

# WATER AND SEWER EXTENSIONS

## VILLAGE OF RIVER HILL

### SECTION 2 AREA 1

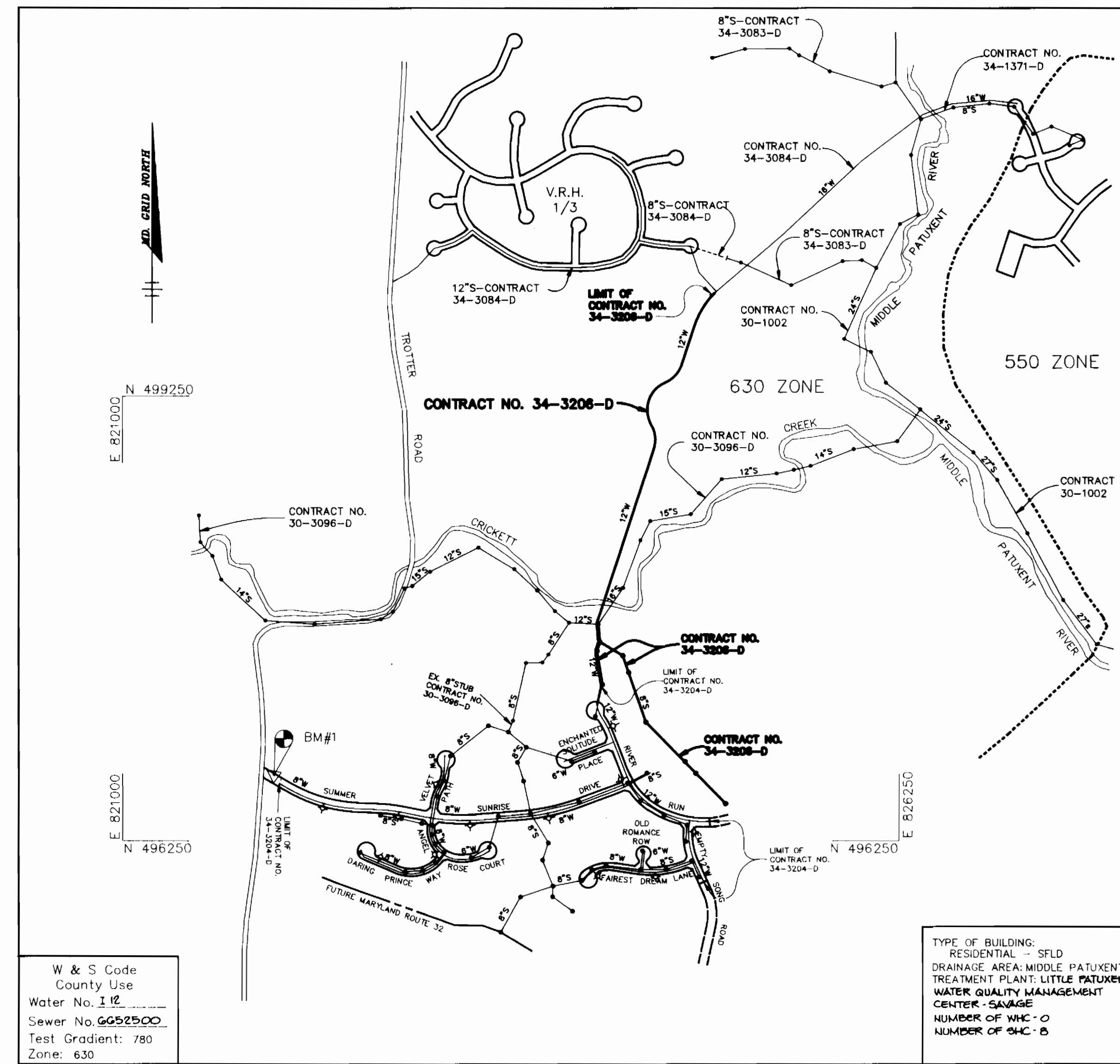
#### 5th ELECTION DISTRICT

#### HOWARD COUNTY, MARYLAND

#### CONTRACT NO. 34-3206-D

SHEET INDEX	
NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN OF A WATER MAIN
3	PLAN OF WATER AND SEWER MAINS
4	PROFILE OF A WATER MAIN
5	PROFILE OF A WATER MAIN
6	PROFILE OF A SEWER MAIN AND DETAIL SHEET
7	PROFILE OF A SEWER MAIN

QUANTITIES				
ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUFACTURER / SUPPLIER
12" WATER	2869 LF	2,867 LF	DIP	GRIFFIN PIPE
12" PLUG & BUTTRESS	1 EA.	1 EA.	DIP	GRIFFIN PIPE
12" VALVES	2 EA.	2 EA.	DIP	MUELLER
AIR RELEASE MANHOLE	1 EA.	1 EA.	MUELLER	ATLANTIC PRECAST
8" SEWER	1724 LF	1,260 LF	PVC	JM MANUFACTURING
8" D.I.P. CL 52	121 LF	627 LF	DIP	GRIFFIN PIPE
4" SHC	80 LF	101 LF	PVC	JM MANUFACTURING
MANHOLES	8 EA. 67-5 VF	8 EA.	CONCRETE	ATLANTIC PRECAST
5" BLOWOFF	1 EA.	1 EA.	KUPFERLE	BOLATIK SUPPLY
1/2" DRAIN	1 EA.			
NAME OF UTILITY CONTRACTOR:				
CHECKBOX				
AS-BUILT DATE				
SURVEY AND DRAFTING DIVISION				



W & S Code  
County Use  
Water No. 112  
Sewer No. 6652500  
Test Gradient: 780  
Zone: 630

TYPE OF BUILDING:  
RESIDENTIAL - SFLD  
DRAINAGE AREA: MIDDLE PATUXENT  
TREATMENT PLANT: LITTLE PATUXENT  
WATER QUALITY MANAGEMENT  
CENTER - SAVAGE  
NUMBER OF V.M.C. = 0  
NUMBER OF SHC = 5

**VICINITY MAP**  
SCALE: 1"=600'

#### 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 to the satisfaction of the Engineer at the Contractor's expense.
2. All horizontal controls are based on Maryland State Coordinates.
3. All vertical controls are based on U.S.G.S. data.
4. All pipe elevations shown are invert elevations.
5. Clear all utilities by a minimum of 6". Clear all poles by 2'-0" minimum or tunnel as required. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the contractor's work requires the bracing of additional poles, any cost incurred by the owner for bracing of additional poles or damages shall be deducted from money owed the contractor. The contractor shall coordinate with the utility companies to schedule the bracing of the poles.
6. For details not shown on the drawings, and for materials and construction methods use Howard County Design Manual, Volume IV, Standard Specifications and Detail for Construction. (Latest Edition). The contractor shall have a copy of Volume IV on the job.
7. Where test pits have been made on existing utilities, they are noted by the symbol at the location of the test pit. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor two weeks in advance of construction operations at his own expense.
8. Contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:
 

State Highway Administration	531-5533
Baltimore Gas & Electric Co. Contractor Services	850-4620
Baltimore Gas & Electric Co. Underground Damage Control	787-9088
Miss Utility	1-800-257-7777
Colonial Pipeline Co.	795-1390
Bureau of Utilities, Howard County Department of Public Works	313-4900
9. Trees and shrubs are to be protected from damage to maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the contractor.
10. Contractor shall remove trees, stumps and roots along line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main.
11. All water mains to be D.I.P. Class 52 unless otherwise noted.
12. Tops of all water mains to have a minimum of 3'-1/2" cover unless otherwise noted.
13. Valves adjacent to tees shall be strapped to tees.
14. All fittings shall be buttressed or anchored with concrete in accordance with the Standard Details unless otherwise provided for on the drawings.
15. Fire hydrants shall be set to the bury line elevations shown on the drawings. All fire hydrants shall be restrained and buttressed with concrete in accordance with Standard Details. Soil around the fire hydrant shall be compacted in accordance with Section 1000 and 1005 of the Standard Specifications.
16. The contractor shall not operate any water main valves on the existing water system.
17. All water house connections shall be for inside meter setting unless otherwise noted on plans or in specifications.
18. All sewer mains shall be DIP, RCP, VCPX, CSFX, RCP and P.V.C. unless otherwise noted.
19. The contractor shall provide a joint in all sewer mains within 2'-0" of exterior manhole wall.
20. All manholes shall be 4'-0" inside diameter unless otherwise noted.
21. Force mains shall be D.I.P. only.
22. Manholes shown with 12" and 16" walls are for brick manholes only.
23. Manholes designated W.T. in plan and profile shall have watertight frame and covers. Standard Detail 05-52. Where watertight manhole frame and cover is used, set top of frame 1'-6" above finished grade unless otherwise noted on the drawings.
24. House(s) with the symbol "C.N.S." indicates that cellar cannot be served.
25. Manholes can be either brick or precast concrete structures.

SEWER AS-BUILT (ONLY)  
10/15/93

Sediment control measures for this contract will be implemented in accordance with Section 219 of the Specifications and as shown on F-93-18

*John R. Robertson* 12/2/92  
HOWARD SOIL CONSERVATION DISTRICT

Review for Howard Soil Conservation District and meet technical requirements.

*John R. Robertson* 12/2/92  
HOWARD SOIL CONSERVATION SERVICE

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

*John R. Robertson* 12/2/92  
HOWARD SOIL CONSERVATION DISTRICT

**BENCHMARKS**

BM#1 RAILROAD SPIKE IN POLE # 525680  
(TROTTER ROAD) ELEV. 393.27  
N 496697.02  
E 822026.81

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Ronald M. ...* 12/4/92  
DIRECTOR OF PUBLIC WORKS DATE

*Robert M. ...* 11-23-92  
CHIEF, BUREAU OF UTILITIES DATE

*William E. ...* 12-4-92  
CHIEF, BUREAU OF ENGINEERING DATE

*Arthur E. Muegge* 11/16/92  
CHIEF, LAND DEVELOPMENT DATE

**RIEMER MUEGGE & ASSOCIATES, INC.**  
A Land Planning, Engineering and Consulting Firm  
8818 Centre Park Drive • Suite 200 • Columbia, Md 21045  
410-997-8900 FAX: 410-997-9282



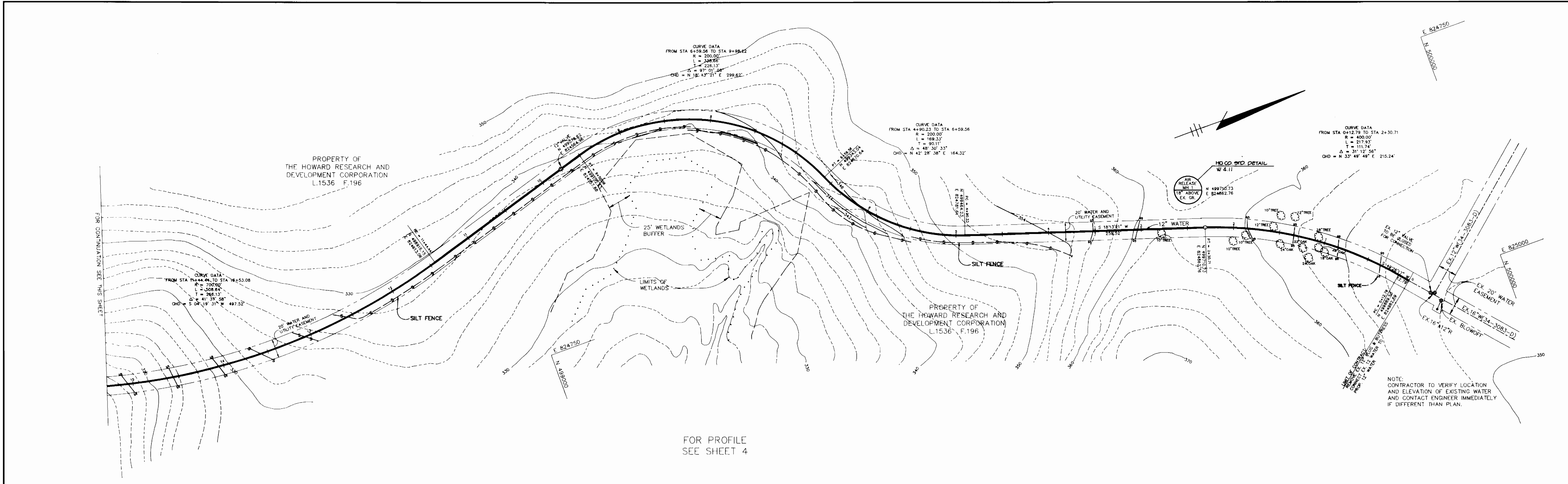
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CHK: C.J.R.	
DATE: 11-16-92	
BY: NO.	
REVISION	
DATE	

**TITLE SHEET**

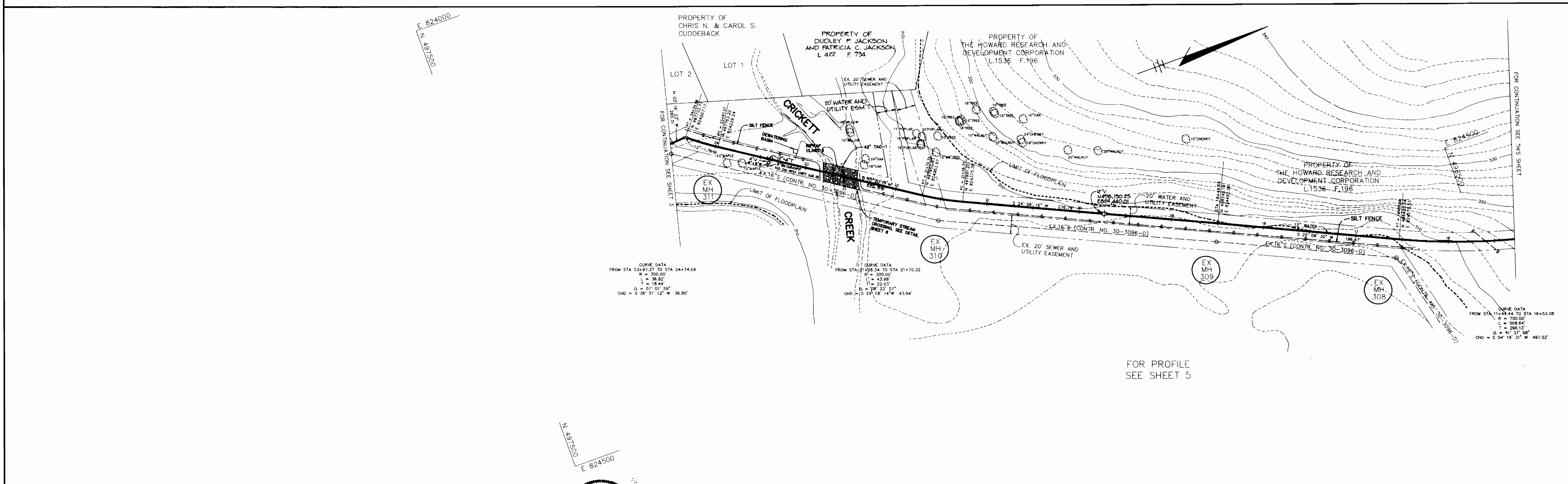
600' SCALE MAP NO. 35 BLOCK NO. 14

**VILLAGE OF RIVER HILL**  
SECTION 2 AREA 1  
5th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 34-3206-D

SCALE AS SHOWN  
SHEET 1 OF 7



FOR PROFILE  
SEE SHEET 4

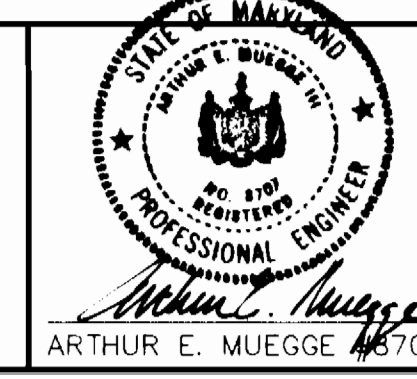


FOR PROFILE  
SEE SHEET 5

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James J. ...* 12/4/92 DIRECTOR OF PUBLIC WORKS  
*Michael ...* 12/4/92 CHIEF, BUREAU OF ENGINEERING  
*Robert ...* 11-23-92 CHIEF, BUREAU OF UTILITIES  
*Arthur E. Muegge* 12/4/92 CHIEF, LAND DEVELOPMENT

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DATE: 11-10-92	BY NO.	REVISION	DATE

PLAN OF A WATER MAIN

600' SCALE MAP NO. 35 BLOCK NO. 14

VILLAGE OF RIVER HILL  
SECTION 2 AREA 1  
5th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 34-3206-D

SCALE  
1" = 50'

SHEET  
2 OF 7



NOTE:  
CONTRACTOR TO VERIFY LOCATION  
AND ELEVATION OF EXISTING SEWER  
MAIN AND CONTACT THE ENGINEER  
IF DIFFERENT THAN PLAN.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

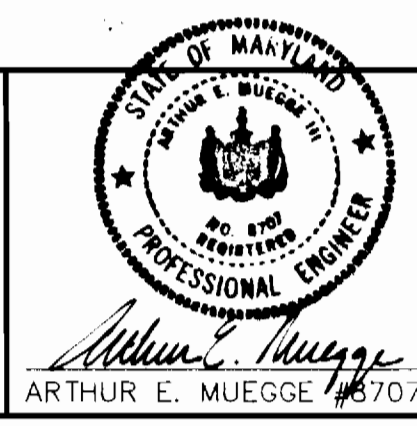
*James J. Shaw* 12/4/92  
DIRECTOR OF PUBLIC WORKS DATE

*Richard R. ...* 11-23-92  
CHIEF, BUREAU OF UTILITIES DATE

*...* 12-4-92  
CHIEF, BUREAU OF ENGINEERING DATE

*...* 12/1/92  
CHIEF, LAND DEVELOPMENT DATE

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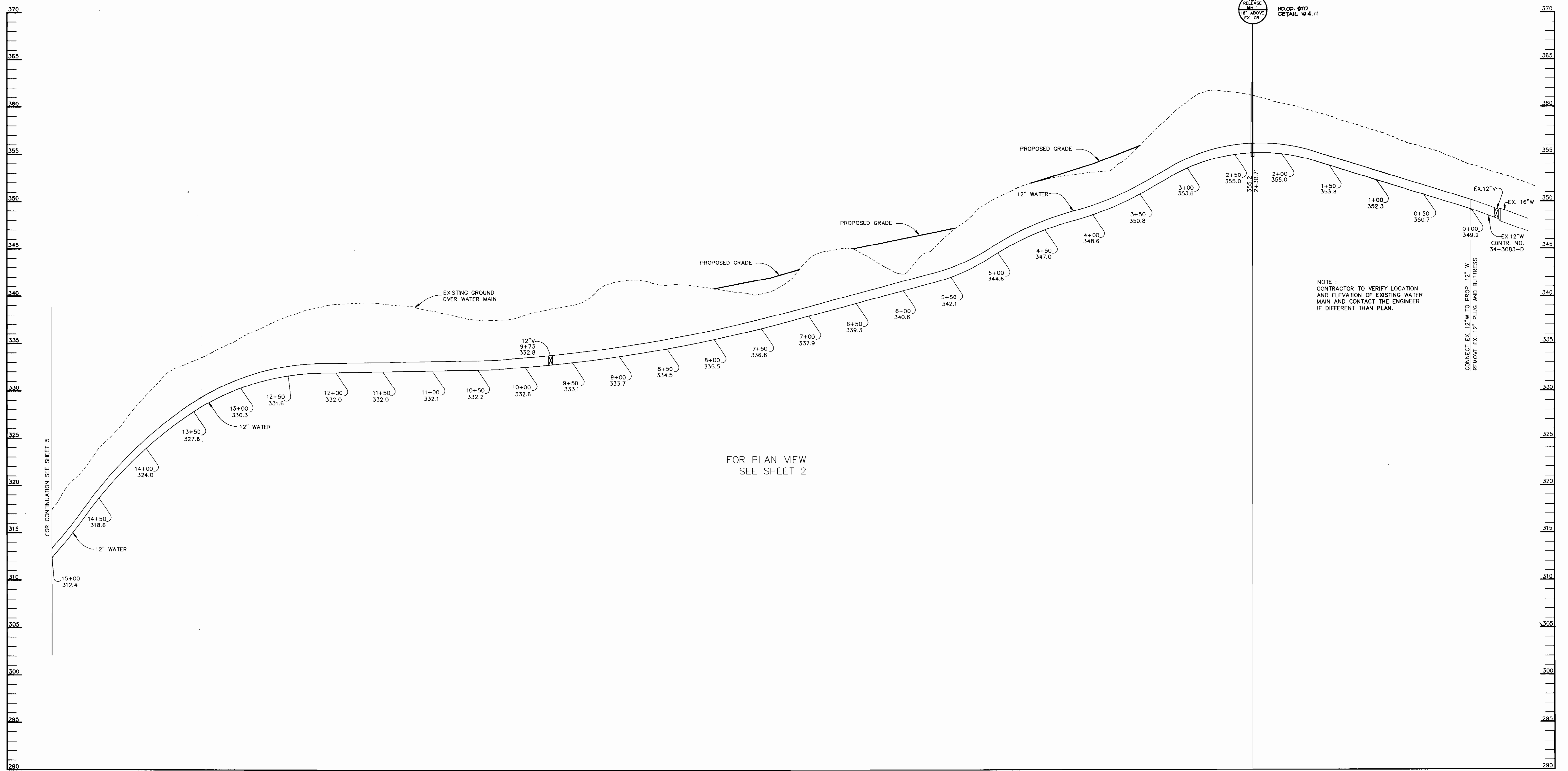
PLAN OF  
WATER AND SEWER MAINS

600' SCALE MAP NO. 35 BLOCK NO. 14

VILLAGE OF RIVER HILL  
SECTION 2 AREA 1  
5th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 34-3206-D

SCALE  
1" = 50'

SHEET  
3 OF 7



FOR PLAN VIEW  
SEE SHEET 2

NOTE:  
CONTRACTOR TO VERIFY LOCATION  
AND ELEVATION OF EXISTING WATER  
MAIN AND CONTACT THE ENGINEER  
IF DIFFERENT THAN PLAN.

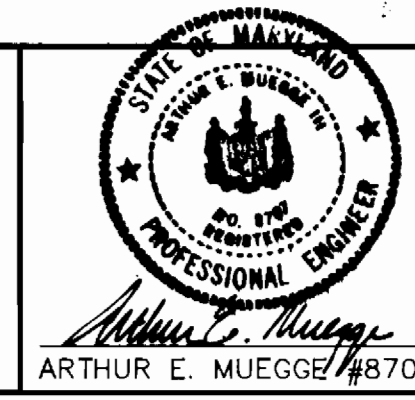
CONNECT EX. 12" W TO PROP. 12" W  
REMOVE EX. 12" PLUG AND BUTTRISS

**PROFILE**  
SCALE:  
HOR. - 1"=50'  
VERT. - 1"=5'

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Robert M. Bennett* 12/4/92 DIRECTOR OF PUBLIC WORKS DATE  
*Arthur E. Muegge* 12/4/92 CHIEF, BUREAU OF ENGINEERING DATE  
*Robert M. Bennett* 11-23-92 CHIEF, BUREAU OF UTILITIES DATE  
*Arthur E. Muegge* 12/4/92 CHIEF, LAND DEVELOPMENT DATE

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**PROFILE OF A WATER MAIN**

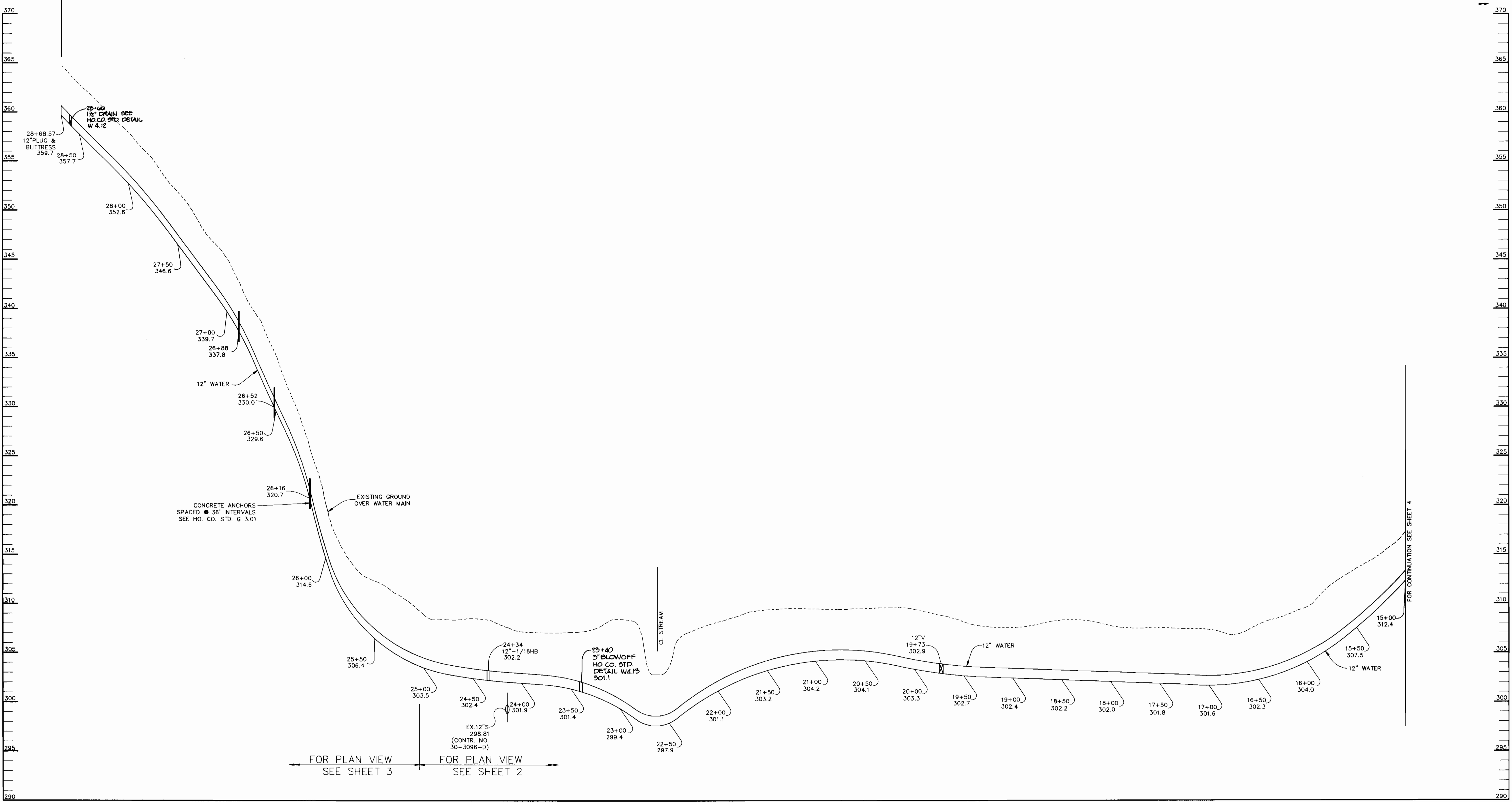
600' SCALE MAP NO. 35 BLOCK NO. 14

**VILLAGE OF RIVER HILL**  
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HOWARD COUNTY, MARYLAND  
CONTRACT NO. 34-3206-D

SCALE AS SHOWN  
SHEET 4 OF 7

VILLAGE OF RIVER HILL  
SECTION 2 AREA 1  
CONTRACT NO. 34-3204-D

PROPERTY OF  
THE HOWARD RESEARCH  
AND DEVELOPMENT  
CORPORATION



**PROFILE**  
SCALE:  
HOR. - 1" = 50'  
VERT. - 1" = 5'

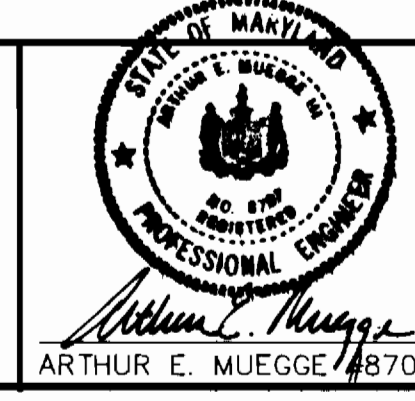
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James M. Shaw* 12/14/92 DIRECTOR OF PUBLIC WORKS  
*Robert B. Bunn* 11-23-92 CHIEF, BUREAU OF UTILITIES

*William E. Muegge* 12-1-92 CHIEF, BUREAU OF ENGINEERING  
*William E. Muegge* 12/1/92 CHIEF, LAND DEVELOPMENT

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*Arthur E. Muegge*  
ARTHUR E. MUEGGE #8707



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DATE: 11-16-92	BY	NO.	REVISION	DATE	

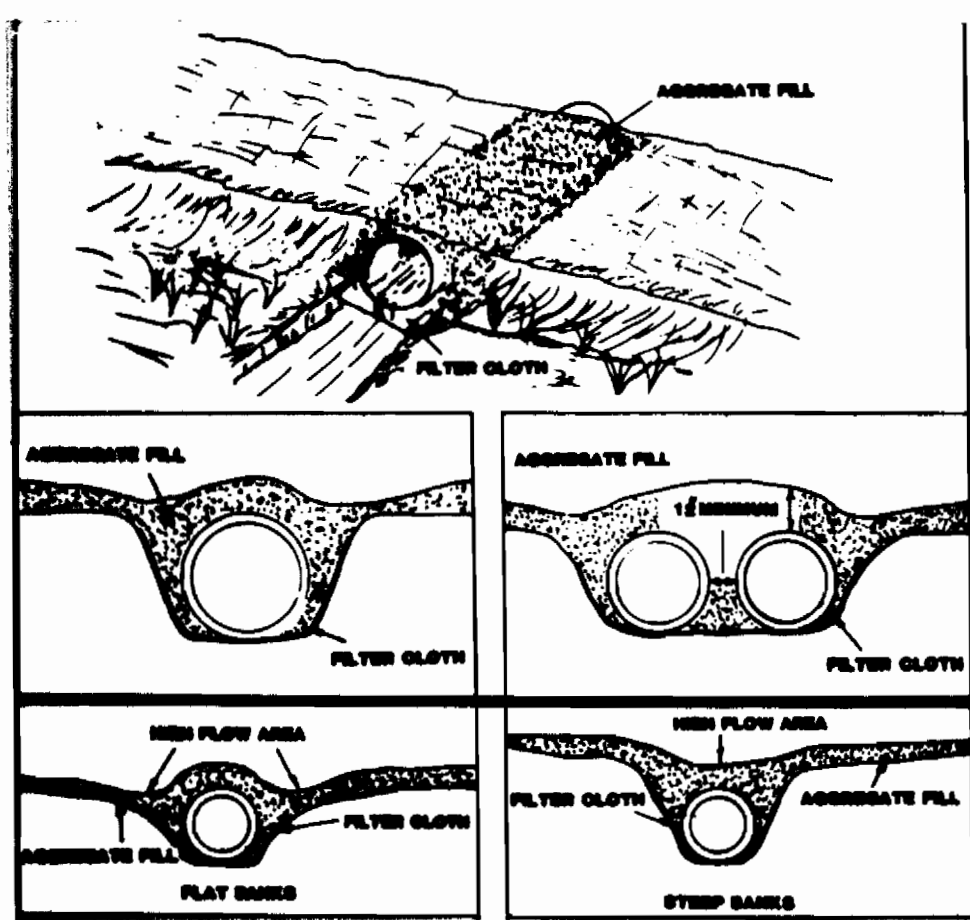
**PROFILE OF A WATER MAIN**

600' SCALE MAP NO. 35 BLOCK NO. 14

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5th ELECTION DISTRICT  
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CONTRACT NO. 34-3206-D

SCALE AS SHOWN  
SHEET 5 OF 7





**Temporary Access Culvert - (STANDARD DRAWING TAC-1)**  
 A temporary access culvert is a structure consisting of a section(s) of circular pipe, pipe arches, or oval pipes of reinforced concrete, corrugated metal, or structural plate, which is used to convey flowing water through the crossing.

- Considerations**
- Temporary culverts are used where (1) the channel is too wide for normal bridge construction, (2) anticipated loading may prove unsafe for single span bridges, or (3) access is not needed from bank to bank.
  - This temporary waterway crossing method is normally preferred over a fixed type of crossing, since disturbance to the waterway is only during construction and removal of the culvert.
  - Temporary culverts can be salvaged and reused.

**Construction Specifications**

- Regulations** - No construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for all Class III and Class IV Trout Waters or between March 15 through June 15 for non-trout waterways.
- Culvert Strength** - All culverts shall be strong enough to support their cross sectional area under maximum expected loads.
- Culvert Size** - The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 50 percent of the cross sectional area of the existing channel. The minimum size culvert that may be used is a 12" diameter pipe.
- Culvert Length** - The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.
- Filter Cloth** - Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces sediment and improves crossing stability.

**Culvert Placement**

- The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).
- Culvert Protection** - The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used they shall be separated by at least 12" of compacted aggregate fill. At a minimum, the bedding and fill material used in the construction of the temporary access culvert crossings shall conform with the aggregate requirements cited in Section 1.8.1. above.
- Stabilization** - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."

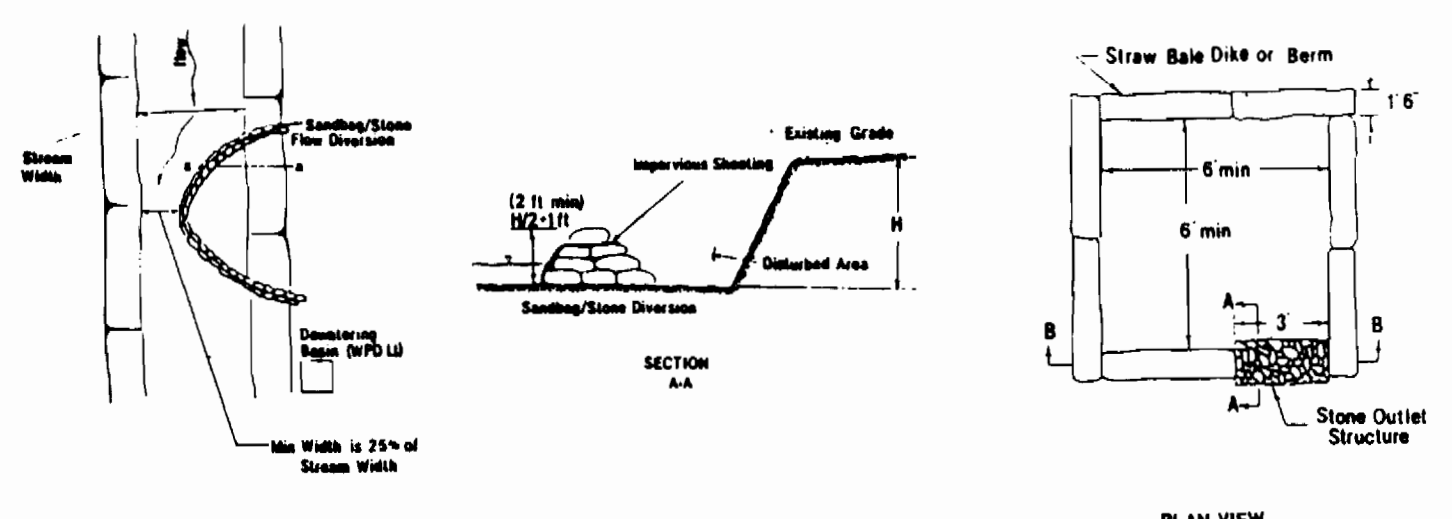
**Culvert Maintenance Requirements**

- Inspection** - Periodic inspection shall be performed to ensure that the culverts, streambed, and streambanks are not damaged, and that sediment is not entering the stream or blocking fish passage or migration.
- Maintenance** - Maintenance shall be performed, as needed in a timely manner to ensure that structures are in compliance with this standard and specifications. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of and stabilized outside the waterway flood plain.

**Culvert Removal and Clean-Up Requirements**

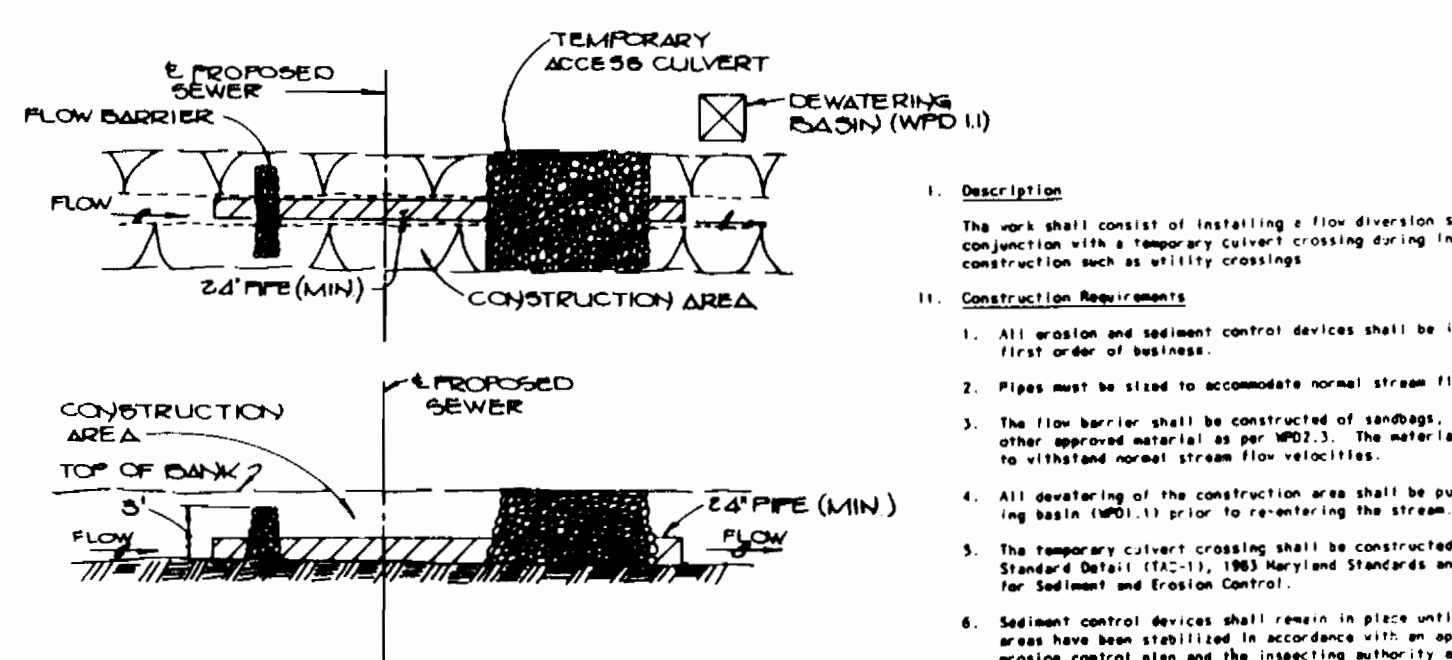
- Removal** - When the crossing has served its purpose, all structures including culverts, bedding and filter cloth materials shall be removed within 14 calendar days. In all cases, the culvert materials shall be removed within one year of installation. No structure shall be removed during the spawning season (March 15 through June 15).
- Final Clean-up** - Final clean-up shall consist of removal of the temporary structure from the waterway, removal of all construction materials, restoration of original stream channel cross section, and protection of the stream banks from erosion. Removed material shall be stored outside of the waterway flood plain.
- Washed** - Removal of the structure and clean up of the area shall be accomplished without construction equipment working in the waterway channel.
- Final Stabilization** - All areas disturbed during culvert removal shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."

**TEMPORARY ACCESS CULVERT**  
NO SCALE

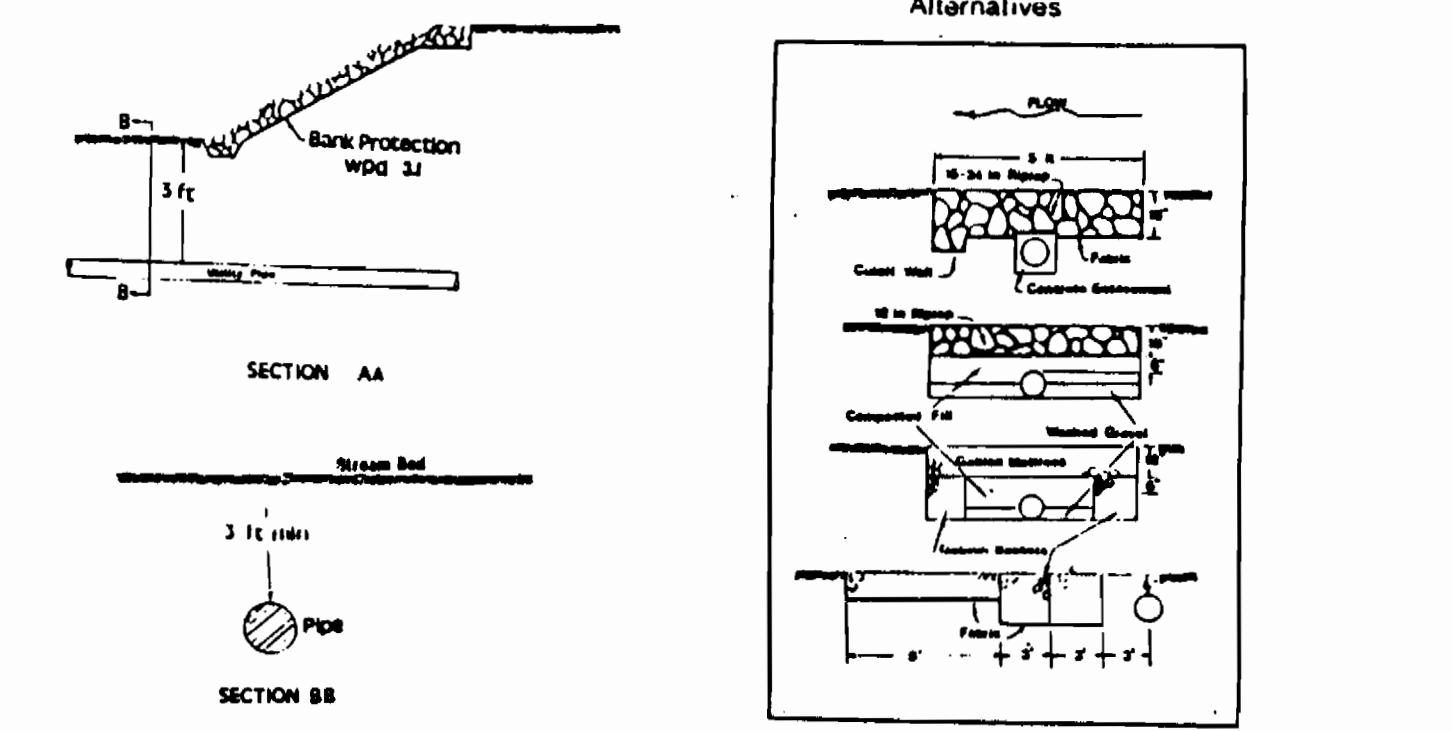
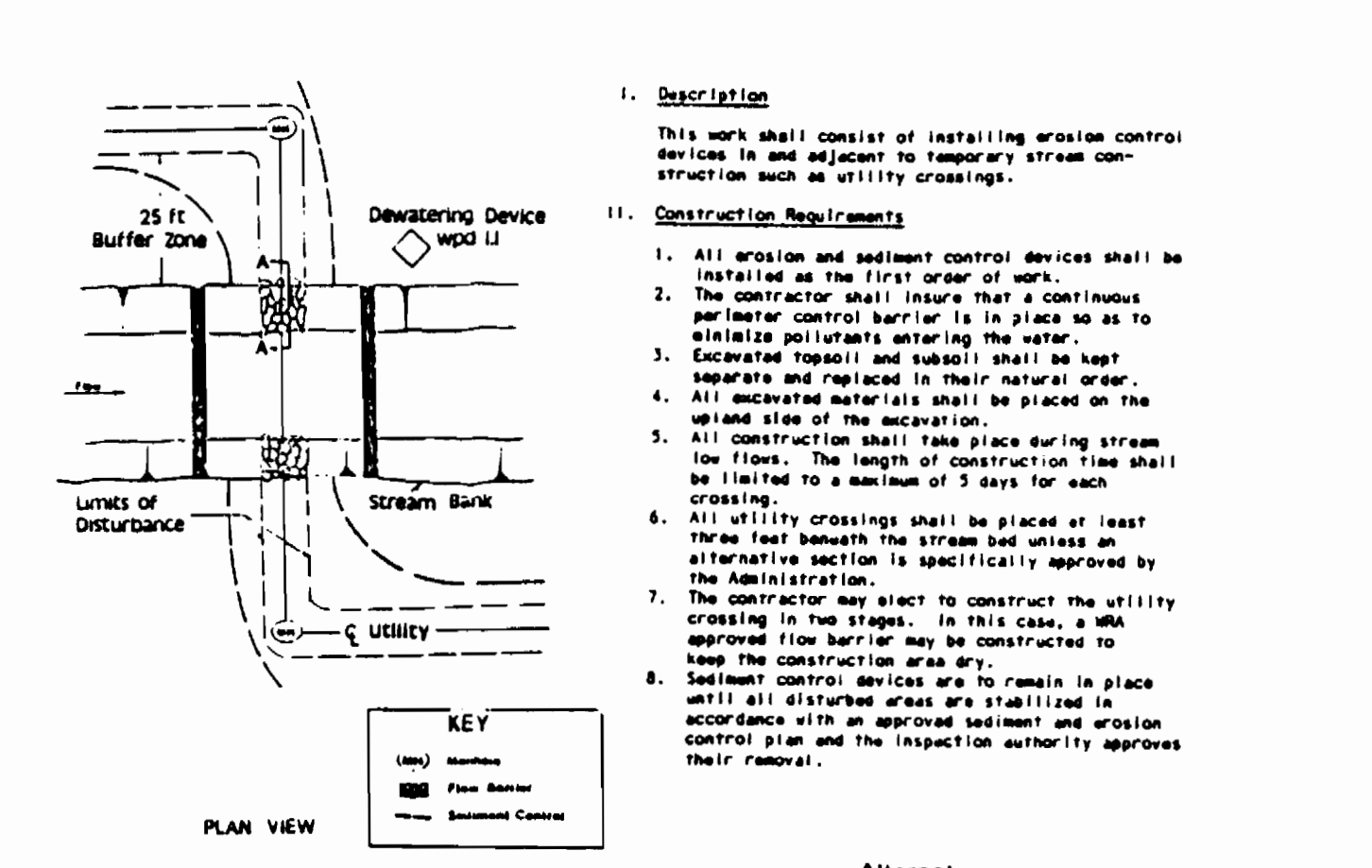


- Description**  
This work shall consist of installing flow diversion for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.
- Material Specifications**  
1. **Sandbags** - Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and were tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).  
2. **Stone** - Stone shall be washed and have a minimum diameter of 6 inches.  
3. **Sheeting** - Sheeting shall consist of polyethylene or other material which is tear-resistant and resistant to puncture and tearing.  
4. **Construction Requirements**  
1. All erosion and sediment control devices shall be installed as the first order of work.  
2. The diversion structure shall be installed from upstream to downstream.  
3. The height of the diversion structure shall be one-half the distance from stream bed to stream bank plus one foot, as indicated on the construction plan.  
4. All excavated materials shall be disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the WA.  
5. All dewatering of the construction area shall be pumped to a dewatering basin prior to re-entering the stream.  
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with a minimum of 18-inch overlap.  
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

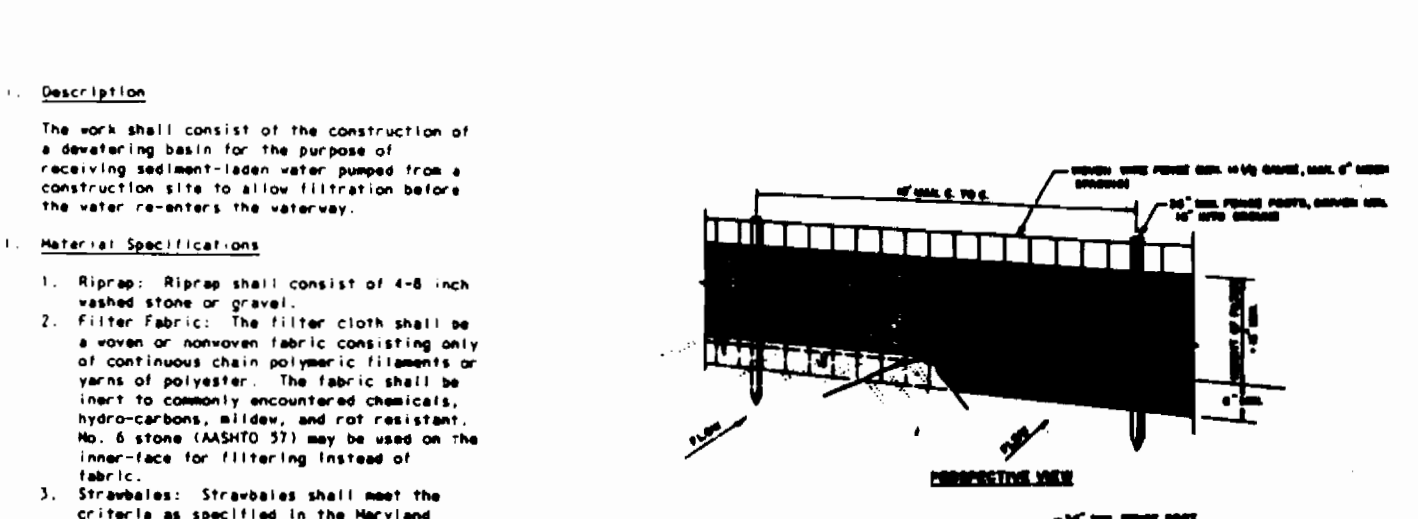
**SANDBAG/STONE DIVERSION**  
NO SCALE



**TEMPORARY STREAM CROSSING**  
NO SCALE

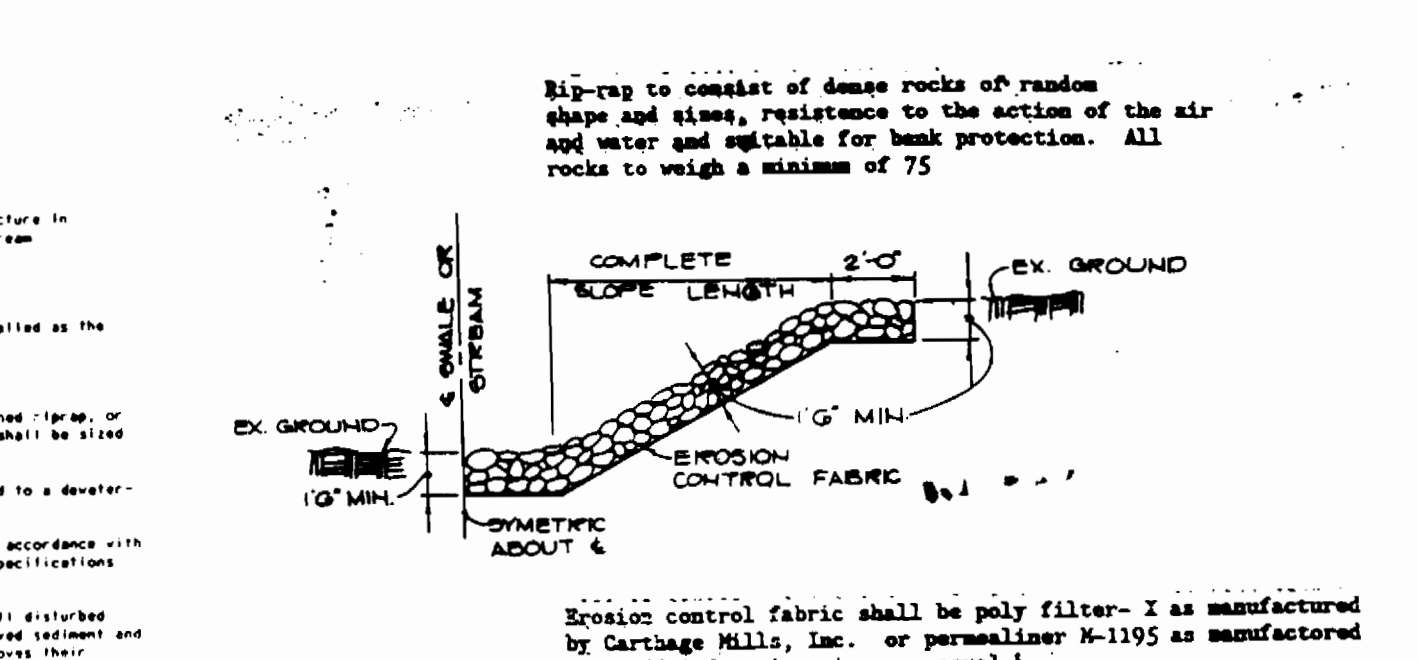


**UTILITY CROSSING**  
NO SCALE



- Description**  
The work shall consist of the construction of a dewatering basin for the purpose of receiving sediment-laden water pumped from a construction site to allow filtration before the water re-enters the waterway.
- Material Specifications**  
1. **Riprap** - Riprap shall consist of 4-8 inch washed stone or gravel.  
2. **Filter Fabric** - The filter cloth shall be a woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, aldehydes, and not resistant to No. 6 stone (ASTM D 55) may be used on the inner face for filtering instead of fabric.  
3. **Strawbales** - Strawbales shall meet the criteria as specified in the Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- Construction Requirements**  
1. The contractor shall install all sediment and erosion control devices as the first order of business.  
2. Excavated materials shall be stored such that sediment are prevented from entering the waterway; i.e., sediment perimeter control shall be necessary.  
3. Excavated silt and spoil shall be kept separate and replaced in their natural order.  
4. Any dewatering of the construction area shall be filtered through a dewatering basin prior to entering the waterway.  
5. The dewatering basin shall be excavated to a minimum depth of 3 feet.  
6. Once the dewatering basin becomes filled to 1/2 of the excavated depth, accumulated sediment shall be removed and disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the WA.  
7. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All ground contours shall be returned to their original condition unless specifically approved otherwise by the Administration.

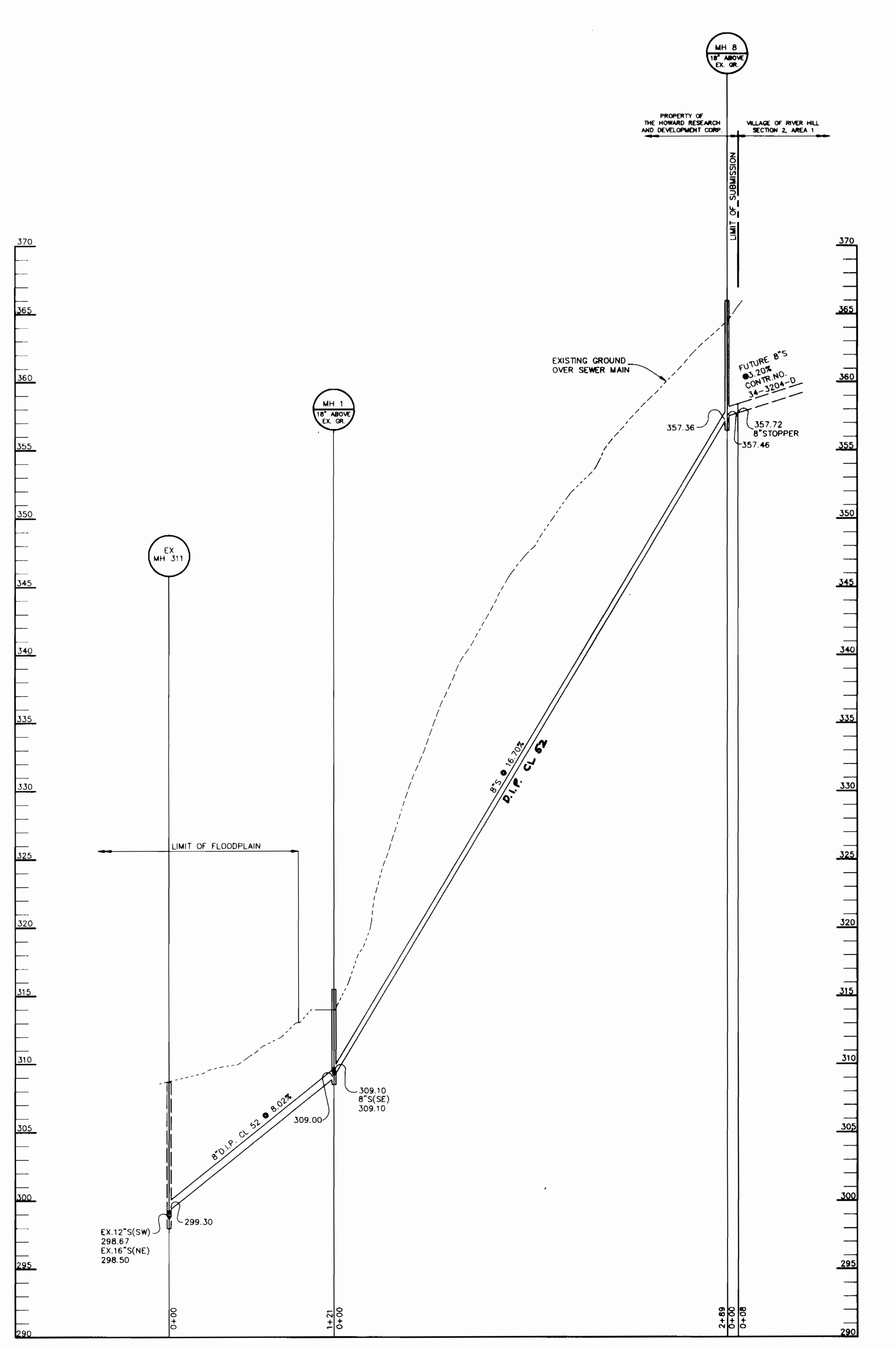
**DEWATERING BASIN**  
NO SCALE



**RIP RAP DETAIL**  
NO SCALE



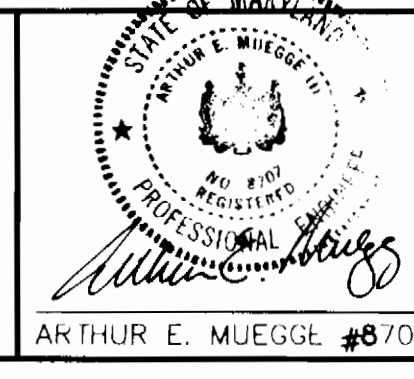
**TEMPORARY STREAM CROSSING**  
NO SCALE



**PROFILE**  
SCALE  
HOR. - 1"=50'  
VERT. - 1"=5'

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
 Director of Public Works: [Signature] 12/16/92  
 Chief, Bureau of Engineering: [Signature] 12-4-92  
 Chief, Bureau of Utilities: [Signature] 11-23-92  
 Chief, Land Development: [Signature] 11/16/92

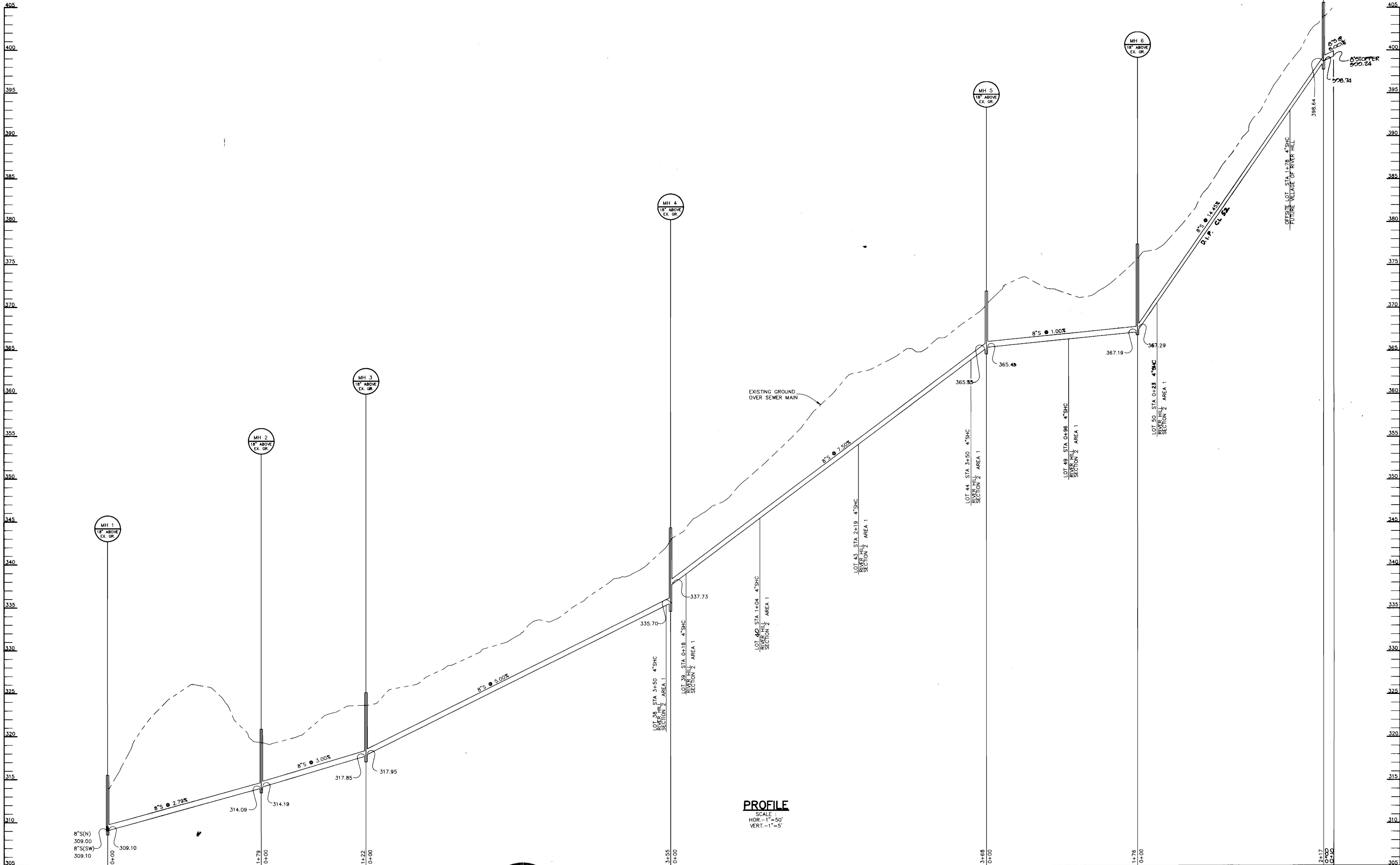
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DES: DAM			
DRN: CAD			
CHK: C.J.R.			
DATE: 11-16-92	BY: NO.	REVISION:	DATE:

PROFILE OF A SEWER MAIN AND DETAIL SHEET  
 600' SCALE MAP NO. 35 BLOCK NO. 14

VILLAGE OF RIVER HILL  
 SECTION 2 AREA 1  
 5th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 CONTRACT NO. 34-3206-D  
 SCALE AS SHOWN  
 SHEET 6 OF 7

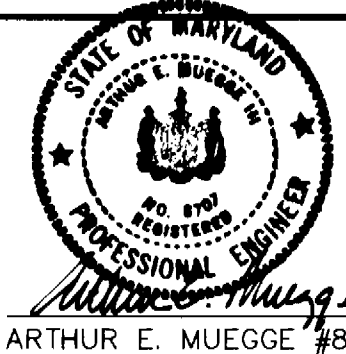


**PROFILE**  
 SCALE  
 HOR. - 1"=50'  
 VERT. - 1"=5'

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*James M. Law* 12/4/92 DIRECTOR OF PUBLIC WORKS DATE  
*William E. Ray* 12-4-92 CHIEF, BUREAU OF ENGINEERING DATE  
*Robert B. ...* 11-27-92 CHIEF, BUREAU OF UTILITIES DATE  
*...* 12/8/92 CHIEF, LAND DEVELOPMENT DATE

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**PROFILE OF A SEWER MAIN**

VILLAGE OF RIVER HILL  
 SECTION 2 AREA 1  
 5th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 CONTRACT NO. 34-3206-D

SCALE AS SHOWN  
 SHEET 7 OF 7

600' SCALE MAP NO. 35 BLOCK NO. 14