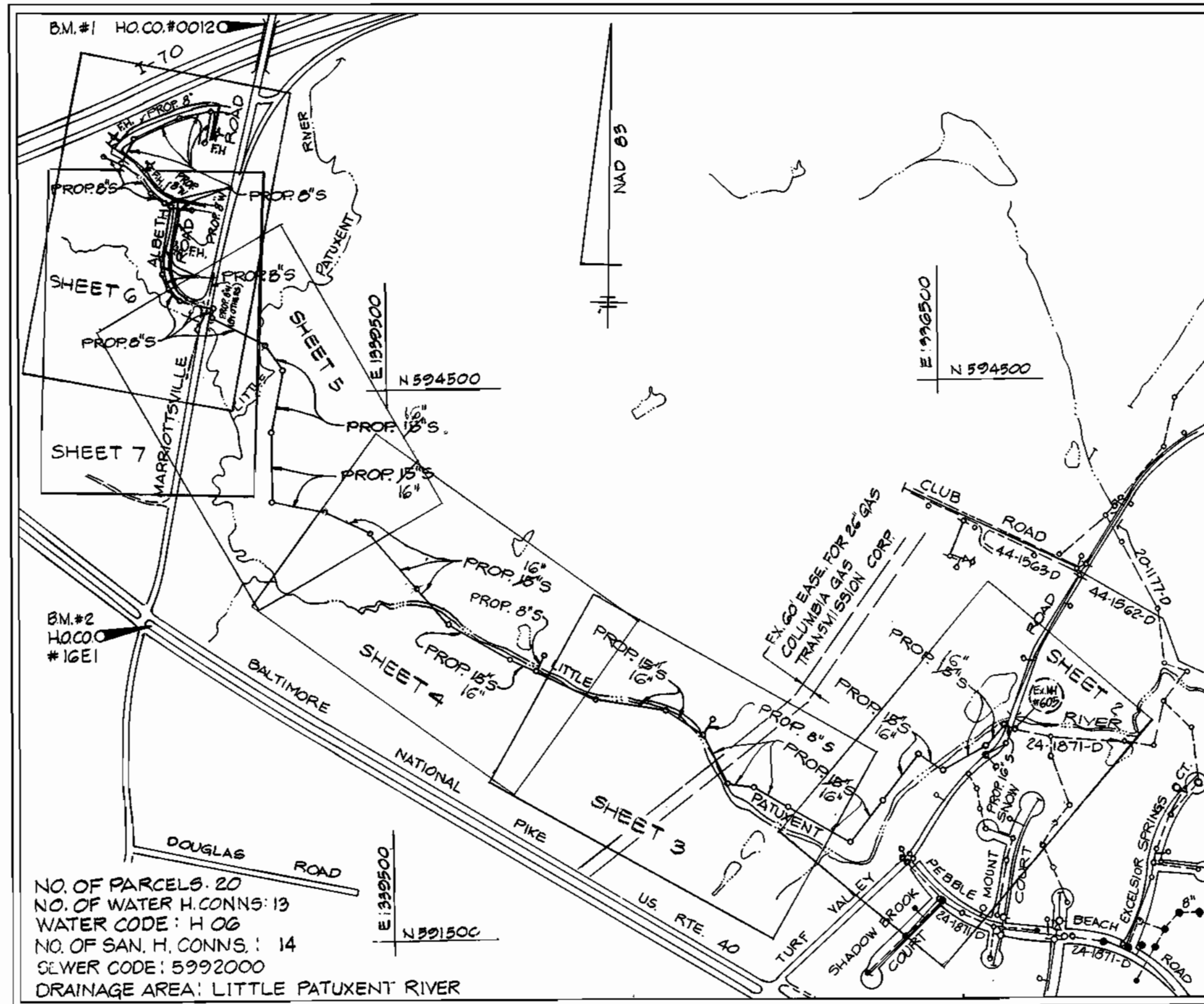


AS-BUILT 2/4/98

QUANTITIES				
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
16" D.I.P. CL. 52	L.F.	34	762.2	U.S. PIPE & FOUNDRY
16" D.I.P. CL. 52	L.F.	713		
16" SAN. P.V.C.	L.F.	5,170	5161	PERKINSON ENTERPRISES
8" SAN.	L.F.	1,057	1874.4	"
8" D.I.P. CL. 52	L.F.	773	810.7	U.S. PIPE & FOUNDRY
STD. 4 MH	EA.	44	44	ATLANTIC
4" S.H.C.	L.F.	443	443	PERKINSON ENTERPRISES
TYPE 'A' MH	EA.	1	1	ATLANTIC
VERT. FT. SAN. MH	V.F.	200	177.85	
8" WATER MAIN	L.F.	2,885	1814	PERKINSON ENTERPRISES
3/4" W.H.C.	L.F.	405	405	U.S. PIPE & FOUNDRY
8" CAP	EA.	4	4	"
FIRE HYDRANT	EA.	4	4	"
8" X 6" TEE	EA.	4	4	WATER-PRO
6" VALVE	EA.	4	4	"
8" X 8" TEE	EA.	2	2	"
8" - 1/2 BEND	EA.	2	2	"
TYPE 'B' MH	EA.	3	3	ATLANTIC
24" STEEL CASING PIPE W/	L.F.	50	60	U.S. PIPE & FOUNDRY
8" D.I.P. CL. 52				

TRAVERSE DATA		
HEC TRAX FT.	NORTHING	EASTING
100	595043.26	1340731.69
101	594934.26	1340506.06
102	595113.33	1340800.70
103	595495.20	1340859.32
104	595658.18	1340181.81
105	595823.31	1340037.25
106	595938.75	1340366.71
107	595858.46	1340488.07
108	595676.91	1340463.70
109	595640.29	1340659.39
110	594506.83	1340861.22
111	594017.28	1340972.61
112	593682.42	1341467.91
113	593326.10	1341810.30
114	593006.95	1342203.70
115	592699.69	1342765.79
116	592267.31	1343089.02
117	592085.54	1343551.21
118	592390.55	1344317.51
119	592622.12	1344919.08
120	592108.64	1344439.45
121	591216.15	1343644.71

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS ELLCOTT CITY, MARYLAND 21043



VICINITY MAP
SCALE: 1" = 600'

ALBETH HEIGHTS WATER & SEWER EXTENSION CAPITAL PROJECT W 8195 CONTRACT NUMBER 24-3447

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 TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- ALL HORIZONTAL CONTROLS SHOWN ARE BASED ON MARYLAND STATE COORDINATES.
- ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATUM.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 6". CLEAR ALL POLES BY 2'-0" MINIMUM OR TUNNEL AS REQUIRED.
- FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION. THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL [X] AT LOCATION OF 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 TESTS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS PRIOR TO STARTING WORK SHOWN ON THIS PLAN:
 - BELL ATLANTIC-MD.....597-8585
 - STATE HIGHWAY ADMINISTRATION.....531-5533
 - BALTIMORE GAS ELECTRIC CO. CONTRACTOR SERVICES.....850-4620
 - BALTIMORE GAS ELECTRIC CO. UNDERGROUND DAMAGE CONTROL..787-9068
 - BALTIMORE GAS ELECTRIC CO. TROUBLE SHOOTING.....298-9001
 - MISS UTILITY.....800-257-7777
 - COLONIAL PIPELINE.....795-1390
 - BUREAU OF UTILITIES, HOWARD CO. DEPT. OF PUBLIC WORKS..313-4900
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
- CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE FOR CONSTRUCTION OF THE MAIN AND SERVICE CONNECTIONS.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- TRENCH REPAIRS TO BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAILS.
- ALL WORK WILL BE IN ACCORDANCE WITH HOWARD COUNTY STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL SECTION 219.
- LENGTH OF OPEN TRENCH WILL BE LIMITED TO THAT WHICH MUST BE FILLED AND STABILIZED WITHIN ONE WORKING DAY.
- ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY AT (410) 313-2450 AT LEAST 5 WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING SEWER MAINS AND HOUSE CONNECTIONS
- ALL WATER MAINS SHALL BE D.I.P., CLASS 52 UNLESS OTHERWISE NOTED.
- TOP OF WATER MAIN PIPE TO HAVE A MINIMUM OF 3.5' OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR IN THE DRAWING.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE STRAPPED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS. SOIL AROUND THE FIRE HYDRANTS SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1003 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM. CALL HOWARD COUNTY BUREAU OF UTILITIES AT 313-4900. COORDINATE THE TIE-IN TO THE EXISTING WATER AT LEAST FIVE WORKING DAYS PRIOR TO SCHEDULING.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY AT (410) 313-2450 AT LEAST 5 WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER MAINS AND HOUSE CONNECTIONS.
- SOIL BORING LOCATIONS ARE SHOWN THUS [B-1]
- TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM AS FOLLOWS: USE I WATERS. IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

SURVEY CONTROL

BM #1 - HOWARD COUNTY SURV. CONT.
STA. NO. 0012 - CONC. MON. @ SURFACE
6.84' W. OF NW. COR. OF BRIDGE FOR
MARRIOTTVILLE RD. OVER TO NORTH.
N 596,502.7603 ELEV. 486.822
E 1,340,864.365

BM #2 - HOWARD COUNTY SURV. CONT.
STA. NO. 16E1 - CONC. MON. @ 6' BELOW
SURFACE @ N.E. COR. OF INTERSECTION
OF MARRIOTTVILLE RD. & E.D.L. OF
U.S. RTE. 40 FROM THE EDGE OF
THE EDGE OF E.D.L. U.S. RTE. 40.
N 593,250.9322 ELEV. 464.550
E 1,340,102.711

SANITARY SEWER MANHOLE TABLE

NO.	NORTHING	EASTING
MH-1	592595.92	1344852.69
MH-2	592505.04	1344729.04
MH-3	592371.83	1344488.77
MH-4	592463.54	1344355.68
MH-5	592222.02	1344161.79
MH-6	591986.50	1343975.69
MH-7	592189.57	1343636.20
MH-8	592299.51	1343457.22
MH-9	592313.94	1343308.36
MH-10	592587.66	1343178.51
MH-10A	592669.61	1343236.66
MH-11	592719.26	1342990.77
MH-12	592778.20	1342641.68
MH-13	592958.05	1342282.49
MH-13A	593043.23	1342324.95
MH-14	593022.08	1342137.42
MH-15	593220.74	1341802.08
MH-16	593420.46	1341633.05
MH-17	593724.62	1341425.22
MH-18	593724.14	1341224.41
MH-19	593383.32	1340862.92
MH-20	594290.14	1340864.46
MH-21	594627.48	1340931.33
MH-22	594746.06	1340826.89
MH-23	594890.69	1340553.57
MH-24	594937.77	1340563.63
MH-25	594974.08	1340414.75
MH-26	595034.34	1340331.95
MH-27	595113.07	1340295.71
MH-28	595206.08	1340289.65
MH-29	595496.65	1340351.83
MH-30	595496.93	1340333.78
MH-31	595597.82	1340234.99
MH-32	595739.80	1340102.67
MH-33	595769.54	1340041.69
MH-34	595808.84	1339975.83
MH-35	595849.99	1340094.23
MH-36	595975.96	1340388.19
MH-37	595953.77	1340404.94
MH-38	595874.45	1340477.27
MH-39	595475.82	1340441.43
MH-40	594955.66	1340490.29
MH-41	594860.46	1340451.67
MH-42	594888.96	1340401.76

DEVELOPERS CERTIFICATION
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT."
Paul D. Sporn 2/27/95
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS

ENGINEERS 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."
Frank E. H. P.E. 7/26/95
HICKS ENGINEERING COMPANY, INC. MD REG. 8676
ENGINEERS-SURVEYORS-PLANNERS
200 EAST JOPPA ROAD-SUITE 402
TOWSON, MARYLAND 21286 TEL:(410)494-0001

THIS DEVELOPMENT PLAN IS APPROVED FOR THE SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.
Clifford W. Shing 10/21/95
APPROVED, HOWARD COUNTY S.C.D.
REVIEWED FOR HOWARD COUNTY S.C.D. AND MEETS TECHNICAL REQUIREMENTS.
Adrian Engle 10/21/95
U.S. NATURAL RESOURCES CONSERVATION SERVICE

NONTIDAL WETLANDS NO. 05-NT-0877
JOINT PERMIT APPLICATION TRACKING NO. 109568973
NATIONWIDE PERMIT #12
WATER QUALITY CERTIFICATION (08-6WQC-001R)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Paul D. Sporn 2/27/95
DIRECTOR OF PUBLIC WORKS
Paul D. Sporn 2/27/95
CHIEF, BUREAU OF ENGINEERING
Paul D. Sporn 2/27/95
CHIEF, WATER & SEWER DIVISION

HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286
TELEPHONE: (410) 494-0001



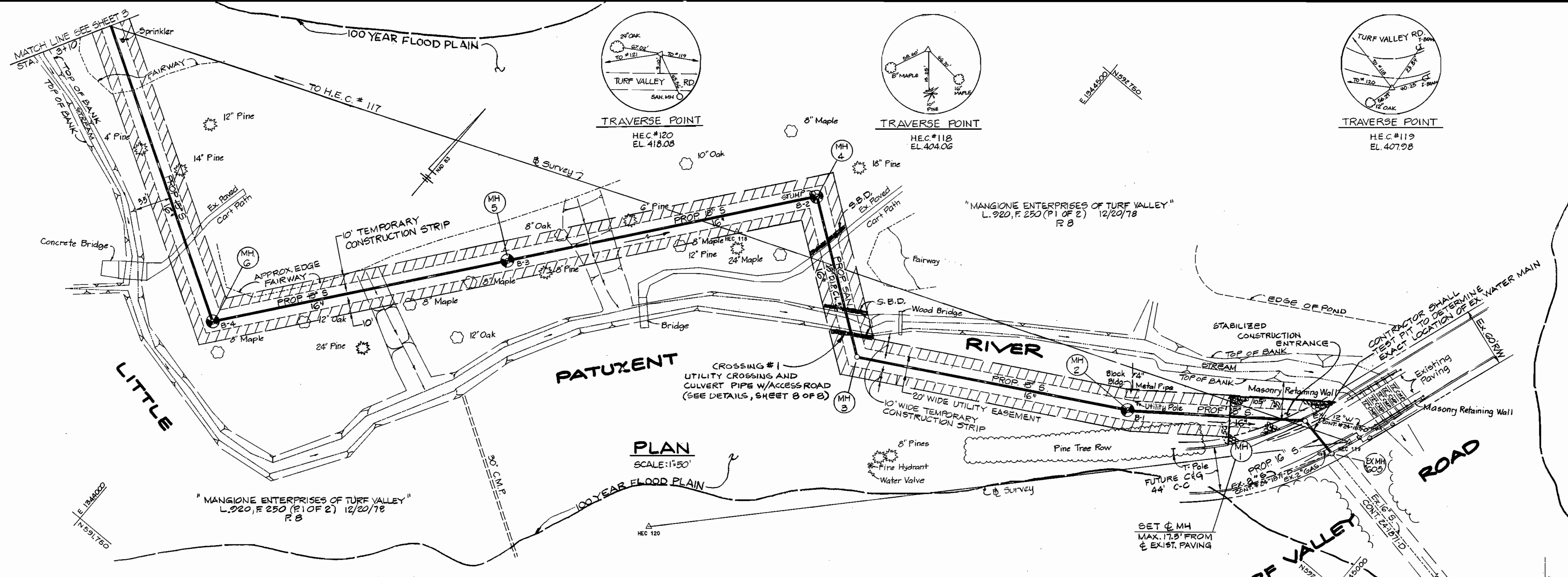
DES: J.K.W.					
DRN: F.W.					
CHK: D.E.H.					
DATE: 5/95	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 3-16 & W-16, BLOCK NO.

TITLE SHEET

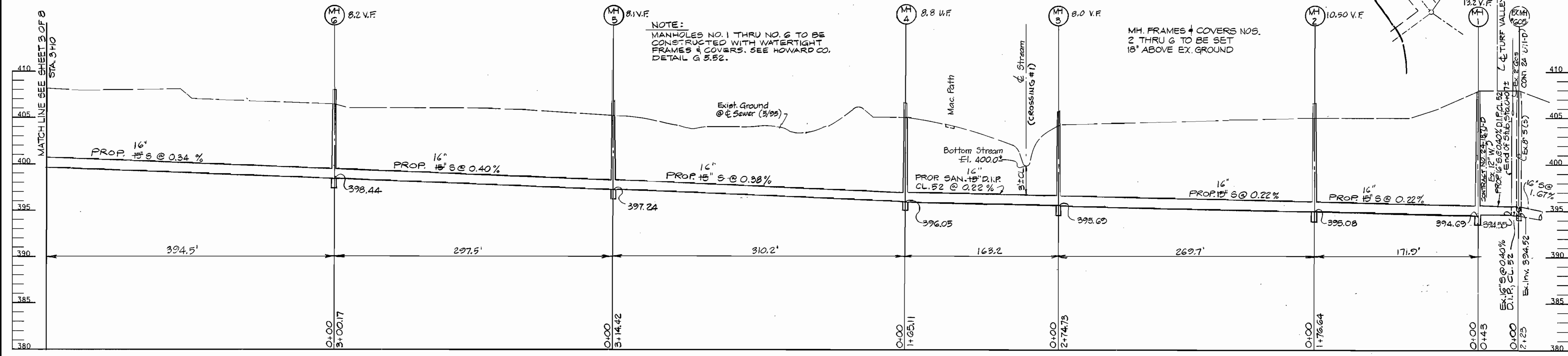
ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO 24-3447

SCALE AS SHOWN
SHEET 1 OF 3

AS-BUILT 2/4/98



PLAN SCALE: 1"=50'



PROFILE SCALE: HORZ. 1"=50' VERT. 1"=5'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 5-2-95
DIRECTOR OF PUBLIC WORKS DATE

Robert ... 9-28-95
CHIEF, BUREAU OF UTILITIES DATE

Robert ... 9-27-95
CHIEF, BUREAU OF ENGINEERING DATE

... 9-27-95
CHIEF, WATER & SEWER DIVISION DATE

H HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286

DES: J.K.W.			
DRN: F.W.			
CHK: D.E.H.			
DATE: 5/95	BY NO.	REVISION	DATE

PLAN & PROFILE SEWER MAIN

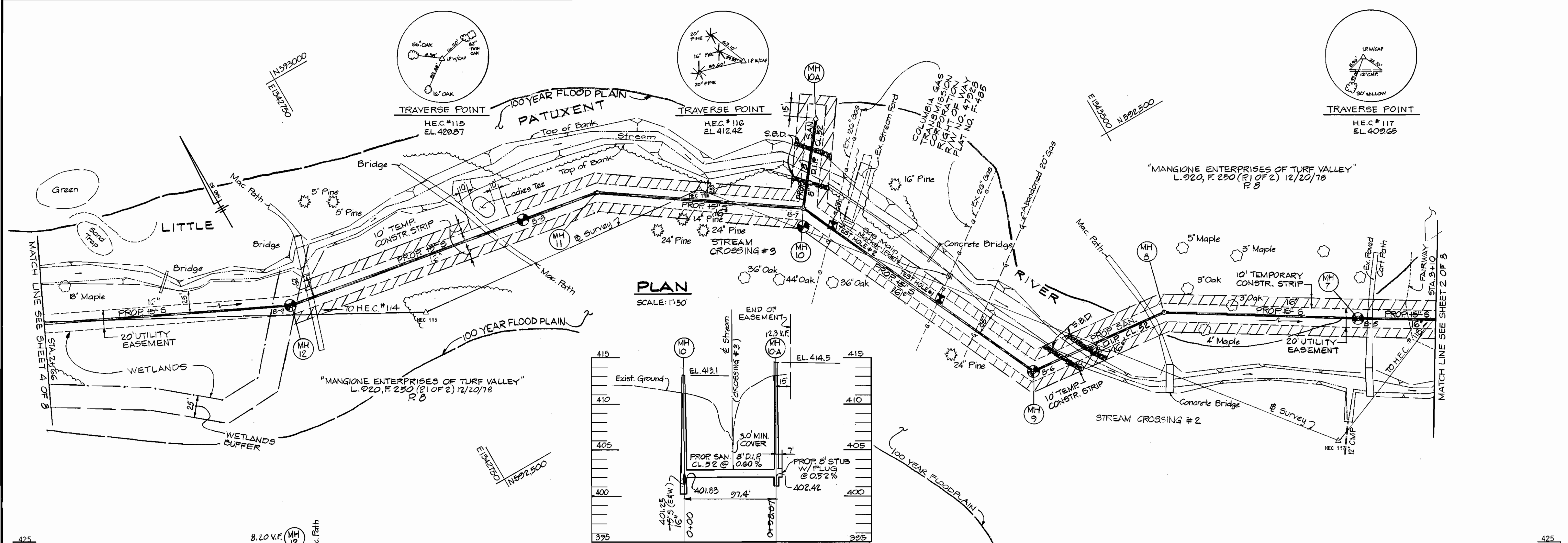
600' SCALE MAP NO. S-16 & W-16 BLOCK NO.

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO. 24-3447

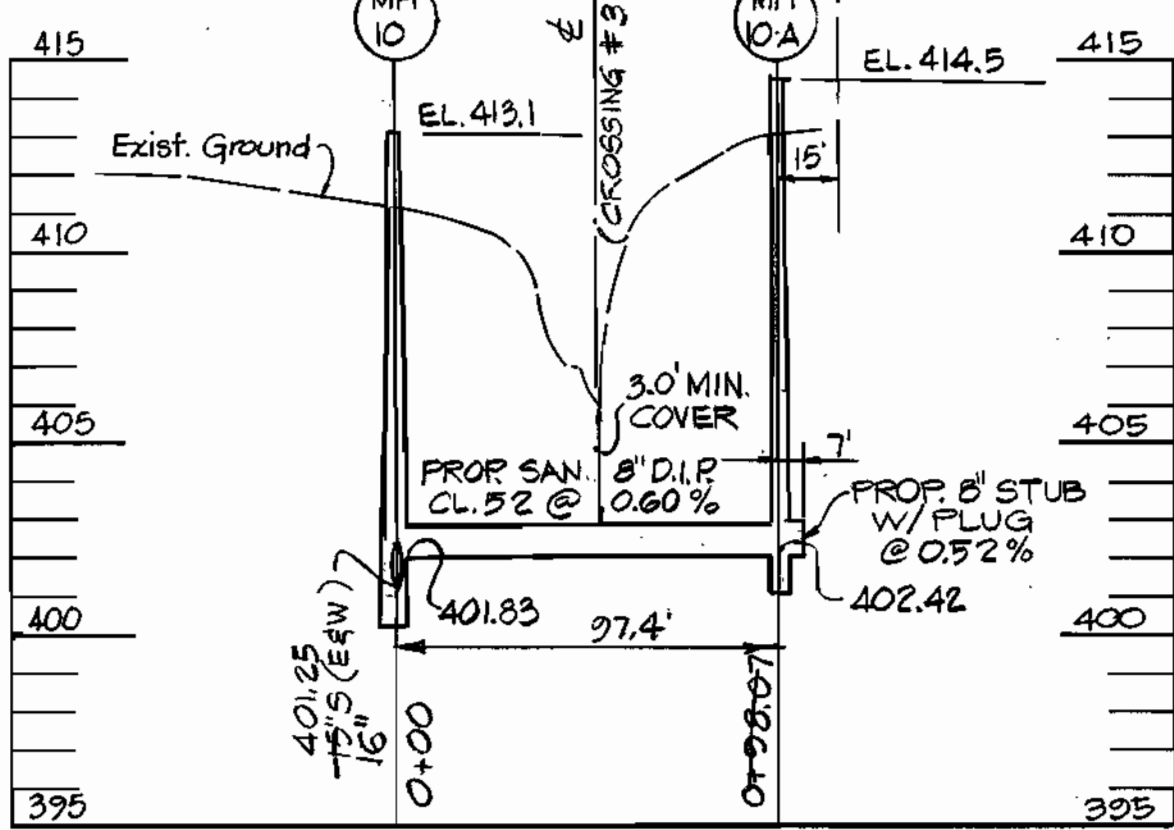
SCALE AS SHOWN
SHEET 2 OF 8

AS-BUILT 2/4/98

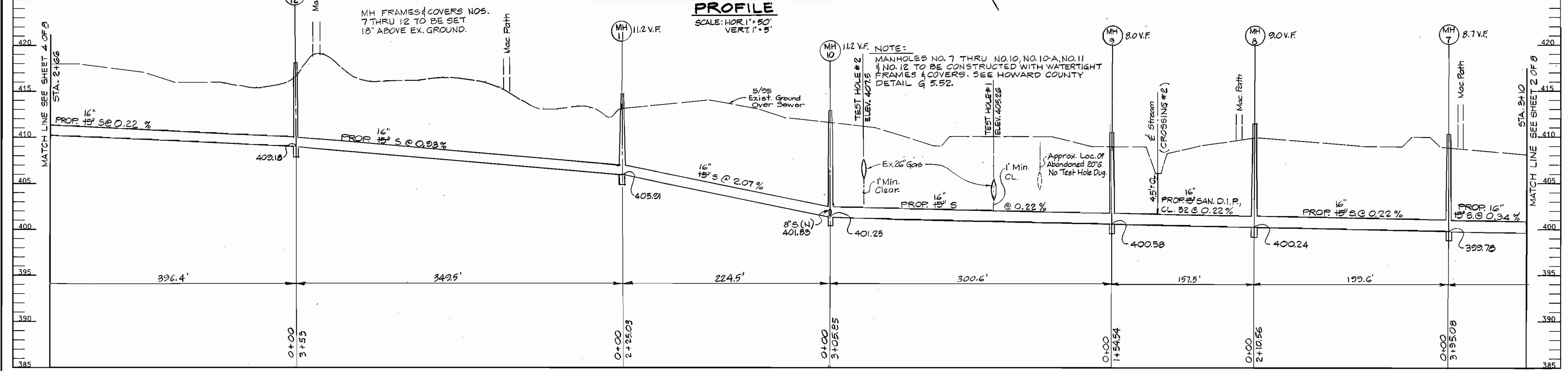
AS-BUILT 2/4/98



PLAN SCALE: 1"=50'



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



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

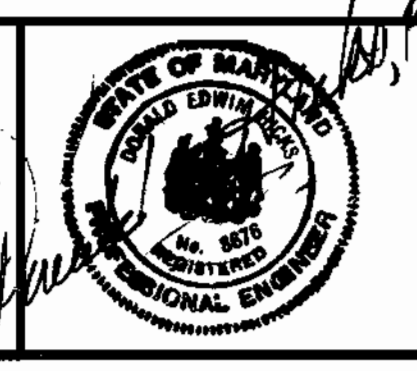
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James P. Sluiter 10/2/95
DIRECTOR OF PUBLIC WORKS DATE

Robert J. ... 9-28-95
CHIEF, BUREAU OF UTILITIES DATE

Robert J. ... 9-27-95
CHIEF, WATER & SEWER DIVISION DATE

H HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286



DES: K.W.	FW: I.	MOVE MH#10 - N.W. 5'	2/5/96
DRN: M.A.B./F.W.			
CHK: D.E.H.			
DATE: 6/16/95	BY: NO.	REVISION	DATE

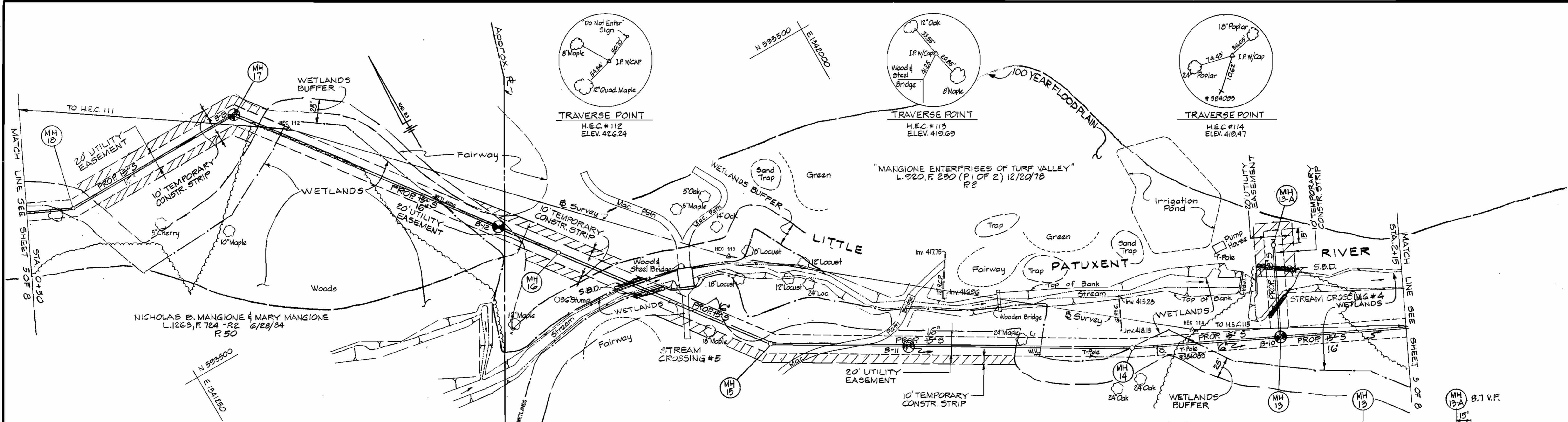
PLAN & PROFILE SEWER MAIN

600' SCALE MAP NO. S-16 & W-16 BLOCK NO.

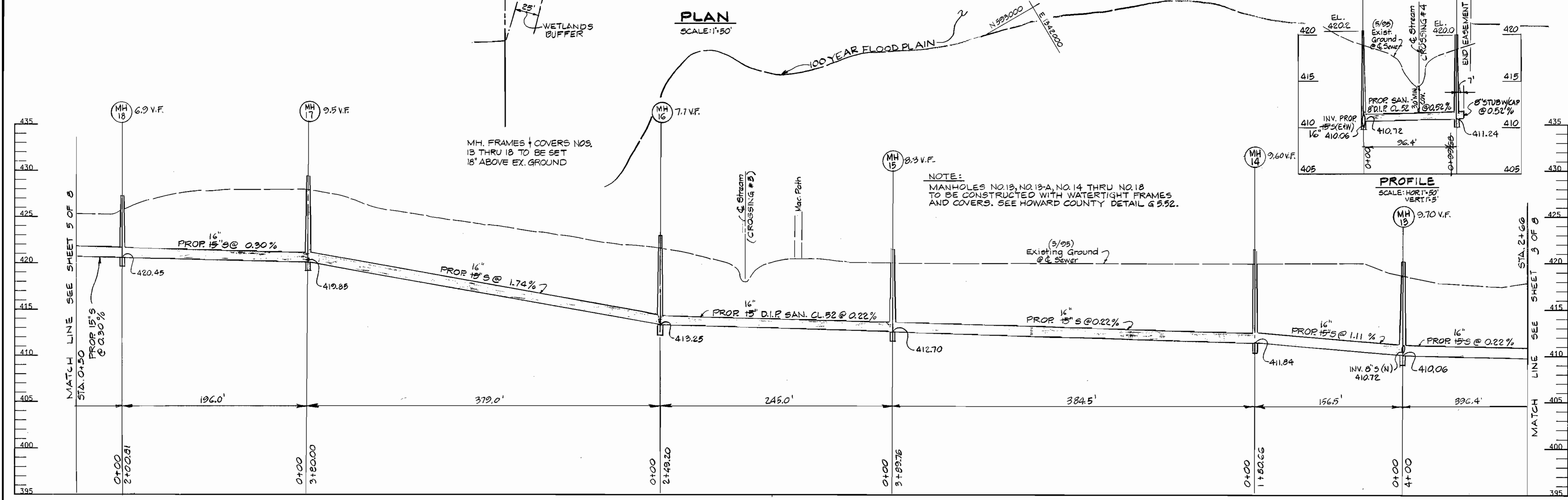
ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO. 24-3447

SCALE AS SHOWN
SHEET 3 OF 5
AS-BUILT 2/4/98

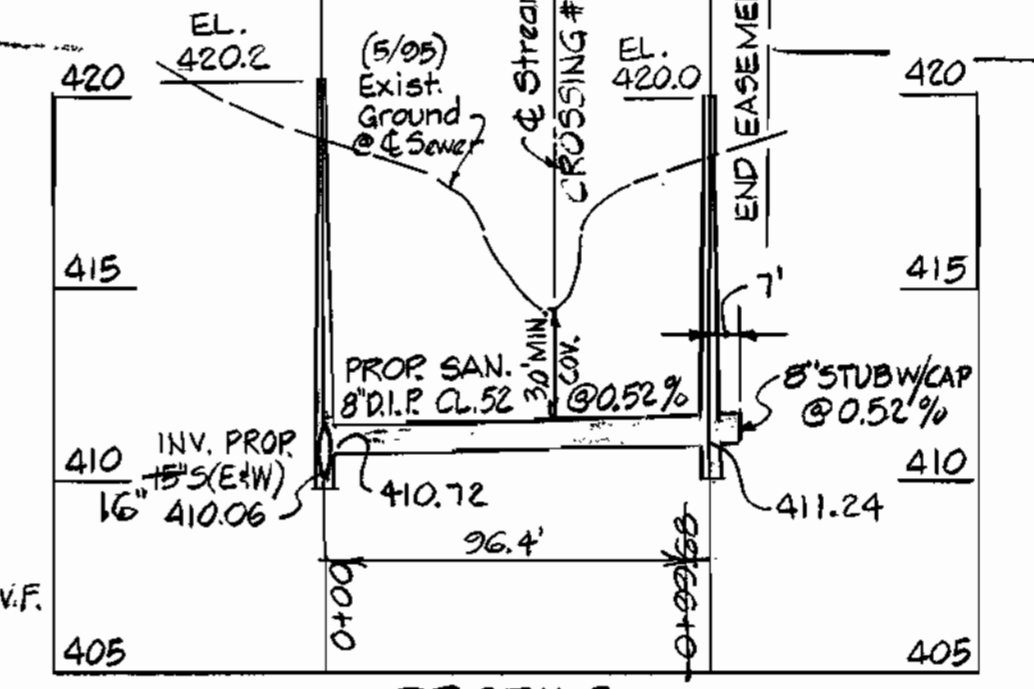
AS-BUILT 2/4/98



PLAN SCALE: 1"=50'



PROFILE SCALE: HORZ. 1"=50' VERT. 1"=5'



PROFILE SCALE: HORZ. 1"=50' VERT. 1"=5'

M.H. FRAMES + COVERS NOS. 13 THRU 18 TO BE SET 18" ABOVE EX. GROUND

NOTE: MANHOLES NO. 13, NO. 13-A, NO. 14 THRU NO. 18 TO BE CONSTRUCTED WITH WATERTIGHT FRAMES AND COVERS. SEE HOWARD COUNTY DETAIL G 5.52.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

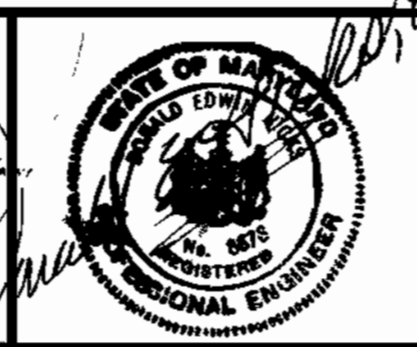
James A. Sullivan 2/2/95
DIRECTOR OF PUBLIC WORKS DATE

Robert J. Sullivan 7-28-91
CHIEF, BUREAU OF UTILITIES DATE

Paul D. Sullivan 2/27/95
CHIEF, BUREAU OF ENGINEERING DATE

Debra L. Sullivan 9-27-95
CHIEF, WATER & SEWER DIVISION DATE

H HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286



DES: K.W.			
DRN: MAB/F.W.			
CHK: DEH			
DATE: 6/16/95	BY NO.	REVISION	DATE

PLAN & PROFILE SEWER MAIN

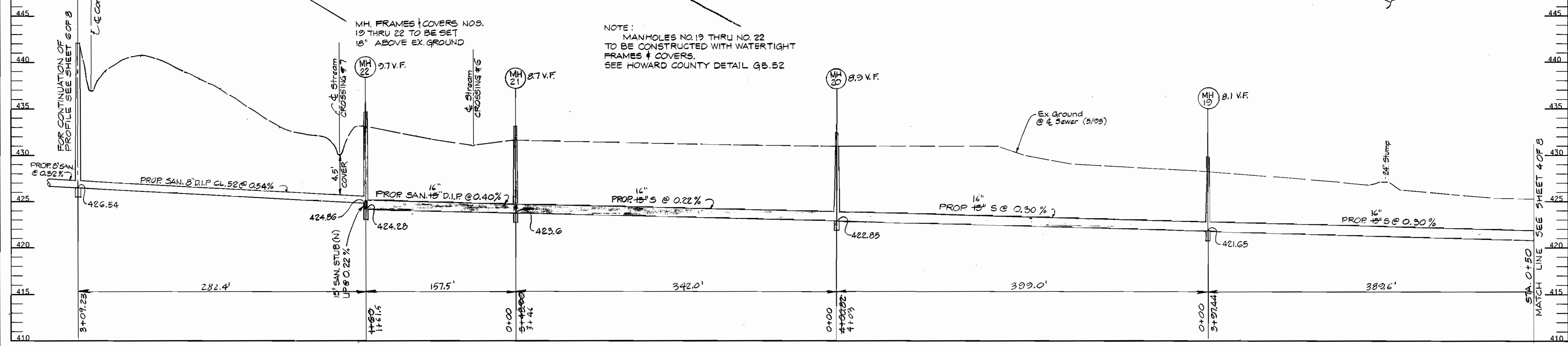
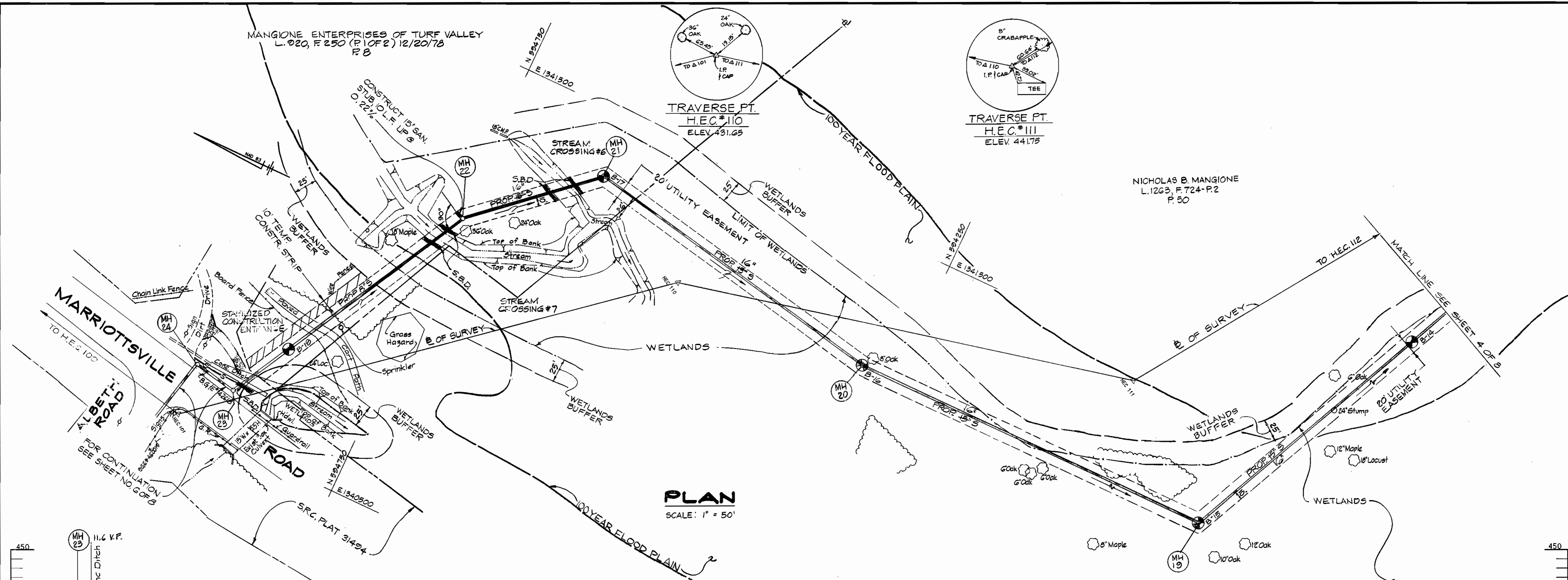
600' SCALE MAP NO. S-16 & W-16 BLOCK NO.

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO. 24-3447

SCALE AS SHOWN
SHEET 4 OF 6

AS-BUILT 2/4/98

AS-BUILT 2/4/98



NOTE: MANHOLES NO. 19 THRU NO. 22 TO BE CONSTRUCTED WITH WATERTIGHT FRAMES & COVERS. SEE HOWARD COUNTY DETAIL G5.52

M.H. FRAMES & COVERS NOS. 19 THRU 22 TO BE SET 18" ABOVE EX. GROUND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 2-27-95
DIRECTOR OF PUBLIC WORKS DATE

Robert ... 2-28-95
CHIEF, BUREAU OF UTILITIES DATE

HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286

Robert ... 2-27-95
CHIEF, WATER & SEWER DIVISION DATE

DES: K.W.			
DRN: M.A.B./E.W.			
CHK: D.E.H.			
DATE: 6/16/95	BY: NO.	REVISION	DATE

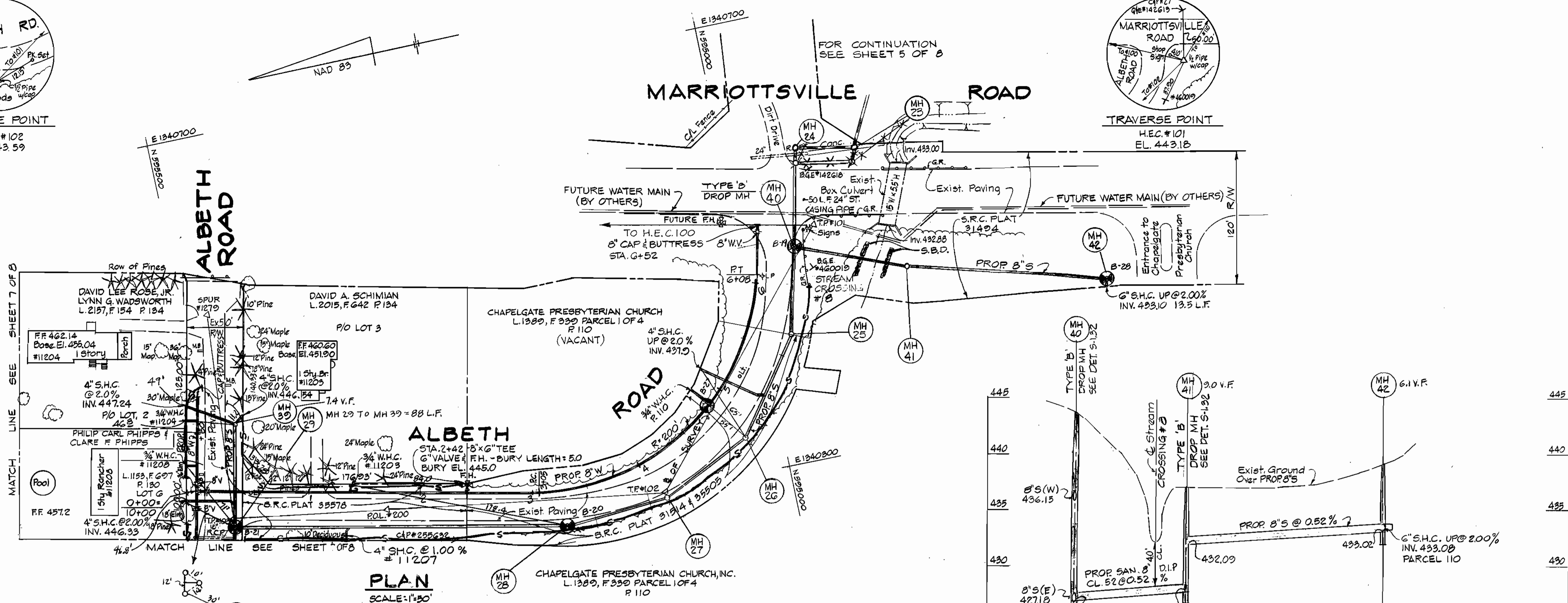
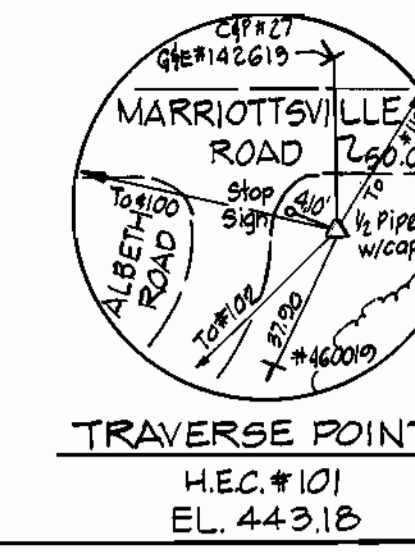
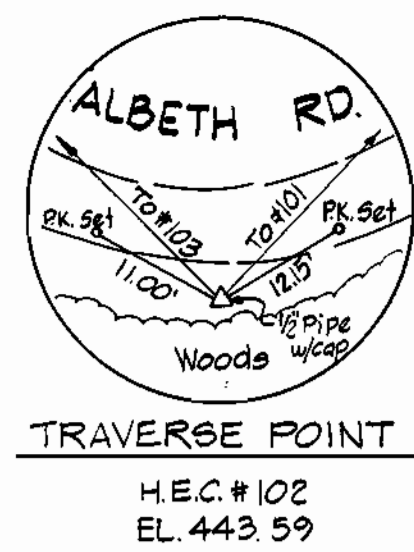
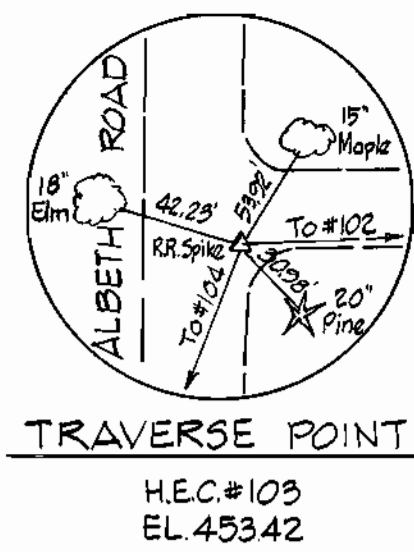
PLAN & PROFILE SEWER MAIN

600' SCALE MAP NO. 2-16 & W-16 BLOCK NO.

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO. 24-3447

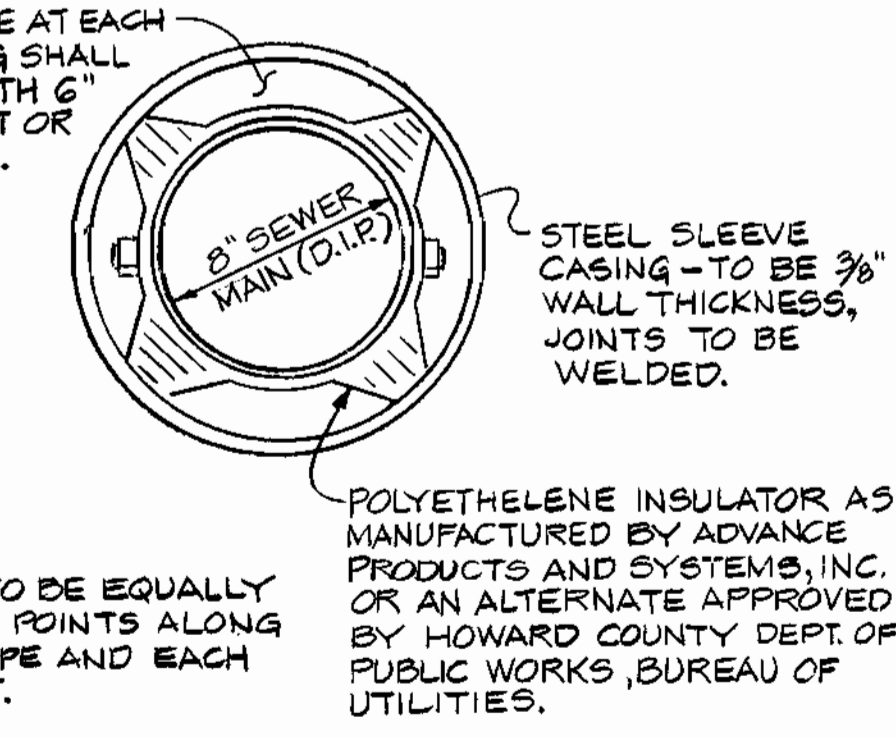
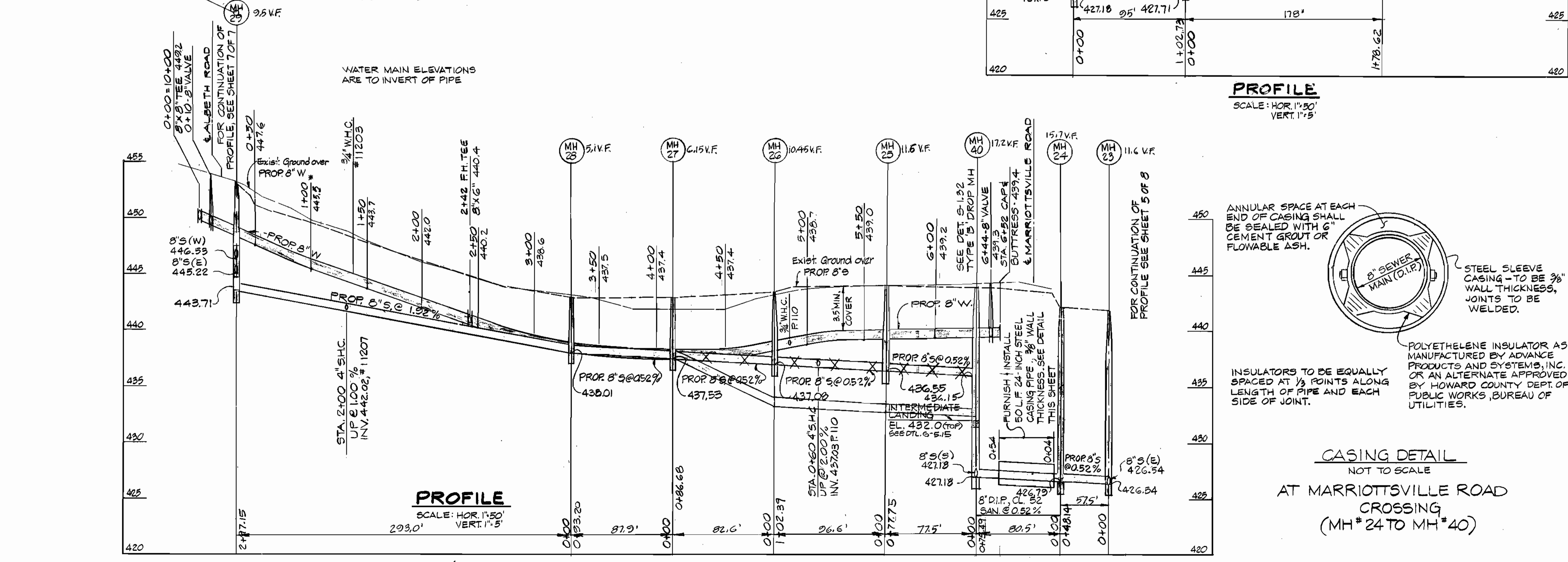
SCALE AS SHOWN
SHEET 5 OF 8

AS-BUILT 2/4/98



WATER STAKE-OUT TABLE

ITEM	STATION	TRAVERSE LINE FROM	TO	PLUS	OFFSET
8" CAP	G+52	101	102	25'	40' RT.
R.T.	G+08	101	102	65'	28' RT.
R.C.	3+05	102	103	113'	5' RT.
TEE	0+00	103	SPUR #1279	50'	30' LT.
8" CAP	0+17	103	SPUR #1279	120'	18' LT.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2-28-95
Date: 2/27/95

Chief, Bureau of Engineering: *[Signature]* 2-27-95
Date: 2-27-95

HICKS ENGINEERING CO., INC.
ENGINEERS - SURVEYORS - PLANNERS
200 E. JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286

Chief, Water & Sewer Division: *[Signature]* 2-27-95
Date: 2-27-95

DES: K.W. REVISE ELEV. MH #40 TO 27
DRN: MAB/F.W. REVISE LOCATION OF MH #23 & 24

CHK: DEH.

DATE: 6/16/95 BY: NO. REVISION DATE

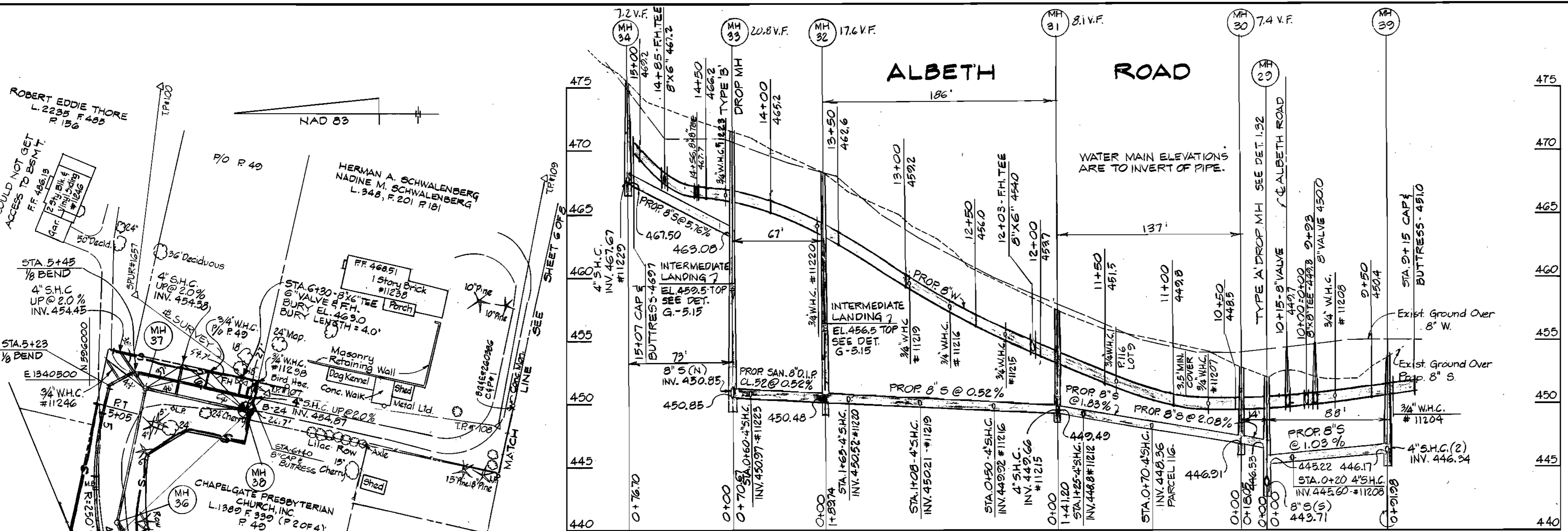
PLAN & PROFILE
WATER & SEWER MAINS

600' SCALE MAP NO. 51641-16 BLOCK NO. _____

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD. ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO 24-3447

SCALE AS SHOWN
SHEET 6 OF 8

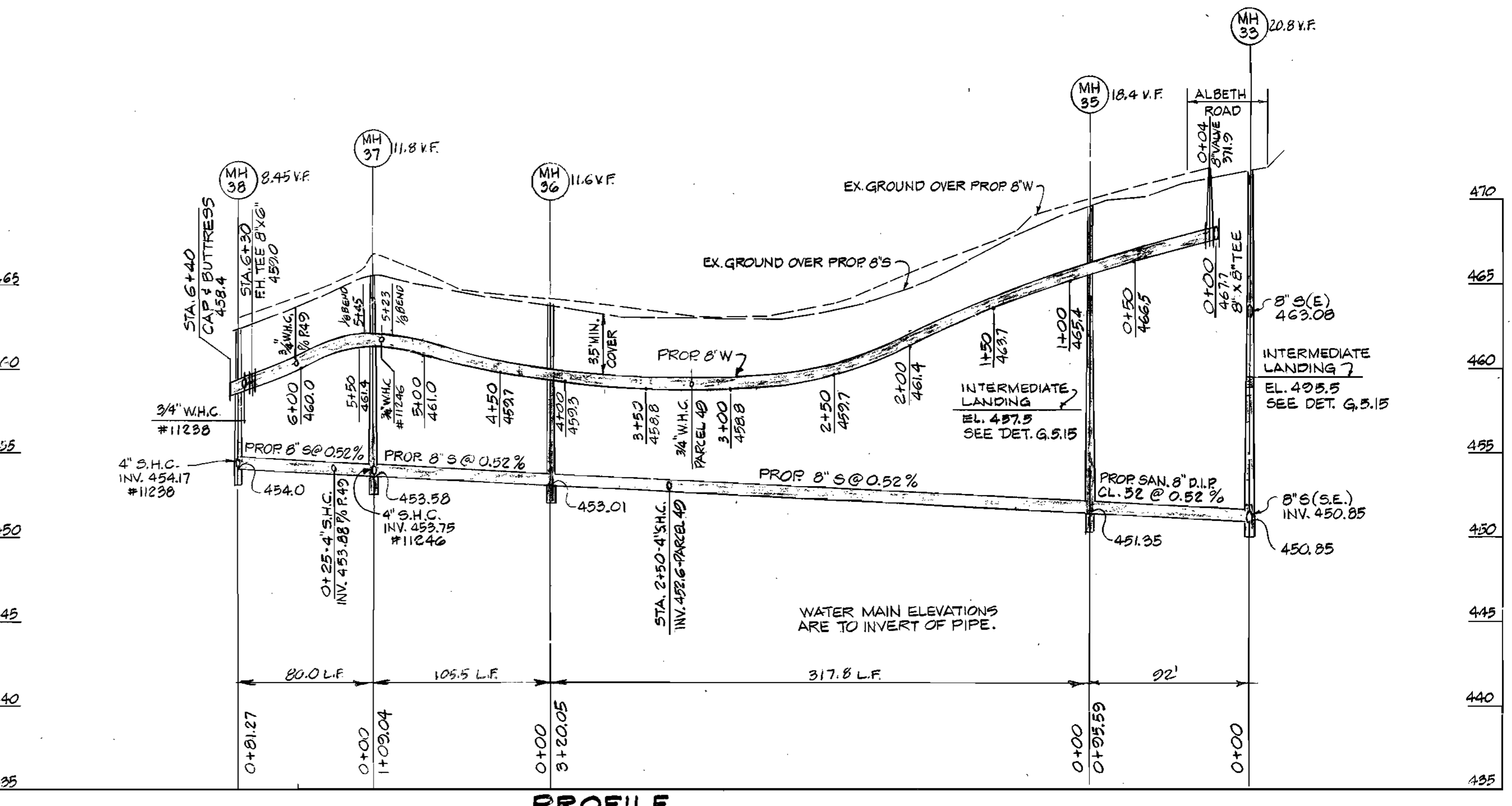
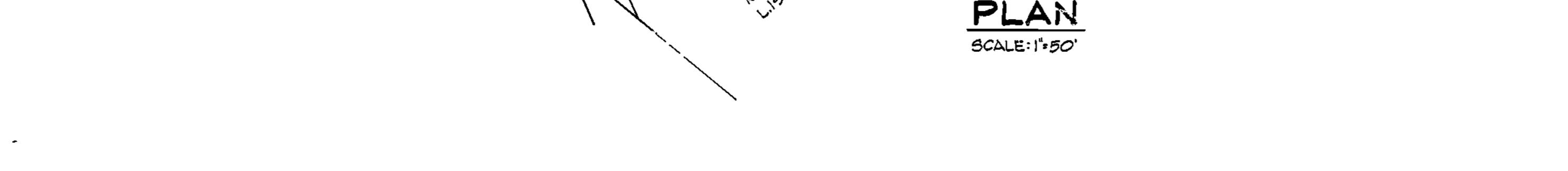
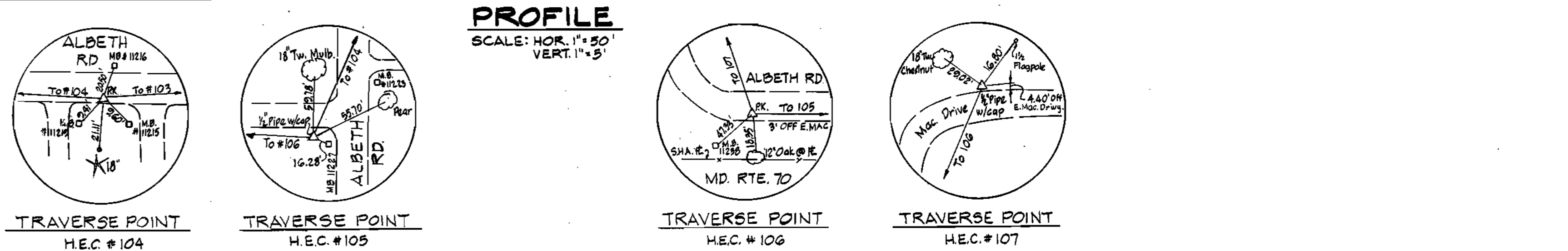
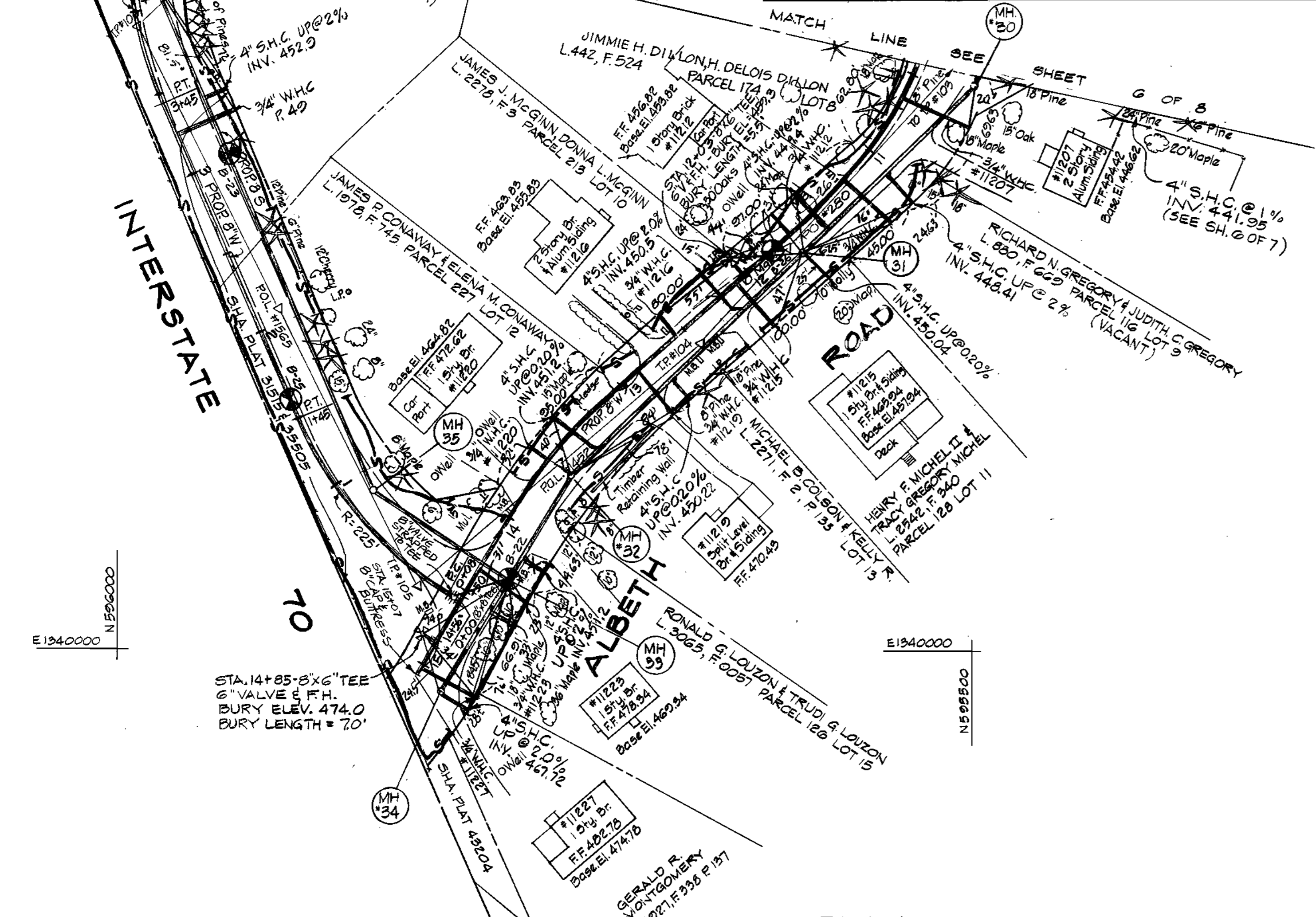
AS-BUILT 2/4/98



ITEM	STATION	TRAVERSE LINE FROM	TO	PLUS	OFFSET
8" CAP	15+07	104	105	254'	40' LT.
8" x 8" TEE	14+56+0.00	"	"	205'	23' LT.
P.C. CRIMP	0+08	"	"	208'	15' LT.
8" x 6" TEE	12+03	104	103	47'	8' LT.
P.T. CRIMP	14+45	105	106	120'	18' LT.
P.C. "	3+45	"	"	322'	8' LT.
P.T. "	5+05	106	107	80'	82' LT.
1/2 BEND	5+23	"	"	94'	91' LT.
"	5+45	"	"	115'	84' LT.
8" CAP	6+40	"	"	168'	5' LT.

STATION	FITTING	STANDARD DETAIL BEING MODIFIED	DIMENSION BEING MODIFIED	MODIFIED DIMENSION
14+56+0+00	8" x 8" TEE	W 2.23	I	1'-3"
			J	10"
14+05	8" x 6" TEE	W 2.23	J	12"
			F	1'-0"
15+07	8" CAP	W 2.21	G	2'-5"

NOTE: THESE MODIFICATIONS ARE PER RECOMMENDATION OF THE GEOTECHNICAL ENGINEER TO INCREASE THE SIZE OF THRUST BLOCKS IN VICINITY OF BORING B-22 BY 20%.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: Robert M. Benjamin, dated 9-28-95
Chief, Bureau of Engineering: [Signature], dated 9/27/95
Chief, Water & Sewer Division: [Signature], dated 9-27-95

HICKS ENGINEERING CO., INC.
ENGINEERS-SURVEYORS-PLANNERS
200 E. JOPPA ROAD SUITE 402
TOWSON MARYLAND 21286

DES:	K.W.	DATE:	4/16/96
DRN:	MAB/EH		
CHK:	DEH		
DATE:	6/16/95		
BY:	NO.	REVISION	DATE

PLAN & PROFILE
WATER & SEWER MAINS

600' SCALE MAP NO. 2-16-12 BLOCK NO.

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD. ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO 24-34-47

SCALE AS SHOWN
SHEET 7 OF 8
AE BUILT 2/4/98

AS-BUILT 2/4/98

Dewatering Basins

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

- 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 polymer filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, aldehydes, and rot resistant. No. 6 stone (ASTM D 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.

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 on the plans by the WMA.
- 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.

Approved On: *[Signature]* WPD 1.1
Chief, Waterway Permits

Culvert Pipe with Access Road

Description
The work shall consist of installing a flow diversion structure in conjunction with a temporary culvert crossing during in-stream construction such as utility crossings.

Construction Requirements

- All erosion and sediment control devices shall be installed as the first order of business.
- Pipes must be sized to accommodate normal stream flow.
- The flow barrier shall be constructed of sandbags, washed riprap, or other approved material as per WPD.2.3. The materials shall be sized to withstand normal stream flow velocities.
- All dewatering of the construction area shall be pumped to a dewatering basin (WPD.1) prior to re-entering the stream.
- The temporary culvert crossing shall be constructed in accordance with Standard Detail 36 (S.D. 36), WMA Maryland Standards and Specifications for Sediment and Erosion Control.
- Sediment control devices shall remain in place until all disturbed areas have been stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

Approved On: *[Signature]* WPD 2.1
Chief, Waterway Permits

Sandbag/Stone Diversion

Description
The work shall consist of installing flow diversions 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

- Sandbags: Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
- Stone: Stone shall be washed and have a minimum diameter of 6 inches.
- Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

Construction Requirements

- All erosion and sediment control devices shall be installed as the first order of business.
- The diversion structure shall be installed upstream to downstream.
- 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 cross-section view.
- 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 WMA.
- All dewatering of the construction area shall be pumped to a dewatering basin prior to re-entering the stream.
- Sheeting shall be overlapped such that the upstream portion covers the downstream portion with at least an 18-inch overlap.
- 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.

Approved On: *[Signature]* WPD 2.3
Chief, Waterway Permits

Riprap

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.

Material Specifications

- Bedding:
 - A. Back run gravel shall meet the following requirements:

U.S. Standard sieve size	U.S. Standard sieve size
100	2 1/2 in.
40	1 1/2 in.
20	3/4 in.
10	3/8 in.
5	3/16 in.
 - B. Gravel filter fabric shall meet the following requirements:

U.S. Standard sieve size	U.S. Standard sieve size
200	75 microns
100	150 microns
60	250 microns
30	600 microns
15	1000 microns
7.5	2000 microns
3.75	4000 microns
1.5	30 mesh
0.75	20 mesh
0.425	40 mesh
0.25	60 mesh
0.15	100 mesh
0.075	200 mesh
0.0425	400 mesh
0.025	600 mesh
0.015	1000 mesh
0.0075	2000 mesh
- Riprap:
 - A. Riprap shall be placed in the stream bed and along the outside edges of the limits of the slope and channel protection in such a manner as to produce a reasonably graded mass of stone with zero drop height.
 - B. The placement of stones that cause erosive segregation is not allowed.
 - C. Any excavation voids existing along the edges of the completed slope and channel protection shall be backfilled.

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 top and bottom of the slope to provide protection against undermining. If this cannot be accomplished by extending the toe trench as indicated, Cross Section, an alternative method of protection must receive prior written approval of the Administration.
- Exception 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 back run gravel or a geotextile filter fabric meeting the specifications of 11.18 above.
- The placement of riprap shall begin with the top, the larger stones shall be placed in the top and along the outside edges of the limits of the slope and channel protection in such a manner as to produce a reasonably graded mass of stone with zero drop height.
- The placement of stones that cause erosive 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.

Approved On: *[Signature]* WPD 3.1
Chief, Waterway Permits

Utility Crossing

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

Construction Requirements

- All erosion and sediment control devices shall be installed as the first order of business.
- The contractor shall ensure that a continuous perimeter control barrier is in place so as to minimize pollutants entering the stream.
- 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 utility crossings shall be placed on the upland side of the excavation.
- The contractor may elect to construct the utility crossing in two stages. In this case, a WMA approved sediment and erosion control plan shall be submitted to the Administration.
- 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.

Approved On: *[Signature]* WPD 5.1
Chief, Waterway Permits

DETAIL 36 TEMPORARY ACCESS CULVERT

Construction Specifications

- Restrictions - No construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 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. In all cases, the pipes shall be large enough to convey normal stream flows.
- Culvert Length - The culverts shall extend a minimum of one foot beyond the upstream and downstream toe to 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 culverts 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 culverts 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 1.1.1. above.
- Stabilization - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standards for Critical Area Stabilization with Permanent Seeding.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 11-29-12A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

TEMPORARY ACCESS CULVERT

Construction Specifications

- Fence posts shall be a minimum of 3/4" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) and steel posts shall be standard I or U section with a top flange (min. 100 pound per linear foot).
- Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal / 4" / minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 11-29-12A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE

Construction Specifications

- Boles shall be placed on the top of a slope, on the contour, and in a row with the ends of each bole slightly offsetting the adjacent boles.
- Each bole shall be entrenched in the soil a minimum of 4 inches and placed so the bindings are horizontal.
- Boles shall be securely anchored in place by either two stakes or rebar's driven through the bole 12 to 18 inches into the ground. The first stake in each bole shall be driven toward the previously laid bole or on angle to force the boles together. Stakes shall be driven flush with the top of the bole.
- Straw bale dikes shall be inspected frequently and after each rain event and maintenance performed as necessary.
- All bole stakes shall be removed when the site has been stabilized. The trench where the boles were located shall be graded flush and stabilized.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 11-29-12 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 32 STRAW BAILE DIKE

Construction Specifications

- Boles shall be placed on the top of a slope, on the contour, and in a row with the ends of each bole slightly offsetting the adjacent boles.
- Each bole shall be entrenched in the soil a minimum of 4 inches and placed so the bindings are horizontal.
- Boles shall be securely anchored in place by either two stakes or rebar's driven through the bole 12 to 18 inches into the ground. The first stake in each bole shall be driven toward the previously laid bole or on angle to force the boles together. Stakes shall be driven flush with the top of the bole.
- Straw bale dikes shall be inspected frequently and after each rain event and maintenance performed as necessary.
- All bole stakes shall be removed when the site has been stabilized. The trench where the boles were located shall be graded flush and stabilized.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 11-29-12 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDING PREPARATION: LOOSES UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 NITROGEN FERTILIZER (9 LBS/1000 SQ. FT.)
- ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING - FOR THE PERIODS MARCH 1 thru APRIL 30, AND AUGUST 1 thru OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 thru JULY 31, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ. FT.) OF BLUEGRASS. DURING THE PERIOD OF OCTOBER 16 thru FEBRUARY 28, PROJECT SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE MOSS. OPTION (3) SEED WITH 60 LBS PER ACRE KENTUCKY 31 TALL FESCUE AND WHEAT WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING - APPLY 14 TO 2 TONS PER ACRE (30 TO 90 LBS/1000 SQ. FT.) OF UNROOTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GALLON/1000 SQ. FT.) OF ENHANCED ASPHALT OR FLAT AREAS, ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GALLON/1000 SQ. FT.) FOR ANCHORING.

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

SEE CONDITIONS, CONDITIONS AND MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, FOR SEEDING WITHIN THE WETLANDS & BUFFER AREAS.

CONDITIONS AND MANAGEMENT PRACTICES FOR WORKING IN TIDAL WETLANDS

- No materials or equipment may be stored or stockpiled within non-tidal wetlands, 25-foot wetlands buffer or 100-year floodplain.
- Stockpile and maintain separately the top 6"-12" of topsoil material excavated from non-tidal wetlands, to be replaced as the top layer of the backfilled material.
- Remove excess fill or construction material or debris to an upland disposal area.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of the non-tidal wetland.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to the non-tidal wetlands.
- Use previously excavated materials as backfill, unless it contains waste metal products, unsightly debris, toxic material or any other deleterious substance. Use clean borrow material when excavated material is not suitable for use as backfill.
- All stabilization in the wetland and buffer shall be of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Echinochloa polystachya*), Barley (*Hordeum sp.*), and/or Rye (*Secale cereale*). These species allow for the rehabilitation of the site while also allowing for the voluntary propagation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Division. Kentucky 31 fescue shall not be utilized in the wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
- After installation has been completed, make post construction grades and elevations of non-tidal wetlands the same as the original grades and elevation.
- To protect important aquatic species, in-stream work is prohibited as determined by the classification of the stream as follows:

Use 1 Waters - In-stream work may not be conducted during the period March 1 through June 15, inclusive, during any year.

***THESE CONDITIONS ALSO APPLY FOR WORK THAT WILL RESULT IN IMPACTS TO THE 100-FOOT WETLAND BUFFER, FEMA MAPPED 100 YEAR FLOOD PLAIN, AND REGULATED WATERWAYS.**

SEQUENCE OF CONSTRUCTION

- Acquire a Grading Permit.
- Contact Howard County Bureau of Construction Inspection (311-1850) prior to starting date.
- Install erosion and sediment control devices as per Section 219 of the Howard County Design Manual, Vol. IV.
- AS A FIRST PRIORITY, install the sewer main through the golf course property and complete construction of the sewer main of all stream crossings prior to March 1, 1998. Then install remaining sewer and water mains and appurtenances in the contract.**
 - See "Conditions and Management Practices" for construction of sewer main within wetlands and buffer area.
- Restore paving and earth trenches to their original condition as per Howard County Standards.
- Upon permission from Howard County Sediment Control Inspector, remove Sediment Control Devices.
- Final grade all disturbed areas and stabilize with permanent seeding.

*** NOTE: Length of open trench for sewer placement shall be limited to 3 pipe lengths or that which can be backfilled and stabilized in one work day.**

STAGING AREA NOTE

STAGING AREAS SHALL BE LOCATED AS PER AGREEMENT BETWEEN THE PROPERTY OWNER AND CONTRACTOR, BUT SHALL NOT BE WITHIN THE 100 YEAR FLOODPLAIN, WETLANDS OR WETLANDS BUFFERS AS DELINEATED ON THESE PLANS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/25/95
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9-28-95
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/27/95
CHIEF, WATER & SEWER DIVISION DATE

HICKS ENGINEERING CO., INC.
ENGINEERS - SURVEYORS - PLANNERS
200 E. JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286

[Signature] 9/27/95
DATE

DES: _____
DRN: _____
CHK: _____
DATE: _____

BY NO. REVISION DATE

600' SCALE MAP NO. S-16-1W-1C BLOCK NO.

DETAIL SHEET

ALBETH HEIGHTS WATER & SEWER EXTENSION
3RD. ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8195
CONTRACT NO. 24-3447

SCALE AS SHOWN
SHEET 8 OF 8

AS-BUILT 2/4/98