

# HOWARD COUNTY, MARYLAND

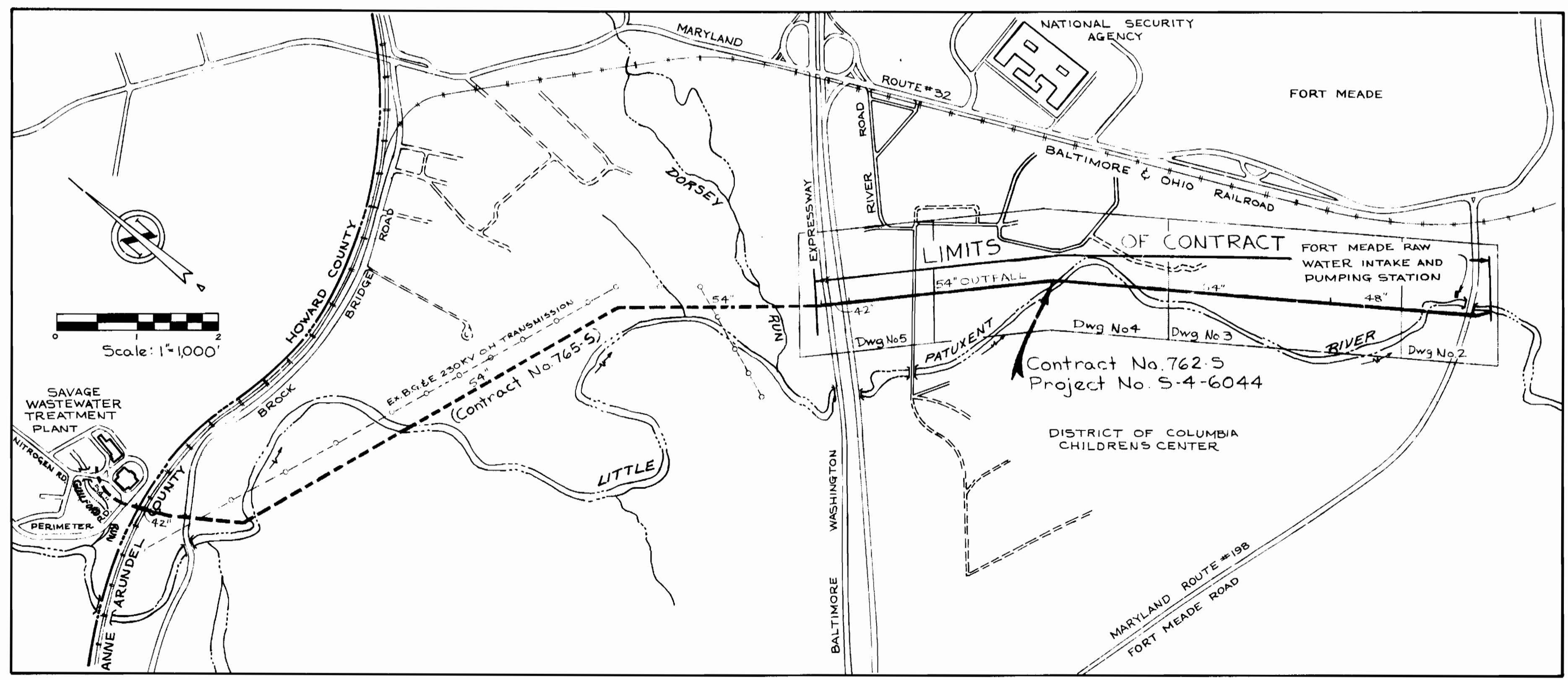
## DEPARTMENT OF PUBLIC WORKS

# SAVAGE WASTEWATER TREATMENT PLANT

# TREATED EFFLUENT OUTFALL

### CONTRACT NO. 762-S

### PROJECT NO. S-4-6044



LIST OF DRAWINGS	
DRAWING NUMBER	TITLE
1	TITLE AND LOCATION MAP
2-4	PLAN OF OUTFALL
5	PLAN AND PROFILE OF OUTFALL
6	PROFILE OF OUTFALL
7	DETAILS-OF OUTFALL DISCHARGE STRUCTURE
8	DETAILS - AIR RELEASE MANHOLES
9	DETAILS - LINER PLATE TUNNEL
10A-12	DETAILS SAMPLING STATION & AIR RELEASE
13	LOCATION AND DRAINAGE MAP
14-17	SEDIMENT CONTROL PLAN
18-19	DETAILS - SEDIMENT CONTROL PLAN

As Built Drawings  
 Stakeout - FB# 6500  
 Diary & Inspectors Daily - FB# 6475 & 6512  
 Residents Daily - FB# 6493 & 6512  
 B.W. Pkwy. Tunnel Diary - FB# 6512

Savage W.W.T.P. Outfall Sewer  
 Project No. S-4-6044  
 Contract No. 762-S

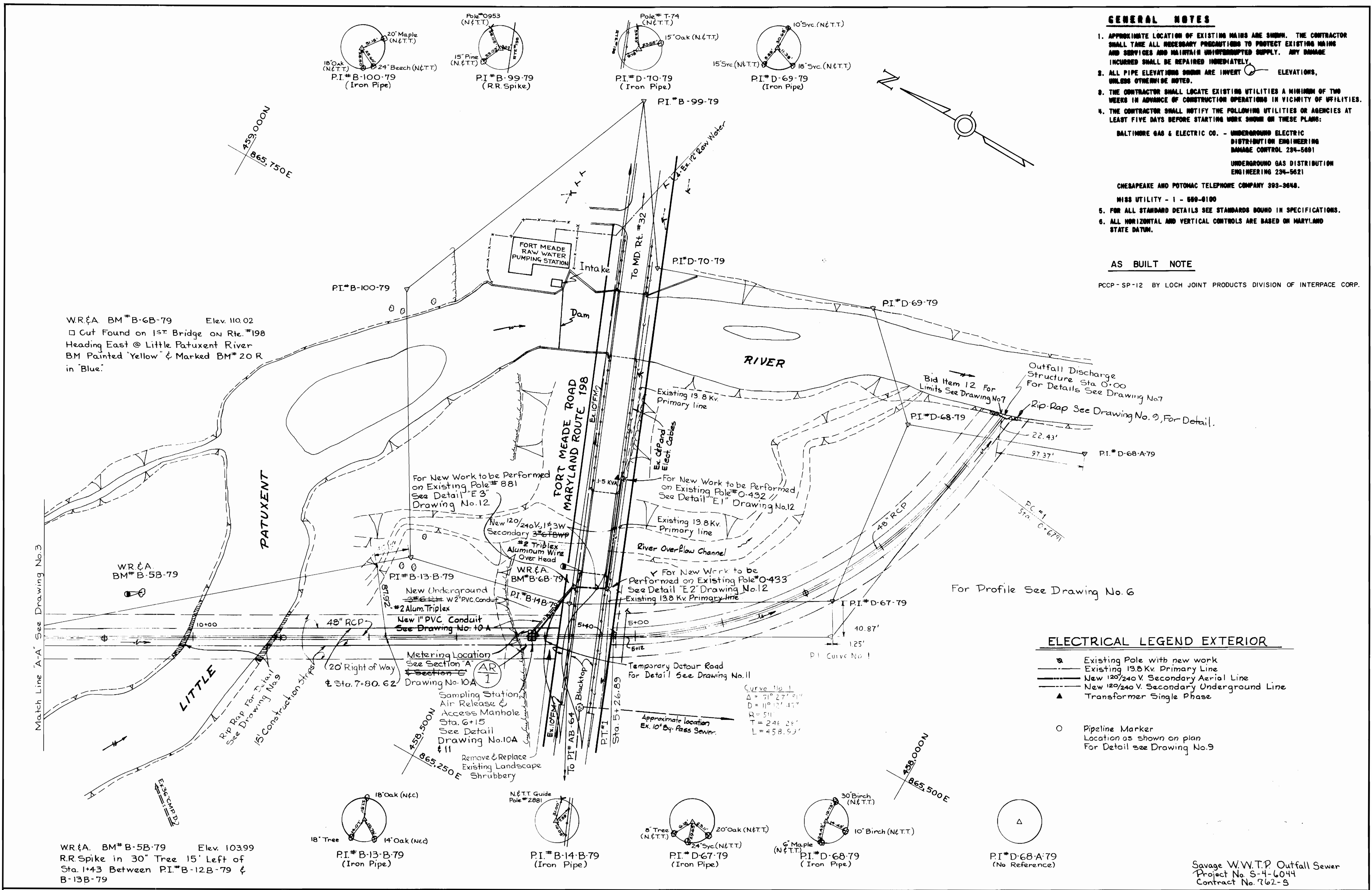
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 9-30-79 DIRECTOR: <i>George F. Nemmy</i>	CONTRACT NO. 762-S	TITLE AND LOCATION MAP	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 1 OF 19	SCALE AS SHOWN
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**GENERAL NOTES**

1. 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.
2. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN VICINITY OF UTILITIES.
4. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:  
BALTIMORE GAS & ELECTRIC CO. - UNDERGROUND ELECTRIC DISTRIBUTION ENGINEERING DAMAGE CONTROL 234-5601  
UNDERGROUND GAS DISTRIBUTION ENGINEERING 234-5621  
CHESAPEAKE AND POTOMAC TELEPHONE COMPANY 393-3646.  
MISS UTILITY - 1 - 669-0100
5. FOR ALL STANDARD DETAILS SEE STANDARDS BOUND IN SPECIFICATIONS.
6. ALL HORIZONTAL AND VERTICAL CONTROLS ARE BASED ON MARYLAND STATE DATUM.

**AS BUILT NOTE**

PCCP-SP-12 BY LOCH JOINT PRODUCTS DIVISION OF INTERPACE CORP.

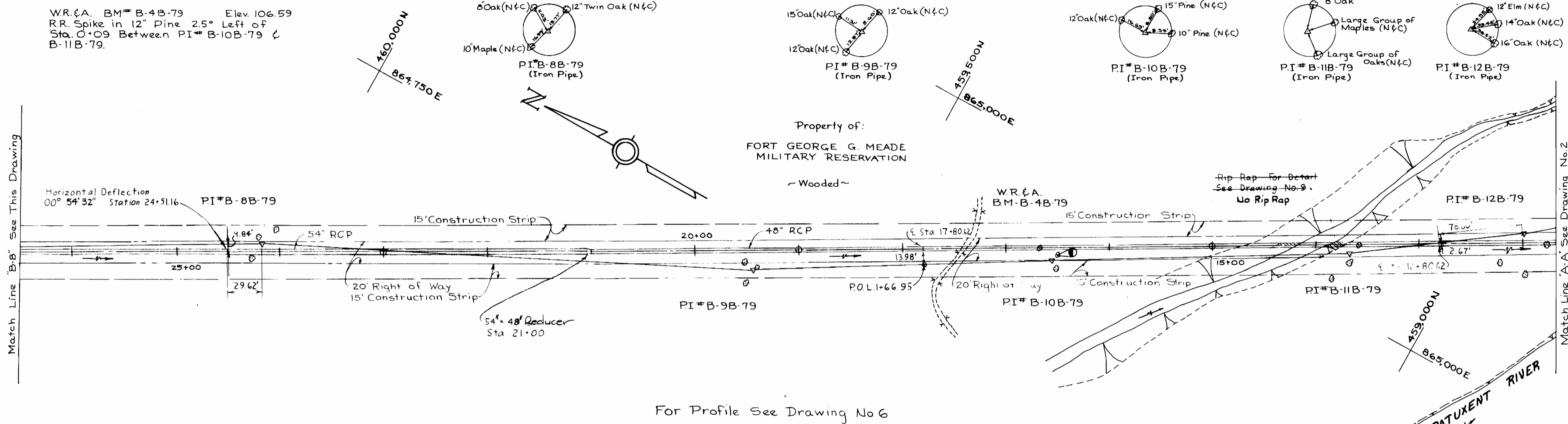


**ELECTRICAL LEGEND EXTERIOR**

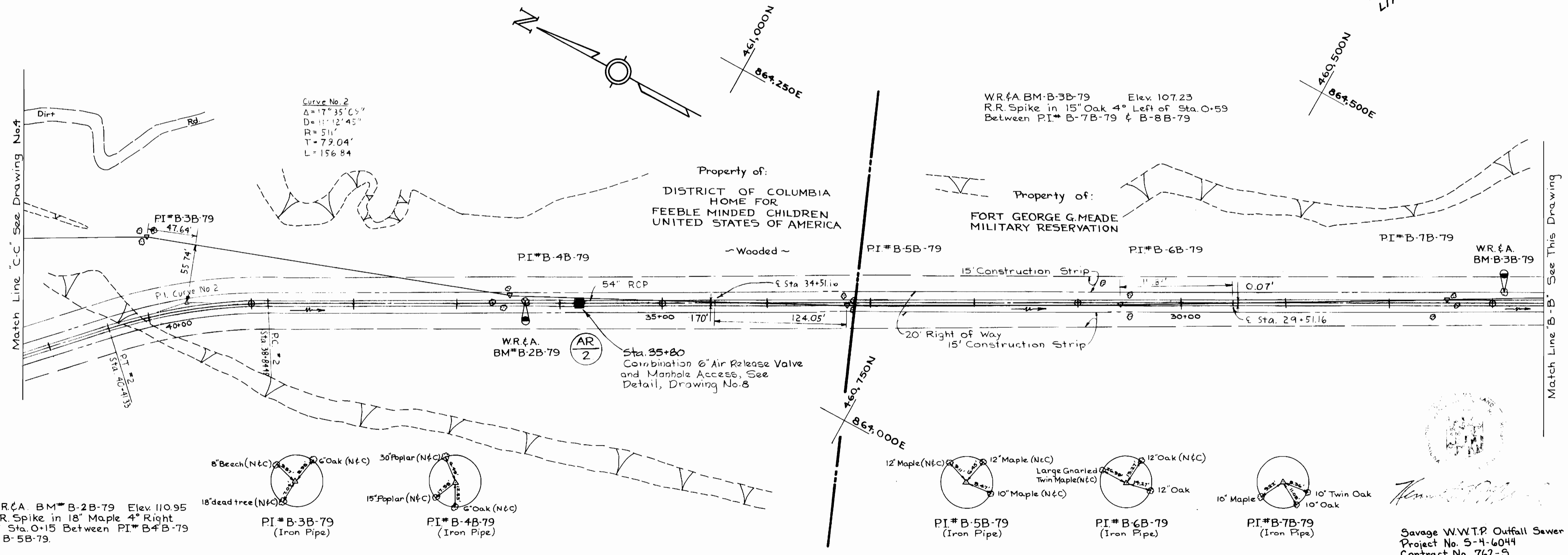
- ⊙ Existing Pole with new work
- Existing 13.8 Kv. Primary Line
- New 120/240 V. Secondary Aerial Line
- New 120/240 V. Secondary Underground Line
- ▲ Transformer Single Phase
- Pipeline Marker  
Location as shown on plan  
For Detail see Drawing No.9

Savage W.W.T.P. Outfall Sewer  
Project No. S-4-6044  
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<p><b>WHITMAN, REQUARDT &amp; ASSOCIATES</b> ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p><b>DEPARTMENT OF PUBLIC WORKS</b> HOWARD COUNTY, MARYLAND</p> <p>8/30/79 DATE</p> <p>CHIEF - BUREAU OF ENVIRONMENTAL SERVICES</p>	<p><b>CONTRACT NO. 762-S</b></p>	<p><b>PLAN OF OUTFALL</b></p>	<p><b>Savage Wastewater Treatment Plant Treated Effluent Outfall</b></p>	<p><b>DRAWING NO. 2 OF 19</b></p>	<p><b>SCALE</b> 1" = 50'</p>
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For Profile See Drawing No 6



WHITMAN, REQUARDT & ASSOCIATES  
ENGINEERS  
1304 ST. PAUL ST.  
BALTIMORE, MARYLAND

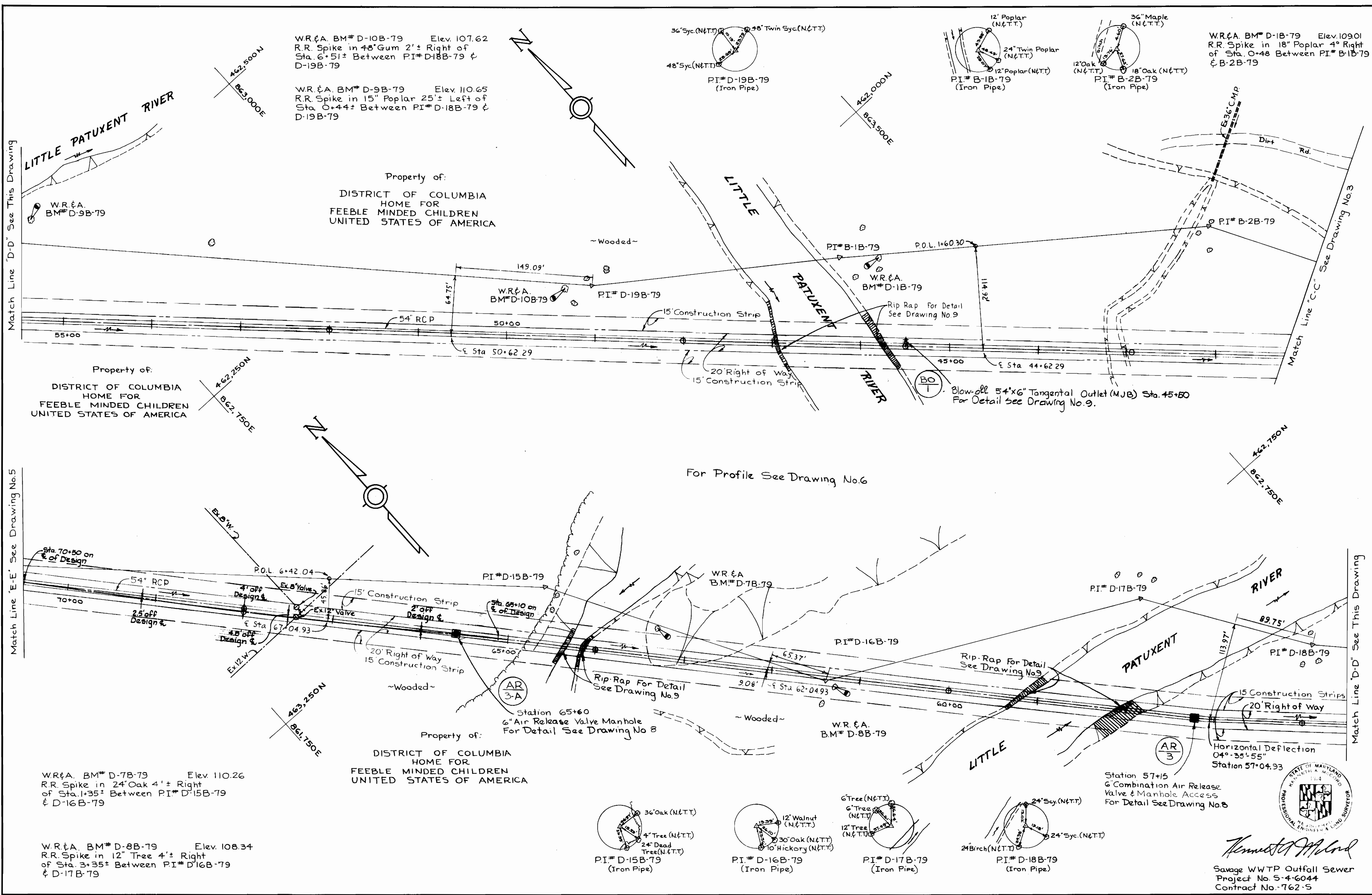
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
DATE: 8/30/77  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 762-S

PLAN OF OUTFALL

SAVAGE WASTEWATER TREATMENT PLANT  
TREATED EFFLUENT OUTFALL

DRIVING SCALE  
NO. 3 OF 19  
SCALE 1"=50'  
51-459/866  
51-460/866  
51-461/866.5  
51-462/867.5



**WHITMAN, REQUARDT & ASSOCIATES**  
**ENGINEERS**  
 1304 ST. PAUL ST.  
 BALTIMORE, MARYLAND

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 DATE: 8/20/79  
 CHIEF: BUREAU OF ENVIRONMENTAL SERVICES

**CONTRACT NO. 762-S**

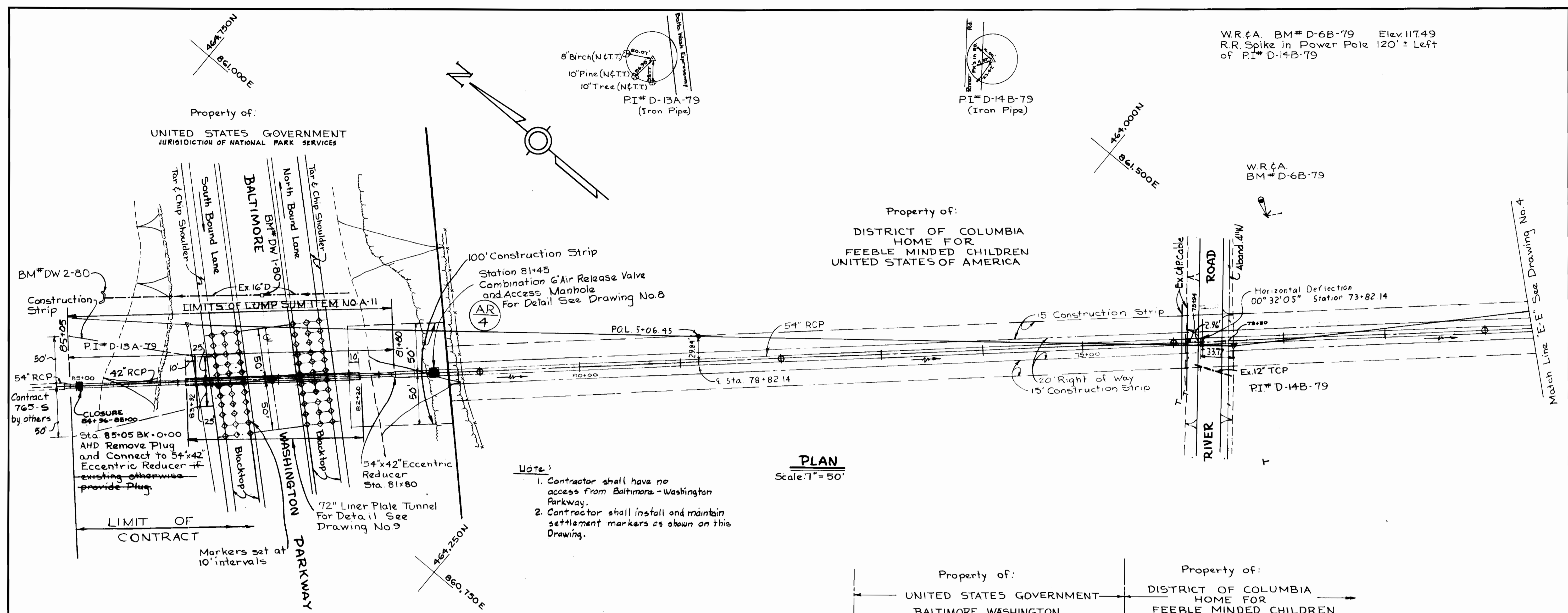
**PLAN OF OUTFALL**

**SAVAGE WASTEWATER TREATMENT PLANT**  
**TREATED EFFLUENT OUTFALL**

**DRAWING NO. 4 OF 19**  
**SCALE 1" = 50'**  
 51-461/864.5  
 51-462/864.5  
 51-462/863  
 51-463/863

*Kenneth A. Milrod*  
 PROFESSIONAL SURVEYOR  
 STATE OF MARYLAND  
 No. 134  
 1964

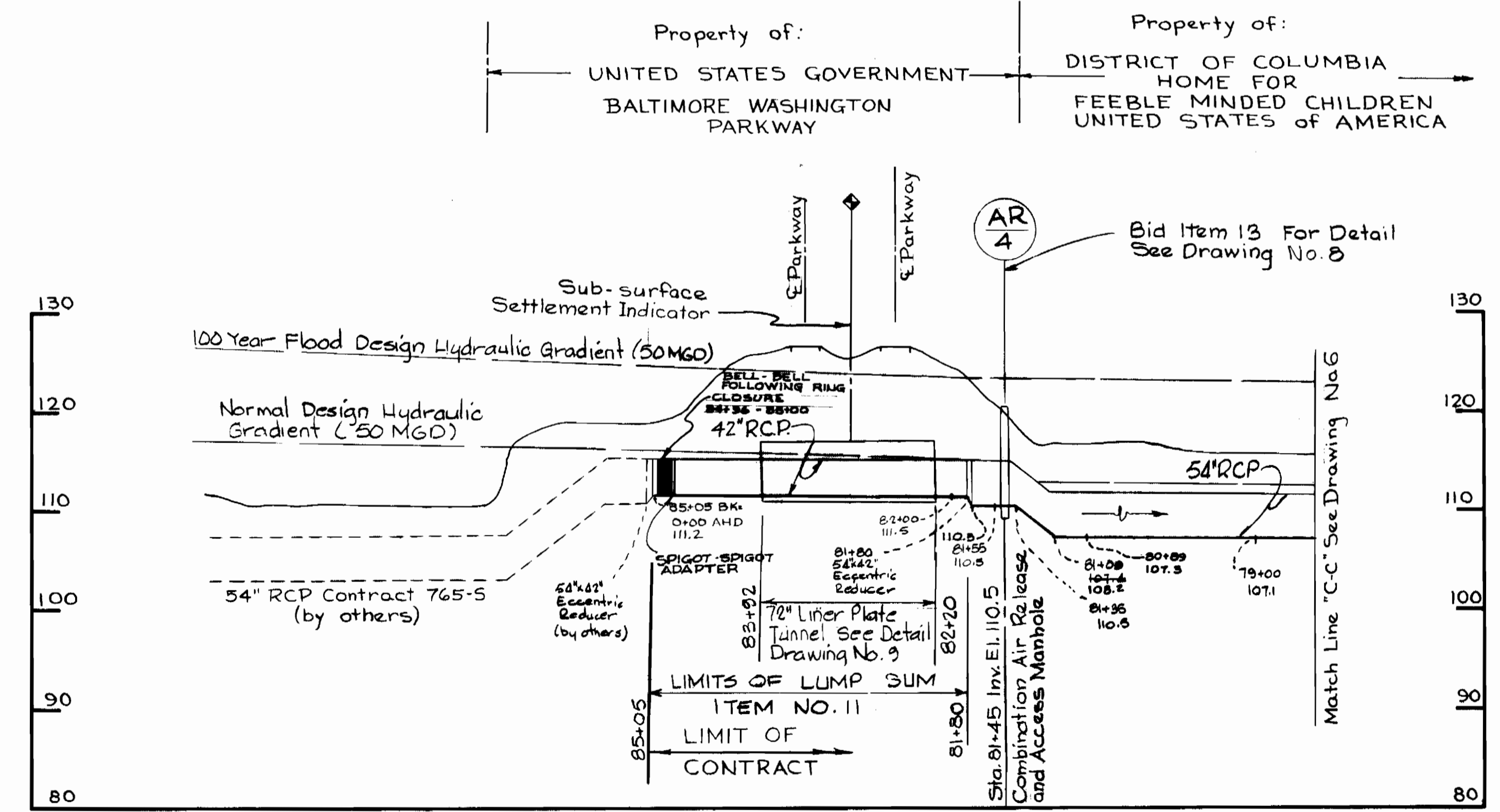
Savage WWTP Outfall Sewer  
 Project No. S-4-6044  
 Contract No. 762-S



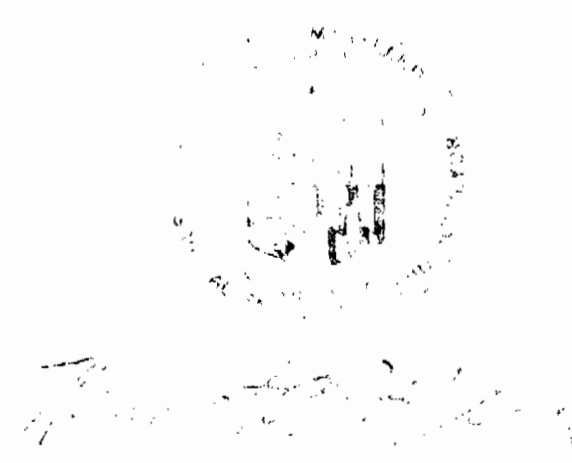
- Notes:**
1. Contractor shall have no access from Baltimore-Washington Parkway.
  2. Contractor shall install and maintain settlement markers as shown on this drawing.

**PLAN**  
Scale: 1" = 50'

- ◇ Settlement markers Locations (Painted on road surface) as shown.
- ◆ Earth tunnel sub-surface settlement indicator. (See detail in Specifications)

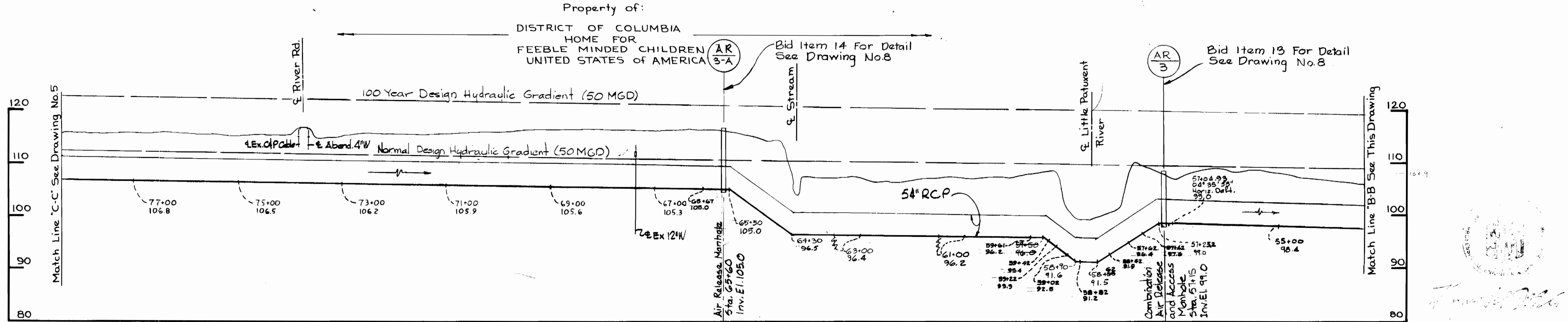
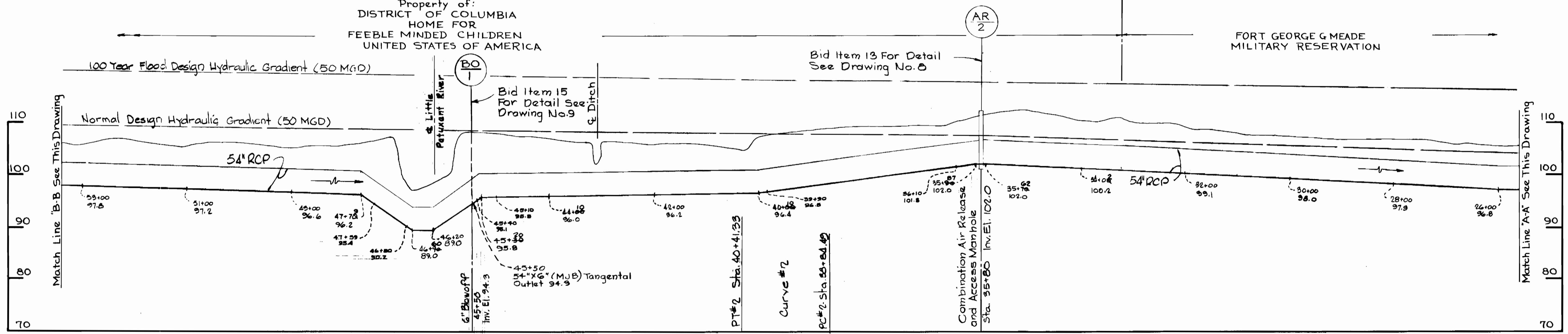
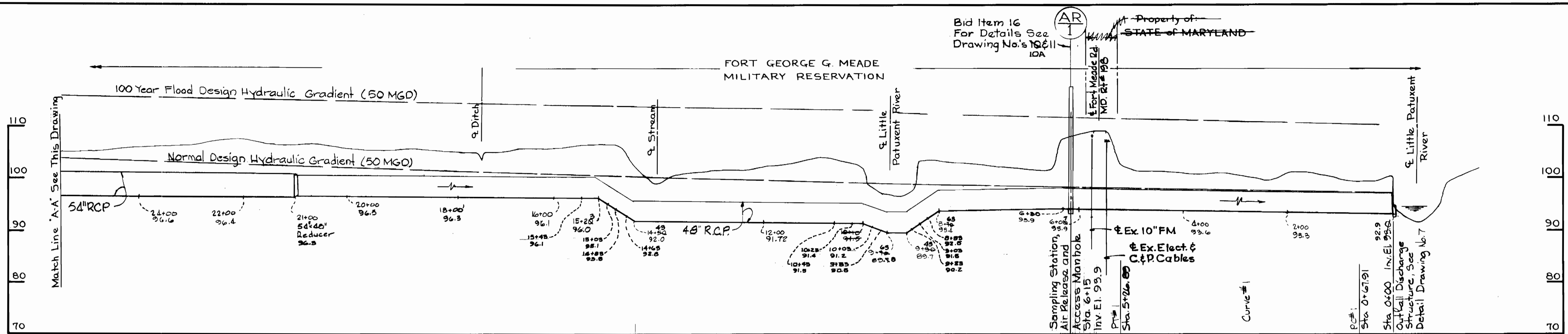


**PROFILE**  
Scale: Horizontal: 1" = 100'  
Vertical: 1" = 10'



Savage W.W.T.P. Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-S

<p><b>WHITMAN, REQUARDT &amp; ASSOCIATES</b> ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p><b>DEPARTMENT OF PUBLIC WORKS</b> HOWARD COUNTY, MARYLAND DATE: 8/20/79 CHIEF: BUREAU OF ENVIRONMENTAL SERVICES</p>	<p><b>CONTRACT NO. 762-S</b></p>	<p><b>PLAN AND PROFILE OF OUTFALL</b></p>	<p><b>SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL</b></p>	<p><b>DRAWING NO. 5 OF 19</b> <b>SCALE AS SHOWN</b></p>
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**PROFILE**

Scale: Horizontal: 1"=100'  
Vertical: 1"=10'

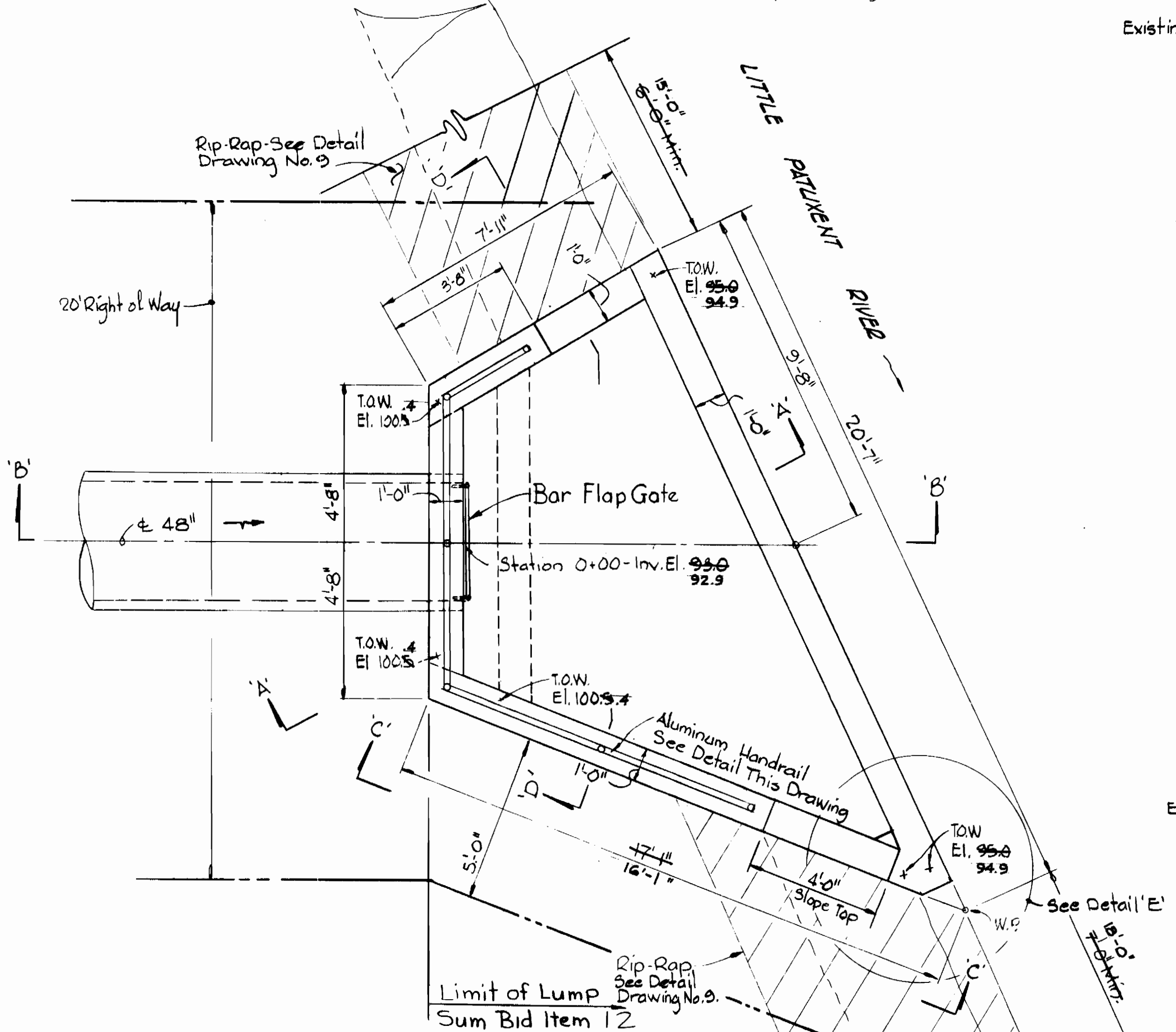


Savage W.W.T.P. Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-5

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>James M. Wilson</i> CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 762-S	PROFILE OF OUTFALL	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 6 OF 19 SCALE AS SHOWN
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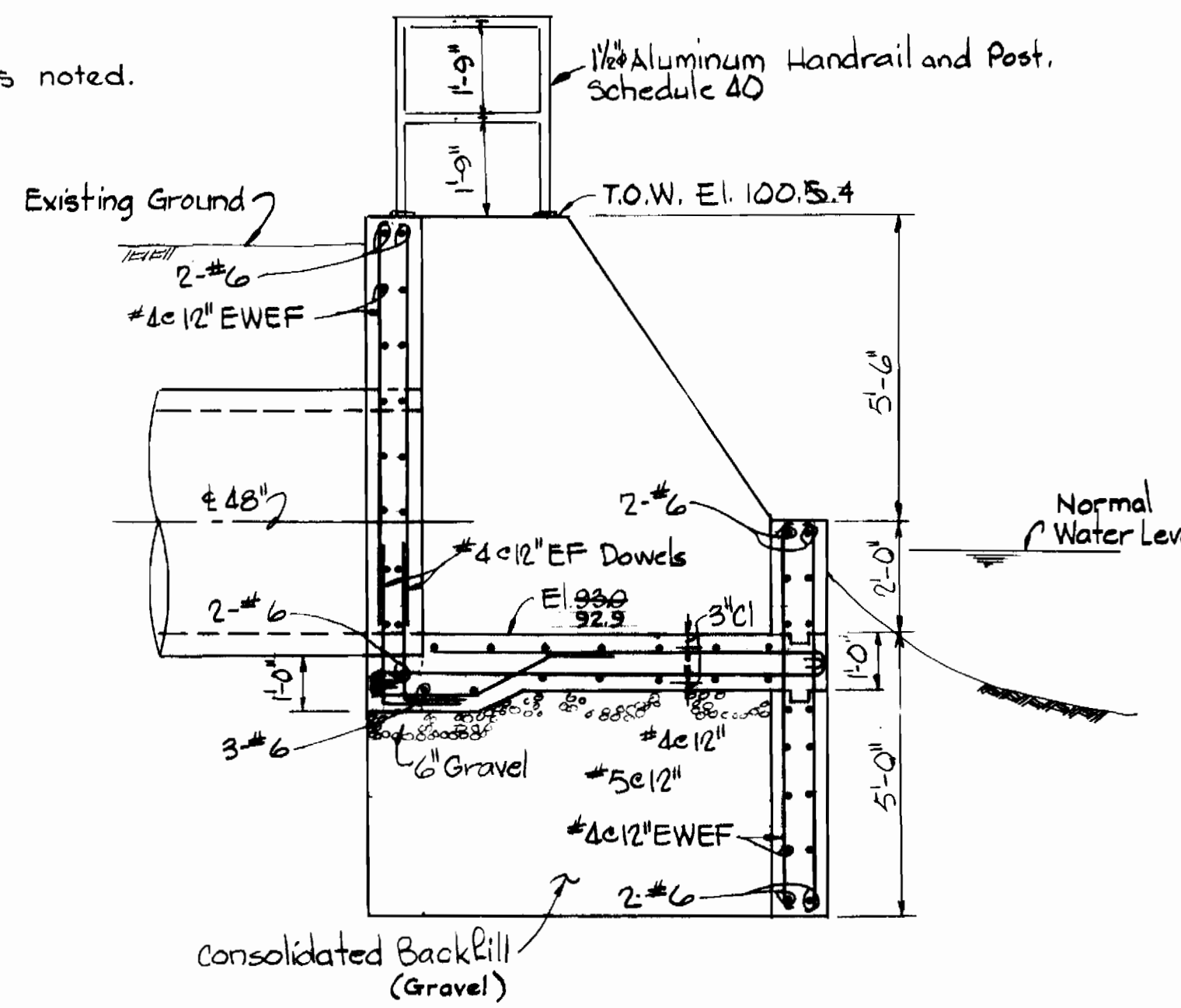
**GENERAL NOTES**

1. Concrete shall be Mix #3 in accordance with Maryland State Highway Administration, fc = 3500 p.s.i.
2. Reinforcing Steel shall conform to A.S.T.M. A-615 for Grade 40.
3. Provide 2" cover to all reinforcing steel except as noted.
4. Laps shall be class "C".
5. Chamfer all exposed edges of concrete 1".

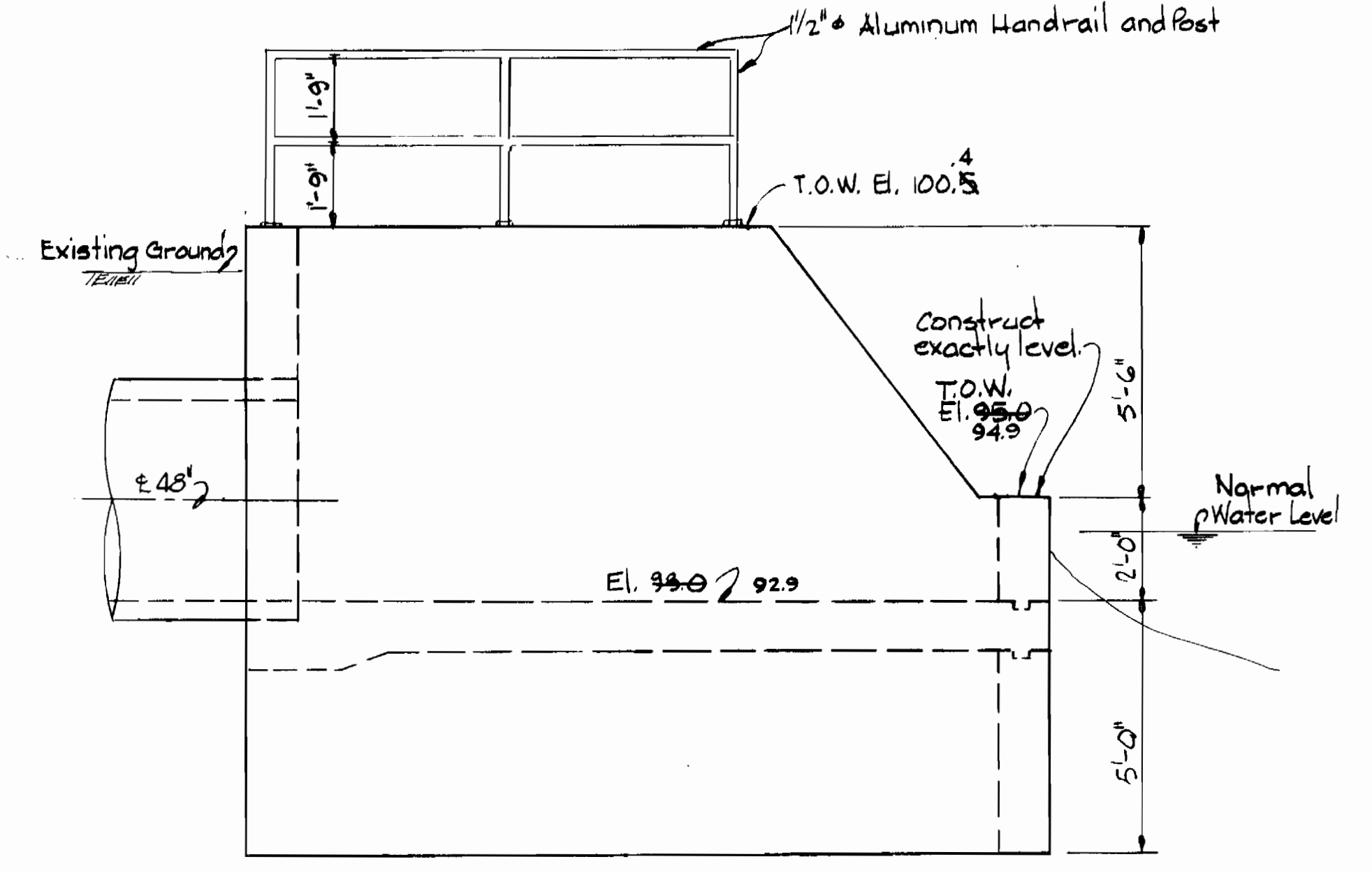


**PLAN**  
Scale: 3/8"=1'-0"

NOTE: Rip-Rap not included in Lump Sum Item 12. Paid for separately under Item B

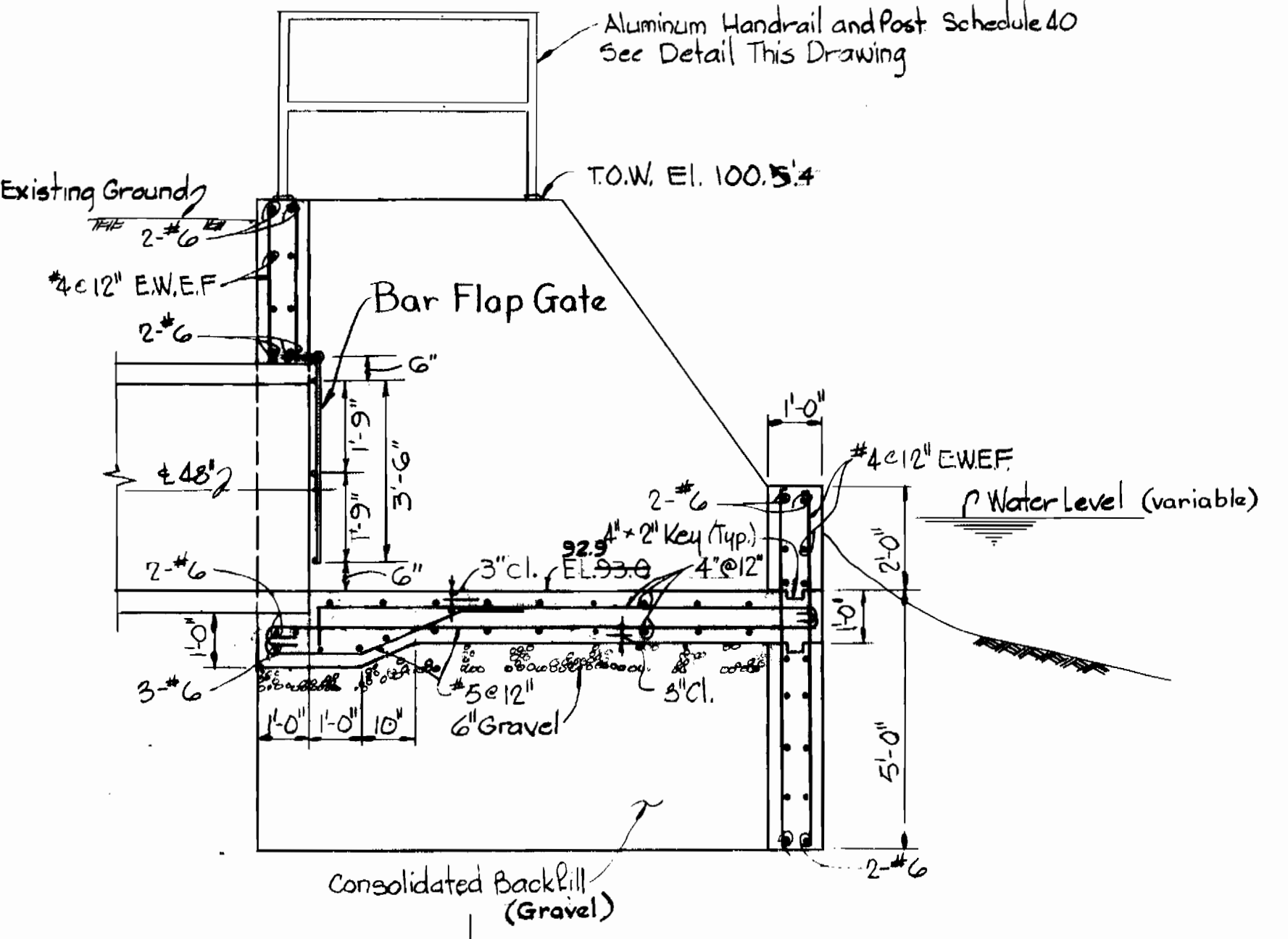


**SECTION 'A-A'**  
Scale: 3/8"=1'-0"

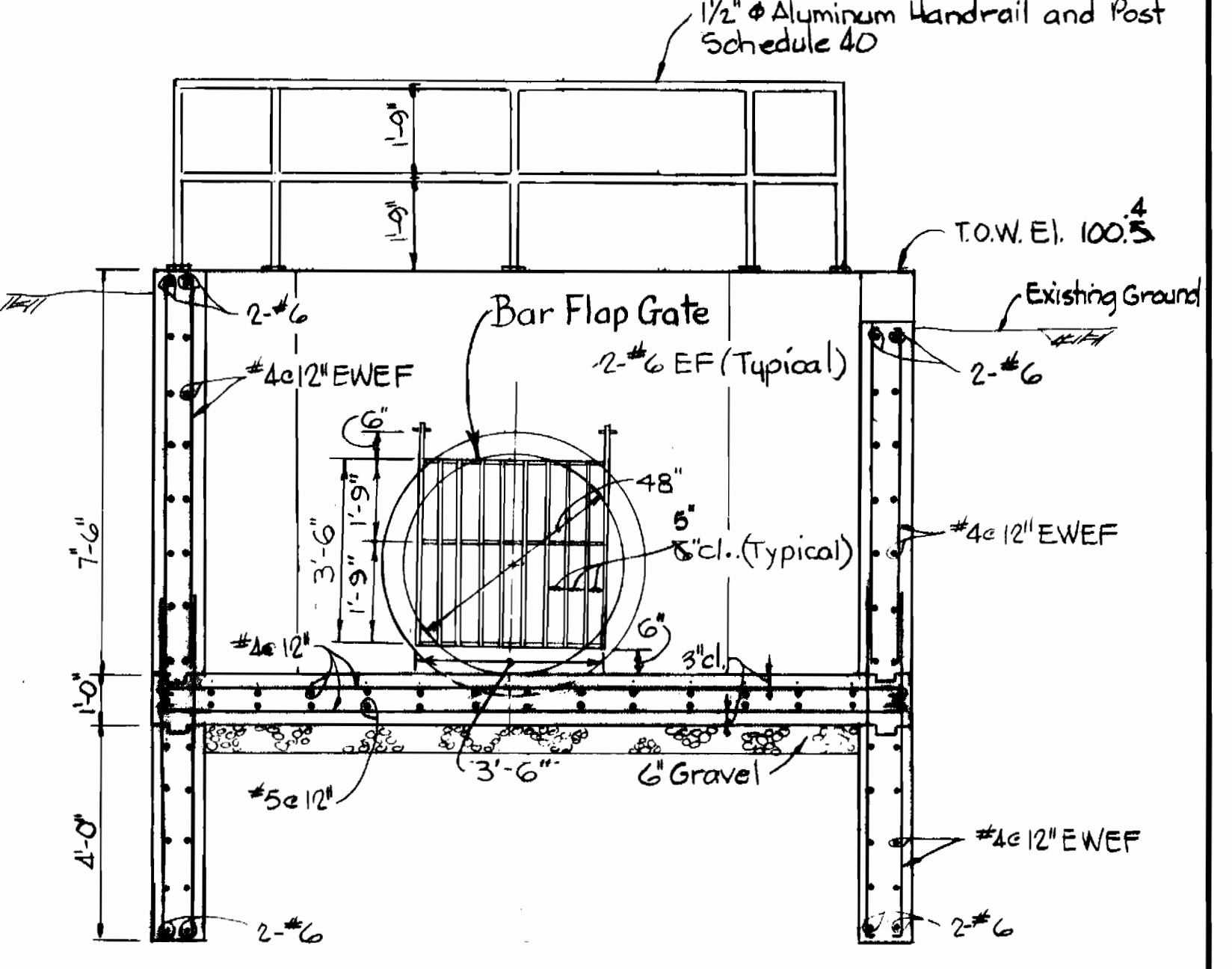


**SECTION 'C-C'**  
Scale: 3/8"=1'-0"

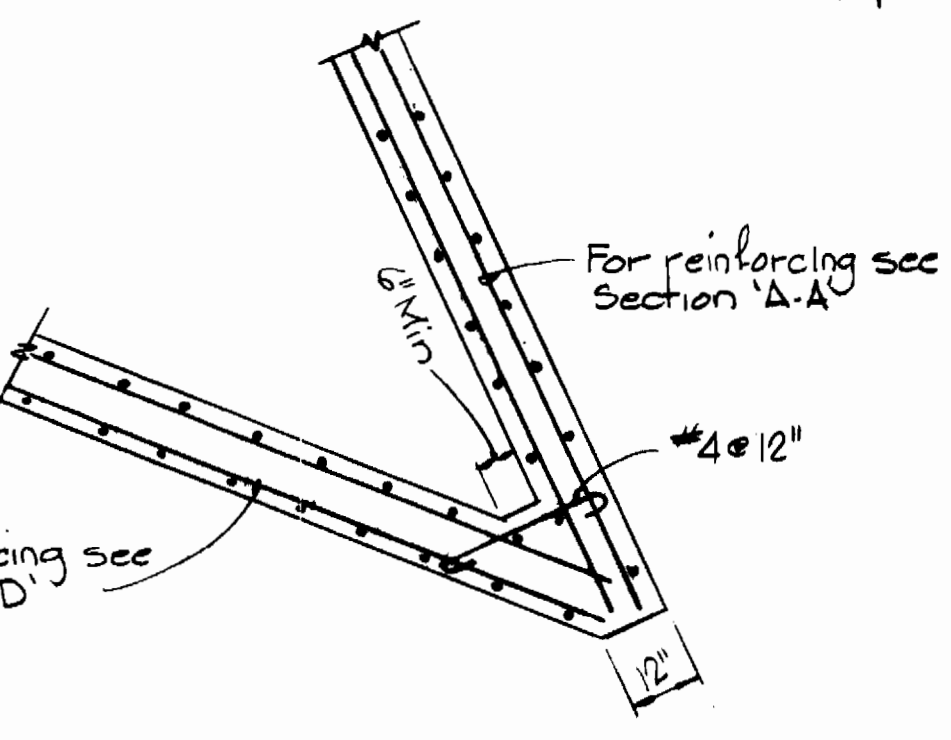
- NOTE**
1. For bar gate use 1" square intermediate undeformed steel bars at 6" on center with 3/8" fillet welds at each point of contact.
  2. Gate shall be shop coat primed and two coats of bituminous paint after erection.



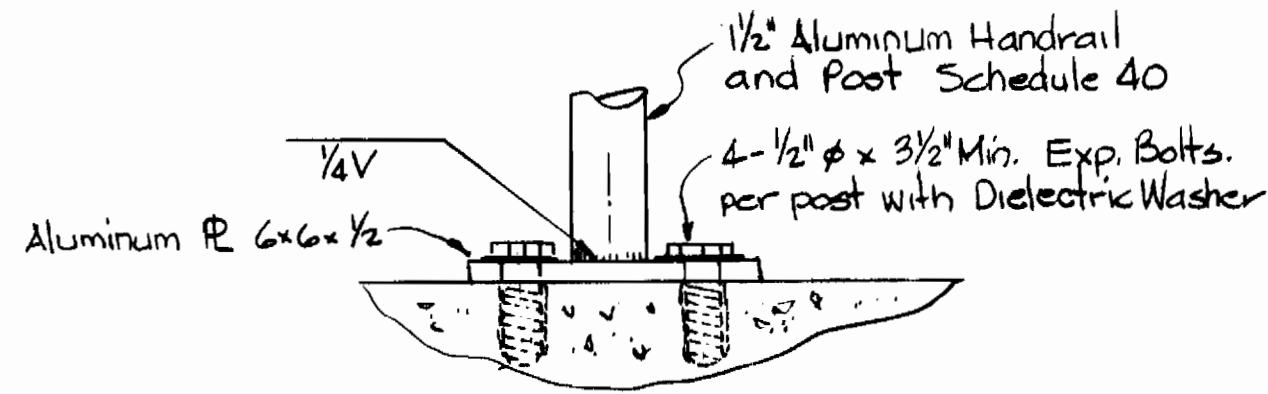
**SECTION 'B-B'**  
Scale: 3/8"=1'-0"



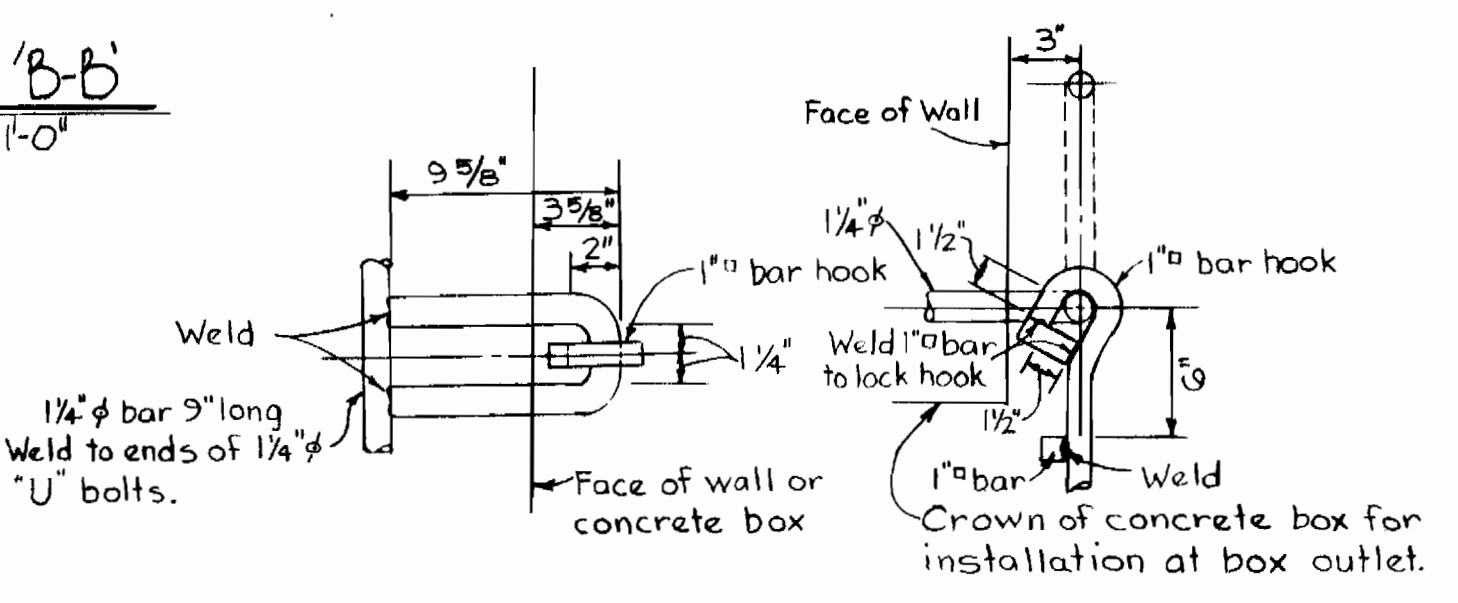
**SECTION 'D-D'**  
Scale: 3/8"=1'-0"



**DETAIL 'E'**  
Scale: 3/8"=1'-0"



**ALUMINUM HANDRAIL POST DETAIL**



**HINGE DETAIL FOR BAR FLAP GATE**

**WHITMAN, REQUARDT & ASSOCIATES**  
ENGINEERS  
1304 ST. PAUL ST.  
BALTIMORE, MARYLAND

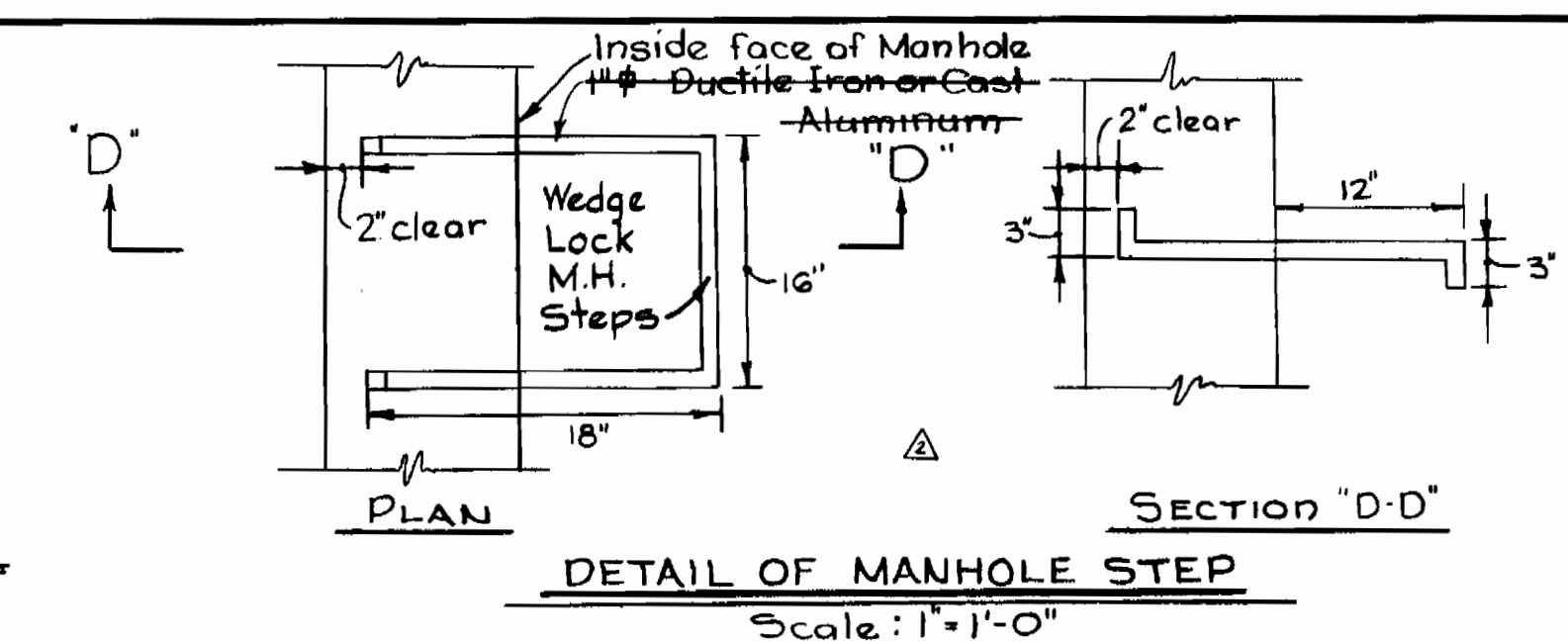
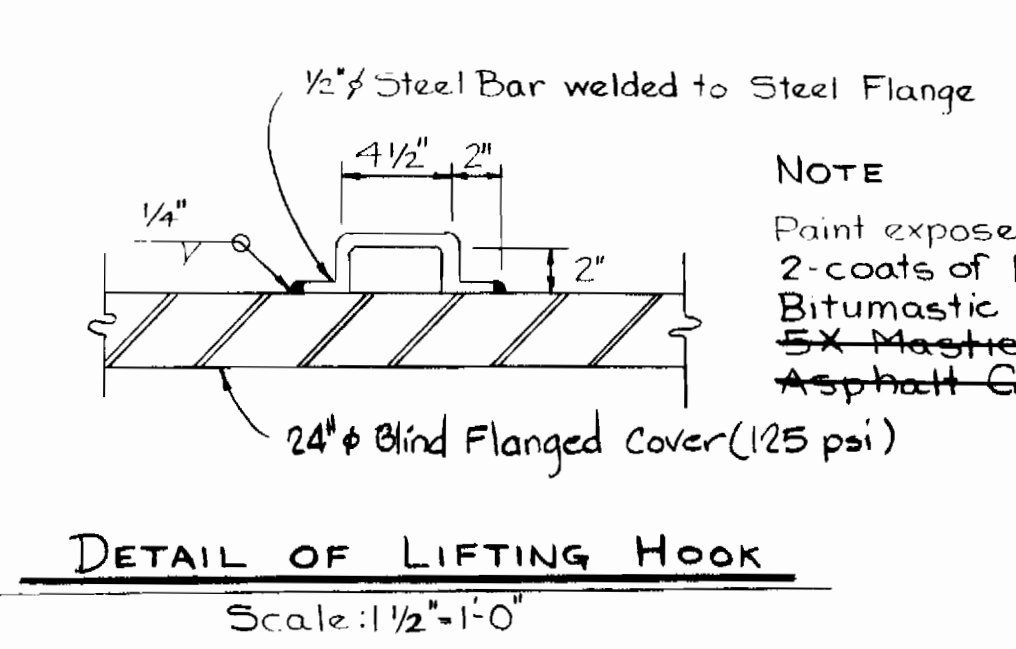
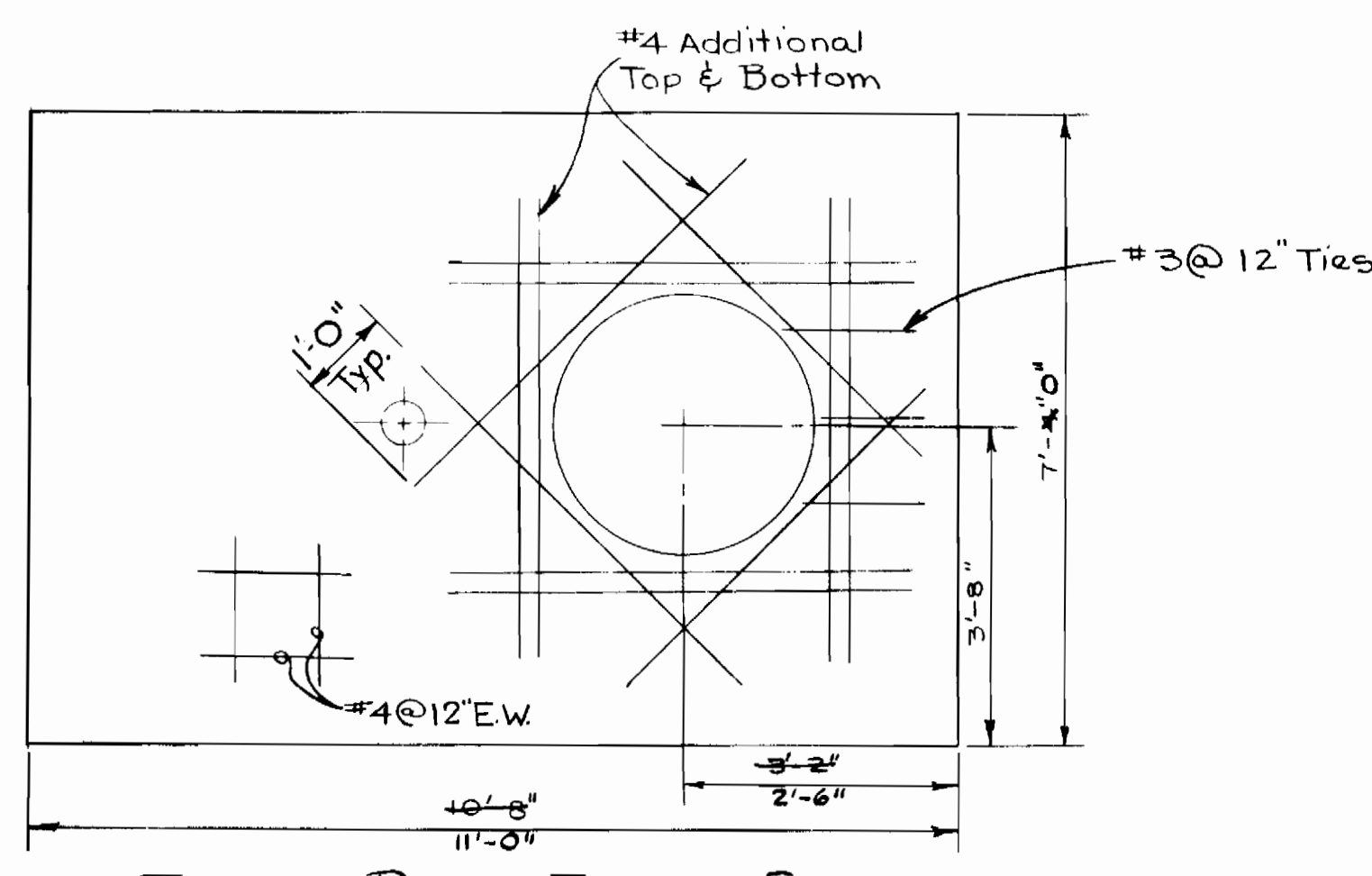
**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND  
DATE: 8/20/79  
Gomez M. Suw  
CHIEF - BUREAU OF ENVIRONMENTAL SERVICES

**CONTRACT NO. 762-S**

**DETAILS OUTFALL DISCHARGE STRUCTURE**

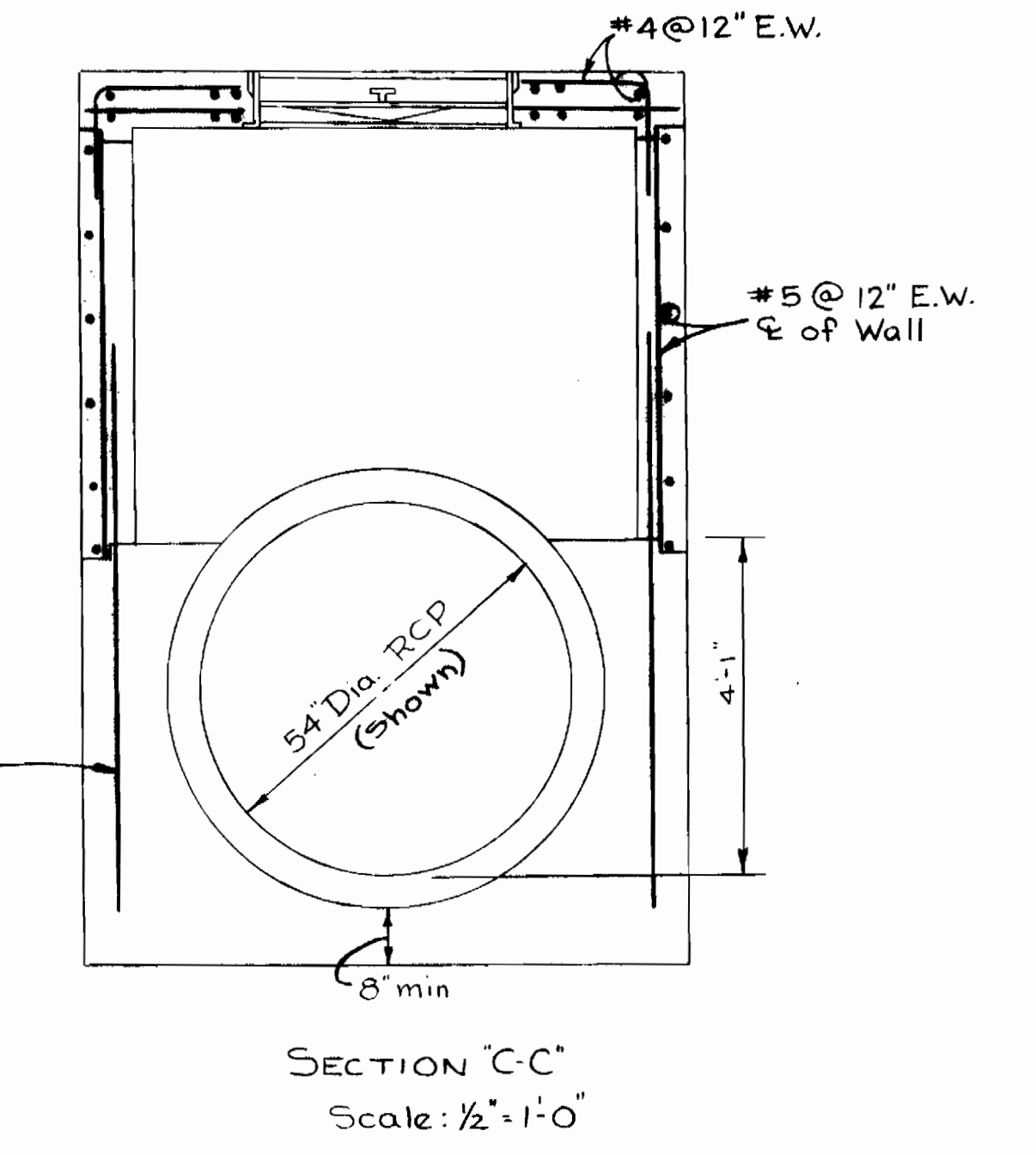
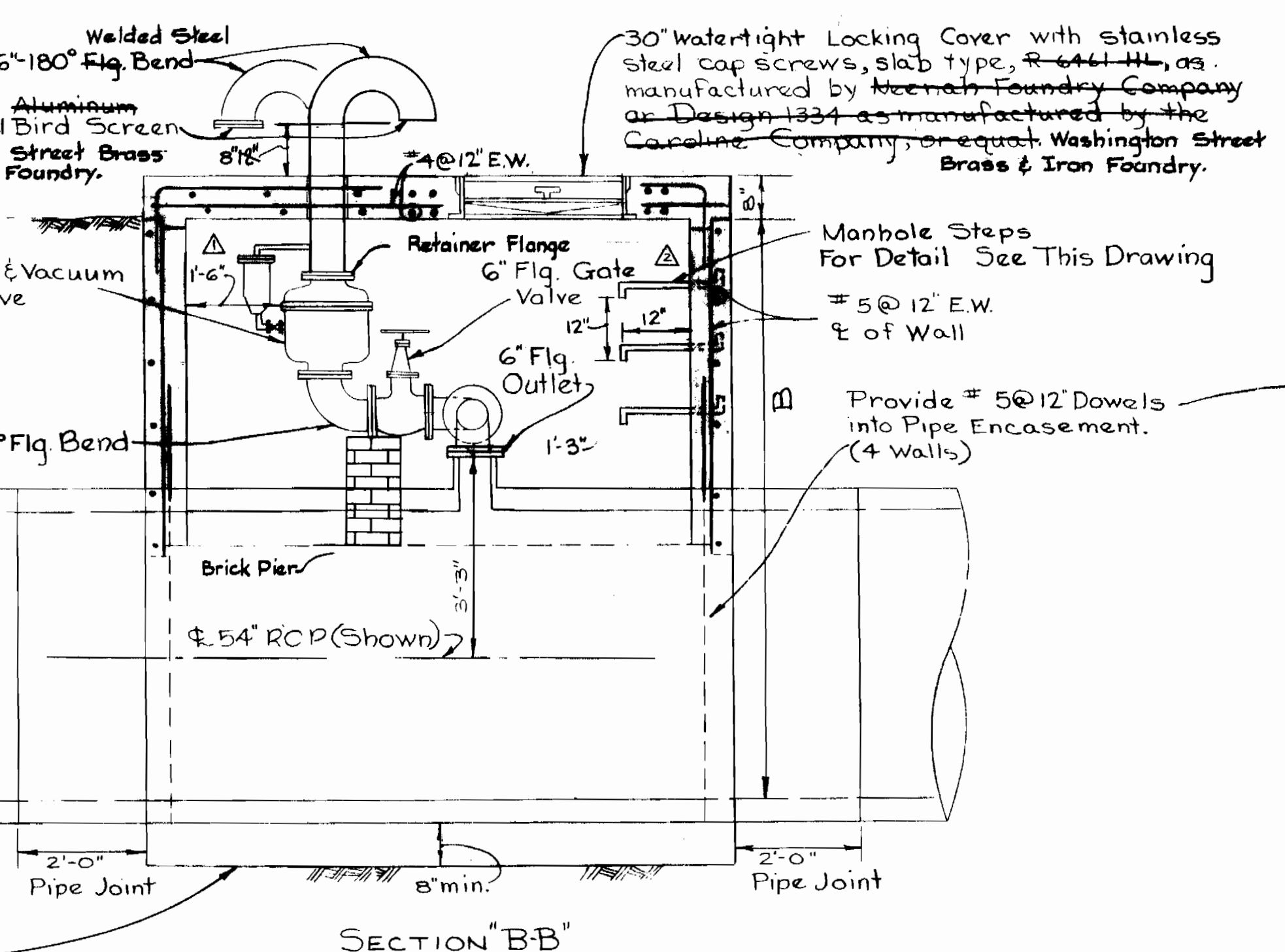
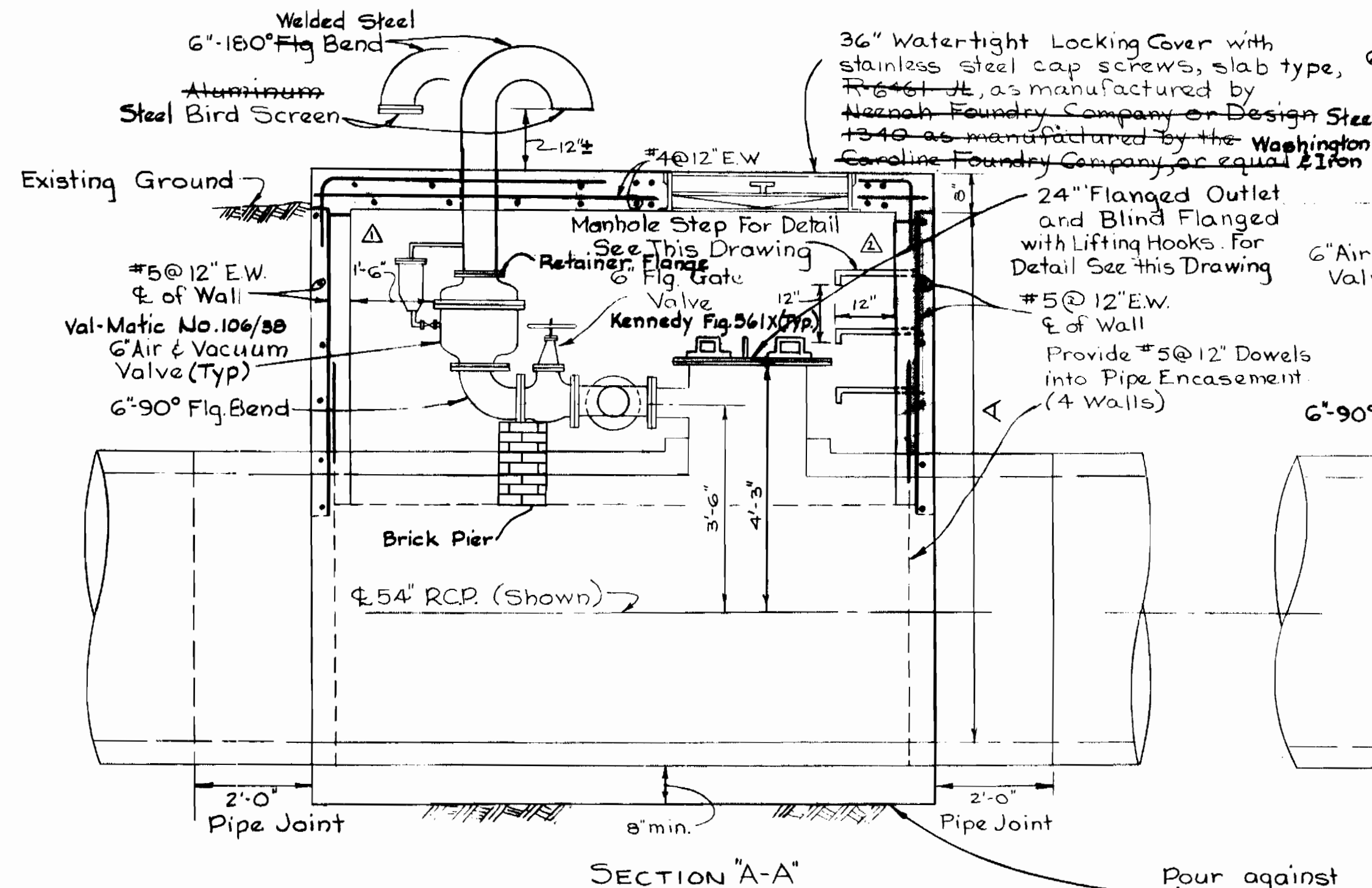
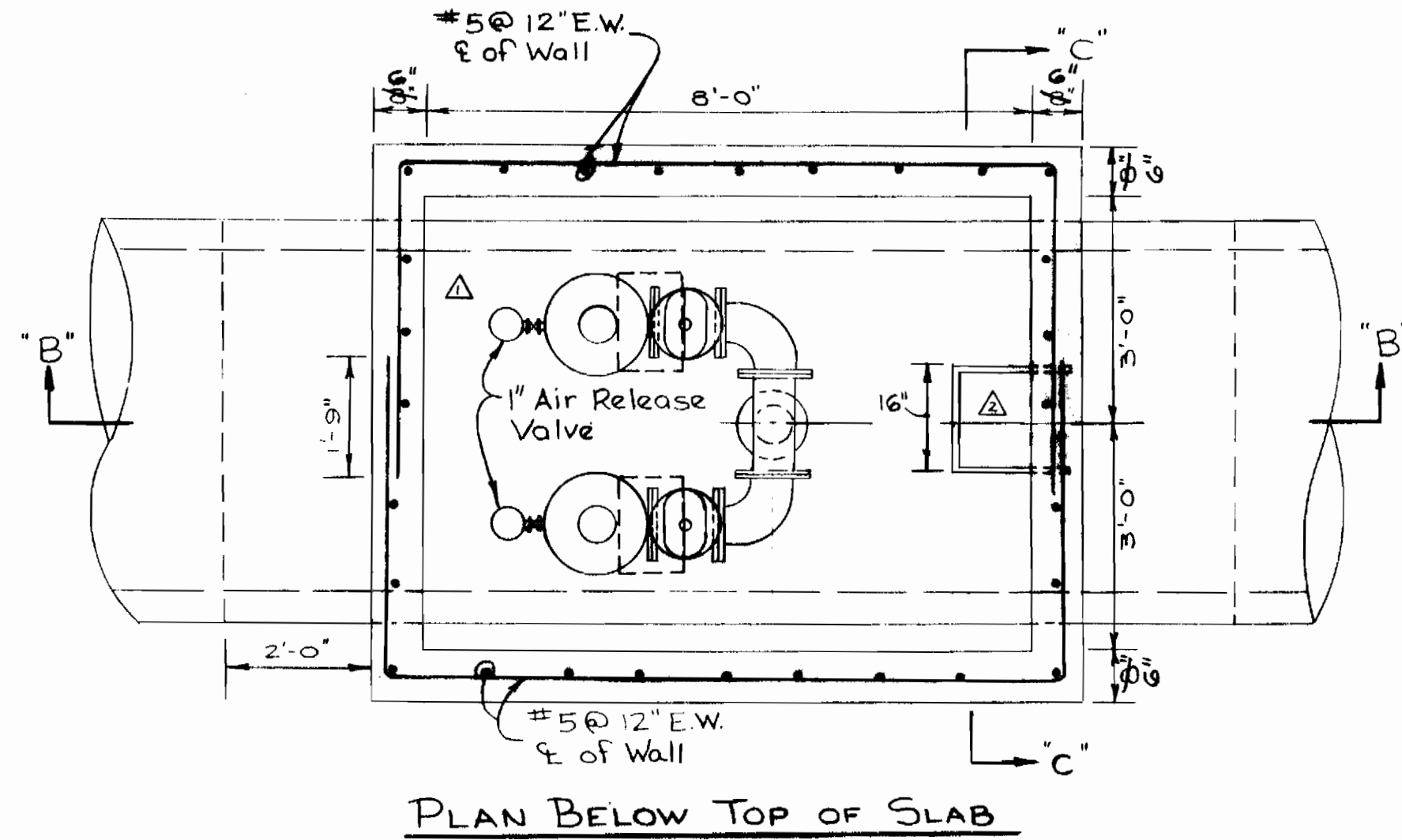
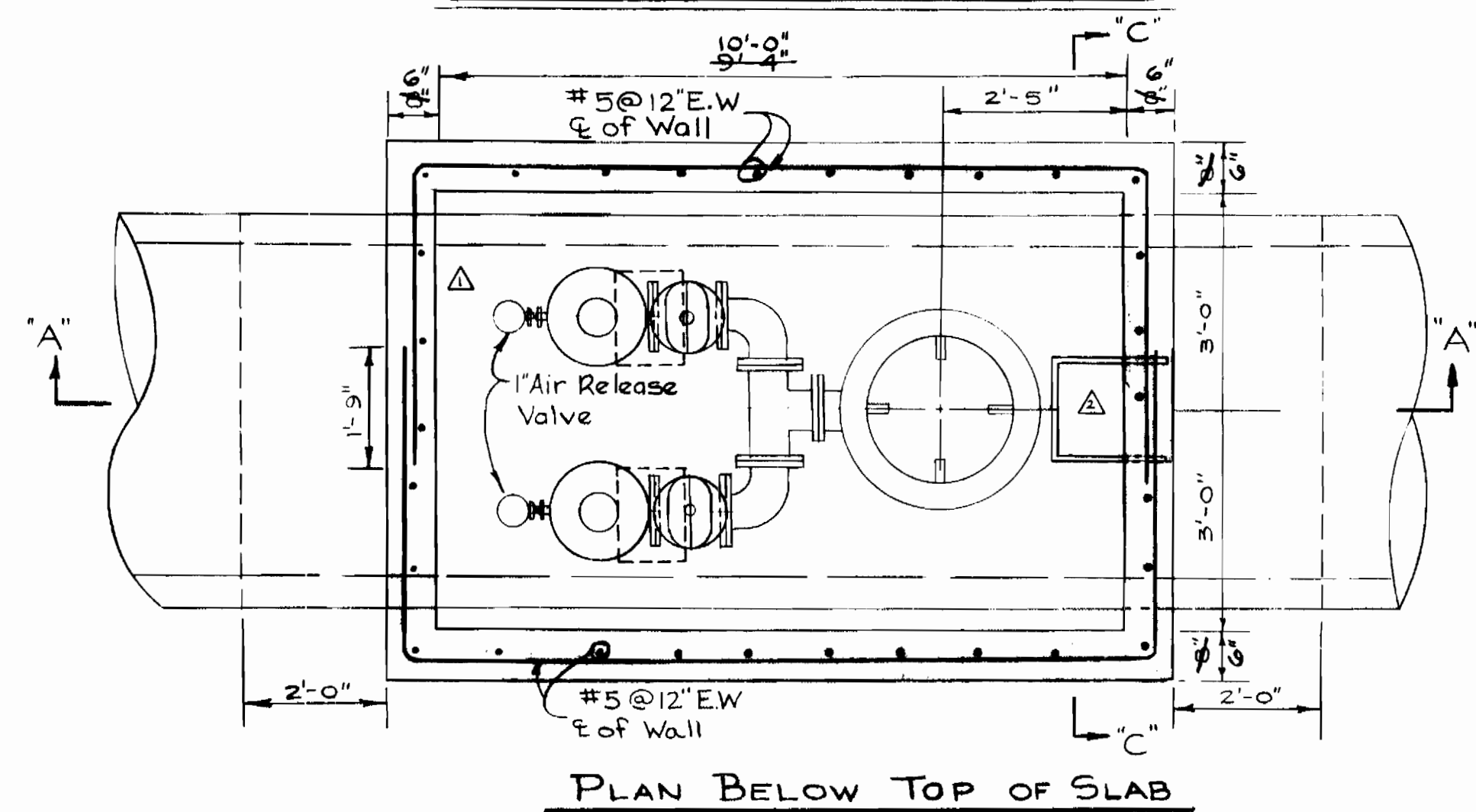
**SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL**

**DRAWING NO. 7 OF 19 SCALE AS SHOWN**



Type	CAR. & MH.	CAR. & MH.	CAR. & MH.	CAR. & MH.	A.R.
Station	6+15*	35+80	57+20	81+45	65+60
Invert Pipe		102.0	99.0	110.5	105.0
Elev. Top Slab		111.7	108.96	120.2	117.81
Dimension	A	9'-0"	9'-3"	9'-0"	
	B				11'-6"

\* See Drawings 10 & 11 for Detail  
**As Built Note:**  
 - Precast Vaults Used  
 A.C. Miller Concrete Products, Inc.  
 Devault, Pa. 19432



DETAIL OF COMBINATION 6" AIR RELEASE AND ACCESS MANHOLE - BID ITEM -13  
 Scale: 1/2" = 1'-0"

DETAIL OF 6" AIR RELEASE VALVE MANHOLE - BID ITEM -14  
 Scale: 1/2" = 1'-0"

NO.	DATE	REVISION
Δ	5-28-80	Revised Manhole Steps
Δ	5-12-80	Revised Air Release Manhole

*Kenneth M. Lord*  
 Professional Engineer & Land Surveyor  
 Savage W.W.T.P. Outfall Sewer  
 Project No. S-4-6044  
 Contract No. 762-S

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 8/22/79 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 762-S	DETAILS AIR RELEASE MANHOLES	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 8 OF 19	SCALE AS SHOWN
					APPENDUM No. 1, 6-5-80	

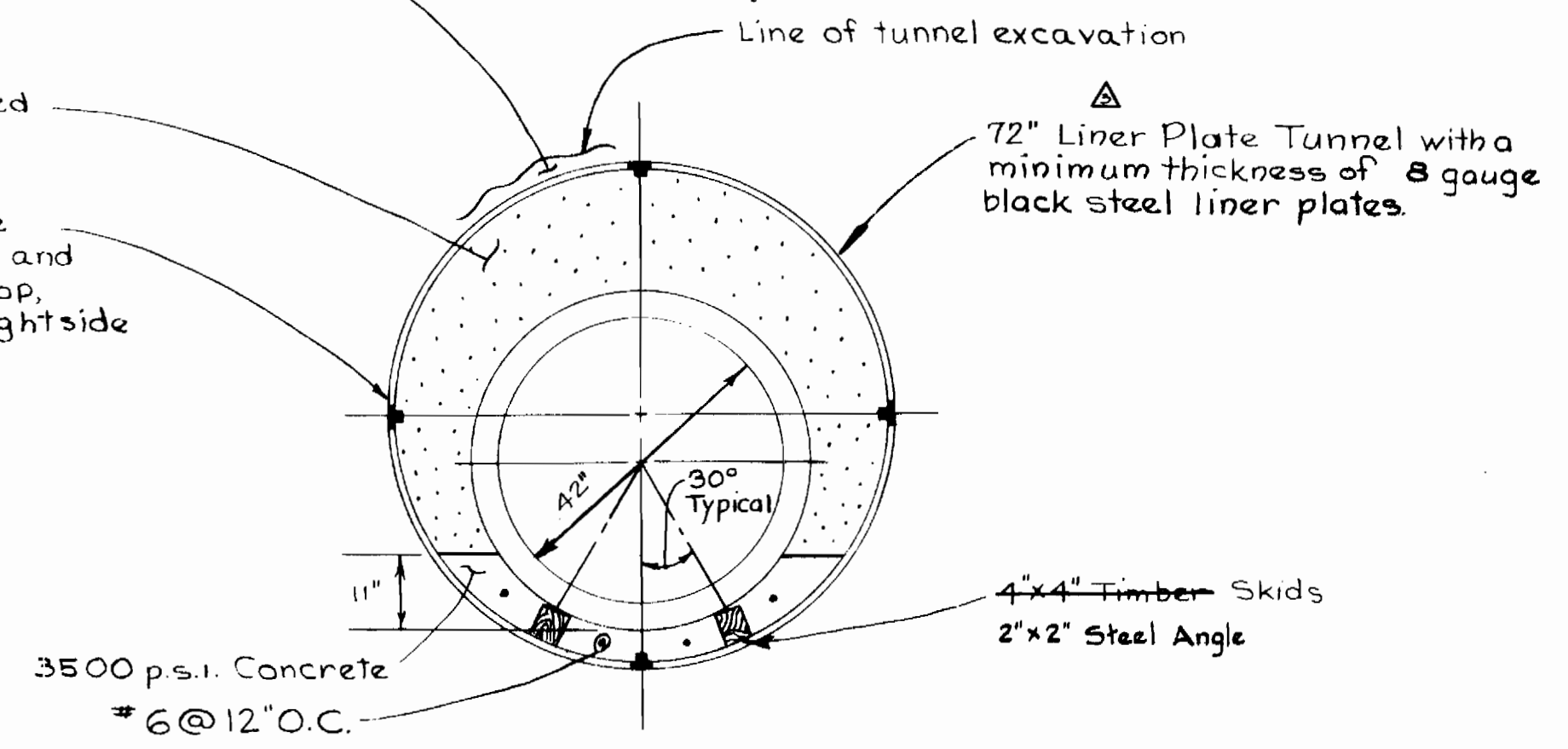


NOTE:  
 Liner Plate to be Hot-Dip Galvanized and all galvanized surfaces are to be treated with Koppers 40 Passivator or equal. Coat both sides all exposed steel inside and out with 2 coats Koppers Butumastic No 300M, or 5X Mastic by Trumbull Asphalt Company, or equal.

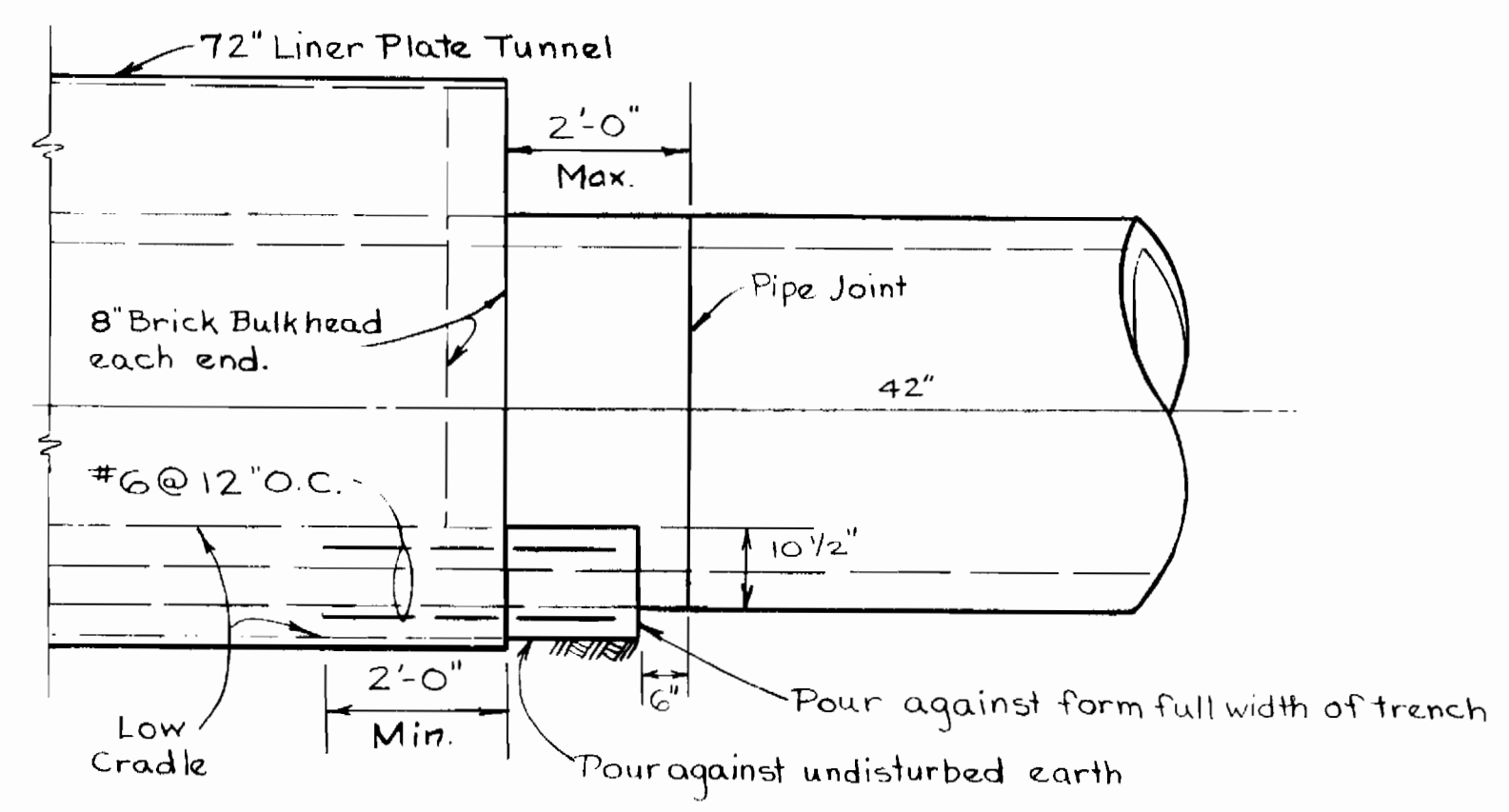
Pump grout or pumpcrete to fill voids between earth and exterior of liner plate.

To be completely filled with concrete grout.

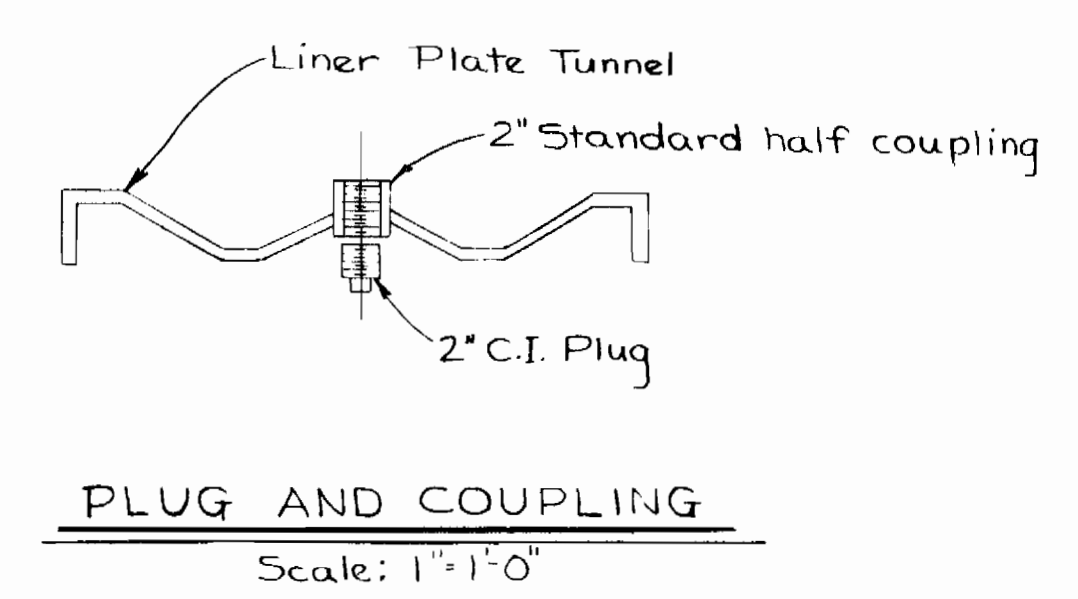
One grout hole to be located in each ring and placed alternately top, left side, bottom, right side top left side, etc.



SECTION AT END OF TUNNEL  
 Scale: 1/2" = 1'-0"



CRADLE AT TUNNEL LIMITS (BOTH ENDS)  
 Scale: 1/2" = 1'-0"

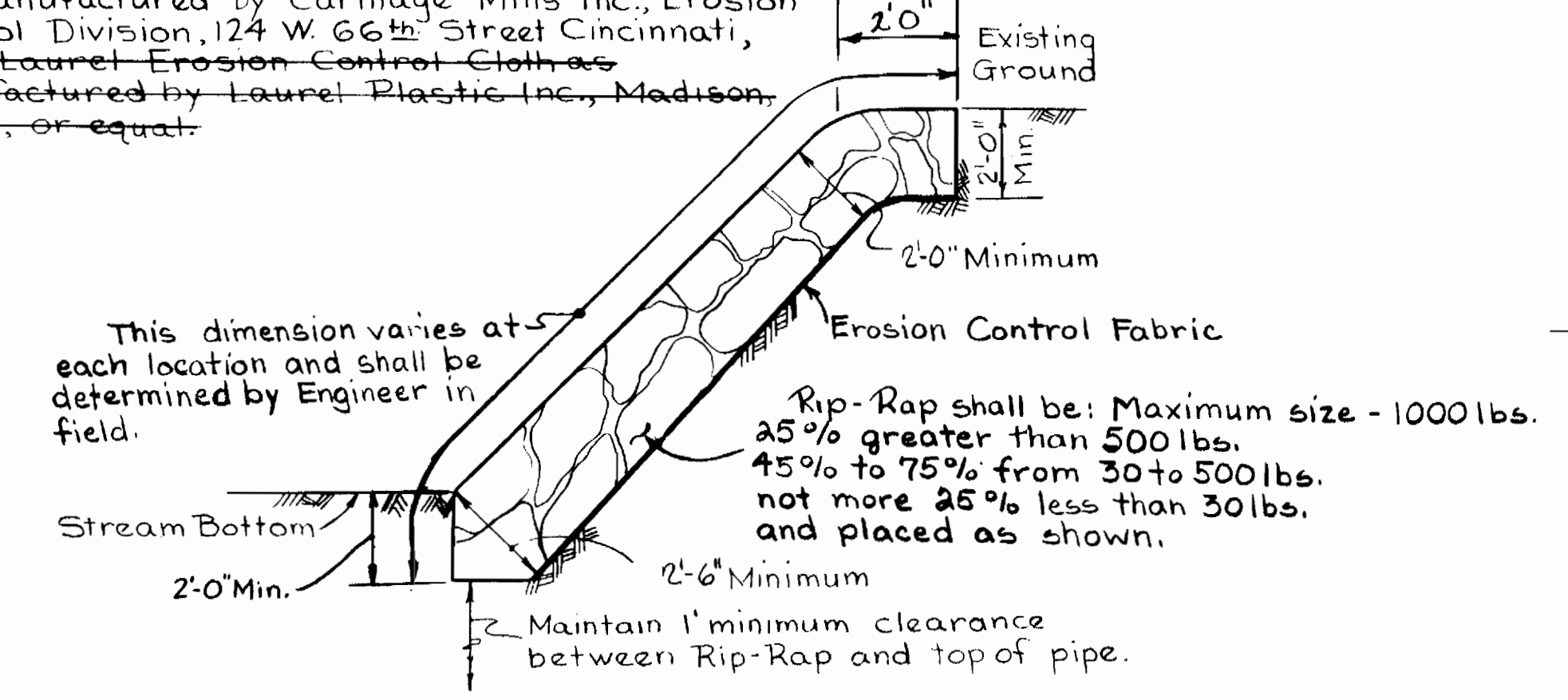


PLUG AND COUPLING  
 Scale: 1" = 1'-0"

DETAIL OF LINER PLATE TUNNEL  
 Scale: As Shown

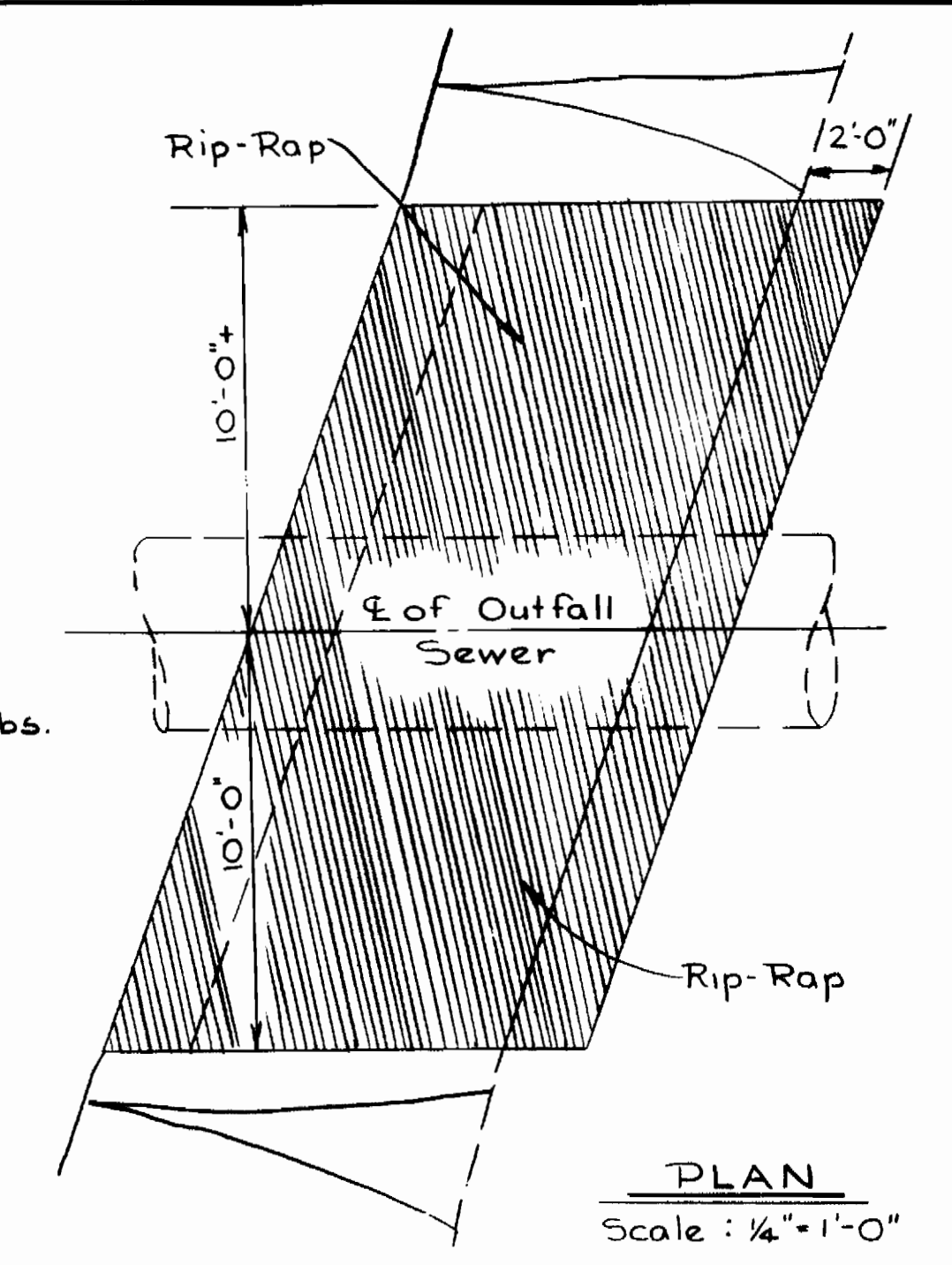
NOTE:

Erosion Control Fabric shall be Poly Filter-X as manufactured by Carthage Mills Inc., Erosion Control Division, 124 W. 66th Street Cincinnati, Ohio, Laurel Erosion Control Cloth as manufactured by Laurel Plastic Inc., Madison, Maine, or equal.

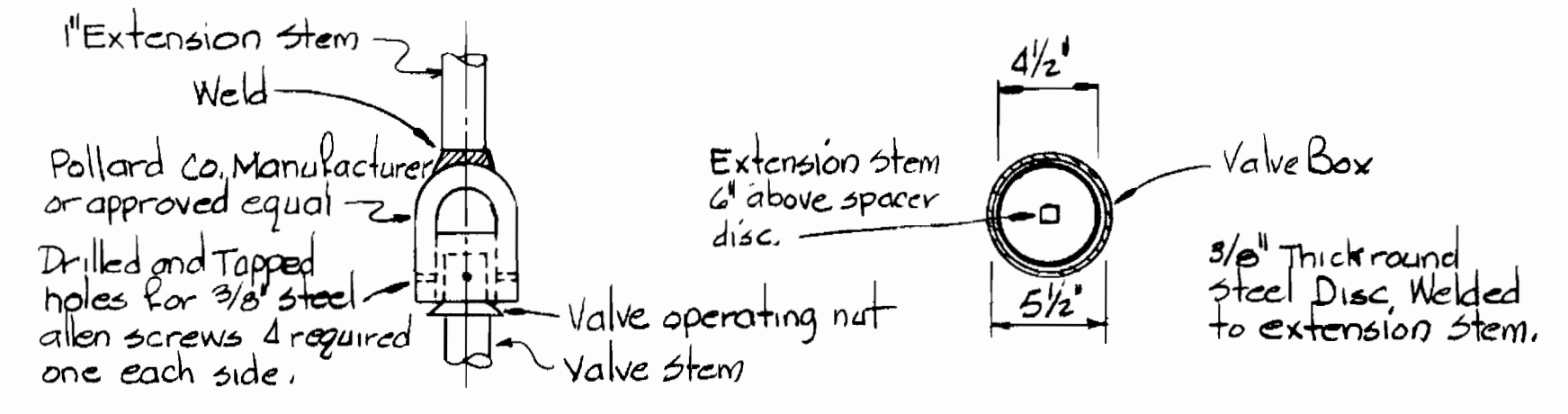


SECTION  
 Scale: 3/8" = 1'-0"

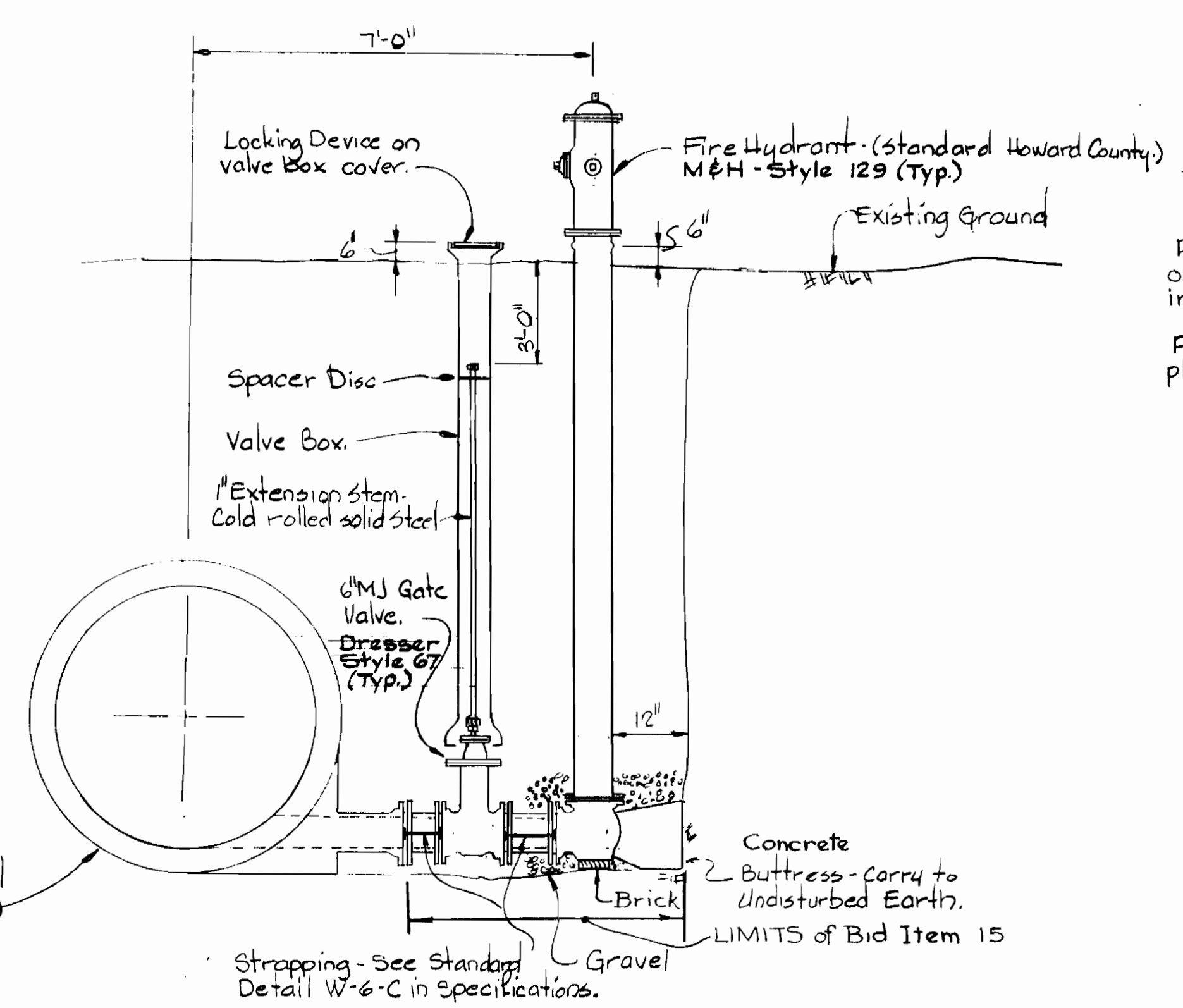
RIp-RAP DETAIL



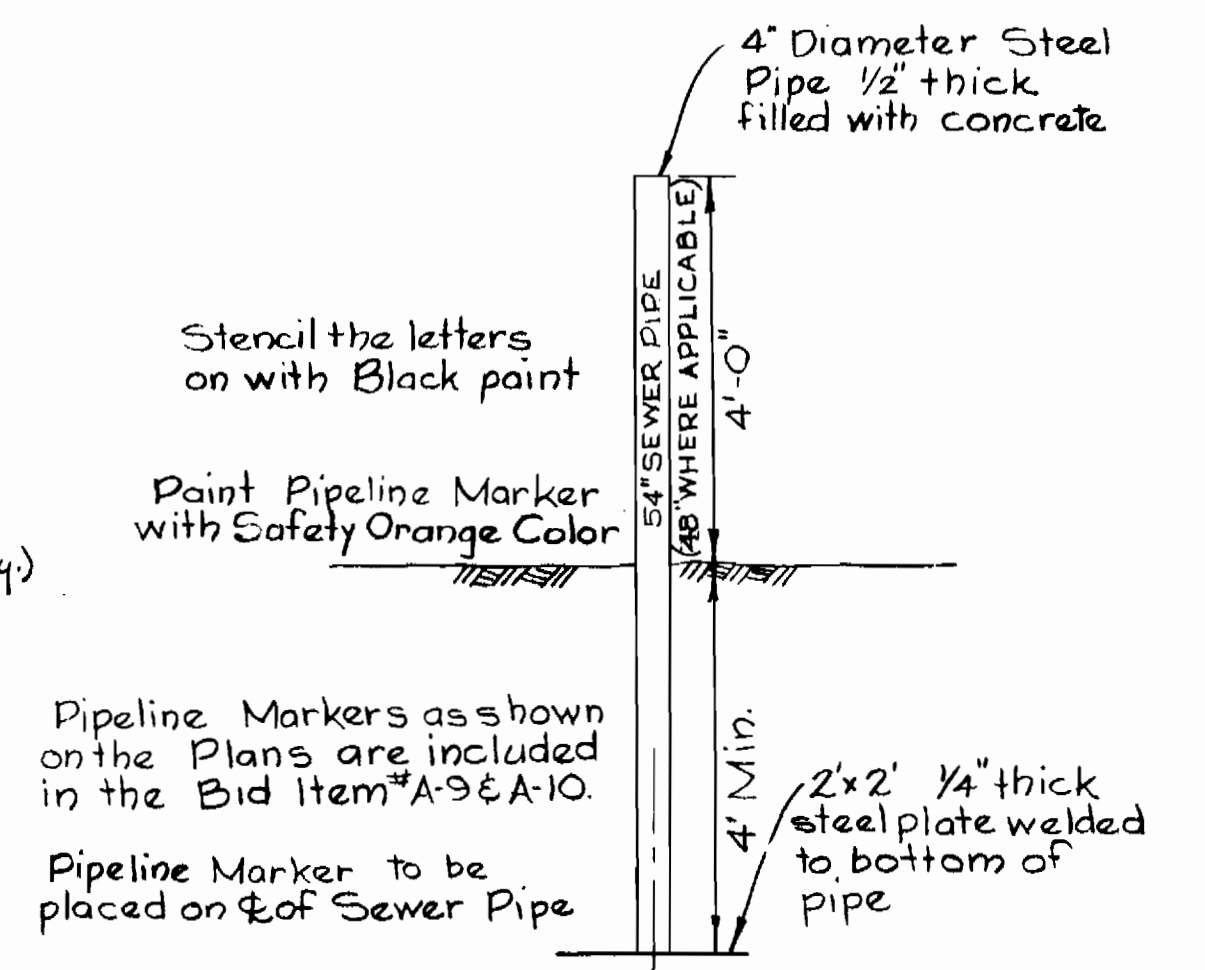
PLAN  
 Scale: 1/4" = 1'-0"



VALVE KEY  
 SPACER  
 DETAIL OF VALVE STEM EXTENSION



DETAIL OF 6-INCH BLOWOFF  
 Scale: 1/2" = 1'-0"



DETAIL OF PIPELINE MARKER  
 Scale: 1/2" = 1'-0"

NO.	DATE	REVISION
1	6-4-80	Revised Note For Liner Plate Tunnel

Savage W.W.T.P. Outfall Sewer  
 Project No. 5-4-6044  
 Contract No. 762-S

WHITMAN, REQUARDT & ASSOCIATES  
 ENGINEERS  
 1304 ST. PAUL ST.  
 BALTIMORE, MARYLAND

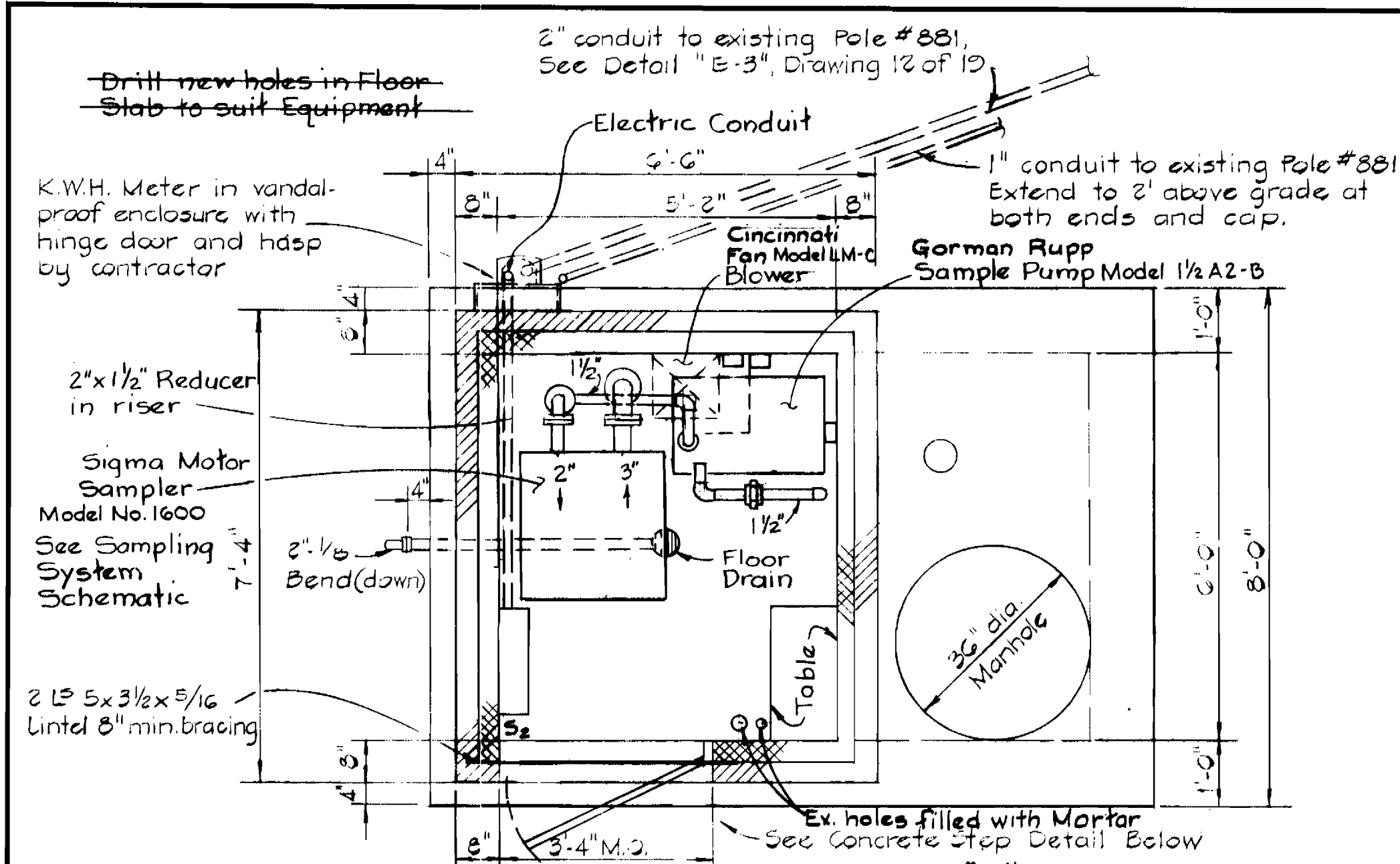
DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 DATE: 6/30/79  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 762-S

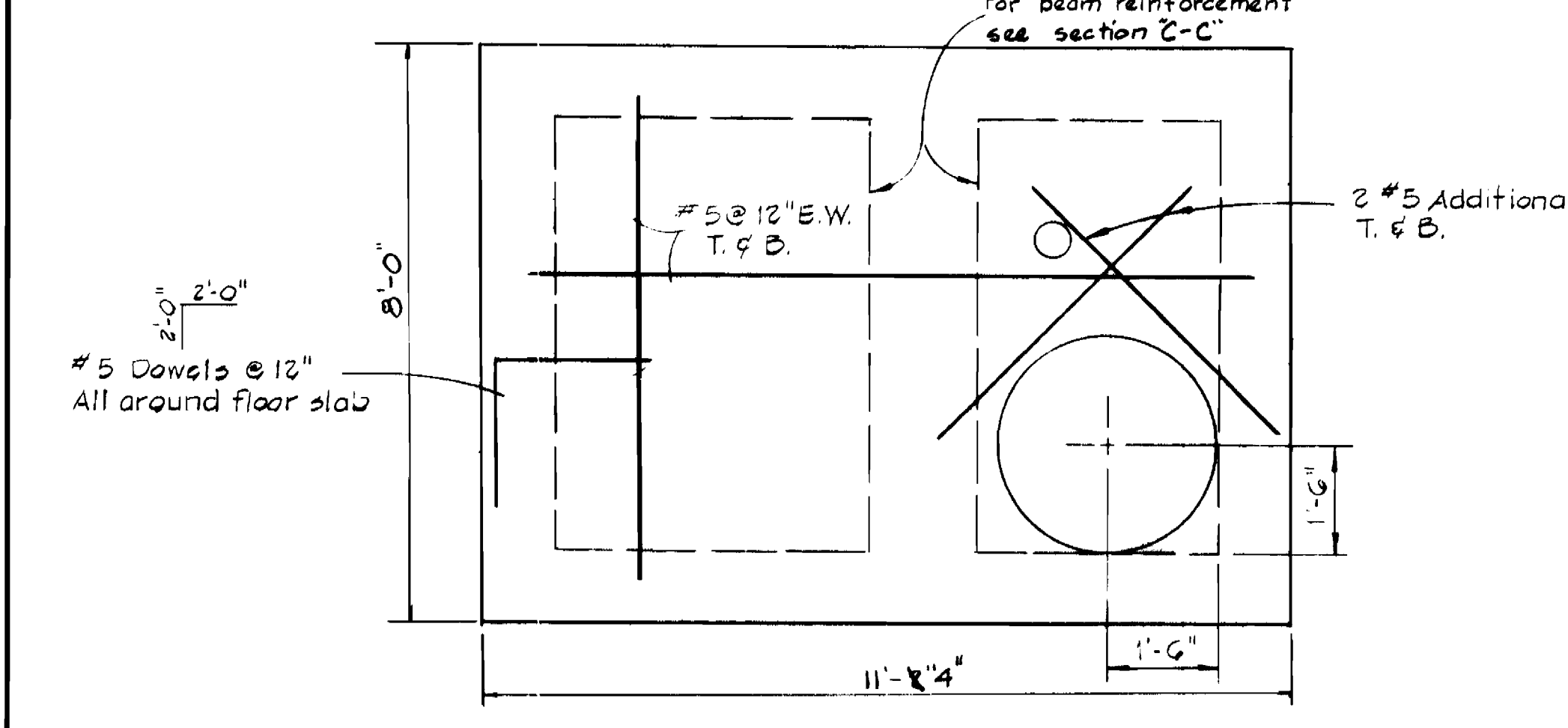
DETAILS - LINER PLATE TUNNEL  
 RIP-RAP - BLOWOFF

SAVAGE WASTEWATER TREATMENT PLANT  
 TREATED EFFLUENT OUTFALL

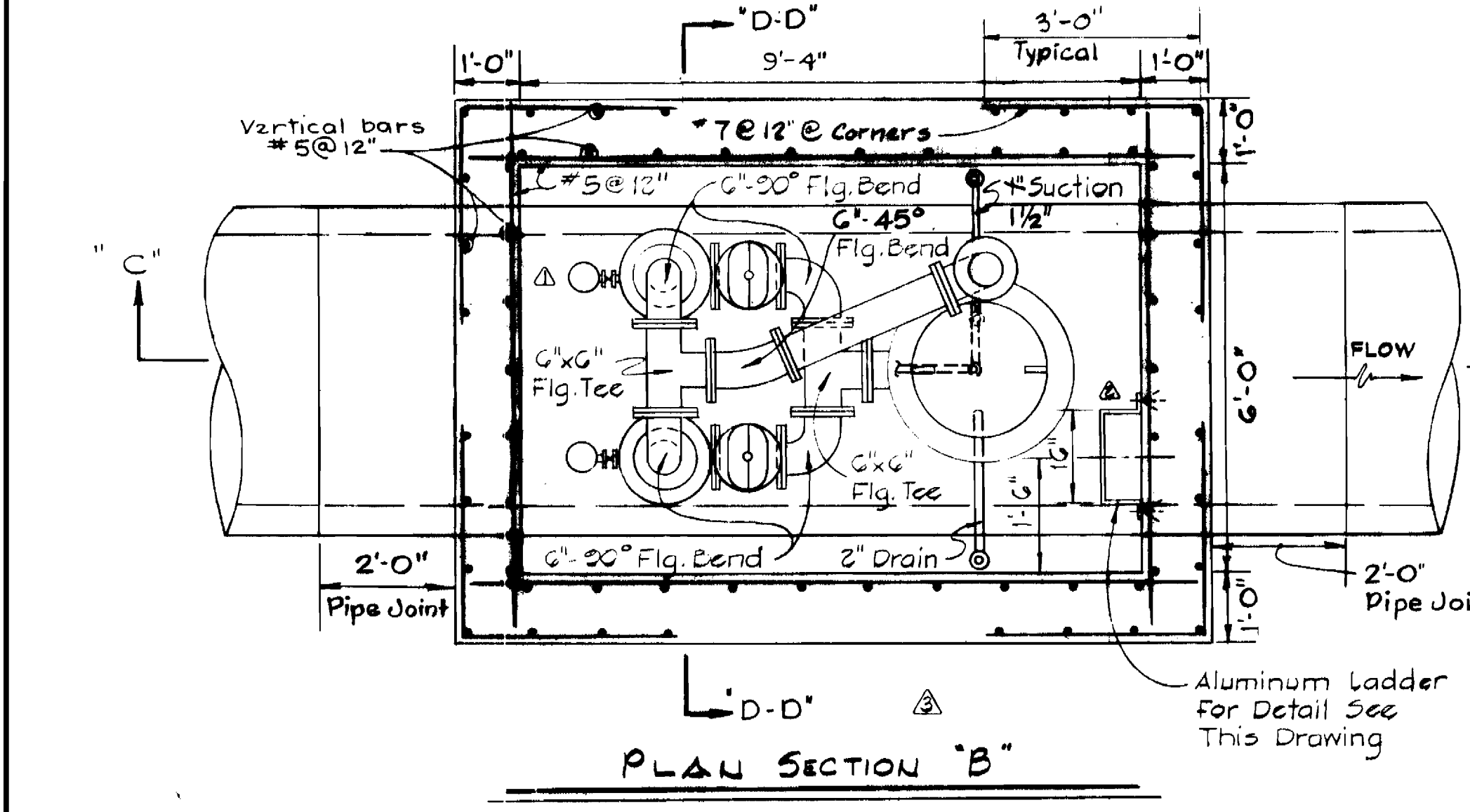
DRAWING NO. 9 OF 19  
 SCALE AS SHOWN



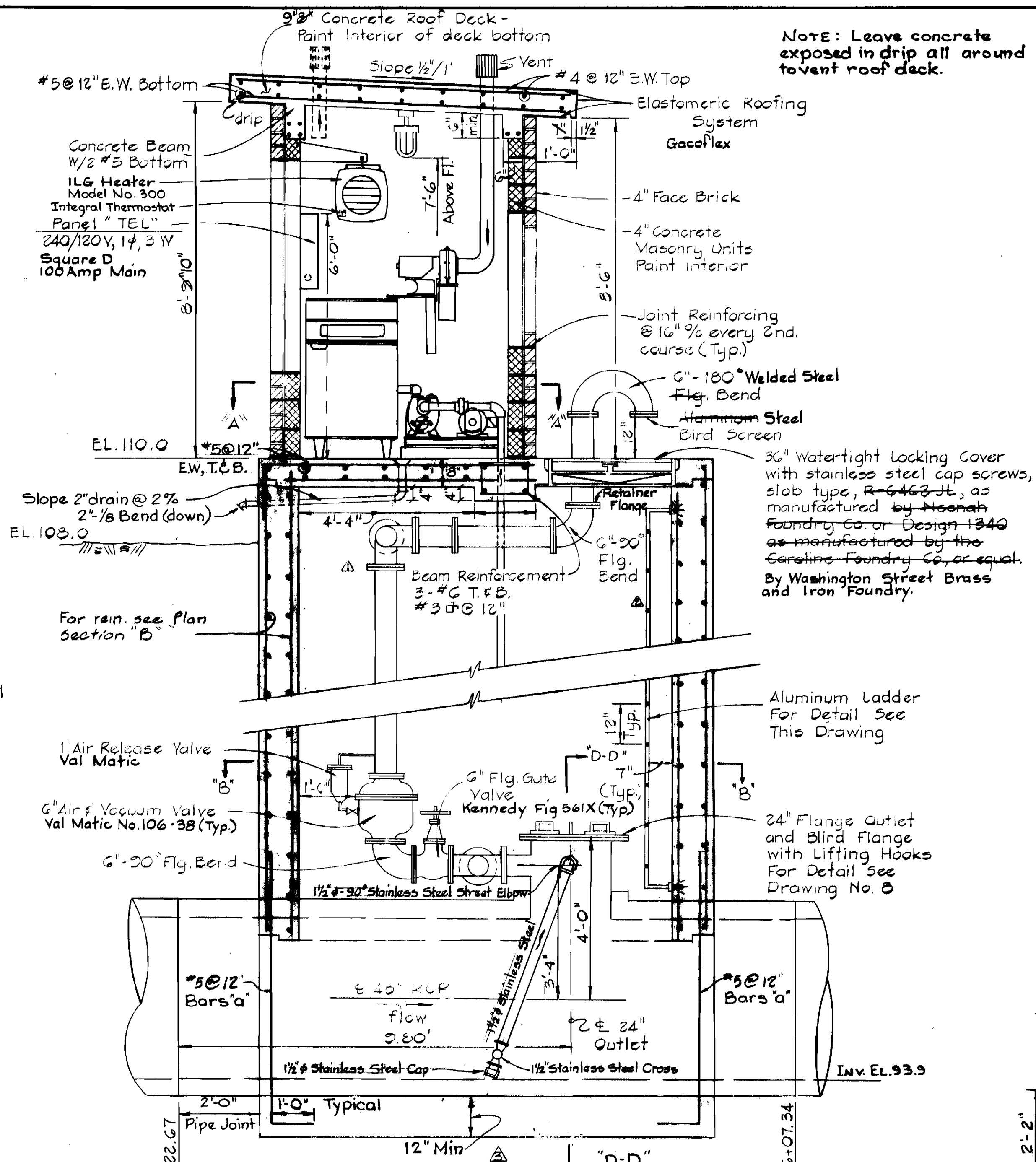
PLAN SECTION "A"



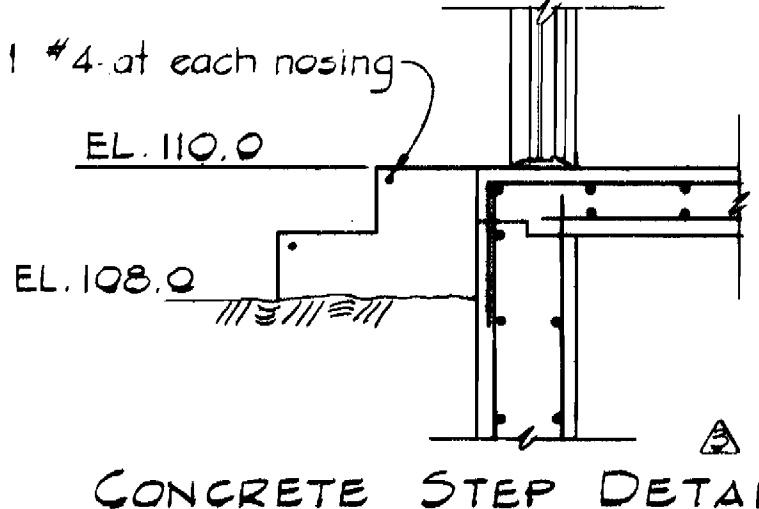
PLAN OF TOP SLAB



PLAN SECTION "B"



SECTION - C-C  
DETAIL OF SAMPLING STATION & AIR RELEASE - ACCESS MANHOLE - BID ITEM 16



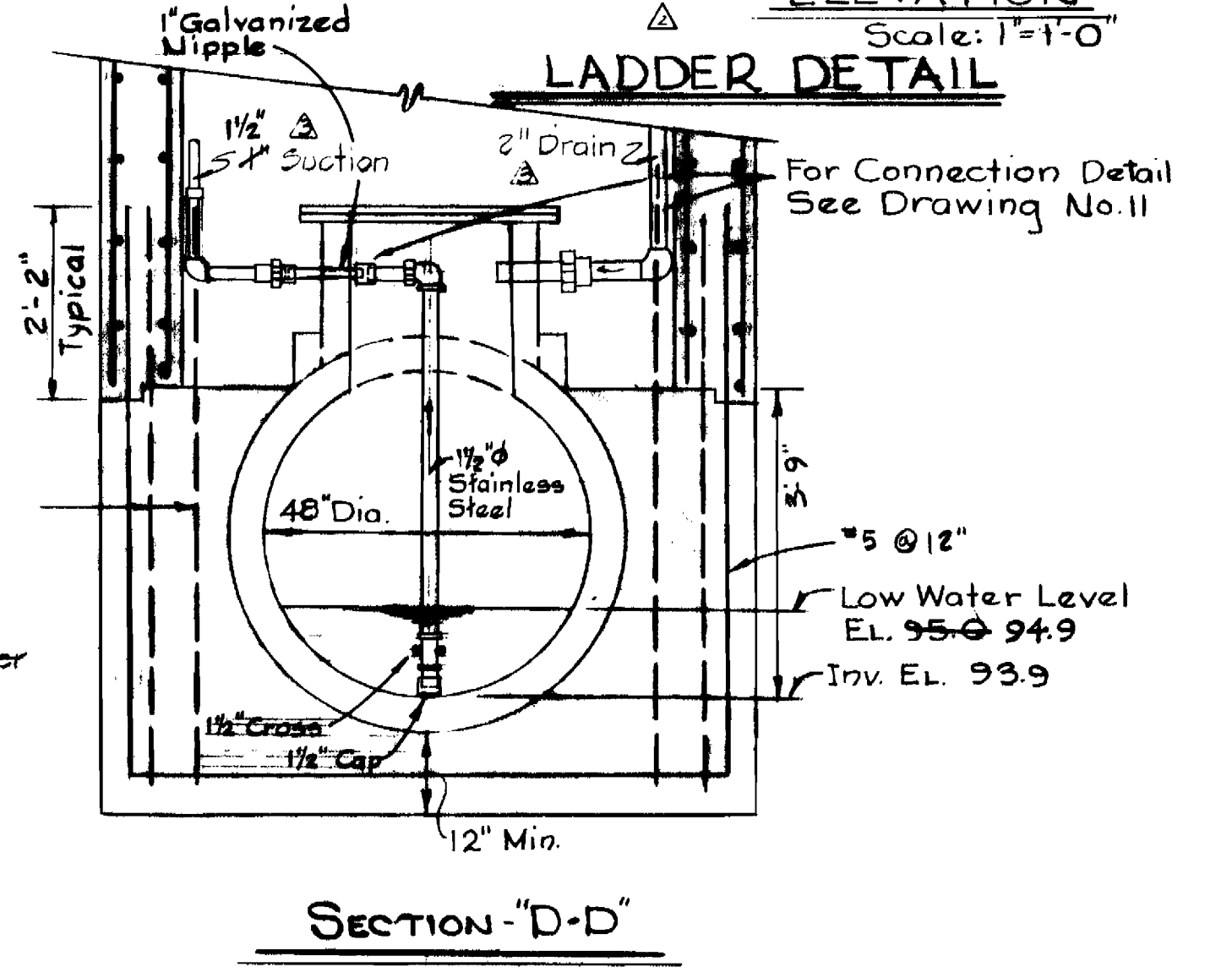
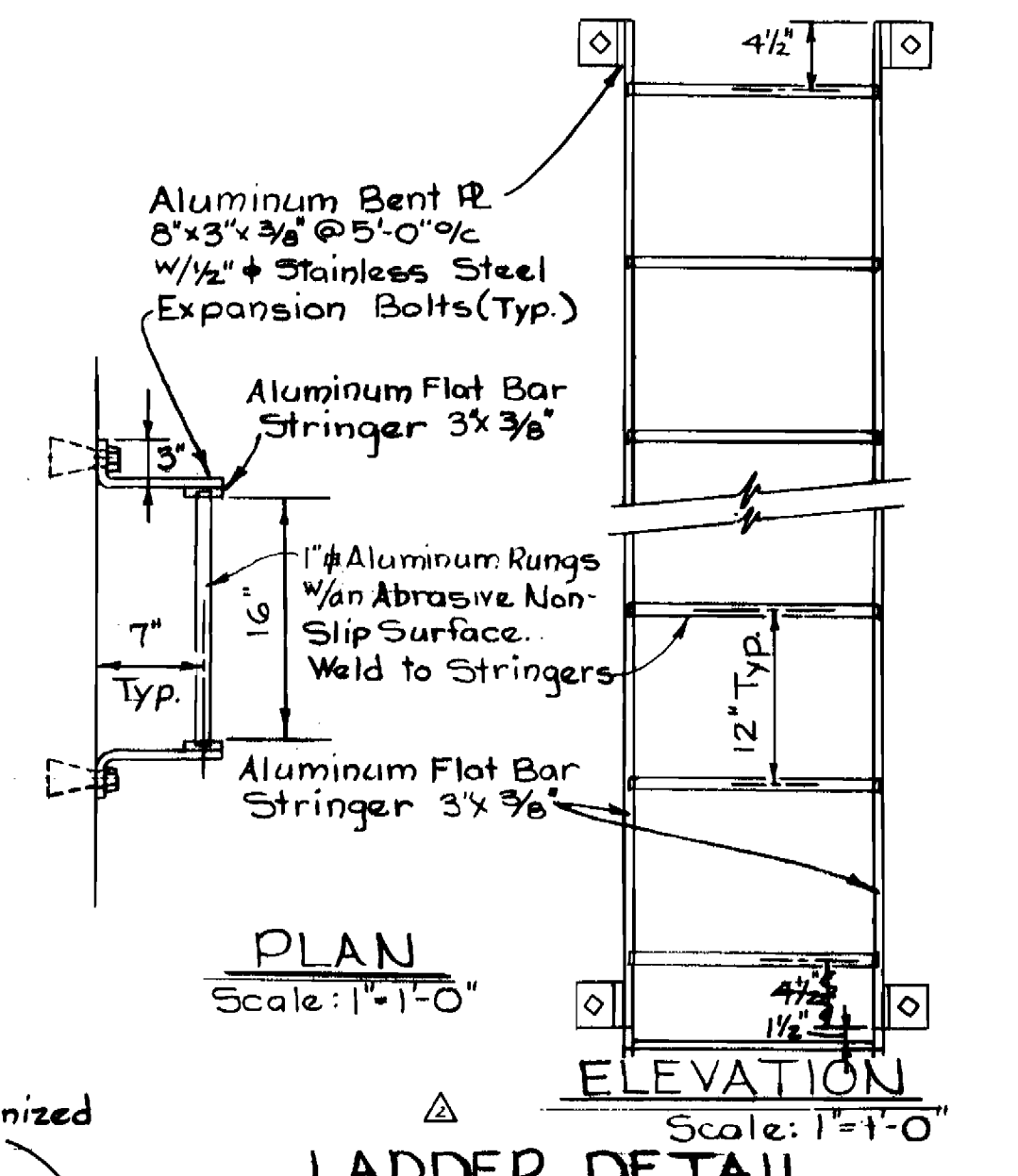
CONCRETE STEP DETAIL

**GENERAL NOTES**

- Concrete shall be Mix #3 in accordance with Maryland State Highway Administration, F<sub>c</sub> = 3500 psi.
- All reinforcement shall conform to A.S.T.M. A 615 - for Grade 60.
- Reinforced concrete is designed and shall be detailed and constructed in accordance with A.C.I. - specification Δ 318-77.
- Provide 2" Cover to all reinforcing steel except as noted.
- Laps shall be class "C".
- Chamfer all exposed edges of concrete 1".

**LEGEND**

- ⊙ Junction Box
- ⊙ Outlet - Duplex Convenience
- ⊙ Outlet - Incandescent, Pendant
- ⊙ Switch - Double Pole
- ⊙ Starter - Manual w/Hand-Off - Auto. Sw.



NO.	DATE	REVISION
Δ	2-11-81	Station Orientation
Δ	5-28-80	Revised Ladder Detail
Δ	5-12-80	Revised Air Release Manhole

**WHITMAN, REQUARDT & ASSOCIATES**  
ENGINEERS  
1304 ST. PAUL ST.  
BALTIMORE, MARYLAND

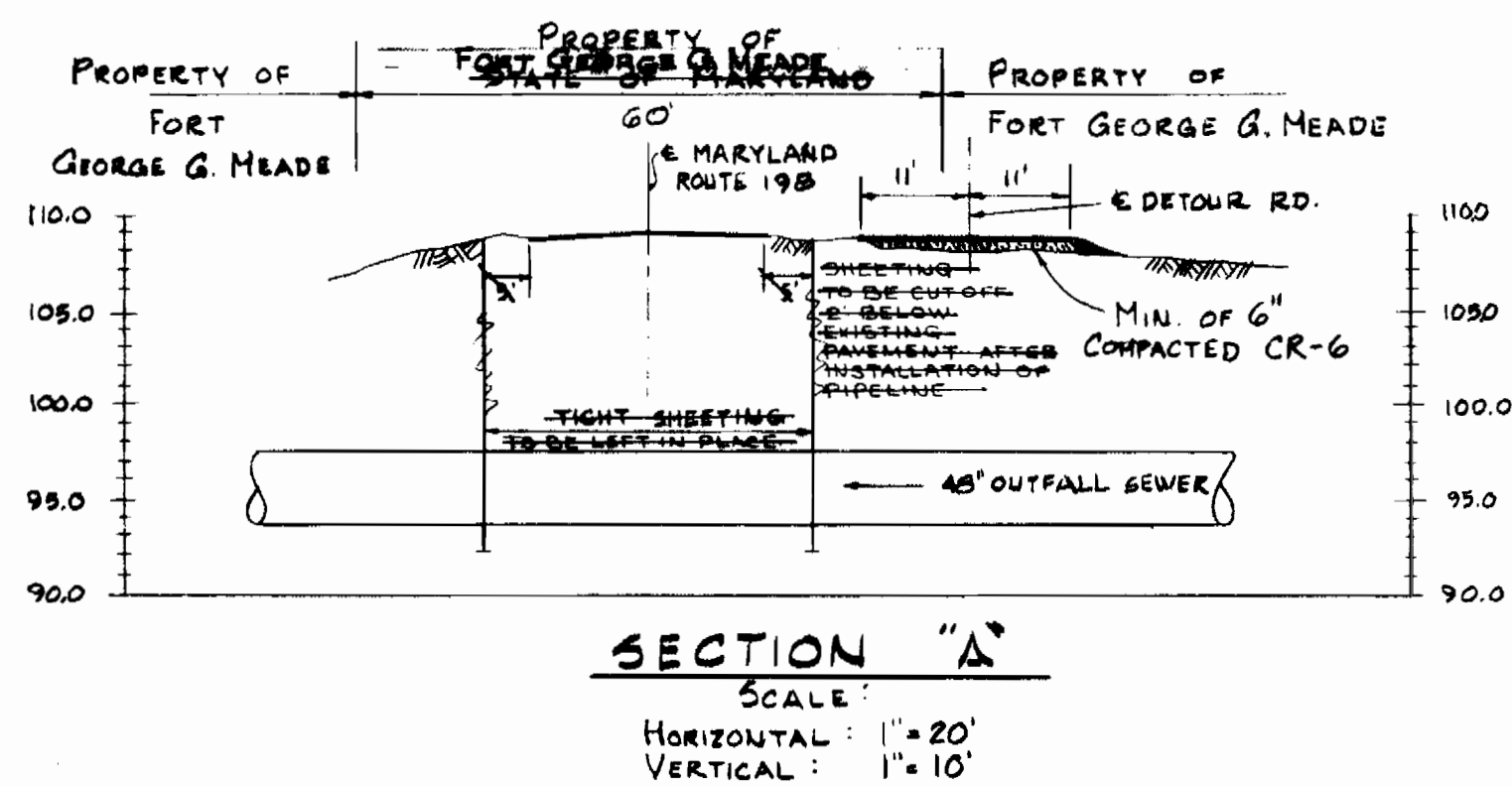
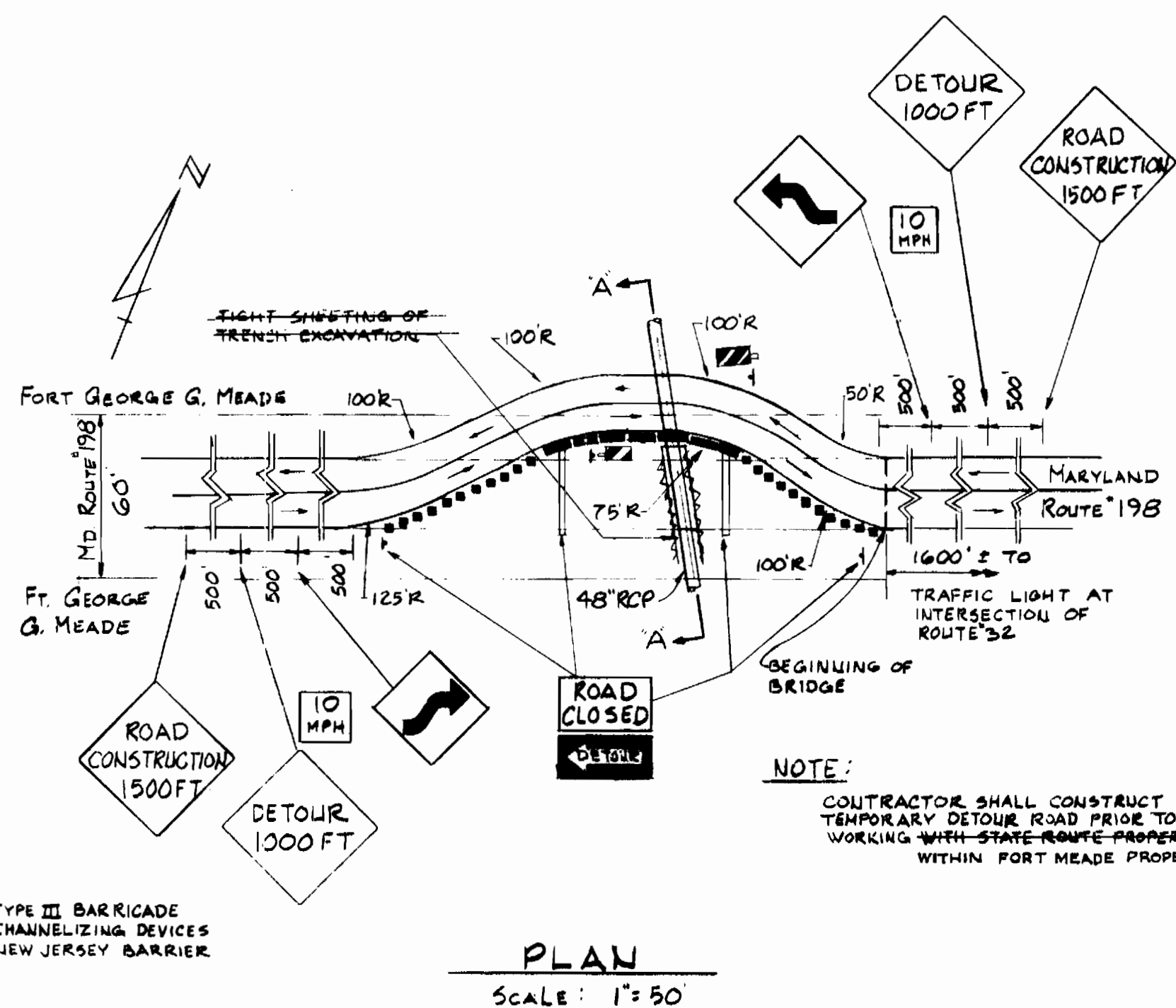
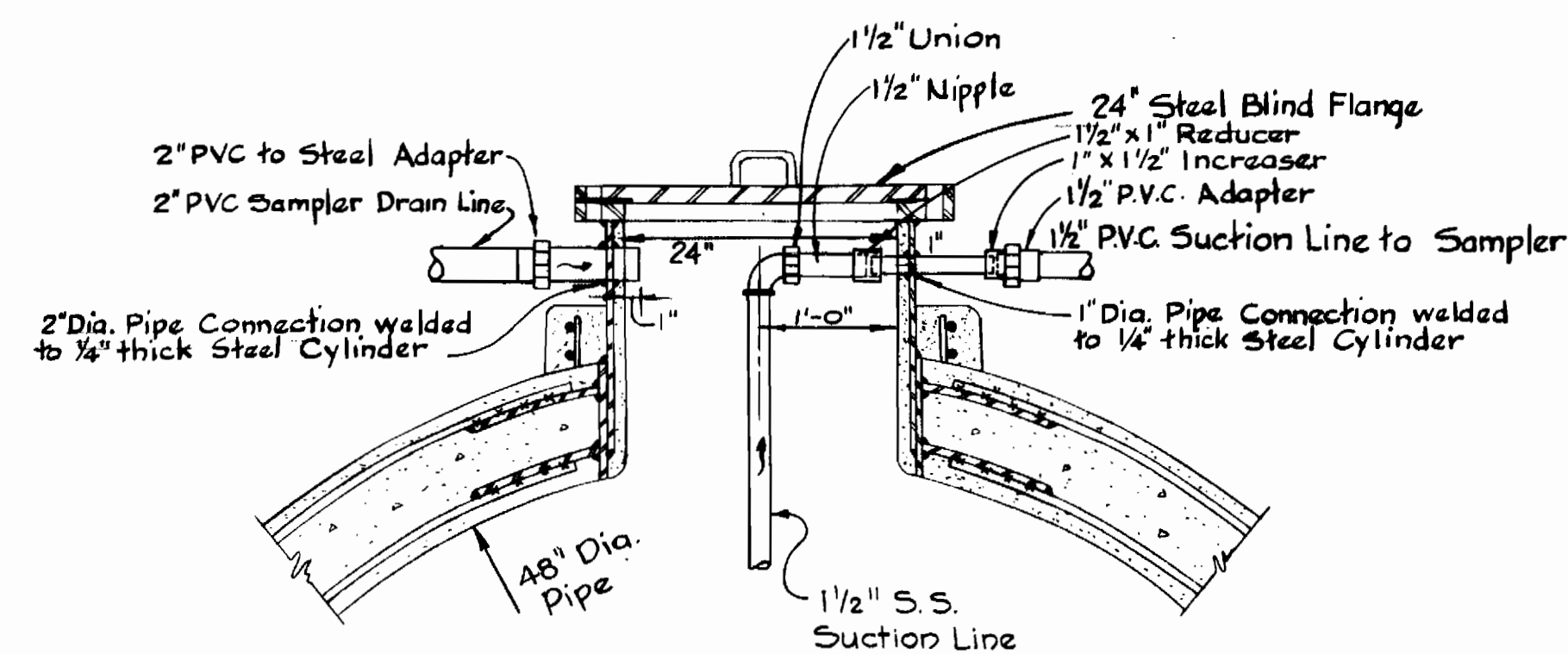
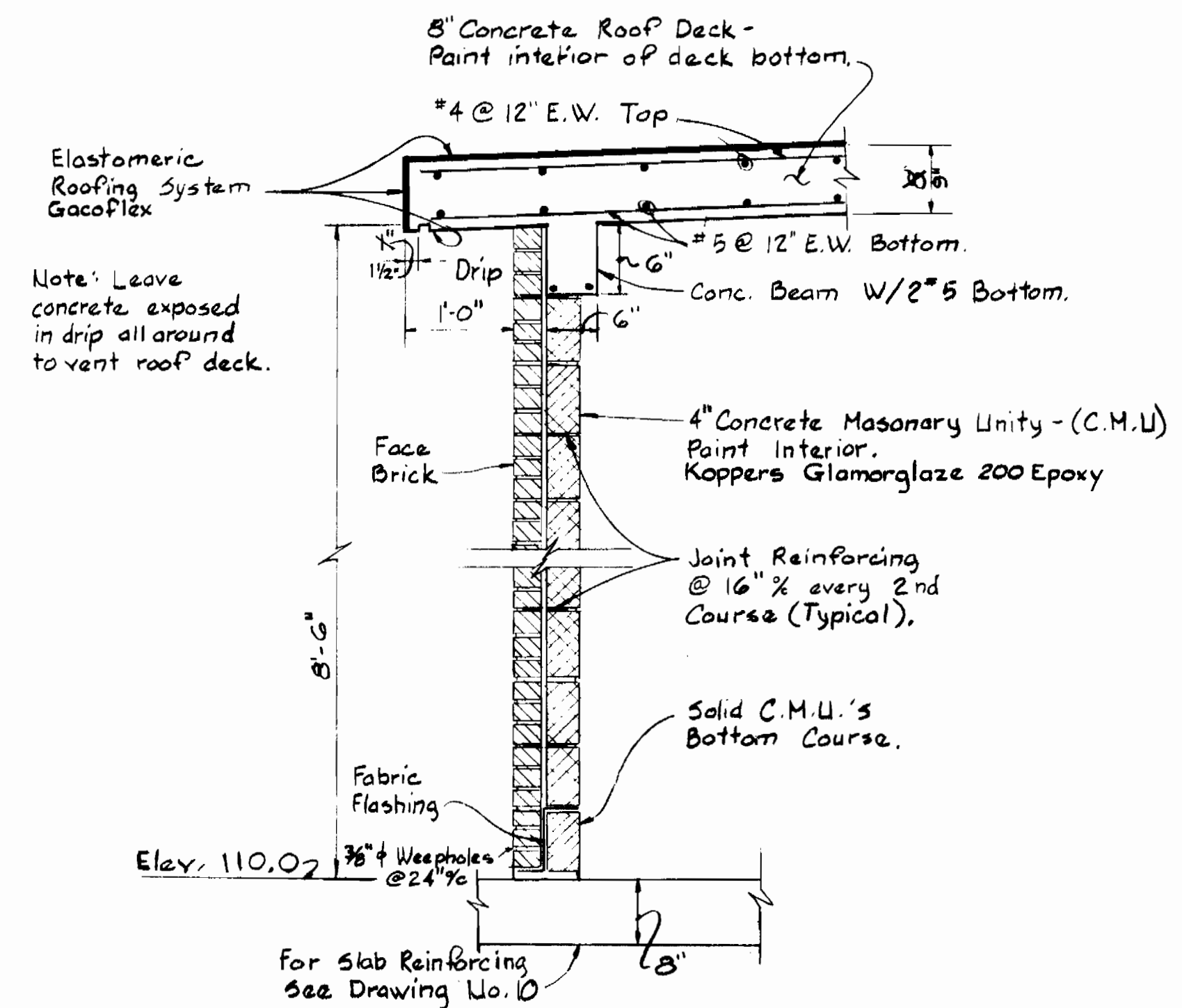
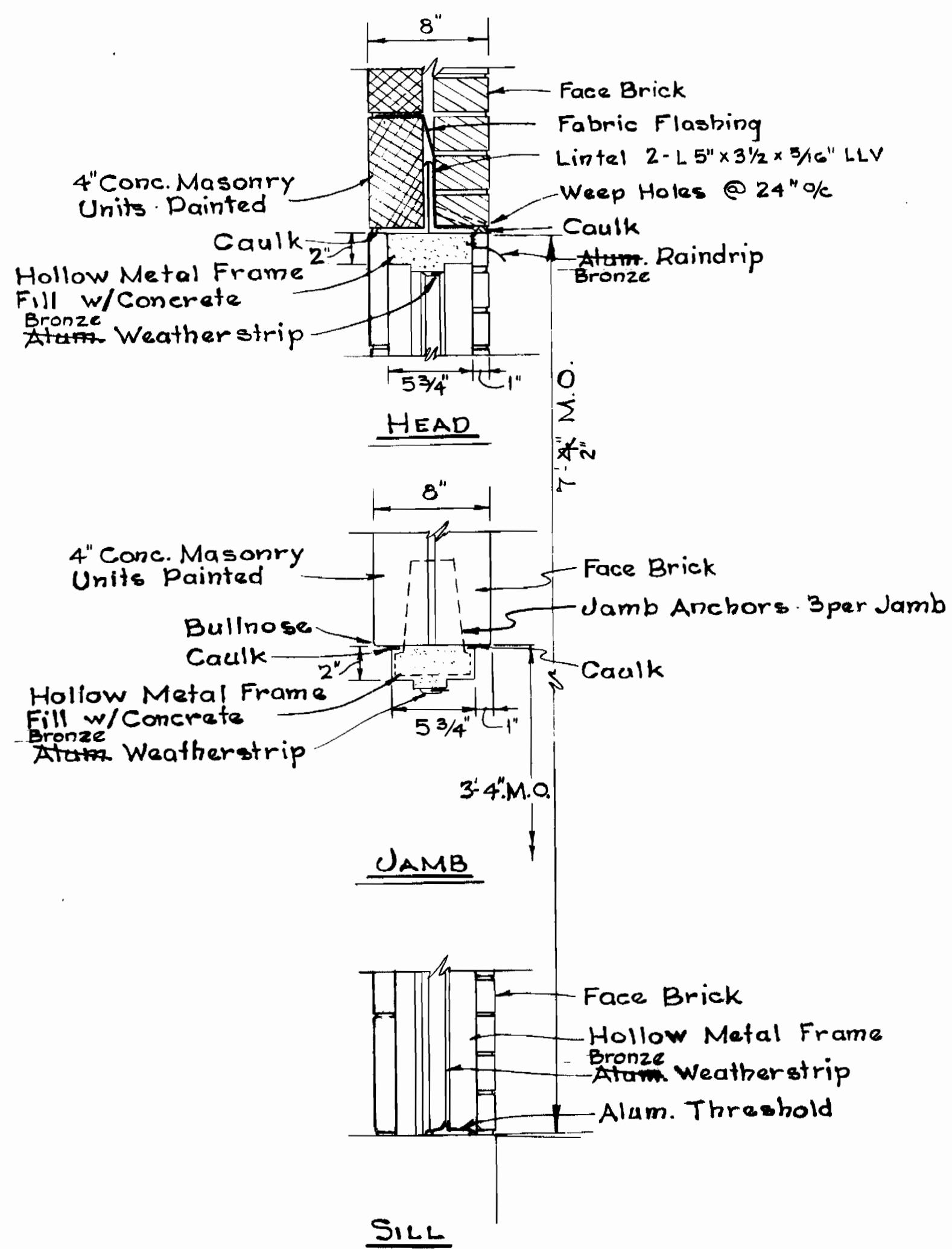
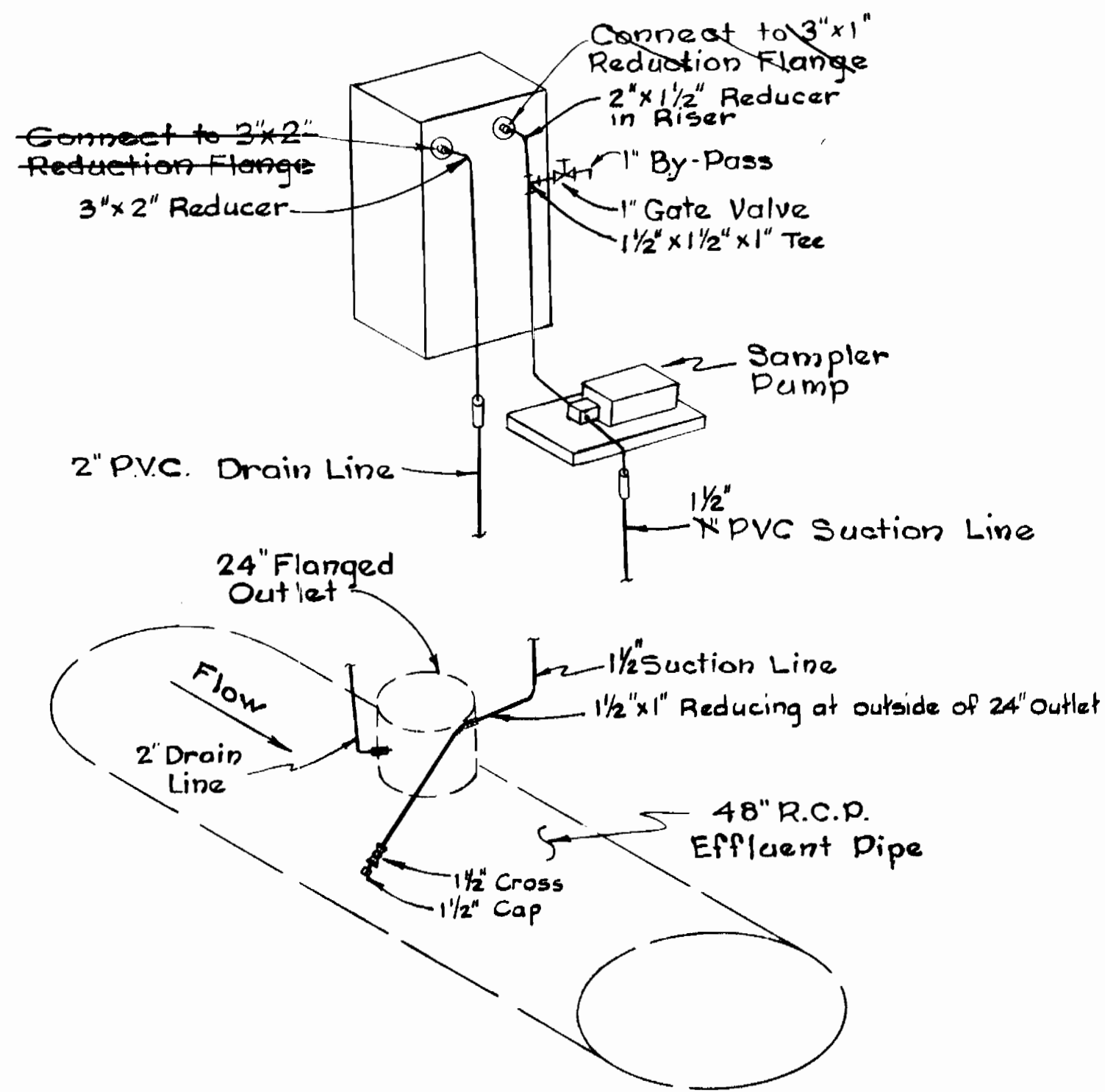
**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND  
4/14/80  
DATE  
Chief Bureau of Environmental Services

**CONTRACT NO. 762-S**

**DETAILS**  
SAMPLING STATION  
AND AIR RELEASE

**SAVAGE WASTEWATER TREATMENT PLANT**  
TREATED EFFLUENT OUTFALL

**DRAWING NO. 10A OF 19**  
SCALE 1/2"=1'-0"



**MARYLAND ROUTE 198 TEMPORARY DETOUR ROAD**

Savage W.W.T.P. Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-S

WHITMAN, REQUARDT & ASSOCIATES  
ENGINEERS  
1304 ST. PAUL ST.  
BALTIMORE, MARYLAND

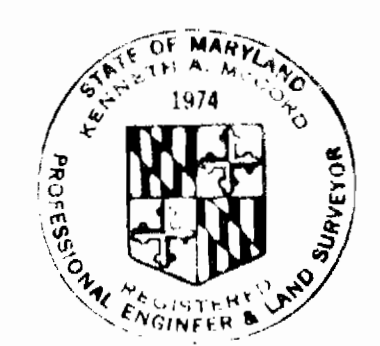
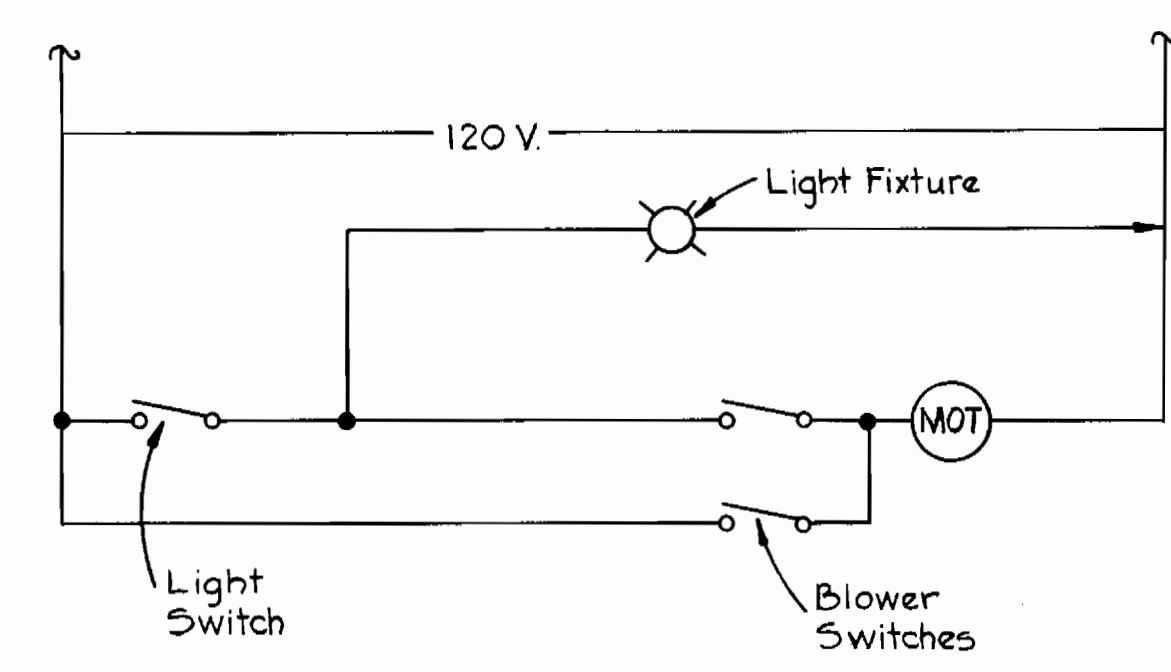
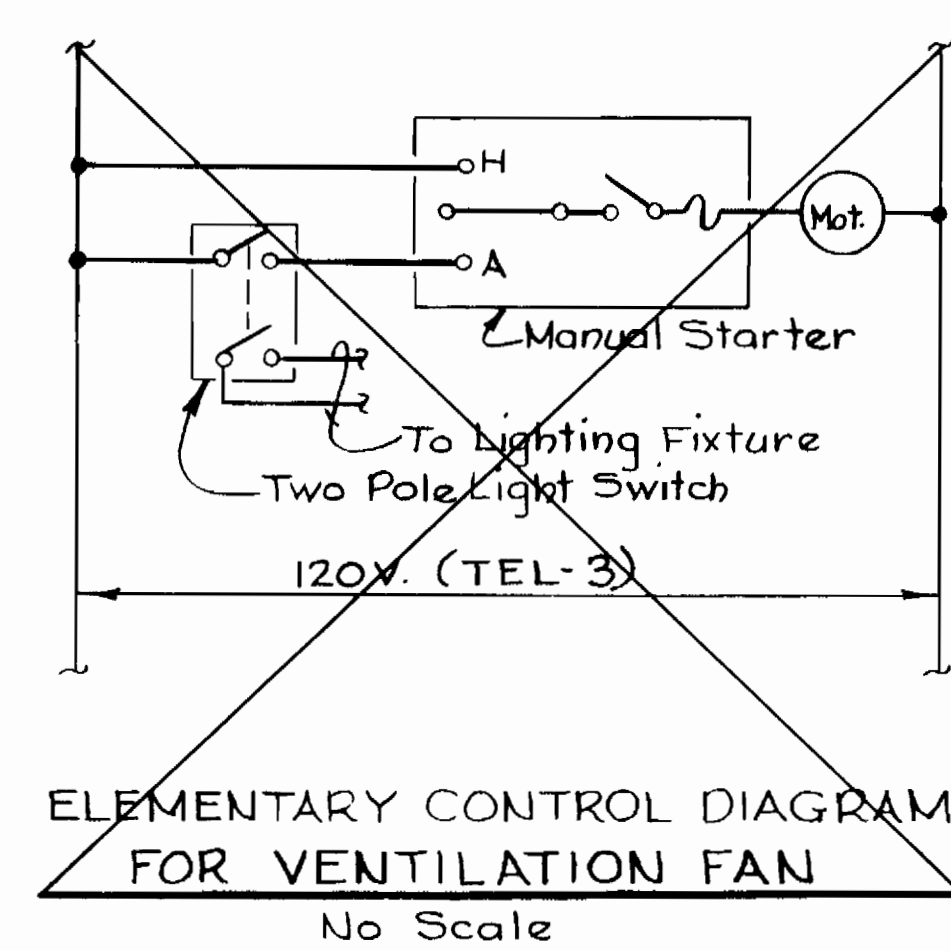
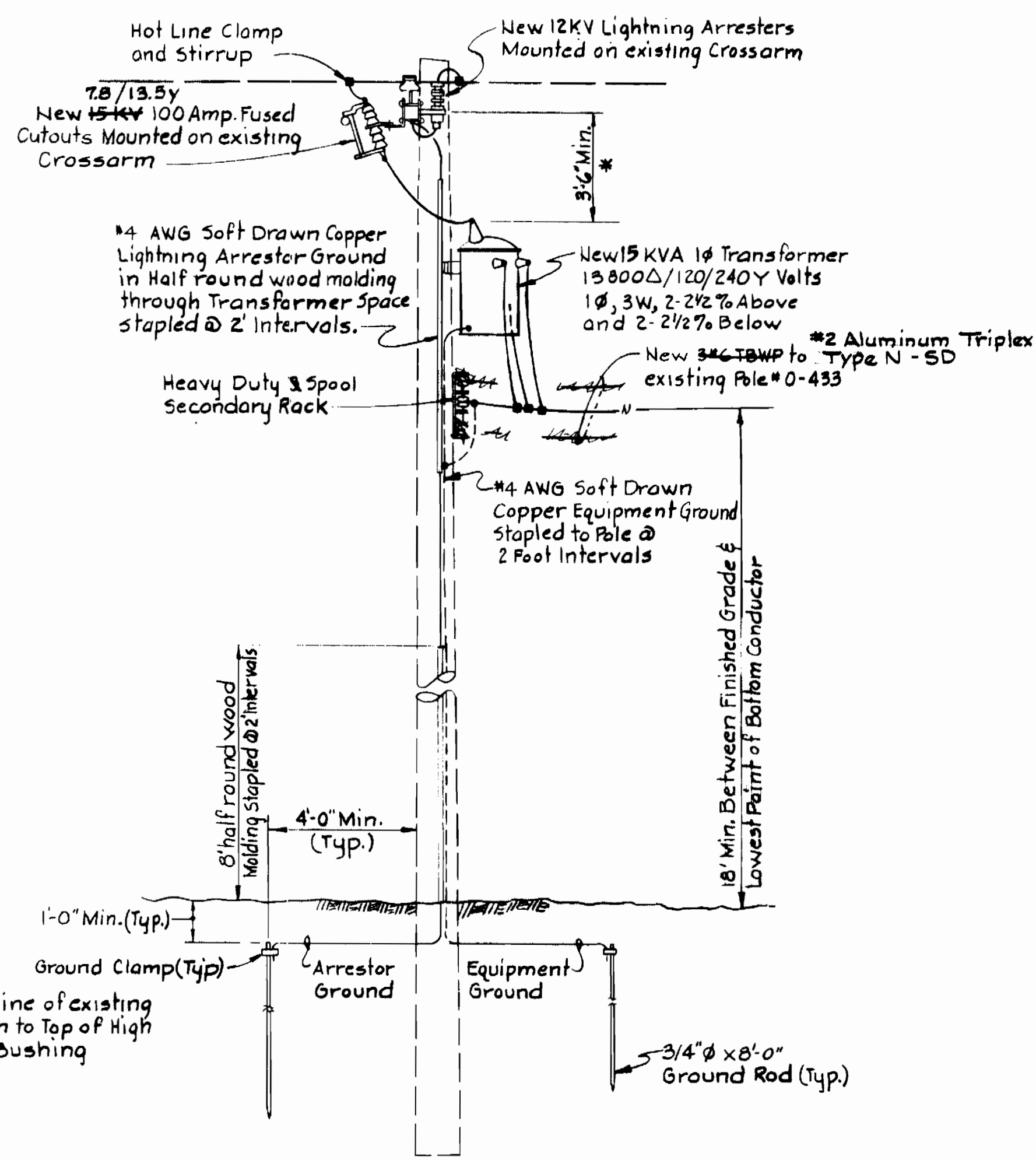
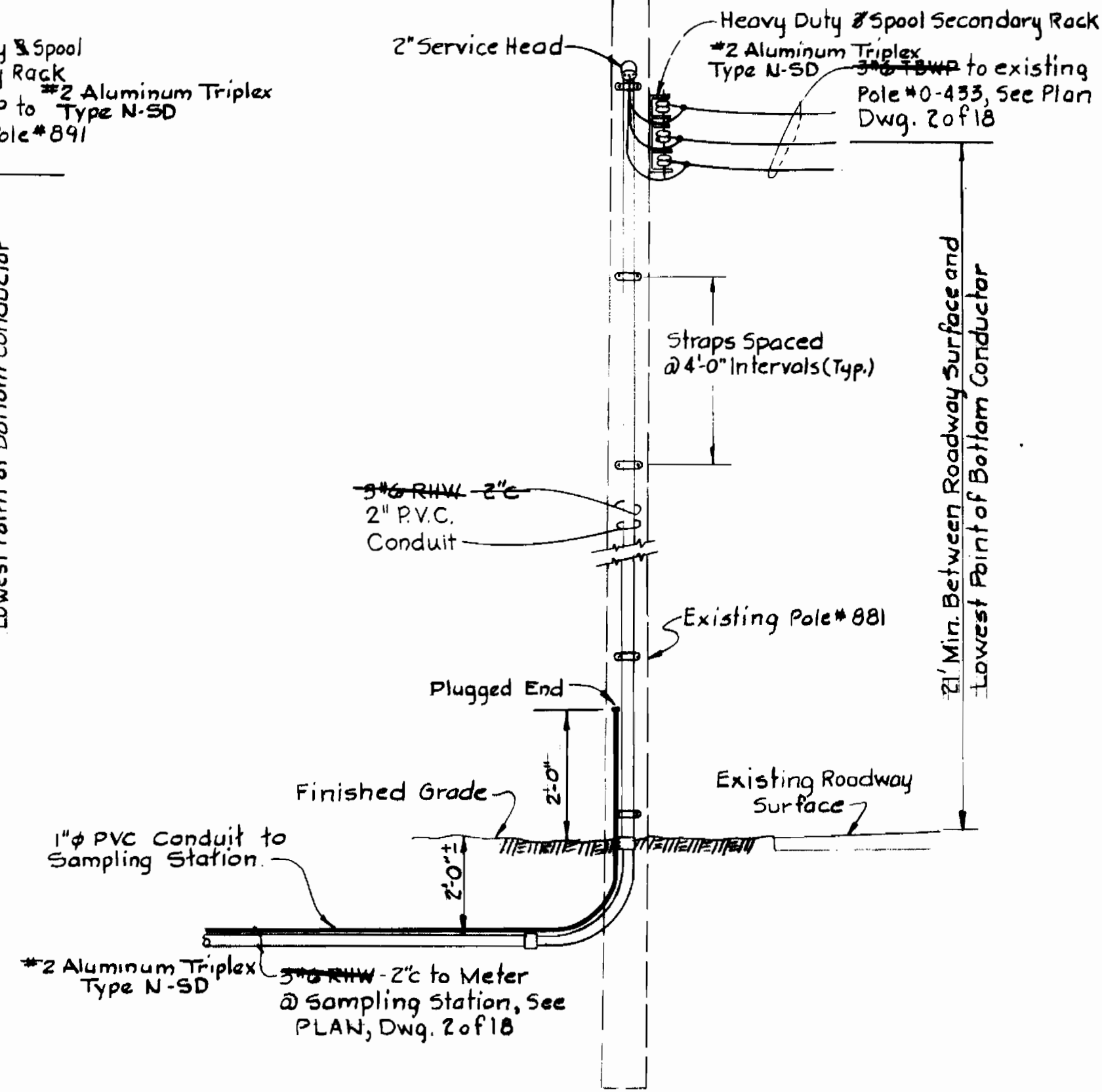
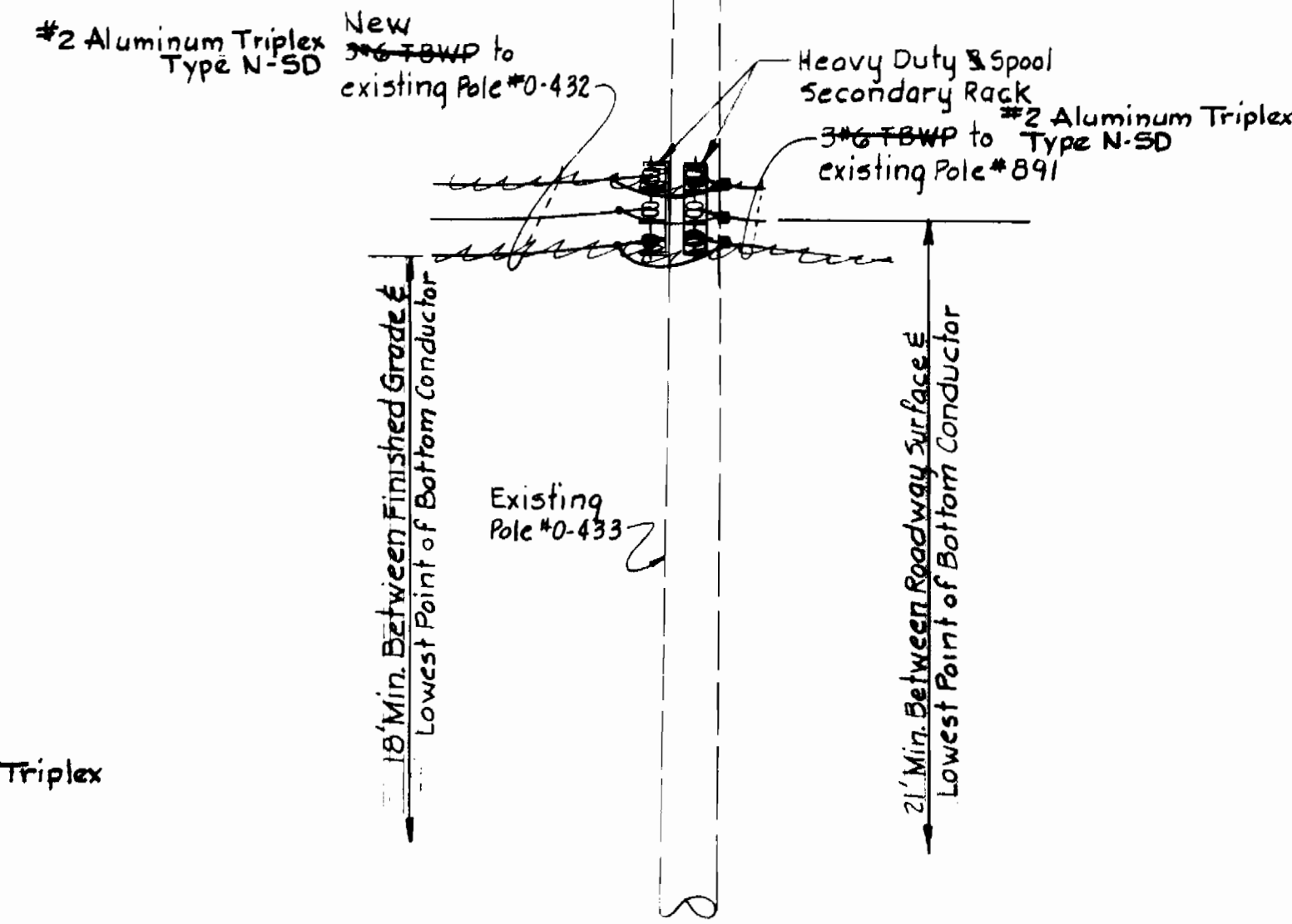
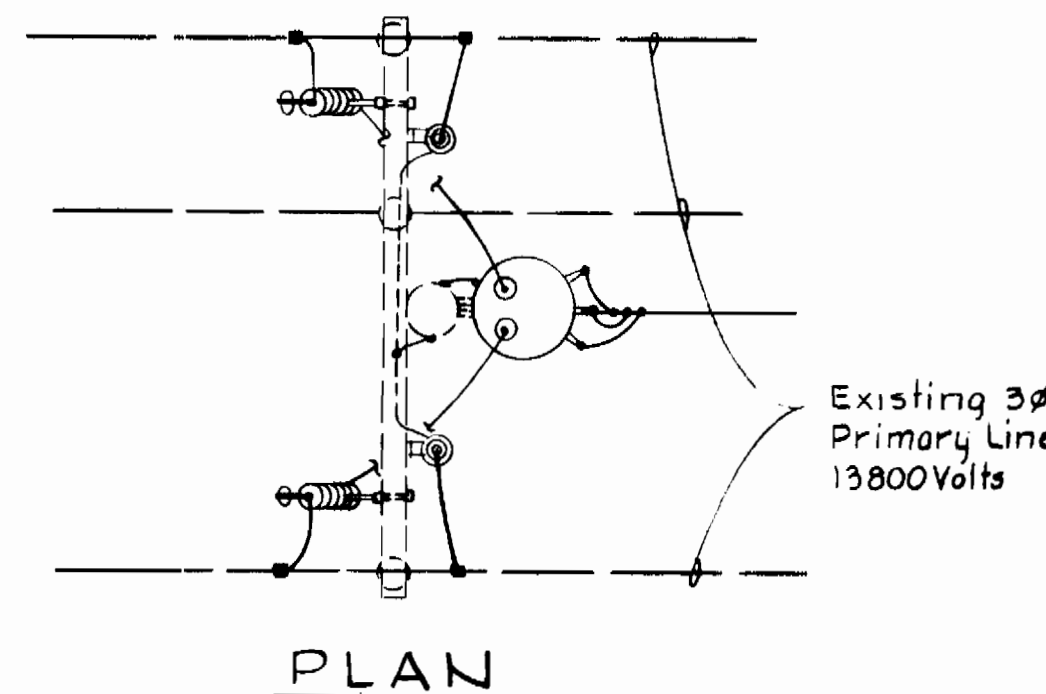
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
DATE \_\_\_\_\_  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 762-S

DETAILS  
SAMPLING STATION  
AND AIR RELEASE

SAVAGE WASTEWATER TREATMENT PLANT  
TREATED EFFLUENT OUTFALL

DRAWING  
NO. 11  
OF 19  
SCALE  
AS  
SHOWN



*Kenneth M. Lord*

Savage W.W.T.P. Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-5

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 4/14/80 CHIEF, BUREAU OF ENGINEERING	CONTRACT NO. 762S	SAMPLING STATION DETAILS	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 12 OF 19 SCALE NONE
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# HOWARD COUNTY, MARYLAND

## DEPARTMENT OF PUBLIC WORKS

# SAVAGE WASTEWATER TREATMENT PLANT

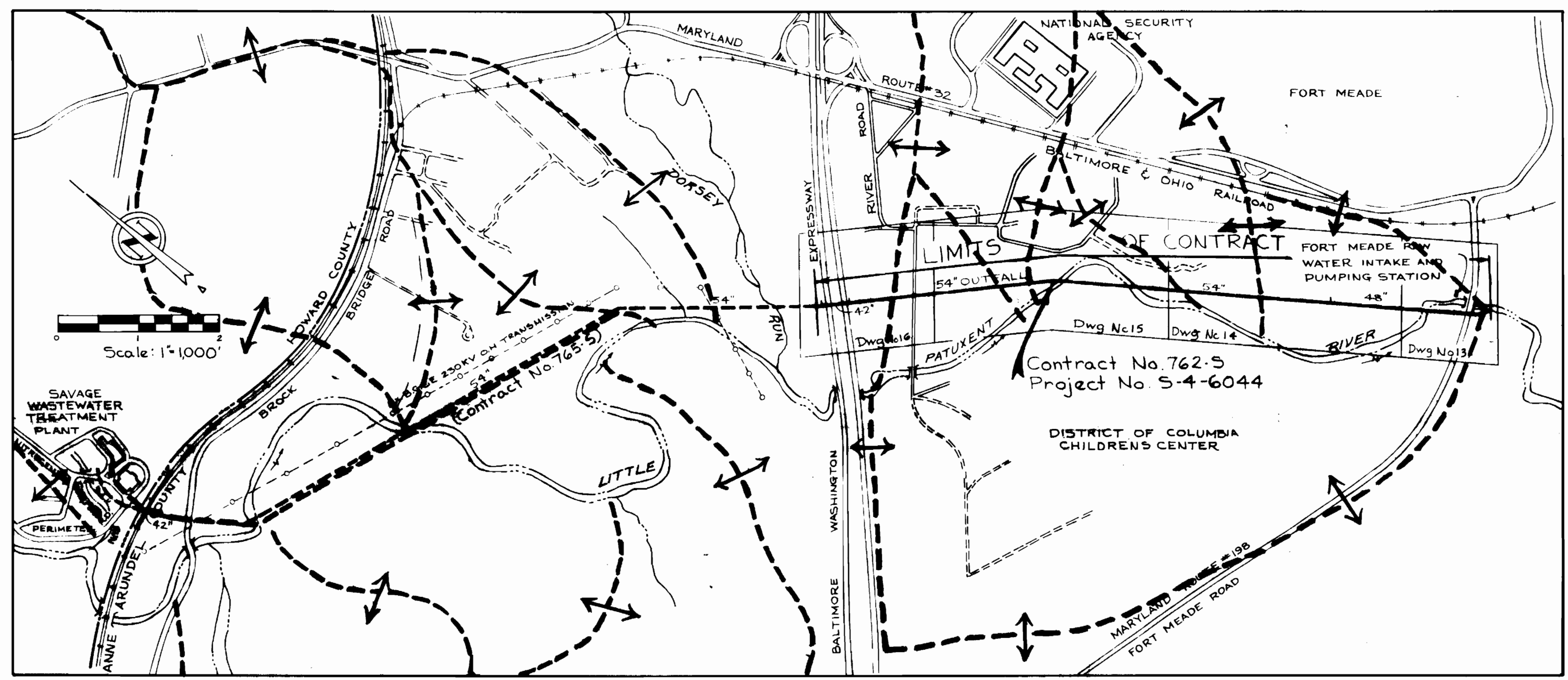
# TREATED EFFLUENT OUTFALL

CONTRACT NO. 762-S  
PROJECT NO. S-4-6044

**CERTIFICATION 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 AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ANNE ARUNDEL SOIL CONSERVATION DISTRICT."  
*Kenneth A. McCord* 8-30-79  
KENNETH A. McCORD P.E. No. 1974 DATE

Reviewed for ANNE ARUNDEL S.C.D. Name  
and meets Technical Requirements  
*James W. [Signature]* Date 9-19-79  
Signature  
D.S. Soil Conservation Service

ANNE ARUNDEL SOIL CONSERVATION DISTRICT  
APPROVED FOR SEDIMENT CONTROL  
*[Signature]*  
DISTRICT OFFICIAL  
DATE 9-19-79 PLAN NO. 95-28



LIST OF DRAWINGS

DRAWING NUMBER	TITLE
13	LOCATION AND DRAINAGE MAP
14 - 17	PLAN OF OUTFALL
18 - 19	DETAILS - SEDIMENT CONTROL PLAN

Savage WWTP Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-S

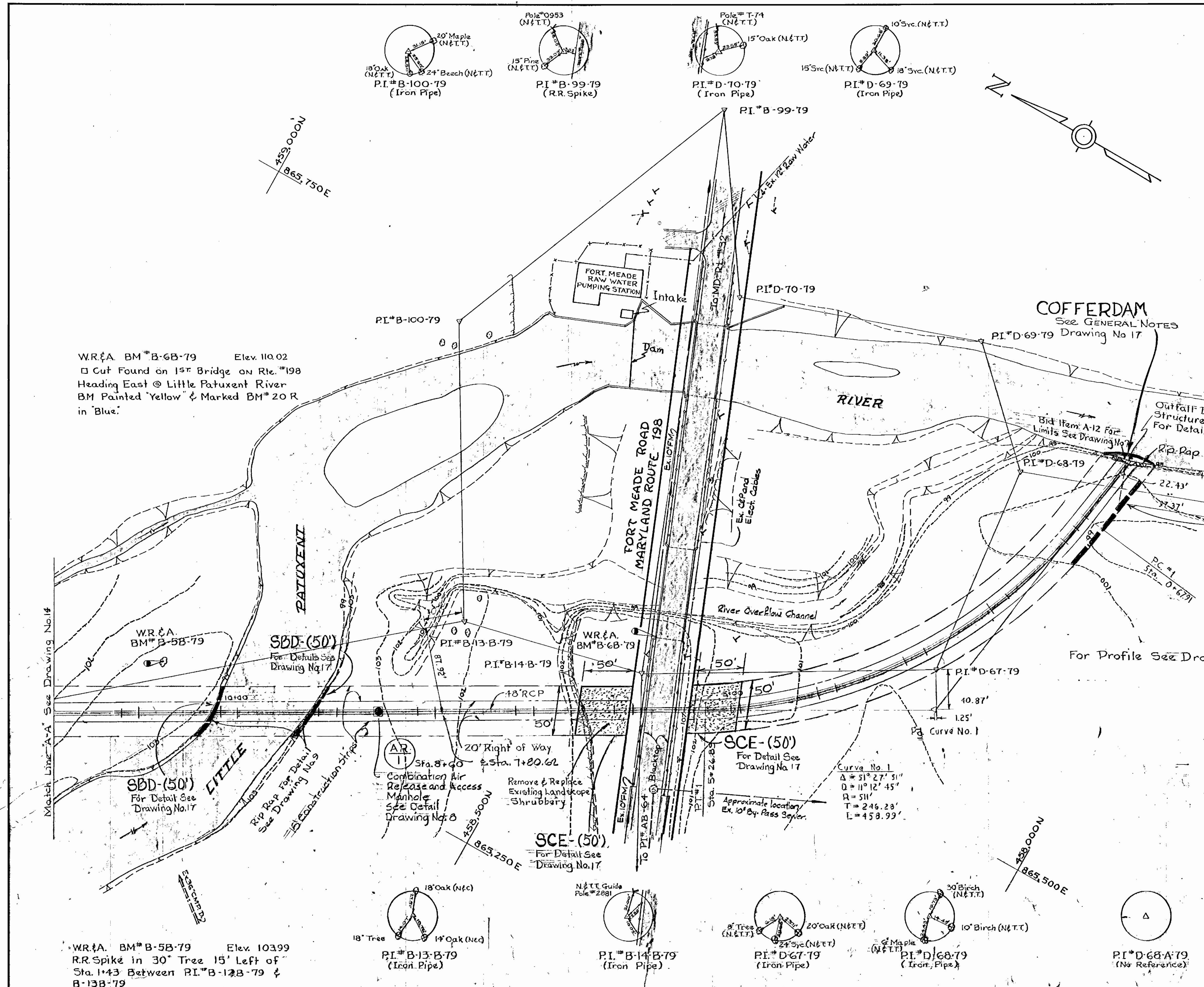
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE 8/30/79 <i>James M. [Signature]</i> CHIEF - BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 762-S	LOCATION AND DRAINAGE MAP SEDIMENT CONTROL PLAN	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 13 OF 19 SCALE AS SHOWN
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**GENERAL NOTES**

- 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.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN VICINITY OF UTILITIES.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:  
BALTIMORE GAS & ELECTRIC CO. - UNDERGROUND ELECTRIC DISTRIBUTION ENGINEERING DAMAGE CONTROL 234-5691  
UNDERGROUND GAS DISTRIBUTION ENGINEERING 234-5621  
CHESAPEAKE AND POTOMAC TELEPHONE COMPANY 393-3648.  
MISS UTILITY - 1 - 559-0100
- FOR ALL STANDARD DETAILS SEE STANDARDS BOUND IN SPECIFICATIONS.
- ALL HORIZONTAL AND VERTICAL CONTROLS ARE BASED ON MARYLAND STATE DATUM.

**AS BUILT NOTE**

ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES WERE INSTALLED IN GENERAL CONFORMANCE WITH THESE PLANS AND WERE REMOVED AFTER PERMANENT RESTORATION AND SEEDING WAS ACCOMPLISHED.



W.R.&A. BM#B-6B-79 Elev. 110.02  
 □ Cut Found on 15<sup>th</sup> Bridge on Rte.#198  
 Heading East @ Little Patuxent River  
 BM Painted 'Yellow' & Marked BM#20 R  
 in 'Blue.'

W.R.&A. BM#B-5B-79 Elev. 103.99  
 R.R. Spike in 30' Tree 15' Left of  
 Sta. 1+43 Between RI#B-12B-79 &  
 B-13B-79

**WHITMAN, REQUARDT & ASSOCIATES**  
 ENGINEERS  
 1304 ST. PAUL ST.  
 BALTIMORE, MARYLAND

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 DATE: *3/10/79*  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

**CONTRACT NO. 762-S**

**PLAN OF OUTFALL  
 SEDIMENT CONTROL**

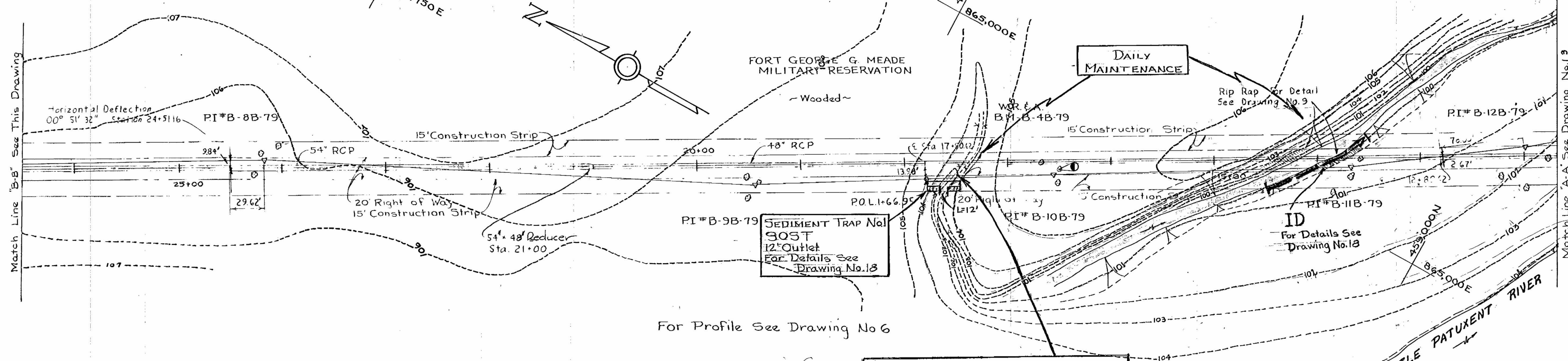
**SAVAGE WASTEWATER TREATMENT PLANT  
 TREATED EFFLUENT OUTFALL**

**DRAWING NO. 14 OF 19**  
**SCALE 1"=50'**  
 51-458/866

STATE OF MARYLAND  
 1974  
 PROFESSIONAL ENGINEER  
*Herbert J. McLeod*

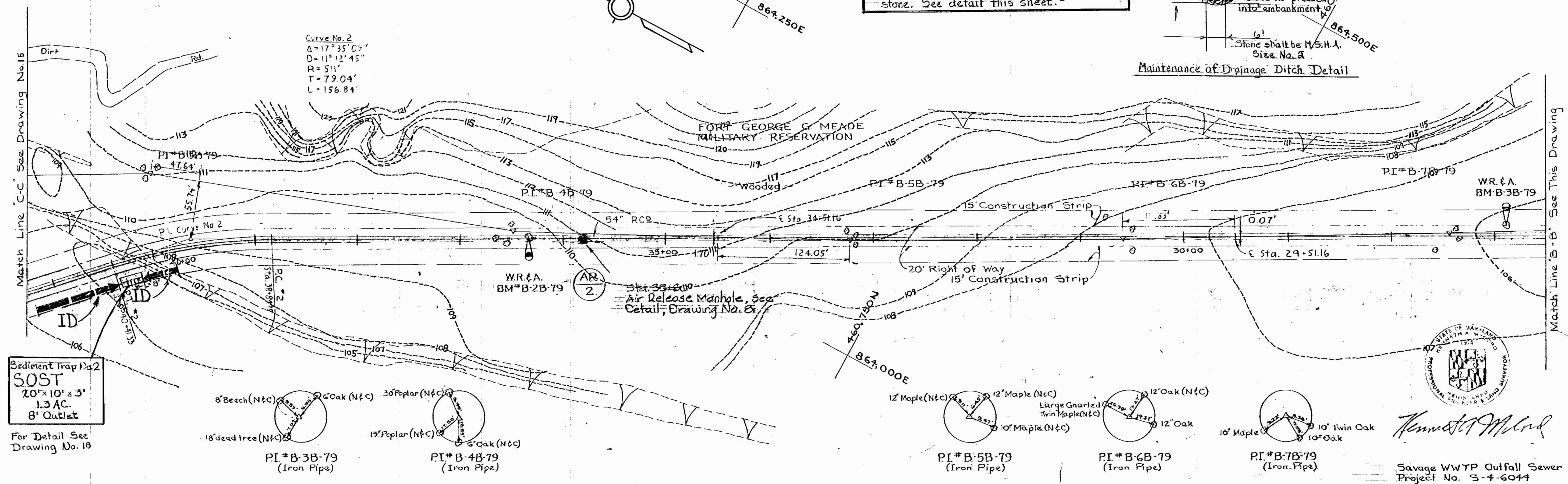
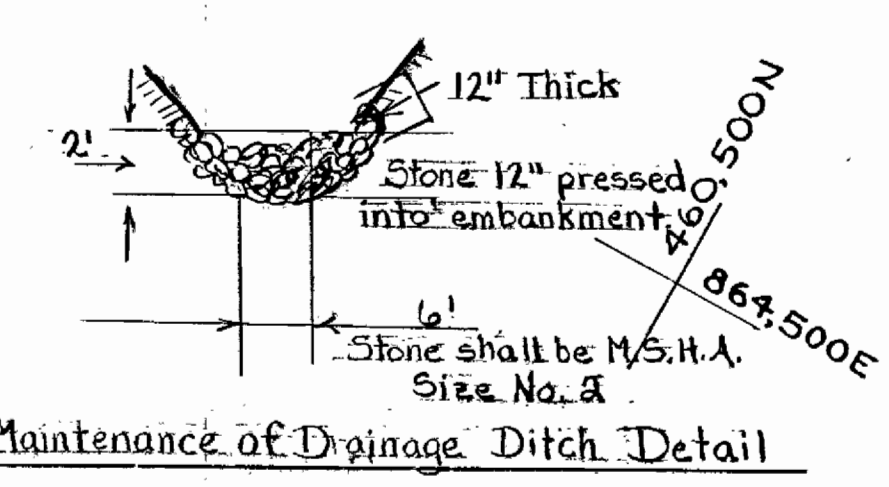
Savage WWTP Outfall Sewer  
 Project No. S-4-6044  
 Contract No. 762-S

W.R.&A. BM# B-4B-79 Elev. 106.59  
R.R. Spike in 12" Pine 2.5' Left of  
Sta. 0+09 Between PI# B-10B-79 &  
B-11B-79.



For Profile See Drawing No 6

Contractor shall maintain drainage of Stream at all times during Trench Excavation and Pipe Installation. Immediately after backfilling, restore drainage ditch with 12 inches of stone. See detail this sheet.



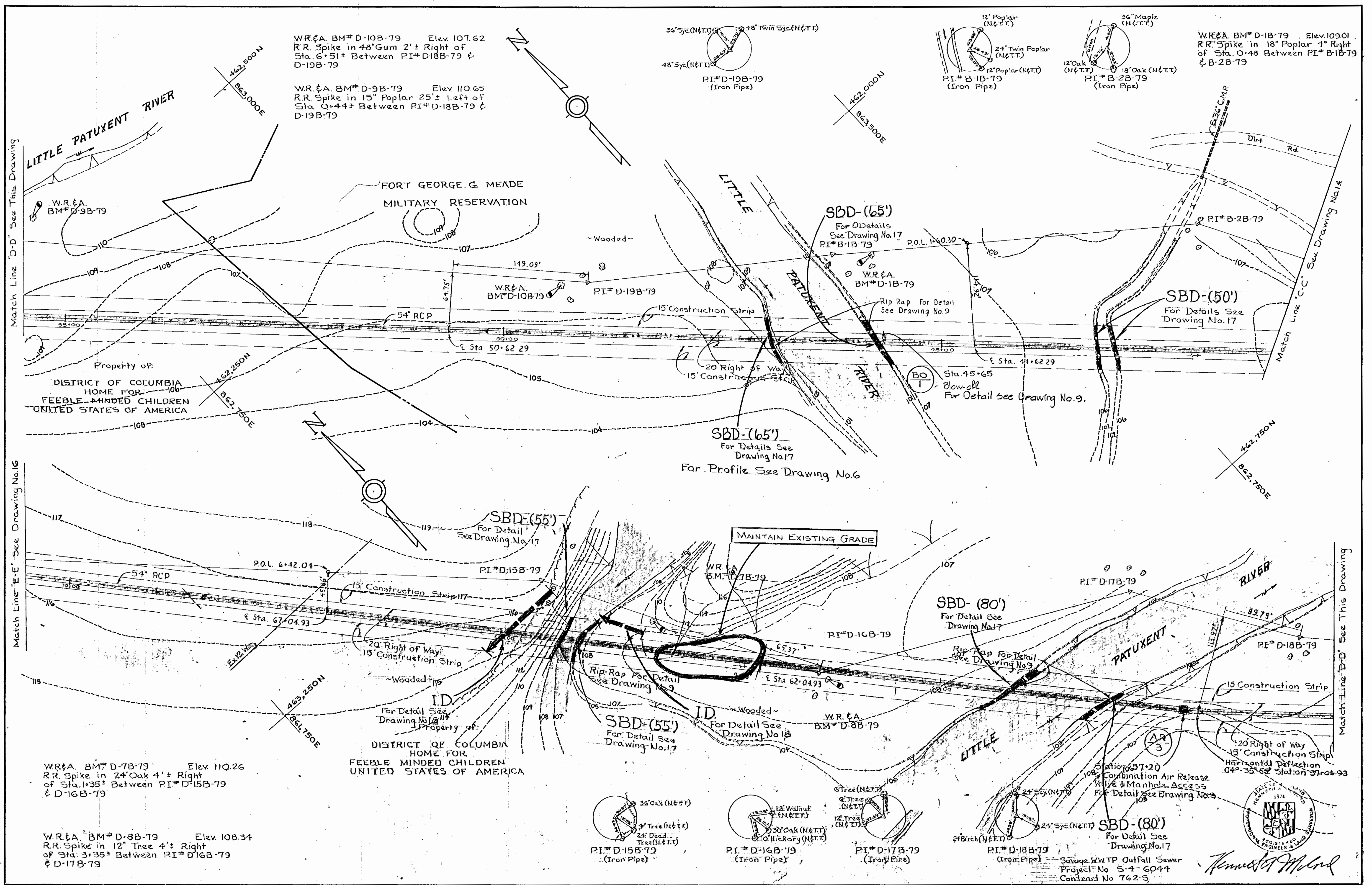
Sediment Trap No. 2  
SOST  
20'x10'x3'  
1.3 AC.  
8" Outlet

For Detail See Drawing No. 18

*Kenneth M. Conrad*  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF MARYLAND  
No. 17974  
EXPIRES 12/31/80

Savage WWTP Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-S

<b>WHITMAN, REQUARDT &amp; ASSOCIATES</b> ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	<b>DEPARTMENT OF PUBLIC WORKS</b> HOWARD COUNTY, MARYLAND DATE: 8/30/79 CHIEF - BUREAU OF ENVIRONMENTAL SERVICES	<b>CONTRACT NO. 762-S</b>	<b>PLAN OF OUTFALL          SEDIMENT CONTROL</b>	<b>SAVAGE WASTEWATER TREATMENT PLANT          TREATED EFFLUENT OUTFALL</b>	<b>DRAWING NO. 15          OF 19</b> <b>SCALE 1"=50'</b>
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**WHITMAN, REQUARDT & ASSOCIATES**  
 ENGINEERS  
 1304 ST. PAUL ST.  
 BALTIMORE, MARYLAND

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 DATE: 8/30/79  
 CHIEF: James M. ...  
 BUREAU OF ENVIRONMENTAL SERVICES

**CONTRACT NO. 762-S**

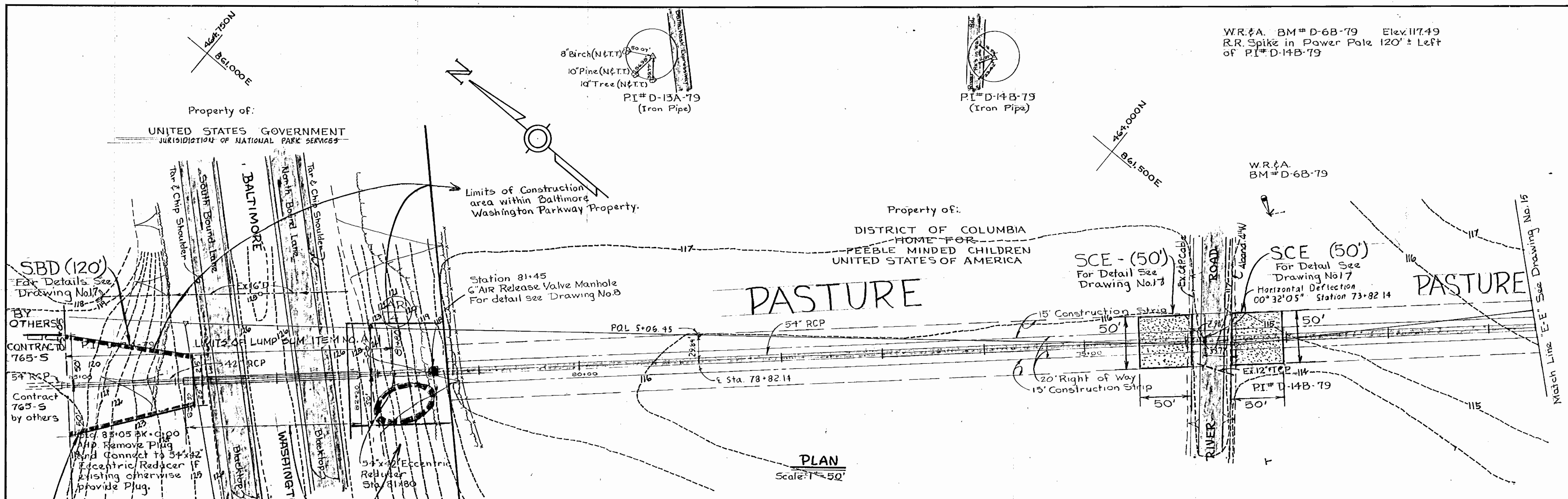
**PLAN OF OUTFALL  
 SEDIMENT CONTROL**

**Savage WASTEWATER TREATMENT PLANT  
 TREATED EFFLUENT OUTFALL**

**DRAWING NO. 16 OF 19**  
**SCALE 1" = 50'**  
 51-461/864.5  
 51-462/864.5  
 51-462/863  
 51-463/863

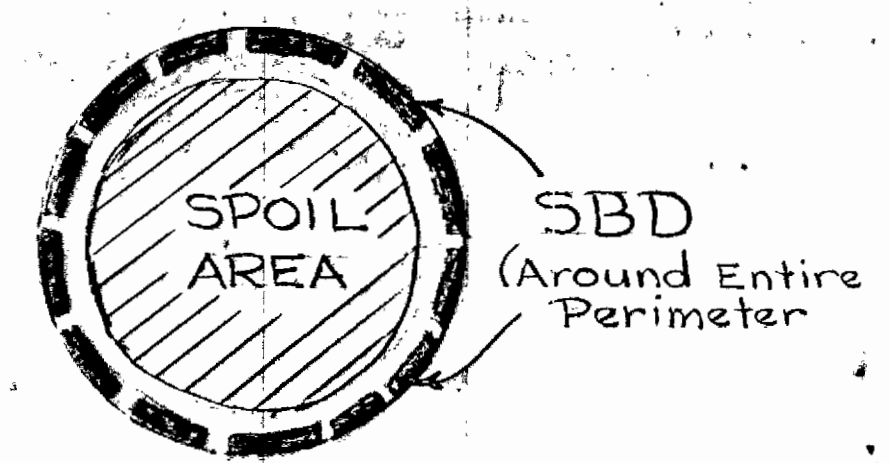
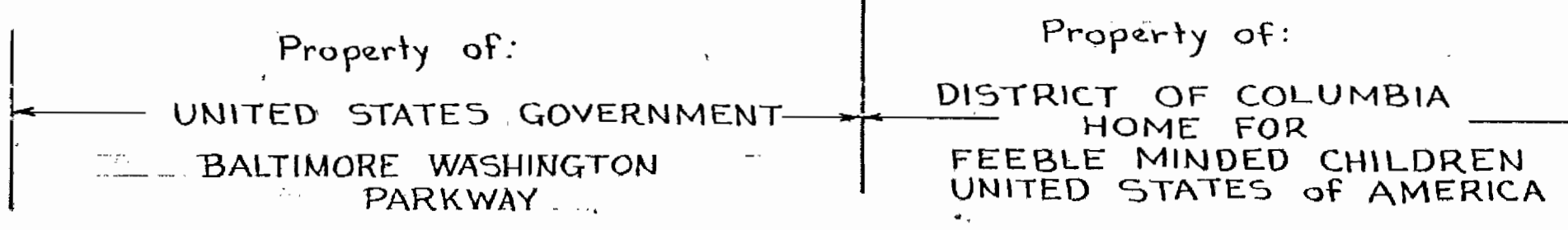


W.R.#A. BM# D-6B-79 Elev. 117.49  
 R.R. Spike in Power Pole 120' ± Left  
 of P.I.# D-14B-79

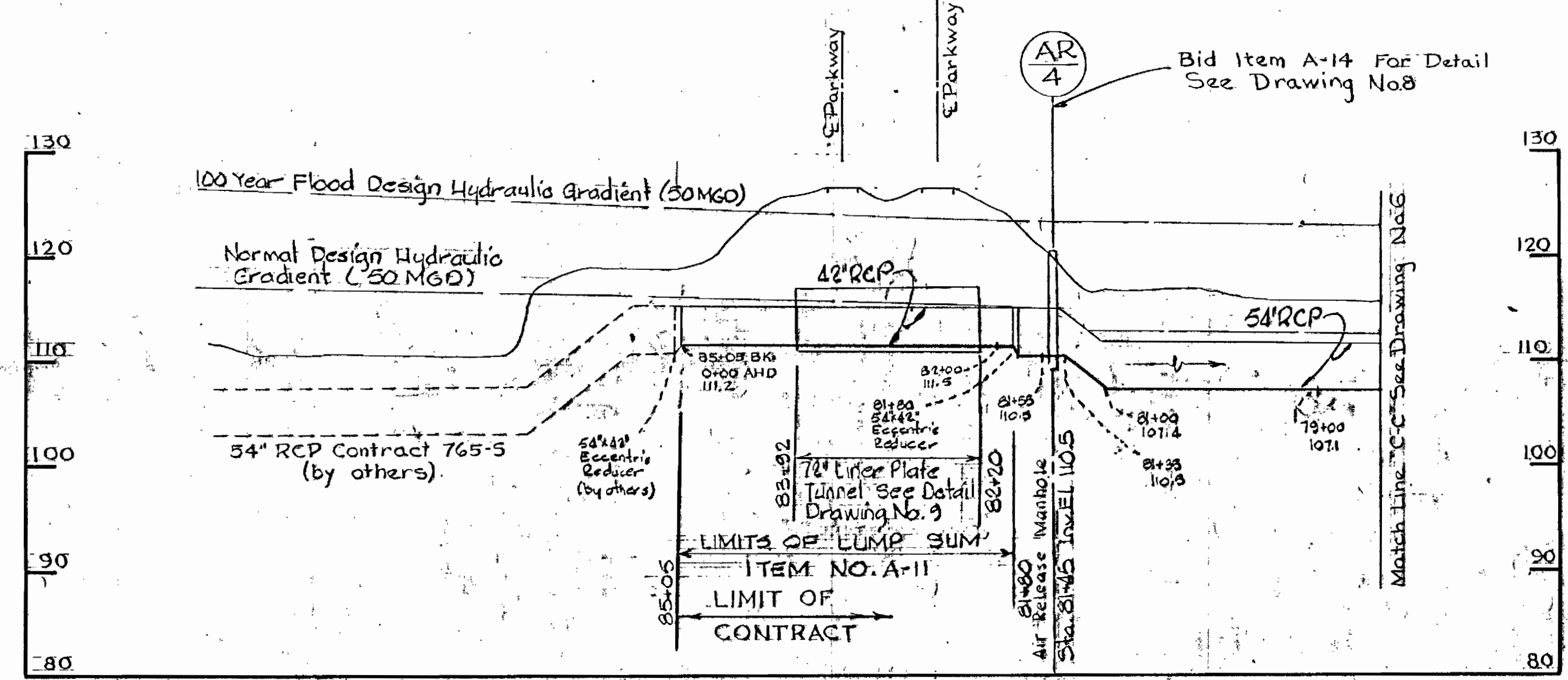


**PLAN**  
 Scale: 1" = 50'

**NOTE**  
 Spoil Stockpile Area shall be in accordance with Federal Highway Administration Permit for Crossing of Baltimore - Washington Parkway (U.S. 295)



**SPOIL AREA DETAIL**



**PROFILE**

Scale: Horizontal: 1" = 100'  
 Vertical: 1" = 10'



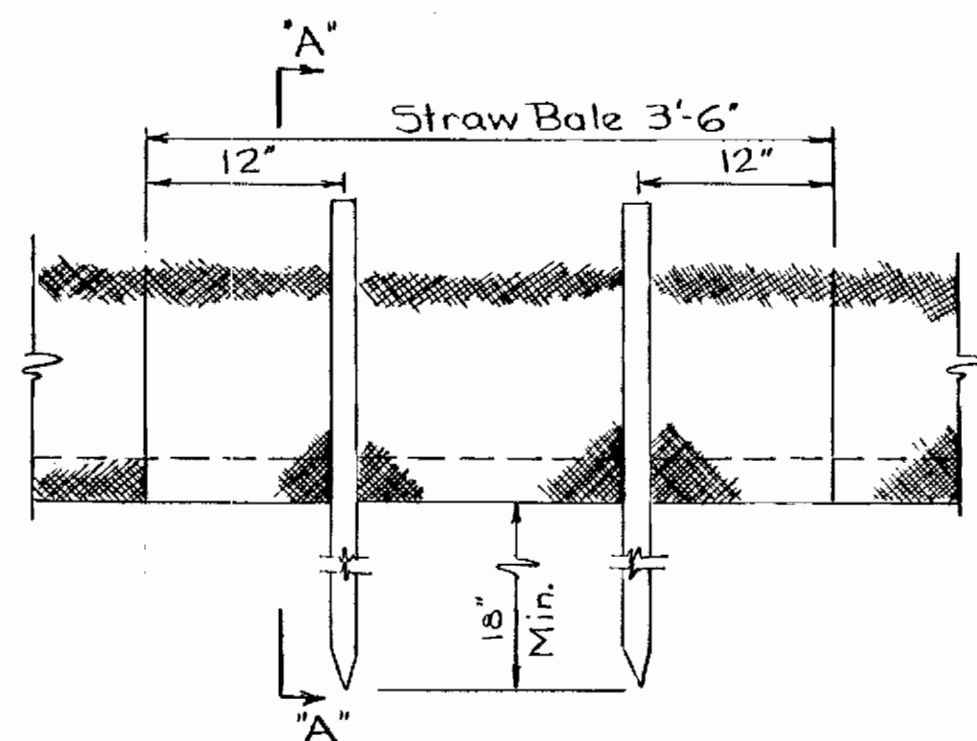
*Kenneth A. McCord*

Savage WWTP Outfall Sewer  
 Project No. S-4-6044  
 Contract No. 762-5

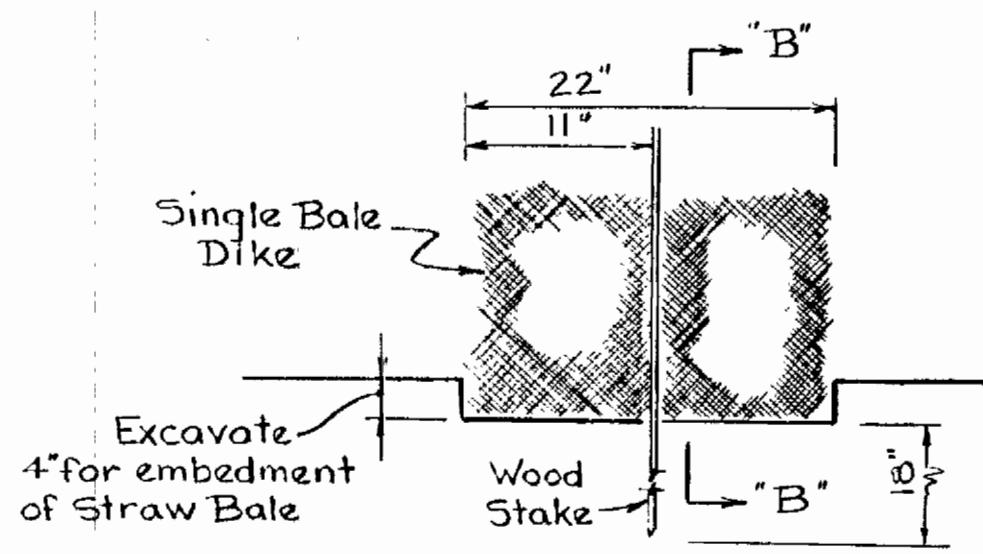
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 2/20/79 CHIEF: BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 762-S	PLAN OF OUTFALL SEDIMENT CONTROL	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 17 OF 19 SCALE AS SHOWN
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**STRAW BALE DIKE (SBD)**

Scale: 1"=1'-0"



ANCHORING DETAIL



EMBEDDING DETAIL

**CONSTRUCTION SPECIFICATIONS**

- Bales shall be placed in a row with ends tightly abutting the adjacent bales.
- Each bale shall be embedded in the soil a minimum of 4".
- Bales shall be securely anchored in place by stakes driven through the bales. The first stake in each bale shall be angled toward previously laid bale to force bales together.
- Inspection shall be frequent and repair or replacement shall be made promptly as needed.
- Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.

SBD-1

Symbol

**SEEDING**

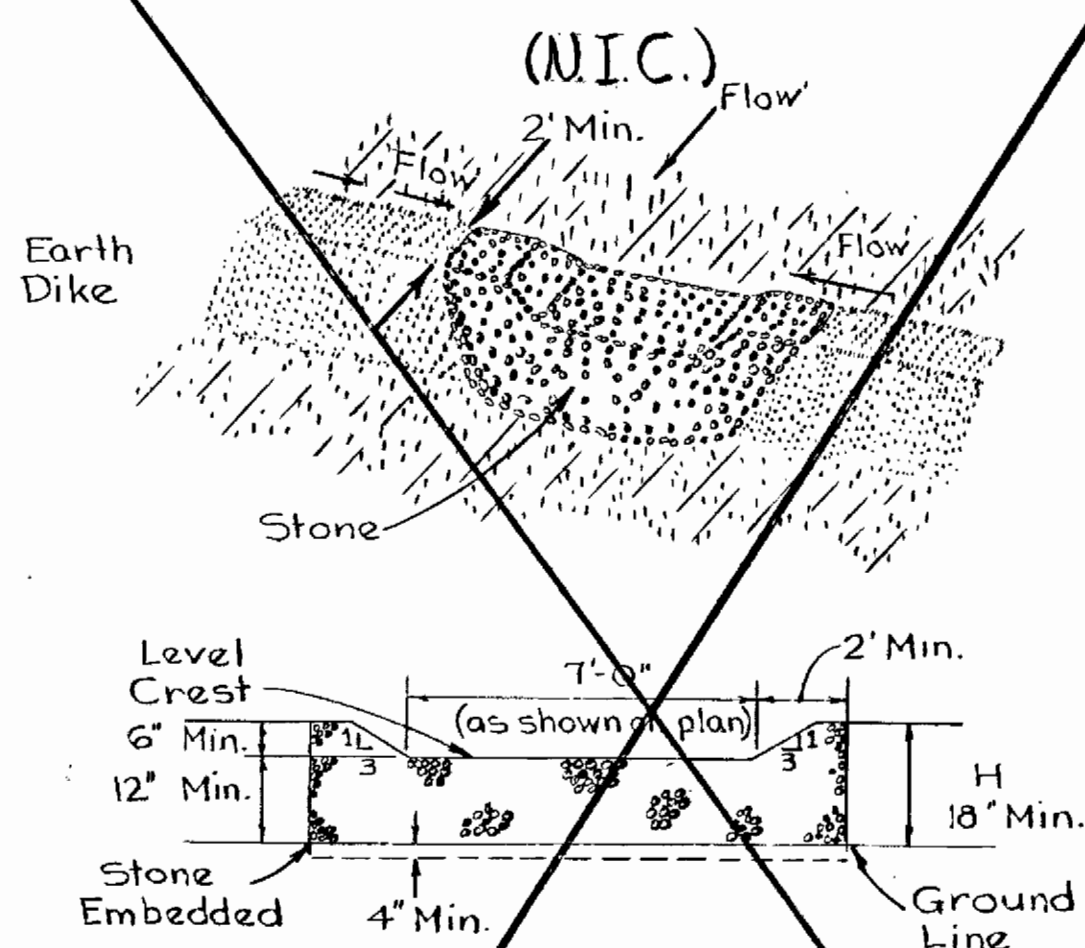
**TEMPORARY**

- Ground Limestone (50 lbs/1000 S.F.)
- Fertilizer 10-10-10 (25 lb/1000 S.F.)
- Seed-Italian Rye Grass 40 lbs/Acre
- Mulch with straw at the rate of 50 lbs/1000 S.F. or one tone per acre.
- Anchor with asphalt at the rate of 200 Gallons/Acre.

**PERMANENT**

- \* Ky.31 Tall Fescue (40 lbs/ac. or .92 lbs/1000 S.F.)
- \*\* Sericea Lespedeza (20 lbs/ac. or .48 lbs/1000 S.F.)
- \* Certified seed only
- \*\* Inoculated hullless seed.

**STONE OUTLET STRUCTURE (SOS)**



PROFILE

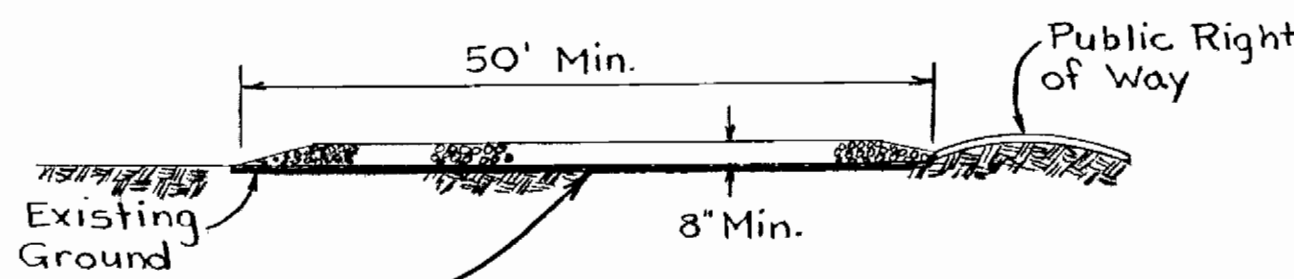
**CONSTRUCTION SPECIFICATIONS**

- The stone shall be crushed stone. Gravel may be used if crushed stone is not available. The stone shall meet MSHA Size NO.2 or AASHTO designation M43 Size No.2 or 24.
- The crest of the stone dike shall be at least six inches lower than the lowest elevation of the top of the earth dike and shall be level.
- The stone outlet structure shall be embedded into the soil a minimum of four inches.
- The minimum length, in feet, of the crest of the stone outlet structure shall be seven feet.
- The stone outlet structure shall be inspected after each rain, and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation among the stone, washout, construction traffic damage, etc.

SOS-1

Symbol

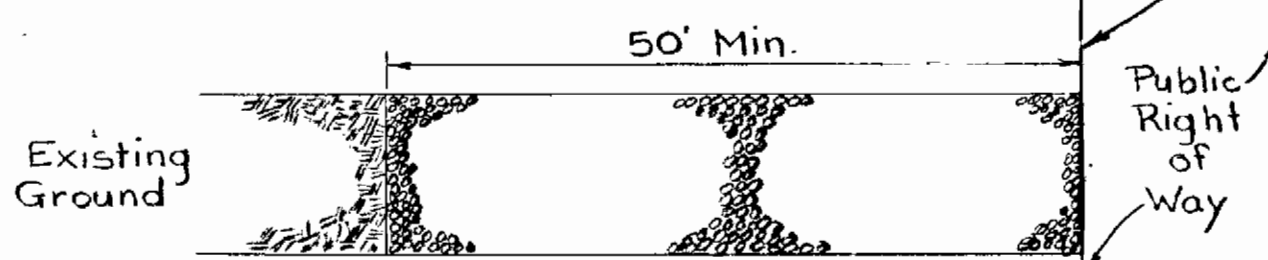
**STABILIZED CONSTRUCTION ENTRANCE (SCE-1)**



PROFILE

Poly Filter-X as manufactured by Carthage Mills Inc. Erosion Control Division, 124 W. 66th St. Cincinnati, Ohio, or Laurel Erosion Control Cloth as manufactured by Laurel Plastic Inc., Madison, Maine, or equal.

Provide appropriate transition between Stabilized Construction Entrance and Public Right-of-Way



PLAN

**CONSTRUCTION SPECIFICATIONS**

- Stone size - Use MSHA size No.2 (2-1/2" to 1") or AASHTO designation M43, size No.2 (2-1/2" to 1-1/2"). Use crushed stone.
- Length - As effective, but not less than 50 feet.
- Thickness - Not less than eight (8) inches.
- Width - Not less than full width of all points of ingress or egress.
- Washing - When necessary, wheels shall be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved sediment trap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse through use of sand bags, gravel, boards or other approved methods.
- Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.

SCE-1

Symbol

**GENERAL NOTES:**

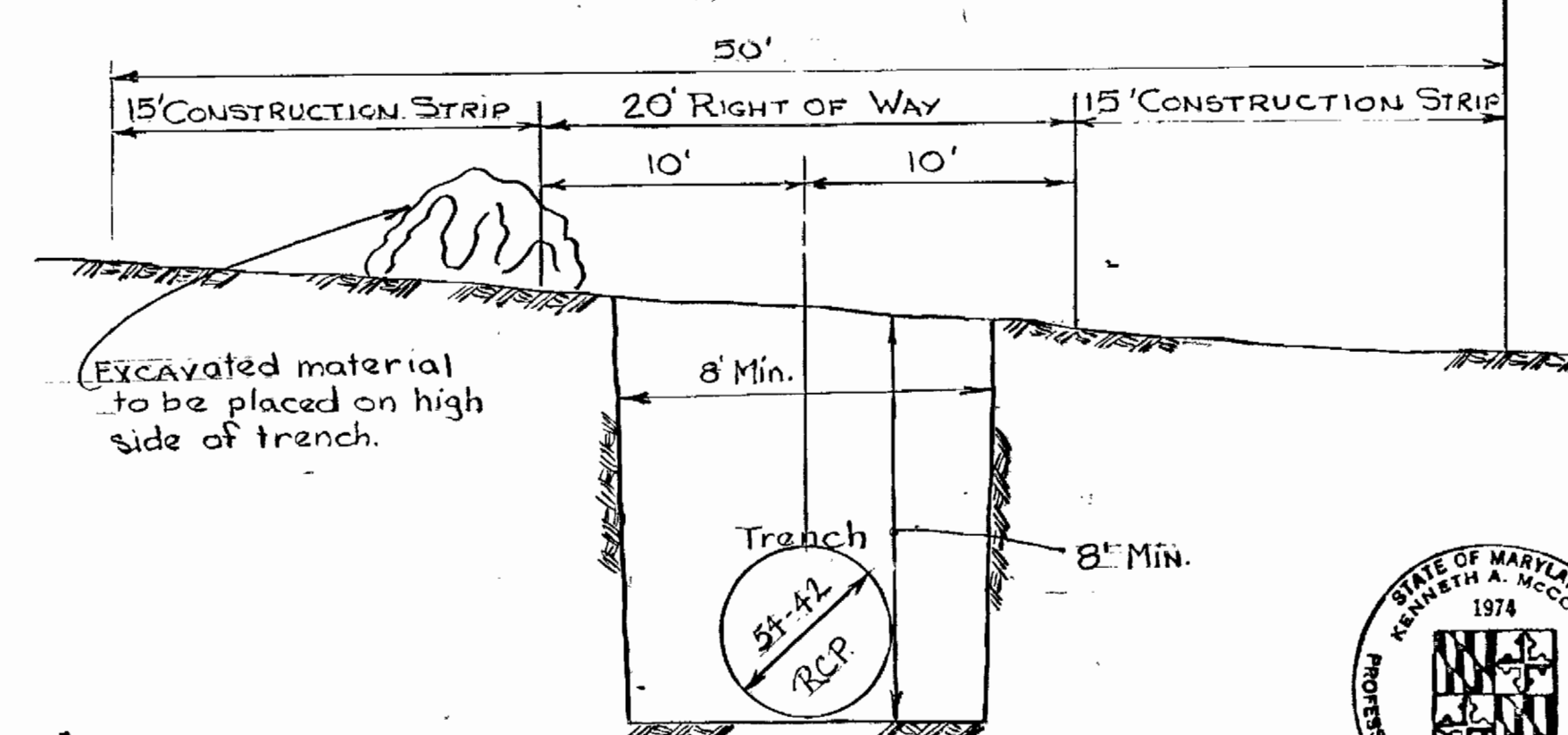
- The Contractor shall maintain, repair and/or replace any existing sediment control devices encountered and disturbed during the course of construction under this contract and as shown on the approved sediment control plan, included as part of the contract documents. All such disturbed devices shall be repaired or replaced before leaving the work site at the end of each working day. The costs of performing all such work, including materials will not be paid for separately and must be included in the cost of other items bid.
- See "Sequence of Construction".
- Prior to starting any work the Contractor shall notify the Anne Arundel Soil Conservation District at least 24 hours in advance of notice to begin.
- No sediment control structures shall be removed without approval of Department of Natural Resources.
- See "Requirements of Anne Arundel Conservation District" under Special Provisions of the General Specifications.
- Excess material from excavations and backfills shall be removed by the Contractor to an off site area as approved by A.A.S.C.D.
- Cofferdam requirements for River Crossing shall be submitted to the Soil Conservation Service for approval. Cofferdams shall be installed prior to excavation at Dorsey Run and Little Patuxent River Crossings.

**SEQUENCE OF CONSTRUCTION (30 WEEKS)**

- Prior to starting work, the Contractor shall notify the Anne Arundel Office of Licenses and Permits at least 24 hours in advance of notice to begin.
- Construct Stabilized Construction Entrance.
- Clear the site within the limits of proposed work in conjunction with construction of Sediment Control Structures.
- Strip and grade; topsoil stockpiles that will be left standing for a period of 7 days or more shall be stabilized. See Temporary Seeding this sheet.
- Excavate the trench; install pipe; backfill and grade, daily.
- Stabilize the disturbed areas immediately after backfilling. See Permanent Seeding Specifications and this sheet.
- Remove the sediment control structures.

**STRAW BALE EMPLOYMENT ALONG TRENCH EXCAVATION**

Scale: 1/4"=1'-0"



TYPICAL TRENCH SECTION



*Kenneth A. McCord*

Savage WWTP Outfall Sewer  
Project No. S-4-6044  
Contract No. 762-S

WHITMAN, REQUARDT & ASSOCIATES  
ENGINEERS  
1304 ST. PAUL ST.  
BALTIMORE, MARYLAND

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

also/79  
DATE

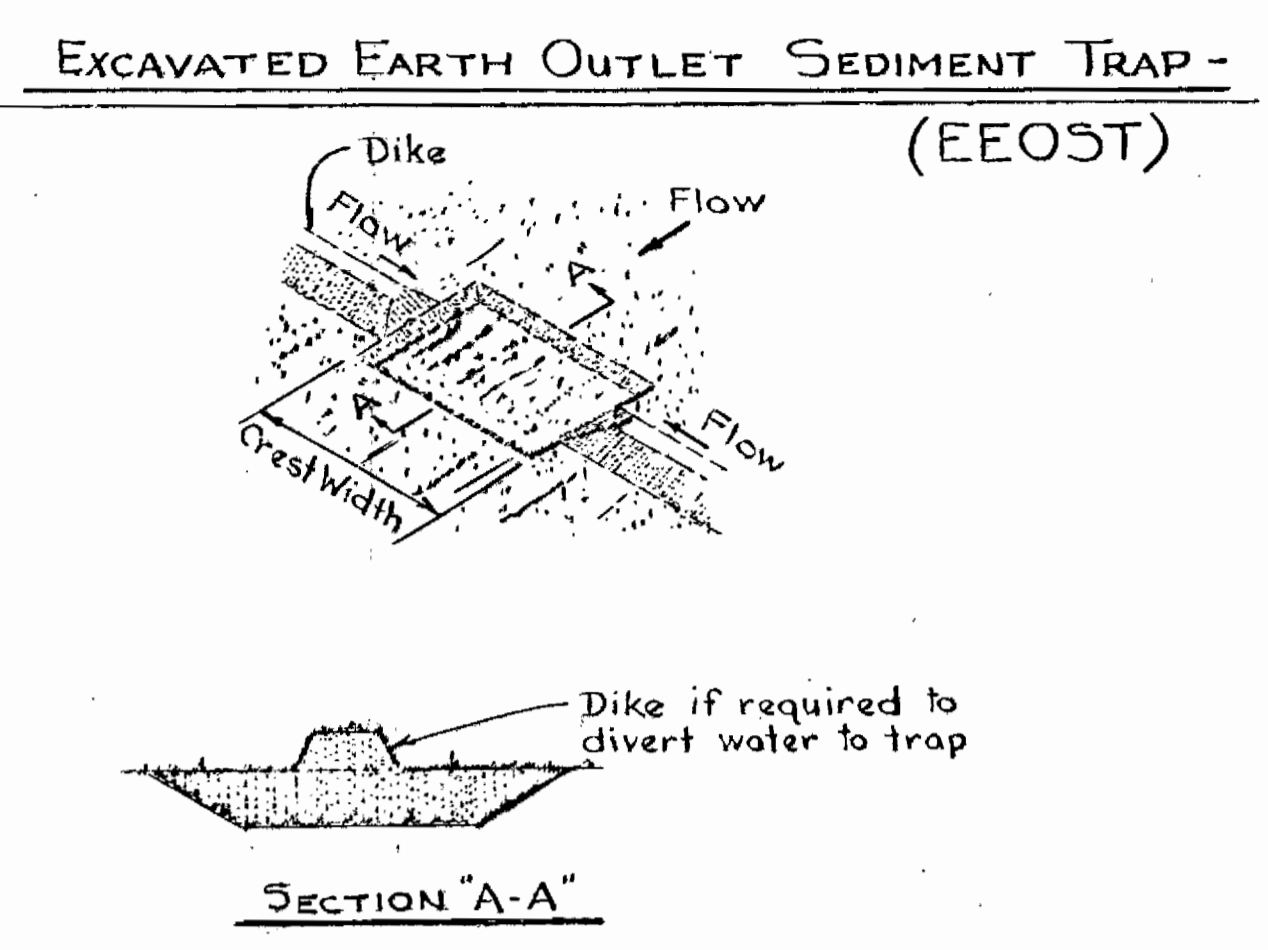
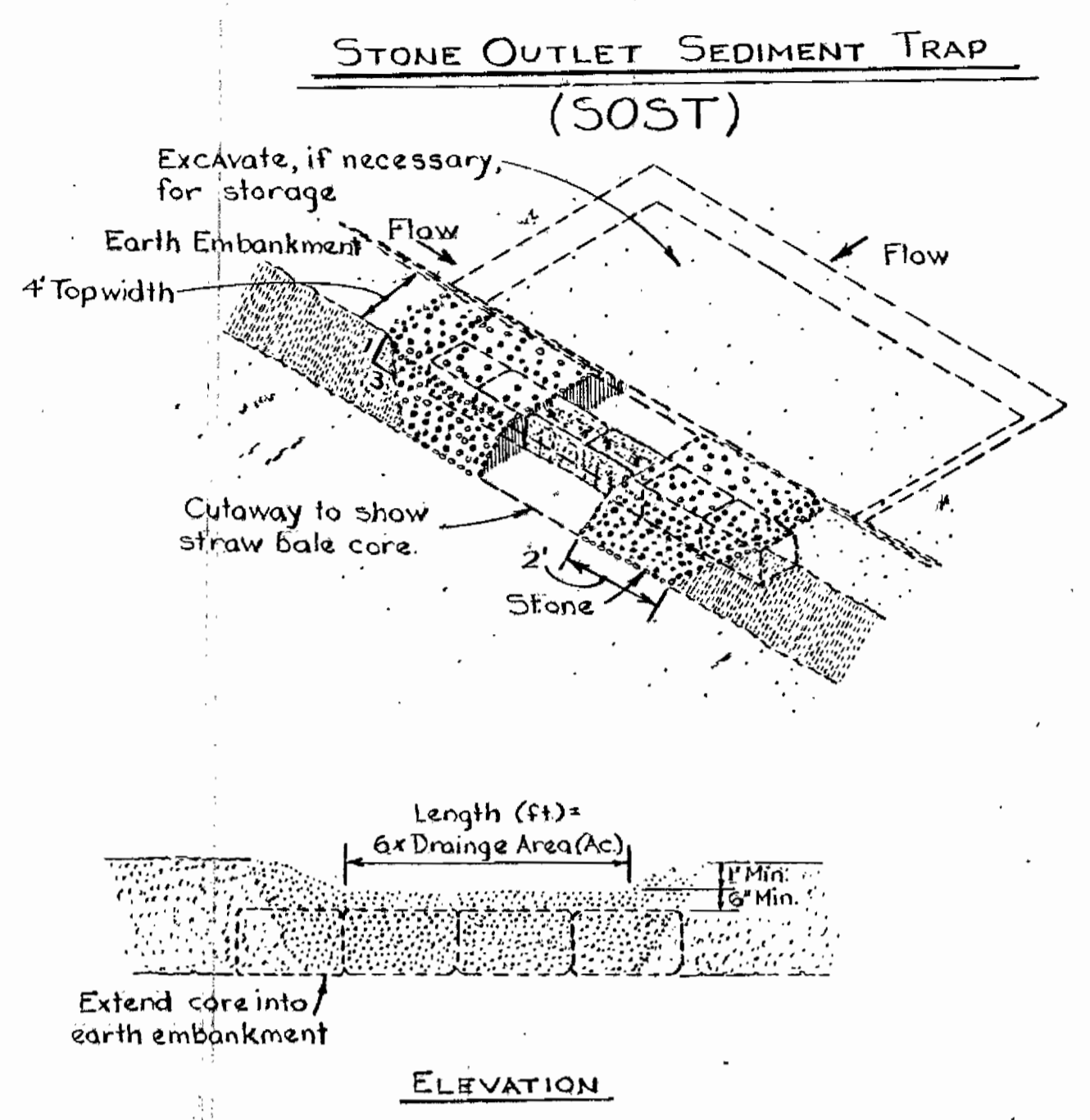
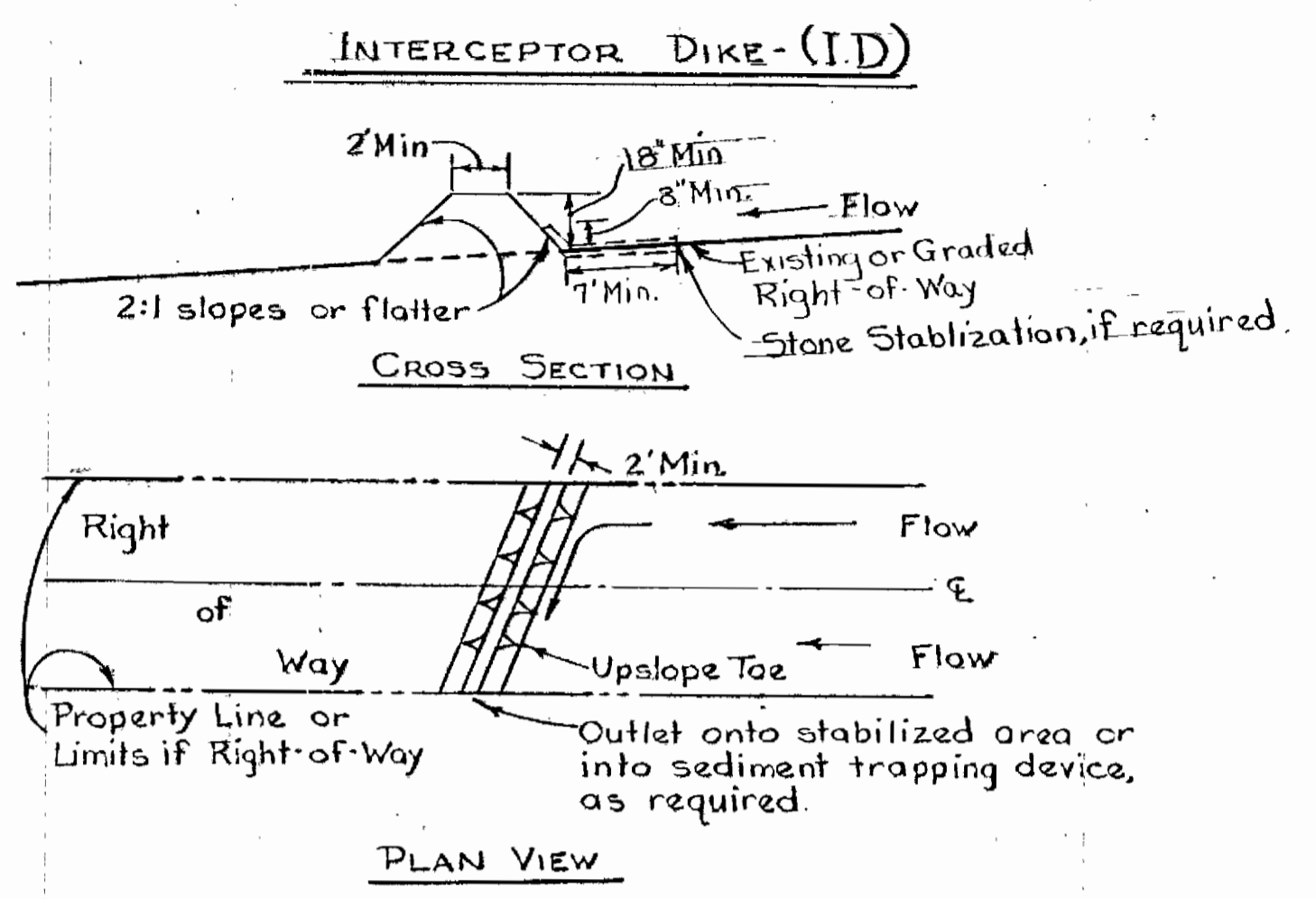
*James M. ...*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CONTRACT NO. 762-S

DETAILS  
SEDIMENT CONTROL PLAN

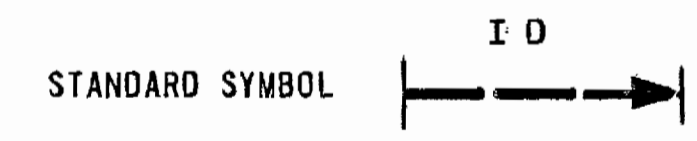
SAVAGE WASTEWATER TREATMENT PLANT  
TREATED EFFLUENT OUTFALL

DRAWING  
NO. 18  
OF 19  
SCALE  
AS  
SHOWN



**CONSTRUCTION SPECIFICATIONS**

1. All dikes shall be machine compacted.
2. All interceptor dikes shall have positive drainage to an outlet.
3. Top width may be wider and side slopes may be flatter if desired to facilitate crossing by construction traffic.
4. Field location should be adjusted as needed to utilize a stabilized safe outlet.
5. Interceptor dikes shall have an outlet that functions with a minimum of erosion. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin when either the interceptor dike channel or the drainage area above the dike are not adequately stabilized.
6. Stabilization, as specified by the plans, shall be: (1) in accordance with Standard Specifications for Grassed Waterway, and the area to be stabilized shall be the channel (flow area); or (2) the flow area shall be lined with stone that meets MSHA size No. 2 or AASHTO size No. 2 or 24 which is placed in a 3 inch thick layer and pressed into the soil. The area covered by the stone shall be as shown on Standard Drawing DD-1.
7. Periodic inspection and required maintenance must be provided.



NOTE - Drawings show straw bales used for core. Bales are anchored as per Standard Specifications for Straw Bale Dike. Other materials (e.g., timber or concrete block) may also be used for core. Firmly anchor all core material to ground.

**CONSTRUCTION SPECIFICATIONS**

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution is minimized.
6. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.
7. All cut and fill slopes shall be 2:1 or flatter.
8. The crushed stone used in the outlet shall meet AASHTO designation M43, size No. 2 or 24 or its equivalent such as MSHA No. 2. Gravel, meeting the above gradation, may be used if crushed stone is not available. Crusher run is not acceptable.

**CONSTRUCTION SPECIFICATIONS**

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
6. The structure shall be removed and re-stabilized when the drainage area has been properly stabilized.
7. All cut and fill slopes shall be 2:1 or flatter.
8. Outlet crest elevation shall be at least one foot below the top of the embankment.



*Kenneth A. McCord*

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DATE: 3/31/79 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	CONTRACT NO. 762-S	DETAILS SEDIMENT CONTROL PLAN	SAVAGE WASTEWATER TREATMENT PLANT TREATED EFFLUENT OUTFALL	DRAWING NO. 19 OF 19 SCALE AS SHOWN
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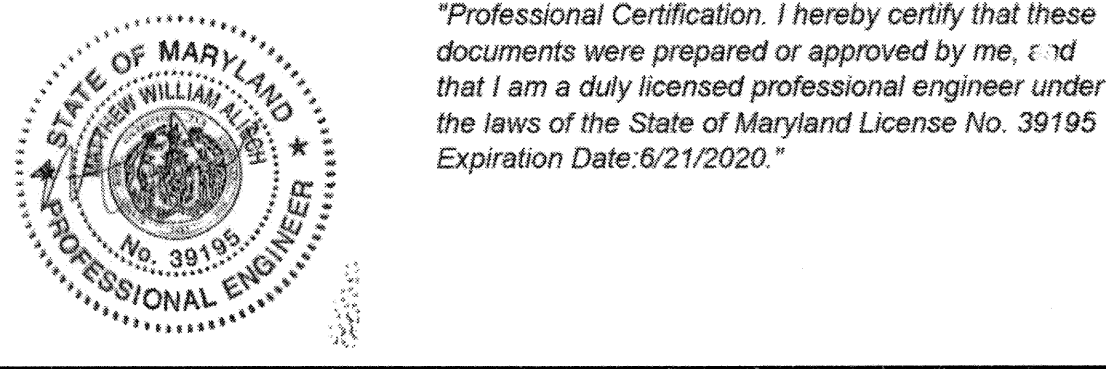
HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS

LITTLE PATUXENT WATER RECLAMATION  
PLANT OUTFALL STREAM BANK  
REHABILITATION  
CAPITAL PROJECT S6268  
CONTRACT NO. 762-S  
AS-BUILT PLAN SET

RECORD CERTIFICATION

I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND PERSONAL BELIEF, THAT THE DEVIATING SURVEYABLE FEATURES OF THE COMPLETED WORK SHOWN ON THESE PLANS WAS CONSTRUCTED TO THE LINES AND GRADES SHOWN.

*[Signature]*  
5/21/2020 39195  
DESIGN PROFESSIONAL (DATE) P.E. NO.



"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland License No. 39195 Expiration Date: 6/21/2020."

SHEET INDEX

SHEET	DWG NO.	DESCRIPTION
20	TI-01	TITLE SHEET
21	LG-01	LEGEND AND ABBREVIATIONS
22	HP-01	STREAM BANK REPAIR PLAN AND PROFILE
23	HP-02	STREAM BANK REPAIR DETAILS
24-28	HC-01 TO 05	IMBRICATED RIPRAP WALL CROSS SECTIONS
29	ES-01	SEDIMENT AND EROSION CONTROL PLAN
30-31	ES-02 TO 03	SEDIMENT AND EROSION CONTROL NOTES
32-33	ES-04 TO 05	SEDIMENT AND EROSION CONTROL DETAILS

OWNERS/DEVELOPER CERTIFICATION:

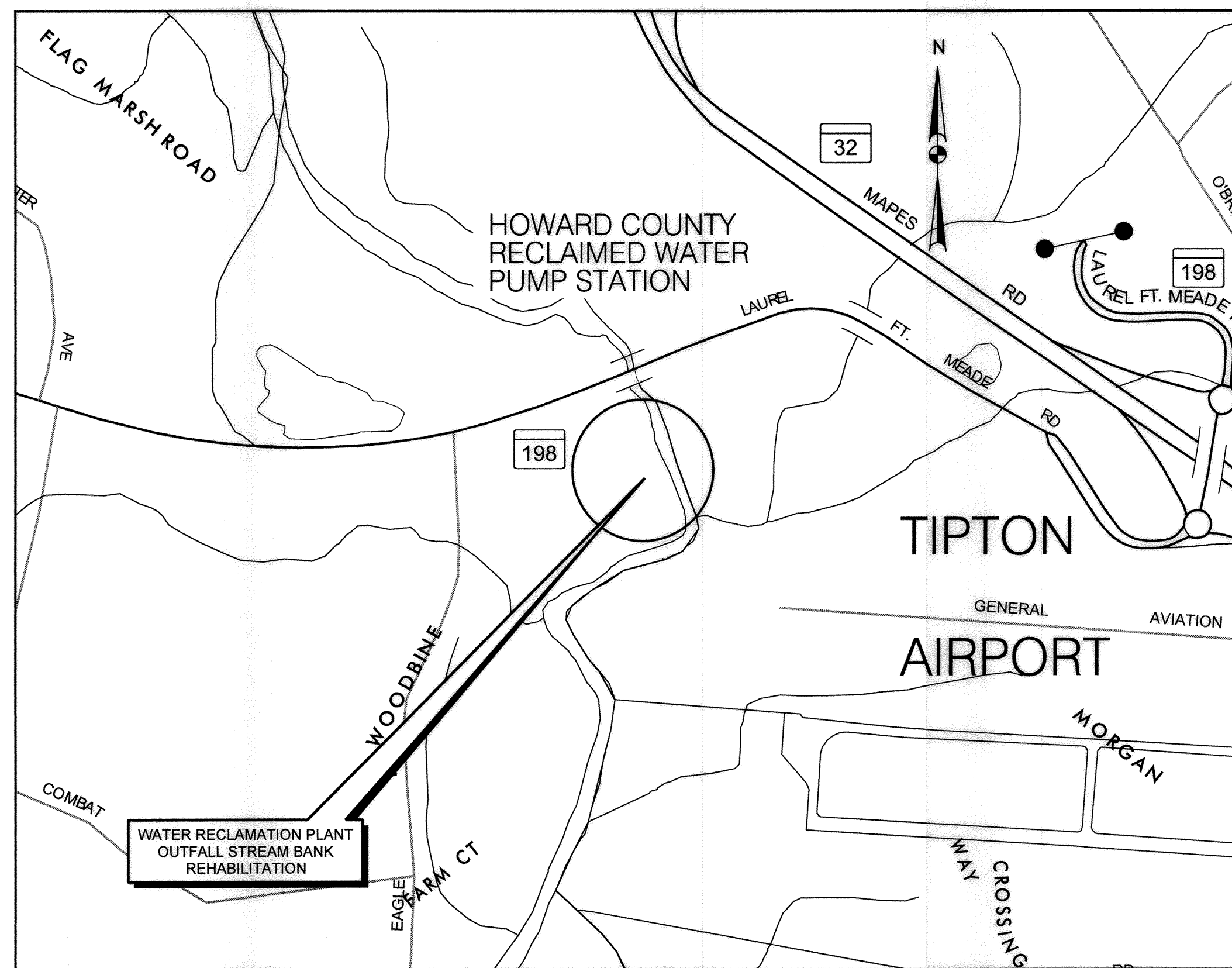
"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

*[Signature]* 1-8-2019  
OWNER'S/DEVELOPER'S SIGNATURE DATE  
MICHAEL C. KINCHIT  
PRINTED NAME & TITLE

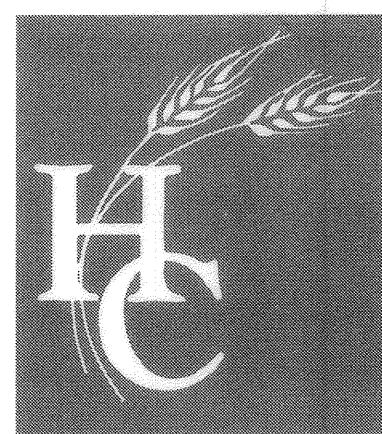
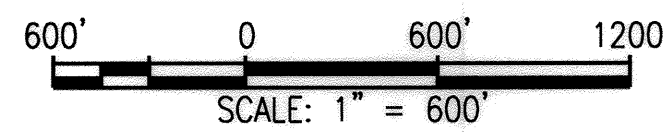
DESIGN CERTIFICATION:

"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 AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

*[Signature]* 12/28/2018  
DESIGNER'S SIGNATURE DATE  
JASON D. COSLER MD REGISTRATION NO. 28467  
PRINTED NAME (P.E.) R.L.S., OR R.L.A. (CIRCLE ONE)



VICINITY MAP



GENERAL NOTES

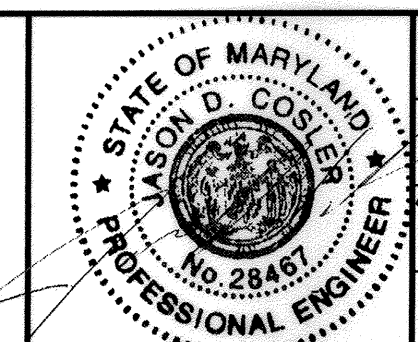
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION (MDOT-SHA) STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST THREE (3) DAYS PRIOR TO ANY EXCAVATION WORK BEING DONE. 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.  
  
BUREAU OF UTILITIES, HOWARD COUNTY, 410-713-4900  
BGE GAS DIVISION (410) 291-5834  
BGE ELECTRIC DIVISION (410) 470-4494  
VERIZON (410) 224-9980  
COMCAST, 410-931-4600  
COMCAST FIBER, 410-427-9600  
COLONIAL PIPELINE, 1-800-275-3004
- TRAFFIC CONTROL DEVICES:  
  
A) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).  
  
B) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY WHITMAN, REQUARDT AND ASSOCIATES, LLP 801 SOUTH CAROLINE STREET BALTIMORE, MARYLAND 21231 FROM JULY, 2018.
- COORDINATES SHOWN HEREON ARE IN THE MARYLAND STATE REFERENCE SYSTEM NAVD '83 (ADJ 2011) AS PROJECTED FROM HOWARD COUNTY GEODETIC CONTROL POINTS:  
  
POINT NORTHING EASTING ELEV.  
38AA 561158.8153 1389726.4260 220.0356  
38BA 562553.3140 1390967.9560 166.1740  
50B5 524999.3110 1357925.7290 177.4270  
50BD 527593.8300 1359803.0180 245.8030  
  
VERTICAL CONTROL IS NAVD '88
- 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.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. AS NECESSARY, CLEARING SHALL BE LIMITED TO THE "LIMIT OF DISTURBANCE" AS SHOWN ON THE SEDIMENT AND EROSION 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.
- 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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL," DATED 2011, PUBLISHED JOINTLY BY MDE WATER MANAGEMENT ADMINISTRATION, NATURAL RESOURCES SOIL CONSERVATION SERVICE, AND MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS.
- 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.
- 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.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5"-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED.
- FOR DETAILS NOT SHOWN ON THE DRAWING, 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.
- THE SITE WAS HISTORICALLY USED FOR U.S. ARMY ORDNANCE TESTING. IF ANY UNUSUAL OR SUSPICIOUS OBJECTS ARE ENCOUNTERED DURING CONSTRUCTION, NOTIFY HOWARD COUNTY PM AND THE FORT MEADE DEPARTMENT OF EMERGENCY SERVICES, NON-EMERGENCY SERVICES (24 HOURS) AT: 301-677-6622 OR 301-677-6623.
- 2 WEEKS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL, IN COORDINATION WITH THE COUNTY PM, HOLD A PRECONSTRUCTION MEETING. AT THIS MEETING THE CONTRACTOR WILL RECEIVE THE REQUIRED BRIEFING RELATED TO THE PRESENCE OF UNEXPLODED MILITARY ORDNANCE ON THE PROPERTY.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28467, EXPIRATION DATE: 12/20/2020."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

*[Signature]* 7/8/2020  
DATE  
*[Signature]* 6-29-2020  
DATE  
CHIEF, BUREAU OF UTILITIES  
CHIEF, UTILITY DESIGN DIVISION

PREPARED BY:  
**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES:	ABR	JDC	(A)	AS-BUILT (REPLACEMENT SHEET)	10/2019
DRN:	ABR				
CHK:	JDC				
DATE:	12/28/18				

BY	NO.	REVISION	DATE

TITLE SHEET

ELECTION DISTRICT 6  
HOWARD COUNTY, MARYLAND

AS-BUILT OCT. 2019

DWG.	TI-01
SCALE	NONE
SHEET	20 OF 33

N:\14104-000\CADD\AS-BUILT SHEETS\pct-7000\_MDI\8800Little\_Patuxent-AS BUILT.dgn  
May 21, 2020

# ABBREVIATIONS

A.A.S.H.T.O. .... American Association of State Highway Transportation Officials	IN..... Inch	R.O.D. .... Rock Quality Designation
ADT..... Average Daily Traffic	I.S.T..... Inlet Sediment Trap	R.M..... Rootmat
AHD..... Ahead	INV..... Invert	S..... South
APPROX..... Approximate	J.B..... Junction Box	SAN..... Sanitary Sewer
B or B/L ..... Baseline	K..... K Inlet	SB or S/B... Southbound
BGE or BG&E. Baltimore Gas and Electric	L..... Length	SBD..... Sandbag Diversion
BIT..... Bituminous	LF..... Linear Feet	SCE..... Stabilized Construction Entrance
B.C..... Bituminous Concrete	L.L..... Liquid Limit	S.D..... Storm Drain
B.M..... Bench Mark	LOD..... Limit of Disturbance	S.D.D..... Surface Drain Ditch
BOT..... Bottom	LP..... Low Point	S/E..... Super Elevation
C.C..... Center of Curve	L.P..... Light Pole	SE..... Southeast
CATV..... Cable Television	LT..... Left	SF..... Silt Fence
C.B.R..... California Bearing Ratio	MAC..... Macadam	S.F..... Square Feet
CIP..... Cast Iron Pipe	M.C..... Moisture Content	SHT..... Sheet
Q or C/L ..... Centerline	MAX..... Maximum	SP..... Sump Pit
C&G..... Curb and Gutter	M.D.D..... Maximum Dry Content	S.P.P..... Structural Plate Pipe
CL..... Class	MH..... Manhole	S.P.T..... Standard Penetration Testing
CLF..... Chainlink Fence	MUTCD..... Manual on Uniform Traffic Control Devices	SSMH..... Sanitary Sewer Manhole
CMP..... Corrugated Metal Pipe	MOD..... Modified	SSF..... Super Silt Fence
C.O..... Cleanout	MIN..... Minimum	STD..... Standard
COMB..... Combination	N..... North	STA..... Station
CONC..... Concrete	N.B..... Northbound	SO..... Single Opening
CONSTR..... Construction	NE..... Northeast	S.Y..... Square Yards
COR..... Corner	N.P..... Non-Plastic	SW..... Southwest
CORR..... Correction	NO..... Number	SWM..... Stormwater Management
DC..... Degree of Curve	O.C..... On Center	T..... Tangent
D.H.V..... Design Hourly Volume	OHE..... Overhead Electric	T..... Telephone
D.I..... Drop Inlet	O.M..... Optimum Moisture	T.C..... Top of Cover
DIA..... Diameter	PAV.T..... Pavement	T.G..... Top of Gate
DIR..... Direction	P.C..... Point of Curvature	T or TL..... Traverse Line
DP..... Diversion Pipe	P.C.C..... Point of Compound Curvature	T.M..... Top of Manhole
E..... East	P/C..... Point of Crown	TRAV..... Traverse
ELEC..... Electric	P/GE..... Profile Grade Elevation	TS..... Temporary Swale
E..... External Distance	P.G.E..... Profile Ground Elevation	T.S..... Top of Slab
EA..... Each	P.G.L..... Profile Grade Line	TYP..... Typical
E.B..... Eastbound	P/GL..... Profile Ground Line	U.D..... Under Drain
ELEV..... Elevation	P/R..... Point of Rotation	U.G..... Underground
E.R.C.C.P..... Elliptical Reinforced Cement Concrete Pipe	P.I..... Plasticity Index	U.P..... Utility Pole
ES..... End Section	P.I..... Point of Intersection	U.S.D.A..... United States Department of Agriculture
ESC..... Erosion and Sediment Control	P.O.C..... Point On Curve	VCL..... Vertical Clearance
EX. or EXIST..... Existing	P.O.T..... Point On Tangent	V.C.L..... Vertical Curve Length
FT..... Feet/Foot	PROP..... Proposed	W..... Water
F or FL..... Flowline	P.R.C..... Point of Reverse Curve	W..... West
F.B.D..... Flat Bottom Ditch	PT..... Point	W.B..... Westbound
F.H..... Fire Hydrant	P.T..... Point of Tangency	WB..... Wetland Buffer
FWD..... Forward	P.V.C..... Point of Vertical Curve	W.M..... Water Meter
G..... Gas	PVC..... Polyvinyl Chloride	W.S..... Wrapped Steel
G.V..... Gas Valve	PVI..... Point of Vertical Intersection	WUS..... Waters of the United States
H.B..... Handbox	PVRC..... Point of Vertical Reverse Curve	W.V..... Water Valve
H.D.P..... High Density Polyethylene	PVT..... Point of Vertical Tangency	
HDWL..... Headwall	R..... Radius	
H.E.R.C.P..... Horizontal Elliptical Reinforced Concrete Pipe	R.F..... Rock Fragments	
HP..... High Point	RD..... Road	
	RT..... Right	
	RW or R/W..... Right of Way	
	R.C.P..... Reinforced Cement Pipe	
	R.C.C.P..... Reinforced Cement Concrete Pipe	

# SYMBOLS / LINSTYLES LEGEND

EXISTING GUY WIRE.....		BASE LINE OR SURVEY LINE.....		TEMPORARY BRIDGE.....	
EXISTING PIPE / CULVERT.....		PROPOSED INDEX CONTOUR.....			
MUNICIPALITY LINE.....		PROPOSED INTERVAL CONTOUR.....			
PROPERTY LINE.....		PROPOSED W BEAM.....			
PERSCRPTIVE EASEMENT.....		PROPOSED EFFECTIVE EDGE OF ROAD.....			
PERPETUAL EASEMENT.....		BORING TARGET.....			
TEMPORARY CONSTRUCTION EASEMENT.....		PROPOSED RIPRAP.....			
EXISTING ROADWAY.....		PROPOSED IMBRICATED RIPRAP WALL.....			
EXISTING W-BEAM.....		PROPOSED STABILIZATION MATTING.....			
EX. UTILITY POLE.....		LIMIT OF DISTURBANCE.....			
TREE LINE.....		FILTER LOG.....			
DECIDUOUS TREE.....		SANDBAG DIVERSION.....			
EXISTING RIPRAP.....		STABILIZED CONSTRUCTION ENTRANCE.....			
WETLANDS.....		SUMP PIT.....			
WETLAND BUFFER.....		FILTER BAG.....			
CENTERLINE OF STREAM.....		FULL DEPTH PAVEMENT.....			
W.U.S.....		GRINDING AND RESURFACE.....			
EXISTING INDEX CONTOUR.....		IMBRICATED WALL CONTROL POINT.....			
EXISTING INTERVAL CONTOUR.....					
100-YEAR FLOODPLAIN.....					
EDGE OF WATER.....					

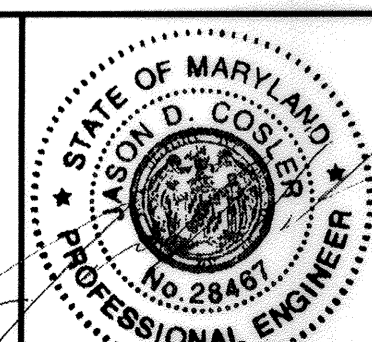
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AS-BUILT OCT. 2019

DWG. LG-01

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.  
7/6/2020  
6-27-2020

PREPARED BY:  
**WRA**  
Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

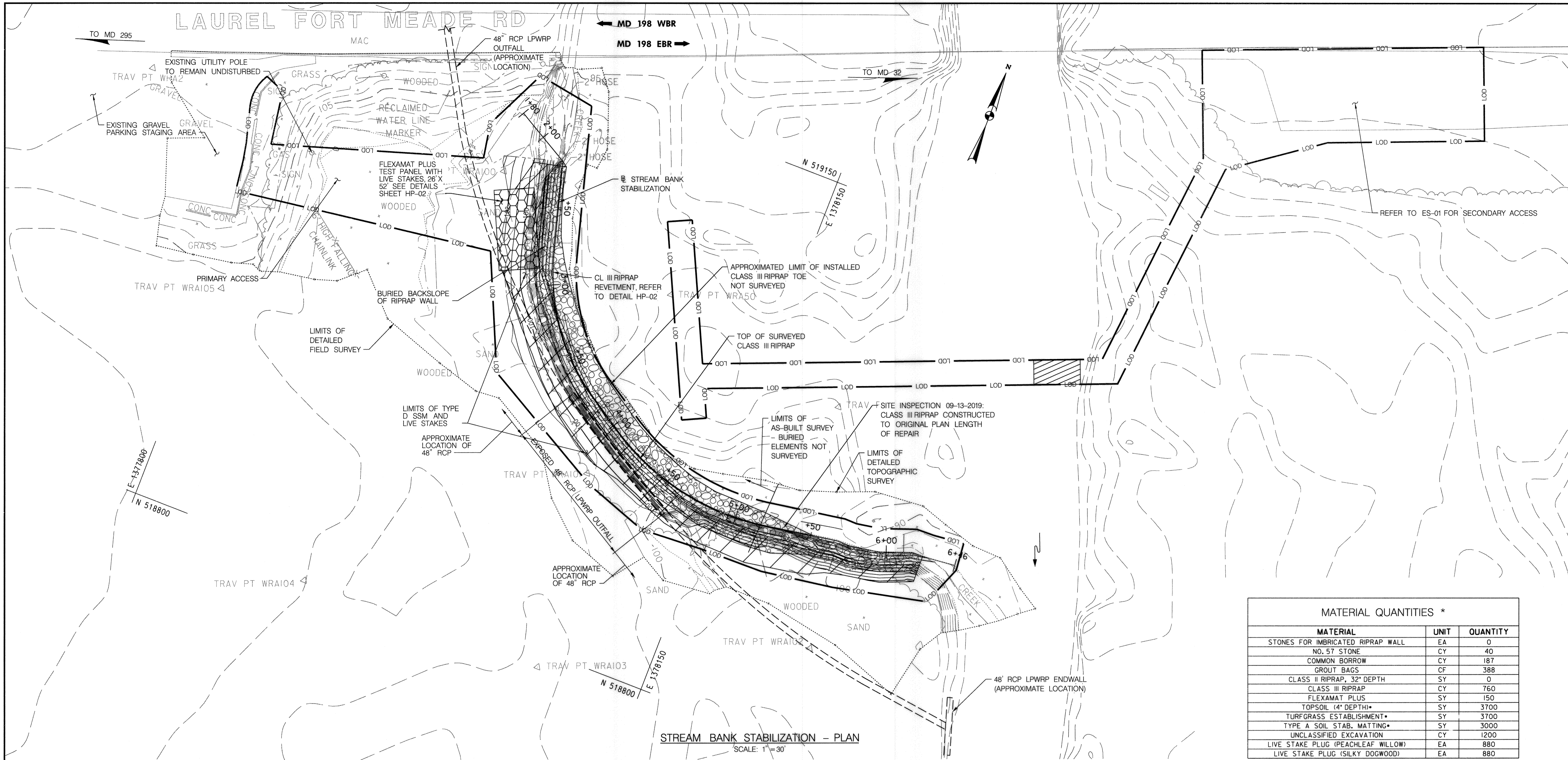


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DRN: ABR			
CHK: JDC			
DATE: 12/28/18			

LEGEND AND ABBREVIATIONS

LITTLE PATUXENT WATER RECLAMATION  
PLANT OUTFALL STREAM BANK REHABILITATION  
AS-BUILT  
ELECTION DISTRICT 6  
HOWARD COUNTY, MARYLAND

SCALE NONE  
SHEET 21 OF 33

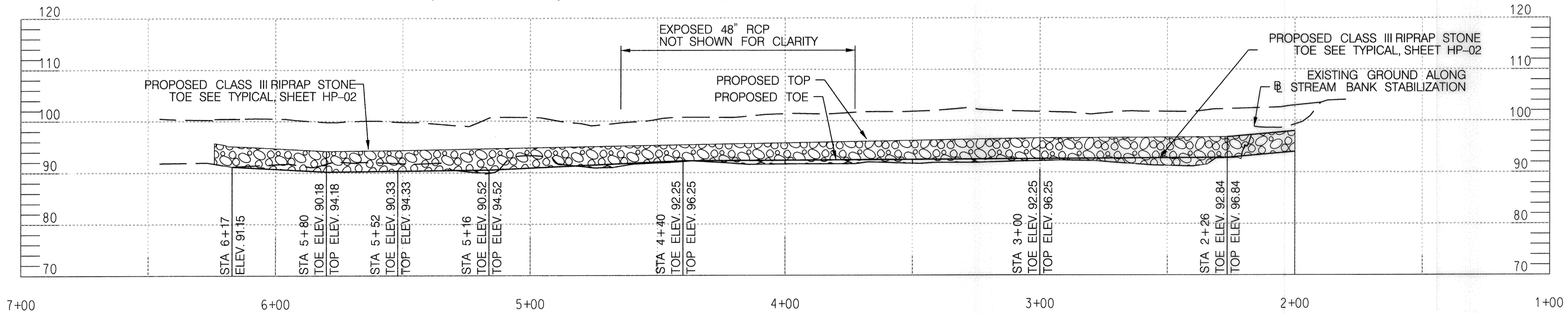


STREAM BANK STABILIZATION - PLAN  
SCALE: 1" = 30'

MATERIAL QUANTITIES *		
MATERIAL	UNIT	QUANTITY
STONES FOR IMBRICATED RIPRAP WALL	EA	0
NO. 57 STONE	CY	40
COMMON BORROW	CY	187
GROUT BAGS	CF	388
CLASS II RIPRAP, 32" DEPTH	SY	0
CLASS III RIPRAP	CY	760
FLEXAMAT PLUS	SY	150
TOPSOIL (4" DEPTH)*	SY	3700
TURFGRASS ESTABLISHMENT*	SY	3700
TYPE A SOIL STAB. MATTING*	SY	3000
UNCLASSIFIED EXCAVATION	CY	1200
LIVE STAKE PLUG (PEACHLEAF WILLOW)	EA	880
LIVE STAKE PLUG (SILKY DOGWOOD)	EA	880

\* 1400 SY OF THIS QUANTITY APPLIES TO SECONDARY CONSTRUCTION ACCESS AREA.

- NOTES:
- MATERIAL AND EXCAVATION QUANTITIES ARE APPROXIMATE.
  - REFER TO PERMANENT STABILIZATION, SHEET ES-03, FOR TURFGRASS ESTABLISHMENT SPECIFICATIONS.
  - INSTALL TYPE A SOIL STABILIZATION MATTING OVER TOPSOIL ON ALL UPLAND AREAS WITHIN LOD EXCEPT THOSE AREAS WHERE TYPE D SOIL STABILIZATION MATTING IS PROPOSED.
  - FLEXAMAT QUANTITY DOES NOT INCLUDE AREA FOR SEAM OVERLAP OR ANCHOR EMBEDMENT.

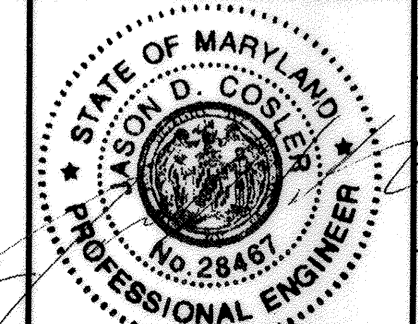


STREAM BANK STABILIZATION - PROFILE  
HORI SCALE: 1" = 30'  
VERT SCALE: 1" = 15'

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28467, EXPIRATION DATE: 12/20/2020."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.  
*Thomas S. Grottel* 7/6/2020  
 CHIEF, BUREAU OF UTILITIES  
*Thomas S. Grottel* 6-22-2020  
 CHIEF, UTILITY DESIGN DIVISION

PREPARED BY:  
**WRA**  
 Whitman, Requardt & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



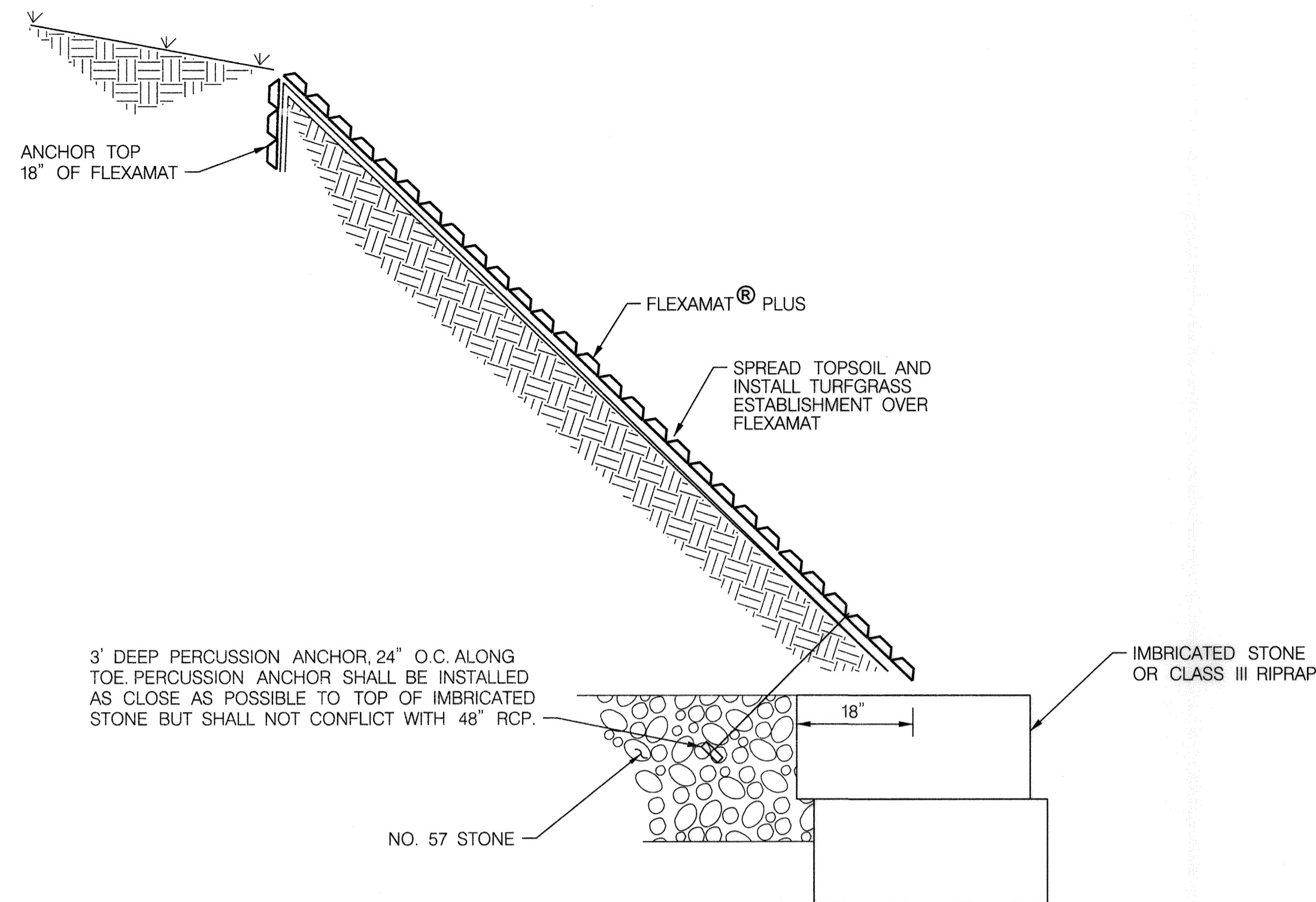
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DRN: ABR				
CHK: JDC				
DATE: 12/28/18	BY	NO.	REVISION	DATE

STREAM BANK REPAIR  
 PLAN VIEW AND PROFILE

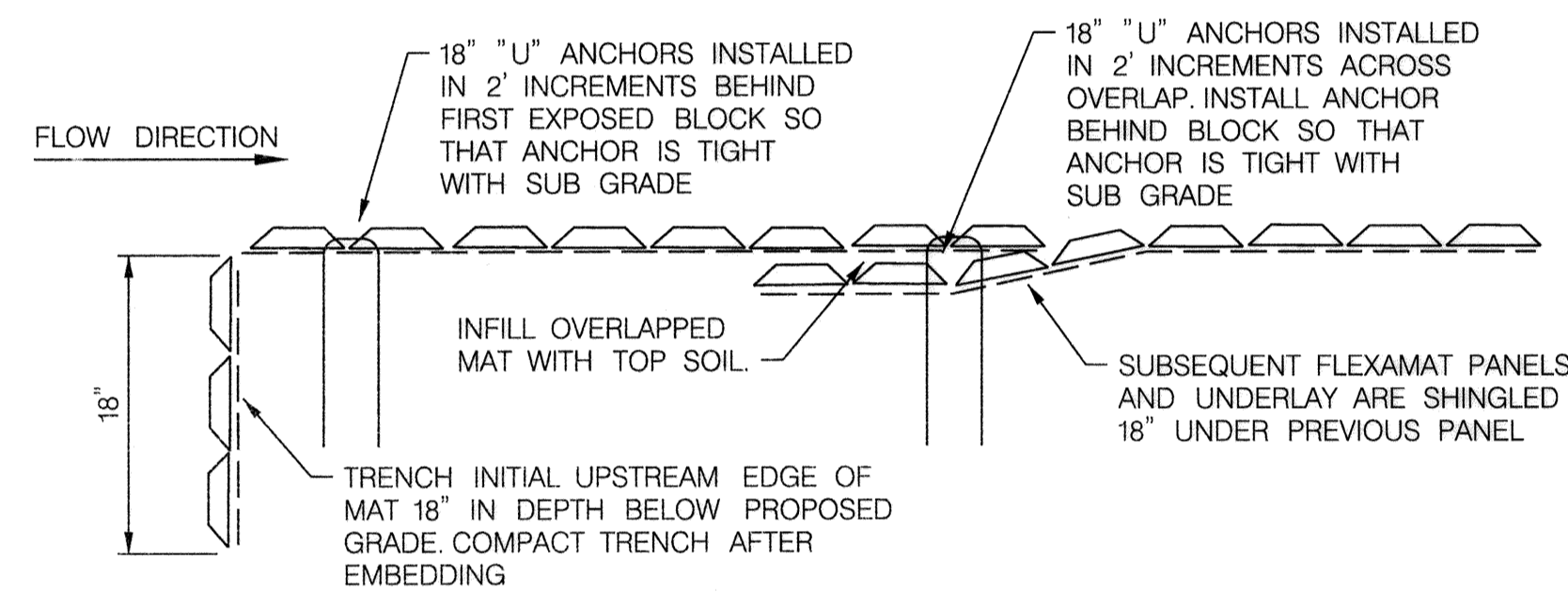
AS-BUILT OCT. 2019  
 LITTLE PATUXENT WATER RECLAMATION  
 PLANT OUTFALL STREAM BANK REHABILITATION  
 AS-BUILT  
 ELECTION DISTRICT 6  
 HOWARD COUNTY, MARYLAND

DWG.  
 HP 01  
 SCALE  
 1" = 30'  
 SHEET  
 22 OF 33

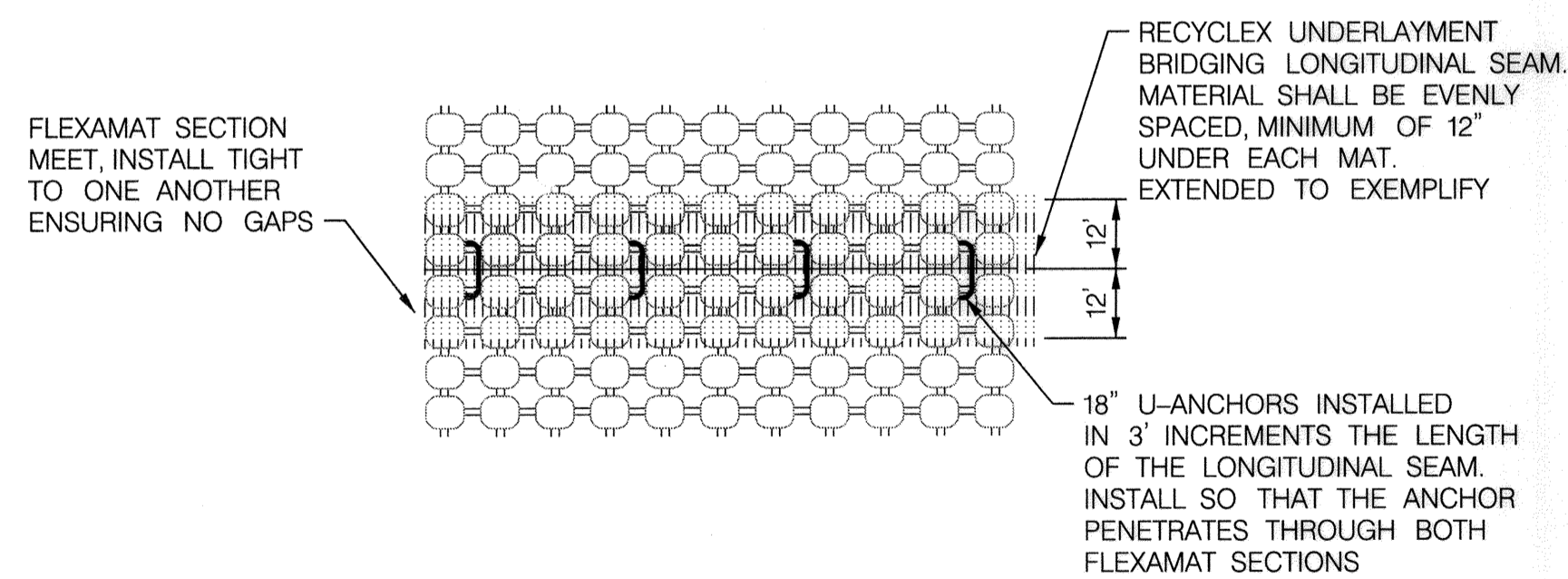
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 May 22, 2020



FLEXAMAT - TYPICAL SECTION  
SCALE: NTS



FLEXAMAT - LONGITUDINAL OVERLAP DETAIL  
SCALE: NTS

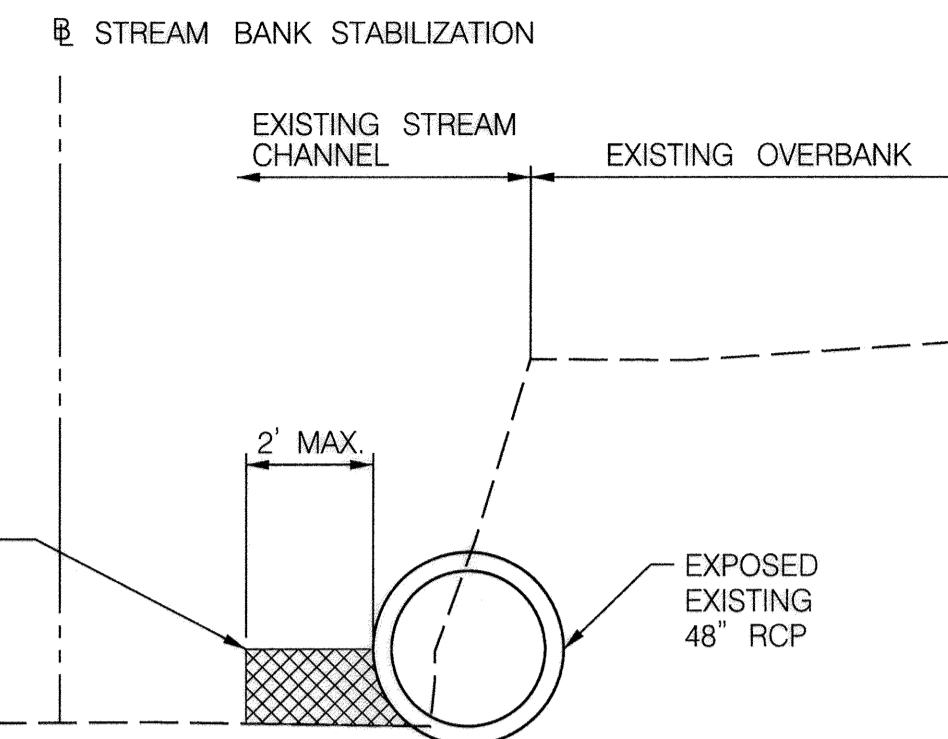


FLEXAMAT LONGITUDINAL SEAM PROFILE  
SCALE: NTS

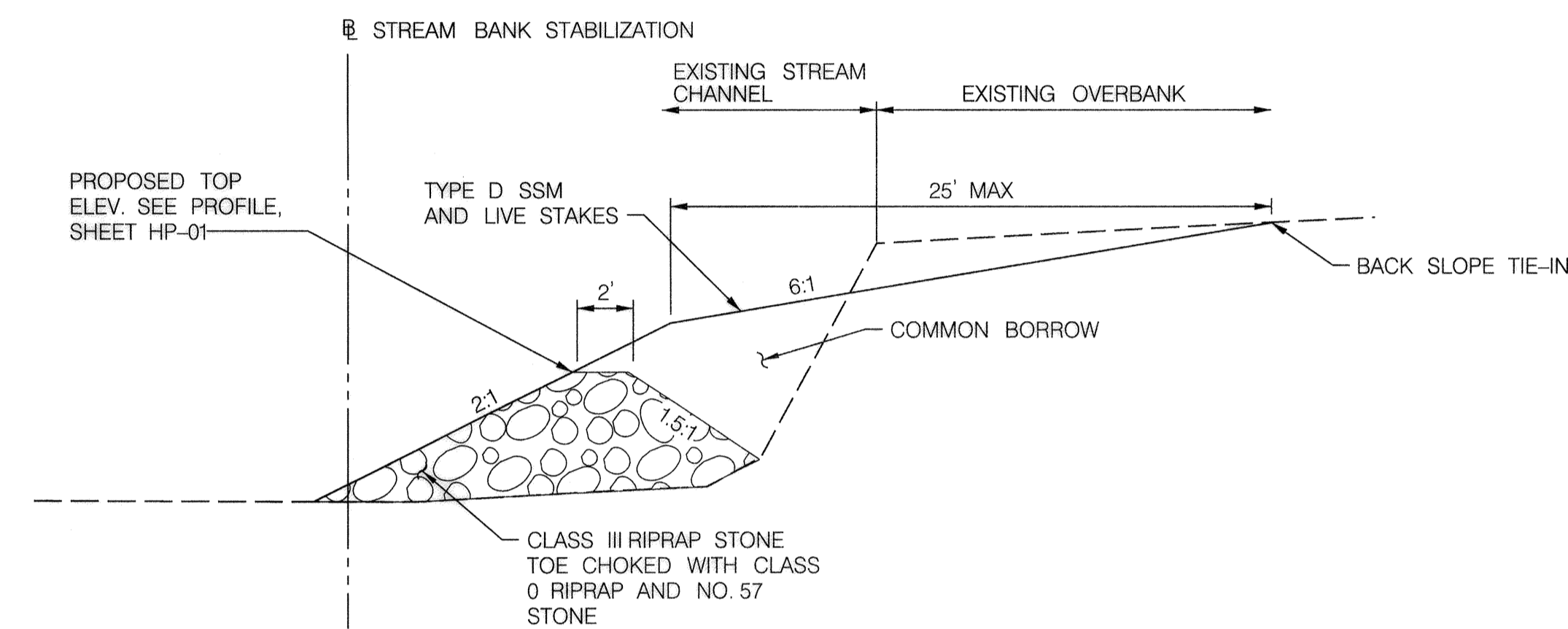
- \* FLEXAMAT INSTALLATION NOTES:**
- INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
  - OVERLAP VERTICAL SHEET JOINTS 48" AND SECURE TO GROUND USING GALVANIZED 18" U-STAPLES. UPSTREAM SHEET SHALL BE PLACED OVER DOWNSTREAM SHEET TO PREVENT UPLIFT BY STREAMFLOW.
  - EMBED TOP AND BOTTOM EDGES OF FLEXAMAT PLUS 18" INTO GROUND.
  - INSTALL PERCUSSION ANCHORS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INSTALLED ONLY AS TEST PANEL, REFER TO HP-01

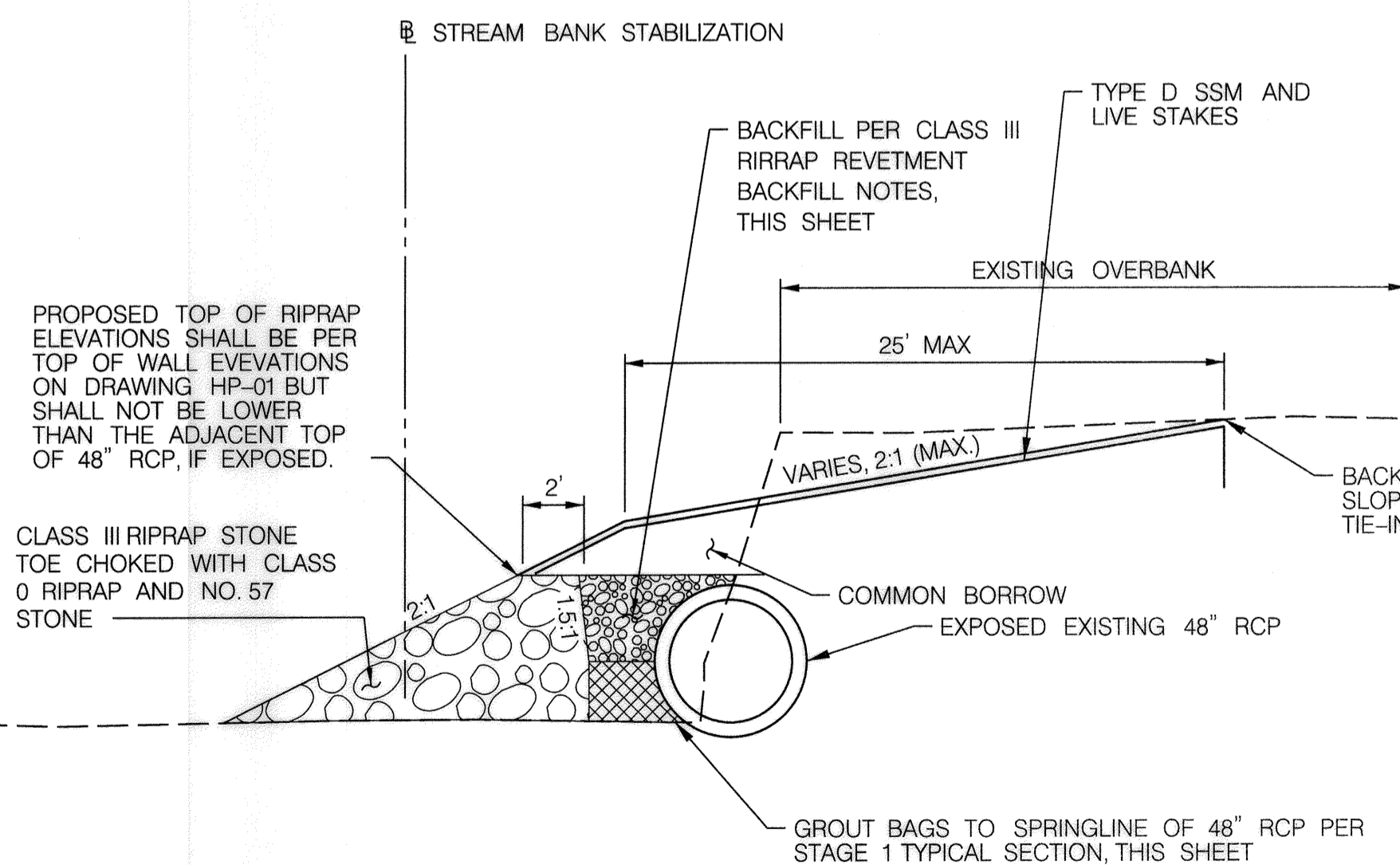
PLACE GROUT BAGS TO SPRINGLINE OF 48" RCP ALONG THE LENGTH OF EXPOSED SEGMENT NOMINAL GROUT BAG DIMENSIONS: 20" L X 12" W X 3" H. MAXIMUM THICKNESS (H) SHALL BE 12". SEE GROUT BAG NOTES, THIS SHEET FOR SPECIFICATIONS.



STAGE 1 STREAM BANK STABILIZATION (GROUT BAGS) - TYPICAL SECTION  
SCALE: 1" = 5'



STAGE 2 - STREAM BANK STABILIZATION (CLASS III RIPRAP) - TYPICAL SECTION  
STA 2+20 TO 3+00 AND 5+52 TO 6+24  
SCALE: 1" = 5'



STAGE 2 - CLASS III REVETMENT - TYPICAL SECTION  
SCALE: 1" = 5'

**GROUT BAG NOTES:**

- GROUT BAGS SHALL BE MADE OF A HIGH STRENGTH WATER PERMEABLE FABRIC OF NYLON AND CORDURA. EACH BAG SHALL BE PROVIDED WITH A SELF-CLOSING INLET VALVE TO ACCOMMODATE INSERTION OF THE GROUT PUMPING HOSE. SEAMS SHALL BE FOLDED AND DOUBLE STITCHED. GROUT BAG FABRIC SHALL EXHIBIT THE FOLLOWING PROPERTIES IN BOTH WARP AND FILL DIRECTIONS:
- | TEST PROPERTY         | TEST METHOD          | SPECIFICATION LIMITS |
|-----------------------|----------------------|----------------------|
| TENSILE STRENGTH, MIN | D 4632, GRAB METHOD  | 400 LB/LIN.          |
| TEAR STRENGTH, MIN    | D 4533, TRAP. METHOD | 90 LB                |
- GROUT FOR GROUT BAGS SHALL CONSIST OF 846 LB/YD<sup>3</sup> OF TYPE II PORTLAND CEMENT, 6 + 1 PERCENT AIR ENTRAINMENT BY VOLUME, MORTAR SAND AGGREGATE, AND WATER PROPORTIONED TO PROVIDE A PUMPABLE MIXTURE. THE 28 DAY COMPRESSIVE STRENGTH SHALL BE 3500 PSI.

**CLASS III RIPRAP REVETMENT BACKFILL NOTES:**

- CLASS III RIPRAP SHALL BE CHOKED WITH SMALLER RIPRAP, NO. 57 STONE AND OTHER APPROVED AGGREGATE MATERIALS IN ORDER TO PREVENT MIGRATION OF BACKFILL THROUGH RIPRAP.
- WHERE BACKSLOPE OF CLASS III RIPRAP REVETMENT IS 1.5:1 OR MILDER, BACKFILL TO TOP OF PIPE WITH NO. 57 STONE AFTER RIPRAP IS SUFFICIENTLY CHOKED.
- WHERE BACKSLOPE OF REVETMENT IS STEEPER THAN 1.5:1, COMPACTIBLE BACKFILL CONSISTING OF CRUSHER RUN CR-6 OR APPROVED EQUAL SHALL BE COMPACTED TO TOP OF PIPE IN CONJUNCTION WITH PLACEMENT AND CHOKING OF RIPRAP IN ORDER TO PREVENT RIPRAP FROM IMPACTING 48" RCP.
- BACKFILL TO FINAL GRADE WITH COMMON BORROW AND STABILIZE WITH TYPE D SSM AND LIVE STAKES.

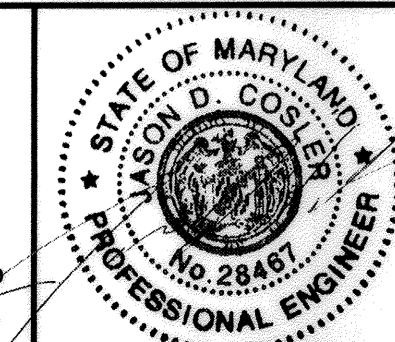


**FLEXAMAT INFORMATION**  
 Manufacturer: Motz Enterprises, Inc.  
 Product Name: Flexamat\*  
 Address: 3153 Madison Road  
 Cincinnati, Ohio 45209  
 Telephone: 513-772-MOTZ (6689)  
 Fax: 513-772-6690  
 Email: info@flexamat.com  
 Website: www.flexamat.com

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND.  
 Director of Public Works: *Melanie J. Smith* 7/8/2020  
 Chief, Bureau of Utilities: *Chris J. ...* 6-29-2020  
 Chief, Utility Design Division: *...*

PREPARED BY:  
**WRA**  
 Whitman, Requardt & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



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CHK: JDC				
DATE: 12/28/18	BY	NO.	REVISION	DATE

600' SCALE MAP NO. 47 BLOCK NO. 24

STREAM BANK REPAIR DETAILS  
 ELECTION DISTRICT 6  
 HOWARD COUNTY, MARYLAND

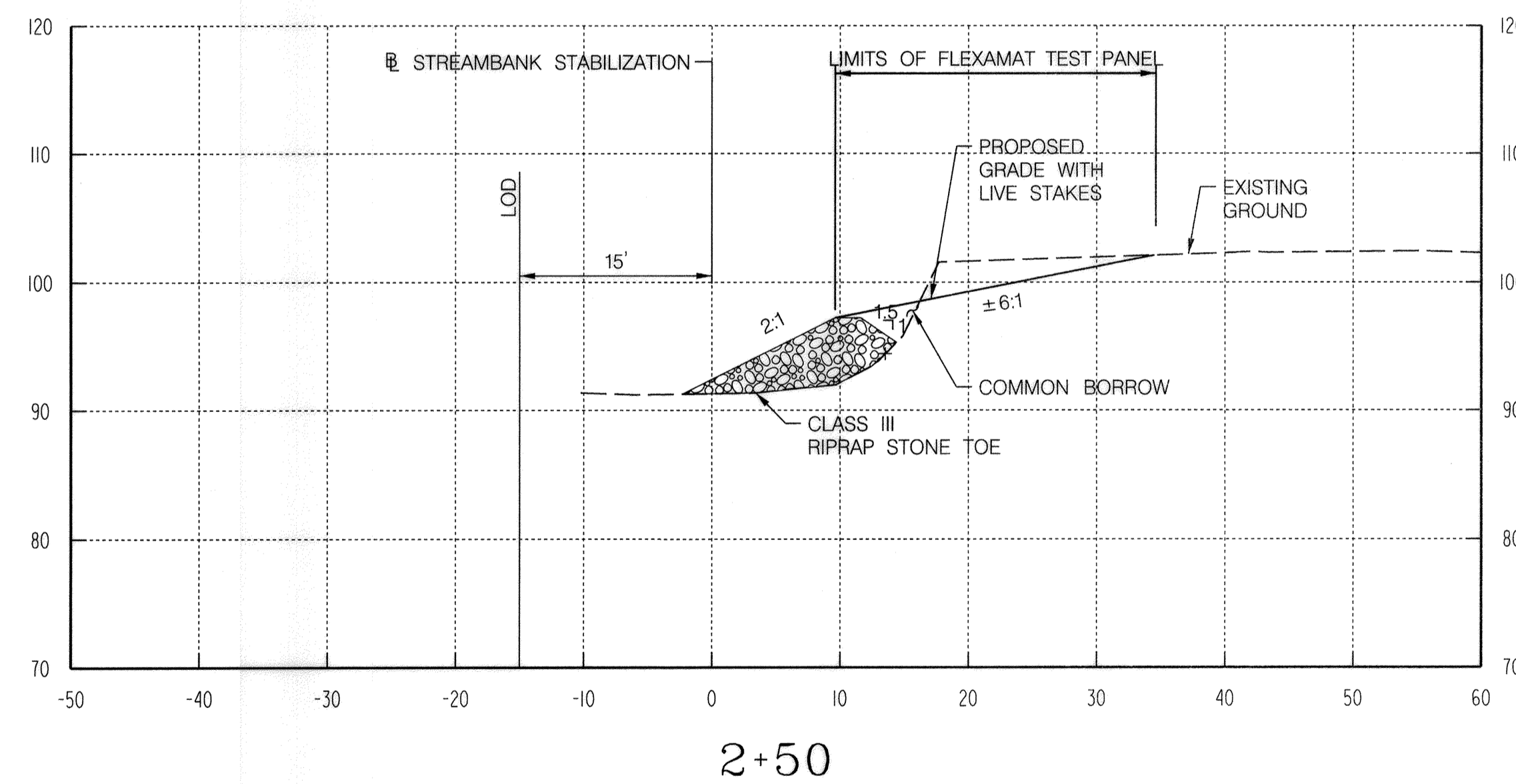
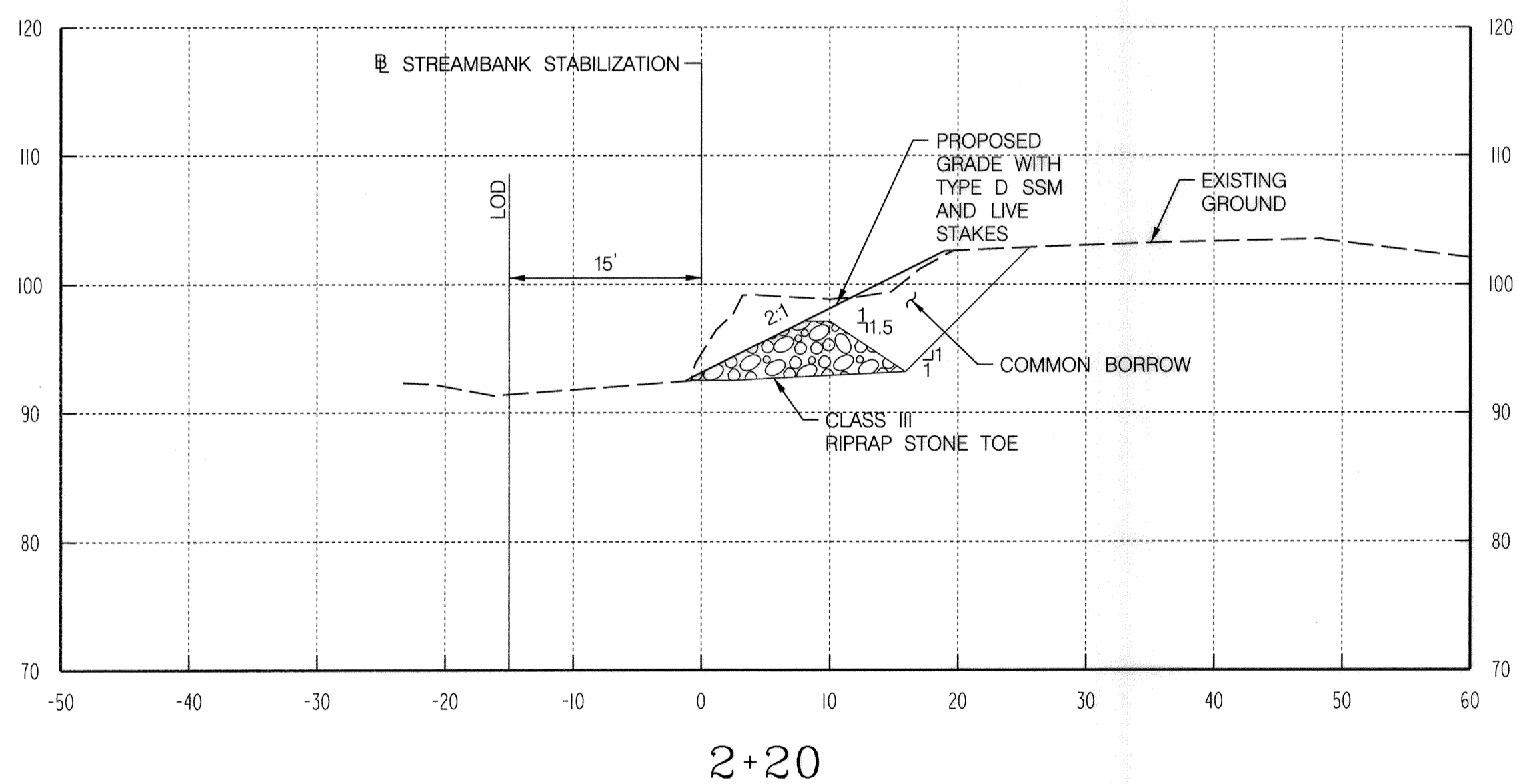
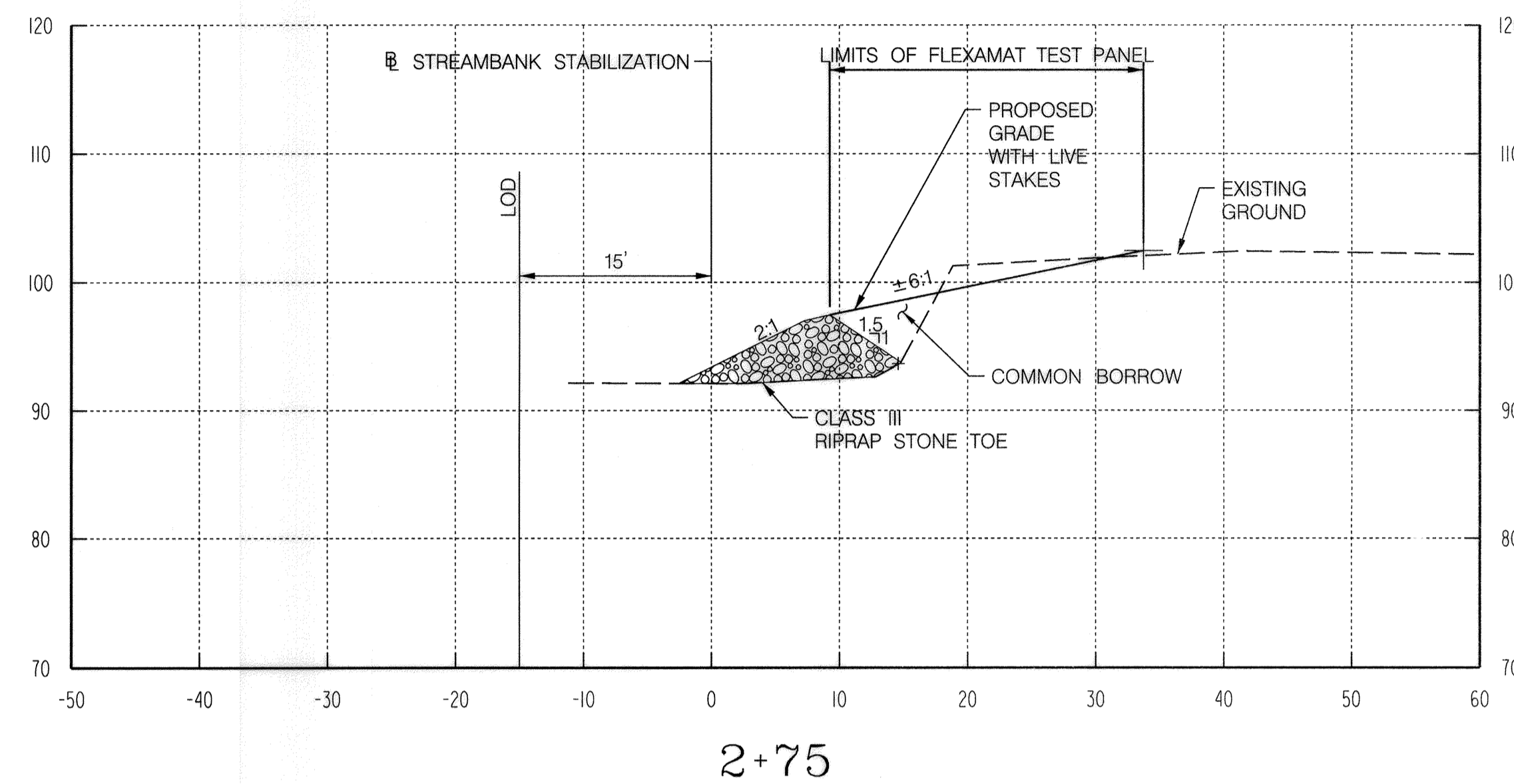
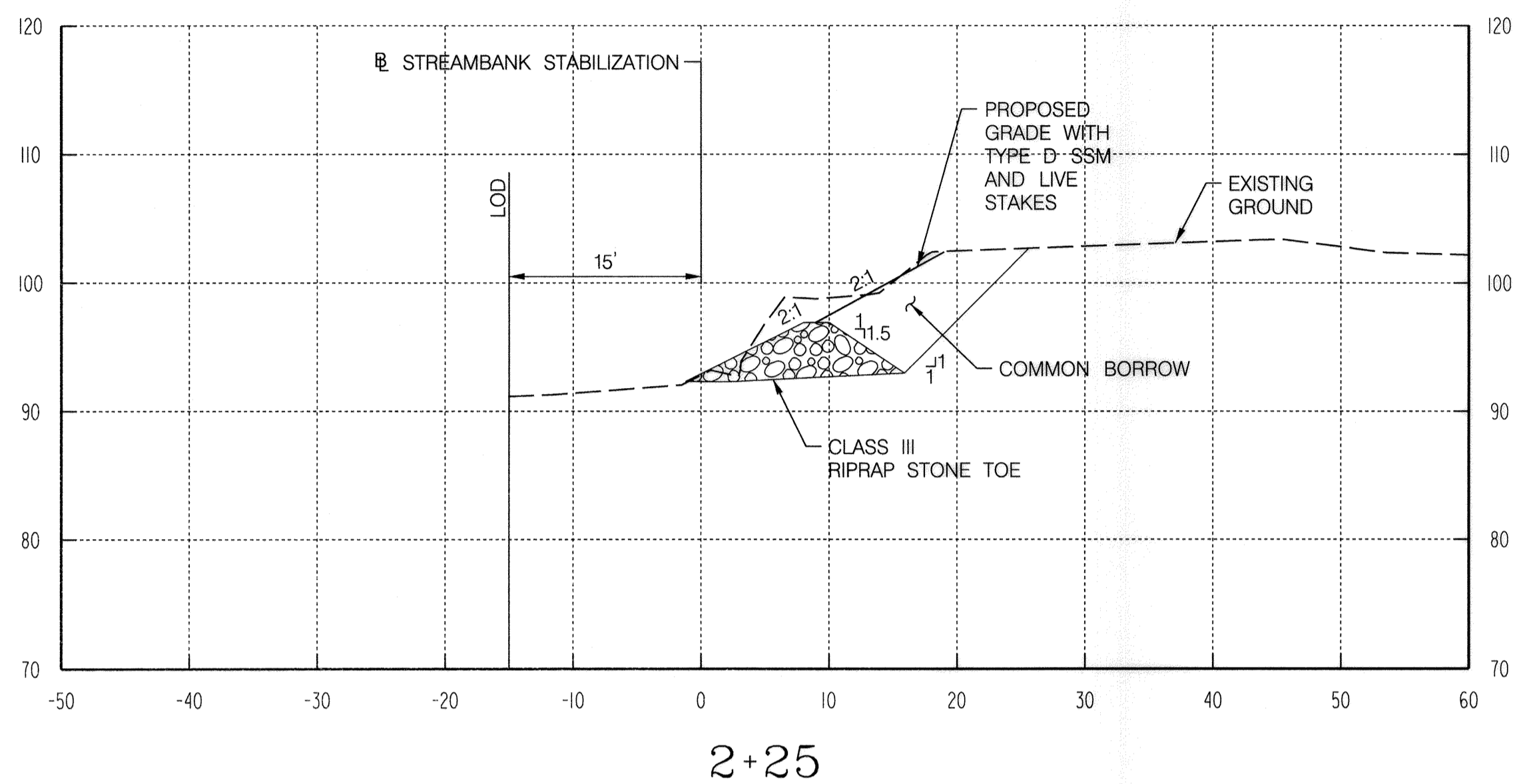
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DWG. HP 02

SCALE 1" = 30'  
 SHEET 23 OF 33

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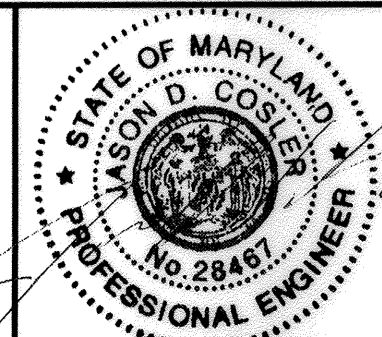
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 May 22, 2020



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 HOWARD COUNTY, MARYLAND.  
 Director of Public Works: *Melvin J. 7/8/2020*  
 Chief, Bureau of Utility Design: *Thomas B. 6-29-2020*

PREPARED BY:  
**WRA**  
**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21231



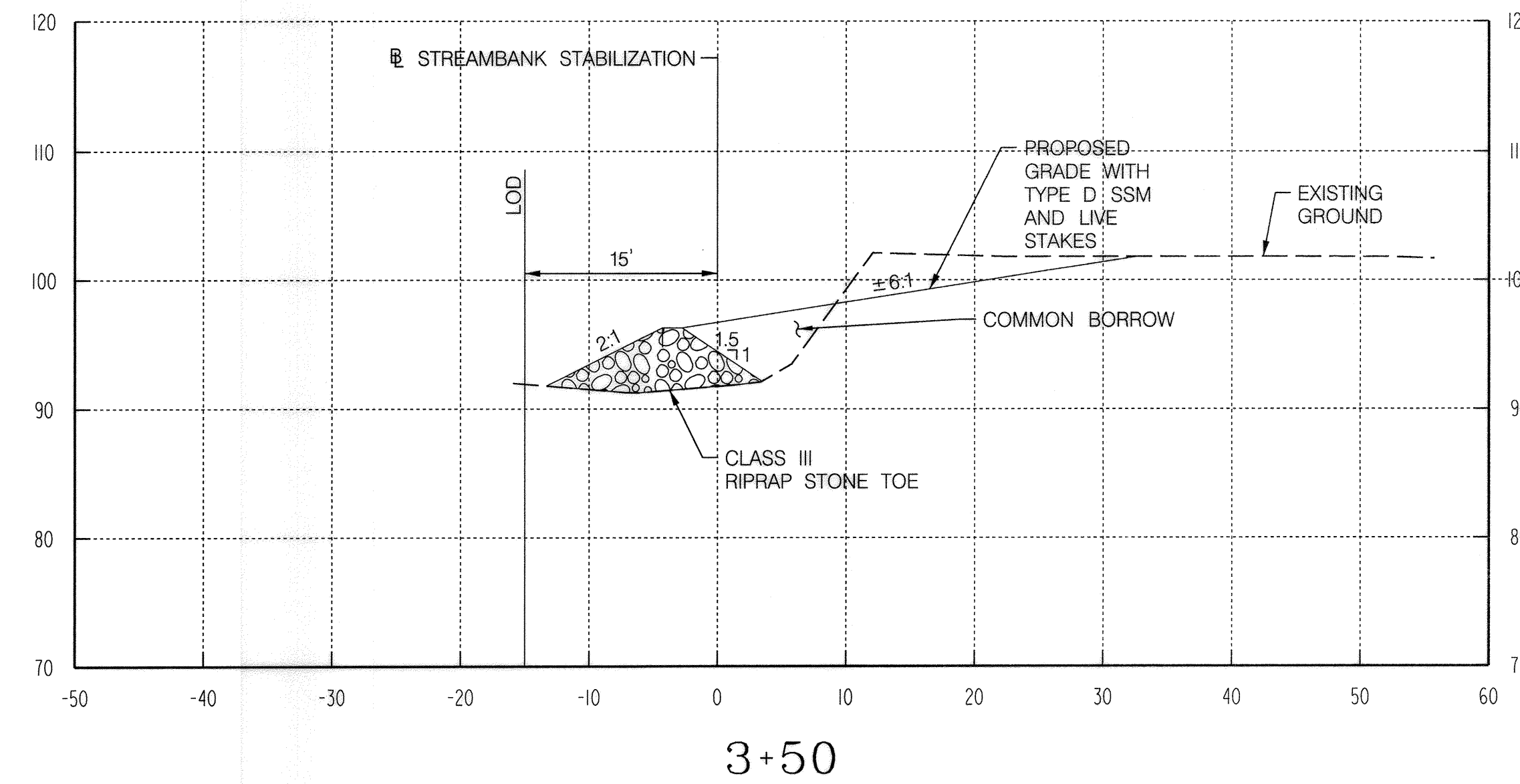
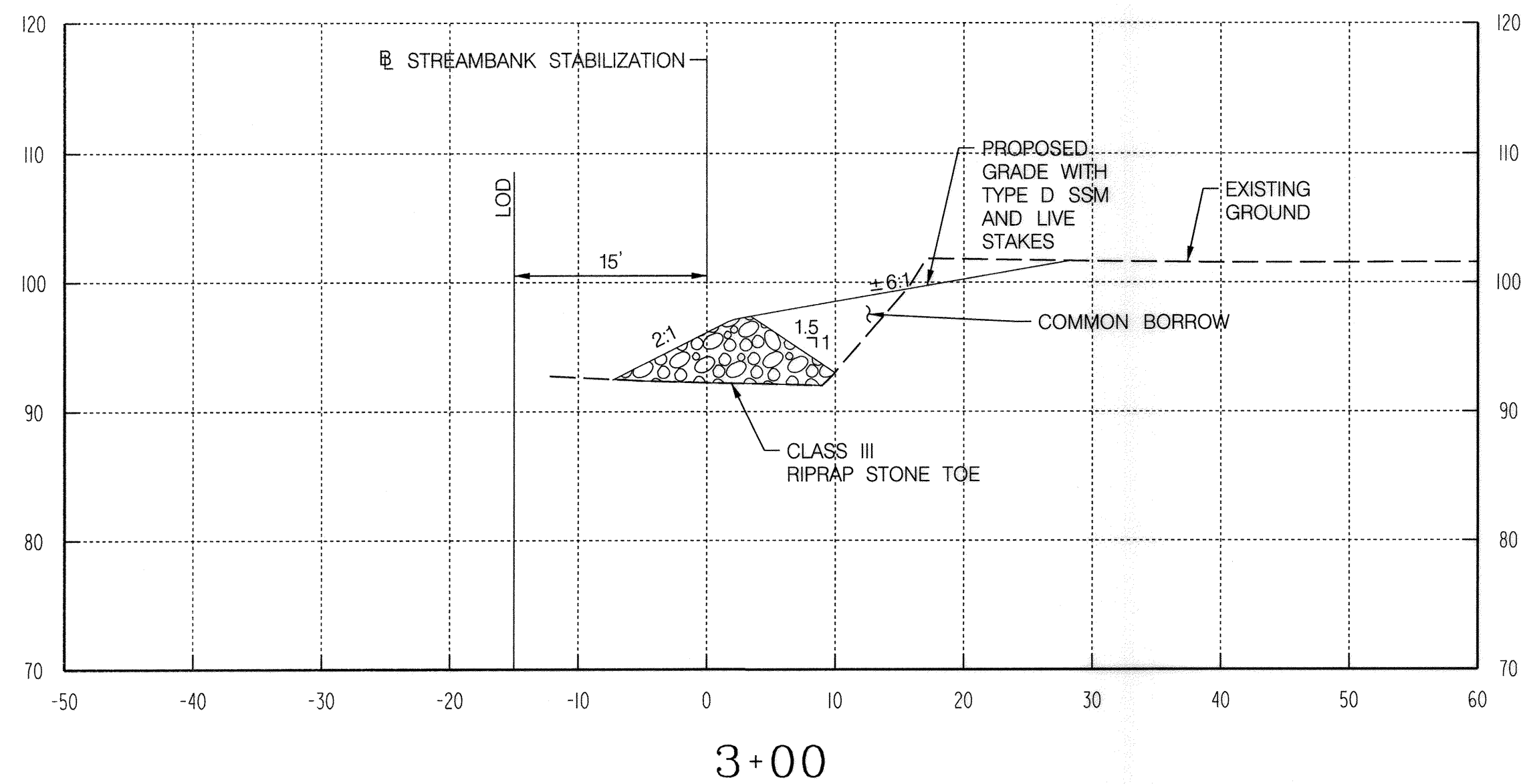
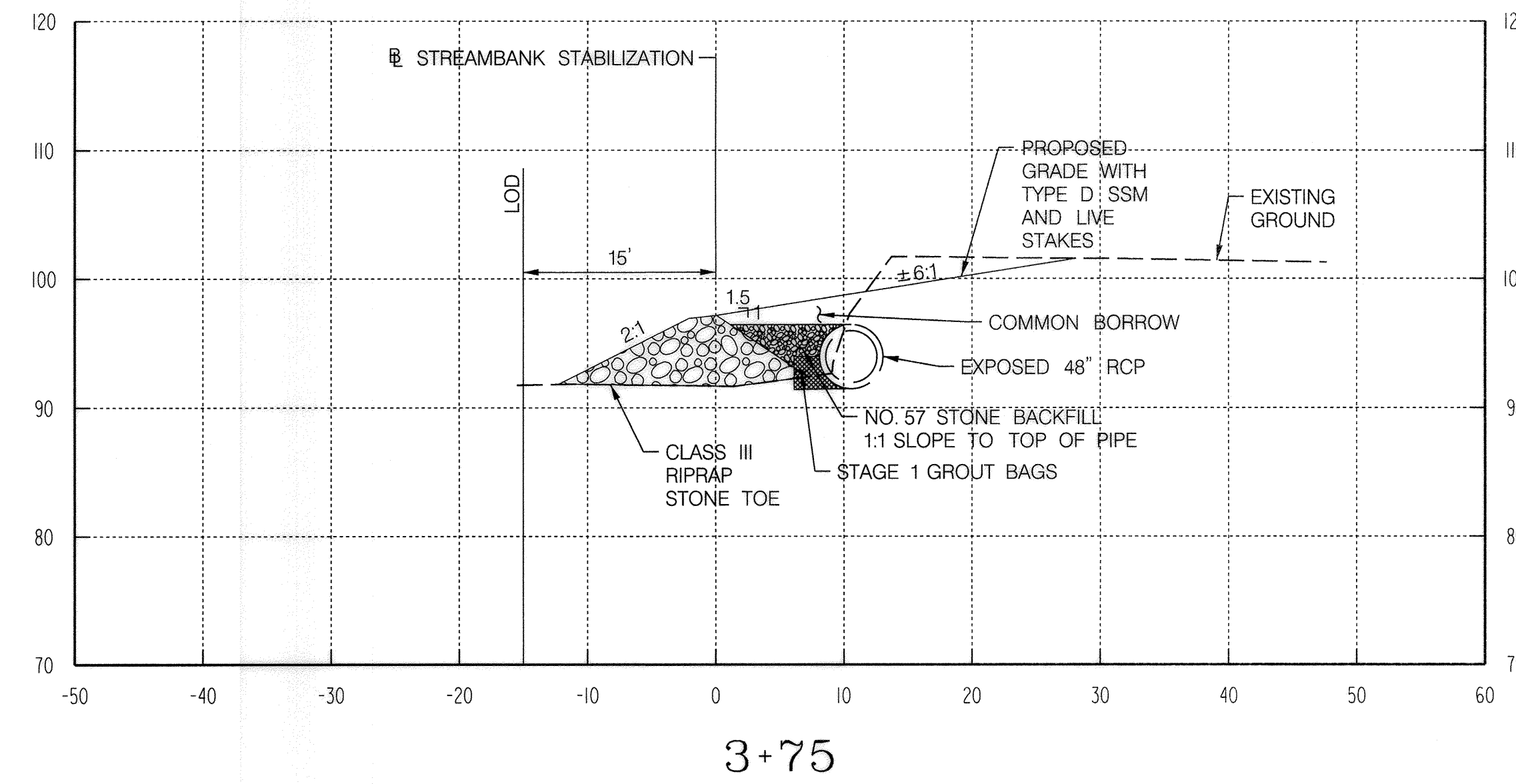
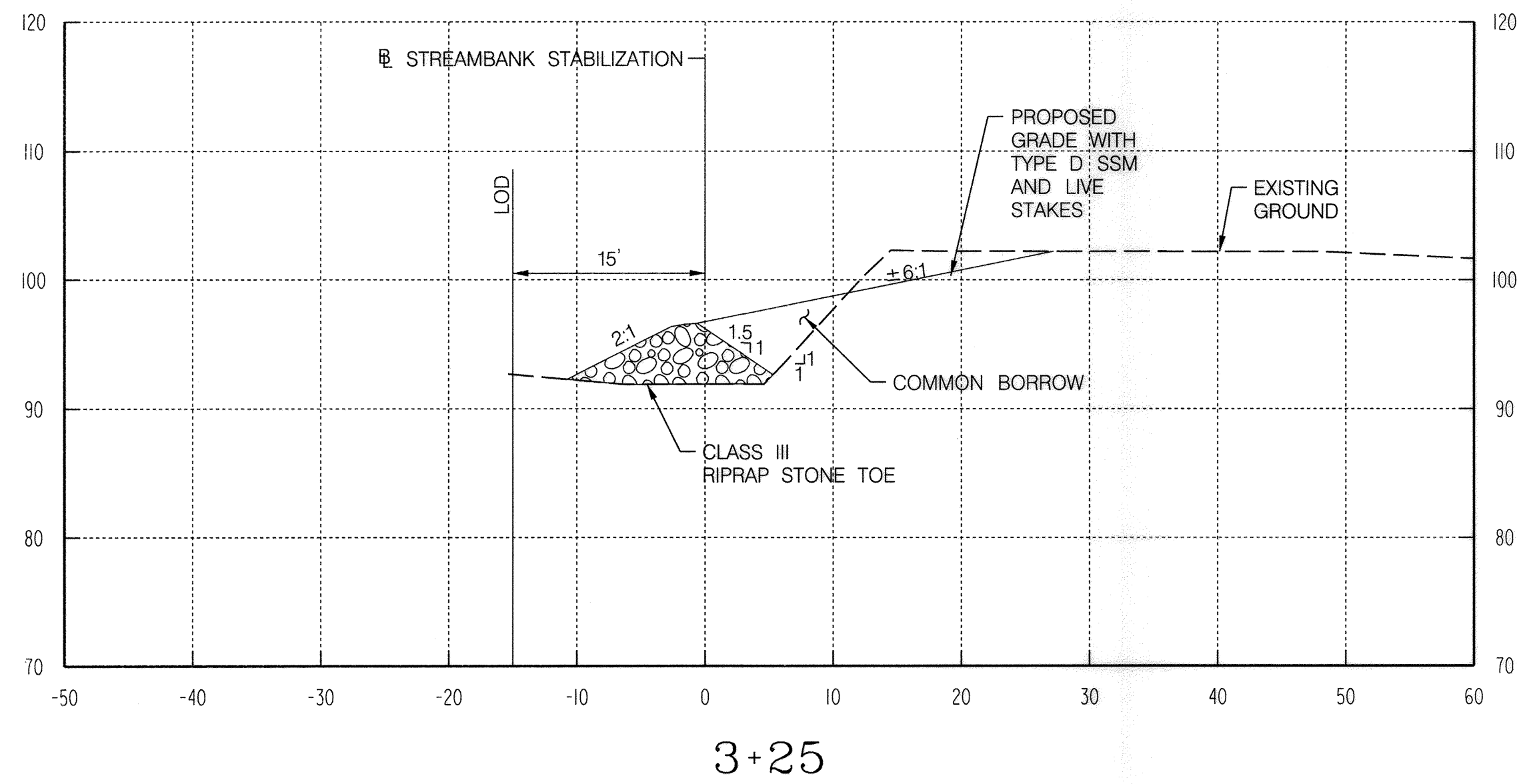
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IMBRICATED STONE WALL CROSS SECTIONS  
 600' SCALE MAP NO. 47 BLOCK NO. 24

AS-BUILT OCT. 2019  
 ELECTION DISTRICT 6  
 HOWARD COUNTY, MARYLAND

DWG. HC 01  
 SCALE 1" = 10'  
 SHEET 24 OF 33





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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

*Thomas E. Butler* 7/8/2020  
DIRECTOR OF PUBLIC WORKS DATE

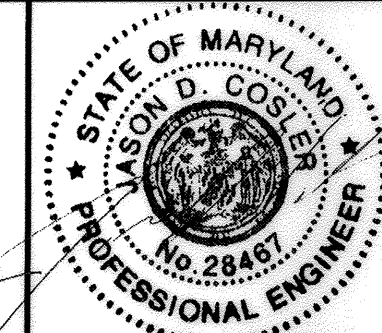
*Thomas E. Butler* 6/29/2018  
CHIEF, BUREAU OF ENGINEERING DATE

*John S. ...* 6-29-2018  
CHIEF, UTILITY DESIGN DIVISION DATE

PREPARED BY :

**WRA**

**Whitman, Requardt & Associates, LLP**  
801 South Caroline Street, Baltimore, Maryland 21231



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BY	NO.	REVISION	DATE		

IMBRICATED STONE WALL CROSS SECTIONS

600' SCALE MAP NO. 47 BLOCK NO. 24

LITTLE PATUXENT WATER RECLAMATION  
PLANT OUTFALL STREAM BANK REHABILITATION  
AS-BUILT

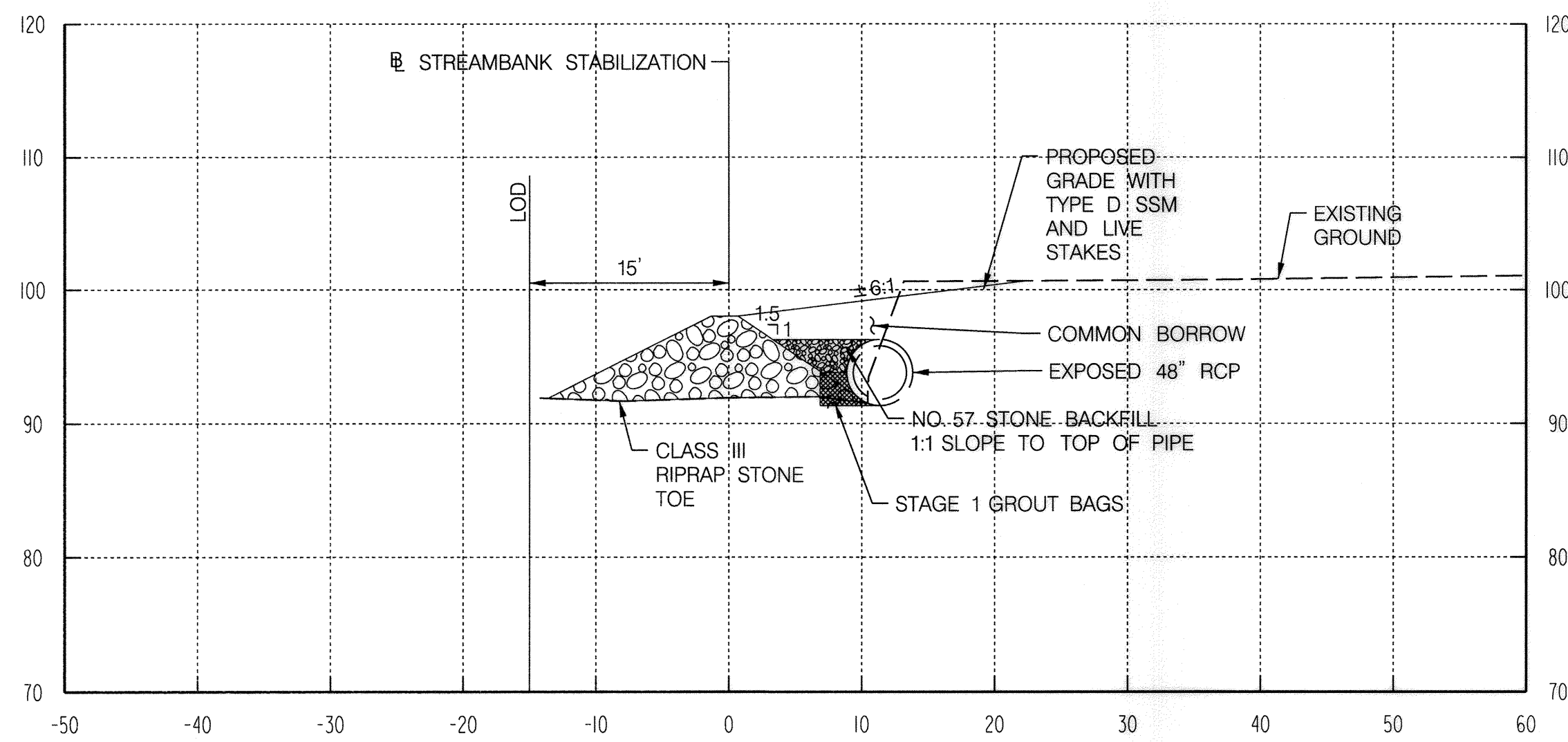
ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

AS-BUILT OCT. 2019

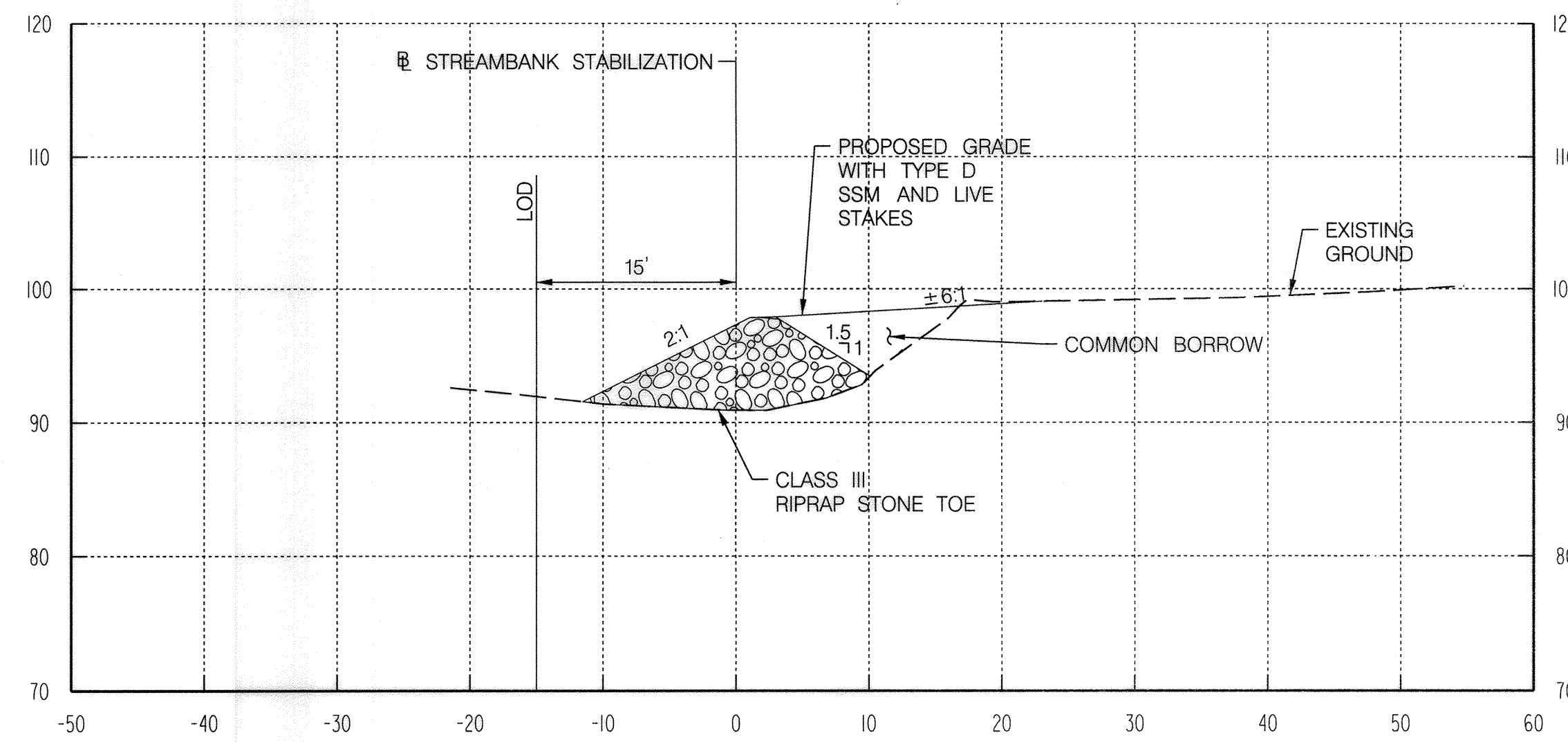
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SCALE  
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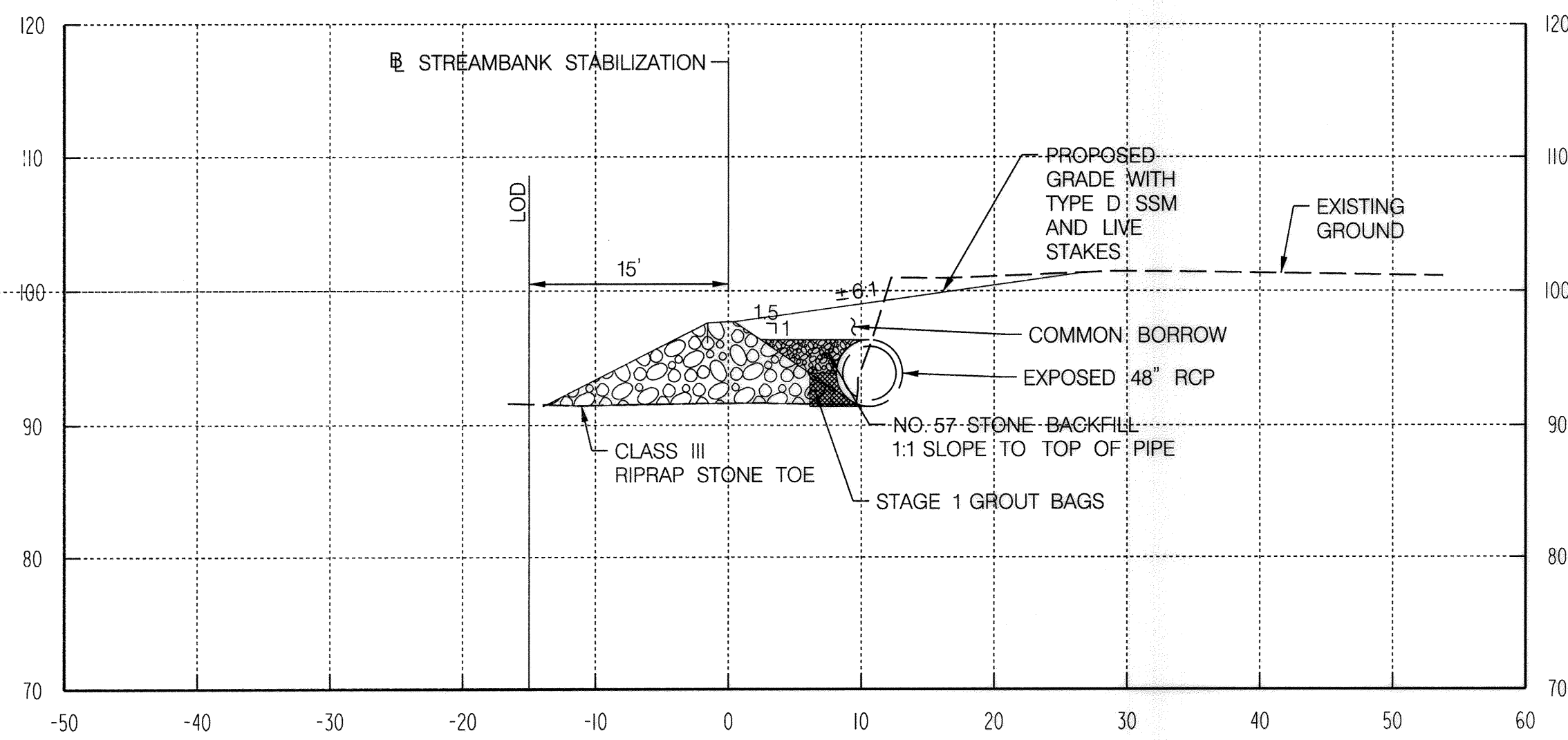
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25 OF 33



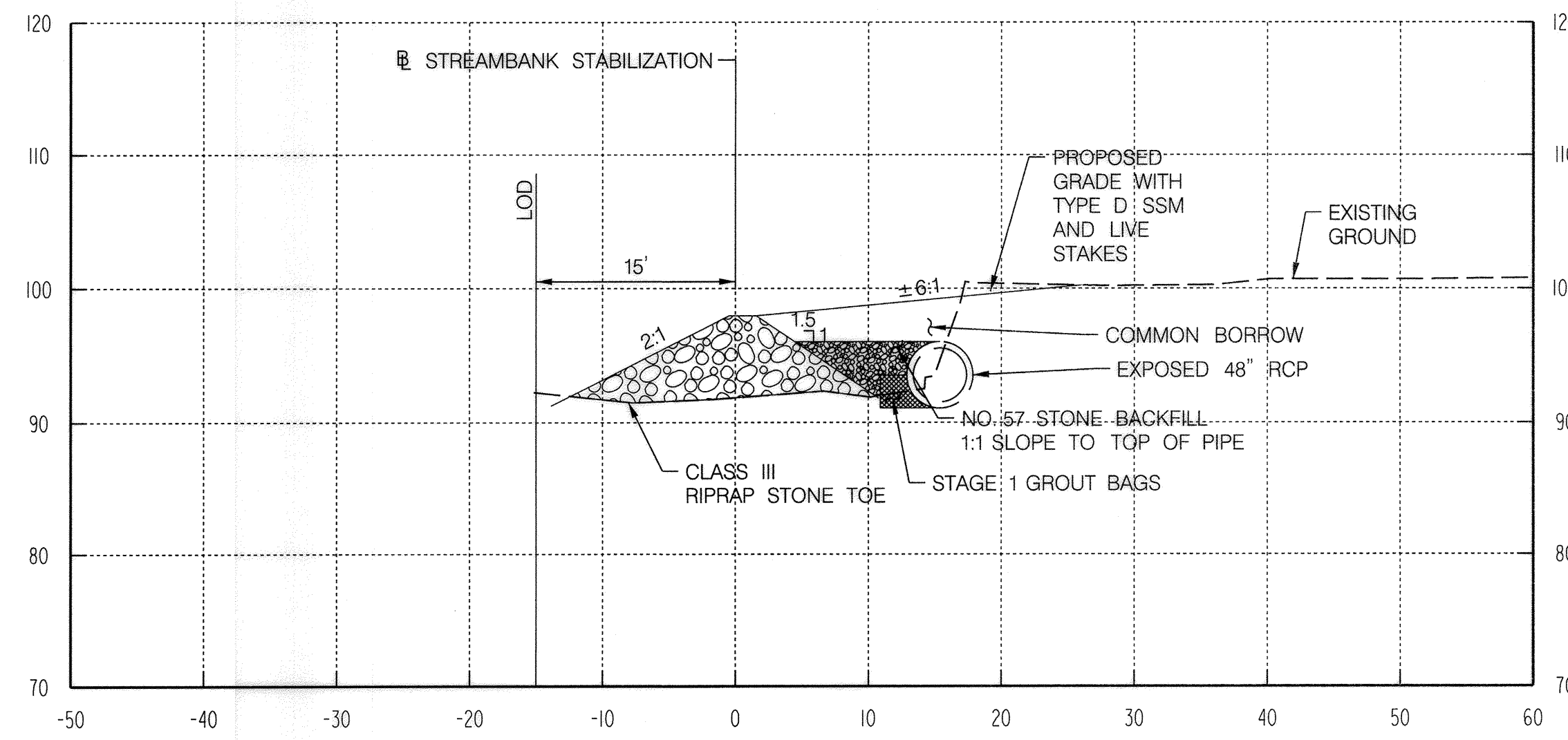
4+25



4+75



4+00



4+50

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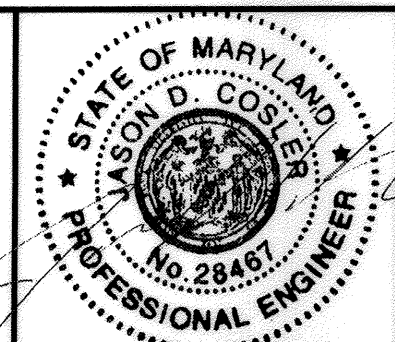
AS-BUILT OCT. 2019

DWG.  
HC 03

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

Director: *Thomas E. Little* DATE: 6-29-2020  
 Chief, Bureau of Engineering: *Thomas E. Little* DATE: 6-29-2020  
 Chief, Utility Design Division: *Thomas E. Little* DATE: 6-29-2020

PREPARED BY:  
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 801 South Caroline Street, Baltimore, Maryland 21231



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IMBRICATED STONE WALL CROSS SECTIONS

LITTLE PATUXENT WATER RECLAMATION  
 PLANT OUTFALL STREAM BANK REHABILITATION  
 AS-BUILT

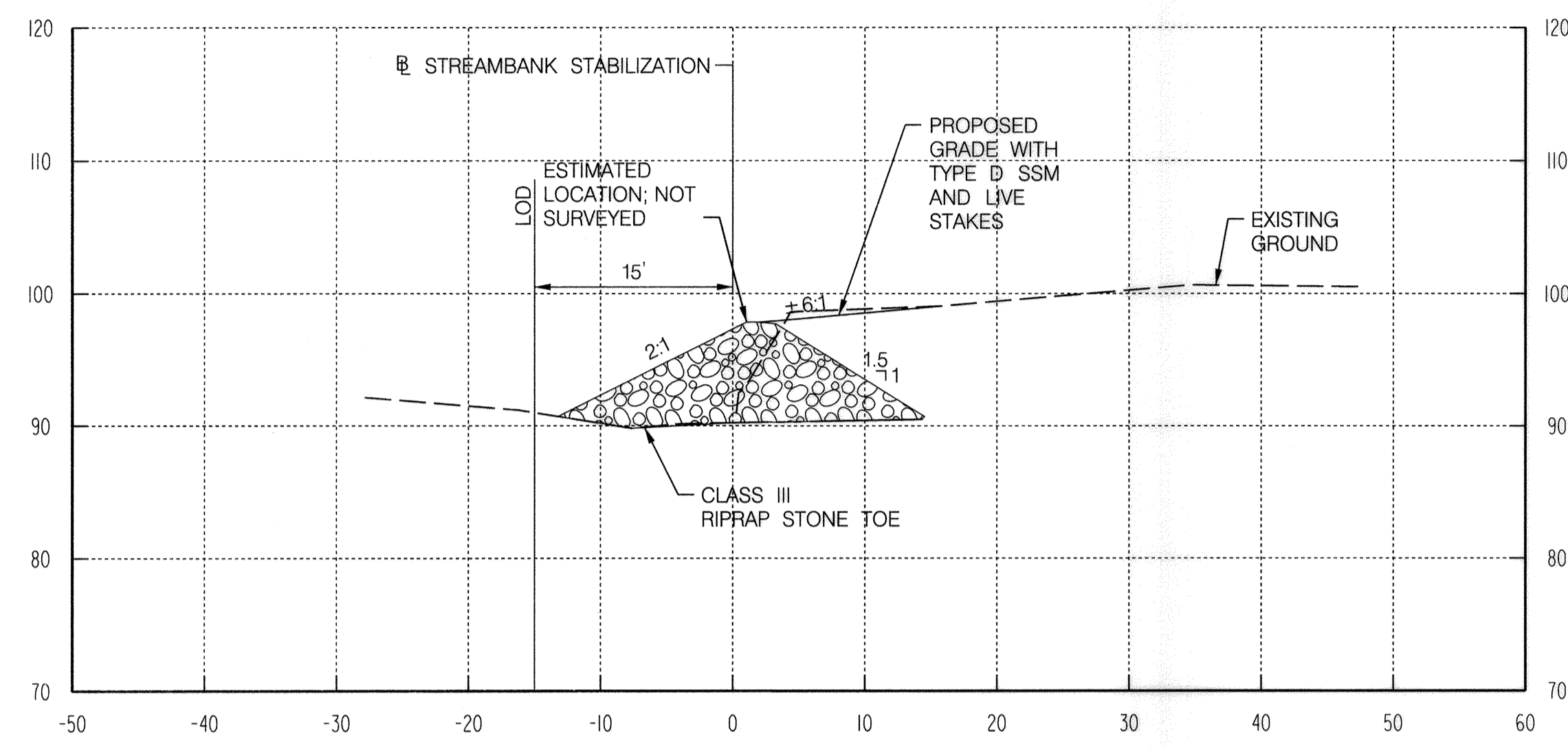
ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

SCALE  
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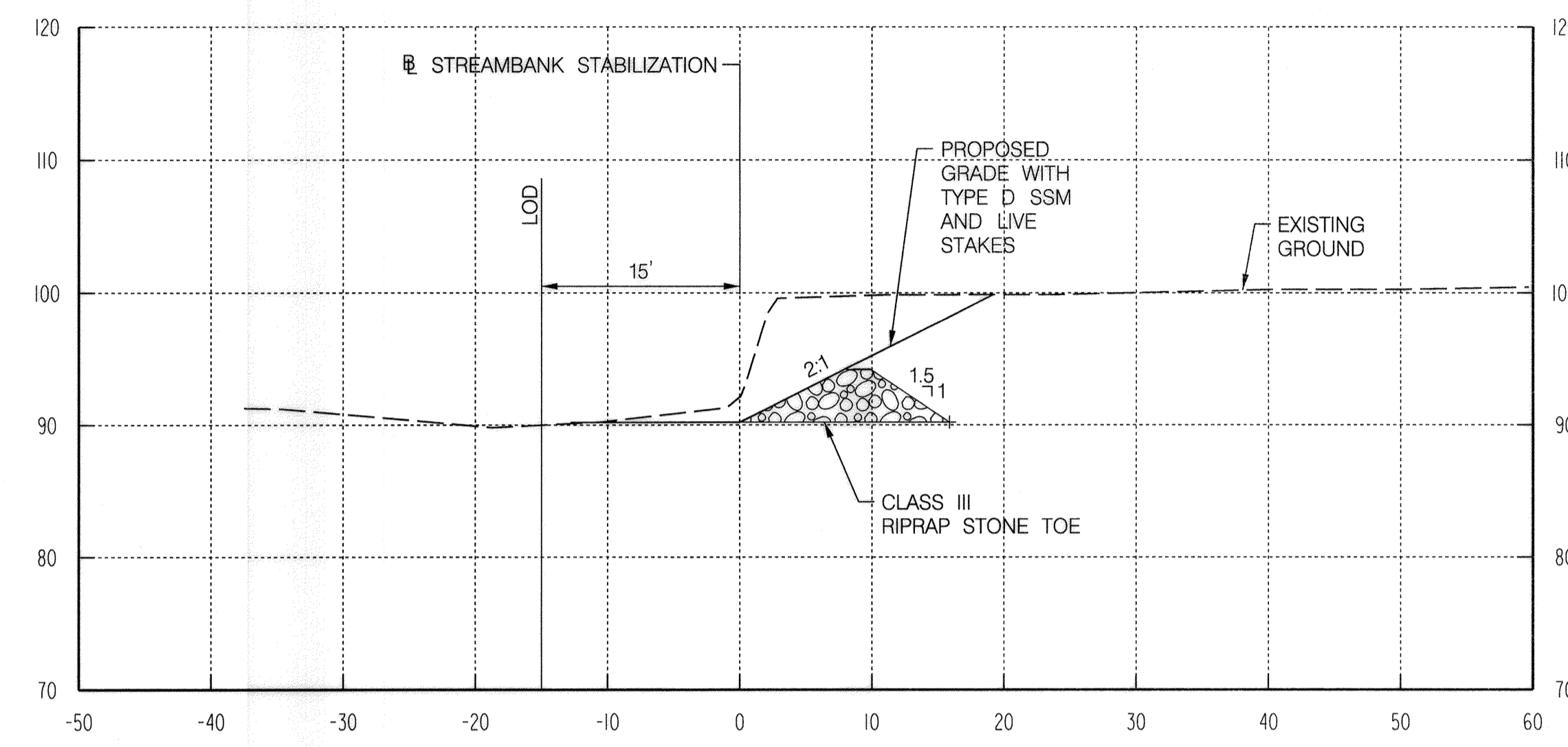
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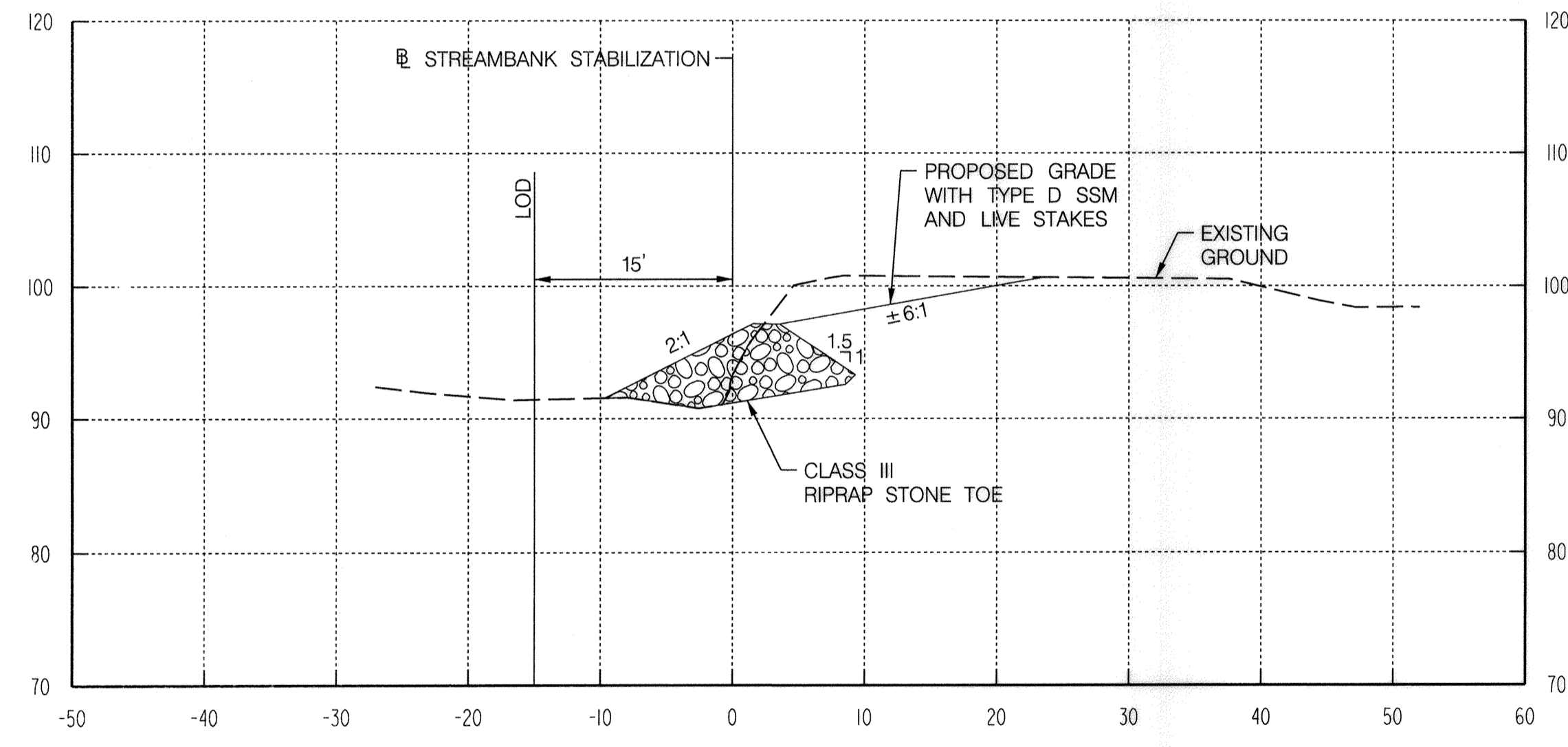
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 May 22, 2020



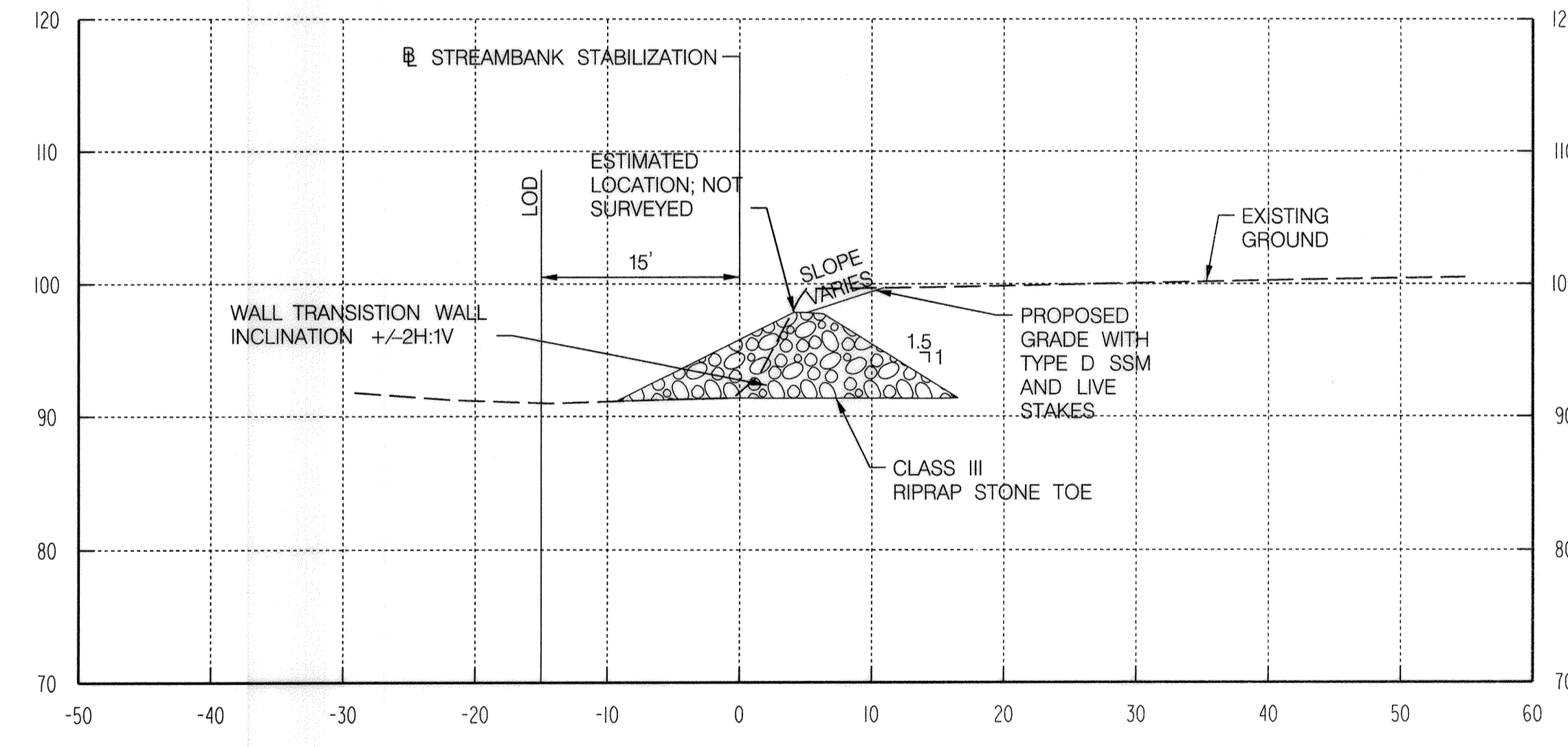
5+25



5+75



5+00

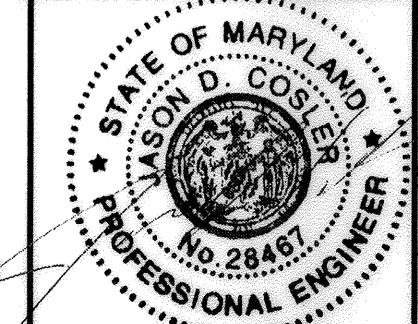


5+50

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND.  
 Director of Public Works: *Melvin...* 7/8/2020  
 Chief, Bureau of Engineering: *Thomas E....*  
 Chief, Utility Design Division: *...* 6-29-2020

PREPARED BY:  
**WRA**  
 Whitman, Requardt & Associates, LLP  
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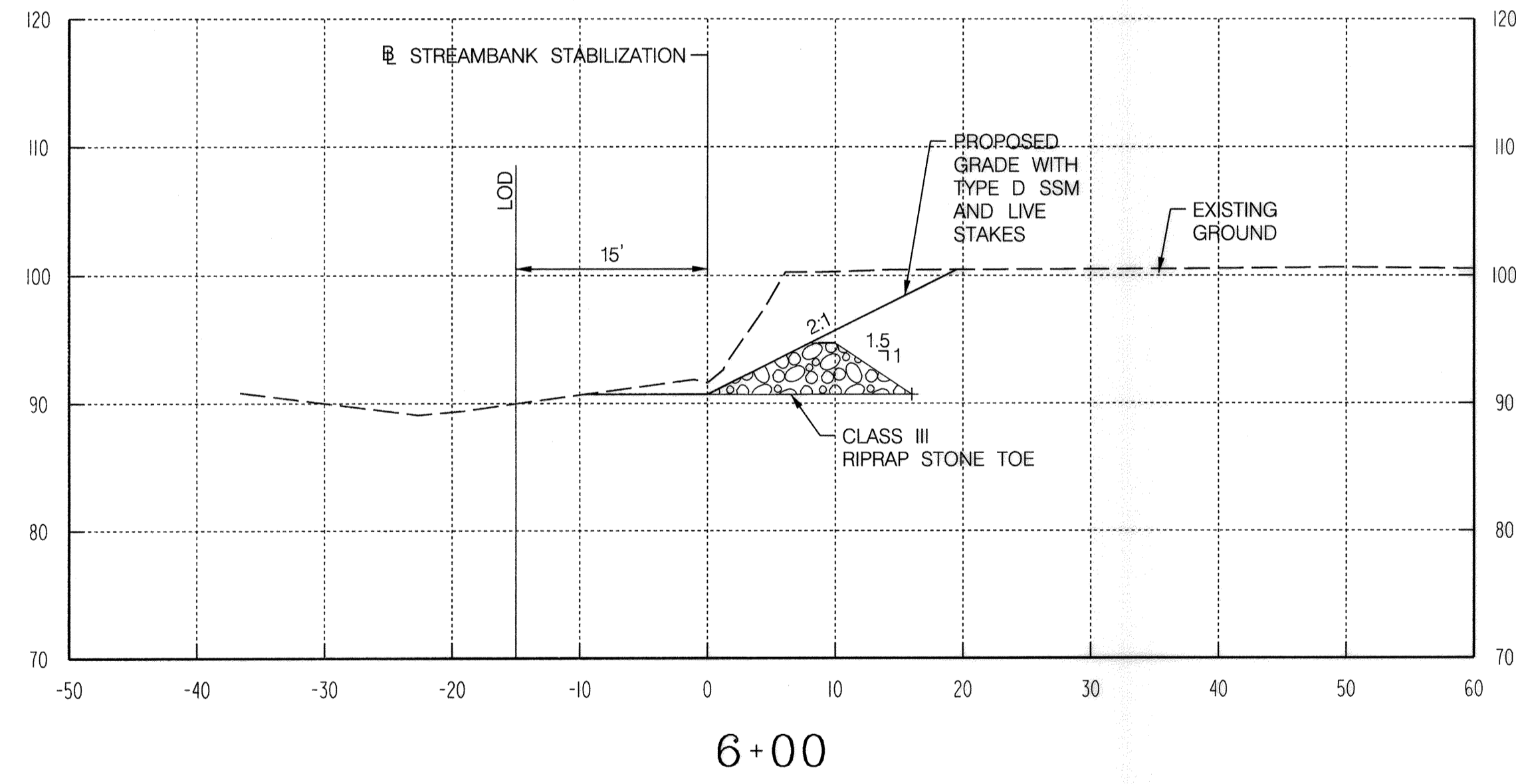
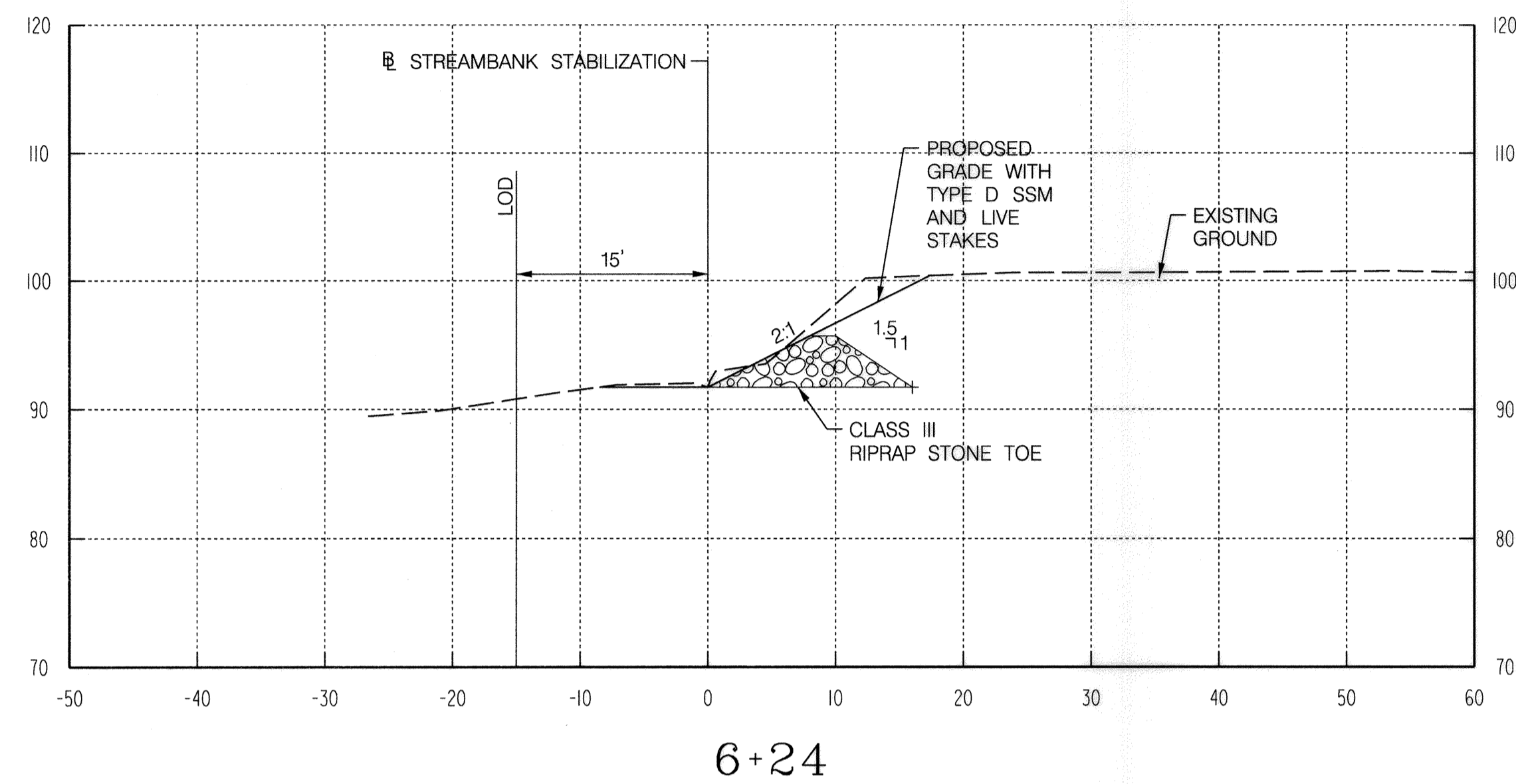
IMBRICATED STONE WALL CROSS SECTIONS  
 600' SCALE MAP NO. 47 BLOCK NO. 24

ELECTION DISTRICT 6  
 HOWARD COUNTY, MARYLAND

AS-BUILT OCT. 2019

DWG.  
 HC 04  
 SCALE  
 1" = 10'  
 SHEET  
 27 OF 33

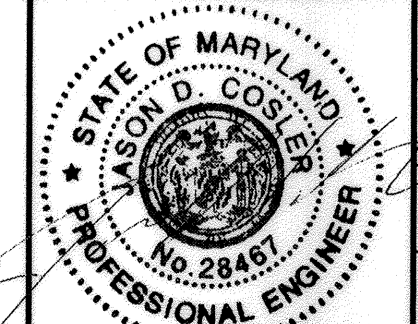
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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND.  
 Director: *Melanie* 7/8/2020  
 Chief, Bureau of Engineering: *Thomas P. Sullivan* 6/22/2020  
 Chief, Bureau of Utilities: *[Signature]* 6-22-2020  
 Chief, Utility Design Division: *[Signature]*

PREPARED BY:  
**WRA**  
**Whitman, Requardt & Associates, LLP**  
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DATE: 12/28/18	BY	NO.	REVISION	DATE

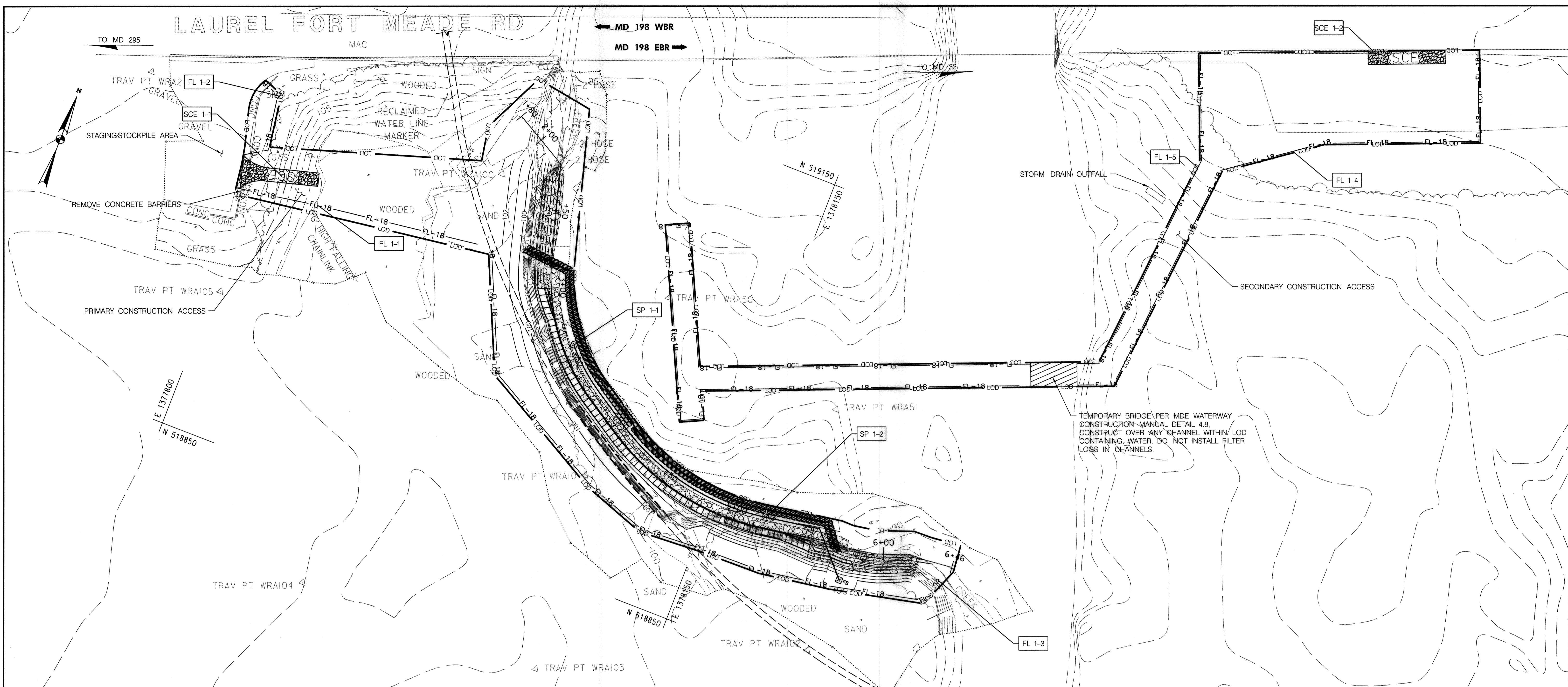
IMBRICATED STONE WALL CROSS SECTIONS  
 600' SCALE MAP NO. 47 BLOCK NO. 24

AS-BUILT OCT. 2019  
 HC 05  
 SCALE 1" = 10'  
 SHEET 28 OF 33  
 ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

LAUREL FORT MEADE RD

MD 198 WBR

MD 198 EBR



TEMPORARY BRIDGE PER MDE WATERWAY CONSTRUCTION MANUAL DETAIL 4.8, CONSTRUCT OVER ANY CHANNEL WITHIN LOD CONTAINING WATER. DO NOT INSTALL FILTER LOGS IN CHANNELS.

CALENDAR DAYS PER PHASE

SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY MDE'S COMPLIANCE PROGRAM AT 301-665-2850 AT LEAST FIVE (5) DAYS BEFORE STARTING AUTHORIZED ACTIVITIES AND FIVE (5) DAYS AFTER COMPLETION. NO IN-STREAM WORK MAY BE PERFORMED BETWEEN MARCH 1 AND JUNE 15, INCLUSIVE.
2. OBTAIN GRADING PERMIT. CONTACT THE SEDIMENT CONTROL INSPECTOR AT A MINIMUM OF 48 HOURS PRIOR TO THE START OF WORK. INFORM THE INSPECTOR OF THE STARTING DATE.
3. INSTALL SCE AND FILTER LOGS WHILE CONCURRENTLY CLEARING AND GRUBBING AS REQUIRED. DURING A NOAA 3-DAY CONTINUOUS DRY WEATHER FORECAST, INSTALL GROUT BAGS ALONG THE EXPOSED 48" RCP IN ACCORDANCE WITH STAGE 1 TYPICAL SECTION, SHEET HP-01.
4. DURING A NOAA 3-DAY CONTINUOUS DRY WEATHER FORECAST, PLACE CLASS III RIPRAP STONE TOE AS SHOWN FROM STA 2+20 TO 3+00 AND PERFORM STREAM BANK STABILIZATION ALONG THE LIMITS OF THE CLASS III RIPRAP STONE TOE. SECONDARY ACCESS MAY BE INSTALLED AT THIS TIME TO FACILITATE CONSTRUCTION OF STONE TOE AND IMBRICATED WALL; HOWEVER, NO EQUIPMENT SHALL TRAVERSE MAIN STREAM CHANNEL FROM SECONDARY ACCESS ROUTE.
5. WORKING FROM UPSTREAM TO DOWNSTREAM, INSTALL SBD, SP, AND FB PER PLANS AND PROCEED WITH INSTALLATION OF IMBRICATED RIPRAP WALL INCLUDING CLASS II STONE TOE. DEWATER THE WORK AREA AS NECESSARY USING SUMP PIT AND FILTER BAG PER PLANS. ANY AREAS NOT RAINING TO AN APPROVED SEDIMENT CONTROL DEVICE SHALL BE IMMEDIATELY STABILIZED.
6. DURING A NOAA 3-DAY CONTINUOUS DRY WEATHER FORECAST, PLACE CLASS III RIPRAP STONE TOE AS SHOWN FROM STA 5+52 TO 6+24 AND PERFORM STREAM BANK STABILIZATION ALONG THE LIMITS OF CLASS III RIPRAP STONE TOE.
7. UPON FINAL GRADING AND BACKFILL, STABILIZE ALL SLOPES WITH FLEXAMAT PLUS, TOPSOIL, SEED AND MULCH PLUS PER PLANS. PLACE TYPE 'D' SOIL STABILIZATION MATTING ON DISTURBED UPLAND AREAS OUTSIDE LIMITS OF FLEXAMAT, OVER TOPSOIL.
8. IMMEDIATELY UPON FINAL STABILIZATION OF THE STREAM BANK AND REMOVAL OF ANY CONSTRUCTION ENTRANCES AND/OR ACCESS MATS, THE GROUND UNDERNEATH THESE AREAS SHALL BE LOOSENED TO A MINIMUM DEPTH OF 12-INCHES USING DISKING OR RIPPING EQUIPMENT IN ORDER TO UNCOMPACT THE SOILS. TOPSOIL SHALL BE USED TO RESTORE THE DISTURBED ACCESS AREAS TO PRE-EXISTING CONDITIONS. THE SOIL SHALL BE PLACED IN UNCOMPACTED, 4-INCH LIFTS AND OVERTOPPED WITH TYPE 'D' SOIL STABILIZATION MATTING. PROCEED WITH FINAL STABILIZATION USING PERMANENT SEEDING AS DESCRIBED ON SHEET ES-03.
9. UPON STABILIZATION AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, ANY REMAINING SEDIMENT CONTROL DEVICES MAY BE REMOVED. ANY DISTURBANCE DUE TO THE REMOVAL PROCESS SHALL BE STABILIZED IMMEDIATELY.

NOTES:

1. CONSTRUCTION PHASING AND ESTIMATED DURATIONS ARE FOR THE PURPOSE OF EVALUATING EROSION AND SEDIMENT CONTROL MEASURES. THE CONTRACTOR MAY SUBMIT REVISIONS TO THE CONSTRUCTION PHASING TO THE ENGINEER FOR REVIEW AND APPROVAL.
2. ANY AREAS NOT DRAINING TO AN APPROVED SEDIMENT CONTROL DEVICE MUST BE STABILIZED AT THE END OF EACH WORKING DAY.
3. ADDITIONAL SEDIMENT CONTROLS ARE TO BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
4. PROJECT IS LOCATED WITHIN THE FLOODWAY. ALL MATERIAL MUST BE STORED OFFSITE.
5. RESTORATION OF STREAM BANK AREAS DISTURBED BY CONSTRUCTION SHALL OCCUR AS A LAST ORDER OF WORK IN ORDER TO RE-ESTABLISH PRE-CONSTRUCTION CONDITIONS. RE-GRADE DISTURBED AREAS BACK TO PRE-CONSTRUCTION CONDITIONS, IF NECESSARY, USING STOCKPILED MATERIALS.
6. THIS PROJECT IS SUBSTANTIALLY LOCATED ON LANDS OWNED BY THE U.S. DEPT. OF INTERIOR, FISH AND WILDLIFE SERVICE - PATUXENT WILDLIFE REFUGE. THE FOLLOWING SPECIAL PROJECT CONDITIONS APPLY:
  - A. THOROUGHLY CLEAN ALL EQUIPMENT PRIOR TO CONSTRUCTION TO PREVENT SPREADING/ESTABLISHMENT OF INVASIVE SPECIES.
  - B. AVOID DAMAGE TO ANT REFUGE SIGNS/MONUMENTS, IF ENCOUNTERED.
  - C. PREPARE A PETROLEUM-PRODUCT SPILL PREVENTION PLAN FOR SUBMITTAL AND APPROVAL BY THE ENGINEER.

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

Director of Public Works: *[Signature]* 1/10/19  
 Chief, Bureau of Utility Design: *[Signature]* 1/10/19  
 Chief, Bureau of Engineering: *[Signature]* 1-8-19

PREPARED BY:  
**WRA**  
**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21231



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DATE:	12/28/18	BY:	NO.	REVISION	DATE

SEDIMENT AND EROSION CONTROL PLAN  
 600' SCALE MAP NO. 47 BLOCK NO. 24

LITTLE PATUXENT WATER RECLAMATION PLANT OUTFALL STREAM BANK REHABILITATION BID-READY SUBMITTAL  
 ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

DWG. ES 01  
 SCALE 1" = 30'  
 SHEET 29 OF 33

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B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

- A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR...
- B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

- III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY...

- V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS; DIAMETER APPROXIMATELY 1 MILLIMETER...

2. APPLICATION

- A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
- B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM THICKNESS OF 1 TO 2 INCHES...
- C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE...

3. ANCHORING

- A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER...
- I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE...
- II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE...
- III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TACK II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED...
- IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS...

- 1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE...
- 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY...
- 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TABLE B.1 - TEMPORARY SEEDING SUMMARY

Table with columns: No., Species, Application Rate (lb/ac), Seeding Dates, Seeding Depths, Fertilizer Rate (10-20-20), Lime Rate. Includes rows for OATS and FOXTAIL MILLET.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- 1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE...
- 4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS...
- 6) RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 7) ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES...
- 8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- 9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM; USE WATERWAYS; IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
- 10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- 11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

B-4-5 STANDARDS AND SPECIFICATIONS

FOR PERMANENT STABILIZATION DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION PURPOSE TO USE LONG LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR MORE CRITERIA

A. SEED MIXTURES

- 1. GENERAL USE A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2...
- B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
- C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY
- D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3.5 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY

- 2. TURFGRASS MIXTURES A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
- B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE, ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

- I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
- II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
- III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.

IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1.5 TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES: SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, "GROWING TURF #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A) CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B) SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1.5 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (0.5 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

1. GENERAL USE

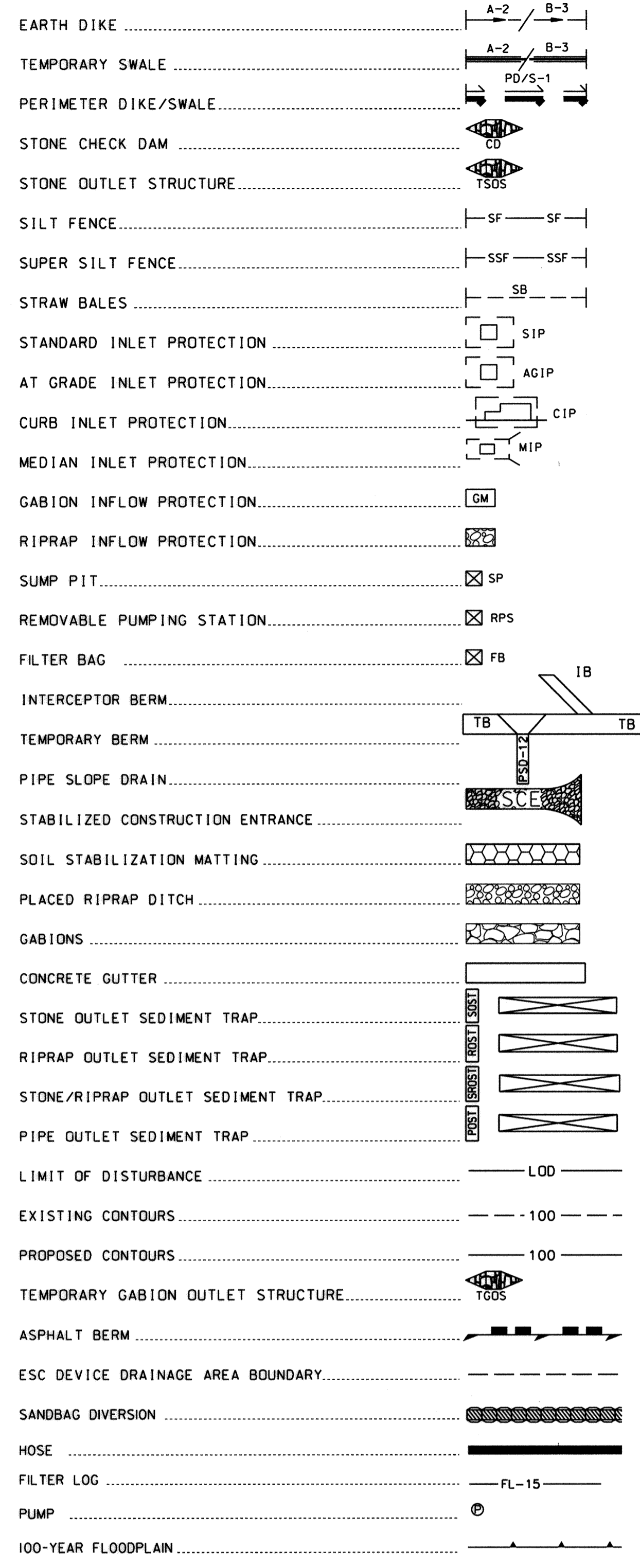
- A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
- B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
- C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY
- D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3.5 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY

Permanent Seeding Summary

Table with columns: Hardiness Zone, Seed Mixture, Application Rate, Seeding Dates, Seeding Depths, Fertilizer Rate (N, P205, K20), Lime Rate. Includes rows for SWITCH GRASS, CREEPING RED FESCUE, and PEA.

Table with columns: Hardiness Zone, Seed Mixture, Application Rate, Seeding Dates, Seeding Depths, Fertilizer Rate (N, P205, K20), Lime Rate. Includes rows for CREEPING RED FESCUE and WHITE CLOVER.

STANDARD SYMBOLS



B-4-4 STANDARDS AND SPECIFICATIONS

FOR TEMPORARY STABILIZATION DEFINITION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28467, EXPIRATION DATE: 12/20/2020."

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND.

Signatures and dates for Director of Public Works and Chief of Engineering.

PREPARED BY: Whitman, Requardt & Associates, LLP 801 South Caroline Street, Baltimore, Maryland 21231

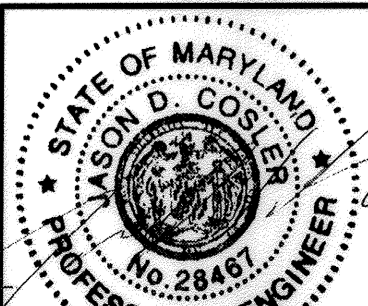
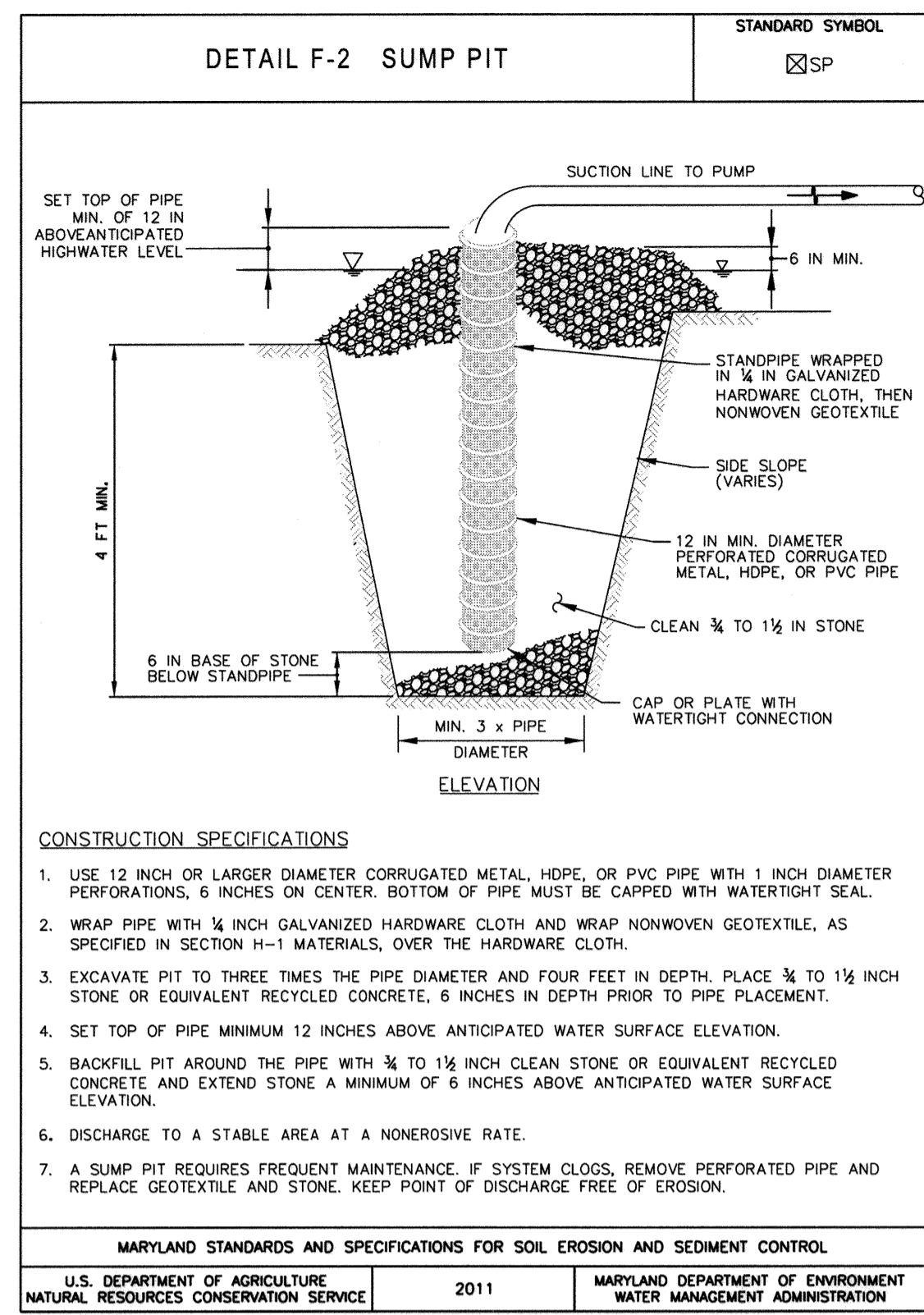


Table with columns: DES, DRN, CHK, DATE, BY, NO., REVISION, DATE. Includes entries for ABR, JDC, and 12/28/18.

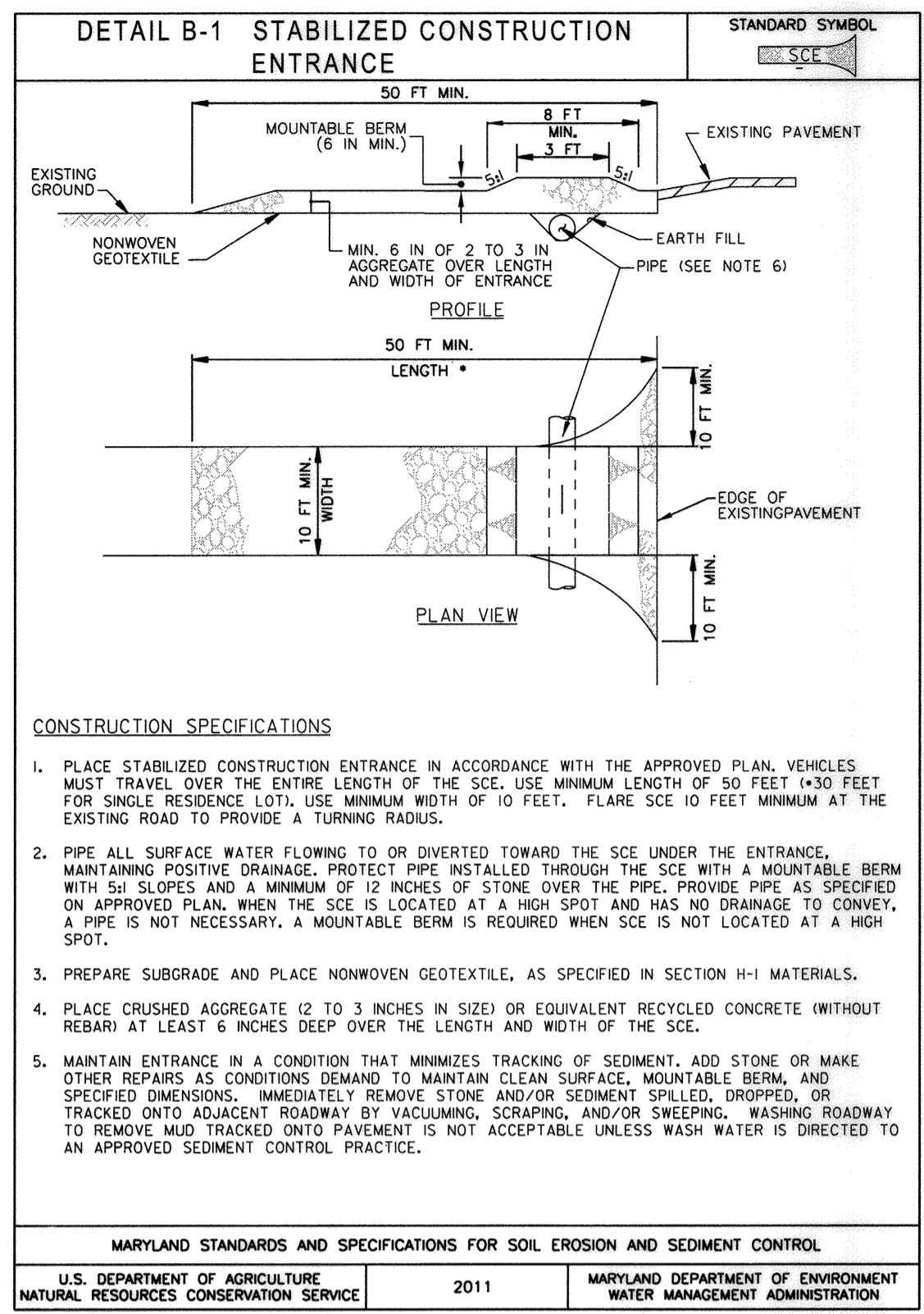
SEDIMENT AND EROSION CONTROL NOTES

LITTLE PATUXENT WATER RECLAMATION PLANT OUTFALL STREAM BANK REHABILITATION BID-READY SUBMITTAL ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

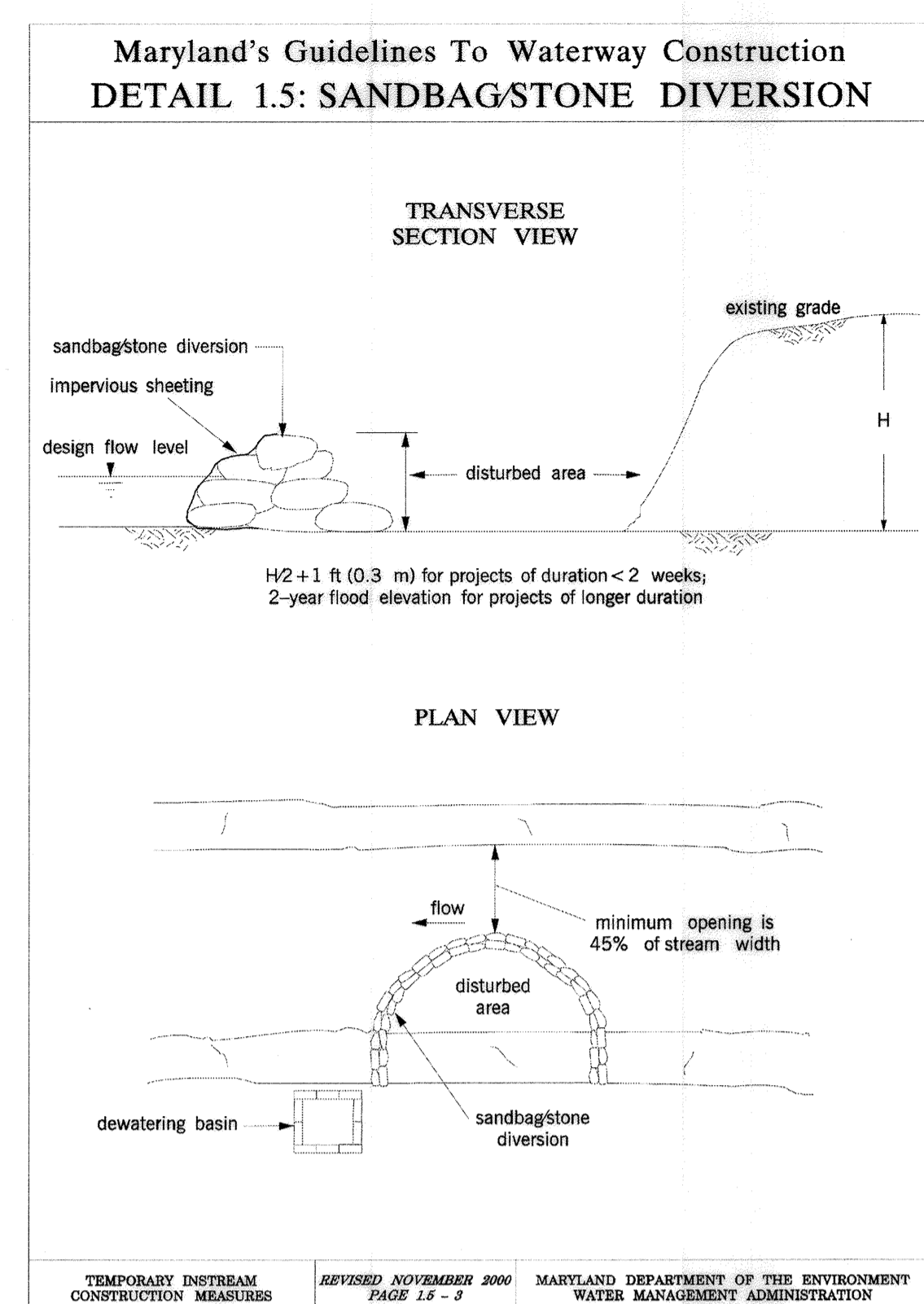
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



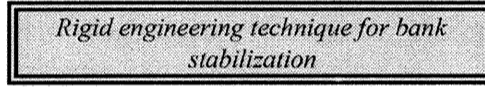
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**HOWARD SOIL CONSERVATION DISTRICT  
STANDARD SEDIMENT CONTROL NOTES**

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
  - A. PRIOR TO THE START OF EARTH DISTURBANCE,
  - B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
  - C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
  - D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
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 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15% OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
5. 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 CID.
6. SITE ANALYSIS:
 

TOTAL AREA OF SITE:	1.22 ACRES
AREA DISTURBED:	1.22 ACRES
AREA TO BE ROOFED OR PAVED:	0.00 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	0.87 ACRES
TOTAL CUT:	447 CU. YDS.
TOTAL FILL:	552 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	TBD ACRES
7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
  - INSPECTION DATE
  - INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
  - NAME AND TITLE OF INSPECTOR
  - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
  - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
  - EVIDENCE OF SEDIMENT DISCHARGES
  - IDENTIFICATION OF PLAN DEFICIENCIES
  - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
  - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
  - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
  - PHOTOGRAPHS
  - MONITORING/SAMPLING
  - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
  - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25 MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.
15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
  - USE I-P MARCH 1 - JUNE 15
16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

**MGWC 2.2: IMBRICATED RIPRAP**



**DESCRIPTION**

Imbricated riprap is used to protect and stabilize embankment soils from the erosive forces of flowing water and piping forces resulting from groundwater seepage. A well-engineered imbricated riprap revetment should consist of the following:

- a filter layer of gravel or cloth designed to prevent soil movement into or through the riprap layer while allowing water to drain from the embankment, and
- a stone wall of appropriate size and positioning to resist the shearing forces of channelized water and the lateral earth pressures of the embankment.

**EFFECTIVE USES & LIMITATIONS**

When properly designed and installed, imbricated riprap revetments resist lateral earth pressures to some extent and can be an effective method of bank armoring where soil conditions, water turbulence and velocity, expected vegetative cover, and groundwater conditions are such that the soil may erode under the design flow conditions and threaten infrastructure or personal property.

Filter cloth should only be utilized when the bank material is a noncohesive material such as sand or gravel.

**MATERIAL SPECIFICATIONS**

Materials for imbricated riprap construction and installation should meet the following requirements:

- **Filters:** Synthetic filter fabric may be used cautiously based on the 1994 MD Standards and Specifications for Soil Erosion and Sediment Control. Whenever possible, however, granular filters with a minimum thickness of 6 inches (15 cm) should be used with a gradation as found in Table 2.2.

Percent Less Than	U.S. Standard Sieve Size
100	2 1/2 in (64 mm)
85 - 100	1 in (25 mm)
60 - 100	1/2 in (13 mm)
35 - 70	No. 10
20 - 50	No. 40
3 - 20	No. 200

- **Toe Riprap:** The maximum diameter or weight of stone for toe riprap should be based upon the bankfull stream channel velocity as detailed in the MGWC 2.1: Riprap and Figure 2.1.
- **Imbricated Stones:** Imbricated riprap should be angular and blocky in shape such that they are stackable and should be sufficiently large to resist displacement by both the design storm event and the site-specific lateral earth stresses. Therefore, the length of the longest axis of each stone should be the greater of 1/3 the height of the proposed wall and the size necessary to resist the design stream flow according to MGWC 2.1: Riprap. A typical minimum axis length is 24 inches (0.6 meters).

**MGWC 2.2: IMBRICATED RIPRAP**

Approximate Cost (\$1999)  
\$90 per linear ft

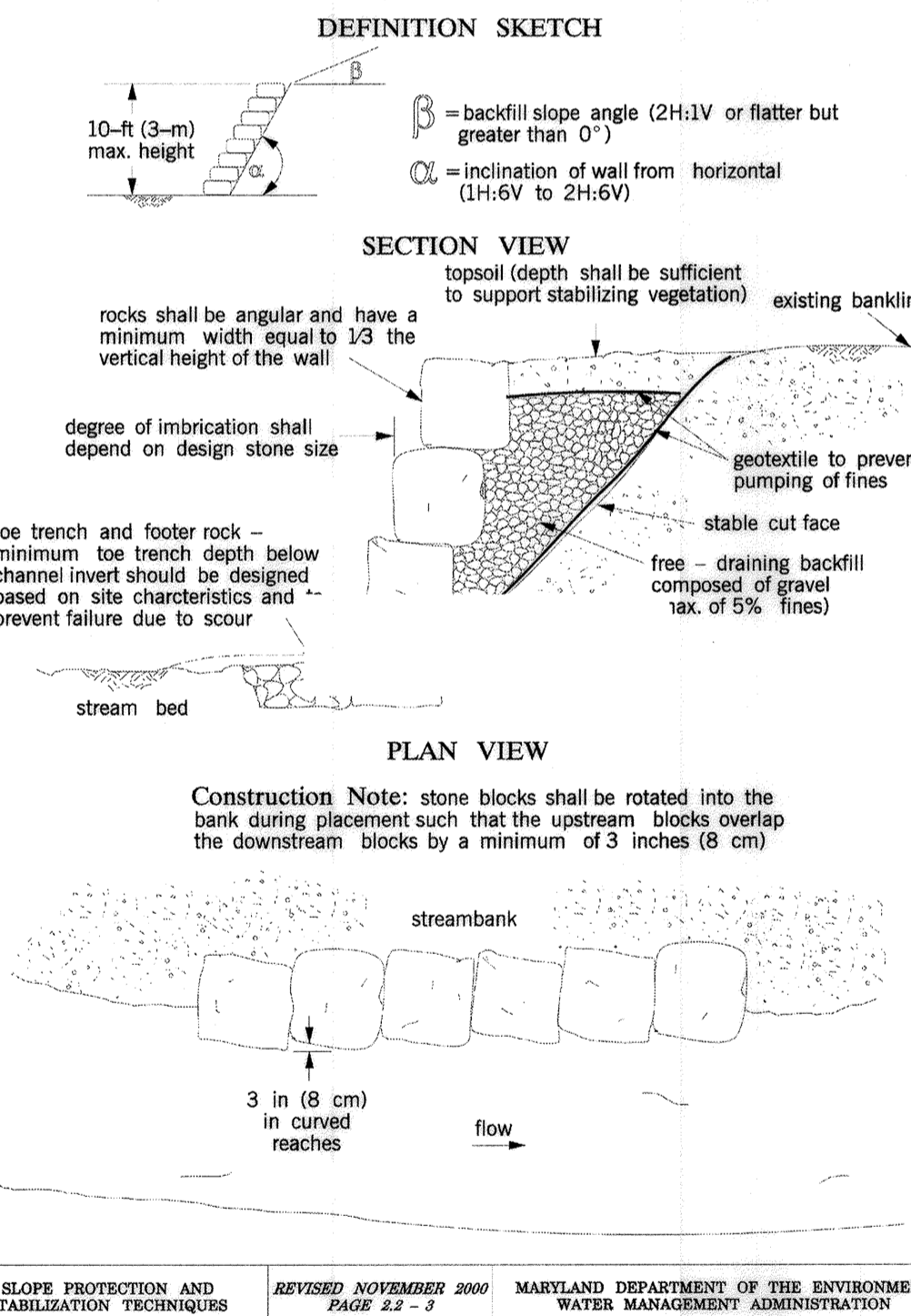
**INSTALLATION GUIDELINES**

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. The recommended construction procedure for imbricated riprap is as follows (refer to Detail 2.2):

1. The stream should be diverted according to a WMA recommended procedure (see Section 1, Temporary Instream Construction Measures, Maryland's Guidelines to Waterway Construction), and the construction area should be dewatered.
2. All excavation should be made in reasonably close conformity with the existing stream slope and bed. The slope of the cut face should be in the range of 1H:5V to 2H:1V. Loose material at the toe of the embankment should be excavated until a stable foundation is reached, usually within 2 to 3 feet (0.6 to 0.9 meters) of the surface. The subgrade should be smooth, firm, and free from protruding objects or voids that would affect the proper positioning of the first layer of stones.
3. A graded granular filter or filter fabric should be placed on the face of the cut slope to prevent the migration of fine materials through the revetment. If filter fabric is used, it should be carefully and loosely placed on the prepared slope and secured. Adjacent strips should overlap a minimum of 6 inches (0.20 meters). If the filter fabric is torn or damaged, it should be repaired or replaced.
4. The rock layers should be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. Upon completion of the first layer of stone, the toe trench should be filled with Class III riprap sized according to MGWC 2.1: Riprap or additional imbricated stone. Two footer stones should be used where high potential for channel incision exists. The height of the imbricated revetment is dictated by the size of the stone used, and the height should not exceed 3 times the length of the longest axis and should not be greater than 10 feet (3 meters).
5. Placement of the granular backfill should occur concurrently with the stone placement. The backfill slope angle should be 2H:1V or flatter but should be greater than 0 degrees to facilitate drainage. Once all of the backfill is in place, it should be covered with a filter layer and a layer of topsoil sufficient to support a native vegetative cover.
6. The disturbed sections of the channel, including the slopes and stream bed, should be stabilized with methods approved by the WMA.

Note: The use of rock vanes (MGWC 3.3: Rock Vanes) should be considered to dissipate excessive toe velocities.

**Maryland's Guidelines To Waterway Construction  
DETAIL 2.2: IMBRICATED RIPRAP**



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

N:\14104-000\CDD\PRS-0001\_MJL090606Little\_Patuxent.dgn  
January 02, 2019

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28467, EXPIRATION DATE: 12/20/2020."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

*[Signature]* DATE: 1-10-19  
DIRECTOR OF PUBLIC WORKS

*[Signature]* DATE: 1/10/19  
CHIEF, BUREAU OF UTILITIES

*[Signature]* DATE: 1/10/19  
CHIEF, UTILITY DESIGN DIVISION

PREPARED BY: **WRA**

Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

*[Professional Engineer Seal]*  
STATE OF MARYLAND  
PROFESSIONAL ENGINEER  
NO. 28467

DES:	ABR				
DRN:	BR				
CHK:	JDC				
DATE:	12/28/18				
BY:	NO.	REVISION	DATE	600' SCALE MAP NO.	47

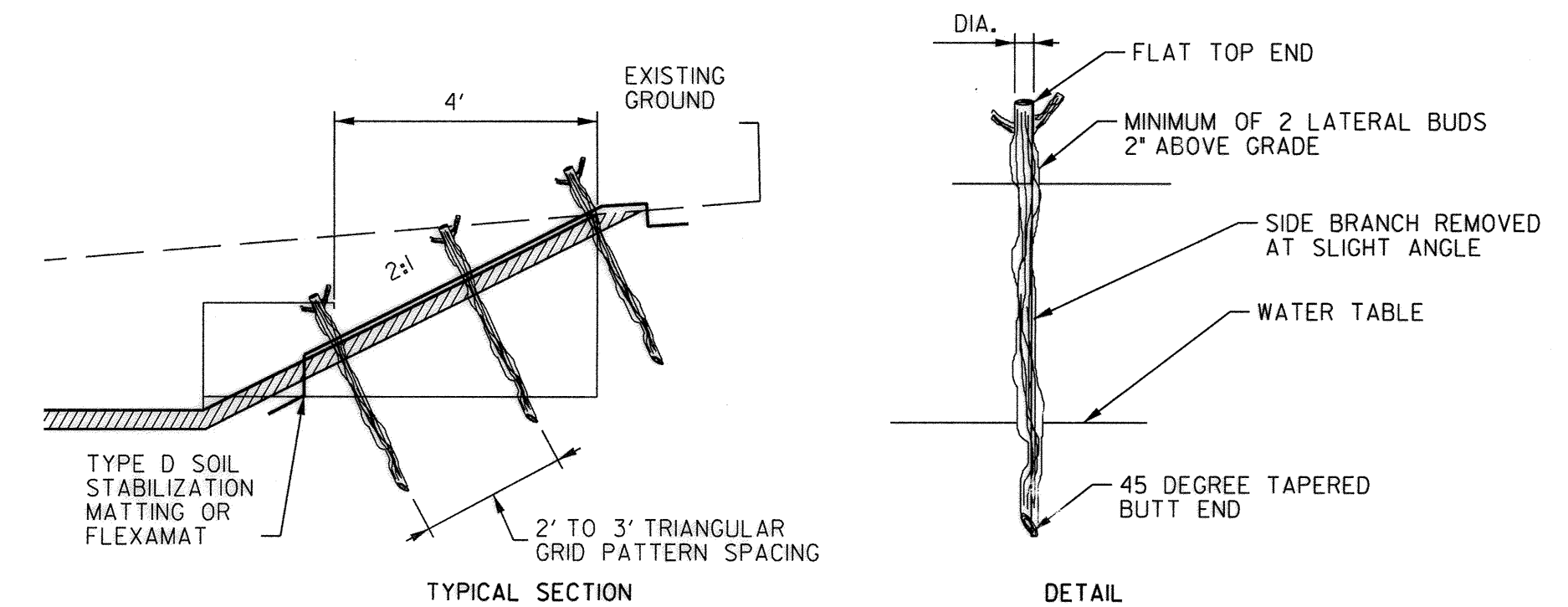
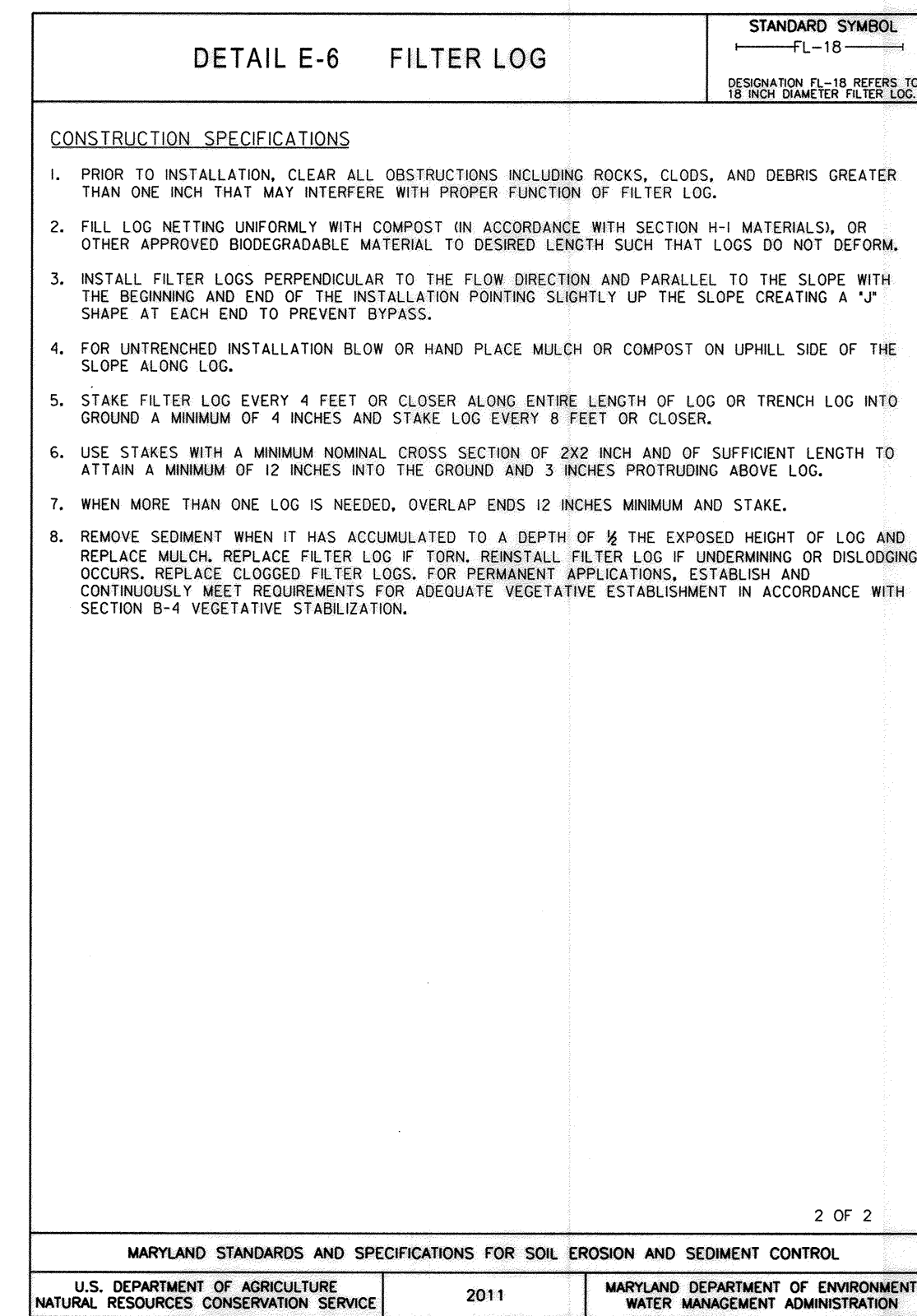
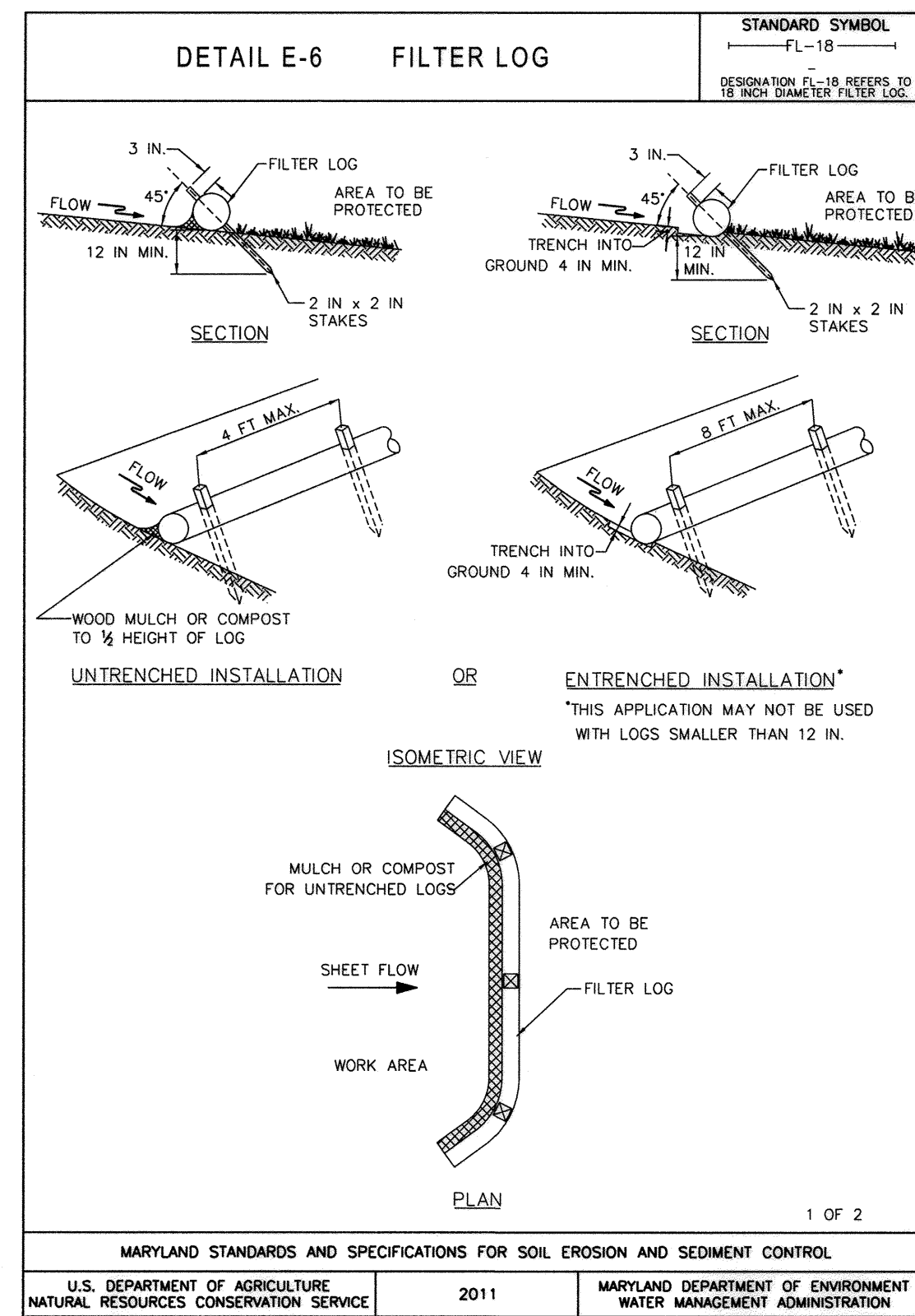
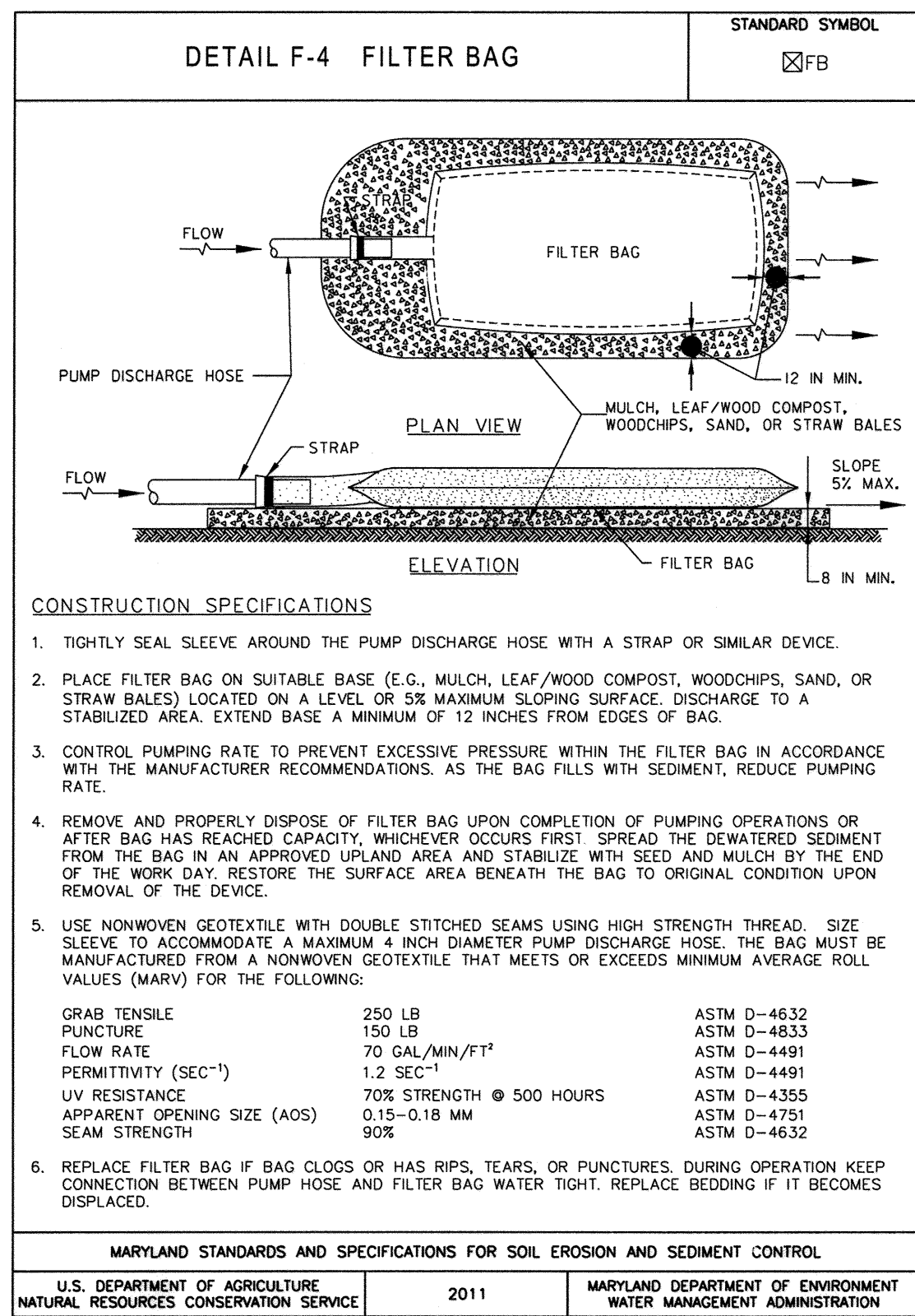
SEDIMENT AND EROSION CONTROL DETAILS

LITTLE PATUXENT WATER RECLAMATION  
PLANT OUTFALL STREAM BANK REHABILITATION  
BID-READY SUBMITTAL

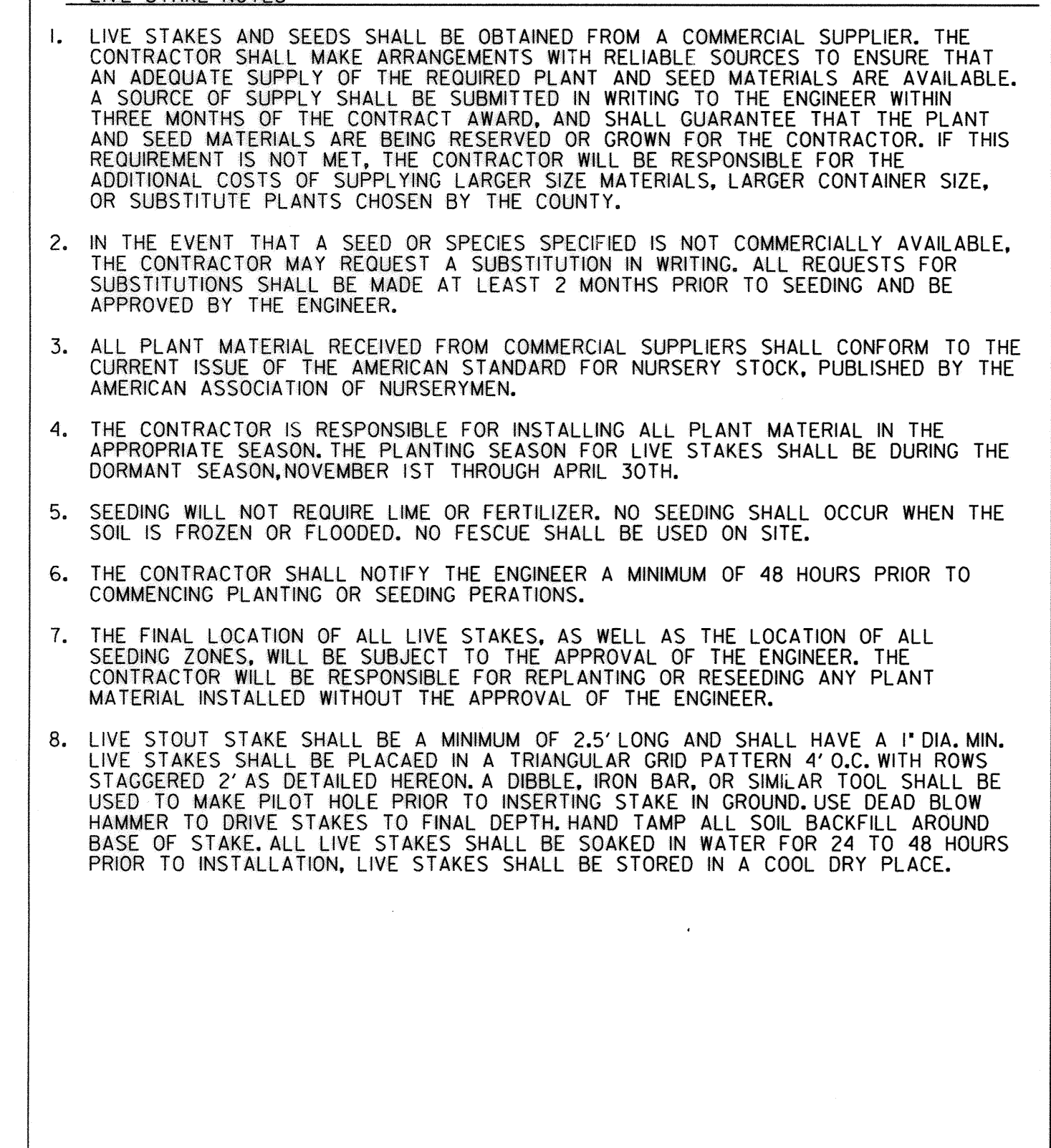
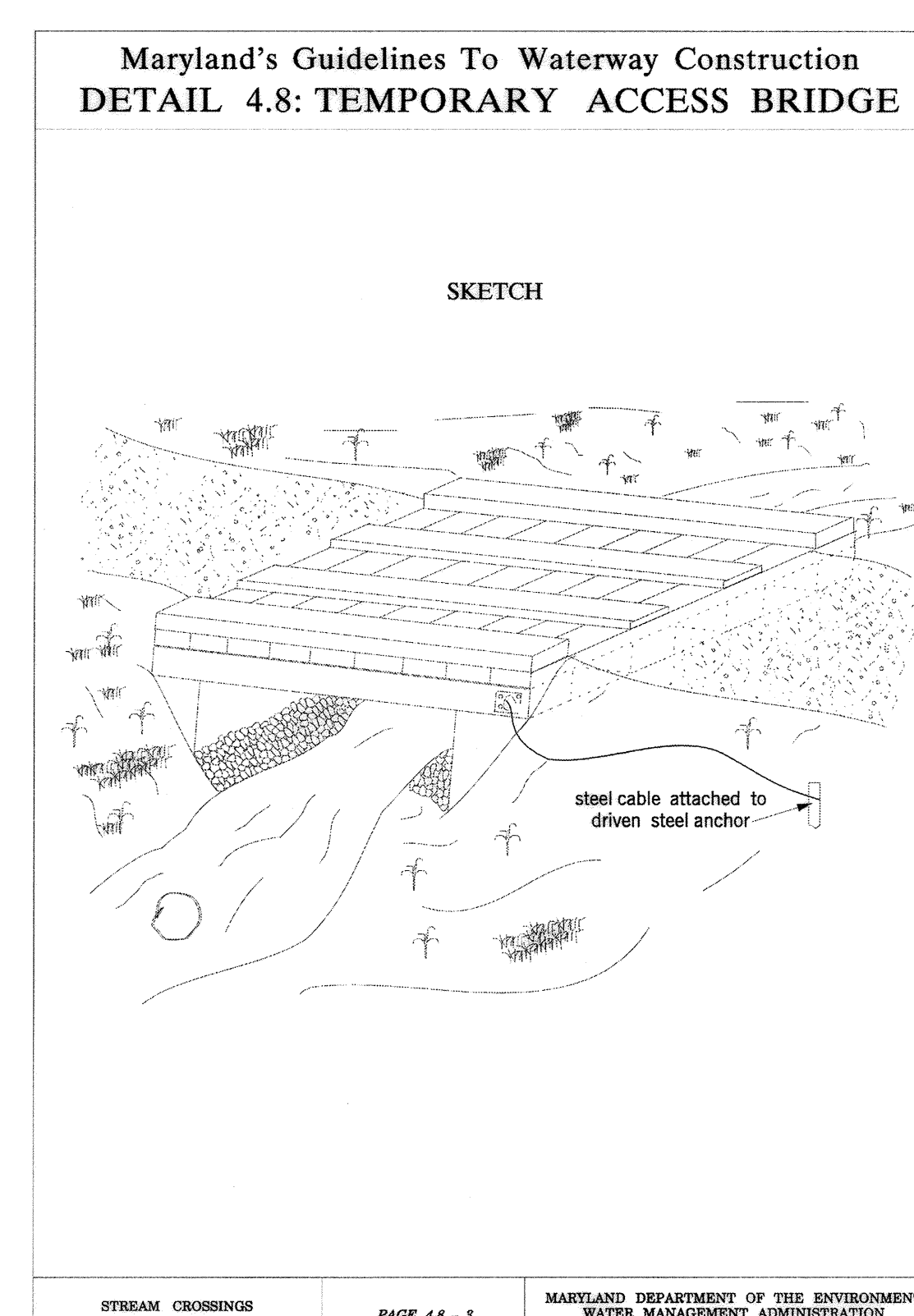
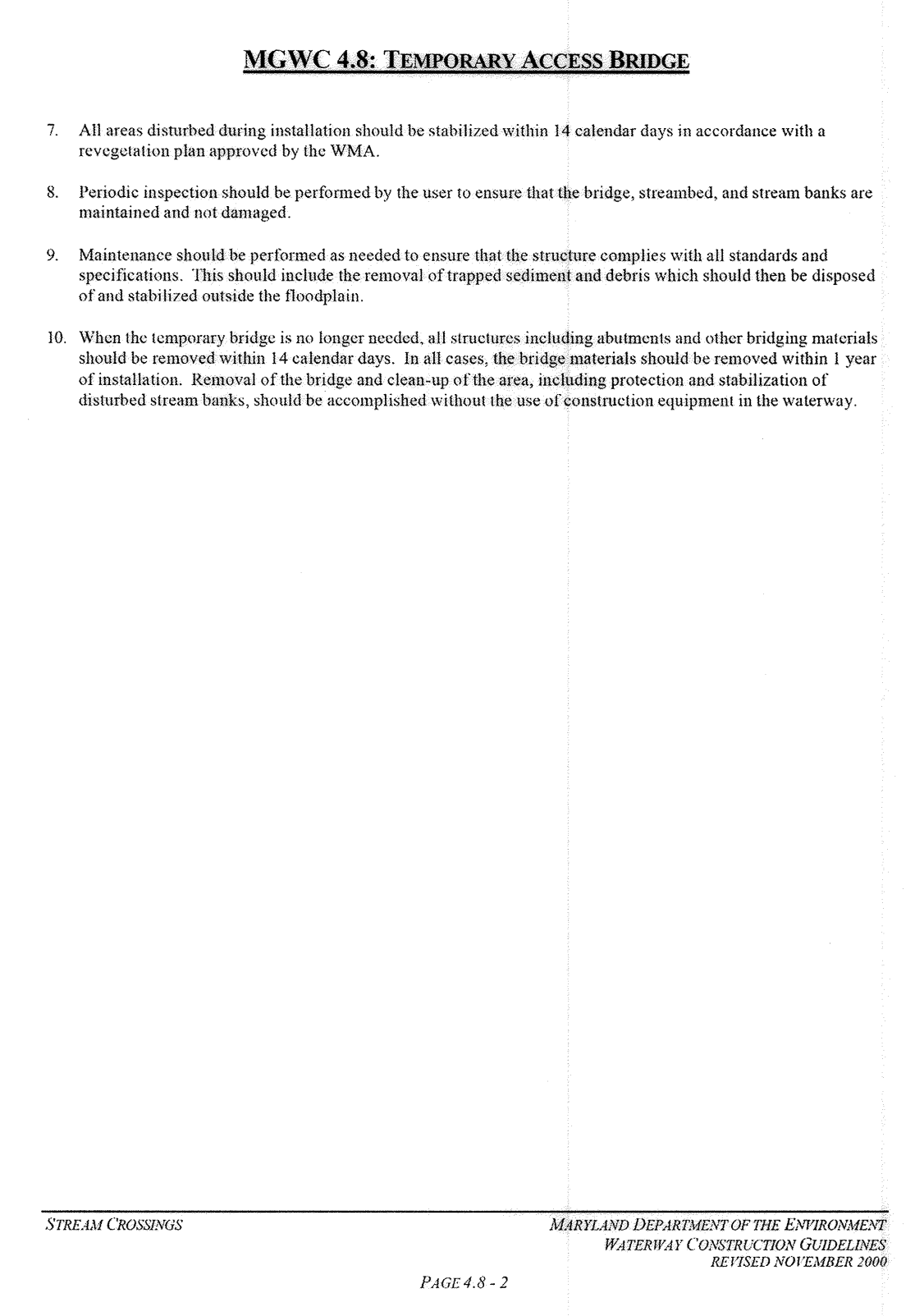
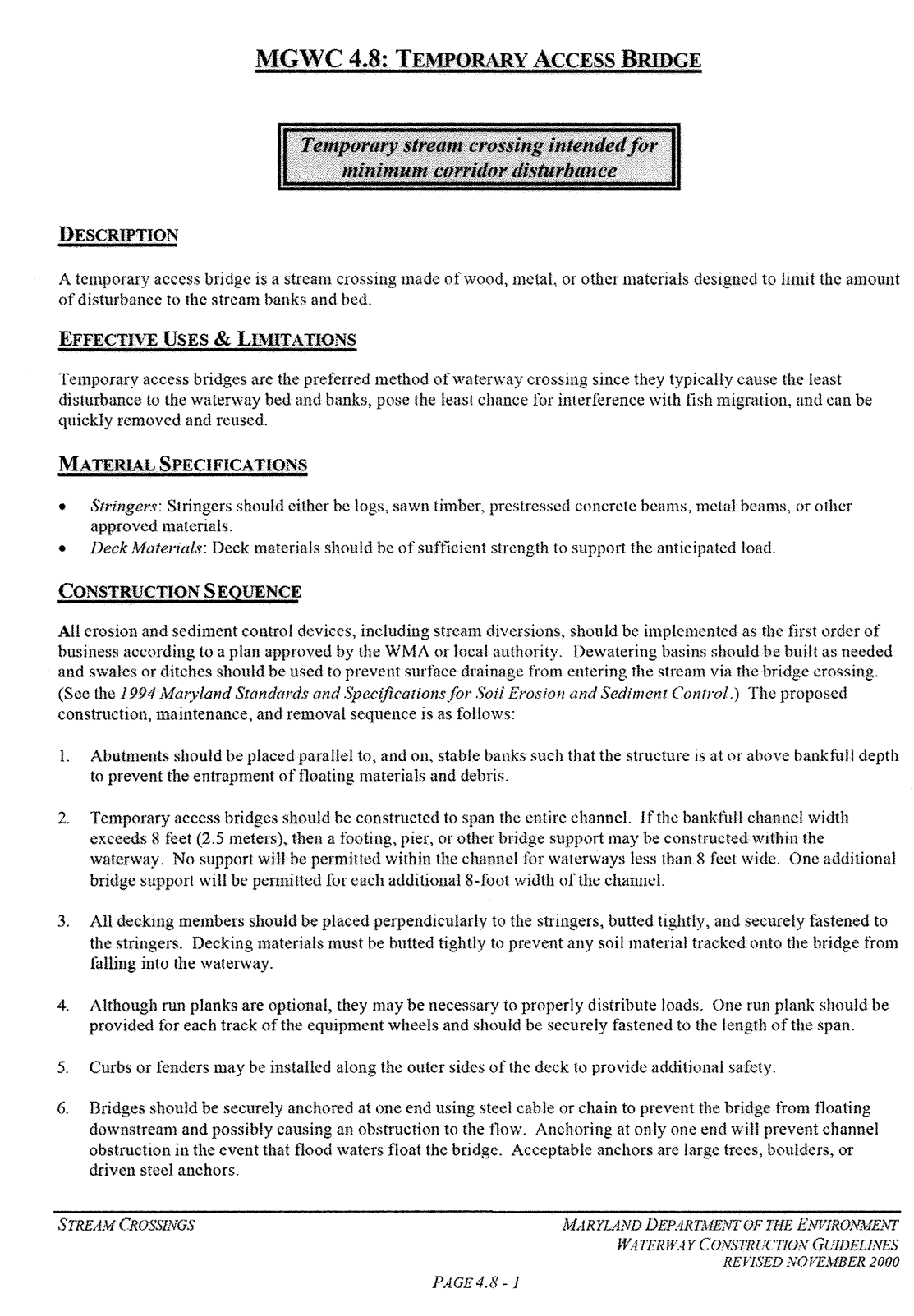
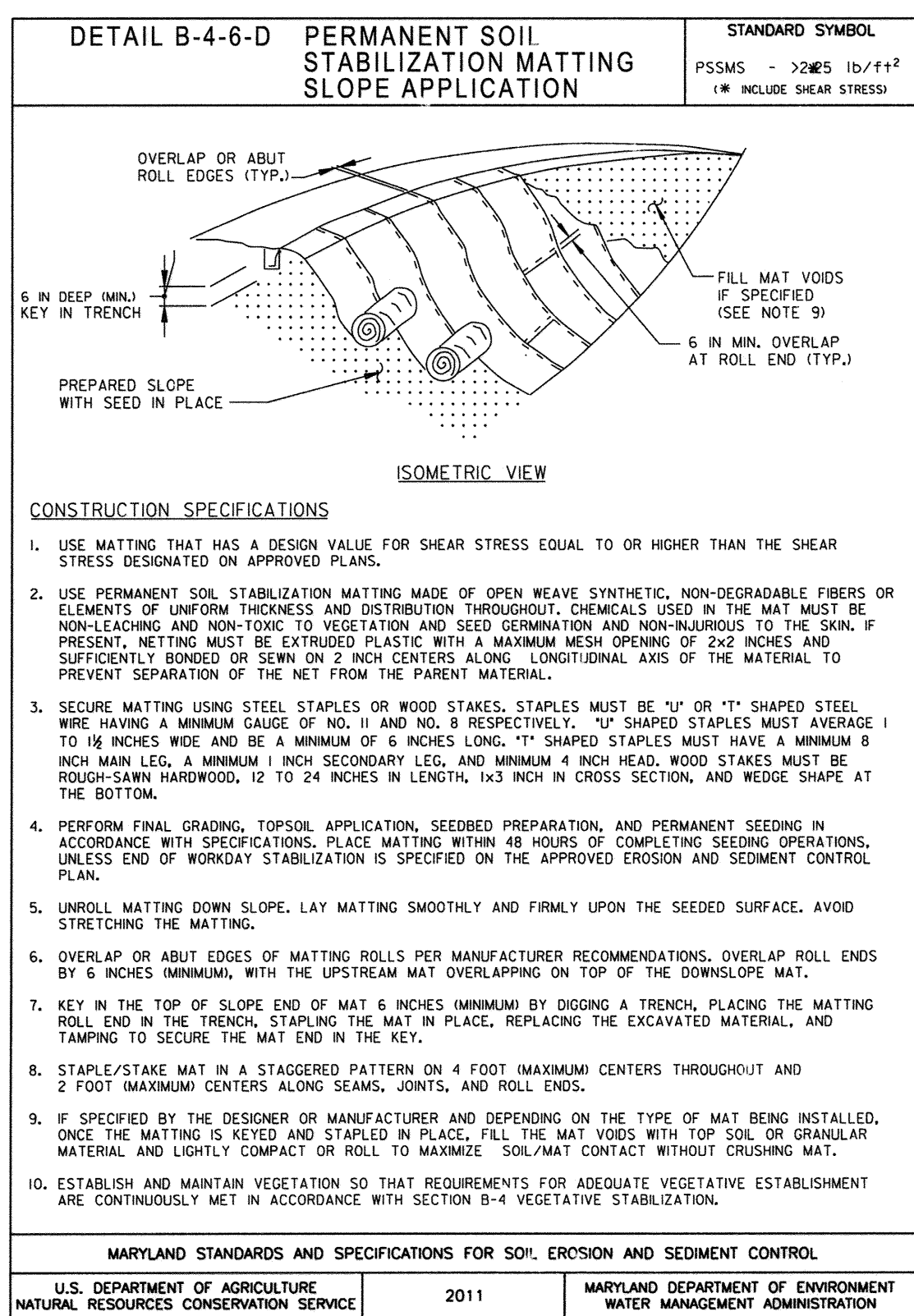
ELECTION DISTRICT 6 HOWARD COUNTY, MARYLAND

DWG.  
ES 04  
SCALE  
NONE  
SHEET  
32 OF 33





QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
880	CORNUS AMOMUM	SILKY DOGWOOD	2.5'-3' 1" DIA.	LIVE STAKE	SEE NOTES
880	SALIX AMYGDALOIDES	PEACHLEAF WILLOW	2.5'-3' 1" DIA.	LIVE STAKE	SEE NOTES



N:\14104-000\CADD\AS-BUILT SHEETS\pds-dwg-0002\_MID180806\Title\_Patuxent-AS BUILT.dwg  
 May 22, 2020

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28467, EXPIRATION DATE: 12/20/2020."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND.

Director of Public Works: *Michael J. Blum* DATE: 7/8/2020  
 Chief, Bureau of Utilities: *Chris Bluff* DATE: 6-29-2020  
 Chief, Bureau of Engineering: *Morgan P. Sullivan* DATE: 6/29/2020  
 Chief, Utility Design Division: *debra* DATE: 6/29/2020

Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21237

PREPARED BY:

**WRA**

STATE OF MARYLAND  
LASON & COLEBY  
PROFESSIONAL ENGINEER  
No. 28467

DES:	ABR	JDC	(A)	AS-BUILT (REPLACEMENT SHEET)	1019
DRN:	ABR				
CHK:	JDC				
DATE:	12/28/18	BY:	NO.	REVISION	DATE

600' SCALE MAP NO.	47	BLOCK NO.	24
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ELECTION DISTRICT 6  
HOWARD COUNTY, MARYLAND

AS-BUILT OCT. 2019

DWG.  
ES 05  
SCALE  
NONE  
SHEET  
33 OF 33