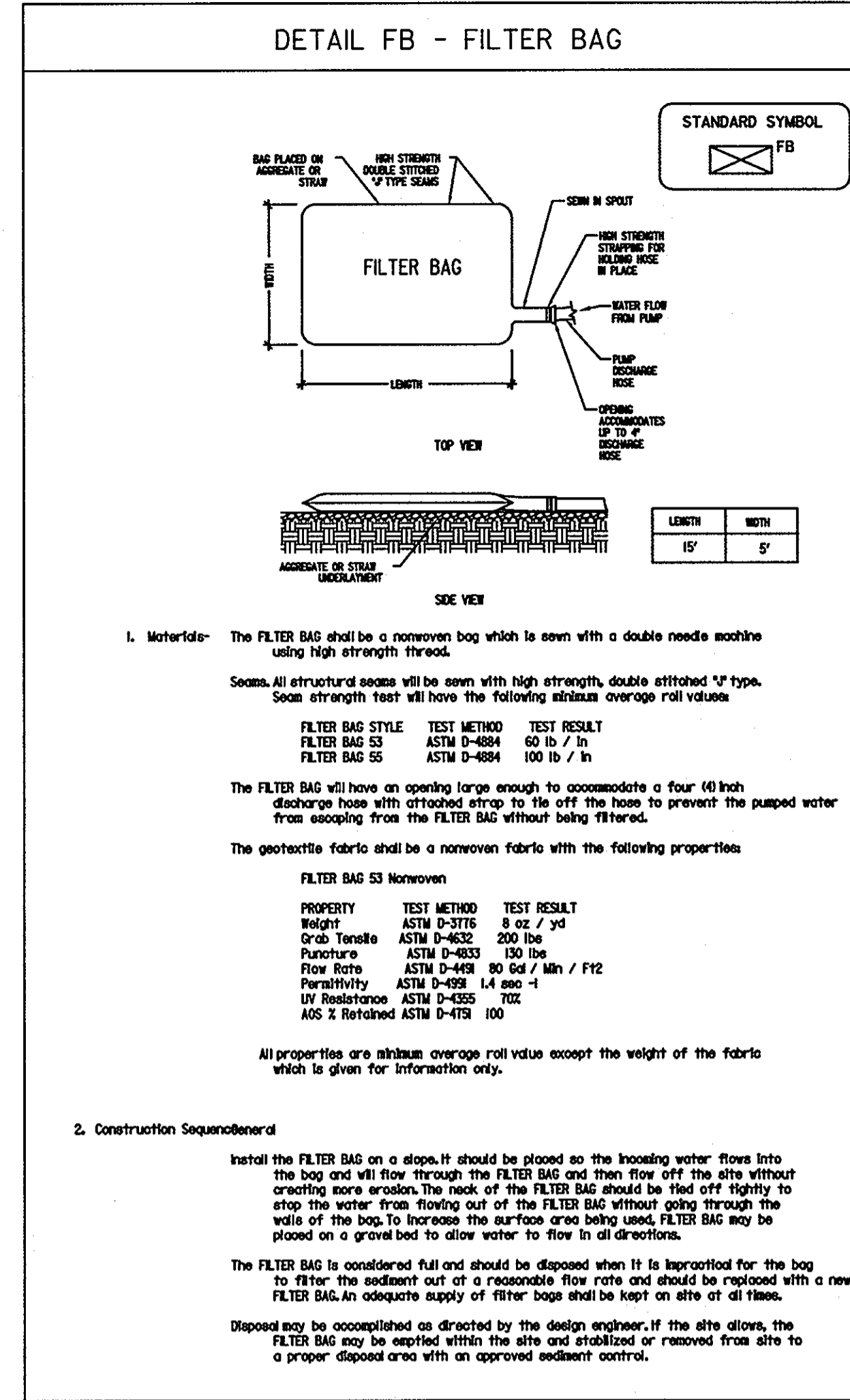
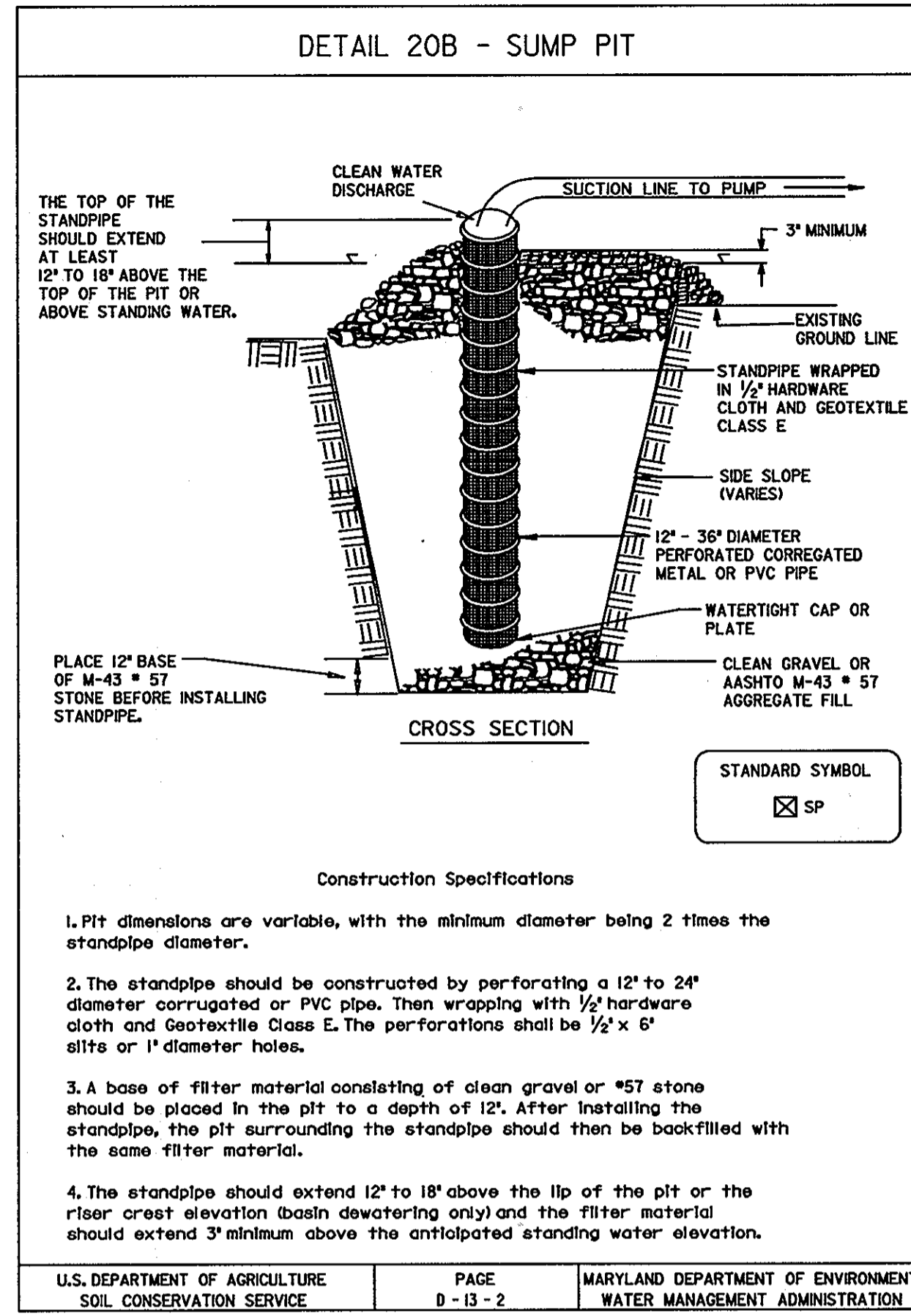
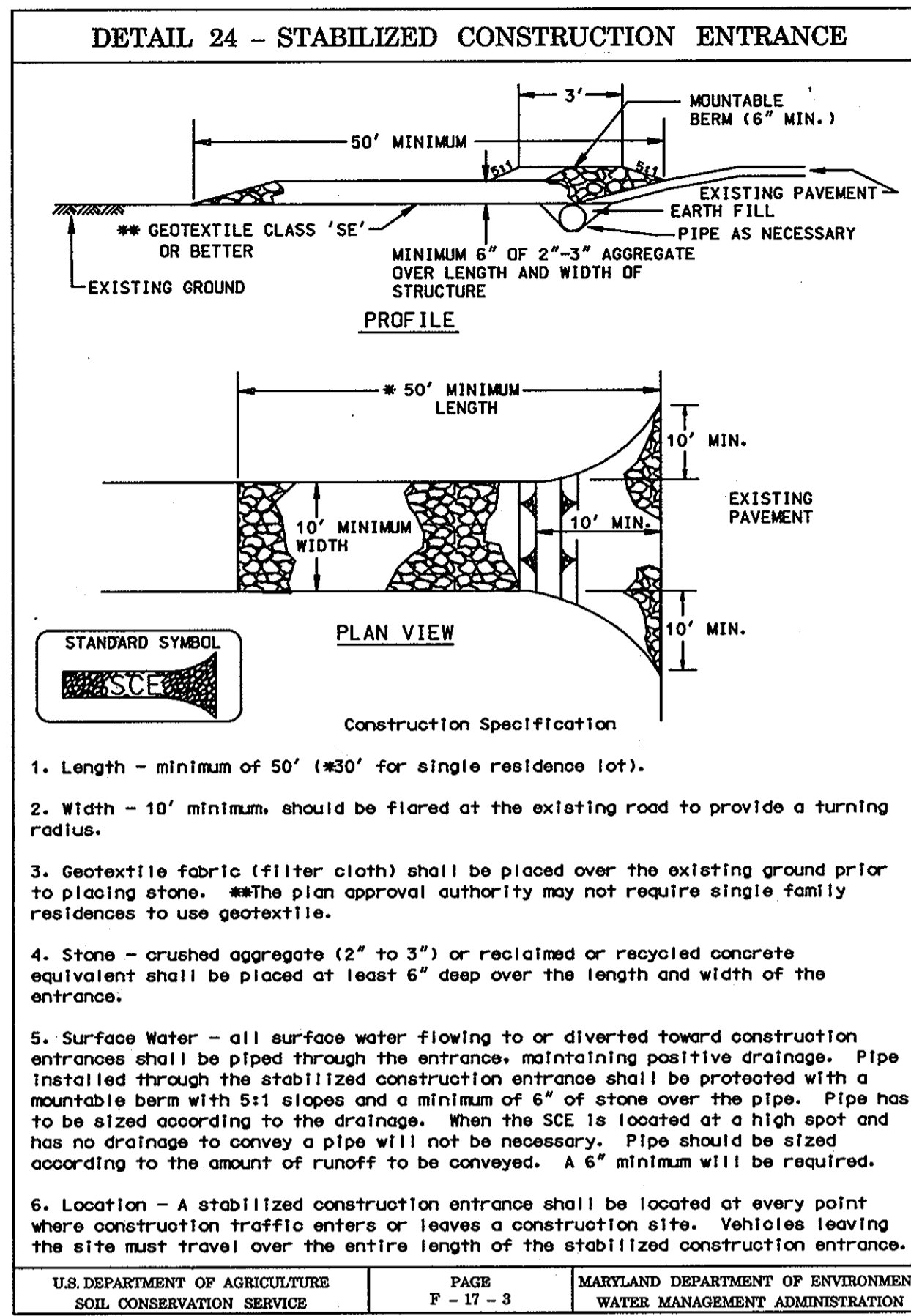
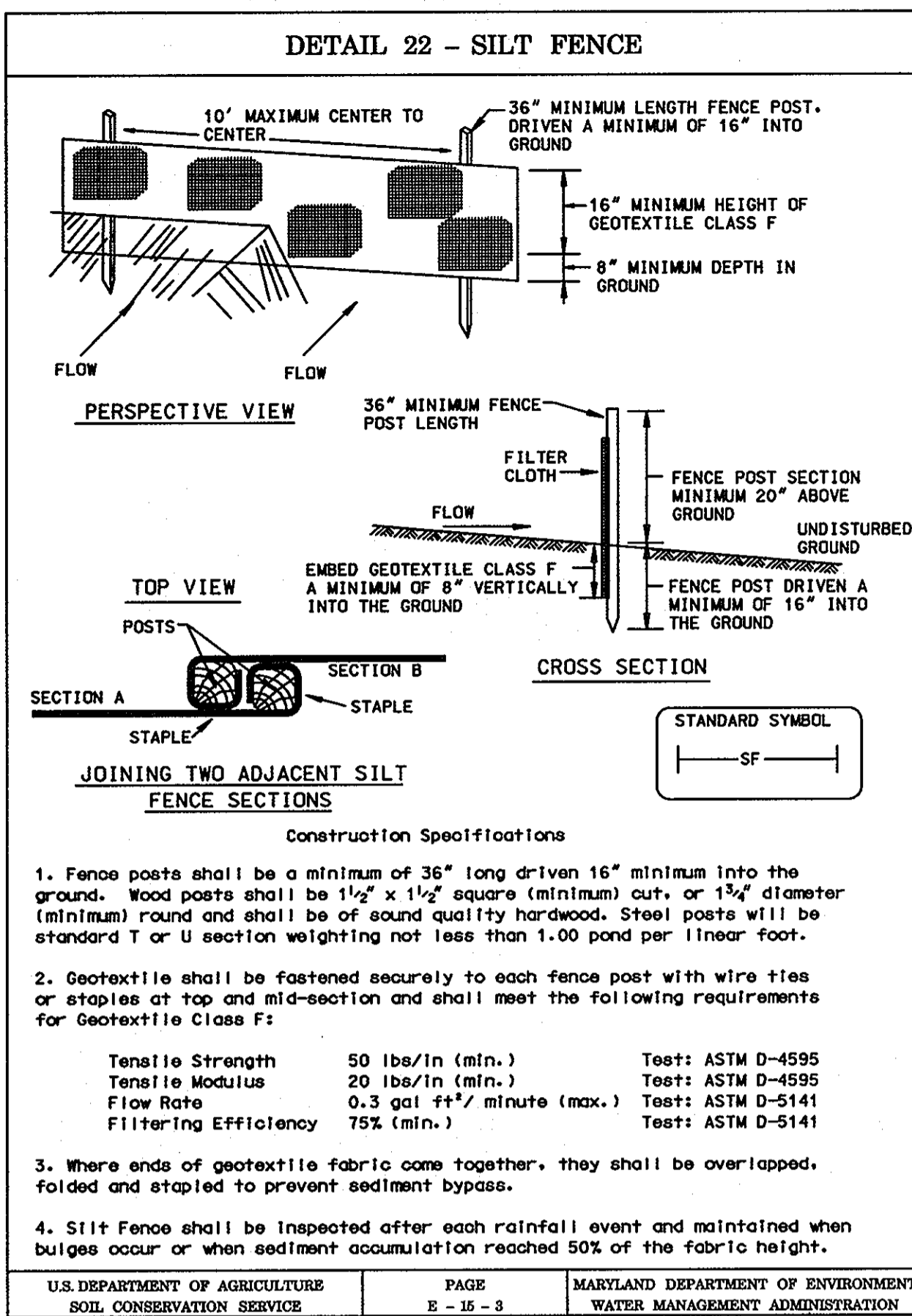
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| DRN: BSB | | | | | |
| CHK: CSN | | | | | |
| DATE: JUNE 2009 | BY | NO. | REVISION | DATE | |

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-1156
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

SHEET
7 OF 12



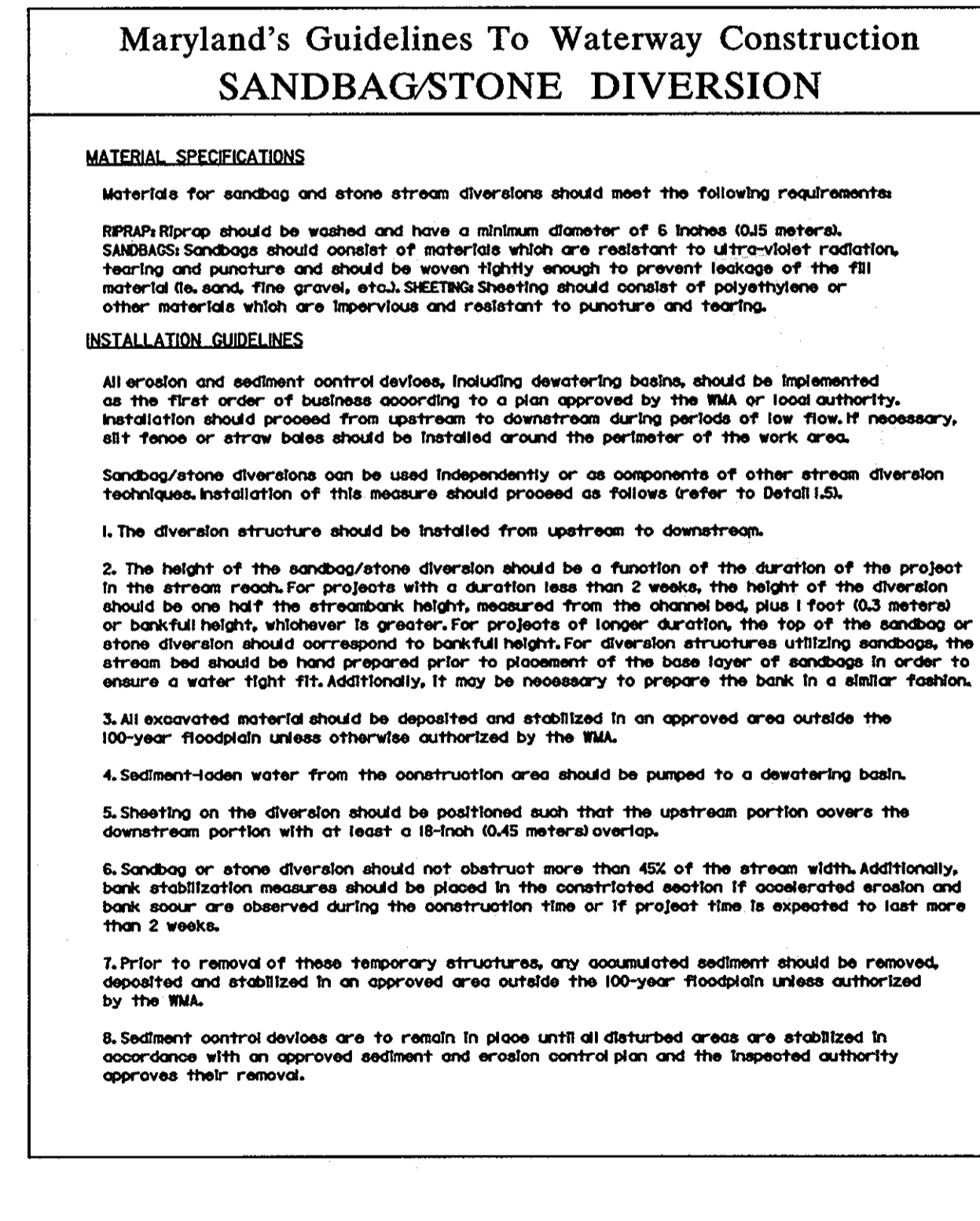
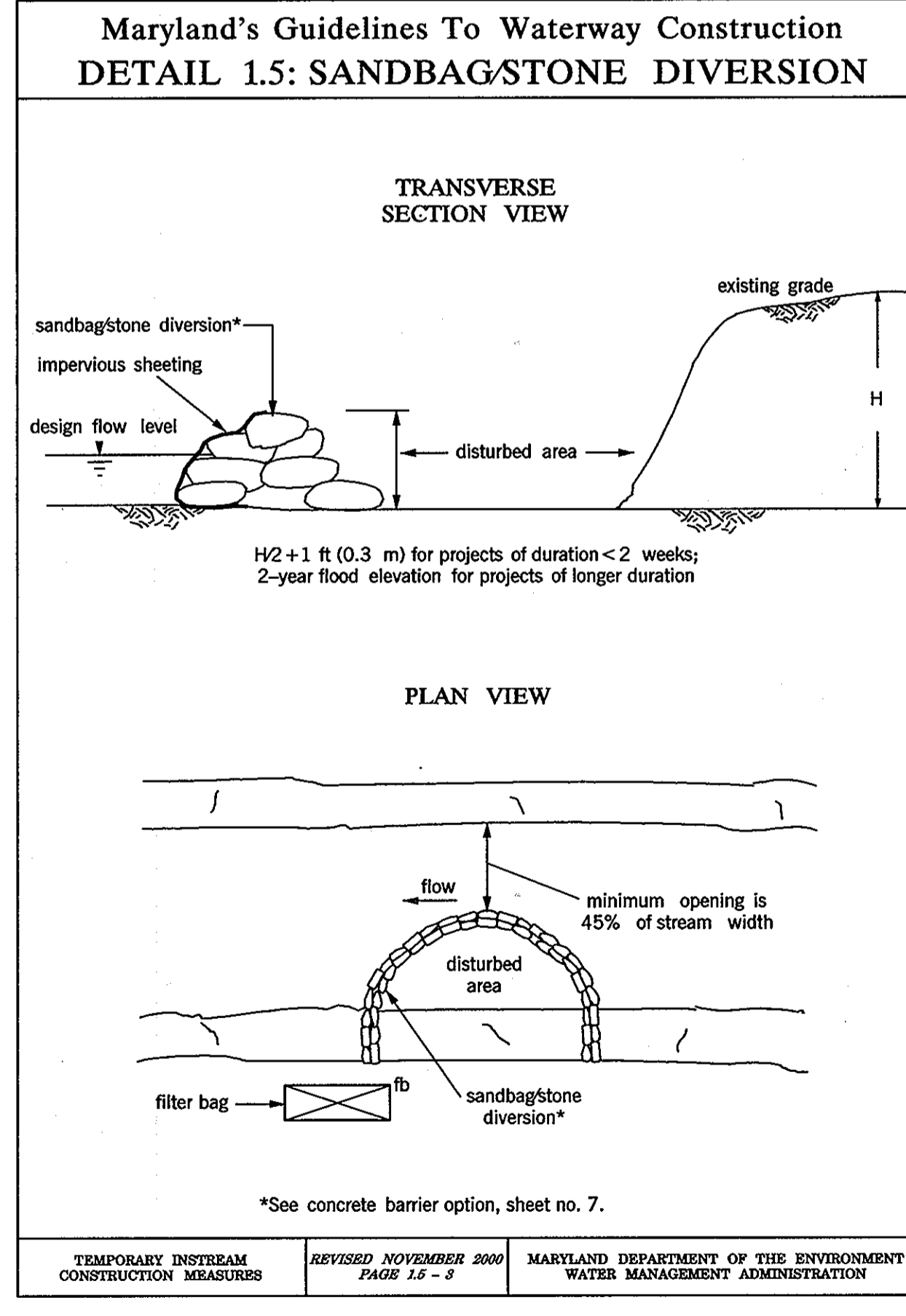
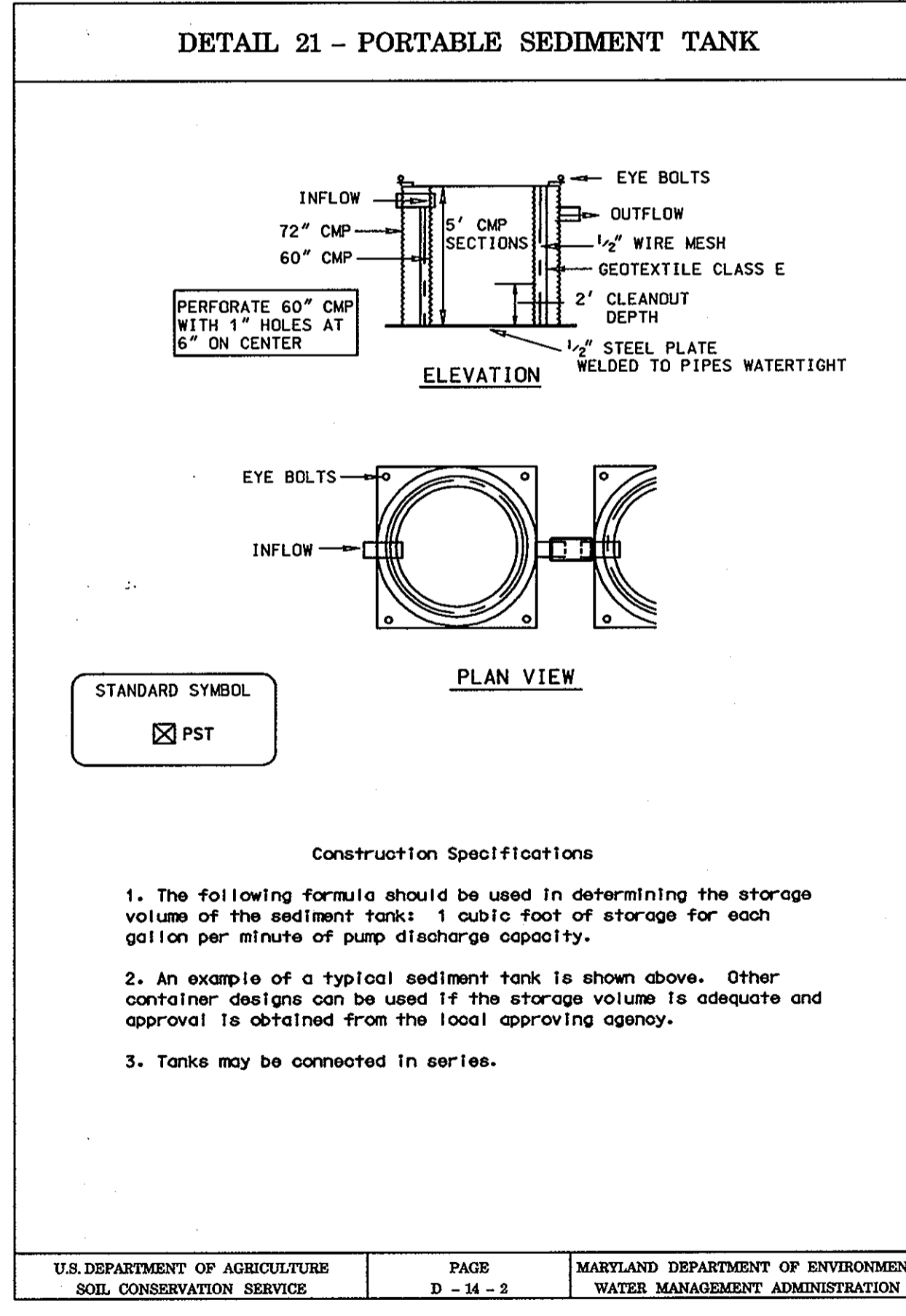
SILT FENCE

Silt Fence Design Criteria

| Slope Steepness | (Maximum) | |
|-------------------|--------------|-------------------|
| | Slope Length | Silt Fence Length |
| Flatter than 50:1 | unlimited | unlimited |
| 50:1 to 10:1 | 125 feet | 1,000 feet |
| 10:1 to 5:1 | 100 feet | 750 feet |
| 5:1 to 3:1 | 60 feet | 500 feet |
| 3:1 to 2:1 | 40 feet | 250 feet |
| 2:1 and steeper | 20 feet | 125 feet |

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 2 - 15 - 8A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark DeLuca 6/7/10
DIRECTOR OF PUBLIC WORKS DATE

Steve Shanley 6/7/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

Steve Shanley 6/7/10
CHIEF, BUREAU OF ENGINEERING DATE

Steve Shanley 6/7/10
CHIEF, BUREAU OF HIGHWAYS DATE

NOLAN
Associates, Inc.

Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042

Phone: (410) 995-3653 Fax: (410) 995-1363

STATE OF MARYLAND
DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

APPROVED
DATE: JUNE 2009

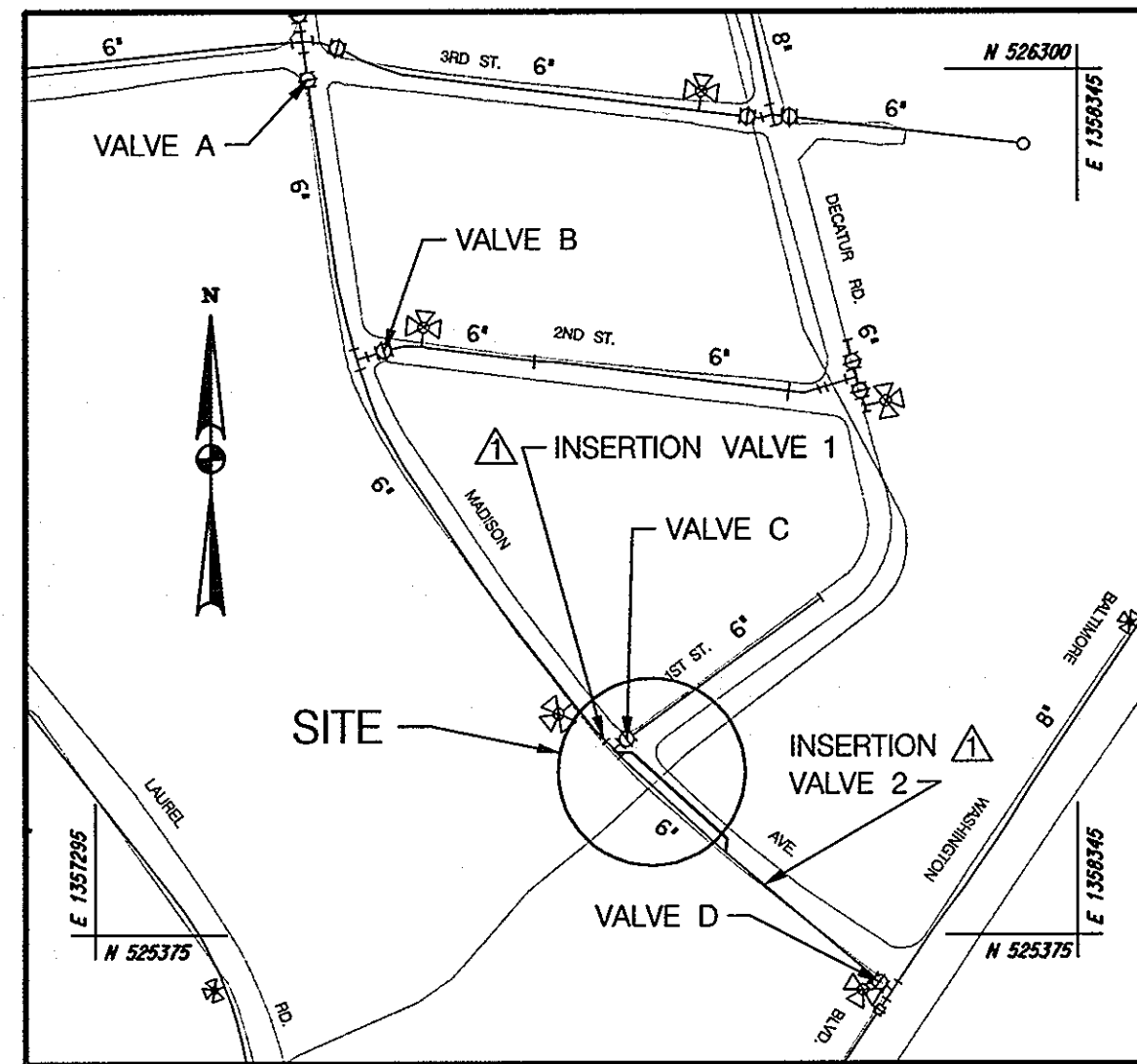
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EROSION AND SEDIMENT CONTROL DETAILS

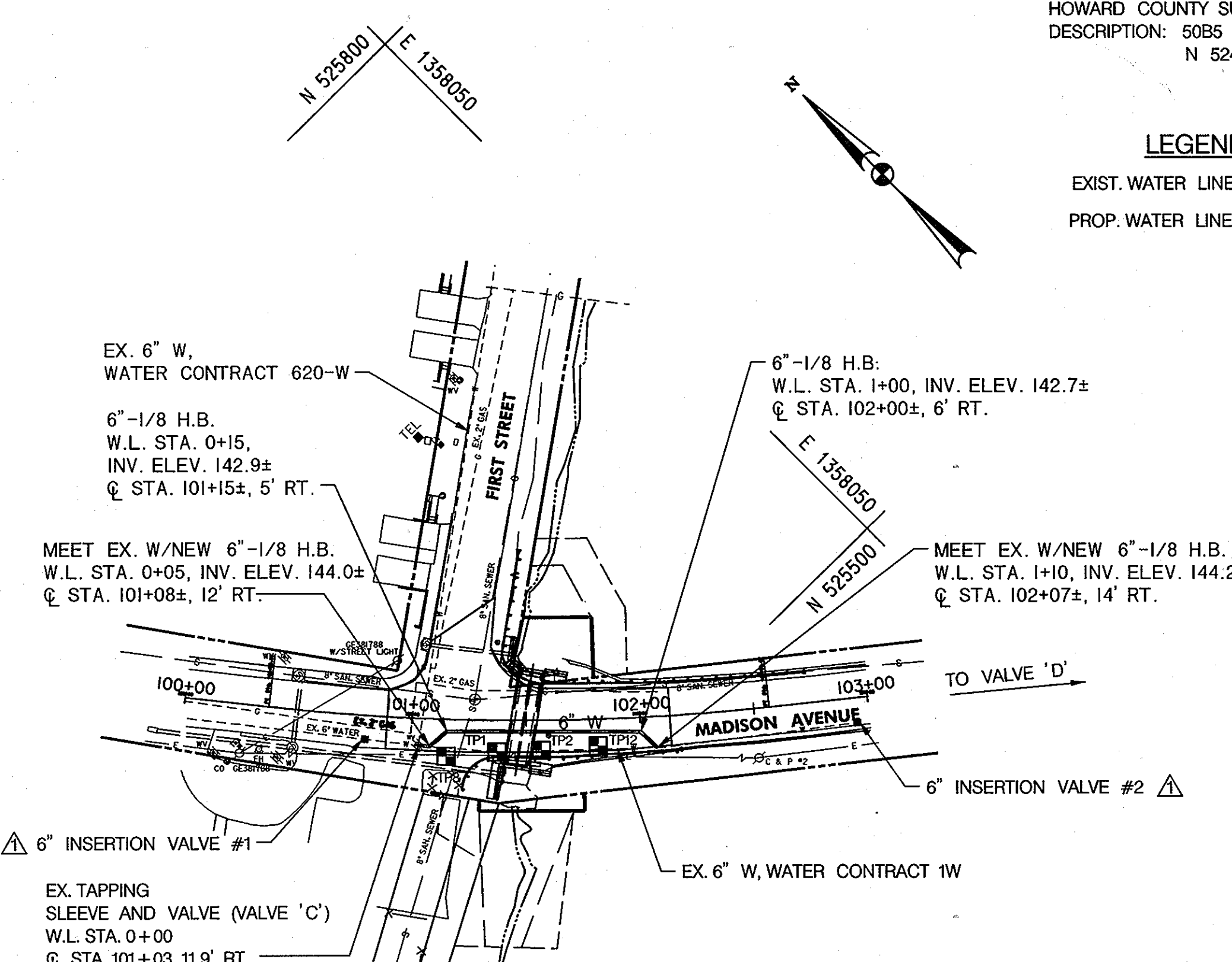
REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-II56
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

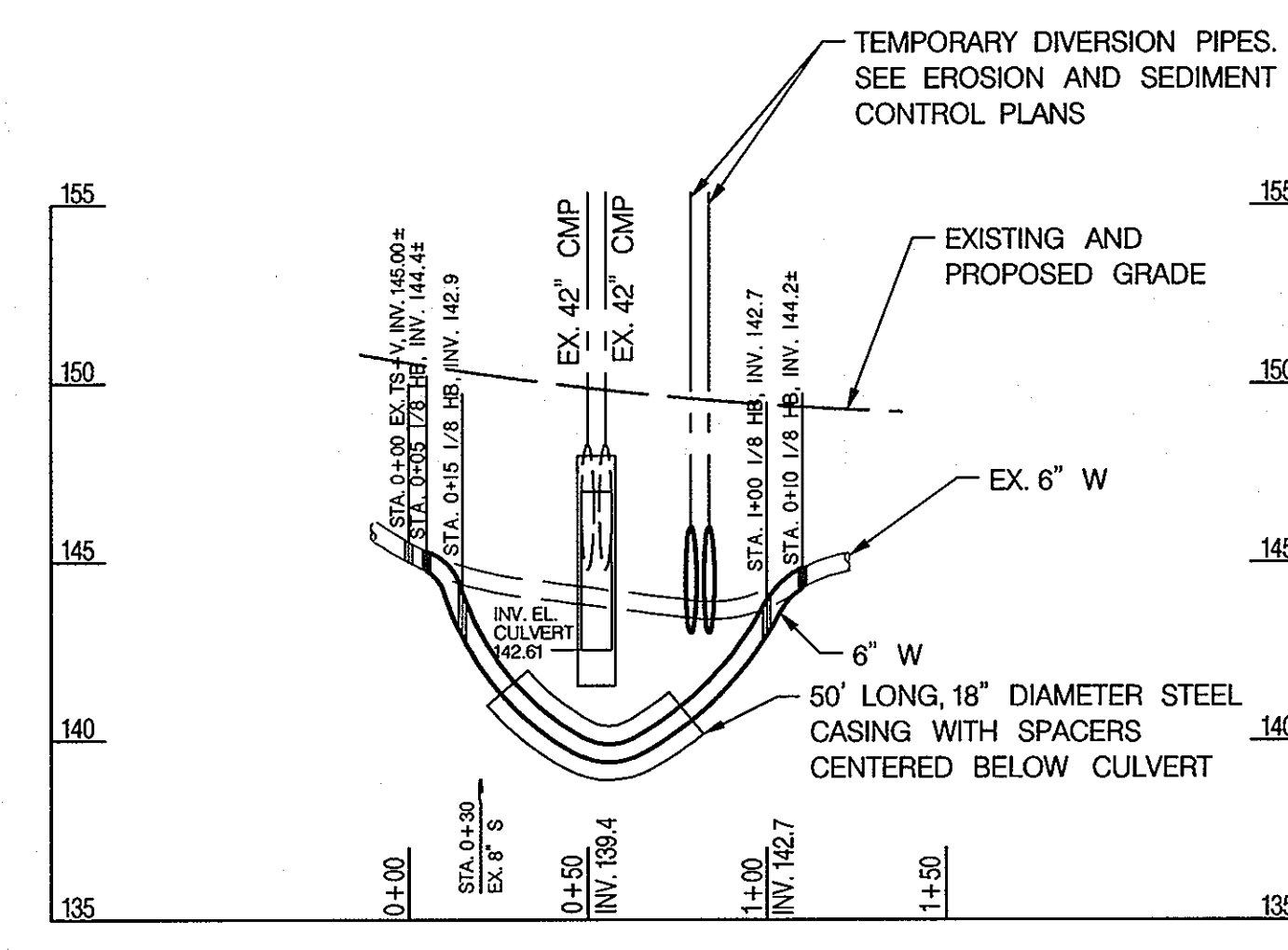
SHEET
8 OF 12



VICINITY MAP
SCALE: 1" = 200'



6" WATER RELOCATION-PLAN
SCALE: 1" = 50'



6" WATER RELOCATION - PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

BENCHMARKS
HOWARD COUNTY SURVEY CONTROL
DESCRIPTION: 50B5
N 524999.1943, E 1357925.7452, ELEV. 177.57

LEGEND
EXIST. WATER LINE
PROP. WATER LINE

| QUANTITIES | | | | |
|--------------------|----------------------|------------|------|-----------------|
| ITEMS | QUANTITIES ESTIMATED | QUANTITIES | TYPE | MANUF./SUPPLIER |
| 6" W | 110 L.F. | | | |
| 6" -1/8 H.B. | 4 EACH | | | |
| 6" INSERTION VALVE | 2 EACH | | | |

| TEST PIT DATA | | | |
|-----------------|-----------|-----------------------|------------------|
| TEST PIT NUMBER | PIPE SIZE | TOP OF PIPE ELEVATION | DATE OF TEST PIT |
| TP 1 | 6" W | 144.58 | 12/2/97 |
| TP 2 | 6" W | 144.15 | 12/2/97 |
| TP 8 | 6" W | 144.56 | 3/4/98 |
| TP 12 | 6" W | 143.93 | 3/4/98 |

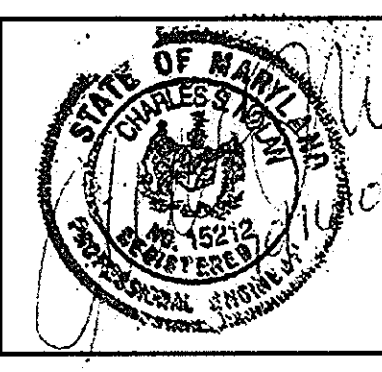
- NOTES-WATER RELOCATION**
- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
 - ALL HORIZONTAL CONTROLS ARE BASED ON MARYLAND STATE COORDINATES, NAD 83/91.
 - ALL VERTICAL CONTROLS ARE BASED ON NAVD 88.
 - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON PLANS.
 - CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM THE MONIES OWED BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
 - FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS USE HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB AT ALL TIMES.
 - WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL [] AT THE LOCATIONS OF THE TEST PITS A NOTE OR NOTES CONTAINING RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
 - THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
 AT&T.....1-800-252-1133
 BGE (CONTRACTOR SERVICES).....410-850-4620
 BGE (UNDERGROUND DAMAGE CONTROL).....410-787-9068
 BUREAU OF UTILITIES.....410-313-4900
 COLONIAL PIPELINE CO.....410-795-1390
 MISS UTILITY.....1-800-257-7777
 STATE HIGHWAY ADMINISTRATION.....410-531-5533
 VERIZON.....1-800-743-0039/410-224-9210
 - TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
 - CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE 12" WATER.
 - ALL WATER MAINS TO BE D.I.P. CLASS 52 RESTRAINED JOINT PIPE, UNLESS OTHERWISE NOTED. PROVIDE FIELD LOC. GASKETS FOR FULL LENGTH OF NEW 12" WATER FITTINGS SHALL BE MEGA-LUG OR APPROVED EQUAL.
 - TOPS OF ALL WATER MAINS TO HAVE A MINIMUM OF 3'-6" COVER UNLESS OTHERWISE NOTED.
 - VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
 - ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
 - FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
 - THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
 - ABANDON EXISTING PIPE IN PLACE WHERE SHOWN, EXCEPT REMOVE AS REQUIRED TO CONSTRUCT NEW PIPELINE.
 - EXISTING VALVES AND HYDRANTS REMOVED AS PART OF THE CONSTRUCTION SHALL BE SALVAGED, CLEANED AND TURNED OVER BY THE CONTRACTOR TO THE HOWARD COUNTY DEPT. OF PUBLIC WORKS, BUREAU OF UTILITIES AT 8250 OLD MONTGOMERY ROAD.
 - INSERTION VALVES SHALL BE INSTA-VALVE PLUS INSERTABLE CLAMP ON VALVES AS MANUFACTURED BY HYDRA-STOP, A DIVISION OF ADS LLC OF ALSIP, IL OR APPROVED EQUAL. INSERTION VALVES SHALL BE INSTALLED WITH NO INTERRUPTION OF FLOW DURING THE INSTALLATION. THE INSERTION VALVES SHALL REMAIN IN PLACE FOR PERMANENT USE IN THE WATER SYSTEM WITH APPROPRIATE VALVE BOXES AND APPURTENANCES.

- SEQUENCE OF CONSTRUCTION**
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LATEST AMENDED HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND THE CONTRACT DRAWINGS AND SPECIFICATIONS.
 - TEST HOLES SHALL BE EXCAVATED ON EXISTING 6" WATER MAIN TIE-IN AND INSERTION VALVE LOCATIONS PRIOR TO CONSTRUCTION OF THE PROPOSED WATER MAIN RELOCATION TO VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF THE EXISTING WATER MAIN.
 - THE CONTRACTOR SHALL PREPARE A TEMPLATE OF THE EXISTING WATER MAIN TO CONFIRM THE ROUNDNESS OF THE PIPE.
 - INSTALL RELOCATED WATER MAIN FROM WATER LINE STA. 0+00± TO STA. 1+10± INCLUDING HORIZONTAL AND/OR VERTICAL BENDS, THRUST BLOCKS, ANCHORAGES AND BUTTRESSES EXCEPT FOR TIE-INS TO EXISTING MAIN UNLESS OTHERWISE APPROVED. CONTRACTOR SHALL INSTALL NEW WATERLINE PRIOR TO REMOVAL OF EXISTING CULVERT. BACKFILL TRENCH IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, CHLORINATE AND PRESSURE TEST THIS SECTION OF THE WATER MAIN.
 - INSTALL PRE-POURED THRUST BLOCKS FOR THE HORIZONTAL BENDS AT TIE-IN POINTS AT STA. 0+00 AND STA. 1+10. CONTRACTOR SHALL SUBMIT DETAILS FOR PRE-POURED THRUST BLOCKS AND WATER MAIN TIE-IN DETAILS TO ENGINEER FOR APPROVAL.
 - CONTRACTOR SHALL COORDINATE WITH HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF UTILITIES PRIOR TO MAKING FINAL TIE-INS OF WATER MAIN TO EXISTING. ANY INTERRUPTIONS TO WATER SERVICE SHALL BE APPROVED IN ADVANCE BY THE COUNTY. THE COUNTY MAY REQUIRE THAT ANY INTERRUPTIONS IN SERVICE ARE SCHEDULED DURING NIGHT TIME WORK HOURS.
 - INSTALL INSERTION VALVES 1 AND 2 ON THE EXISTING 6 INCH WATER MAIN ALONG MADISON AVENUE WITHOUT INTERRUPTING FLOW.
 - WITH THE PRIOR APPROVAL OF THE ENGINEERS, CLOSE INSERTION VALVES 1 AND 2 AND VALVE 'C' ON THE EXISTING 6 INCH WATER MAIN ALONG MADISON AVENUE. SEE VICINITY MAP FOR APPROXIMATE LOCATIONS OF VALVES.
 - REMOVE EXISTING 6 INCH WATER MAIN AS NECESSARY AND CONNECT RELOCATED WATER MAIN TO THE EXISTING WATER MAIN IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND APPROVED WATER MAIN TIE-IN DETAILS. TIE-INS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL NO. W-4.15. THE RELOCATED WATER MAIN AND FITTINGS SHALL BE CHLORINATED DURING THE INSTALLATION IN ACCORDANCE WITH HOWARD COUNTY STANDARD SPECIFICATIONS SECTION NO. 1006, "DISINFECTION OF WATER MAIN".
 - OPEN INSERTION VALVES 1 AND 2 AND VISUALLY INSPECT THE TIE-INS FOR LEAKS AND WHEN ASSURED THAT THERE ARE NO LEAKS, BACKFILL THE REMAINING TRENCH IN ACCORDANCE WITH HOWARD COUNTY STANDARDS AND OPEN ALL VALVES TO RESTORE FULL SERVICE.
 - RESTORE ALL PAVING AT INSERTION VALVES USING FULL DEPTH PAVING SECTION SHOWN ON SHEET 3.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark D. Secca 6/7/10
DIRECTOR OF PUBLIC WORKS DATE

Steve Shuman 6/7/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE



| | | | |
|-----------------|--------|------------------------|---------|
| DES: CSN | CSN | ADDED INSERTION VALVES | 05/2010 |
| DRN: BSB | | | |
| CHK: CSN | | | |
| DATE: JUNE 2009 | BY NO. | REVISION | DATE |

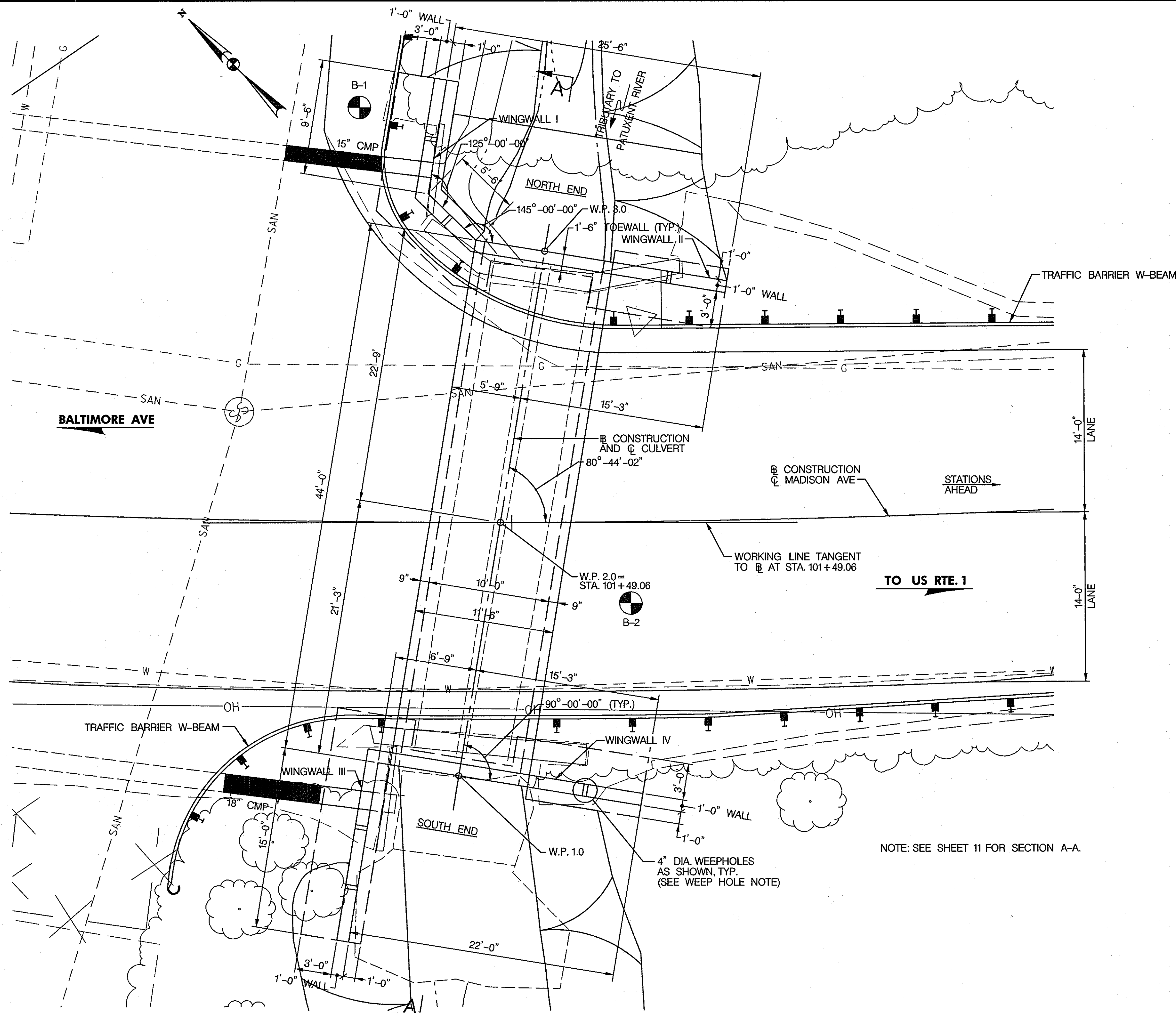
6" WATER RELOCATION
PLAN AND PROFILE

WATER CONTRACT IW

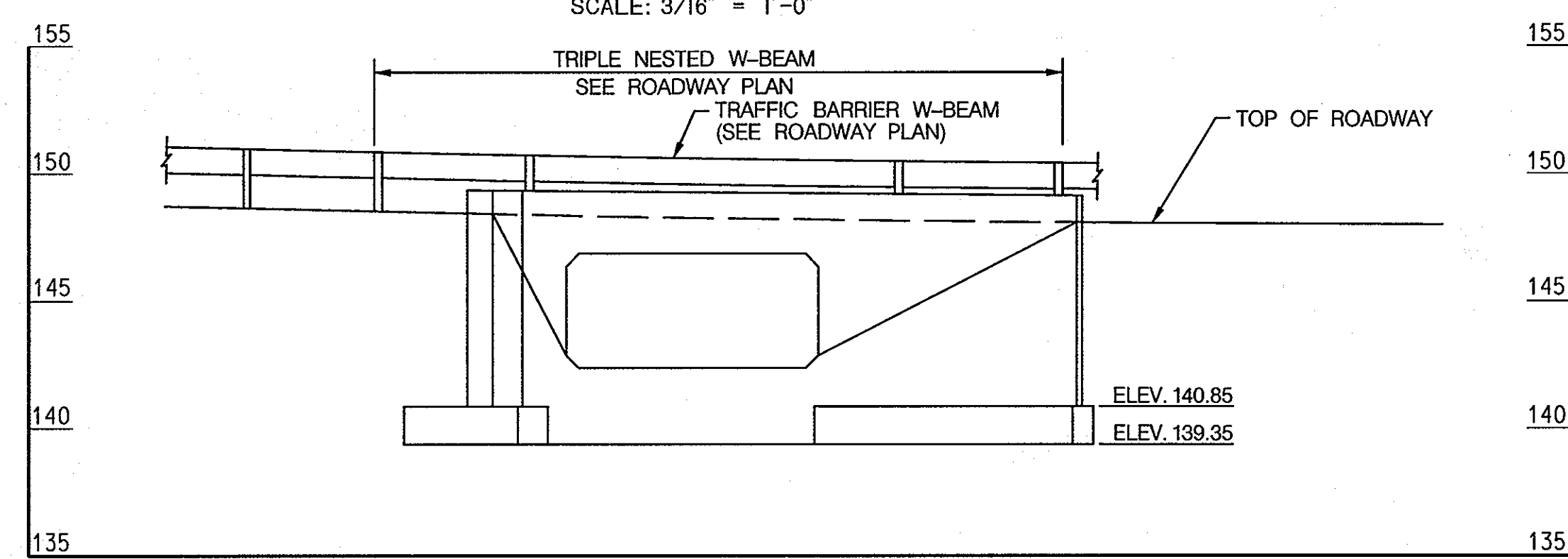
REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-II56
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

SHEET
9 OF 12



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



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

WEEP HOLE NOTE:
SET INVERT OF 4" DIA. PVC PIPES
1'-0" MINIMUM FROM FINISHED GRADE
ALONG THE STREAM FACE OF WALL.

GENERAL NOTES

- SPECIFICATIONS:** THE HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (VOLUME IV), SHA SPECIFICATIONS DATED JULY 2008, REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
- AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 2002.
- LOADING:** HS-27 AND MD TYPE 3.
- CONCRETE:** ALL PRECAST CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS. ALL CAST-IN-PLACE CONCRETE SHALL BE MIX NO. 3 (3500 PSI), UNLESS OTHERWISE NOTED.
- REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. MINIMUM BAR SPLICES SHALL BE 40 BAR DIAMETERS UNLESS NOTED OTHERWISE. HOOKS AND BEND DIMENSIONS SHALL BE IN ACCORDANCE WITH THE ACI 318. MINIMUM COVER FOR ANY BAR SHALL BE 2" MINIMUM, EXCEPT THE BOTTOM AND SIDES OF ALL THE FOOTINGS 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 ON THIS PROJECT
- CHAMFER:** ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 34" x 34" MILLED CHAMFER STRIPS.
- EXISTING STRUCTURE:** EXISTING STRUCTURE SHOWN IN LONG DASHED LINES. THE CONTRACTOR SHALL REMOVE THE EXISTING CULVERTS AND HEADWALLS IN THEIR ENTIRETY.
- PRECAST CULVERT DESIGN:** THE DESIGN AND DETAILS OF THE PRECAST CULVERT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE SUBJECT TO REVIEW, COMMENTS AND APPROVAL. SUBMIT TWO SETS OF DETAILED PLANS FOR REVIEW. INCLUDE ALL DETAILS IN THE PLANS, INCLUDING THE SIZE AND SPACING OF THE REQUIRED REINFORCEMENT NECESSARY TO BUILD THE PRECAST BOX CULVERT. INCLUDE CHECKED DESIGN CALCULATIONS FOR THE PRECAST MEMBERS COMPLYING WITH THE LATEST AASHTO STANDARD SPECIFICATIONS AND REQUIREMENTS DETAILED HEREIN. A MARYLAND REGISTERED PROFESSIONAL ENGINEER SHALL CHECK AND SEAL THE PLANS AND DESIGN CALCULATIONS. AFTER THE PLANS ARE REVIEWED AND, IF NECESSARY, THE CORRECTIONS MADE, SUBMIT ONE SET OF REPRODUCIBLE TRACINGS ON 24" x 36" SHEETS TO BECOME THE REVISED CONTRACT PLANS.
- JOINTS BETWEEN PRECAST UNITS:** PRODUCE THE PRE-CAST REINFORCED CONCRETE BOX SECTION WITH MALE AND FEMALE ENDS. DESIGN AND FORM THESE ENDS OF THE BOX SECTION SO, WHEN THE SECTIONS ARE LAID TOGETHER, THEY MAKE A CONTINUOUS LINE OF BOX SECTIONS WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES IN THE FLOWLINE. THE INTERNAL JOINT FORMED AT THE MALE AND FEMALE ENDS OF THE PRECAST UNITS SHALL BE SEALED WITH EITHER BITUMENBUTYL SEALANT OR CLOSED-CELL NEOPRENE MATERIAL. THE INTERNAL JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE MATERIAL SHALL BE SHOWN ON THE SHOP DRAWINGS WHEN THEY ARE SUBMITTED FOR REVIEW.
- SEAL THE EXTERNAL JOINT WITH AN OUTSIDE SEALER WRAP THAT IS AT LEAST 12 INCHES (300 MM) WIDE AND COVERS THE JOINT ON BOTH SIDES AND THE TOP OF BOX SECTION. USE CONWRAP CS-212 FROM CONCRETE SEALANTS, INC., EZ-WRAP FROM PRESS-SEAL GASKET CORPORATION, SEAL WRAP FROM MAR-MAC MANUFACTURING CO., CADILLOC EXTERNAL PIPE JOINT FROM CADILLOC, OR AN APPROVED EQUAL FOR THE OUTSIDE SEALER WRAP. PLACE SEALER WRAP ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- NOTE:** CONTRACTOR HAS OPTION OF USING PRE-CAST HEADWALLS AND WINGWALLS IN LIEU OF CAST-IN-PLACE DETAILS SHOWN. SHOULD THE PRE-CAST OPTION BE CHOSEN, THE CONTRACTOR SHALL PROVIDE PLANS AND DETAILS INCLUDING CHECKED DESIGN CALCULATIONS FOR THE PRECAST MEMBERS COMPLYING WITH THE LATEST AASHTO STANDARD SPECIFICATIONS AND REQUIREMENTS DETAILED HEREIN. A MARYLAND REGISTERED PROFESSIONAL ENGINEER SHALL CHECK AND SEAL THE PLANS AND DESIGN CALCULATIONS. AFTER THE PLANS ARE REVIEWED AND, IF NECESSARY, THE CORRECTIONS MADE, SUBMIT ONE SET OF REPRODUCIBLE TRACINGS ON 24" x 36" SHEETS TO BECOME THE REVISED CONTRACT PLANS.

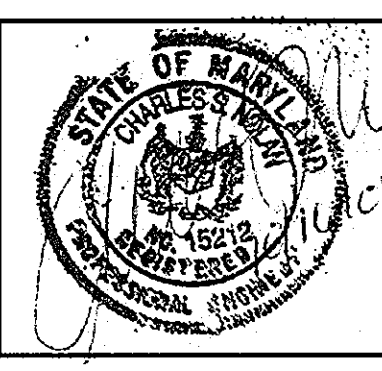
| WORKING POINT COORDINATES | | |
|---------------------------|--------------|----------------|
| POINT | NORTHING | EASTING |
| W.P. 1.0 | 525,533.5166 | 1,357,866.5766 |
| W.P. 2.0 | 525,546.0044 | 1,357,883.7701 |
| W.P. 3.0 | 525,559.3737 | 1,357,902.1773 |

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Michael P. ... 6/7/10
DIRECTOR OF PUBLIC WORKS DATE

Steve Shannon 6/7/10
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION DATE

NOLAN
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Ellicott City, Maryland 21042
Phone: (410) 995-3651 Fax: (410) 995-1363



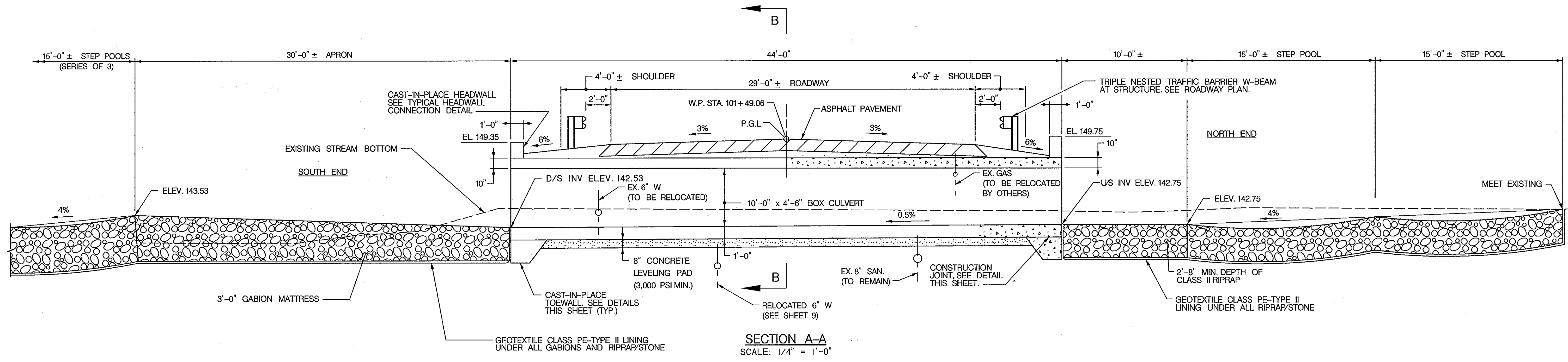
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| DES: CSN | | | | | |
| DRN: BSB | | | | | |
| CHK: CSN | | | | | |
| DATE: JUNE 2009 | BY | NO. | REVISION | DATE | |

GENERAL PLAN

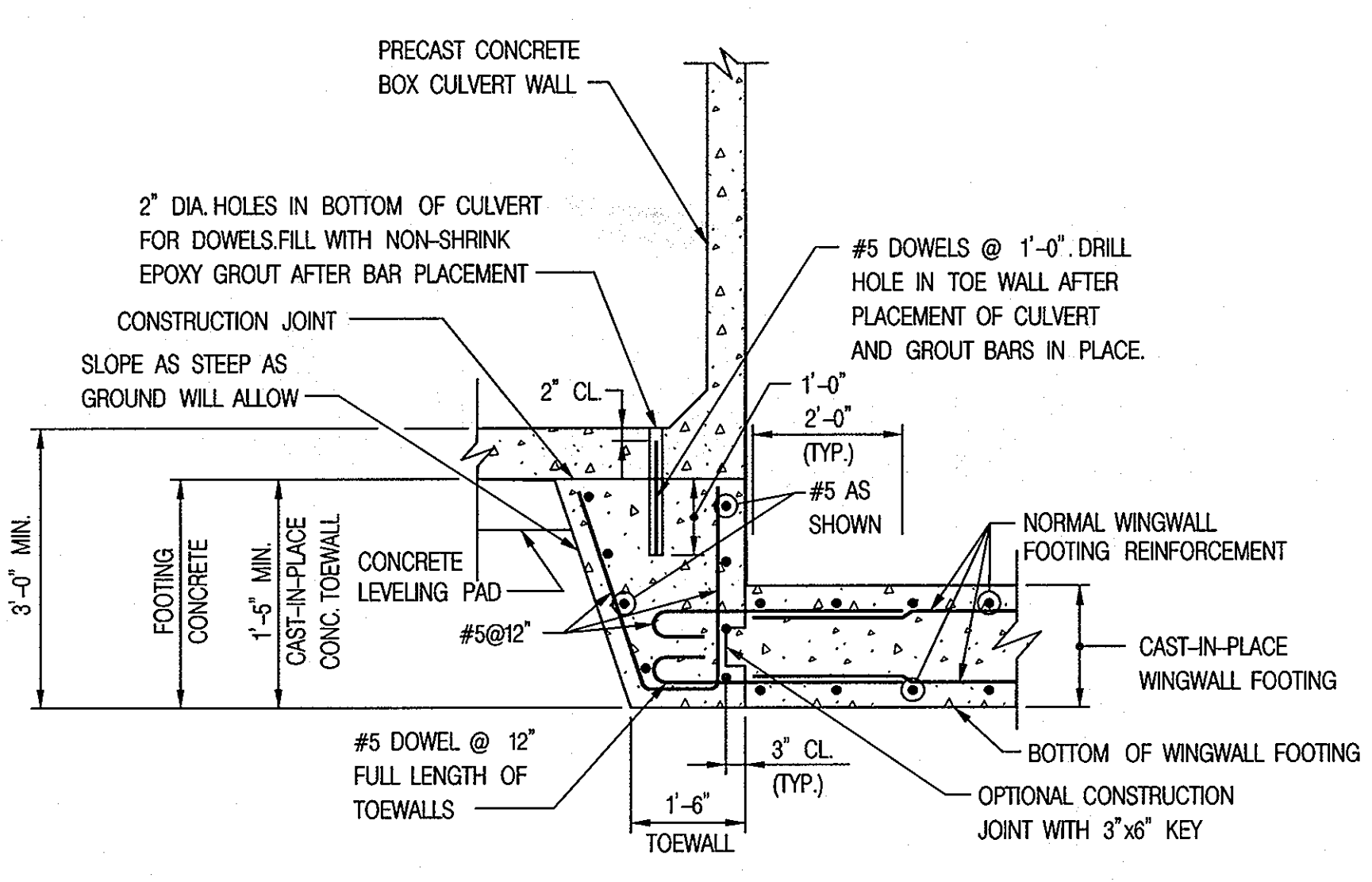
REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-II56
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN

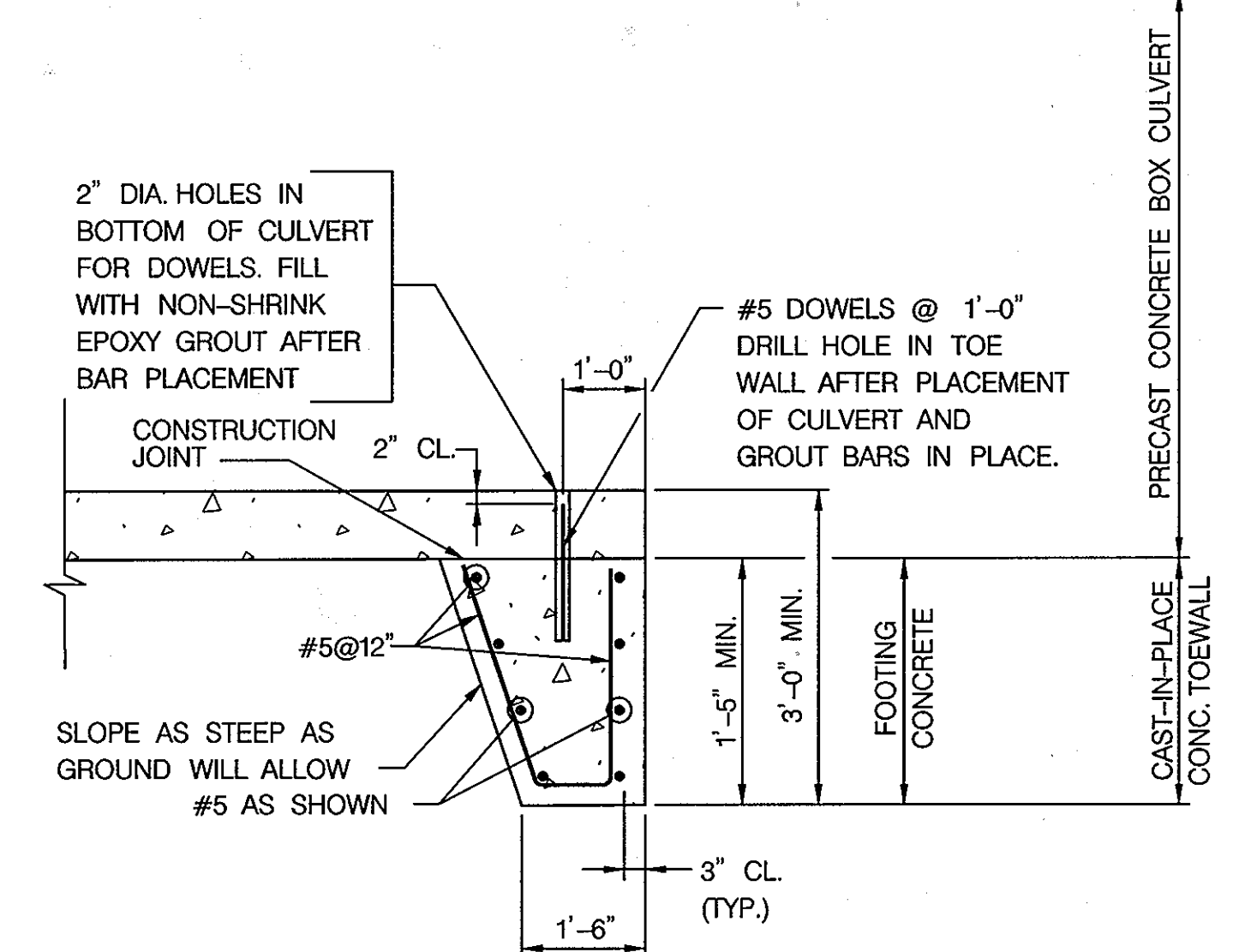
SHEET
10 OF 12



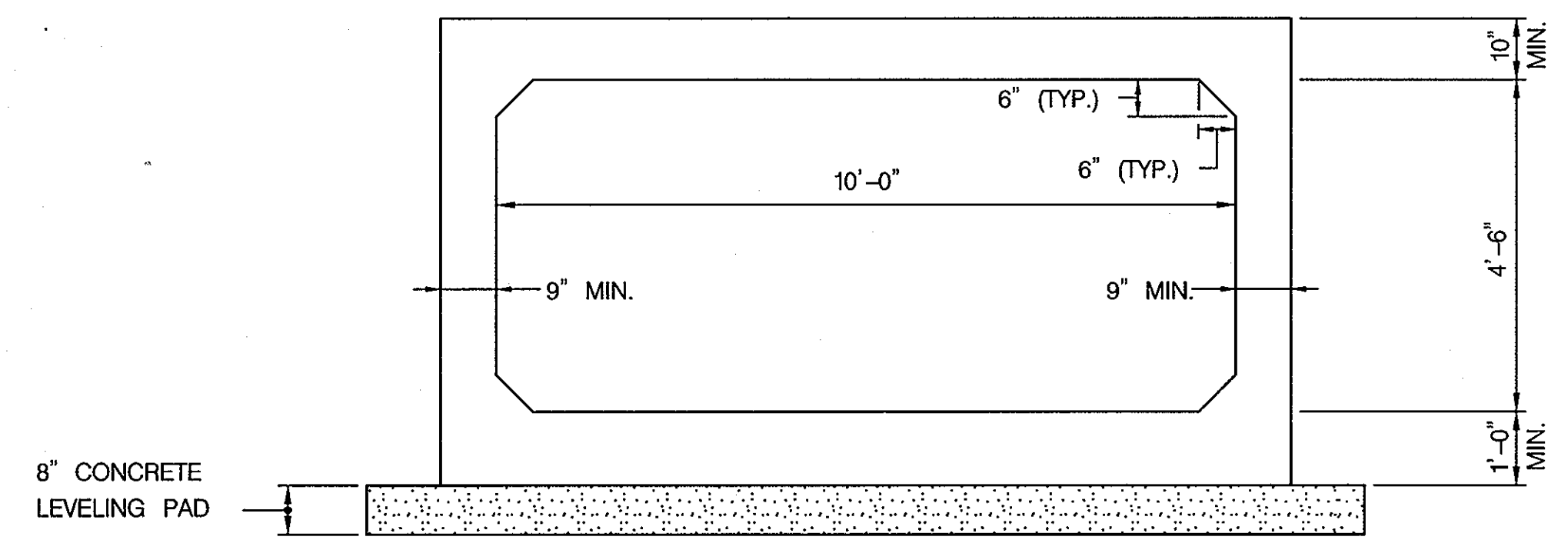
SECTION A-A
SCALE: 1/4" = 1'-0"



TYPICAL WINGWALL/CULVERT FOOTING CONNECTION
SCALE: 1/2" = 1'-0"



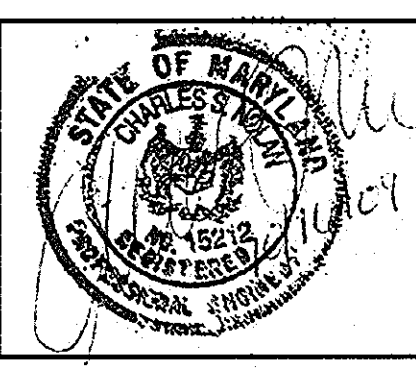
TYPICAL TOEWALL SECTION
SCALE: 1/2" = 1'-0"



SECTION B-B
SCALE: 1/2" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *Michael D. Rouse* 6/7/10
Chief, Bureau of Engineering: *Steve Shanahan* 6/7/10
Chief, Bureau of Highways: *William J. White* 6-7-10
Projects Division

NOLAN
Associates, Inc.
Engineers - Civil/Structural/Inspections
4785 Dorsey Hall Drive
Suite 124
Billicott City, Maryland 21042
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| DES: | CSN | | | | |
| DRN: | BSB | | | | |
| CHK: | CSN | | | | |
| DATE: | JUNE 2009 | BY: | NO. | REVISION | DATE |

CULVERT SECTIONS

REPLACEMENT OF CULVERT
MADISON AVENUE OVER
TRIBUTARY TO PATUXENT RIVER
CAPITAL PROJECT D-II56
ELECTION DISTRICT NO. 6
LAUREL, MARYLAND

SCALE:
AS SHOWN
SHEET
11 OF 12