

CAPITAL PROJECT NO. D-1078 U WEST DURHAM ROAD

STREAM RESTORATION PROJECT

HOWARD COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

INDEX OF SHEETS

1. TITLE SHEET
2. GEOMETRY SHEET
3. PLAN AND PROFILE SHEET
4. LANDSCAPING PLAN
5. DETAIL SHEET
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7. CROSS SECTIONS
8. CROSS SECTIONS

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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."

11-11-99
DATE

Franklin L. Gvabowski
DESIGNER'S SIGNATURE

MARYLAND REGISTRATION NO. 11092 Franklin L. Gvabowski
PRINTED NAME

OWNER'S/DEVELOPER'S CERTIFICATION

"I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND 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."

11/17/99
DATE

Ronald G. Lapson
OWNER'S SIGNATURE

Ronald G. Lapson
PRINTED NAME

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND/OR THE MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1800 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 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.
5. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION.
6. THE 100-YEAR FLOODPLAIN IS SHOWN ON DRAINAGE AREA AND VICINITY MAP.
7. ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
8. PROFILES STATIONS SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO PLAN DIMENSIONS.
9. CONSTRUCTION ACTIVITIES ARE PROHIBITED FOR IN STREAM WORK BETWEEN MARCH 1 AND JUNE 15, INCLUSIVE.
10. THIS PROJECT HAS BEEN ASSIGNED THE FOLLOWING MARYLAND DEPARTMENT OF THE ENVIRONMENT'S (MDE) REFERENCE NUMBERS:
TRACKING NO. 199660881
DIVISION NO. 98-NT-0679
11. TREES ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT, AS SHOWN ON THE PLANS.
12. ANY EXISTING FENCES, MAILBOXES, SIGNS, AND SHRUBS DISTURBED BY THE WORK SHALL BE RECONSTRUCTED OR REPLACED IN-KIND AT THE EXPENSE OF THE CONTRACTOR.
13. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, THE CONTRACTOR SHALL ABIDE BY THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION" AND SPECIAL PROVISIONS. IN THE EVENT OF ANY DISCREPANCY BETWEEN THESE TWO SOURCES, THE LATTER SHALL GOVERN.
14. THE FIELD SURVEY EFFORT WAS COMPLETED IN MARCH 1998. TOPOGRAPHICAL FEATURES OF THE STREAM CHANNEL ARE LIKELY TO HAVE CHANGED SINCE THE SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXISTING CONDITIONS.



DRAINAGE AREA / VICINITY MAP

SCALE: 1"=200'

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.
Cheryl Simon / CES 11/23/99
NATURAL RESOURCE CONSERVATION SERVICE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Yuhua Song 11/23/99
CONSERVATION DISTRICT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 11/18/99
DIRECTOR OF PUBLIC WORKS

Ronald G. Lapson 11/17/99
CHIEF, BUREAU OF HIGHWAYS

Elizabeth Lendow-Cole 11/16/99
PROJECTS AND WATERSHED MANAGEMENT

STV Incorporated
Engineers / Architects / Planners / Surveyors
21 Governor's Court
Beltsville, Maryland 21244-2722
(410) 904-9112 Fax: (410) 250-2794

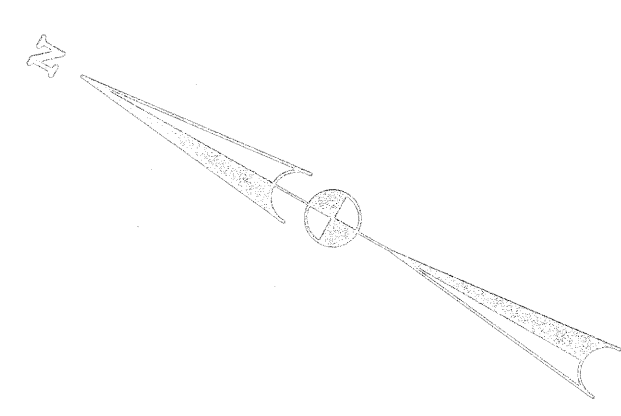


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| DES: DAA | | | | | |
| DRN: DAA | | | | | |
| CHK: FLG | | | | | |
| DATE: NOV, 1999 | BY | NO. | REVISION | DATE | 600' SCALE MAP NO. |

FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 1 OF 8



| BASELINE OF SURVEY | | | | |
|--------------------|----------|----------|---------|-----------------------------------|
| STATION | OFFSET | NORTHING | EASTING | DESCRIPTION |
| 0+00 | Ø | 5000.00 | 5000.00 | TRAVERSE PT. 2 |
| 0+35.22 | 14.71' R | 4962.22 | 4994.58 | PC \curvearrowright OF CONSTR. |
| 0+83.67 | 2.75' R | 4918.30 | 5018.29 | PT \curvearrowright OF CONSTR. |
| 0+99.93 | 1.48' R | 4902.89 | 5023.59 | PRC \curvearrowright OF CONSTR. |
| 1+64.36 | 1.34' L | 4841.21 | 5042.46 | PRC \curvearrowleft OF CONSTR. |
| 1+98.52 | Ø | 4807.81 | 5049.71 | TRAVERSE PT. 12 |
| 2+46.78 | 1.96' L | 4761.57 | 5063.70 | PRC \curvearrowleft OF CONSTR. |
| 2+62.20 | 0.71' L | 4746.33 | 5066.35 | PC \curvearrowleft OF CONSTR. |
| 2+82.95 | 0.65' L | 4726.22 | 5071.48 | PT \curvearrowleft OF CONSTR. |

NOTE: THE BASELINE OF SURVEY HAS BEEN ESTABLISHED SO THAT THE BASELINE OF CONSTRUCTION MAY BE ACCURATELY STAKED OUT IN THE FIELD.

WEST DURHAM ROAD
PL STA 0+00.00

CURVE DATA 1
 P.I. STA. 0+36.17
 H. 0261.02
 E. 0262.02
 A = 15° 02' 23.23"
 D = 11° 32' 21.81"
 R = 250.00'
 L = 65.97'
 T = 6.27'
 E = 0.37'

CURVE DATA 2
 P.I. STA. 0+99.93
 H. 0262.02
 E. 0263.02
 A = 14° 30' 06.77"
 D = 22° 59' 05.82"
 R = 250.00'
 L = 65.97'
 T = 6.27'
 E = 0.37'

CURVE DATA 3
 P.I. STA. 1+75.75
 H. 0263.02
 E. 0264.02
 A = 14° 30' 06.77"
 D = 22° 59' 05.82"
 R = 250.00'
 L = 65.97'
 T = 6.27'
 E = 0.37'

CURVE DATA 4
 P.I. STA. 2+50.00
 H. 0264.02
 E. 0265.02
 A = 8° 32' 11.29"
 D = 87° 17' 54.81"
 R = 100.00'
 L = 15.49'
 T = 7.78'
 E = 0.37'

WEST DURHAM ROAD
GEOMETRY SHEET
SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

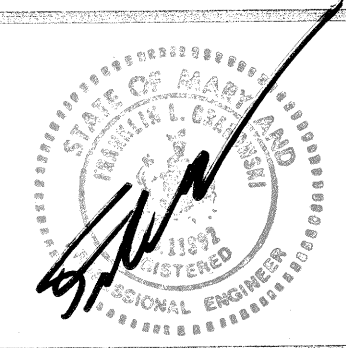
James P. Ivey 11/16/99
DIRECTOR OF PUBLIC WORKS DATE

Richard J. Depom 11/17/99
CHIEF, BUREAU OF HIGHWAYS DATE

Richard M. Ruckel 11-18-99
CHIEF, BUREAU OF HIGHWAYS DATE

Elizabeth Anderson-Cole 11/16/99
DIVISION OF TRANSPORTATION
PROJECTS AND DISTRICT MANAGEMENT DATE

STV Incorporated
 Engineers / Architects / Planners / Surveyors
 21 Governor's Court
 Beltsville, Maryland 21054-5122
 (301) 583-5122

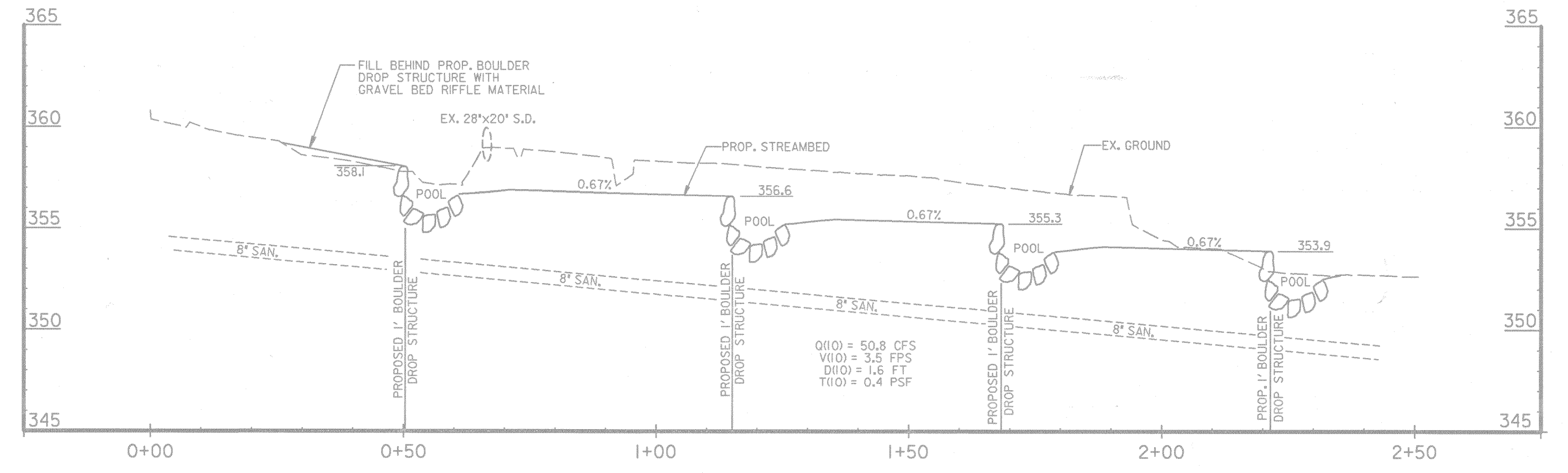
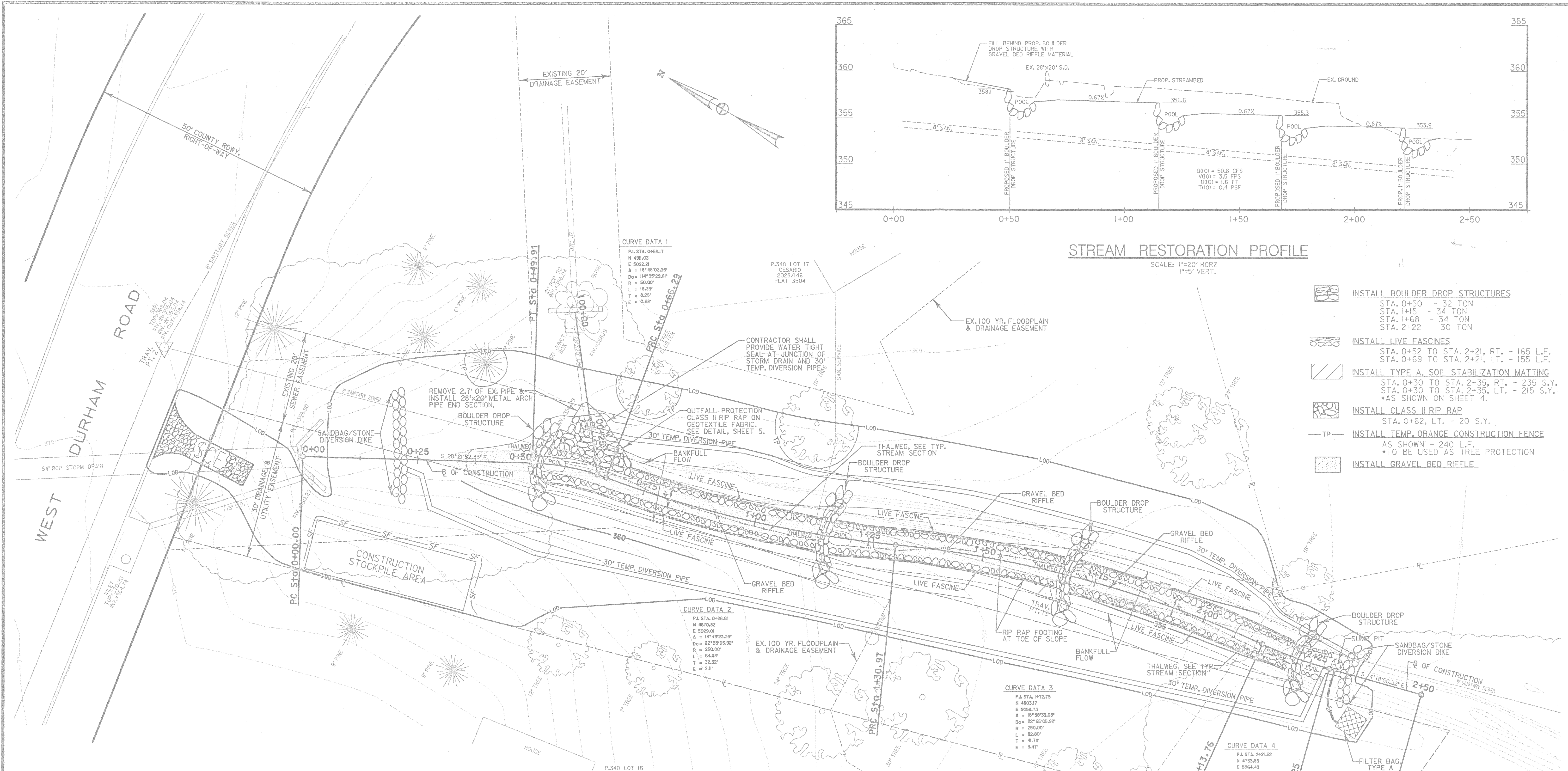


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| DATE: NOV. 1999 | BY | NO. | REVISION | DATE | |

FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
 ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 CAPITAL PROJECT No. D-1078 U

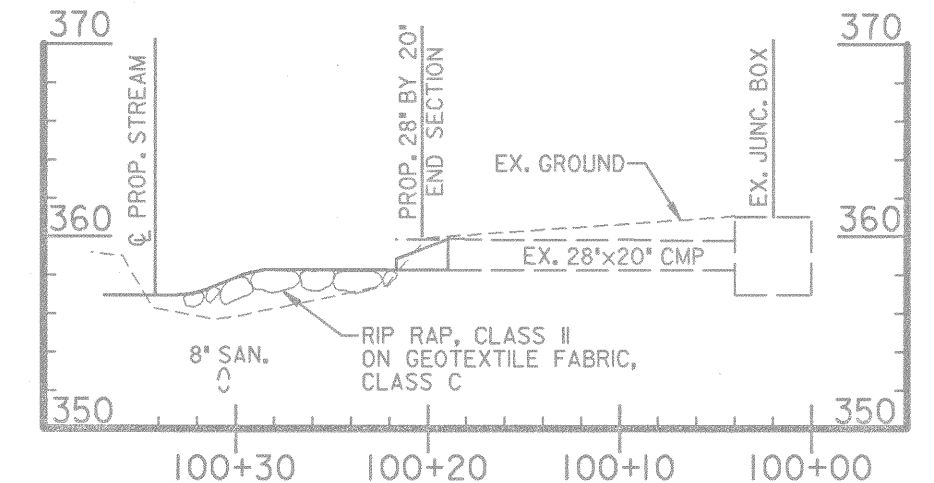
SCALE AS SHOWN
 SHEET 2 OF 8



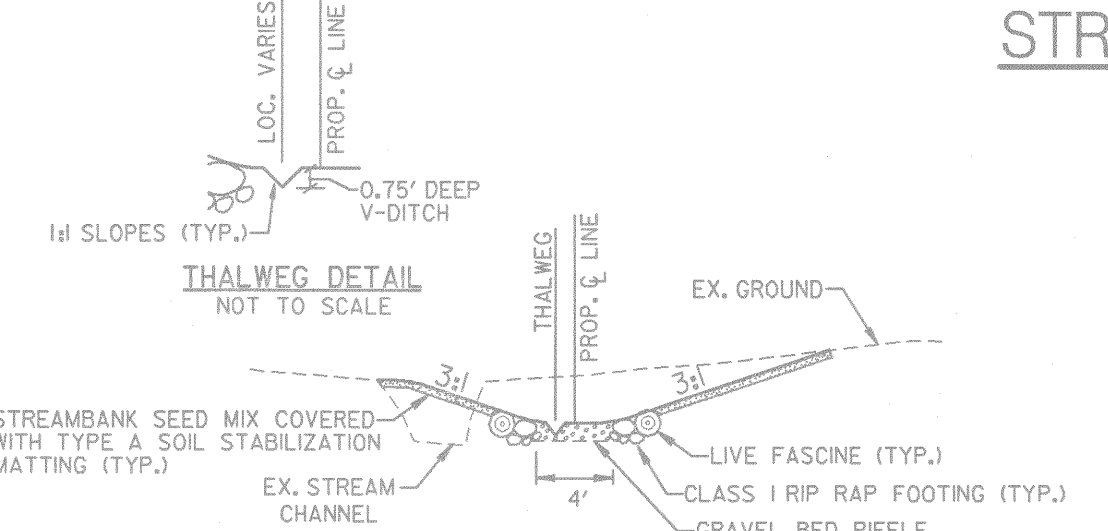
STREAM RESTORATION PROFILE
SCALE: 1"=20' HORZ
1"=5' VERT.

- INSTALL BOULDER DROP STRUCTURES
STA. 0+50 - 32 TON
STA. 1+15 - 34 TON
STA. 1+68 - 34 TON
STA. 2+22 - 30 TON
- INSTALL LIVE FASCINES
STA. 0+52 TO STA. 2+21, RT. - 165 L.F.
STA. 0+69 TO STA. 2+21, LT. - 155 L.F.
- INSTALL TYPE A SOIL STABILIZATION MATTING
STA. 0+30 TO STA. 2+35, RT. - 235 S.Y.
STA. 0+30 TO STA. 2+35, LT. - 215 S.Y.
*AS SHOWN ON SHEET 4.
- INSTALL CLASS II RIP RAP
STA. 0+62, LT. - 20 S.Y.
- INSTALL TEMP. ORANGE CONSTRUCTION FENCE
AS SHOWN - 240 L.F.
*TO BE USED AS TREE PROTECTION
- INSTALL GRAVEL BED RIFFLE

WEST DURHAM ROAD
STREAM RESTORATION PLAN
SCALE: 1" = 10'



EXISTING OUTFALL PROFILE
SCALE: 1"=10' HORZ
1"=10' VERT.



TYPICAL STREAM SECTION
NOT TO SCALE

- NOTES:
- SEE SHEET 6 OF 8 FOR THE SEQUENCE OF OPERATION.
 - SEE SHEET 4 OF 8 FOR VEGETATIVE PLANTING REQUIREMENTS.
 - BOULDER DROP STRUCTURES ARE TO BE INSTALLED AS DETAILED ON SHEET 6 OF 8.
 - LIVE FASCINES SHALL BE INSTALLED AS SPECIFIED ON SHEET 6 OF 8.
 - GRAVEL BED RIFFLE AREAS SHALL BE INSTALLED AS DETAILED ON SHEET 6 OF 8.
 - ALL PROPERTY LINES, EASEMENTS, AND RIGHT-OF-WAY INFORMATION WERE PROVIDED BY HOWARD COUNTY DPW BUREAU OF ENGINEERING SURVEY DIVISION.

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Carol Simon 7/20/00
NATURAL RESOURCE CONSERVATION SERVICE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Andrew M. Dwyer 7/20/00
HOWARD COUNTY ENGINEER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 7/20/00
DIRECTOR OF PUBLIC WORKS

Robert J. ... 7/20/00
BUREAU OF ENGINEERING

Elizabeth ... 7/20/00
PROJECT AND WATERSHED MANAGEMENT

STV Incorporated
Engineers / Architects / Planners / Surveyors
21 Governor's Court
Baltimore, Maryland 21244-2122
(410)944-5112 Fax: (410)298-2794

DATE: JULY 2000

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| DES: DAA | BY: NO. | REVISION | DATE |
| DRN: DAA | | | |
| CHK: FLG | | | |

FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 3 OF 8

Restoration Area Plant Schedule

| KEY | QTY. | BOTANICAL / COMMON NAME | WETLAND INDICATOR STATUS | REMARKS |
|---------------|------|------------------------------------|--------------------------|----------|
| TREES | | | | |
| AR | 5 | ACER RUBRUM / RED MAPLE | FAC | 4-5' HT. |
| BN | 6 | BETULA NIGRA / RIVER BIRCH | FACW | 4-5' HT. |
| FP | 11 | FRAXINUS PENNSYLVANICA / GREEN ASH | FACW | 4-5' HT. |
| SHRUBS | | | | |
| IV | 22 | ILEX VERTICILLATA / WINTERBERRY | FACW | 2-3' HT. |
| LB | 21 | LINDERA BENZOIN / SPICEBUSH | FACW- | 3-4' HT. |
| SC | 25 | SAMBUCUS CANADENSIS / ELDERBERRY | FACW | 3-4' HT. |

HERBACEOUS

450 SY STREAMBANK SEED MIX WITH SOIL STABILIZATION MATTING



Planting Notes:

1. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, "AMERICAN STANDARDS FOR NURSERY STOCK."
2. THE STREAMBANK PLANTING MUST BE MONITORED FOR A PERIOD OF 2 GROWING SEASONS FOLLOWING INSTALLATION. A GUARANTEE OF 90% SURVIVAL OF PLANT MATERIAL MUST BE PROVIDED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES AND MAY MAKE MINOR ADJUSTMENTS IN SPACING AND/OR LOCATION OF PLANT MATERIALS. CONTRACTOR TO VERIFY "AS BUILT" LOCATION OF ALL UTILITIES.
4. NO SUBSTITUTIONS SHALL BE MADE WITHOUT THE APPROVAL OF THE ENVIRONMENTAL CONSULTANT OR HOWARD COUNTY DPW. PLANT LOCATIONS MAY BE ALTERED IN ACCORDANCE WITH SUBTLE TOPOGRAPHY CHANGES ON-SITE.
5. ALL AREAS NOT STABILIZED IN PLANT MATERIALS SHALL BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING OR MULCH.
6. ALL STOCKPILE SHALL BE LOCATED OUTSIDE OF THE RESTORATION AREA.
7. ALL SHADE TREES SHALL BRANCH A MINIMUM OF 6'-0" ABOVE GROUND LEVEL. TREES SHALL BE PLANTED AND STAKED IN ACCORDANCE WITH THE PLANTING DETAIL SHOWN.
8. PLANTING SOIL MIX: 2/3 EXISTING SOIL (EXCAVATED FROM PLANT PIT) AND 1/3 PEAT HUMUS, COMPOSTED SLUDGE OR OTHER ORGANIC MATERIAL.
9. ALL GROUND COVER AND SHRUB BEDS SHALL RECEIVE 3" TOPSOIL THOROUGHLY WORKED INTO THE TOP 6" OF EXISTING SOIL. ALL BEDS TO BE MULCHED 3" DEEP WHEN PLANT INSTALLATION IS COMPLETE.
10. ALL PLANT PIT LOCATIONS SHALL BE EXCAVATED TO DEPTH AND DIMENSIONS INDICATED ON APPROPRIATE PLANTING DETAILS. ALL NATIVE SOIL EXCAVATED FROM PLANTING PITS (NOT USEABLE FOR PLANTING PURPOSES) SHALL BE REMOVED. PLANTING PITS SHALL BE BACKFILLED WITH PLANT SOIL MIXTURE AS SPECIFIED IN NOTE 8 ABOVE.
11. REFER TO SHEET 5 OF 8 FOR PLANTING DETAILS.
12. ALL DISTURBED AREAS SHALL BE STABILIZED WITH THE SEED AND MULCH SPECIFIED IN THE SPECIAL PROVISIONS BY THE END OF EACH WORK DAY.

WEST DURHAM ROAD
STREAM LANDSCAPING PLAN

SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jan 17, 2006 DIRECTOR OF PUBLIC WORKS
Blair H. Seppan 7/20/06 CHIEF, BUREAU OF PROJECTS AND WATERSHED MANAGEMENT

Blair H. Seppan 7/20/06 CHIEF, BUREAU OF PROJECTS AND WATERSHED MANAGEMENT

STV Incorporated
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Baltimore, Maryland 21244-2722
(410) 944-9112 Fax: (410) 298-2794

DES: DAA
DRN: DAA
CHK: FLG
DATE: JULY 2006

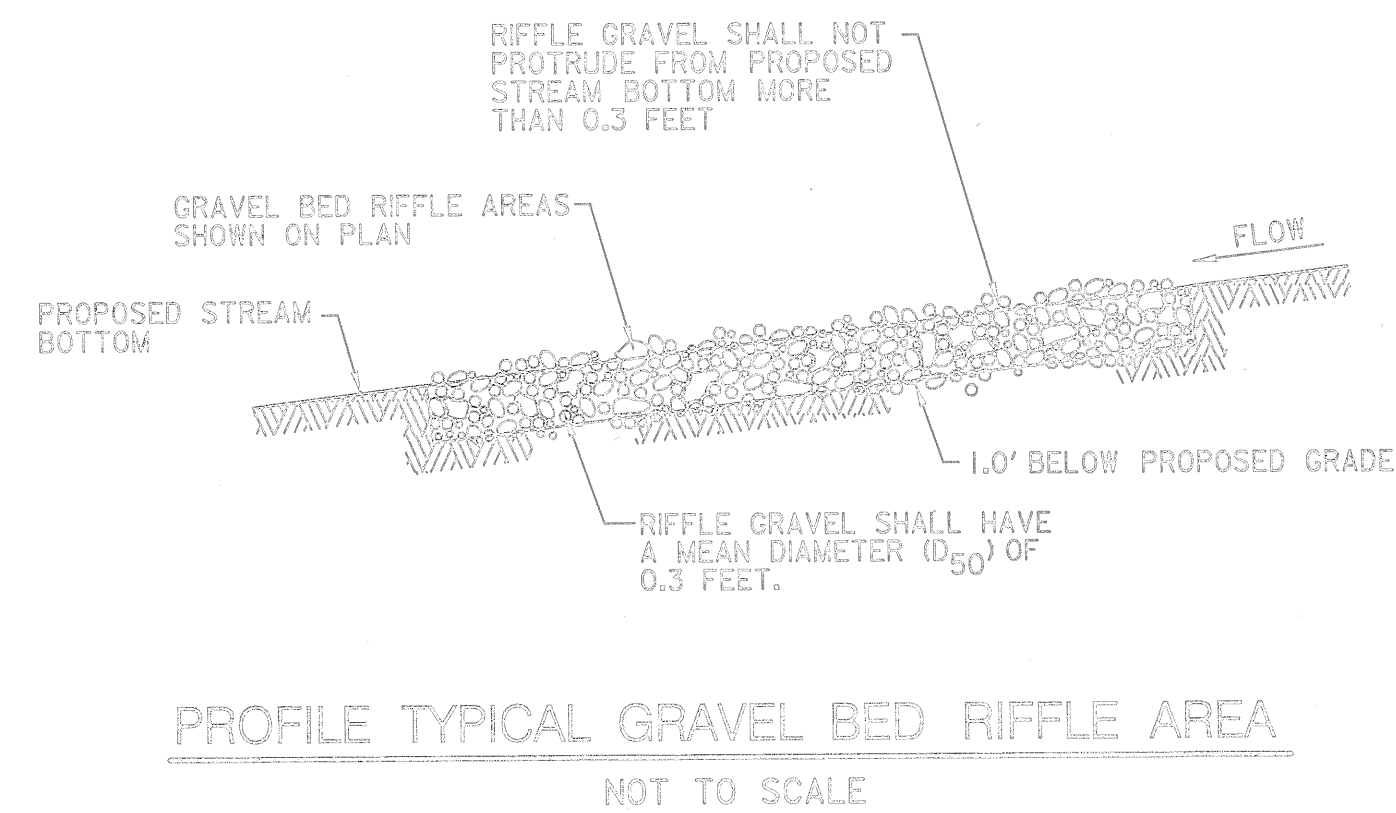
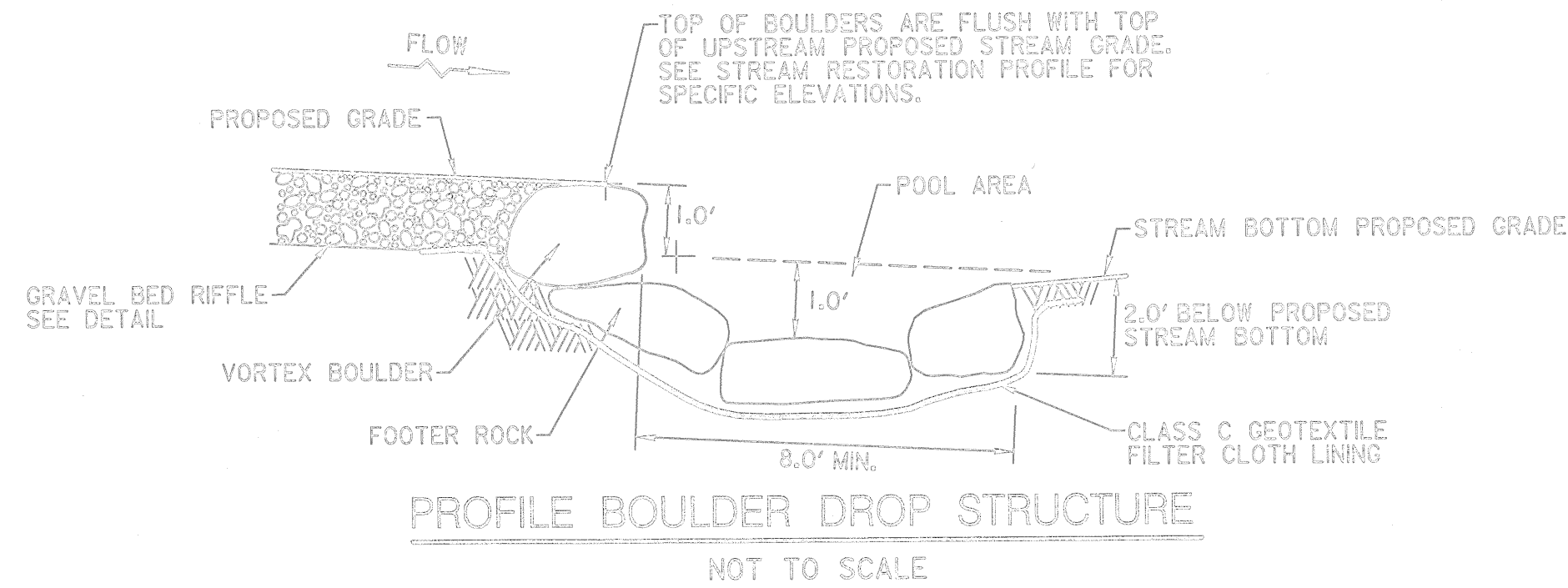
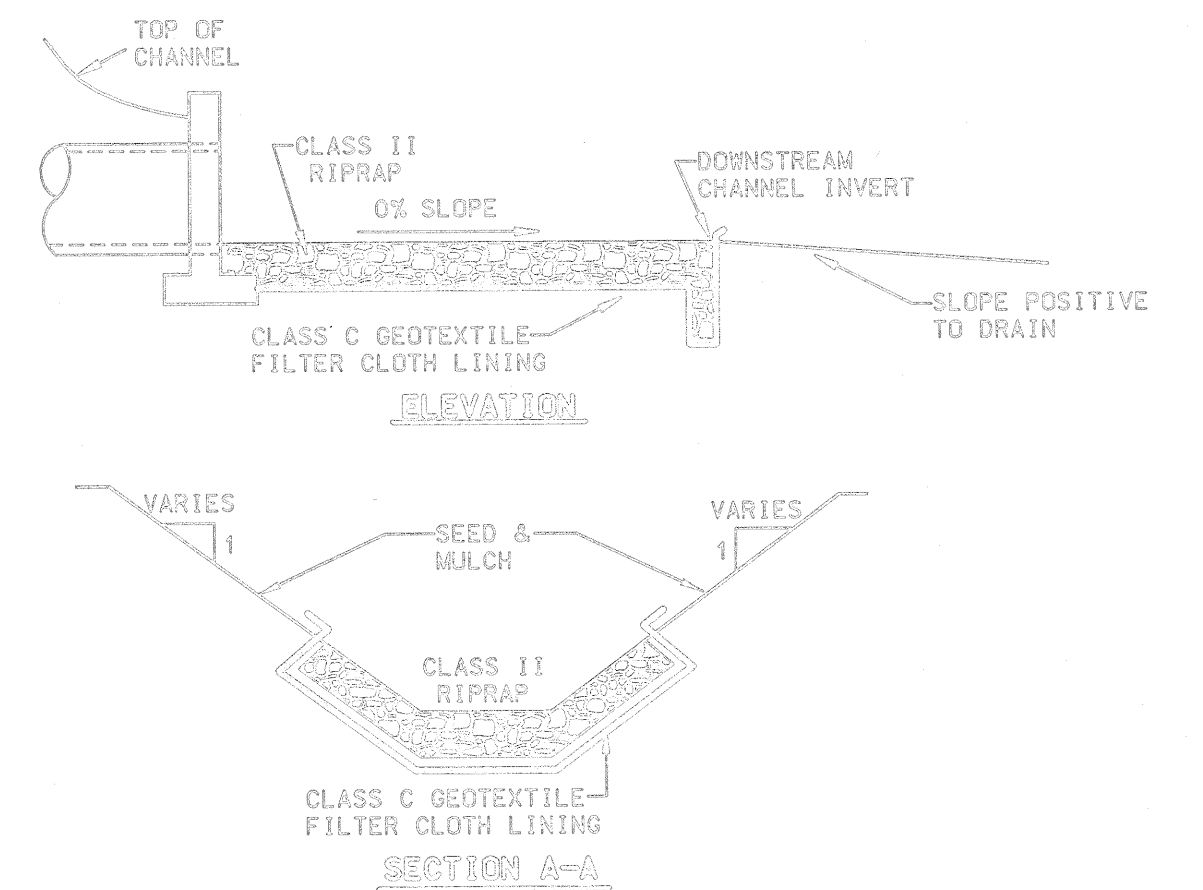
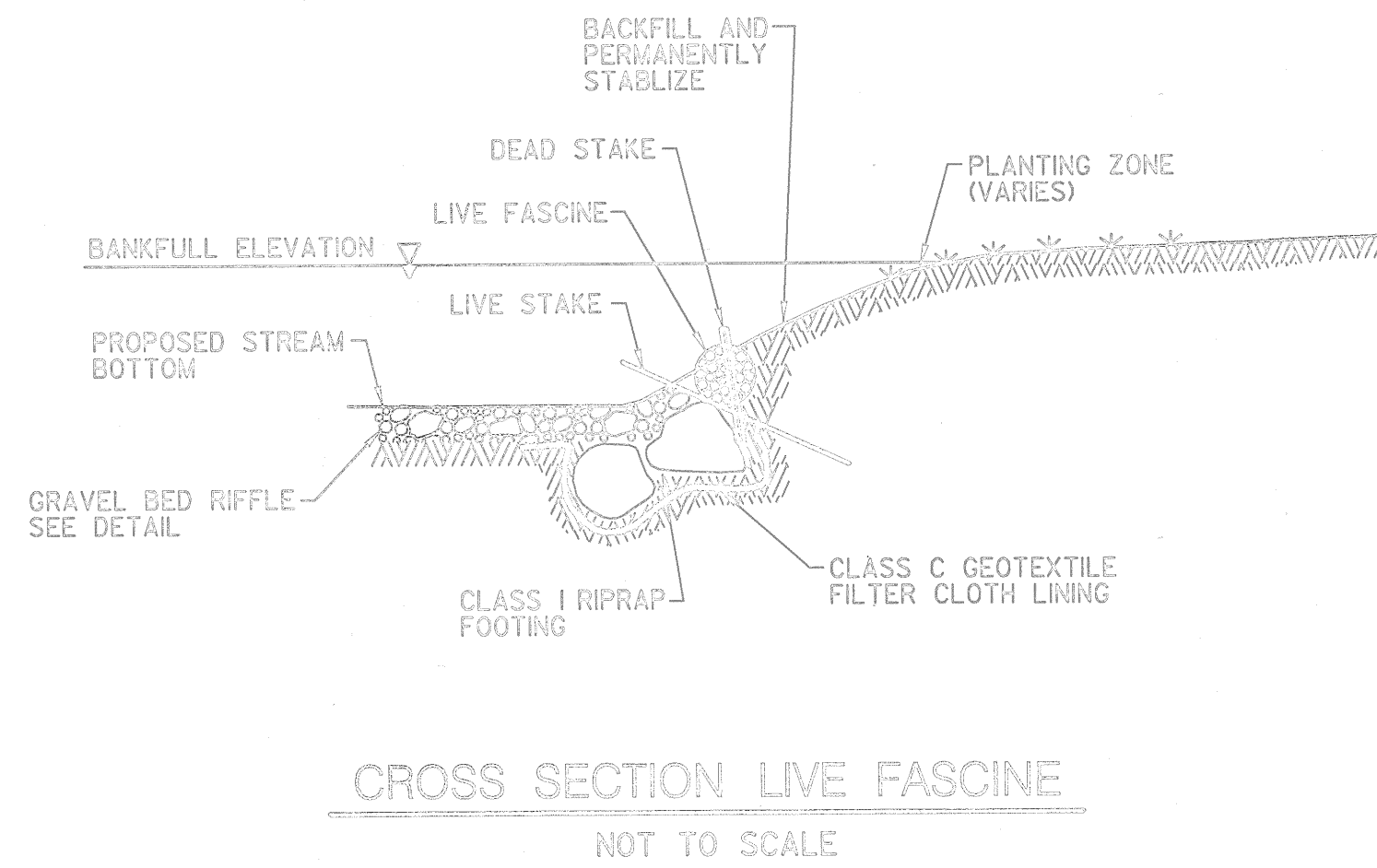
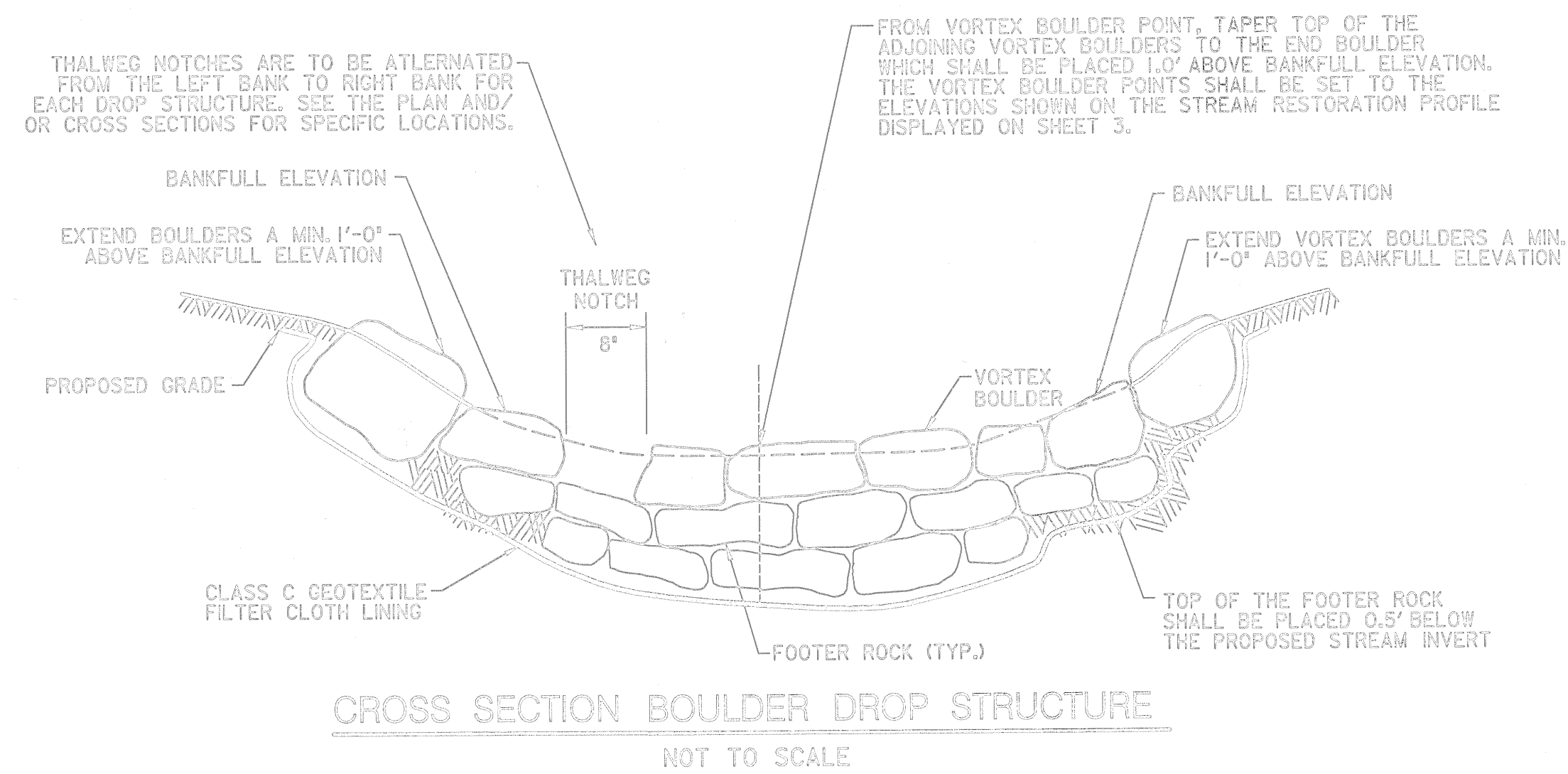
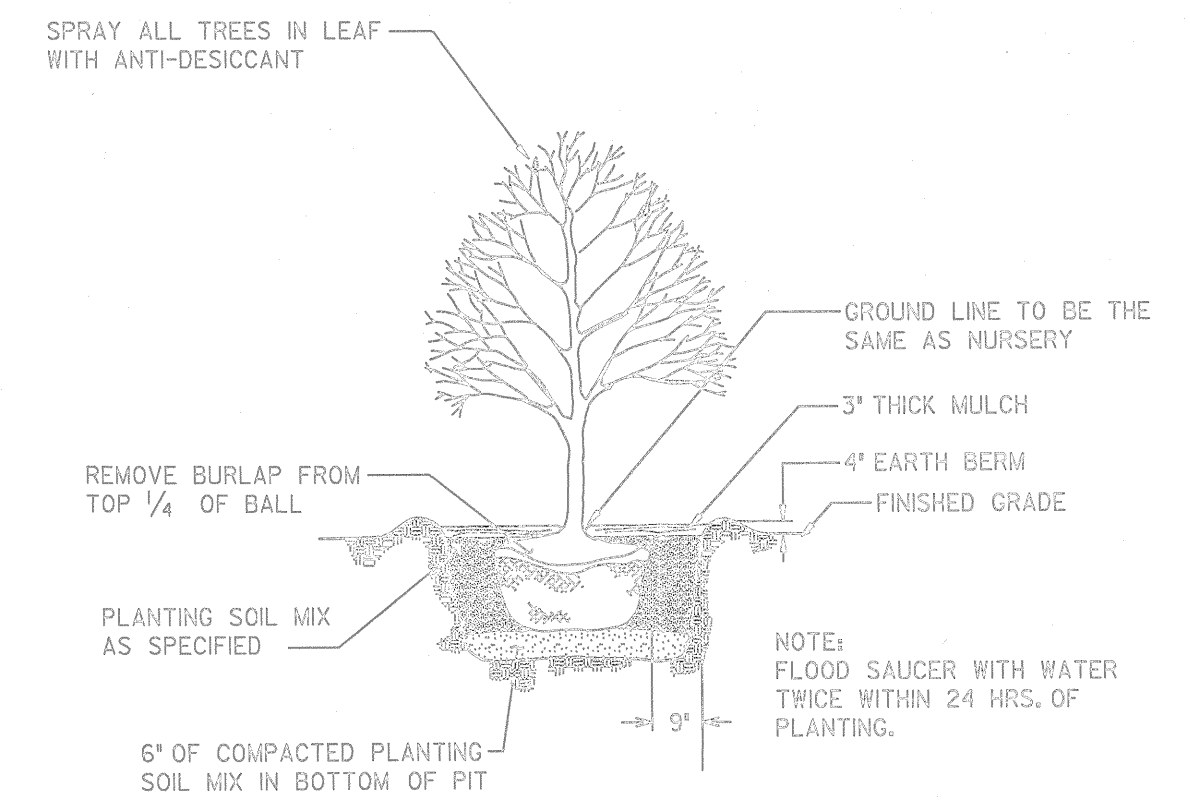
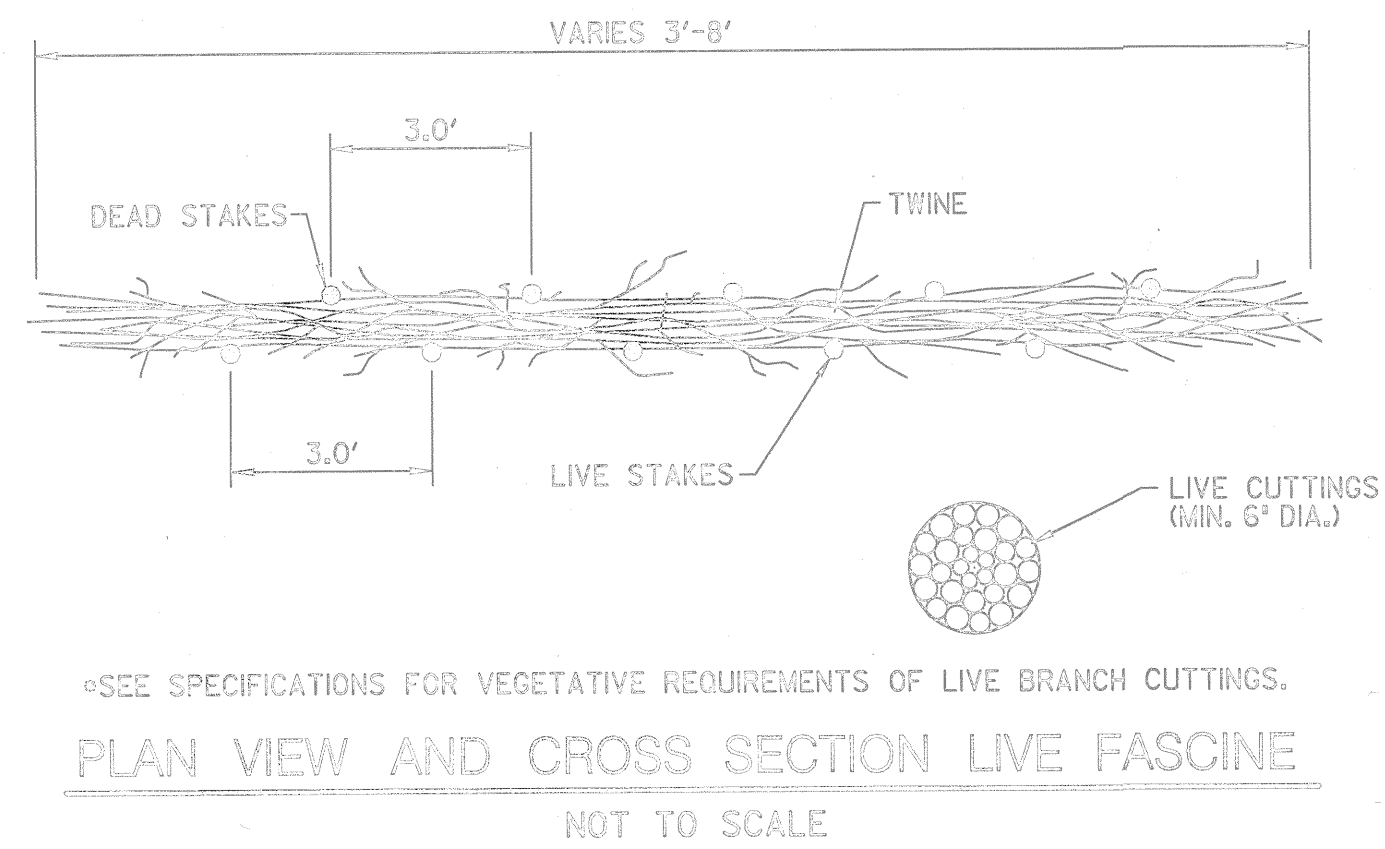
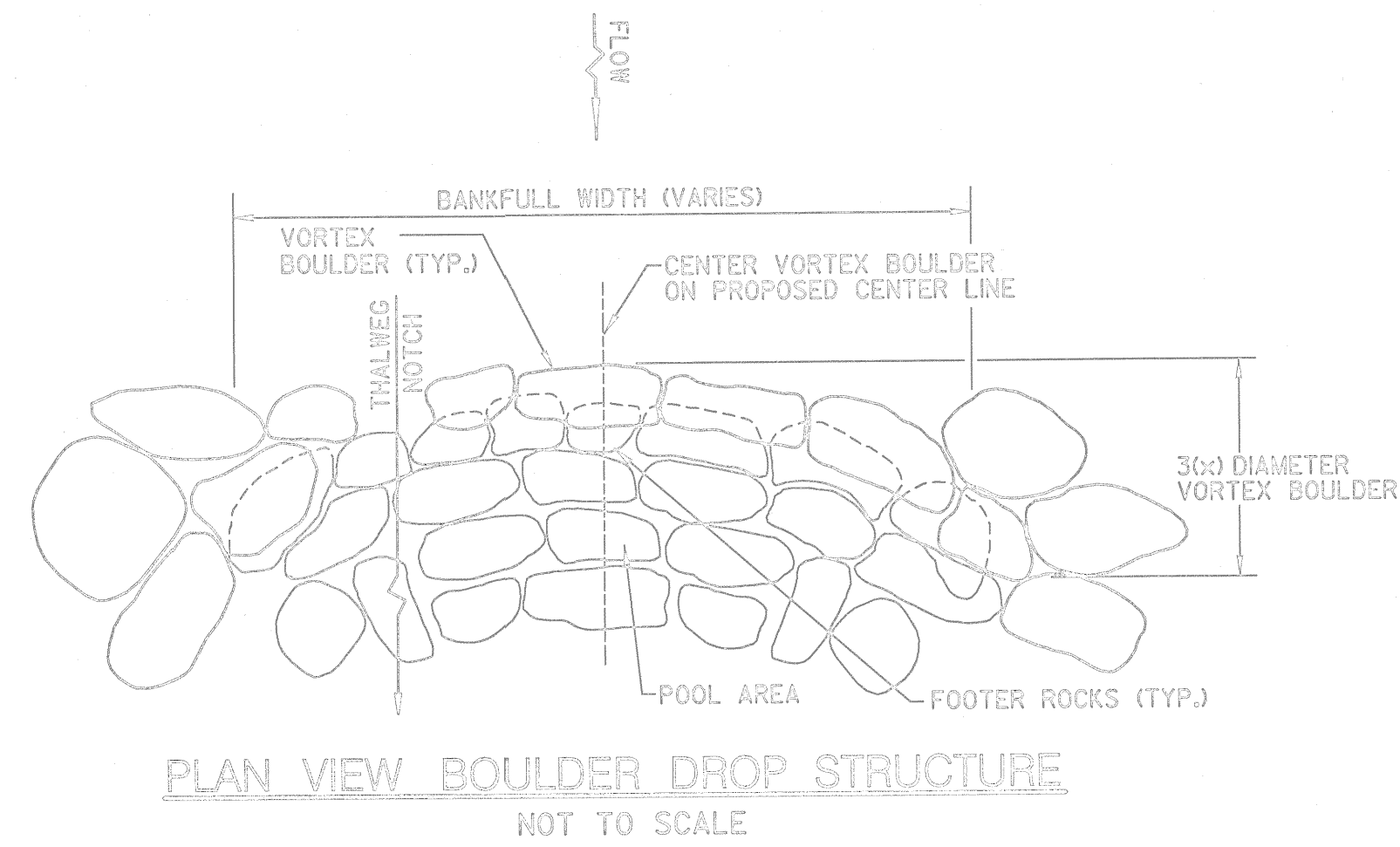
BY: NO. REVISION DATE

600' SCALE MAP NO. BLOCK NO.

FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 4 OF 8



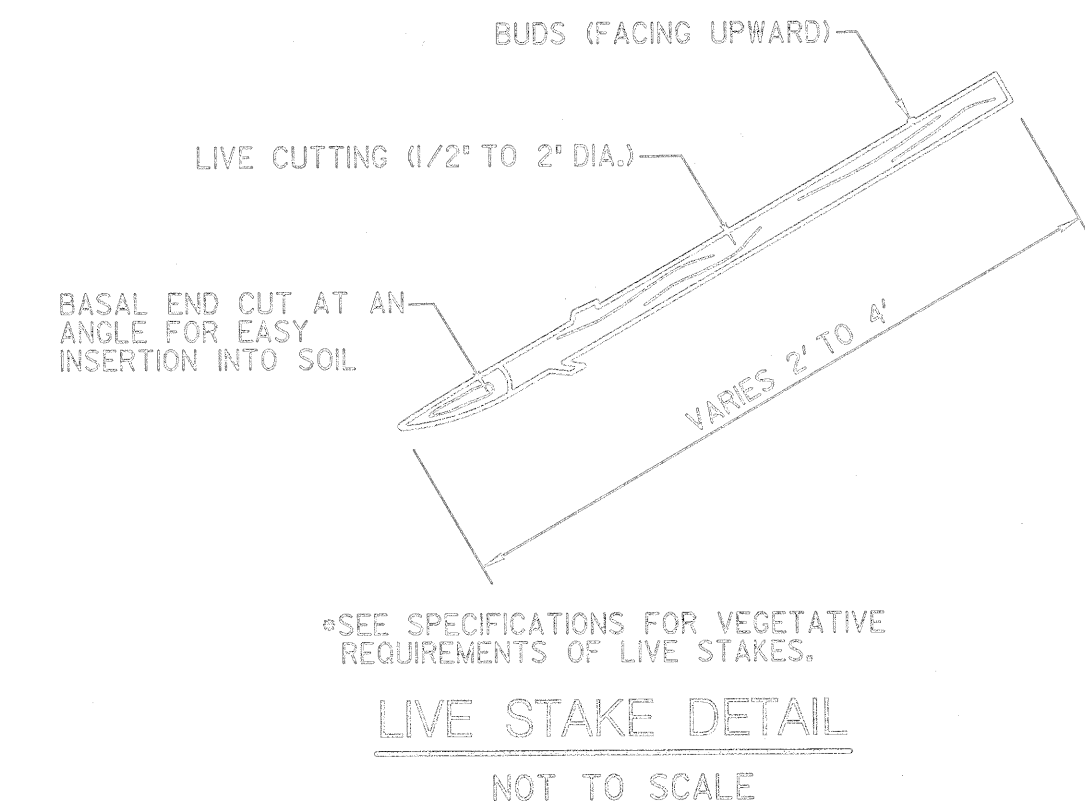
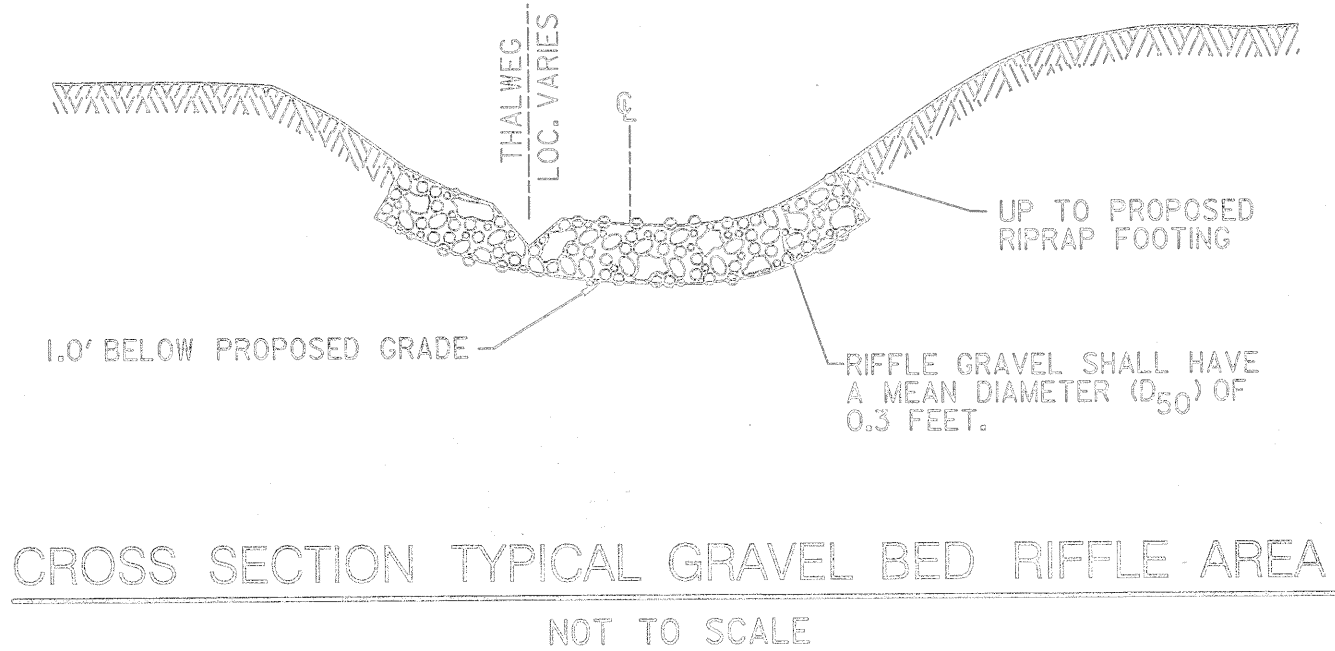
NOTE: CONSTRUCT OUTFALL PROTECTION AS SPECIFIED IN DETAIL 26 OF MDE'S 1994 MD STANDARDS & SPECIFICATIONS FOR SOIL EROSION & SEDIMENT CONTROL.

STREAMBANK SEED MIX

| BOTANICAL NAME | COMMON NAME | % BY WEIGHT (APPLY 25 LBS./ACRE) |
|--------------------|---------------------|----------------------------------|
| LOLIUM MULTIFLORUM | ANNUAL RYEGRASS | 38.5 |
| ELYMUS RIPARIUS | RIVERBANK WILD RYE | 11.5 |
| FESTUCA RUBRA | CREeping RED FESCUE | 38.5 |
| ERAGROSTIS CURVULA | WEeping LOVEGRASS | 11.5 |

LIVE CUTTING SPECIES

| BOTANICAL NAME | COMMON NAME | % BY WEIGHT |
|----------------------------|-------------------|-------------|
| CORNUS AMOMUM | SILKY DOGWOOD | 15% |
| CORNUS SERICEA STOLONIFERA | RED OSIER DOGWOOD | 15% |
| SALIX BONPLANDIANA | PUSSY WILLOW | 20% |
| SALIX INTERIOR | SANDBAR WILLOW | 20% |
| SALIX PURPUREA | STREAMCO WILLOW | 20% |
| VIURNUM DENTATUM | ARROWWOOD | 10% |

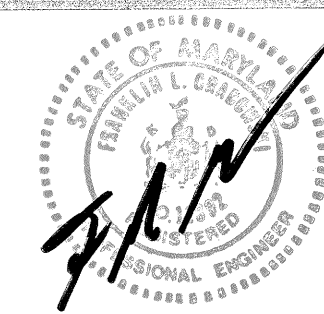


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Lee
DIRECTOR OF PUBLIC WORKS
DATE 11/18/99

Paul J. Johnson
CHIEF, BUREAU OF
DATE 11/17/99

STV Incorporated
Engineers / Architects / Planners / Surveyors
21 Governor's Court
Beltsville, Maryland 21034-1338
(301) 944-9132 FAX (301) 944-9138



| DESIGN | DATE | BY | NO. | REVISION | DATE |
|-----------|------|----|-----|----------|------|
| DAA | | | | | |
| DAA | | | | | |
| FLC | | | | | |
| NOV. 1999 | | | | | |

FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 5 OF 8

STANDARD SEDIMENT CONTROL NOTES

- 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 AT 410-313-1855.
- 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 THERE TO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, @ 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT CONTROL TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOLUME 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCH (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.
- 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.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITIES FOR PLACE-MENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 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 CONTROL, 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.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- OFF-SITE SPOIL AND/OR BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL BY MDE AND OTHER APPLICABLE STATE, FEDERAL AND LOCAL AGENCIES OTHERWISE, APPROVAL MUST BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.

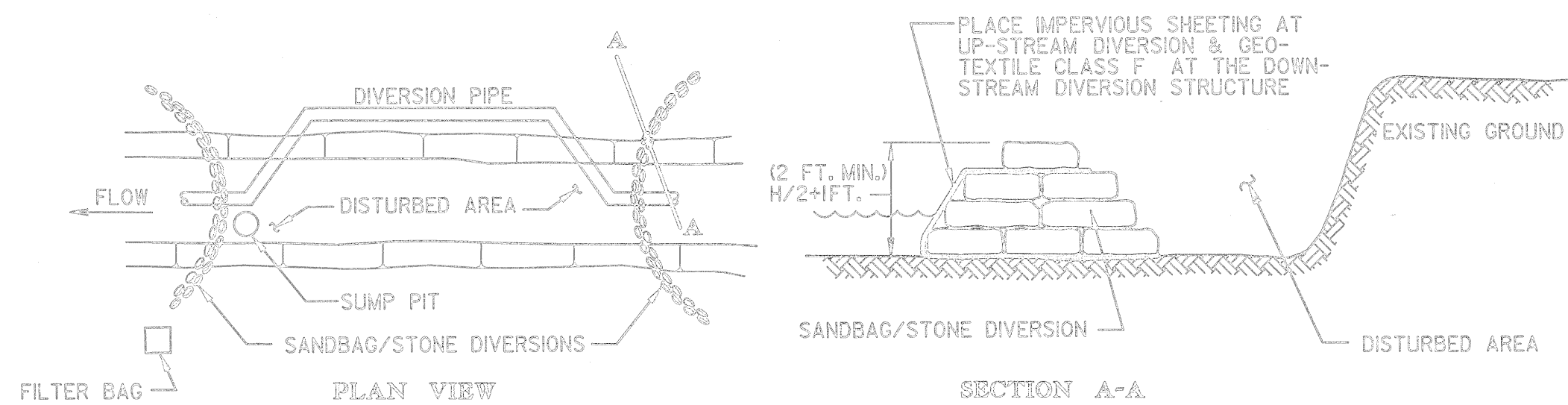
SITE ANALYSIS

| | | |
|------------------------------------|--|----------|
| TOTAL AREA OF SITE | 0.39 | ACRES |
| AREA DISTURBED | 0.29 | ACRES |
| AREA TO BE ROOFED OR PAVED | 0 | ACRES |
| AREA TO BE VEGETATIVELY STABILIZED | 0.25 | ACRES |
| TOTAL CUT | 144.0 | CU. YDS. |
| TOTAL FILL | 35.5 | CU. YDS. |
| OFFSITE WASTE/BORROW AREA LOCATION | UNKNOWN (MUST HAVE APPROVED & ACTIVE GRADING PERMIT) | |

SEQUENCE OF OPERATION

| NO. | DESCRIPTION | ESTIMATED TIME |
|-----|--|----------------|
| 1. | THE CONTRACTOR SHALL NOTIFY MARYLAND'S DEPARTMENT OF THE ENVIRONMENT (MDE) FIVE (5) DAYS PRIOR TO BEGINNING CONSTRUCTION. | AS SPECIFIED |
| 2. | A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION BY THE CONTRACTOR PRIOR TO THE START OF ANY CONSTRUCTION AT (410) 313-1855. | AS SPECIFIED |
| 3. | THE CONSTRUCTION FOR THIS RESTORATION PROJECT SHALL TAKE PLACE BETWEEN OCTOBER 15 AND FEBRUARY 28, THE DORMANT SEASON. | AS SPECIFIED |
| 4. | PLACE STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS. | WITHIN 1 DAY |
| 5. | THE CONTRACTORS LAYDOWN/STOCKPILE AREA SHALL BE PROTECTED WITH SEDIMENT CONTROL MEASURES AT ALL TIMES AS REQUIRED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. | - |
| 6. | PLACE TEMPORARY DIVERSION PIPE AT 28"x20" STORM DRAIN OUTFALL AND DISCHARGE AS SHOWN ON THE PLANS AT STA. 2+40. | WITHIN 1 DAY |
| 7. | CONSTRUCT TEMPORARY SANDBAG/STONE DIVERSION DIKES, BYPASS PIPE, SUMP PIT, AND FILTER BAG AS SHOWN ON THE PLANS TO DIVERT THE STREAM FLOW. ONCE THE STREAM DIVERSION IS OPERATIONAL, BEGIN DEWATERING THE WORK AREA BY PUMPING WATER TO THE FILTER BAG AS SHOWN. THE CONTRACTOR MAY SETUP THE TEMPORARY STREAM DIVERSION IN SECTIONS TO ESTABLISH SMALLER WORK ZONES IF DESIRED. THIS OPERATION SHALL CONTINUE THROUGHOUT THE CHANNEL CONSTRUCTION. | WITHIN 1 WEEK |
| 8. | WITH APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR BEGIN THE PROPOSED GRADING FOR THE STREAM CHANNEL STARTING AT STA. 0+25+ AND WORKING DOWNSTREAM TO STA. 2+30+. | WITHIN 60 DAYS |
| 9. | AS THE PROPOSED GRADE IS ESTABLISHED, SET THE BOULDER DROP STRUCTURES, TOE OF SLOPE RIPRAP FOOTING, LIVE FASCINES, AND GRAVEL BED RIFFLES AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL COMPACT THE EARTH GRADING AND GRAVEL BED RIFFLES TIGHTLY AROUND THE BOULDER STRUCTURES AND STREAM BOTTOM. | WITHIN 60 DAYS |
| 10. | AS A SECTION OF STREAM WORK IS COMPLETED PLACE THE STREAMBANK SEED MIX AND SOIL STABILIZATION MATTING TO ALL DISTURBED STREAMBANK AREAS WITHIN 24 HOURS AND AS SPECIFIED IN THE CONTRACT SPECIFICATIONS. | AS SPECIFIED |
| 11. | AS THE WORK EFFORT APPROACHES THE EXISTING 28"x20" STORM DRAIN OUTFALL CONSTRUCT THE PROPOSED ENDSECTION AND OUTFALL PROTECTION AREA WHILE MAINTAINING THE TEMPORARY HDPE BYPASS PIPE. | WITHIN 1 WEEK |
| 12. | STABILIZE ALL REMAINING DISTURBED AREAS WITH TOPSOIL (AS SPECIFIED IN THE SPECIAL PROVISIONS), SEED AND MULCH. | WITHIN 1 WEEK |
| 13. | WITH APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR MAY REMOVE THE TEMPORARY STREAM DIVERSION MEASURES TO BEGIN THE PROPOSED FLOW CONDITION. | WITHIN 1 DAY |
| 14. | COMPLETE THE VEGETATIVE (WOODY) PLANTING WORK TO THE STREAMBANKS AS SHOWN ON THE STREAM LANDSCAPING PLAN AND STABILIZE ALL DISTURBED AREAS WITH THE STREAMBANK SEED MIX AND MULCH BY THE END OF EACH WORK DAY. | WITHIN 30 DAYS |

EROSION AND SEDIMENT CONTROL



FLOW DIVERSION STRUCTURE

I. DESCRIPTION

THE WORK SHALL CONSIST OF INSTALLING A FLOW DIVERSION STRUCTURE WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS CULVERT CONSTRUCTION OR CULVERT REPLACEMENT.

II. MATERIAL SPECIFICATIONS

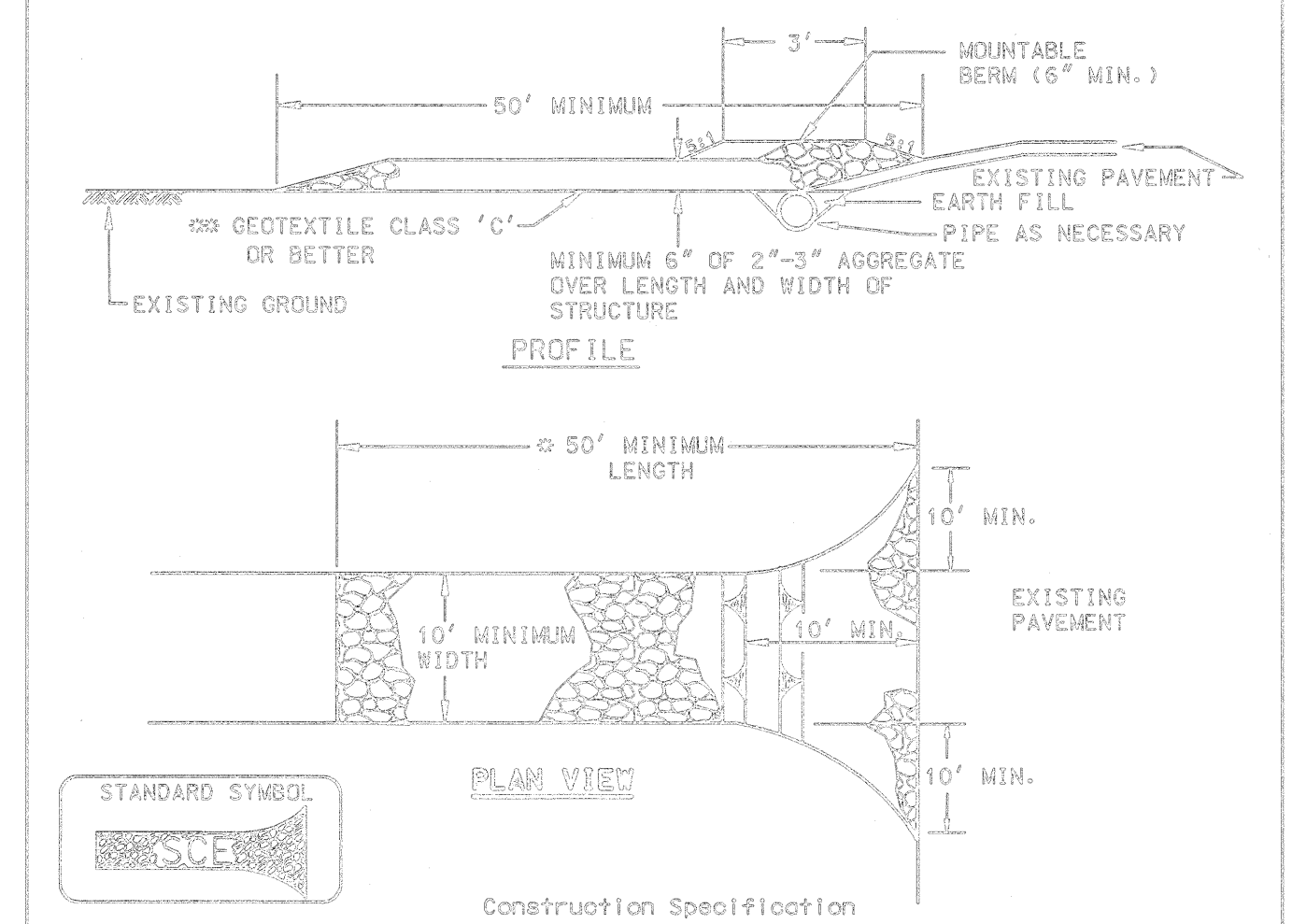
- SANDBAGS/SANDBAGS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (I.E., SAND, FINE GRAVEL, ETC.).
- STONE: STONE SHALL BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES.
- SHEETING: SHEETING SHALL CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.
- GEOTEXTILE CLASS F₂ SHALL CONFORM TO THE 1994 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

III. CONSTRUCTION REQUIREMENTS

ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK.

- THE HEIGHT OF THE SANDBAG/STONE DIVERSION STRUCTURE SHALL BE ONE HALF THE DISTANCE OF THE STREAM BED TO THE BANK PLUS ONE FOOT, AS INDICATED IN SECTION A-A. THE SANDBAGS SHALL BE PLACED ON A SMOOTH, PREPARED SURFACE.
- ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF IN AN APPROVED DISPOSAL AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED BY THE COE.
- ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING BASIN OR OTHERWISE APPROVED ON THE PLANS BY THE COE.
- SHEETING/GEOTEXTILE SHALL BE OVERLAPPING A MINIMUM OF 18 INCHES.
- THE DIVERSION PIPE SHALL HAVE A MINIMUM DIAMETER OF SUFFICIENT SIZE TO CONVOY THE NORMAL STREAM FLOW.
- IF NECESSARY, SILT FENCE OR STRAW BALES SHALL BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.
- SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



- Length - minimum of 50' (±30' for single residence lot).
- Width - 10' minimum, should be flared at the existing road to provide a turning radius.
- Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone, with the plan approval authority may not require single family residences to use geotextile.
- Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
- Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mounded berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
- Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

PERMANENT SEEDING SPECIFICATIONS (OUTSIDE OF STREAMBANK & CHANNEL AREAS)

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:

- PREFERRED - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 600 LBS/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/ACRE 30-0-0 UREA/FORM FERTILIZER (9 LBS/1000 SQ.FT.)
- ACCEPTABLE - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 1000 LBS/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 TO APRIL 30, AND AUGUST 1 TO OCTOBER 15, SEED WITH 60 LBS./ACRE (1.4 LBS./1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 TO JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS./ACRE (0.5 LBS./1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 TO FEBRUARY 28, PROTECT SITE BY OPTION 1 - TWO 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 30 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.

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

TEMPORARY SEEDING SPECIFICATIONS

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

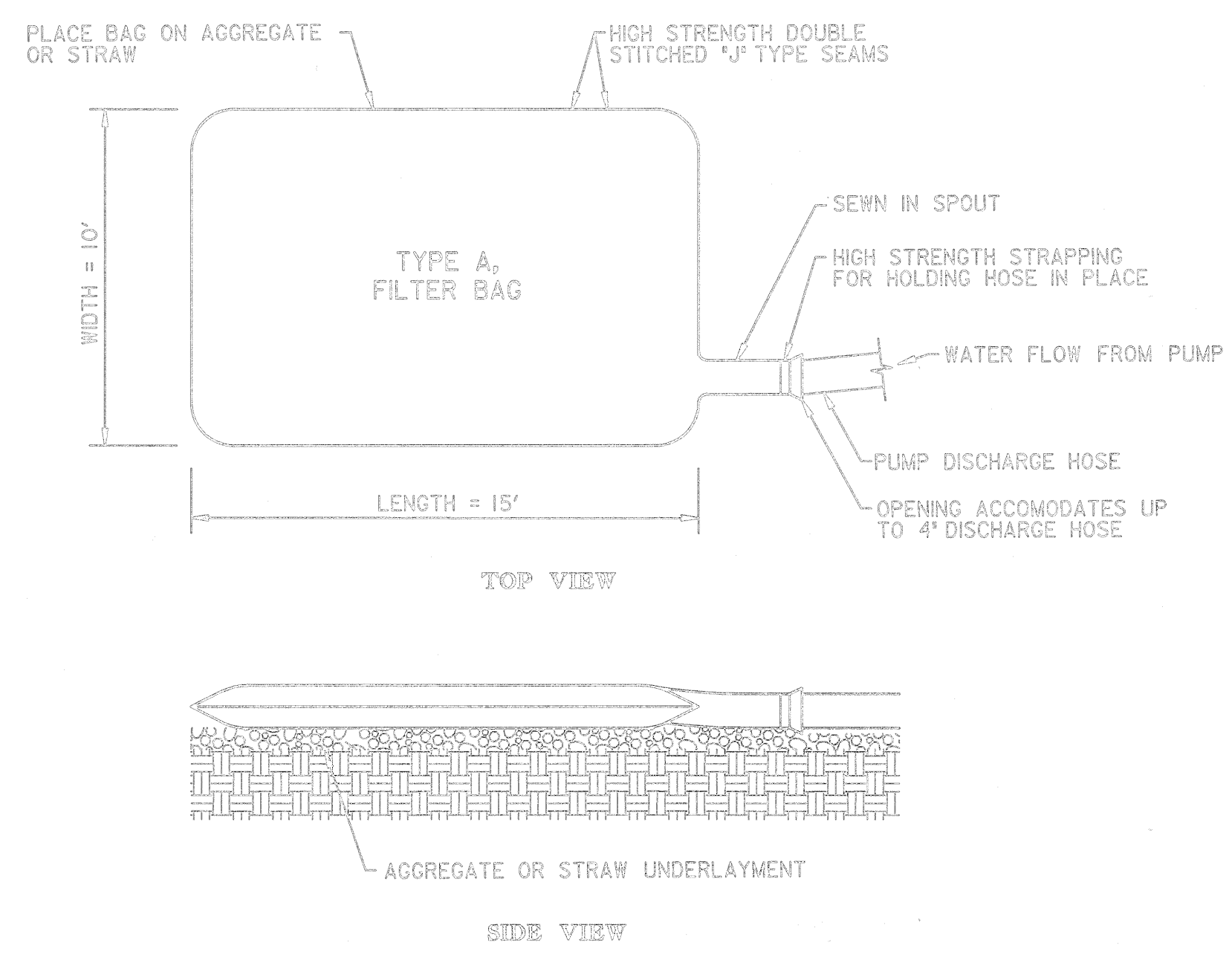
SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ.FT.)

SEEDING - FOR THE PERIODS MARCH 1 TO APRIL 30, AND AUGUST 15 TO OCTOBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.). FOR THE PERIOD MAY 1 TO AUGUST 14, SEED WITH 3 LBS/ACRE WEEPING LOVEGRASS (0.7 LBS./1000 SQ.FT.). FOR THE PERIOD NOVEMBER 16 TO FEBRUARY 29, PROTECT SITE BY APPLY 2 TONS/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.

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



FILTER BAG

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Cheryl Stimm 11/22/99
DISTRICT SOIL CONSERVATION OFFICE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Shirley L. Kelly 11/22/99
DISTRICT SOIL CONSERVATION OFFICE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Shaw 11/18/99
DIRECTOR OF PUBLIC WORKS

Paul J. Rapson 11/17/99
CHIEF, BUREAU OF DESIGN

Shirley L. Kelly 11/16/99
CHIEF, BUREAU OF HIGHWAYS

Shirley L. Kelly 11/16/99
PROJECTS AND WATERSHED MANAGEMENT

STV Incorporated
Engineers / Architects / Planners / Surveyors
2110 Governor's Square
Suite 1000 • Baltimore, MD 21201-3788
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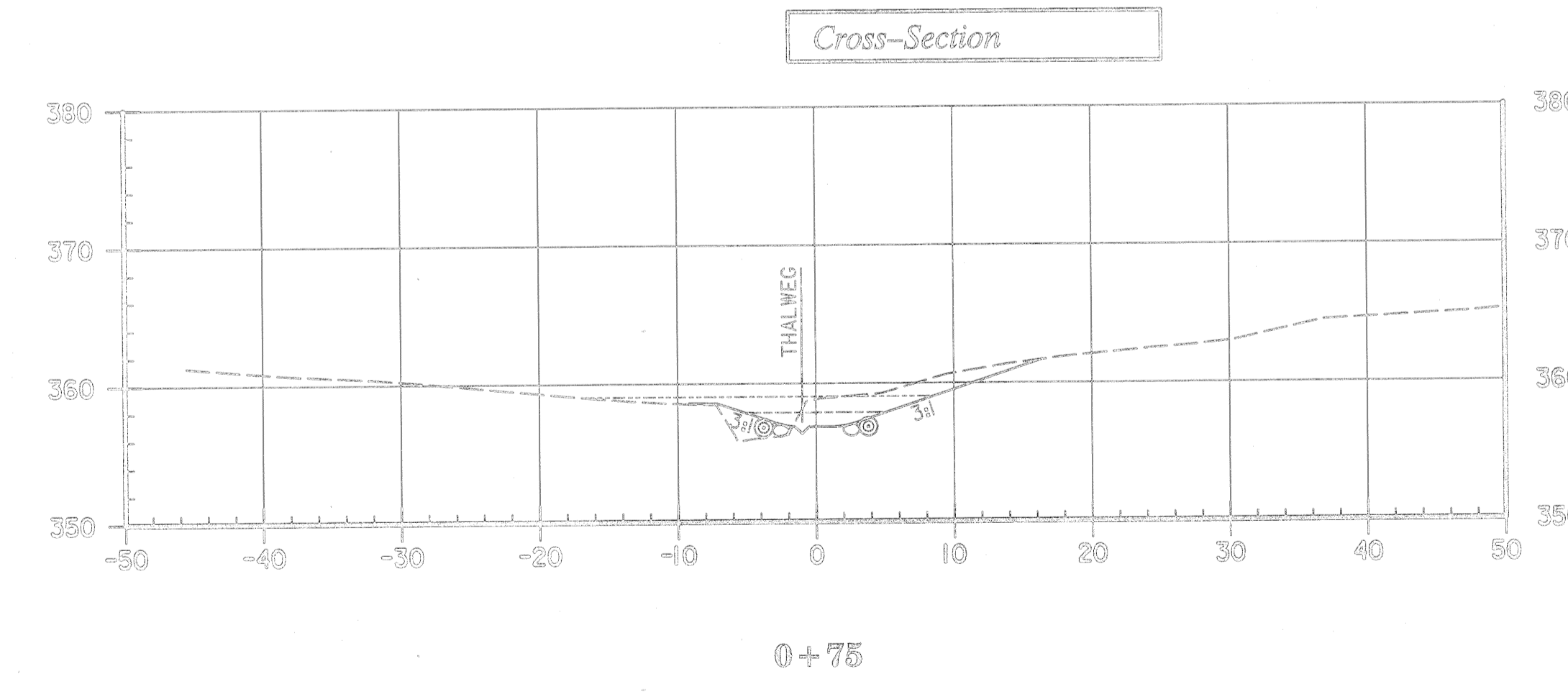
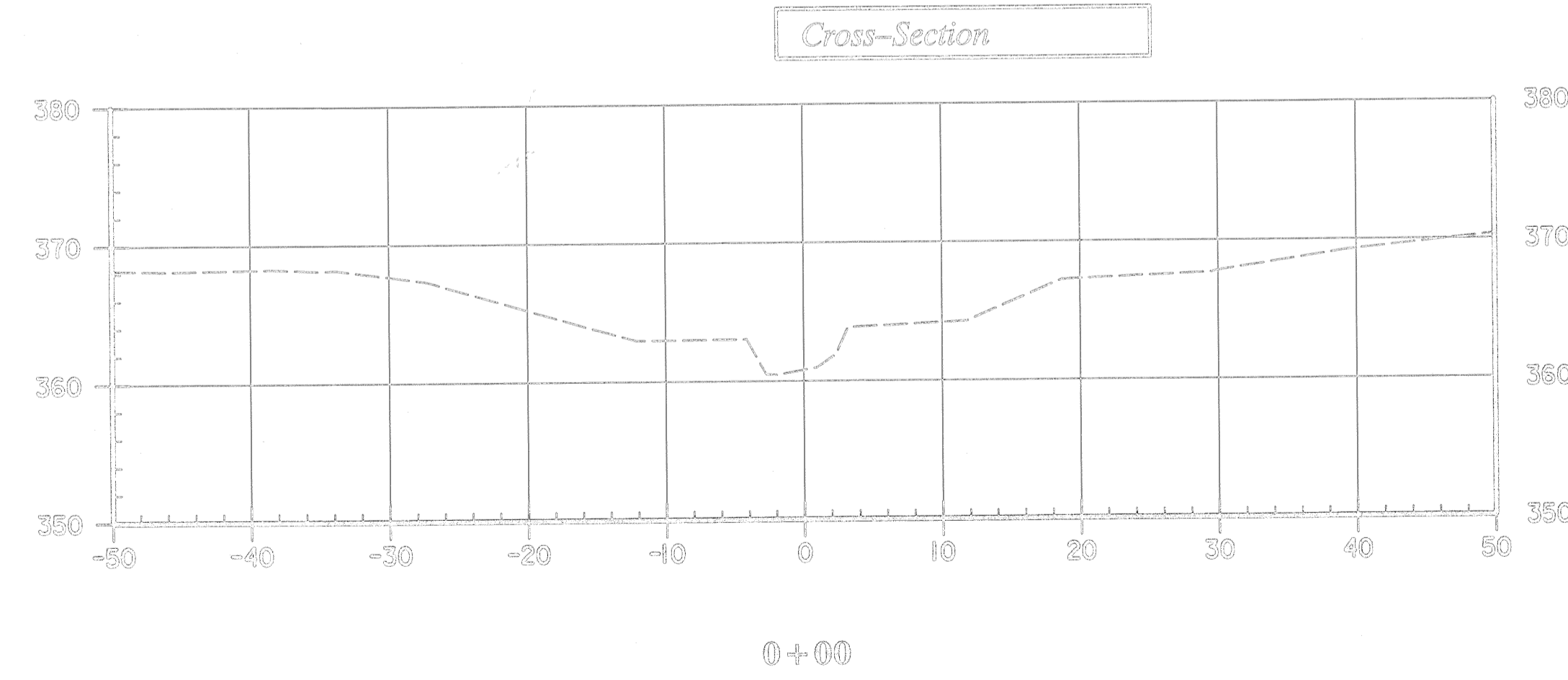
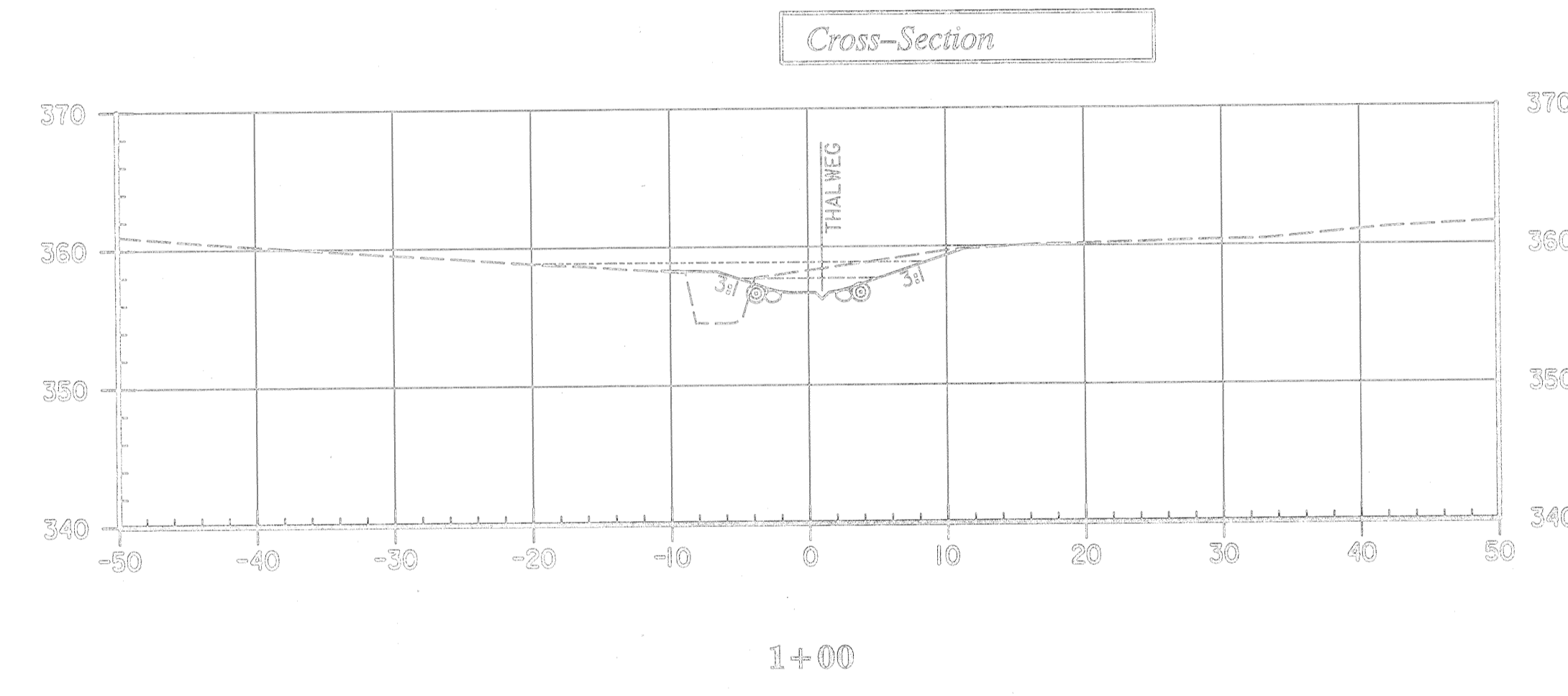
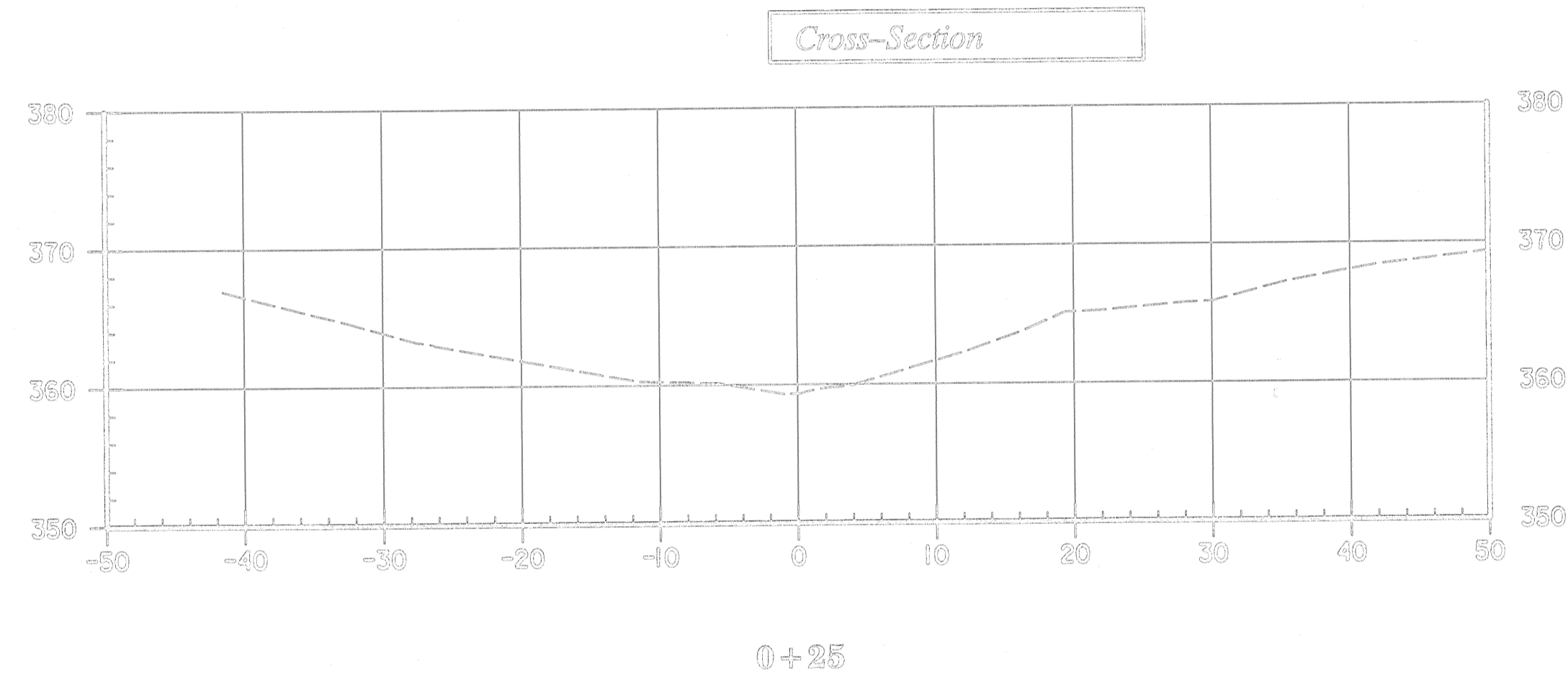
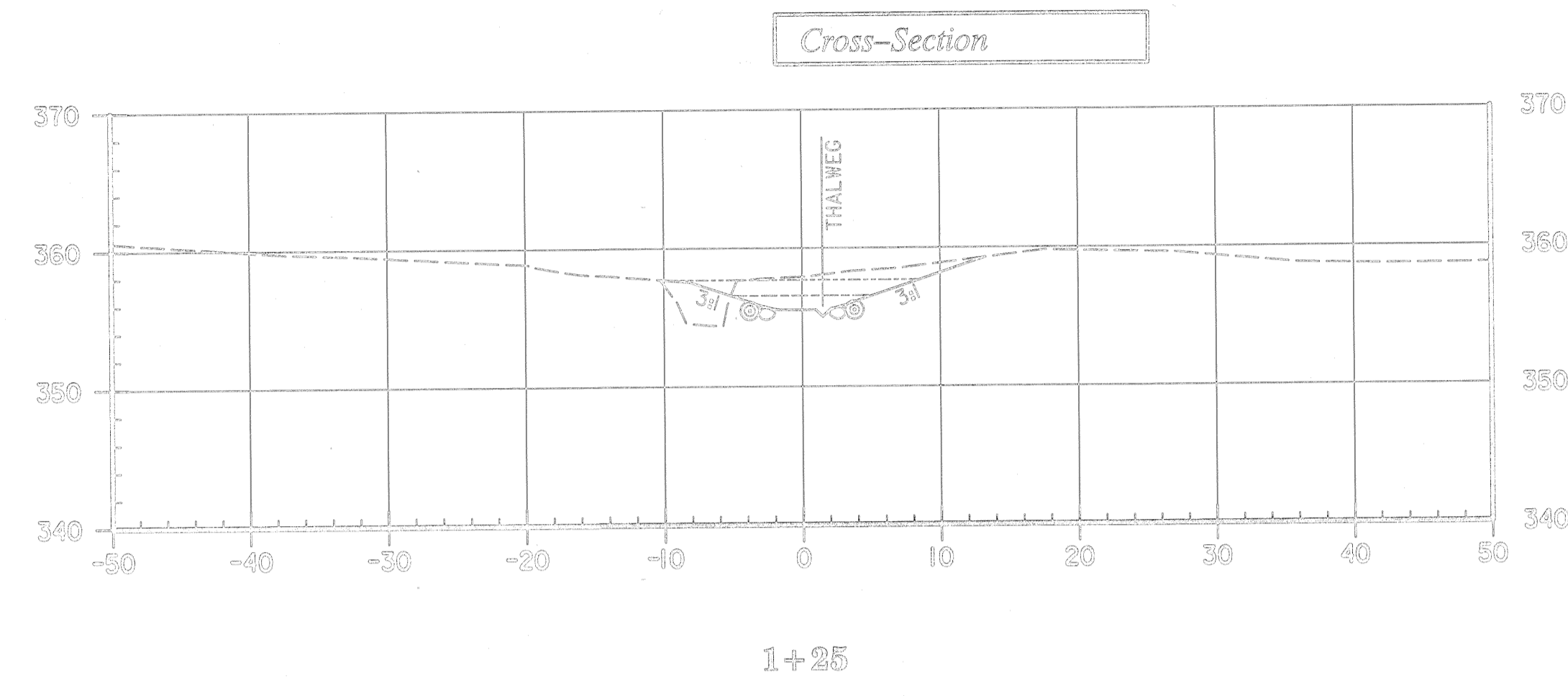
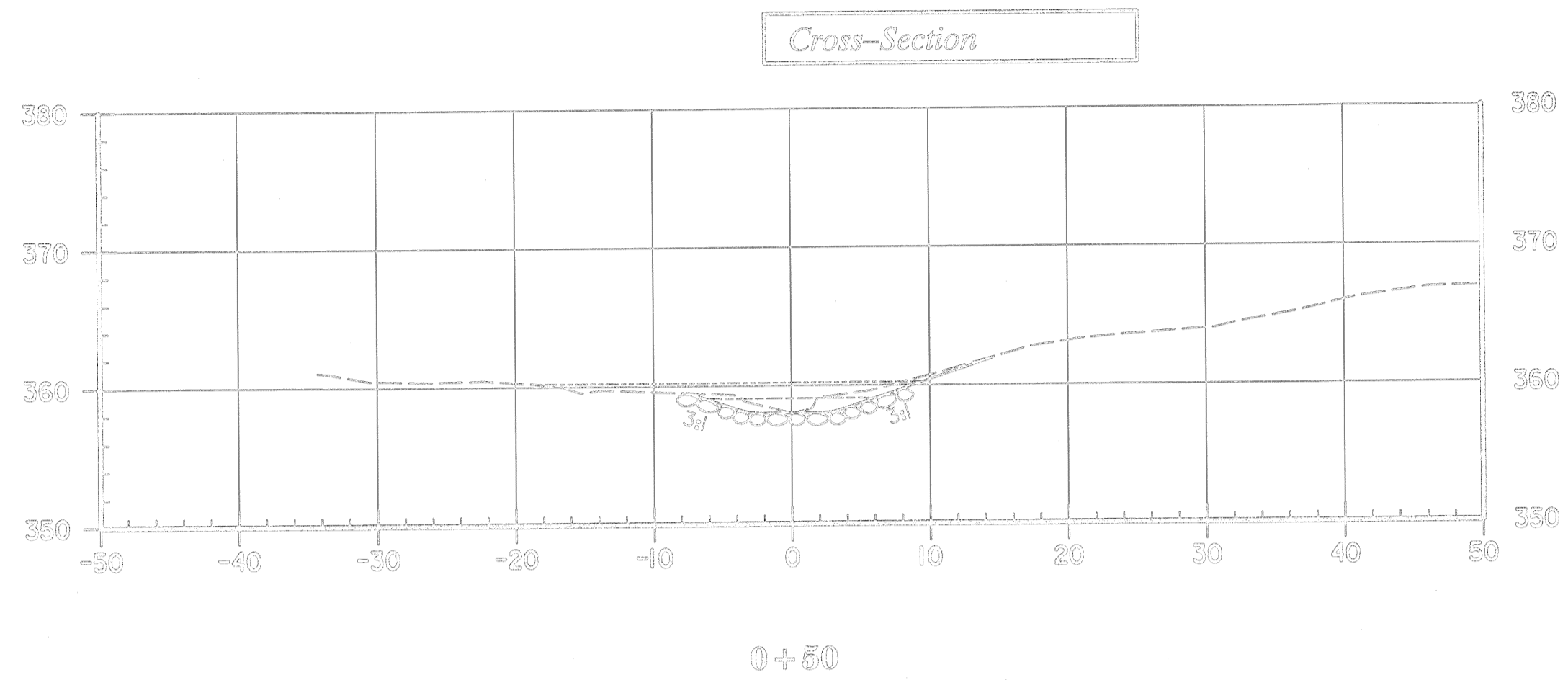
STATE OF MARYLAND
DEPARTMENT OF ENVIRONMENT
NATURAL RESOURCES

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FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 6 OF 8



- LEGEND
- LIVE FASCINES ⊙
 - ROCK FOOTING AT TOE ○
 - EXISTING GROUND LINE ---
 - PROPOSED GROUND LINE ---
 - BANKFULL ELEVATION ---
 - 100 YR. FLOW ELEVATION ---

SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

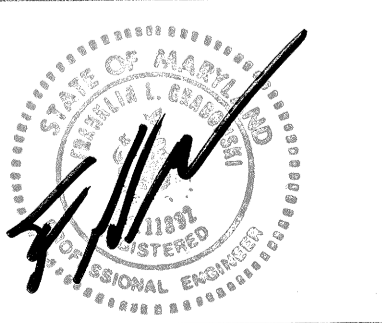
James J. New 11/16/99
DIRECTOR OF PUBLIC WORKS DATE

Robert J. Sporn 11/17/99
CHIEF, BUREAU OF HIGHWAYS DATE

Stephen M. Rankin 11-18-99
CHIEF, BUREAU OF HIGHWAYS DATE

Elizabeth Anderson-Lake 11/11/99
CHIEF, BUREAU OF WATERSHED MANAGEMENT DATE

STV Incorporated
Engineers / Architects / Planners / Surveyors
21 Governor's Court
Beltsville, Maryland 21240-5738
(410)866-8115 Fax: (410)866-5739

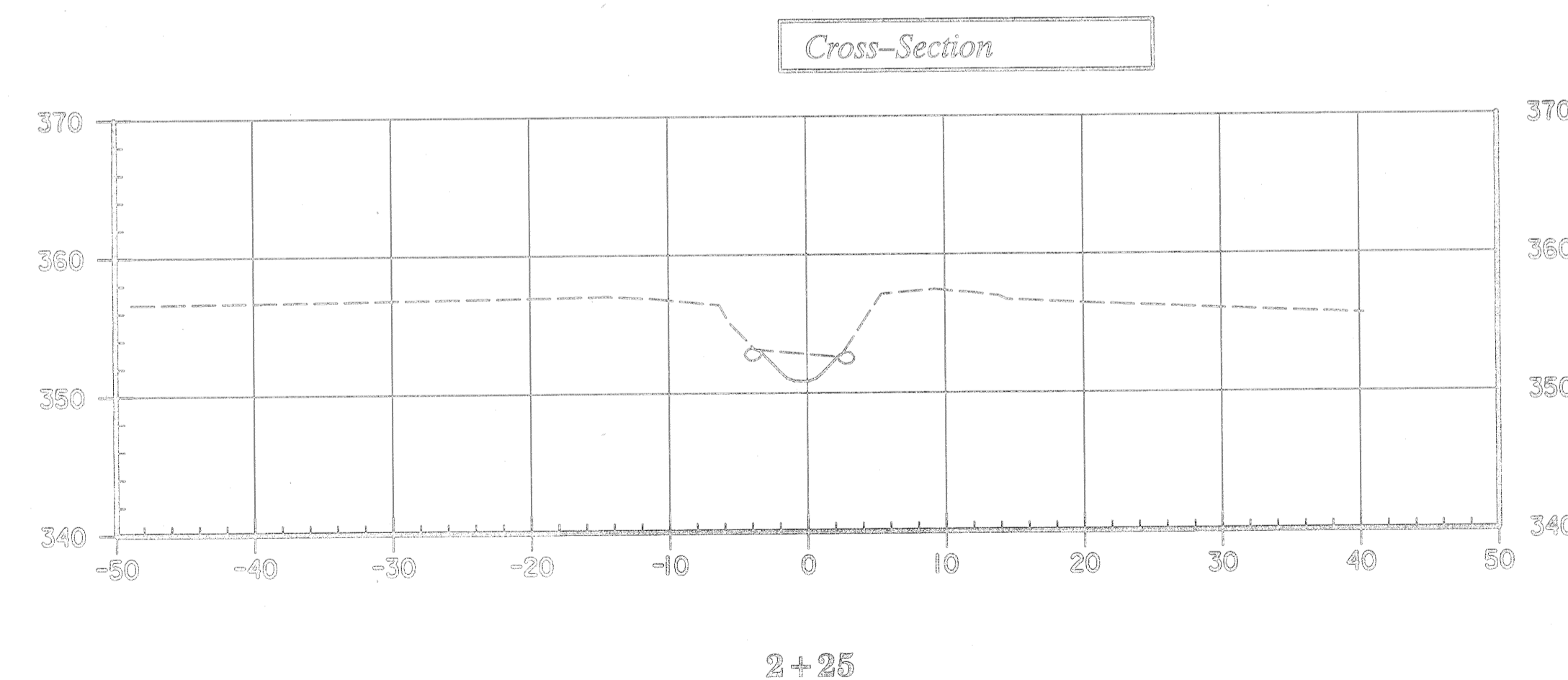
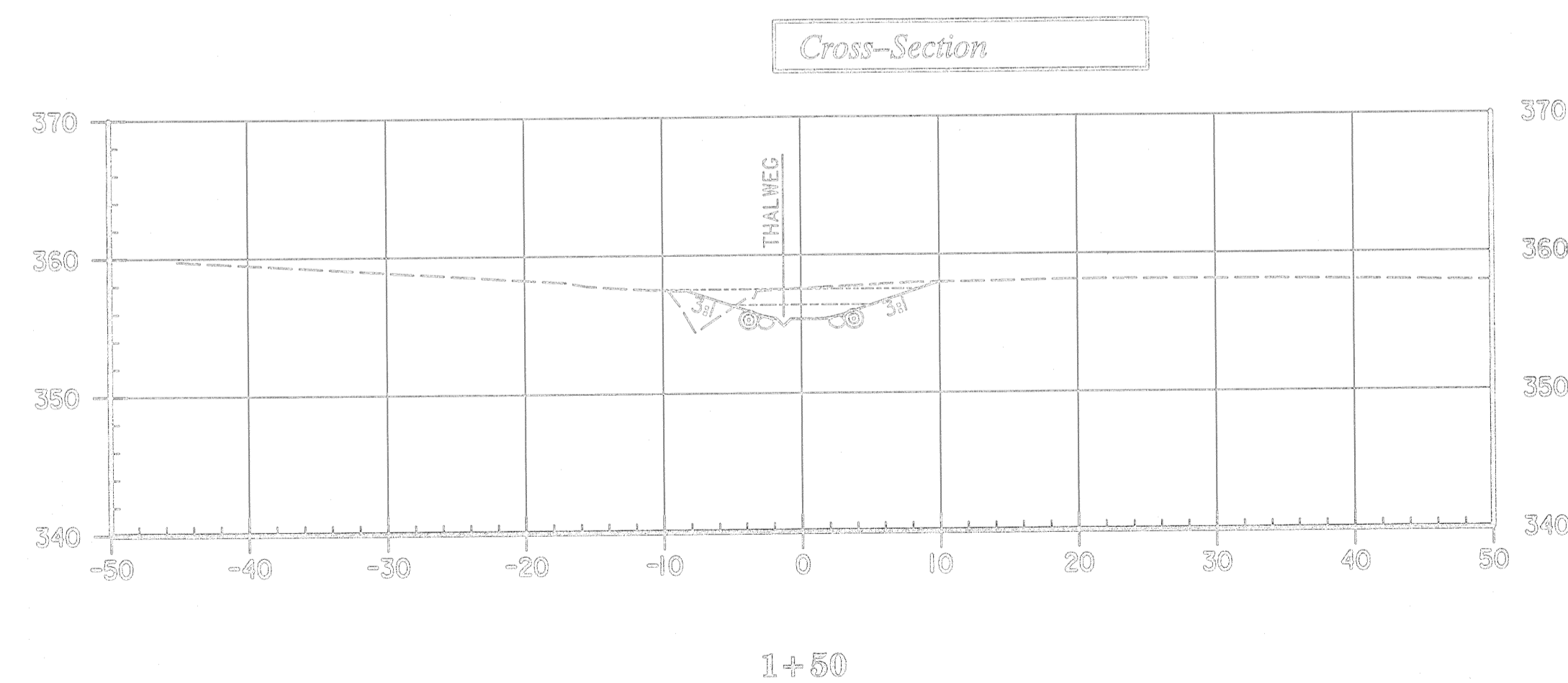
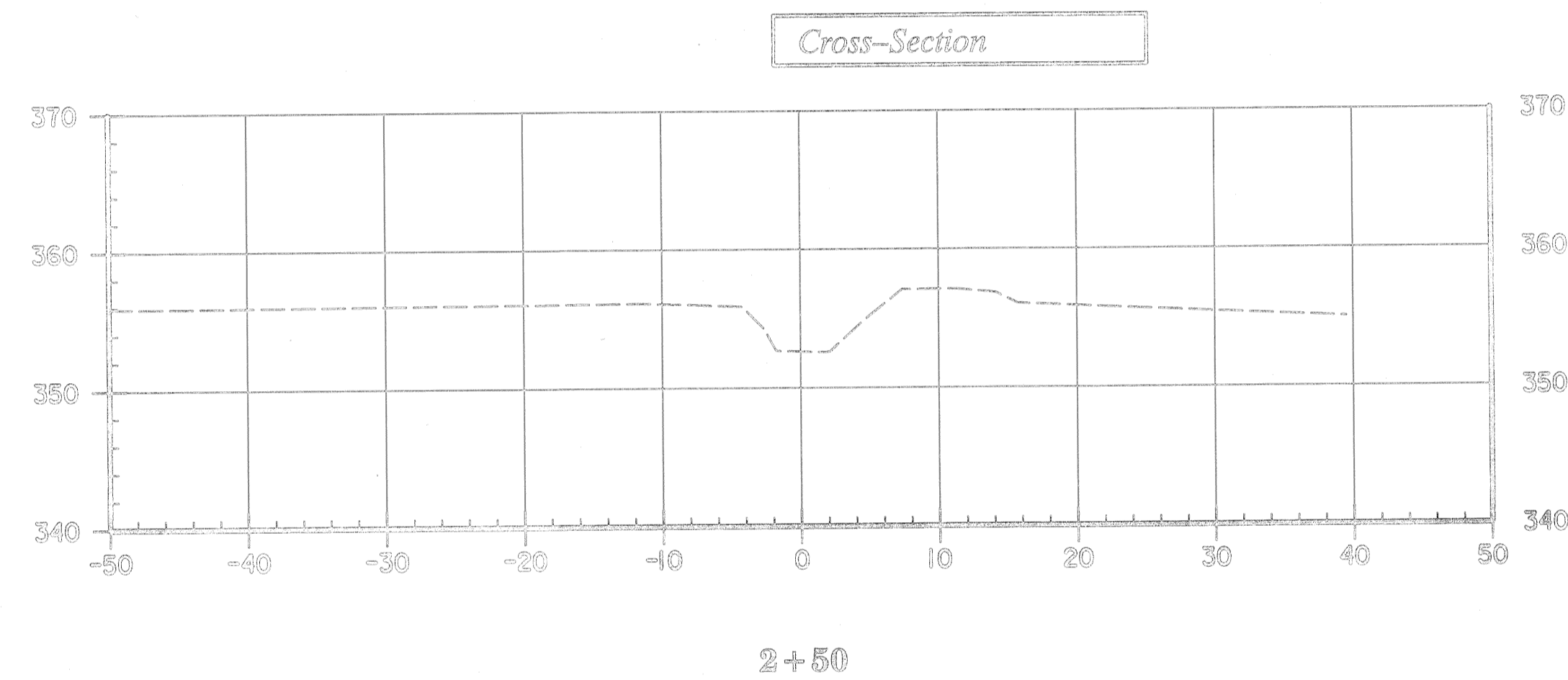
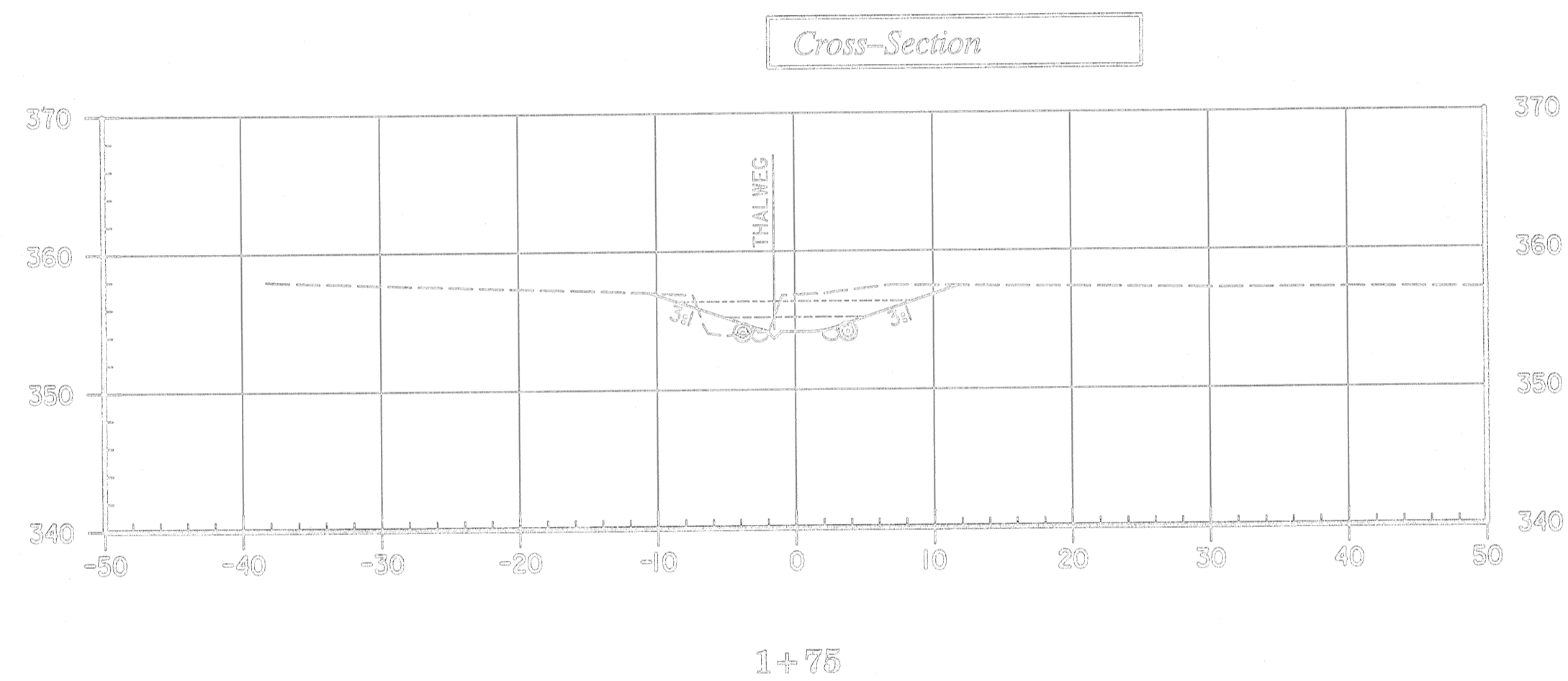
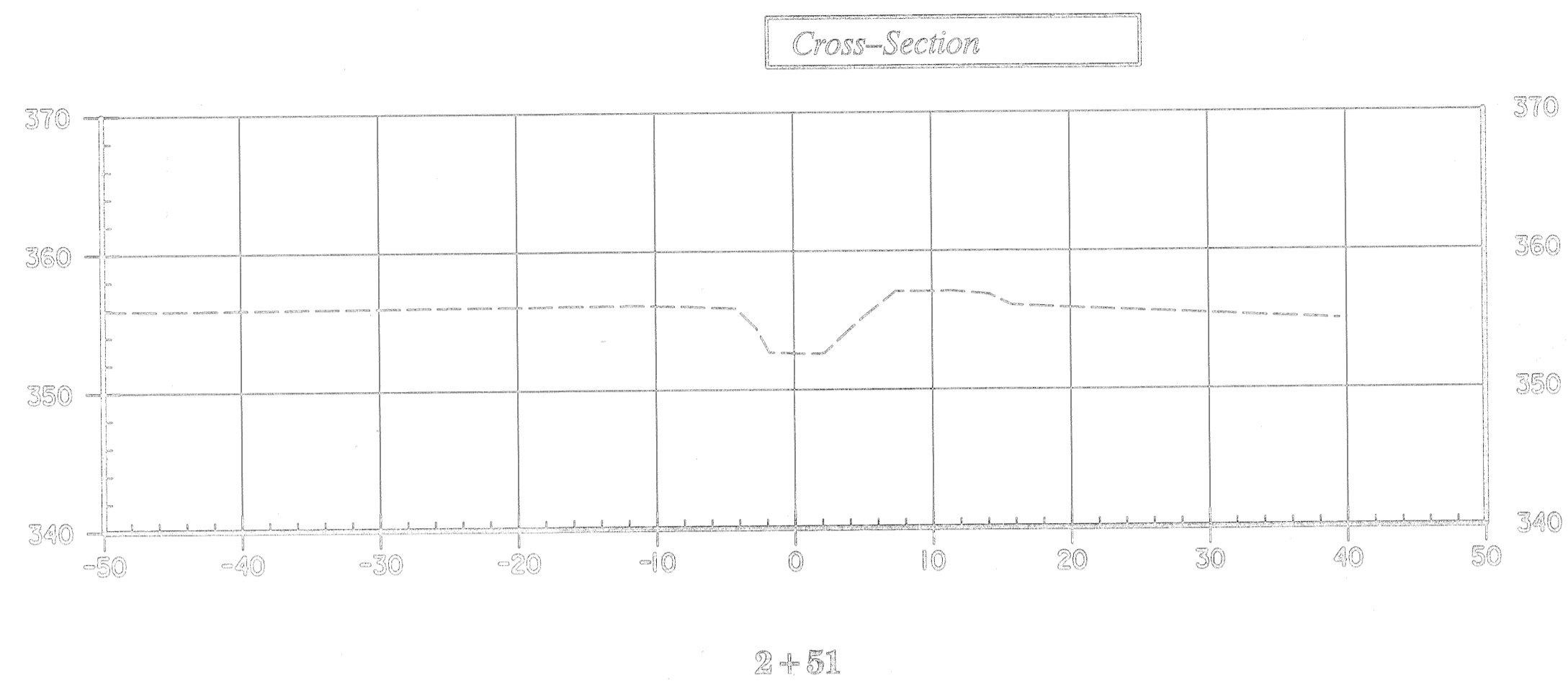
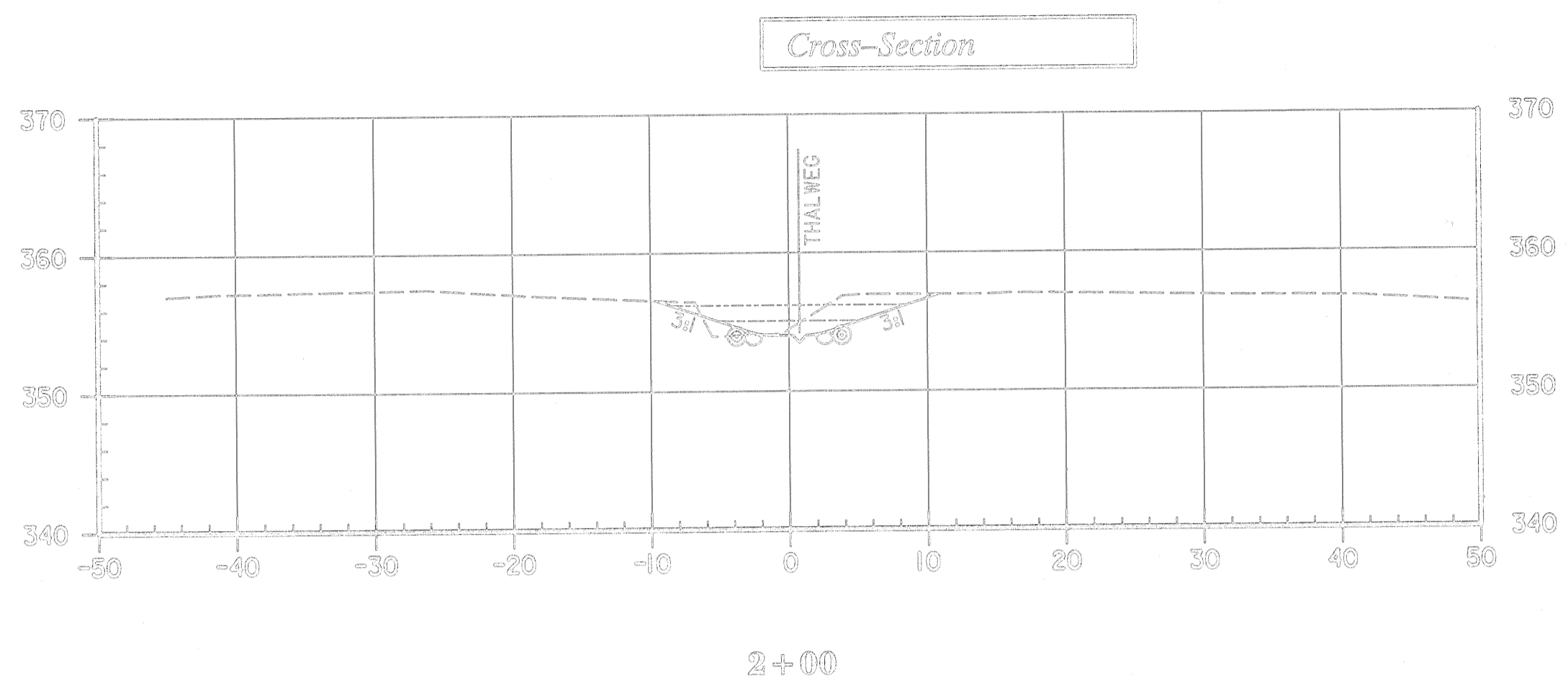


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FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 7 OF 8



- LEGEND**
- LIVE FASCINES ⊙
 - ROCK FOOTING AT TOE ○
 - EXISTING GROUND LINE ---
 - PROPOSED GROUND LINE —
 - BANKFULL ELEVATION - - - -
 - 100 YR. FLOW ELEVATION - · - · -

SCALE: 1" = 10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. Shaw 11/17/99
DIRECTOR OF PUBLIC WORKS DATE

Robert M. Rando 11-18-99
CHIEF, BUREAU OF HIGHWAYS DATE

Paul J. Seppan 11/17/99
CHIEF, BUREAU OF HIGHWAYS DATE

Stephen H. Anderson 11/14/99
CHIEF, BUREAU OF HIGHWAYS DATE

STV Incorporated
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FINAL CONSTRUCTION DRAWINGS

STREAM RESTORATION
WEST DURHAM ROAD
ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT No. D-1078 U

SCALE AS SHOWN
SHEET 8 OF 8