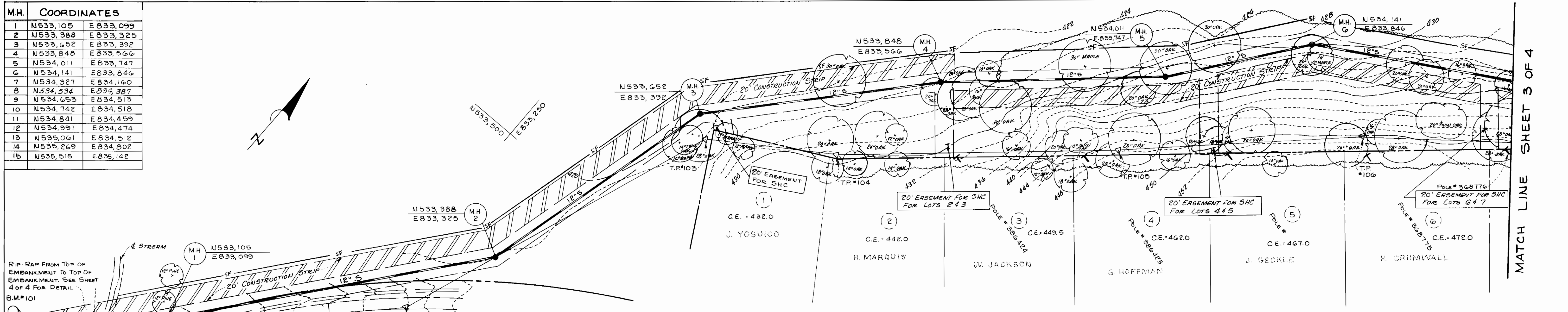
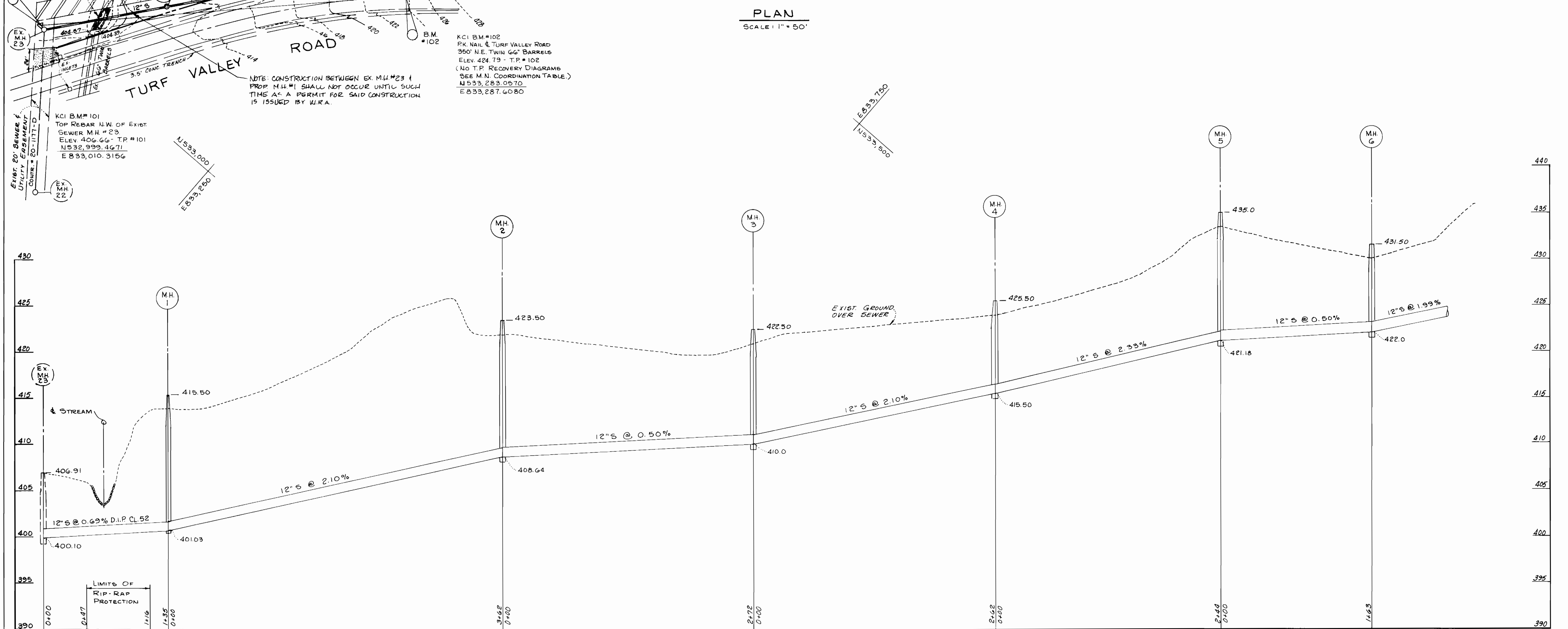




M.H.	COORDINATES
1	N533,105 E833,099
2	N533,388 E833,325
3	N533,652 E833,392
4	N533,848 E833,566
5	N534,011 E833,747
6	N534,141 E833,846
7	N534,327 E834,160
8	N534,534 E834,387
9	N534,653 E834,513
10	N534,742 E834,518
11	N534,841 E834,459
12	N534,991 E834,474
13	N535,061 E834,512
14	N535,269 E834,802
15	N535,515 E835,142



PLAN  
SCALE: 1" = 50'



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James P. ...* 3/22/89  
DIRECTOR OF PUBLIC WORKS DATE

*Robert ...* 3-17-89  
CHIEF, BUREAU OF UTILITIES DATE

*...* 3/23/89  
CHIEF, BUREAU OF ENGINEERING DATE

*...* 3/23/89  
CHIEF, LAND DEVELOPMENT DIVISION DATE

DES: BIS	JUL 1	MOVED SEWER ALIGNMENT	2/14/89
DRN: JMM	P.R. 2	ADDED NOTE FOR CONST. BETWEEN EX. M.H. #23 & PROP. M.H. #1	4/17/89
CHK: BIS			
DATE: FEB, 89	BY: NO.	REVISION	DATE

PLAN AND PROFILE  
CONTRACT NO. 20-1819-D

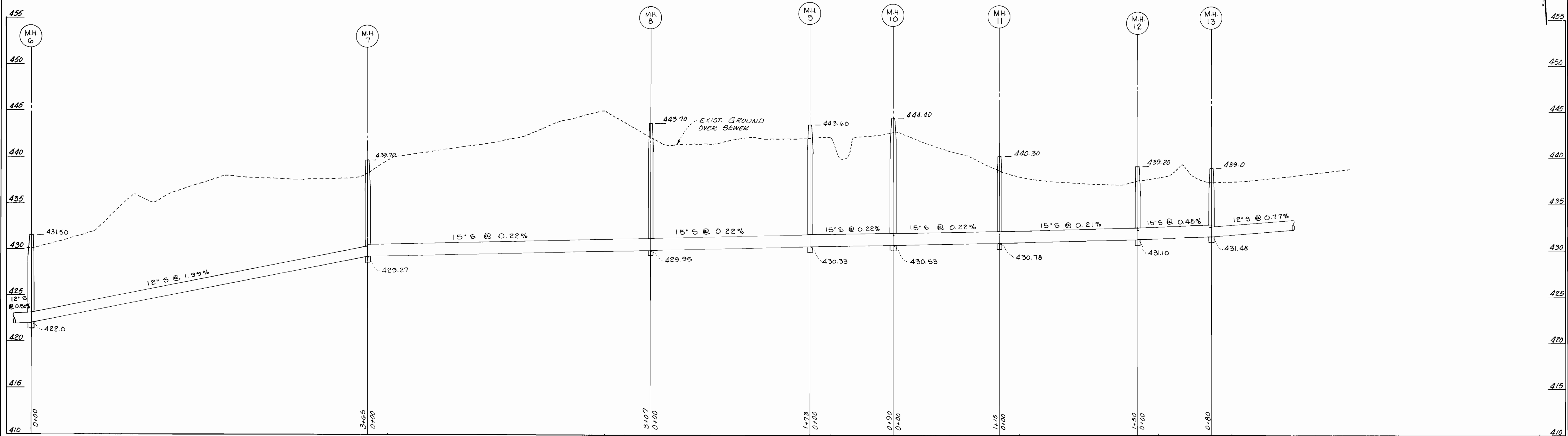
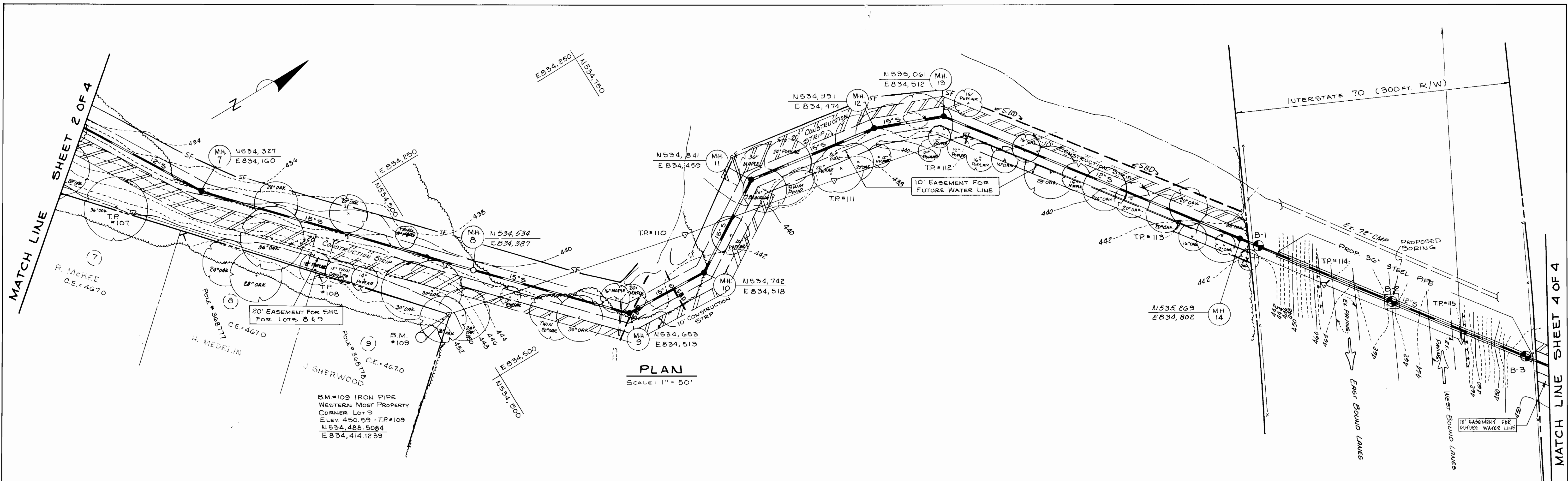
600' SCALE MAP NO. 16 BLOCK NO. 12 & 18

WAVERLY INTERCEPTOR  
TAX MAP 16 PARCEL 226  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 2 OF 4

AS-BUILT 8-31-89



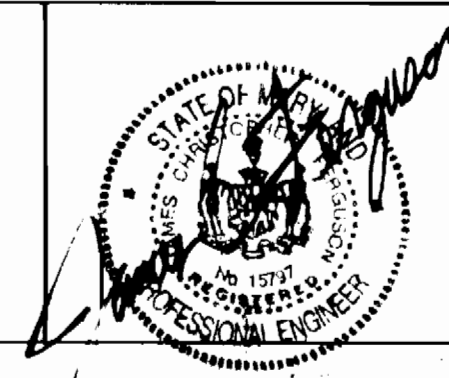


DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James M. ...* 3-27-89  
CHIEF, BUREAU OF ENGINEERING

*John M. ...* 3-17-89  
CHIEF, BUREAU OF UTILITIES

*James M. ...* 3-23-89  
CHIEF, LAND DEVELOPMENT DIVISION



DES	BIS	JUL 1	1	MOVED SEWER ALIGNMENT	2-14-89
DRN	JMM	5G K	2	CORRECTED 10' EASEMENT FOR FUTURE WATER LINE	3-28-89
CHK	BIS				
DATE	FEB., 89	BY	NO	REVISION	DATE

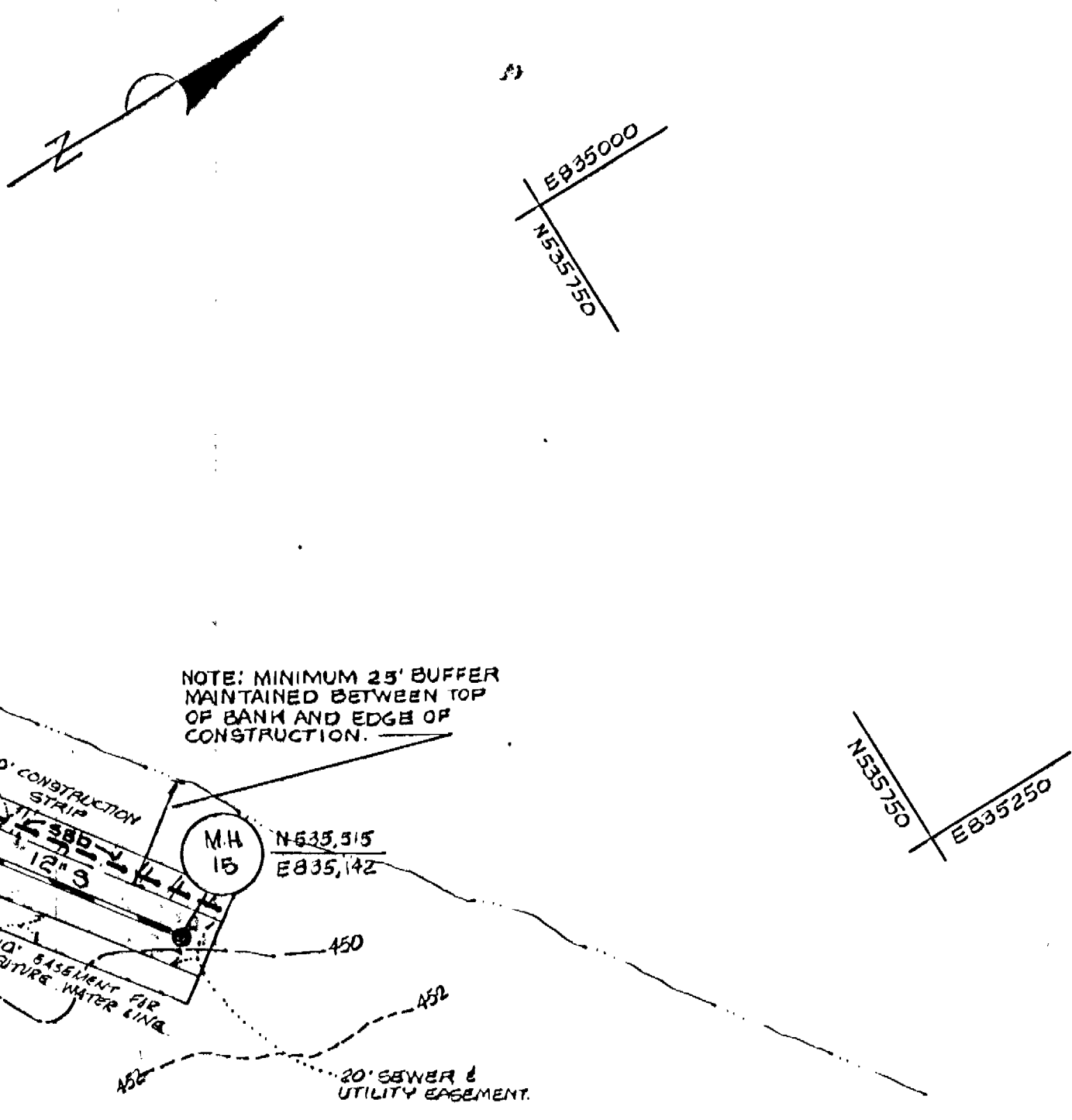
PLAN AND PROFILE  
CONTRACT NO. 20-1819-D

WAVERLY INTERCEPTOR  
TAX MAP 16 PARCEL 226  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 3 OF 4

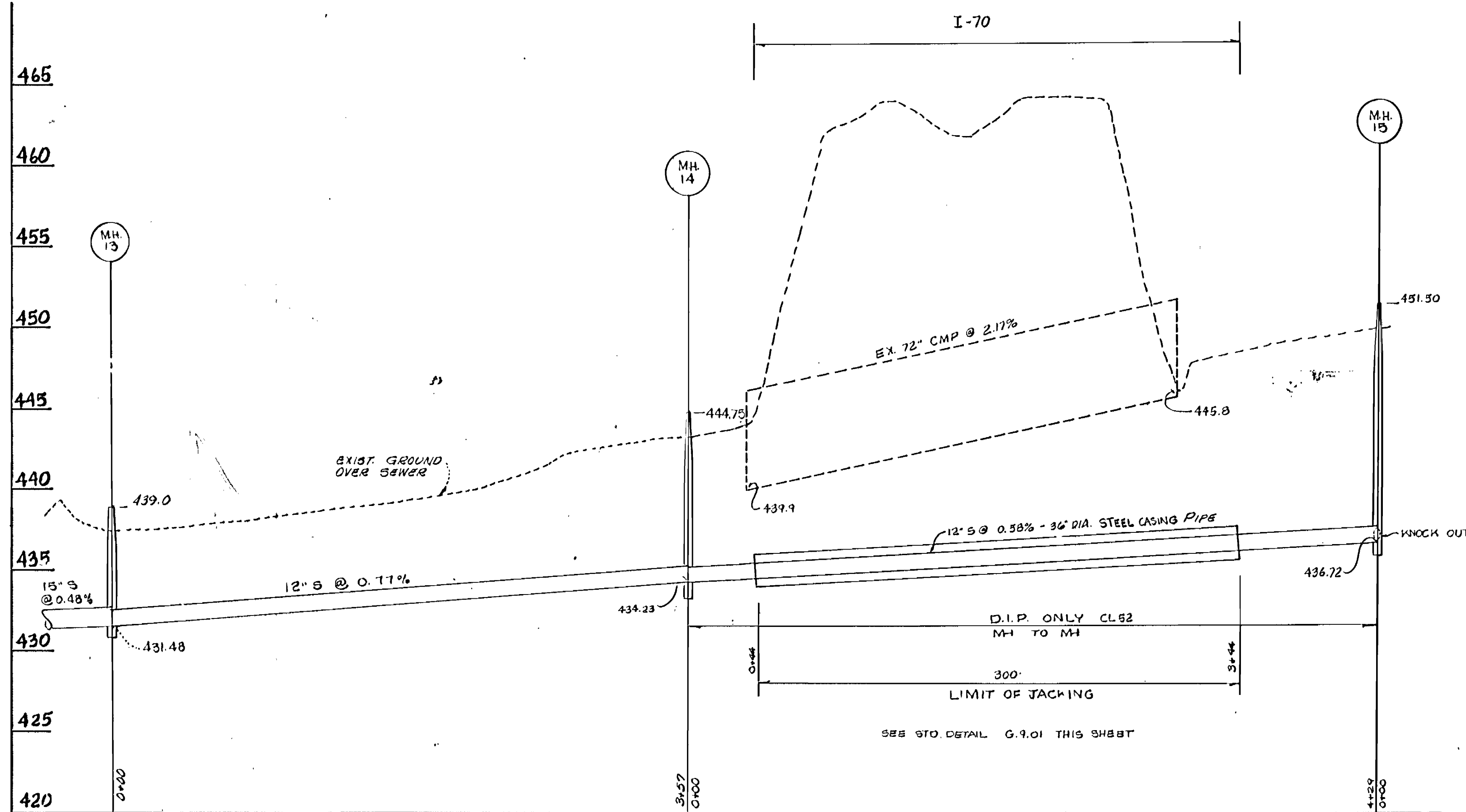
AS-BUILT 8-31-80

MATCH LINE SEE SHEET 3 OF 4

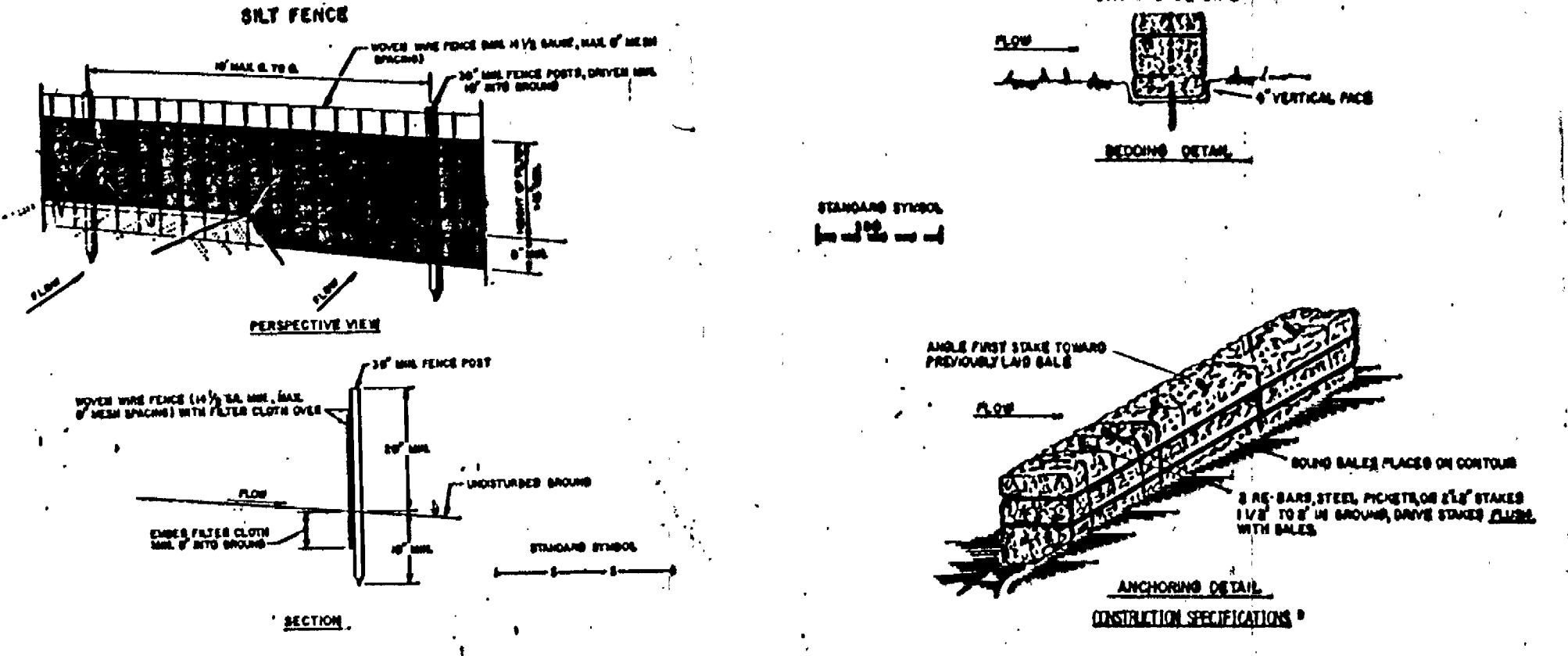


**PLAN**  
SCALE: 1" = 50'

WATER RESOURCES ADMINISTRATION	Sandbag/Stone Diversion	Approved By: <i>[Signature]</i>	WPD 2.3
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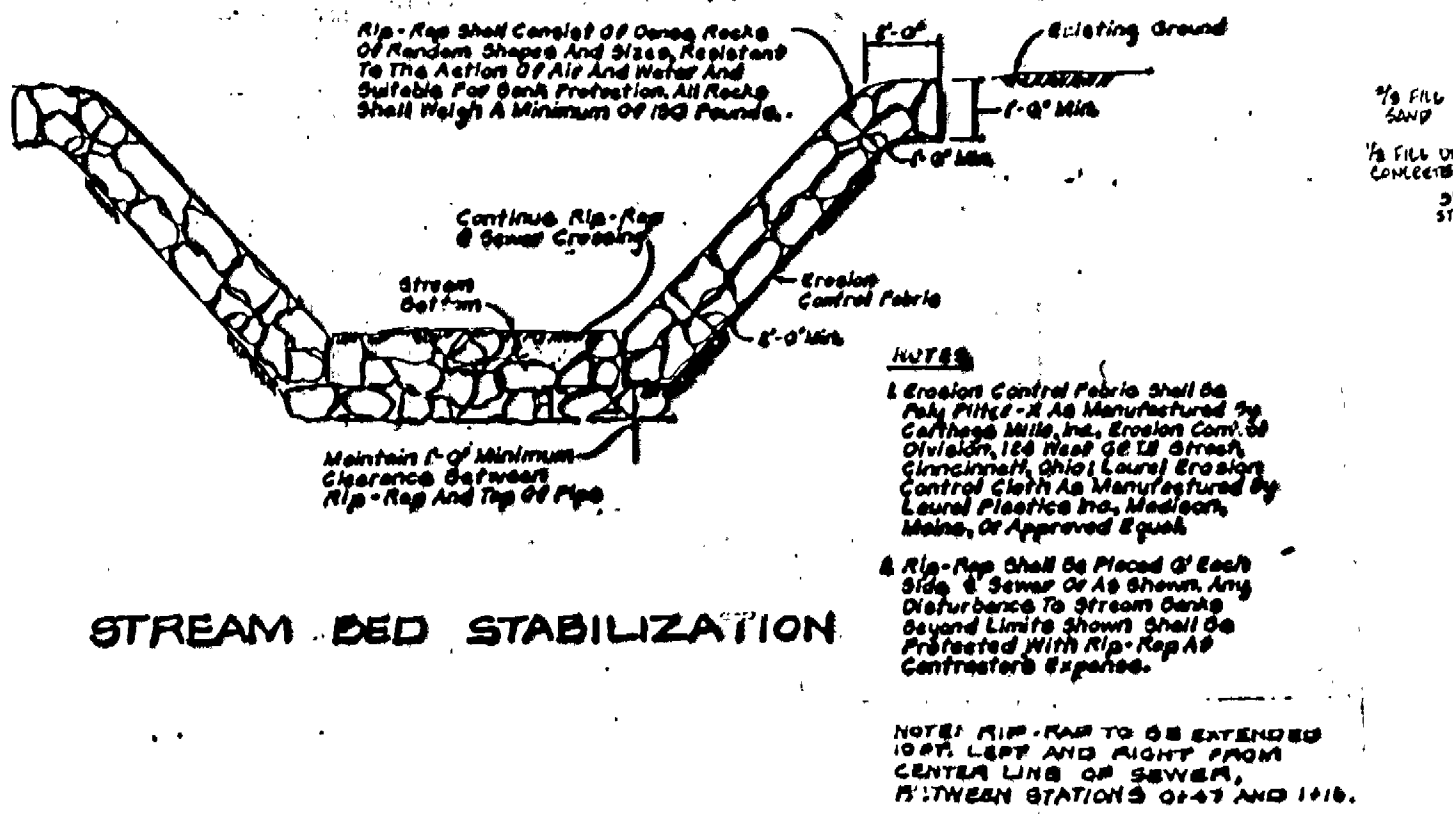
**PROFILE**  
SCALE: HORIZ: 1" = 50'  
VERT: 1" = 5'



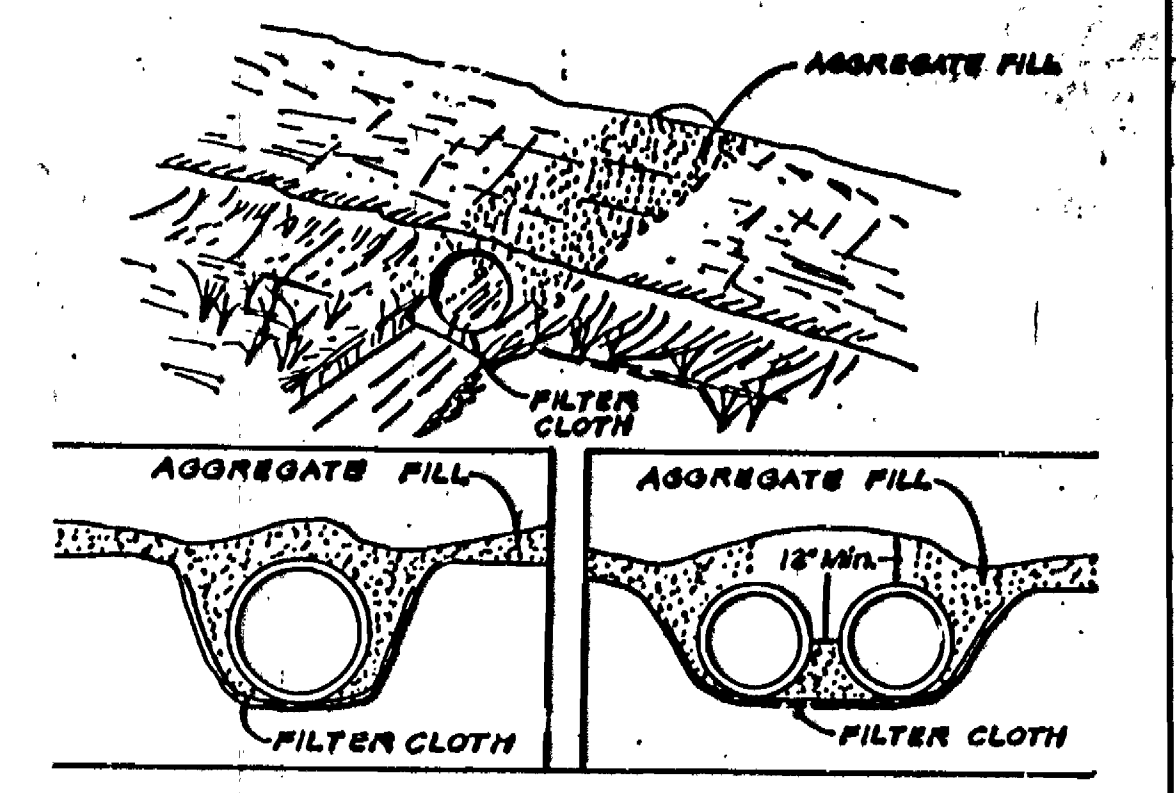
- CONSTRUCTION NOTES FOR FABRICATED SILT FENCE**
- MONY WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - FILTER CLOTH TO BE FASTENED SECURELY TO MONY WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND SIDE SECTION.
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 12" UNCL. AND FOLDED.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN BLENDS DEVELOP ON THE SILT FENCE.
- STANDARDS DRAWING**  
SILT FENCE  
SP-1
- STANDARDS DRAWING**  
STRAW BALE DIKE  
900-1

**SURVEY STAKEOUT DATA**

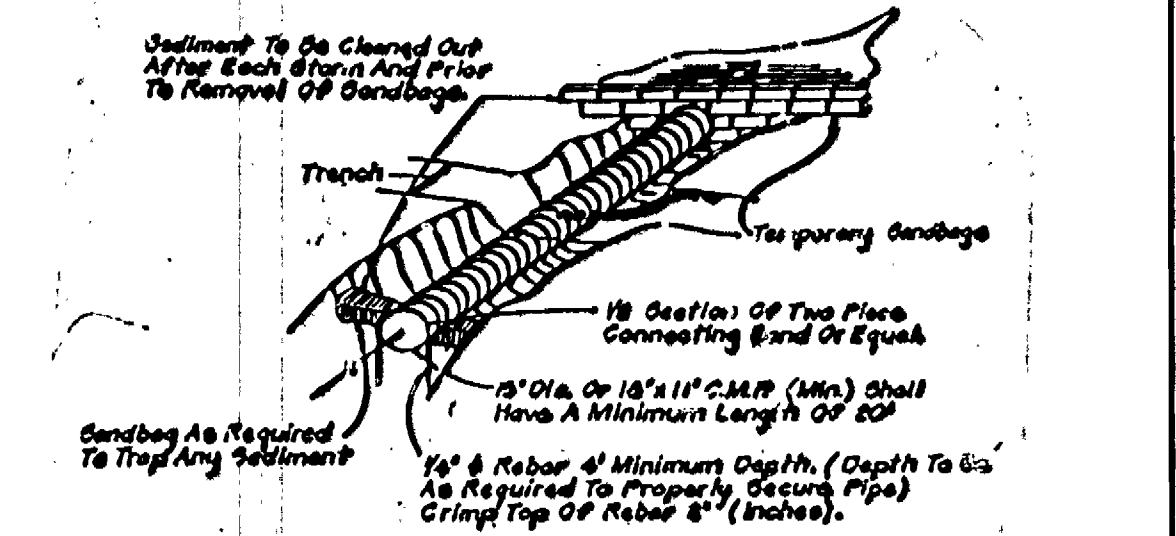
FROM TRAV. STA.	TO MH	BEARING	DISTANCE
101	1	N40°16'07"W	138.70
102	2	N19°46'42"W	111.50
103	3	N54°02'25"W	27.20
104	4	N14°06'41"W	138.98
105	5	N07°09'41"W	94.91
106	6	N69°09'48"W	113.96
107	7	N12°09'59"W	75.29
109	8	N79°50'24"W	65.15
110	9	N76°53'08"W	44.74
110	10	N21°00'52"W	107.13
110	11	N09°42'22"W	90.00
111	12	N27°16'01"W	77.81
112	13	N75°07'10"W	29.87
113	14	N46°01'08"W	78.37
113	15	N50°38'15"W	164.67



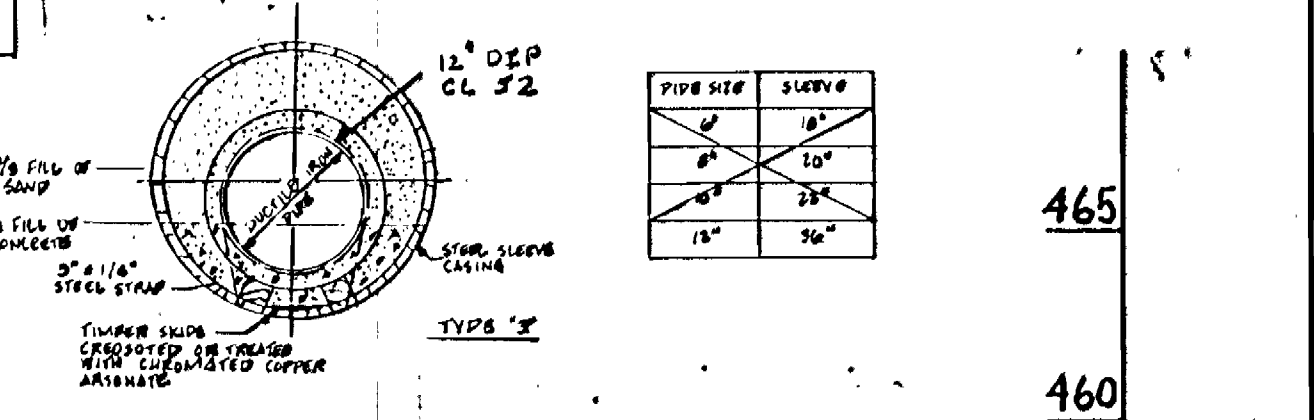
**STREAM BED STABILIZATION**



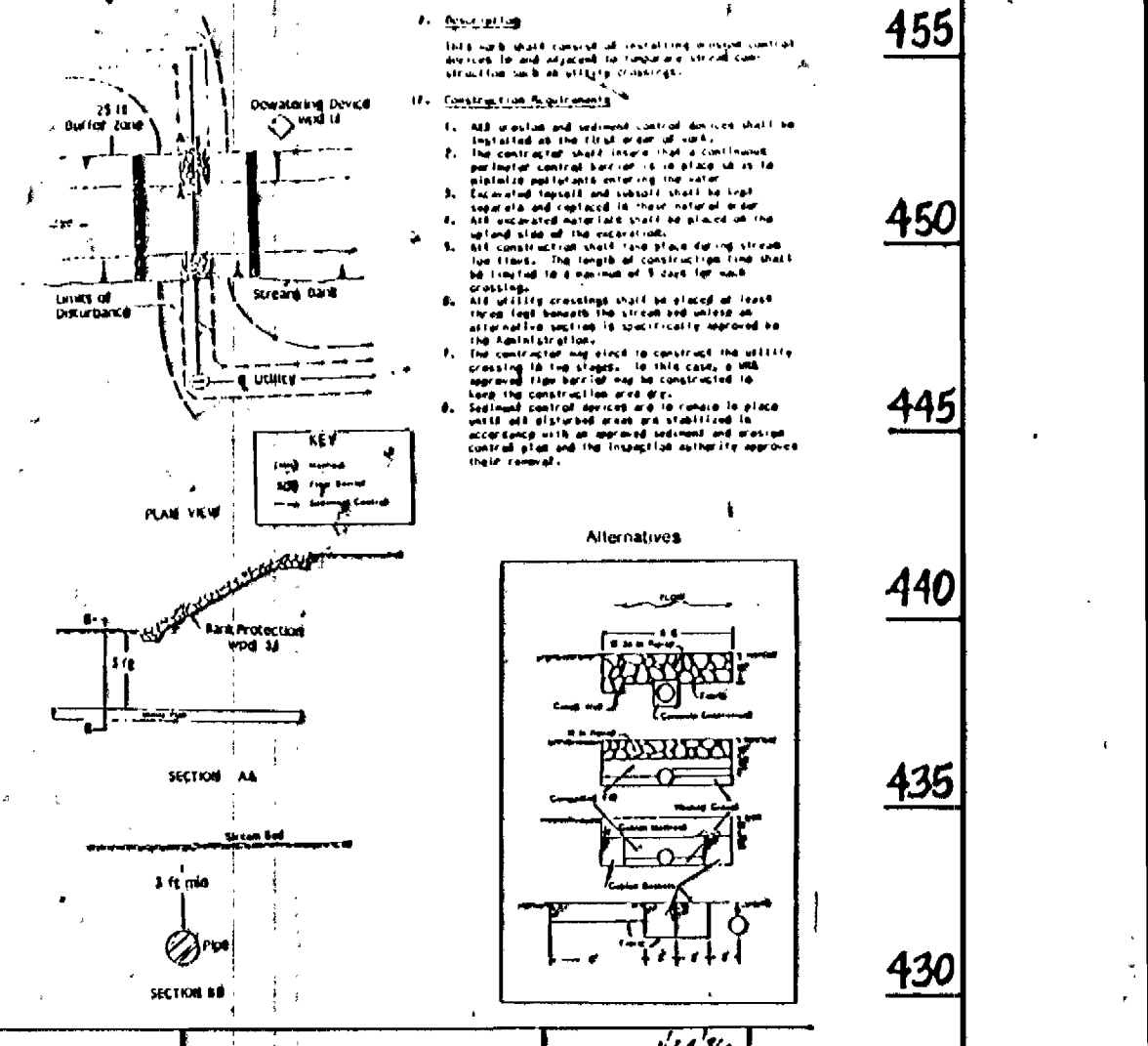
**TEMPORARY ACCESS CULVERT**  
Not To Scale



**SOIL CONSERVATION MEASURES AT SMALL STREAM CROSSING**  
Not To Scale



**JACKING OR BORING INSTALLATION**



**UTILITY CROSSING**

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James G. [Signature]* 3/22/89  
DIRECTOR OF PUBLIC WORKS DATE

*William S. [Signature]* 3-27-89  
CHIEF, BUREAU OF ENGINEERING DATE

*Robert [Signature]* 3-17-89  
CHIEF, BUREAU OF UTILITIES DATE

*Paul [Signature]* 3/22/89  
CHIEF, LAND DEVELOPMENT DIVISION DATE

DES: EMM	JUL 1	MOVED SEWER ALIGNMENT	2/4/89
DRN: EMM	547	CREATED 10' EASEMENT FOR FUTURE WATER LINE	3-28-89
CHK: D.C.W.			
DATE: FEB, 88	BY NO.	REVISION	DATE

PLAN AND PROFILE  
CONTRACT NO. 20-1019-D

600' SCALE MAP NO. 18 BLOCK NO. 12 & 18

**WAVERLY INTERCEPTOR**  
TAX MAP 16 PARCEL 228  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE A3 SHOWN  
SHEET 4 OF 4



Reference Construction Specifications: Stream Diversion  
Sequence of Construction

**Channel Reception**

- All erosion and sediment control devices shall be installed as the first order of business.
- All disturbance resulting from construction of the channel shall be contained by appropriate sediment control measures.
- The installation of the channel shall begin at the downstream end and proceed upstream. All excavated materials shall be stockpiled on the outside of the channel and temporarily stabilized to prevent particles into the stream channel.
- The process of excavation and stabilization with fabric shall be a continuous (intermittent) operation. All materials shall be deposited prior to channel construction.
- The excavation and stabilization operation shall be completed when the channel is continuous. The stream shall be contained by the channel and the riprap shall be placed in the channel.
- All debris, rocks, sticks, etc. shall be removed and the channel surface shall be smoothed so that the fabric will rest flush with the channel sides and bottom.

**Stabilization with Geotextile Fabric**

- The fabric shall have a minimum width such that it is lapped to and enclosed at the top of stream bank.
- Fabric shall be placed so that it rests flush with the channel at all points of contact.
- Fabric shall be placed such that one piece will flow into the next channel. If this is not possible, fabric shall be placed so that there is no overlapping, except in the case of a channel with a drop. Longitudinal overlaps shall be staggered. Upstream sections shall overlap downstream sections. Overlaps shall be at least 2 feet wide.
- The fabric shall be lapped in a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination.
- The fabric sections shall be secured with wooden pins or 1/2 inch diameter metal spikes. The pins or spikes shall be spaced along the length and width of the fabric. The pins or spikes shall be placed in the fabric at the top and bottom of the channel. The pins or spikes shall be placed in the fabric at the top and bottom of the channel.
- Sediment from surrounding areas of disturbance shall not be allowed to enter the diversion channel.

**Removal of Diversion**

- Work shall not be resumed through the natural stream until all construction is completed.
- After diversion of the stream through the natural stream bed, the temporary diversion channel shall be backfilled and stabilized. All materials shall be placed in the natural channel shall be stabilized with riprap in accordance with WPD 1.1.

**Alternate Design**

- The above design may be modified to allow seating of the geotextile fabric. Seating of the geotextile fabric shall be done by covering the entire area of the channel with a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination. The fabric shall be lapped in a 2 x 2 foot interval at the stream termination.
- The spacing of the pins or spikes shall be determined on the basis of the anticipated velocities and thickness and type of geotextile fabric.
- The entire bottom of the channel shall be riprapped to a depth of 18 inches. The riprap shall be placed in the channel. The riprap shall be placed in the channel. The riprap shall be placed in the channel.

WATER RESOURCES ADMINISTRATION      Fabric-Based Channel Diversion      Approved On 12/4/86      WPD 2.4  
Chief Waterway Permits

**PLAN VIEW**

**SECTION AA**

**SECTION BB**

**1. 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.

**11. Material Specifications**

- Riprap: Riprap shall consist of 4-8 inch washed stone or gravel.
- Filter Fabric: The filter cloth shall be a woven or nonwoven fabric consisting of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew, and rot resistant. No. 6 Stone (ASTM 57) may be used on the inner-face for filtering instead of fabric.
- Strawbales: Strawbales shall meet the criteria as specified in the Maryland Standards and Specifications for Soil Erosion and Sediment Control.

**111. Construction Requirements**

- The contractor shall install all sediment and erosion control devices as the first order of business.
- Excavated materials shall be stored such that sediments are prevented from entering the waterway. i.e., sediment perimeter controls may be necessary.
- Excavated subsoil and topsoil shall be kept separate and replaced in their natural order.
- Any dewatering of the construction area shall be filtered through a dewatering basin prior to entering the waterway.
- The dewatering basin shall be excavated to a minimum depth of 3 feet.
- 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 by the plans by the MSA.
- 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.

WATER RESOURCES ADMINISTRATION      Dewatering Basins      Approved On 12/4/86      WPD 1.1  
Chief Waterway Permits

**SEQUENCE OF CONSTRUCTION: UTILITY CROSSING**

- Obtain all required permits, approvals, licenses from the appropriate agencies.
- Notify the Enforcement Division at least five days prior to initiation of construction and five days after work ends. The Annapolis office is (301) 974-2641.
- Install perimeter controls as per WPD 5.1. The perimeter controls shall consist of straw bale dikes and/or silt fencing.
- Install the utility approaches to the stream.
- Divert the stream. (Reference WPD 2.4)
- Dewater the construction area. All dewatering discharges shall be diverted to a dewatering basin as per WPD 1.1 before re-entering the stream.
- Stabilize the disturbed banks using filter fabric and riprap or gabions. Riprap must be sized and installed as per WPD 3.1. Gabions must be installed as per WPD 2.3.
- Remove the diversion from upstream to downstream.
- Stabilize all disturbed areas,
- Remove perimeter controls.

**PLAN VIEW**

**SECTION AA**

**SECTION BB**

**1. Description**

This work shall consist of installing erosion control devices in and adjacent to temporary stream construction such as utility crossings.

**11. Construction Requirements**

- All erosion and sediment control devices shall be installed as the first order of business.
- The contractor shall insure that a continuous perimeter control barrier is in place so as to minimize pollutants entering the waterway.
- Excavated topsoil and subsoil shall be kept separate and replaced in their natural order.
- All excavated materials shall be placed on the upland side of the excavation.
- All construction shall take place during stream low flows. The length of construction time shall be limited to a maximum of 5 days for each crossing.
- All utility crossings shall be placed at least three feet beneath the stream bed unless an alternative section is specifically approved by the Administration.
- The contractor may elect to construct the utility crossing in two stages. In this case, a MSA approved pipe barrier may be constructed to keep the construction area dry.
- 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.

**Alternatives**

WATER RESOURCES ADMINISTRATION      Utility Crossing      Approved On 12/4/86      WPD 5.1  
Chief Waterway Permits

**CROSS SECTION**

**RIPRAP GRADATION**

**1. Description**

This work shall consist of protecting slopes and channels from erosion with coverings of stone in accordance with the plans and specifications shown on this drawing.

**11. Material Specifications**

**1. Bedding:**

- Bank run gravel shall meet the following requirements:

U.S. Standard	Gravel Size
100	2 1/2 in
80 - 100	1 in
60 - 100	1/2 in
15 - 20	No. 10
20 - 50	No. 40
3 - 20	No. 200

**B. Geotextile filter fabric shall meet the following requirements:**

Lintless Strength	200 lbs.
Burst Strength	350 lbs.
Puncture Strength	70 lbs.
Permeability	.05 cm/sec
Elongation at Failure	10%
Minimum Lap Length	24 in

**2. Riprap:**

The maximum weight of stone shall be based upon the bankfull stream channel velocity, using the given chart. The gradation of the stone shall be as indicated.

**111. Construction Requirements**

- The contractor shall install all sediment and erosion control devices as a first order of business.
- Provisions must be made to anchor the riprap at the stream bed so as to provide protection against undermining. If this cannot be accomplished by extending the toe trench as indicated in Cross Section, an alternative method of protection must receive prior written approval of the Administration.
- Excavation for riprap shall be made in reasonably close conformity with the existing stream slope and bed.
- A filter bedding is required under all riprap. Bedding material shall consist of either a bank run gravel or a geotextile filter fabric meeting the specifications of 11.1B above.
- The placement of riprap shall begin with the toe. The larger stones shall be placed in the toe and along the outside slope of the limits of the slope and channel protection. The riprap shall be placed with suitable equipment in such a manner as to produce a reasonably graded mass of stones with zero drop height. The placing of stones that cause extensive segregation is not allowed.
- Any excavation voids existing along the edges of the completed slope and channel protection shall be backfilled.
- All disturbed areas shall be permanently stabilized in accordance with an approved sediment and erosion control plan.

WATER RESOURCES ADMINISTRATION      Riprap      Approved On 12/4/86      WPD 3.1  
Chief Waterway Permits

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

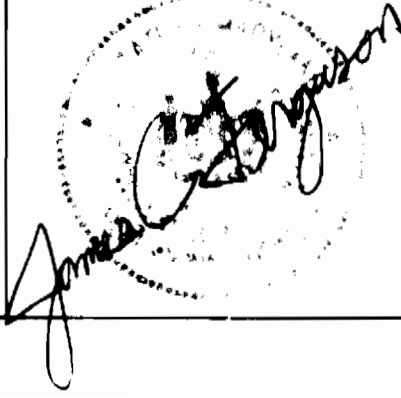
*James M. Helms* 6/6/87  
U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY CONSERVATION DISTRICT.

*Stephen R. Helms* 6/6/87  
HOWARD S.C.D.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

**KIDDE CONSULTANTS, INC.**  
ENGINEERS, PLANNERS & SURVEYORS  
13992 BALTIMORE AVENUE / SUITE 300  
LAUREL, MD 20707  
(301) 792-8086 (301) 953-1821



**SEDIMENT CONTROL DETAIL SHEET**

CONTRACT NO. 20-1819-D

**WAVERLY INTERCEPTOR**  
TAX MAP I6 PARCEL 226  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 5 OF 5