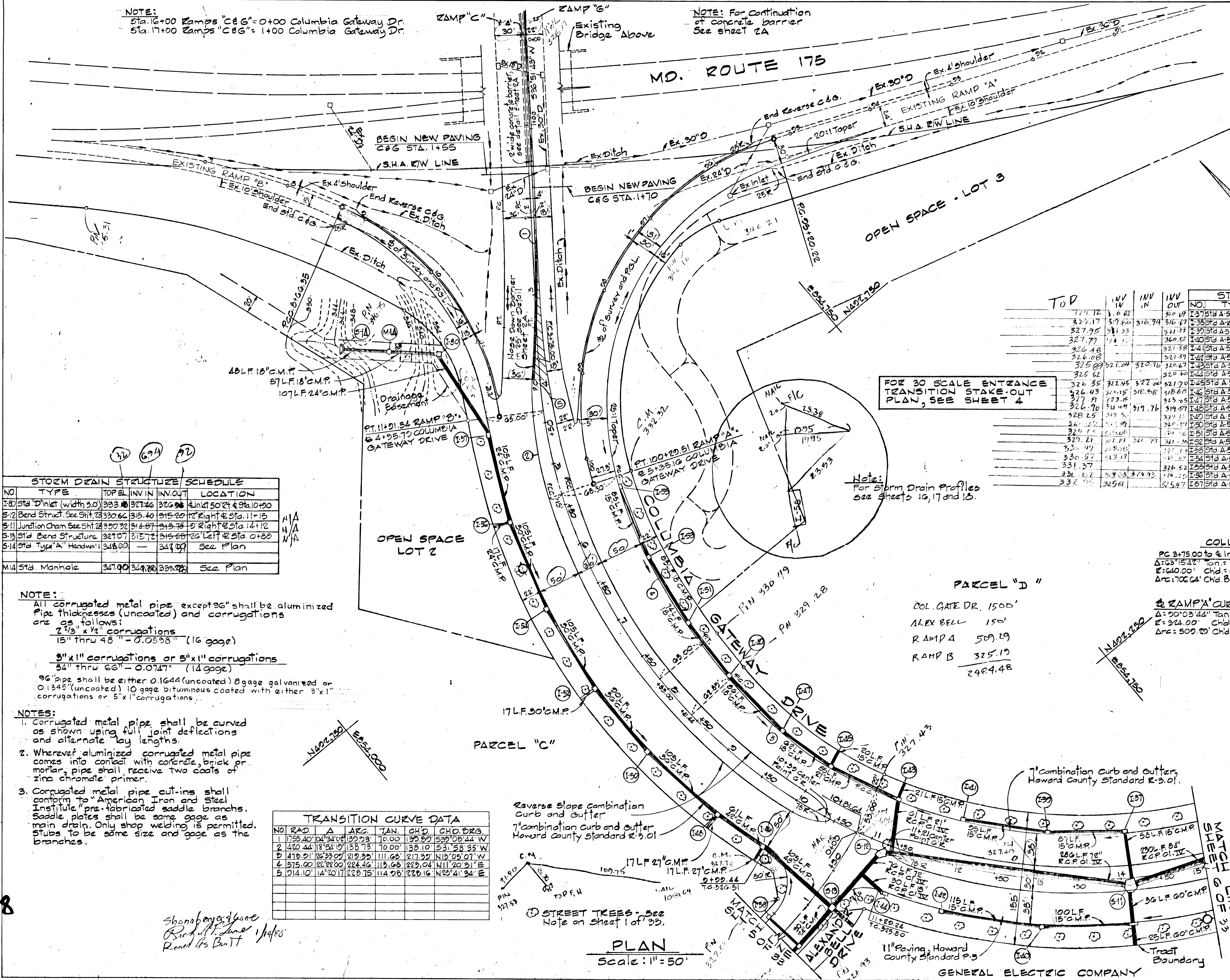




NOTE:  
Sta. 16+00 Ramps "C&G" = 0+00 Columbia Gateway Dr.  
Sta. 17+00 Ramps "C&G" = 1+00 Columbia Gateway Dr.

NOTE: For Continuation  
of concrete barrier  
See sheet 2A

APPROVED: DEPARTMENT OF  
PUBLIC WORKS  
CHIEF, BUREAU OF ENGINEERING  
OFFICE OF PLANNING & ZONING  
DATE: 3/25/86  
CHIEF DIVISION OF LAND DEVELOPMENT  
AND ZONING ADMINISTRATION



**STORM DRAIN STRUCTURE SCHEDULE**

NO.	TYPE	TOPEL	INV. IN	INV. OUT	LOCATION
1-2	Std. Inlet (width 3.0)	333.30	327.46	326.98	Inlet 50' 21' E Sta. 10+90
5-2	Band Struct. See Sht. 2	330.66	315.40	315.20	Right E Sta. 11+15
5-11	Junction Cham. See Sht. 2	330.32	314.67	314.78	Right E Sta. 14+12
5-13	Std. Band Structure	327.07	315.72	315.28	Left E Sta. 0+00
5-14	Std. Type 'A' Headwall	348.00	-	347.00	See Plan
M-14	Std. Manhole	347.00	349.70	339.25	See Plan

**NOTE:**  
All corrugated metal pipe except 36" shall be aluminumized pipe thickness (uncoated) and corrugations are as follows:  
7 1/2" x 1/2" corrugations  
15" thru 48" - 0.0538" (16 gage)  
3" x 1" corrugations or 5" x 1" corrugations  
54" thru 66" - 0.0747" (14 gage)  
36" pipe shall be either 0.1644 (uncoated) 8 gage galvanized or 0.1345 (uncoated) 10 gage bituminous coated with either 3" x 1" corrugations or 5" x 1" corrugations.

- NOTES:**
- Corrugated metal pipe shall be curved as shown using full joint deflections and alternate lay lengths.
  - Wherever aluminumized corrugated metal pipe comes into contact with concrete, brick or mortar, pipe shall receive two coats of zinc chromate primer.
  - Corrugated metal pipe cut-ins shall conform to American Iron and Steel Institute pre-fabricated saddle branches. Saddle plates shall be same gage as main drain. Only shop welding is permitted. Stubbs to be same size and gage as the branches.

**TRANSITION CURVE DATA**

NO.	RAD.	Δ	ARG.	TAN.	CH'D	CH'D BRG.
1	1755.40	04°34'07"	30.93	76.00	30.80	S30°08'44" W
2	420.44	18°54'17"	35.73	70.00	38.10	S31°38'35" W
3	478.51	26°33'07"	29.95	111.65	217.97	N18°05'07" W
4	575.00	22°22'00"	224.46	115.06	229.04	N11°20'21" E
5	214.10	14°20'17"	226.75	114.96	226.16	N20°41'24" E

**STORM DRAIN STRUCTURE SCHEDULE**

NO.	TYPE	TOPEL	INV. IN	INV. OUT	LOCATION
1-3	Std. A-5 Inlet (width 2.5)	329.81	320.66	320.40	Inlet 50' 21' E Sta. 14+12
1-3	Std. A-5 Inlet (width 2.5)	329.31	320.59	320.70	Inlet 54' 02' E Sta. 14+12
1-3	Std. A-5 Inlet (width 2.5)	327.01	321.09	321.09	Inlet 54' 02' E Sta. 13+11
1-4	Std. A-5 Inlet (width 2.5)	327.01	321.10	320.93	Inlet 54' 02' E Sta. 13+11
1-4	Std. A-5 Inlet (width 2.5)	326.38	-	321.63	Inlet 54' 02' E Sta. 12+00
1-4	Std. A-5 Inlet (width 2.5)	327.78	320.00	320.70	Inlet 54' 02' E Sta. 11+15
1-4	Std. A-5 Inlet (width 2.5)	325.84	-	320.20	Inlet 54' 02' E Sta. 11+36
1-4	Std. A-5 Inlet (width 2.5)	326.56	322.09	321.20	Inlet 61' 00' E Sta. 10+15
1-4	Std. A-5 Inlet (width 2.5)	326.57	319.19	318.60	Inlet 60' 17' E Sta. 02+80
1-4	Std. A-5 Inlet (width 2.5)	327.42	322.00	322.70	Inlet 60' 08' E Sta. 04+38
1-4	Std. A-5 Inlet (width 2.5)	327.20	320.21	319.71	Inlet 61' 02' E Sta. 04+35
1-4	Std. A-5 Inlet (width 2.5)	328.52	324.01	323.87	Inlet 64' 01' E Sta. 04+38
1-5	Std. A-5 Inlet (width 4.0)	328.40	321.20	321.09	Inlet 67' 07' E Sta. 04+35
1-5	Std. A-5 Inlet (width 4.0)	329.50	324.64	324.64	Inlet 66' 02' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	329.50	322.04	322.04	Inlet 67' 07' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	330.70	325.63	325.63	Inlet 66' 02' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	330.70	323.66	323.42	Inlet 67' 07' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	331.00	-	326.17	Inlet 60' 02' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	331.00	325.00	324.50	Inlet 67' 07' E Sta. 04+50
1-5	Std. A-5 Inlet (width 4.0)	333.10	326.08	325.88	Inlet 67' 17' E Sta. 04+50

FOR 30 SCALE ENTRANCE  
TRANSITION STAKE-OUT  
PLAN, SEE SHEET 4

Note:  
For Storm Drain Profiles  
see sheets 19, 17 and 15.

**CLUEVE DATA**  
**COLUMBIA GATEWAY DRIVE**  
PC 2+75.00 to Int. 10+81.64 & Int. 10+81.64 to PT. 17+25.05  
Δ = 57°32'03" Tan = 354.85  
E = 640.00' Chd = 671.00'  
Arc = 706.64' Chd Brg = 505°13'50" W  
Arc = 643.41' Chd Brg = 355°11'59" E

**RAMP 'A' CURVE DATA**  
Δ = 50°03'44" Tan = 324.35  
R = 324.00' Chd = 458.45'  
Arc = 509.20' Chd Brg = 567°33'18" W

**RAMP 'B' CURVE DATA**  
Δ = 57°08'55" Tan = 178.70  
R = 315.00' Chd = 310.94'  
Arc = 325.10' Chd Brg = 501°50'44" W

**PARCEL "D"**  
COL. GATE DR. 1500'  
ALEX BELL 150'  
RAMP A 509.29  
RAMP B 325.19  
2484.48

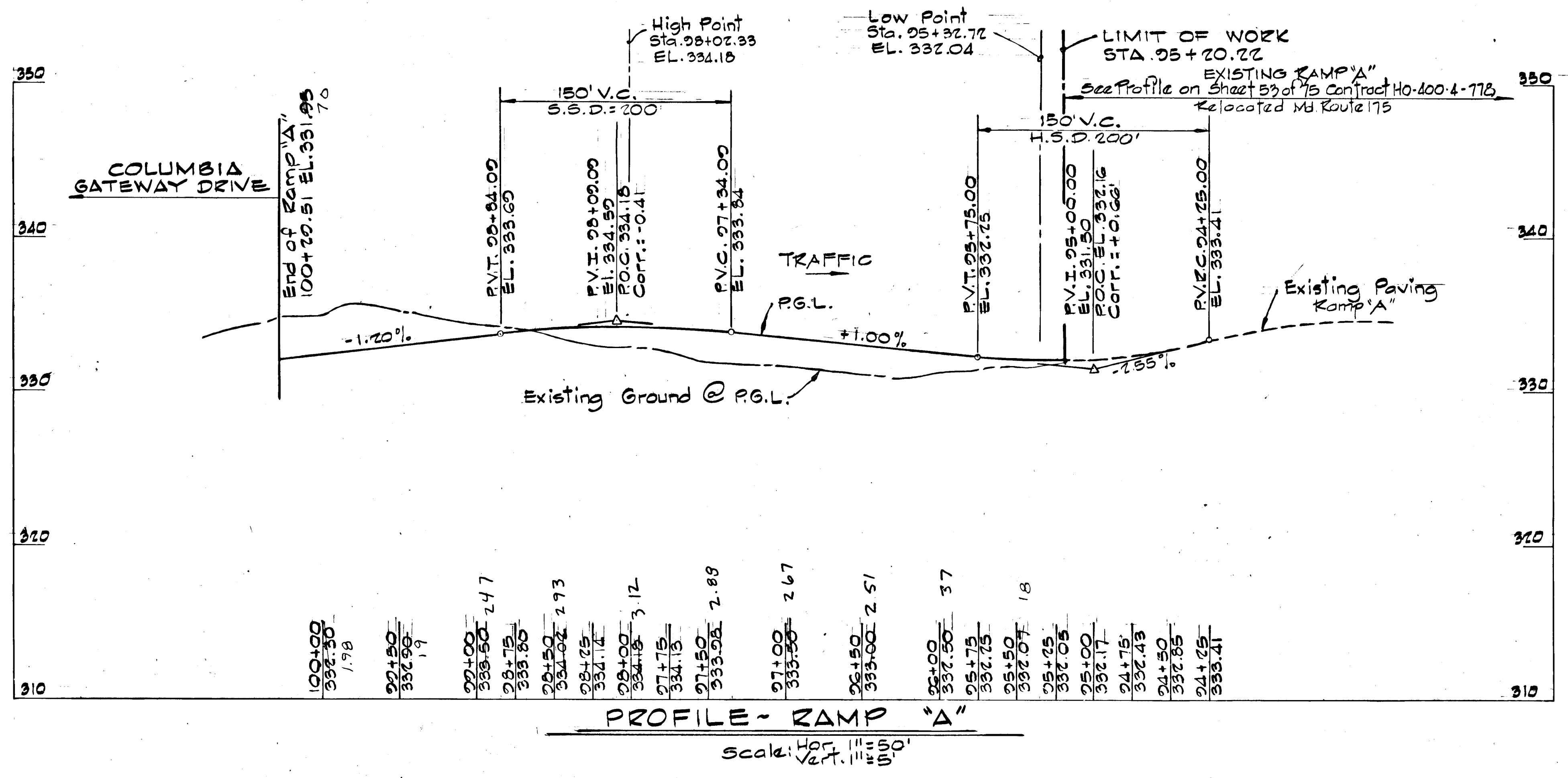
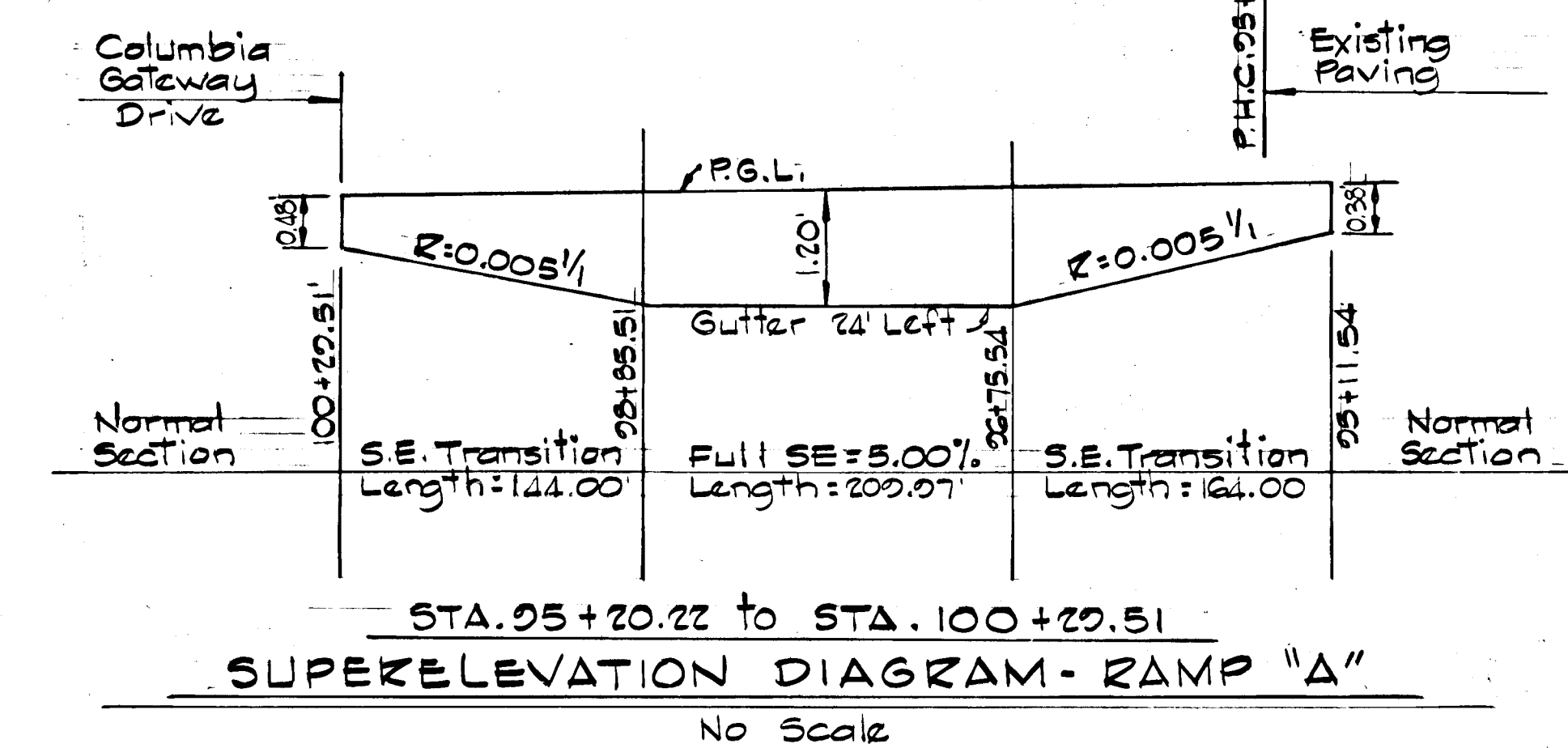
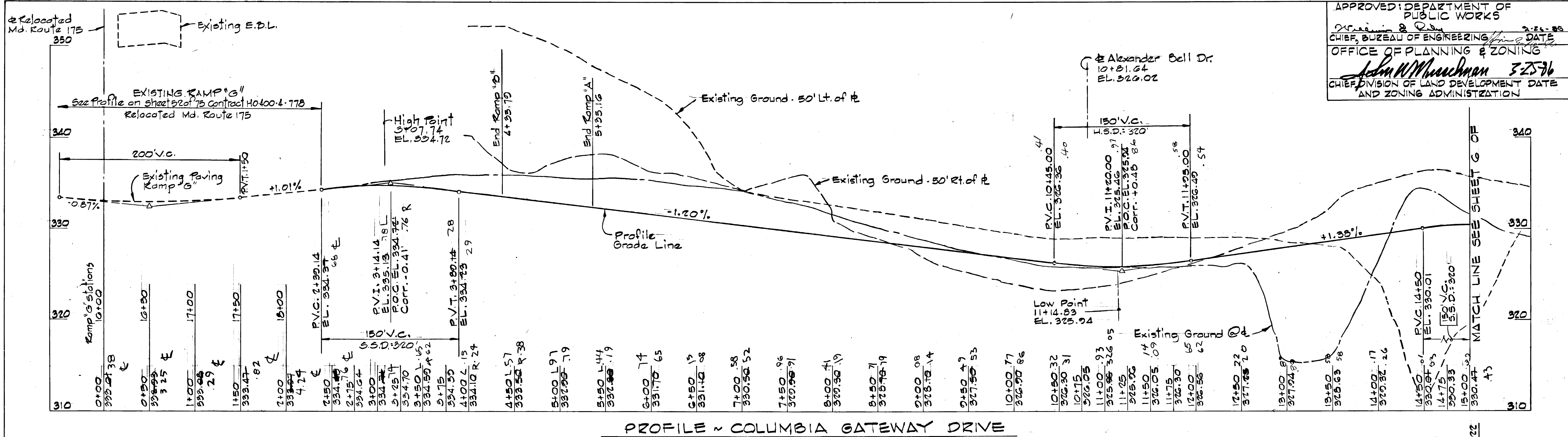
Reverse Slope Combination  
Curb and Gutter  
7' combination curb and gutter  
Howard County Standard R-3.01

STREET TREES - See  
Note on sheet 1 of 33.

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

6-10-86	2	Revised Pipe Notes
3-17-86	1	As per Planning, DPW and SCS Comments
REV DATE	REV NO.	REVISION DESCRIPTION
<b>COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</b>		
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION		
PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1		
PROJECT TITLE PLAN COLUMBIA GATEWAY DRIVE STA. 0+00 TO STA. 15+00		
SCALE: AS SHOWN DATE:		
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218		
Kenneth A. McCord Registered Engineer NO. 1074		STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER & LAND SURVEYOR NO. 13718

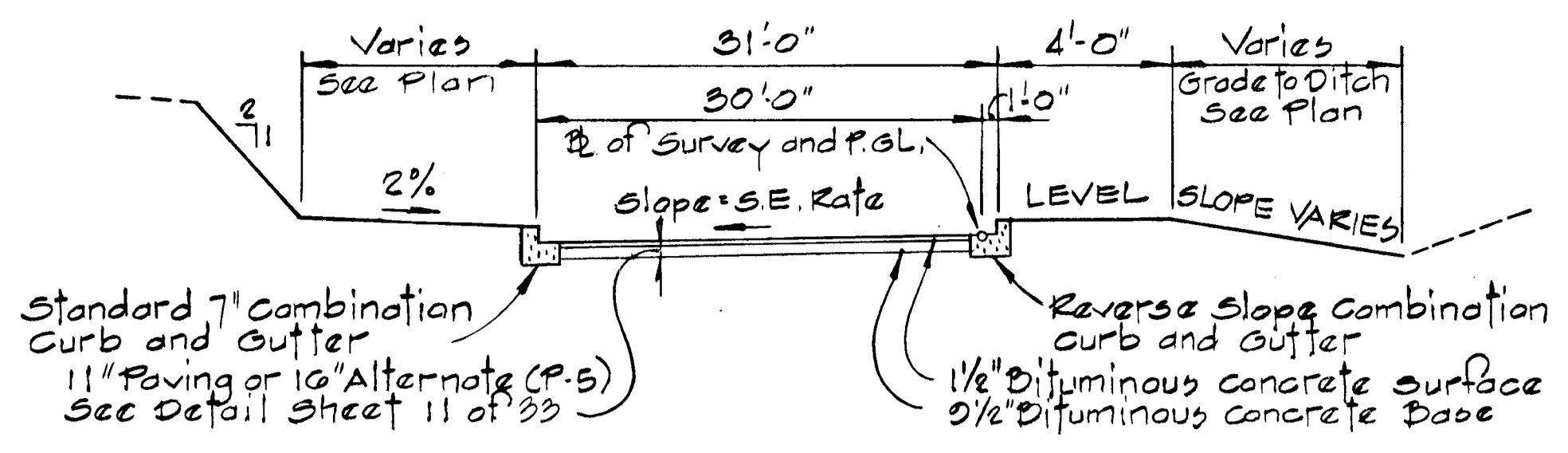
APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING DATE 3-21-86  
 OFFICE OF PLANNING & ZONING  
*John W. Mauchman* 32576  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 AND ZONING ADMINISTRATION



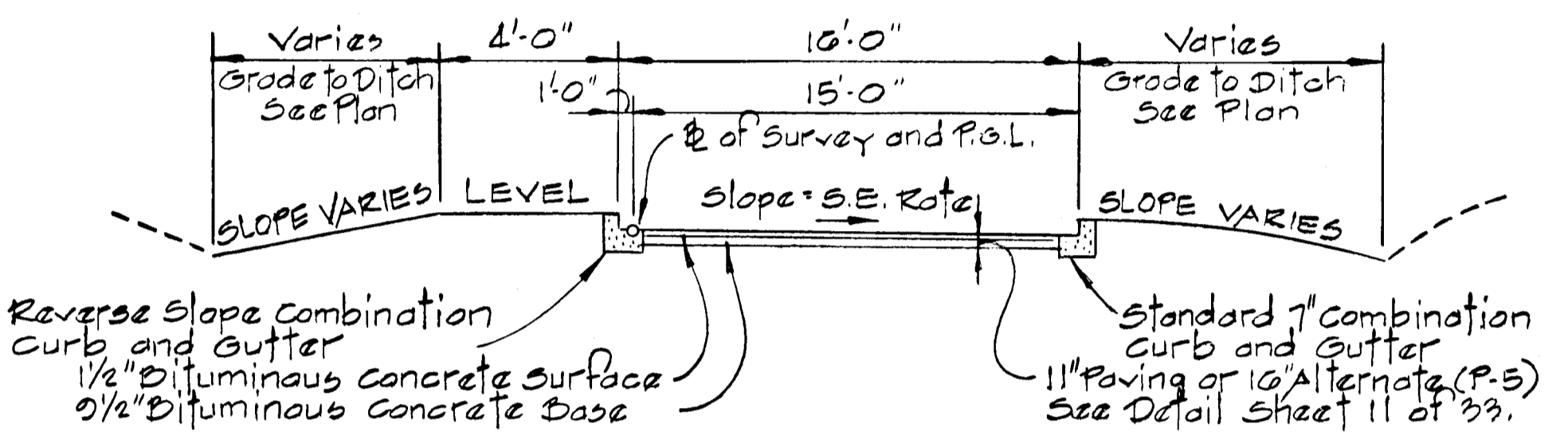
Shanaberg Lane  
 Rickland F. Lane 1/14/88  
 Road As Built

3-17-86	1	As per Planning, DPW and SCS Comments
REV DATE	REV NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6 <sup>TH</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE PROFILES COLUMBIA GATEWAY DRIVE STA. 0+00 TO STA. 15+00 RAMP "A" STA. 95+20.22 TO STA. 100+29.51
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
<i>Kenneth A. McCord</i> KENNETH A. MCCORD Registered Engineer NO. 1074		

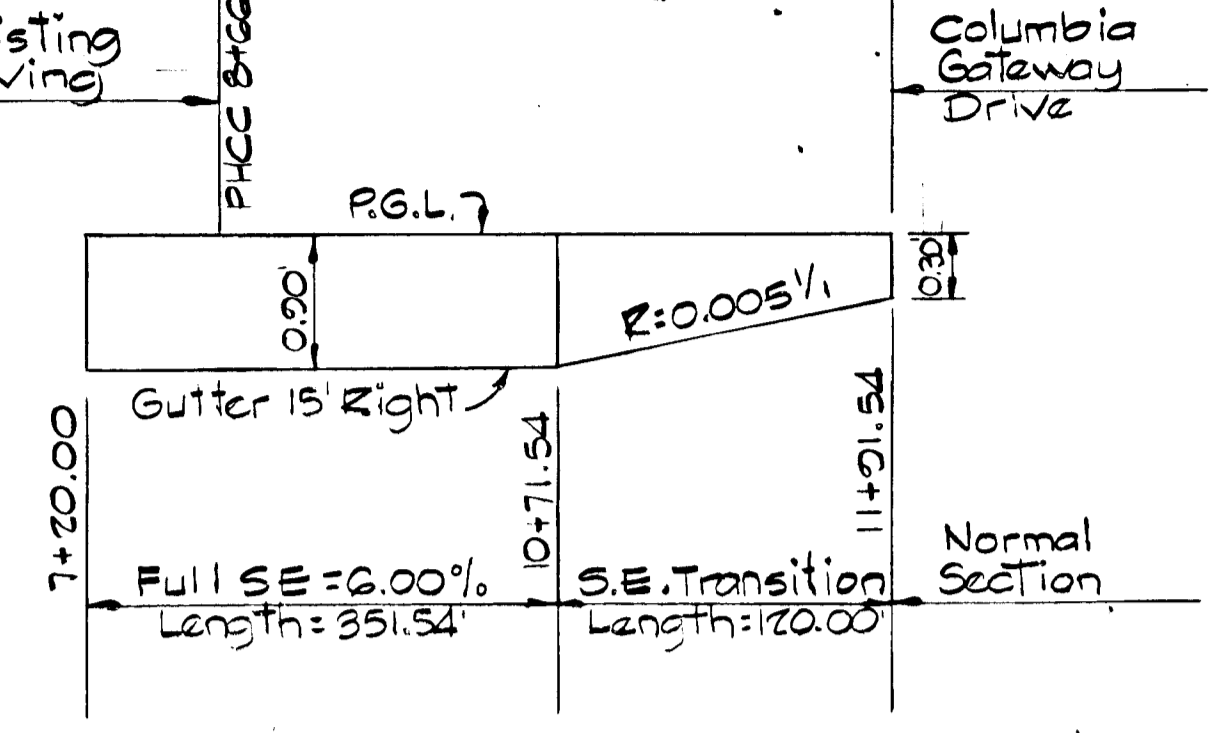
APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING & DATE  
 OFFICE OF PLANNING & ZONING  
 3/7/86  
 DIVISION OF LAND DEVELOPMENT DATE  
 AND ZONING ADMINISTRATION



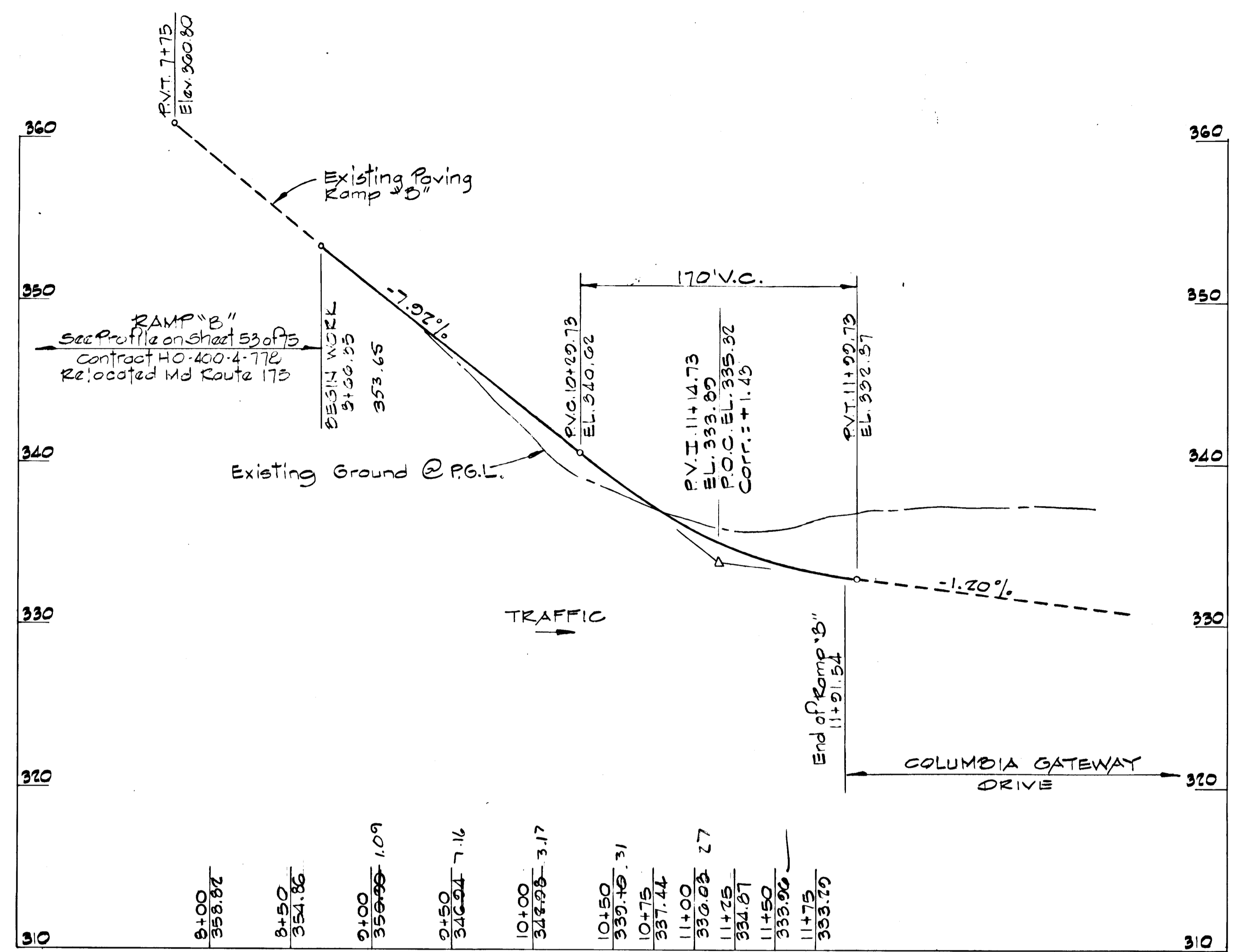
**RAMP "A"**  
 STATION 05+50 TO STATION 09+05  
 No Scale



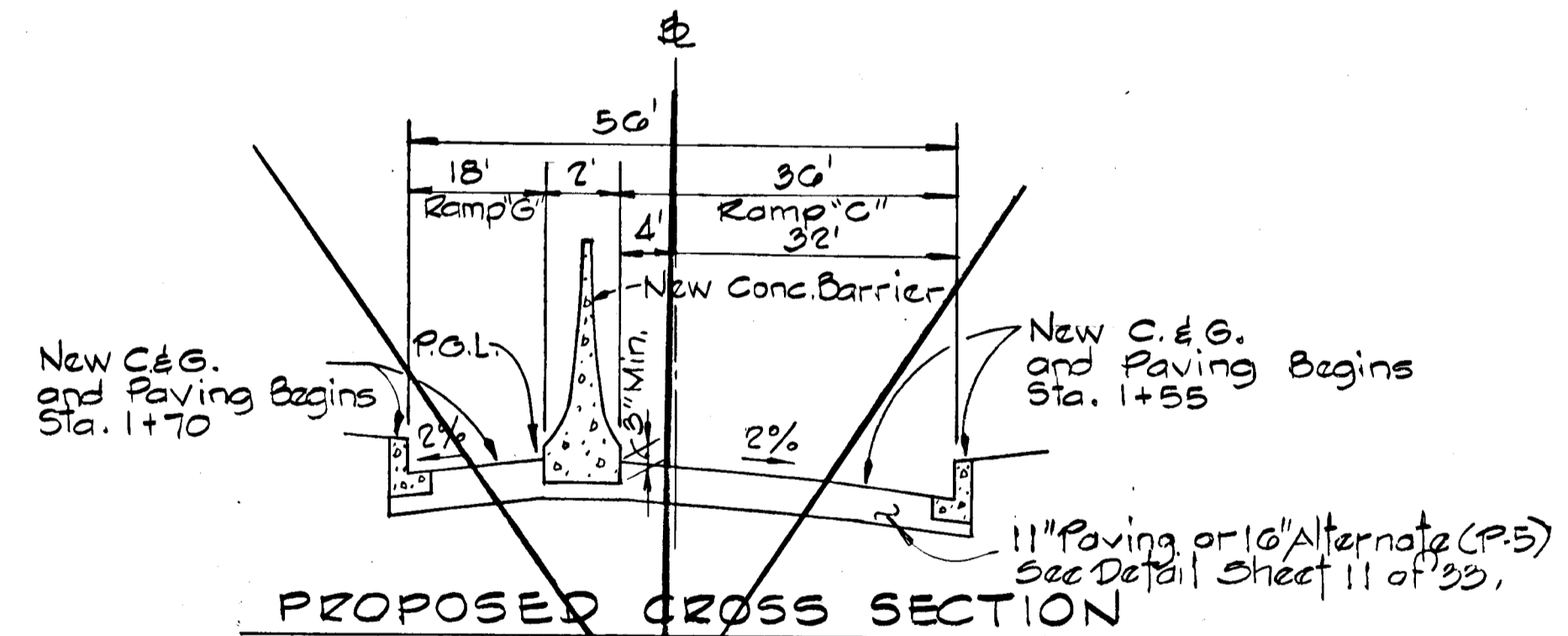
**RAMP "B"**  
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 No Scale



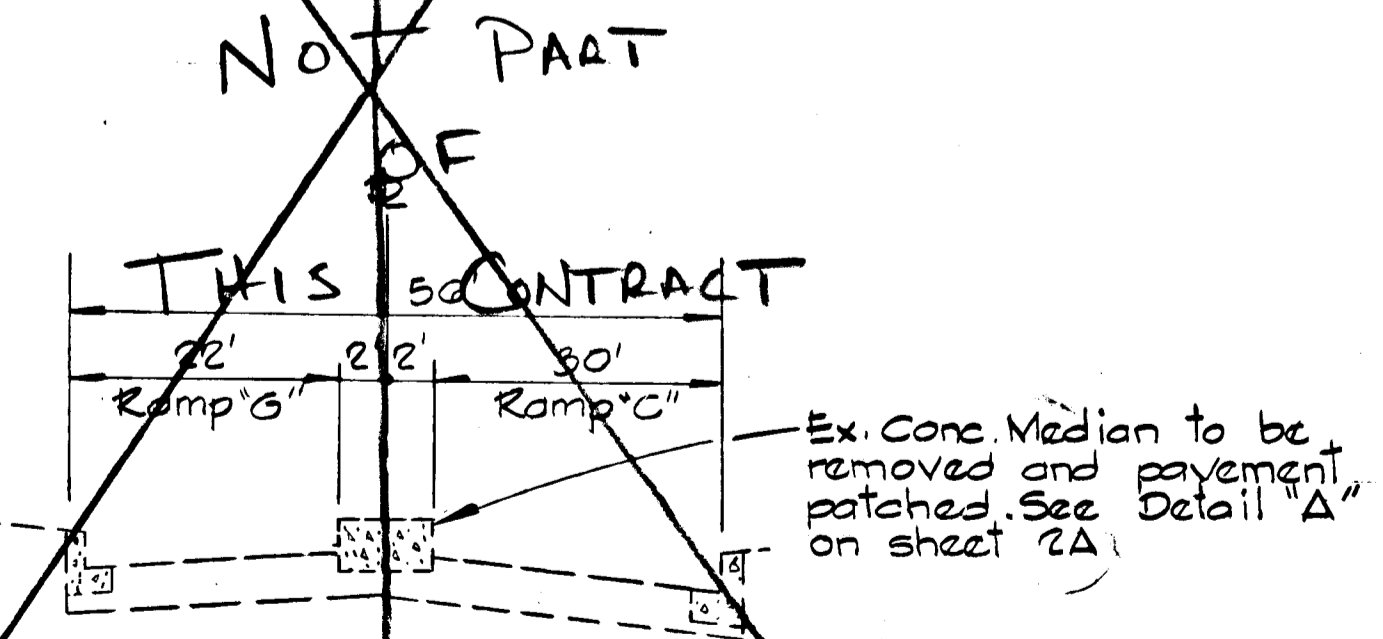
STA. 8+66.35 TO STA. 11+01.54  
**SUPERELEVATION DIAGRAM**  
**RAMP "B"**  
 No Scale



**PROFILE - RAMP "B"**  
 Scale: HORIZ.: 1" = 50'  
 VERT.: 1" = 5'



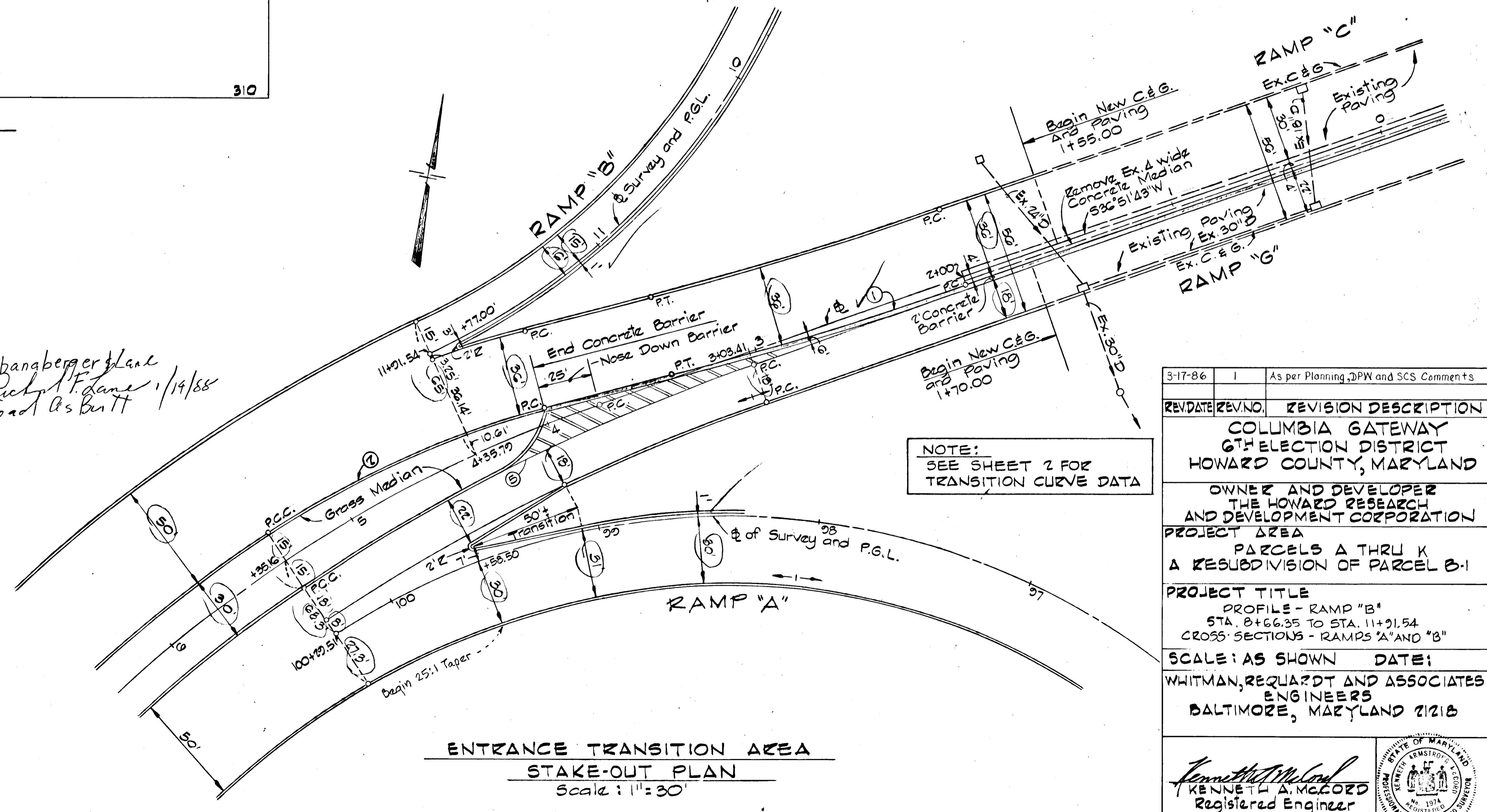
**PROPOSED CROSS SECTION**



**EXISTING CROSS SECTION**

**RAMPS "C" & "G"**  
 STA. 0+00 TO STA. 2+00  
 No Scale

Shanberger Lane  
 Rich F. Lane 1/19/88  
 Road As Built



**ENTRANCE TRANSITION AREA**  
**STAKE-OUT PLAN**  
 Scale: 1" = 30'

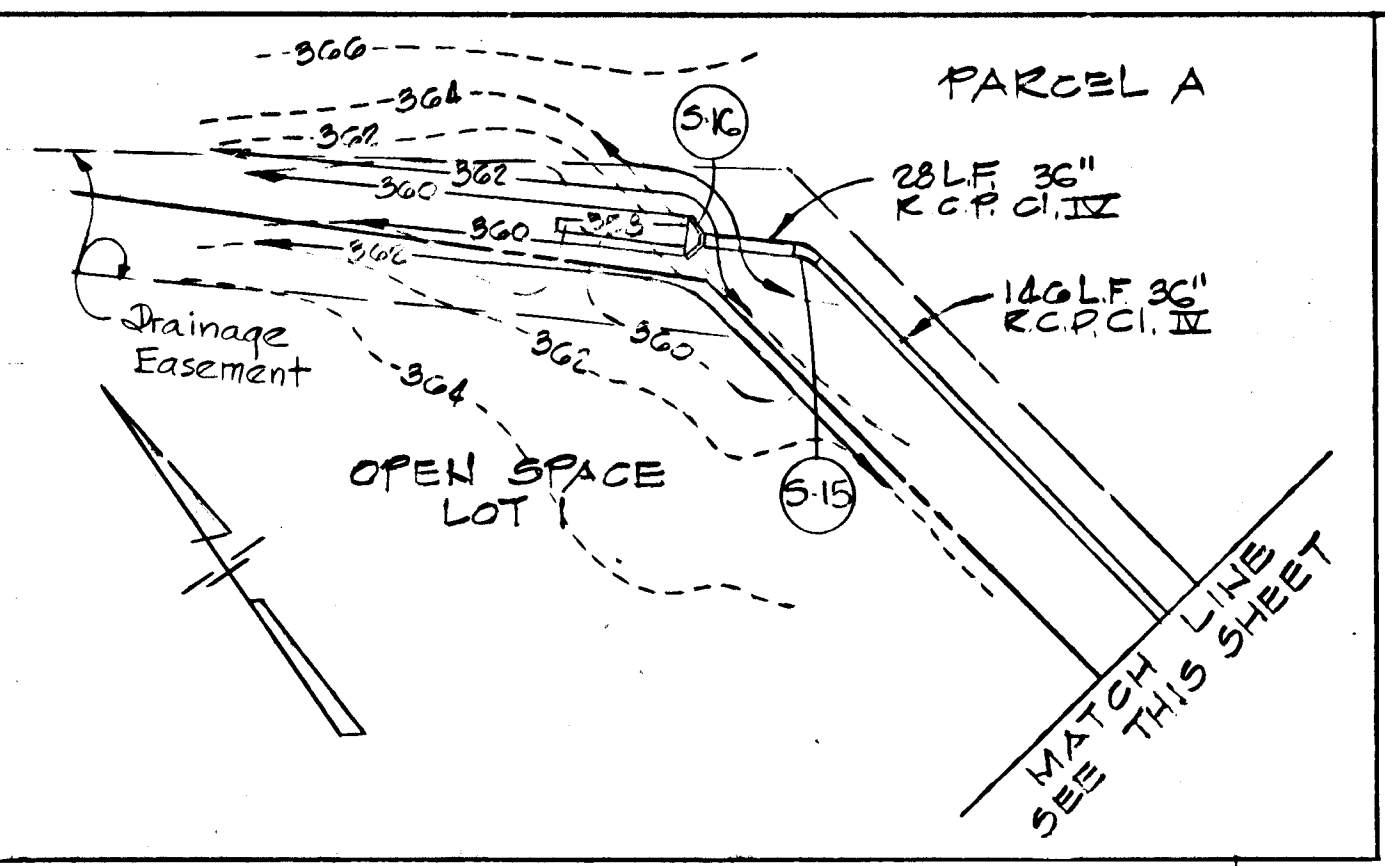
3-17-86	1	As per Planning, DPW and SCS Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
<b>COLUMBIA GATEWAY</b> <b>6TH ELECTION DISTRICT</b> <b>HOWARD COUNTY, MARYLAND</b>		
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1		
<b>PROJECT TITLE</b> PROFILE - RAMP "B" STA. 8+66.35 TO STA. 11+01.54 CROSS SECTIONS - RAMPS "A" AND "B"		
<b>SCALE: AS SHOWN</b> <b>DATE:</b>		
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218		
Kenneth A. McCord Registered Engineer NO. 1074		

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 3-26-86  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 JOHN W. MURPHY  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

**STORM DRAIN STRUCTURE SCHEDULE**

NO	TYPE	TO P.E.	IN IN	INVO.	LOCATION
I-1	A-5 Inlet (width)	327.54		322.40	Inlet 25.2' RT 51.141
I-2	A-5 Inlet (width)	327.54	318.24	318.04	Inlet 25.2' RT 51.141
I-3	A-5 Inlet (width)	324.09	320.14	318.04	Inlet 25.2' RT 51.141
I-4	A-5 Inlet (width)	324.09	324.09	325.02	Inlet 25.2' RT 51.141
I-5	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-6	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-7	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-8	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-9	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-10	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-11	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
I-12	A-5 Inlet (width)	324.09	325.02	325.02	Inlet 25.2' RT 51.141
M-1	Std Manhole	324.09	325.02	325.02	See Plan
M-2	Std Manhole	324.09	325.02	325.02	See Plan
M-3	Std Manhole	324.09	325.02	325.02	See Plan
M-4	Std Manhole	324.09	325.02	325.02	See Plan
M-5	Std Manhole	324.09	325.02	325.02	See Plan
M-6	Std Manhole	324.09	325.02	325.02	See Plan
M-7	Std Manhole	324.09	325.02	325.02	See Plan
M-8	Std Manhole	324.09	325.02	325.02	See Plan
M-9	Std Manhole	324.09	325.02	325.02	See Plan
M-10	Std Manhole	324.09	325.02	325.02	See Plan
M-11	Std Manhole	324.09	325.02	325.02	See Plan
M-12	Std Manhole	324.09	325.02	325.02	See Plan
M-13	Std Manhole	324.09	325.02	325.02	See Plan
M-14	Std Manhole	324.09	325.02	325.02	See Plan
M-15	Std Manhole	324.09	325.02	325.02	See Plan
M-16	Std Manhole	324.09	325.02	325.02	See Plan
M-17	Std Manhole	324.09	325.02	325.02	See Plan
M-18	Std Manhole	324.09	325.02	325.02	See Plan
M-19	Std Manhole	324.09	325.02	325.02	See Plan
M-20	Std Manhole	324.09	325.02	325.02	See Plan
M-21	Std Manhole	324.09	325.02	325.02	See Plan
M-22	Std Manhole	324.09	325.02	325.02	See Plan
M-23	Std Manhole	324.09	325.02	325.02	See Plan
M-24	Std Manhole	324.09	325.02	325.02	See Plan
M-25	Std Manhole	324.09	325.02	325.02	See Plan
M-26	Std Manhole	324.09	325.02	325.02	See Plan
M-27	Std Manhole	324.09	325.02	325.02	See Plan
M-28	Std Manhole	324.09	325.02	325.02	See Plan
M-29	Std Manhole	324.09	325.02	325.02	See Plan
M-30	Std Manhole	324.09	325.02	325.02	See Plan

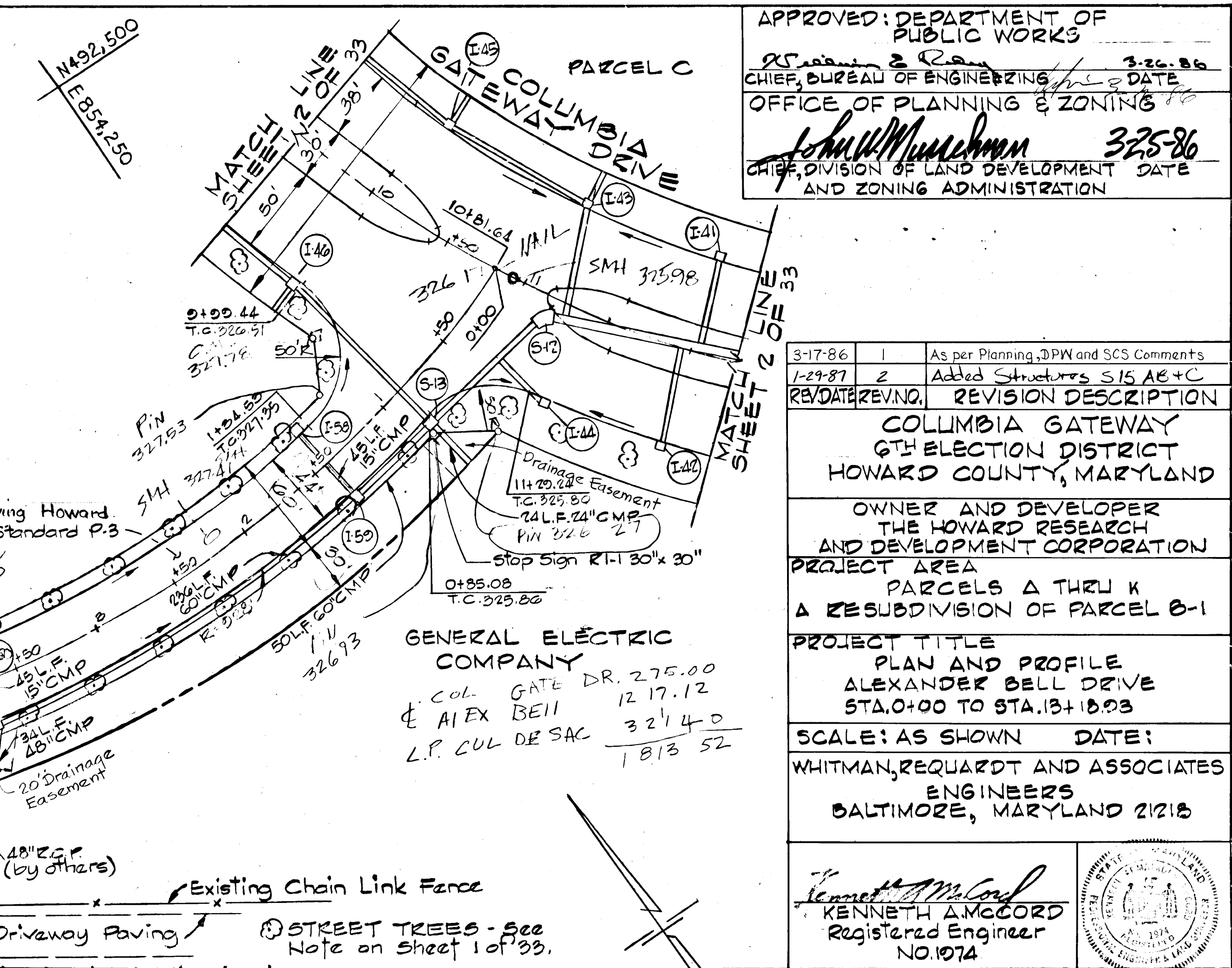
- Notes:
1. A-5 Inlets, Howard County Standard S.D.4.01.
  2. A-10 Inlets, Howard County Standard S.D.4.02.
  3. Type A Headwall, Howard County Standard S.D.5.11.
  4. Standard Manholes, Howard County Standard S.D.5.01.
  5. For Storm Drain Profiles, see Sheet 16.
  6. All Stubs to be up @ 0.50%.
  7. \* Denotes Inlet with Deflectors.



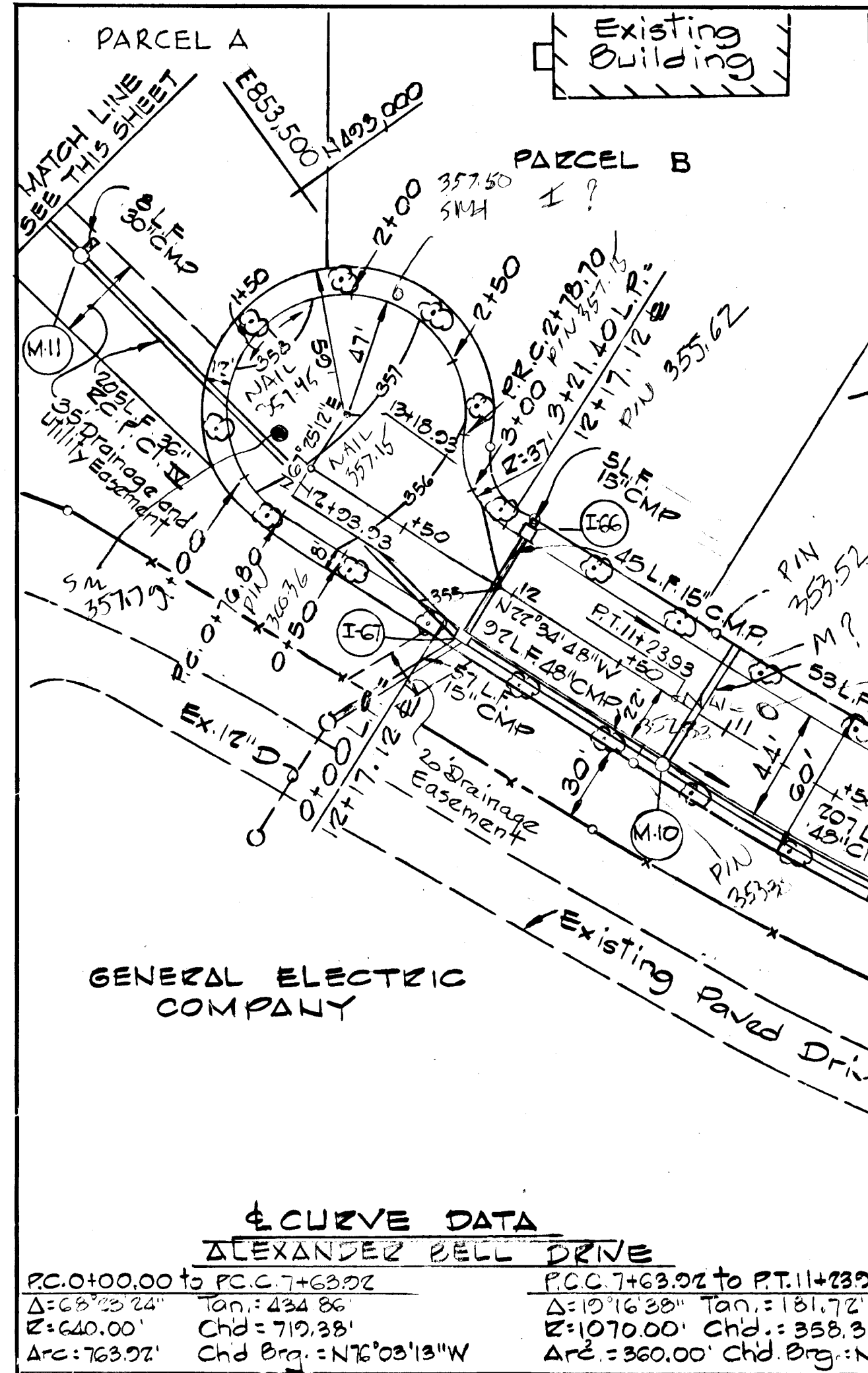
**STORM DRAIN STRUCTURE SCHEDULE**

NO	TYPE	TO P.E.	IN IN	INVO.	LOCATION
B-15A	Std Bend	336.88	326.25	327.78	Bend 29.63 Left Sta. 6+74.76
B-15B	Std Bend	341.94	334.64	334.45	Bend 25.57 Left Sta. 6+82.42
B-15C	Std Bend	344.67	336.94	336.88	Bend 24.36 Left Sta. 7+83.92

Note: DRIVEWAY ENTRIES TO BE CONSTRUCTED UNDER S.D. 2-36 S.D. 2-49 S.D. 2-129

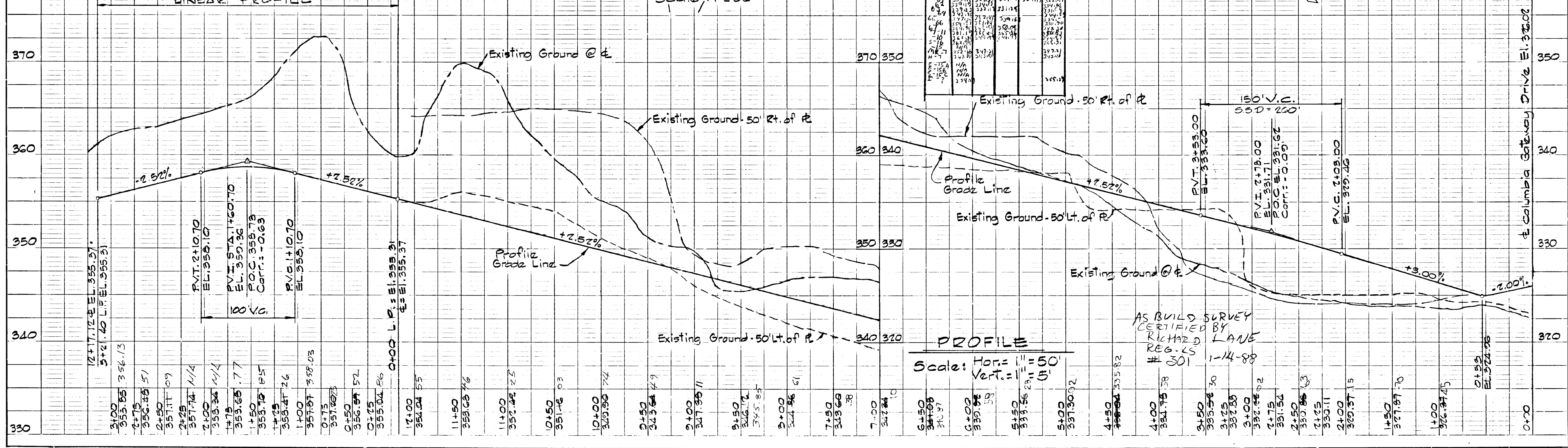


3-17-86 1 As per Planning, DPW and SCS Comments  
 1-29-87 2 Add Structures S15 AB+C  
 REV. DATE REV. NO. REVISION DESCRIPTION  
**COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND**  
 OWNER AND DEVELOPER: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION  
 PROJECT AREA: PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1  
 PROJECT TITLE: PLAN AND PROFILE ALEXANDER BELL DRIVE STA. 0+00 TO STA. 13+00.3  
 SCALE: AS SHOWN DATE: 3/7/86  
 WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218  
 KENNETH A. MCCORD Registered Engineer NO. 1074



**± CURVE DATA ALEXANDER BELL DRIVE**

PC	PT	PI	TA	EA	EA
PC: 0+00.00	PT: 0+63.02	PI: 0+31.51	TA: 181.72'	EA: 181.72'	EA: 181.72'
PC: 7+63.02	PT: 11+23.93	PI: 9+43.47	TA: 181.72'	EA: 181.72'	EA: 181.72'
PC: 11+23.93	PT: 13+00.31	PI: 12+12.12	TA: 181.72'	EA: 181.72'	EA: 181.72'



1158

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 JOHN W. MURPHY 325-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

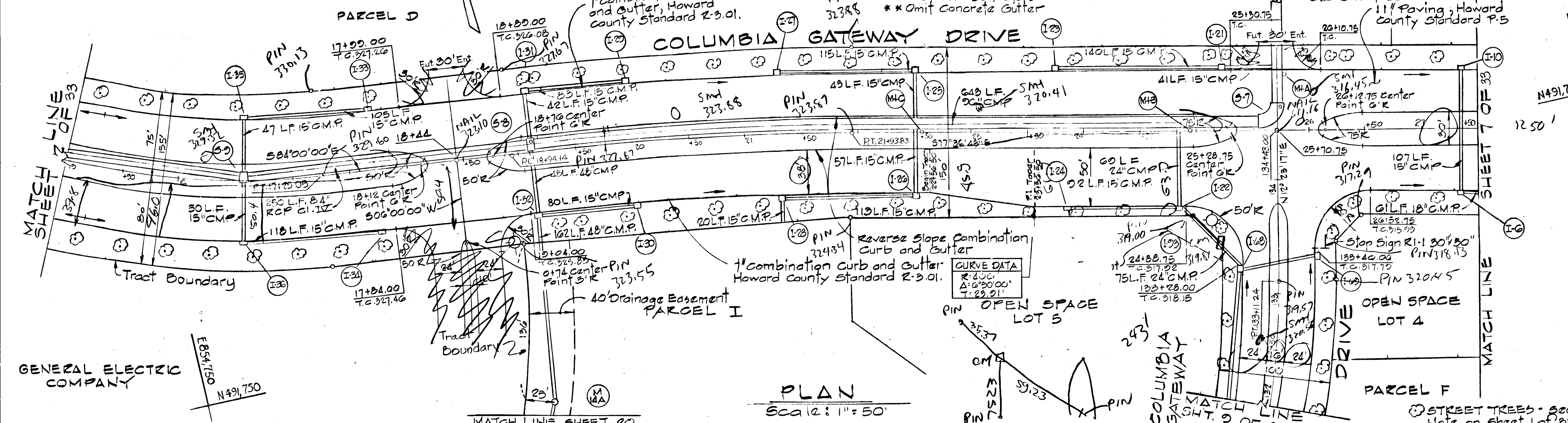
- Notes:
1. A-5 Inlets - Howard County Standard S.D. 4.01.
  2. For Bend Structure details, see Sheet 23.
  3. For Storm Drain Profiles, see Sheets 17 and 18.
  4. All Stubs to be up @ 0.50%.
  5. "K" Inlet - Howard County Standard S.D. 4.12.
  6. M's "A", "B", and "C" shall be 36" C.M.P. Stacks with Std. Frame and Cover. Shop Drawings required showing necessary saddles, etc.
  7. M4" - Locate opp. & Sta. 22+50; Top Elev. 322.22.
  8. M4" - Locate opp. & Sta. 24+00; Top Elev. 319.00.
  9. M4" - Locate opp. & Sta. 27+50; Top Elev. 316.20.
  10. Standard Manhole - Howard County Standard G.5.09

NO.	TYPE	TOP ELEV.	IN	IN	IN	OUT	LOCATION
1	A-5 Inlet	314.20	309.71	309.46	309.21	308.96	Sta. 15+00 to Sta. 15+25
2	A-5 Inlet	314.20	310.76	310.51	310.26	310.01	Sta. 15+25 to Sta. 15+50
3	A-5 Inlet	319.65	315.20	314.95	314.70	314.45	Sta. 15+50 to Sta. 16+00
4	A-5 Inlet	319.27	314.82	314.57	314.32	314.07	Sta. 16+00 to Sta. 16+25
5	A-5 Inlet	321.30	316.85	316.60	316.35	316.10	Sta. 16+25 to Sta. 16+50
6	A-5 Inlet	321.30	314.44	314.19	313.94	313.69	Sta. 16+50 to Sta. 17+00
7	Bend Structure	322.27	318.12	317.87	317.62	317.37	Sta. 17+00 to Sta. 17+25
8	Bend Structure	322.27	318.02	317.77	317.52	317.27	Sta. 17+25 to Sta. 17+50
9	Bend Structure	322.27	318.02	317.77	317.52	317.27	Sta. 17+50 to Sta. 18+00
10	A-5 Inlet	324.61	319.82	319.57	319.32	319.07	Sta. 18+00 to Sta. 18+25
11	A-5 Inlet	324.61	320.50	320.25	320.00	319.75	Sta. 18+25 to Sta. 18+50
12	A-5 Inlet	325.81	320.07	319.82	319.57	319.32	Sta. 18+50 to Sta. 19+00

NO.	TYPE	TOP ELEV.	IN	IN	IN	OUT	LOCATION
13	A-5 Inlet	325.80	321.28	321.03	320.78	320.53	Sta. 19+00 to Sta. 19+25
14	A-5 Inlet	321.62	317.17	316.92	316.67	316.42	Sta. 19+25 to Sta. 19+50
15	A-5 Inlet	321.62	317.02	316.77	316.52	316.27	Sta. 19+50 to Sta. 20+00
16	A-5 Inlet	322.10	317.55	317.30	317.05	316.80	Sta. 20+00 to Sta. 20+25
17	A-5 Inlet	322.10	317.40	317.15	316.90	316.65	Sta. 20+25 to Sta. 20+50
18	Bend Structure	321.05	316.92	316.67	316.42	316.17	Sta. 20+50 to Sta. 21+00
19	Bend Structure	321.10	317.00	316.75	316.50	316.25	Sta. 21+00 to Sta. 21+25
20	Bend Structure	321.10	317.00	316.75	316.50	316.25	Sta. 21+25 to Sta. 21+50
21	A-5 Inlet	321.20	317.20	316.95	316.70	316.45	Sta. 21+50 to Sta. 22+00
22	A-5 Inlet	321.20	317.10	316.85	316.60	316.35	Sta. 22+00 to Sta. 22+25
23	A-5 Inlet	324.01	320.50	320.25	320.00	319.75	Sta. 22+25 to Sta. 22+50
24	A-5 Inlet	325.81	320.07	319.82	319.57	319.32	Sta. 22+50 to Sta. 23+00

4 CURVE DATA  
 COLUMBIA GATEWAY DRIVE  
 INT. 10+81.64 TO PT. 17+25.05  
 Δ = 57°36'03" Tan = 351.85  
 R = 640.00' Chd = 216.65'  
 Arc = 648.41' Chd Brg = 55°11'50"E

RC 18+24.14 TO PT. 21+93.83  
 Δ = 06°23'17" Tan = 150.00'  
 R = 2687.97' Chd = 209.53'  
 Arc = 209.63' Chd Brg = 58°04'21"E



REVISION NO.	DATE	REVISION DESCRIPTION
11-6-87	4	Delete curb cuts at Sta. 18+44 + 25+70.75
0-10-86	2	Added right turn lane, revised I-22, I-24, I-29. Added M-14A
3-17-86	1	As per Planning, DPW and SCS Comments
1-29-87	3	Eliminate I-93

REVISION NO. 11-6-87 4  
 0-10-86 2  
 3-17-86 1  
 1-29-87 3

REVISION DESCRIPTION  
 Delete curb cuts at Sta. 18+44 + 25+70.75  
 Added right turn lane, revised I-22, I-24, I-29. Added M-14A  
 As per Planning, DPW and SCS Comments  
 Eliminate I-93

COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

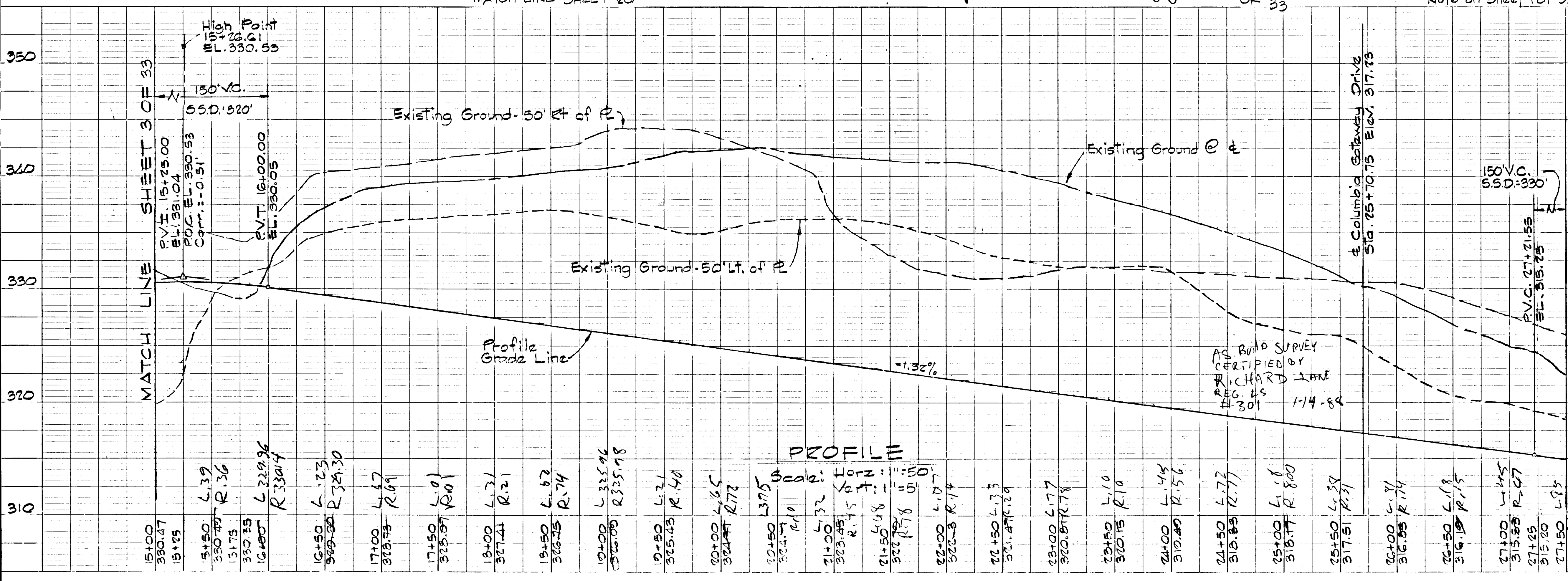
OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL C-1

PROJECT TITLE  
 PLAN AND PROFILE  
 COLUMBIA GATEWAY DRIVE  
 STA. 15+00 TO STA. 27+50

SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 Registered Engineer  
 NO. 1074

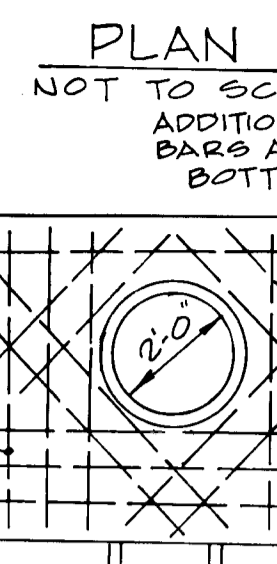


STATION	TOP	IN	IN	IN	OUT	ELEVATION
15+00	314.25	314.25	314.25	314.25	314.25	314.25
16+00	319.65	319.65	319.65	319.65	319.65	319.65
17+00	321.30	321.30	321.30	321.30	321.30	321.30
18+00	324.61	324.61	324.61	324.61	324.61	324.61
19+00	325.81	325.81	325.81	325.81	325.81	325.81
20+00	321.05	321.05	321.05	321.05	321.05	321.05
21+00	321.10	321.10	321.10	321.10	321.10	321.10
22+00	324.01	324.01	324.01	324.01	324.01	324.01
23+00	325.81	325.81	325.81	325.81	325.81	325.81
24+00	321.20	321.20	321.20	321.20	321.20	321.20
25+00	321.20	321.20	321.20	321.20	321.20	321.20
26+00	324.01	324.01	324.01	324.01	324.01	324.01
27+00	325.81	325.81	325.81	325.81	325.81	325.81
28+00	321.62	321.62	321.62	321.62	321.62	321.62
29+00	321.62	321.62	321.62	321.62	321.62	321.62
30+00	322.10	322.10	322.10	322.10	322.10	322.10
31+00	322.10	322.10	322.10	322.10	322.10	322.10

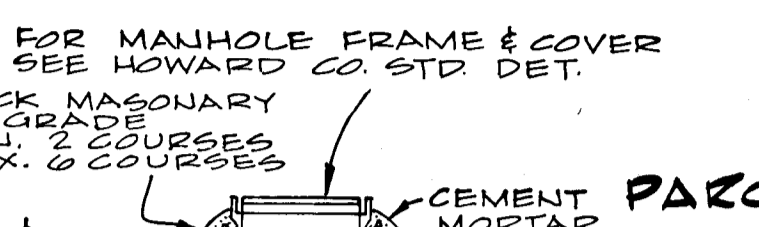
PLAN  
 NOTE BOOK  
 NO.

PROFILE  
 NOTE BOOK  
 NO.

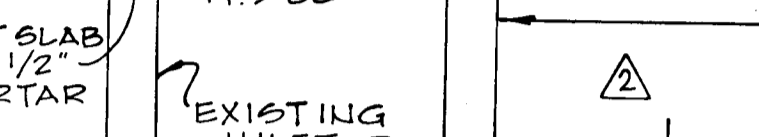
**CURVE DATA**  
**COLUMBIA GATEWAY DRIVE**  
 PC: 30+81.00 to PT: 32+43.15  
 $\Delta = 70^{\circ}29'13''$  Tan.: 494.50'  
 $R = 700.00'$  Chd.: 807.87'  
 Arc: 861.16' Chd. Brg.:  $S42^{\circ}22'07'' E$



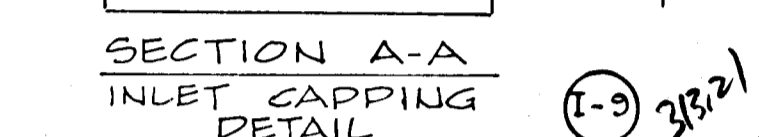
NOTE: SLAB DIMENSIONS TO CONFORM TO THOSE OF THE EXISTING INLET



FOR MANHOLE FRAME & COVER SEE HOWARD CO STD DET.



SET SLAB ON 1/2" MORTAR



NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING & PLANNING  
 OFFICE OF PLANNING & ZONING  
 DATE: 3-2-86  
 32586  
 CHIEF DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

8/18/88 BY G.W.S. ADDED ENTRANCE/EXIT AT EXISTING MEDIAN ON COLUMBIA GATEWAY DRIVE BUILDING AT PARCEL 22. ADD DECELERATION LANES, ADD INLET CAPPING DETAIL FOR EXISTING INLETS I-2, I-3, I-4. ADD INLETS I-2, I-3, I-4 ALONG COLUMBIA GATEWAY DRIVE. ADD TYPICAL ROAD WIDENING SECTION.

3-17-86 1 As per Planning, DPW and SCS Comments

REVISION NO. REVISION DESCRIPTION  
 COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 PLAN AND PROFILE  
 COLUMBIA GATEWAY DRIVE  
 STA. 27+50 TO STA. 40+00

SCALE: AS SHOWN DATE:  
 WHITMAN, REQUAZOT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 KENNETH A. MCCORD  
 Registered Engineer  
 NO. 1974



**STORM DRAIN STRUCTURE SCHEDULE**

NO.	TYPE	TOP ELEV.	INVERT	LOCATION
I-1	Std. A-5 Inlet (width 2.5)	298.42	288.53	Inlet 33.92' RT. STA. 34+40
I-2	Std. A-5 Inlet (width 2.5)	297.25	291.85	Inlet 33.92' RT. STA. 34+40
I-3	Std. A-5 Inlet (width 2.5)	302.93	297.25	Inlet 33.92' RT. STA. 34+40
I-4	Std. A-5 Inlet (width 2.5)	307.94	302.45	Inlet 33.92' RT. STA. 34+40
I-5	Std. A-5 Inlet (width 2.5)	311.98	306.58	Inlet 33.92' RT. STA. 34+40
I-6	Std. A-5 Inlet (width 2.5)	307.74	298.51	Inlet 33.92' RT. STA. 34+40
I-7	Std. A-5 Inlet (width 2.5)	307.97	307.20	Inlet 33.92' RT. STA. 34+40
I-8	Std. A-5 Inlet (width 2.5)	311.93	307.20	Inlet 33.92' RT. STA. 34+40
I-9	Std. A-5 Inlet (width 2.5)	289.56	279.22	Inlet 33.92' RT. STA. 34+40
I-10	Std. A-5 Inlet (width 2.5)	289.26	285.06	Inlet 33.92' RT. STA. 34+40
I-11	Std. A-5 Inlet (width 2.5)	289.27	285.01	Inlet 33.92' RT. STA. 34+40
I-12	Std. A-5 Inlet (width 2.5)	284.65	280.25	Inlet 33.92' RT. STA. 34+40
I-13	Std. A-5 Inlet (width 2.5)	313.93	307.62	Inlet 33.92' RT. STA. 34+40
M-1	Std. Manhole	290.09	285.64	Inlet 33.92' RT. STA. 34+40
S-1	Type "A" Headwall	290.09	285.64	Inlet 33.92' RT. STA. 34+40

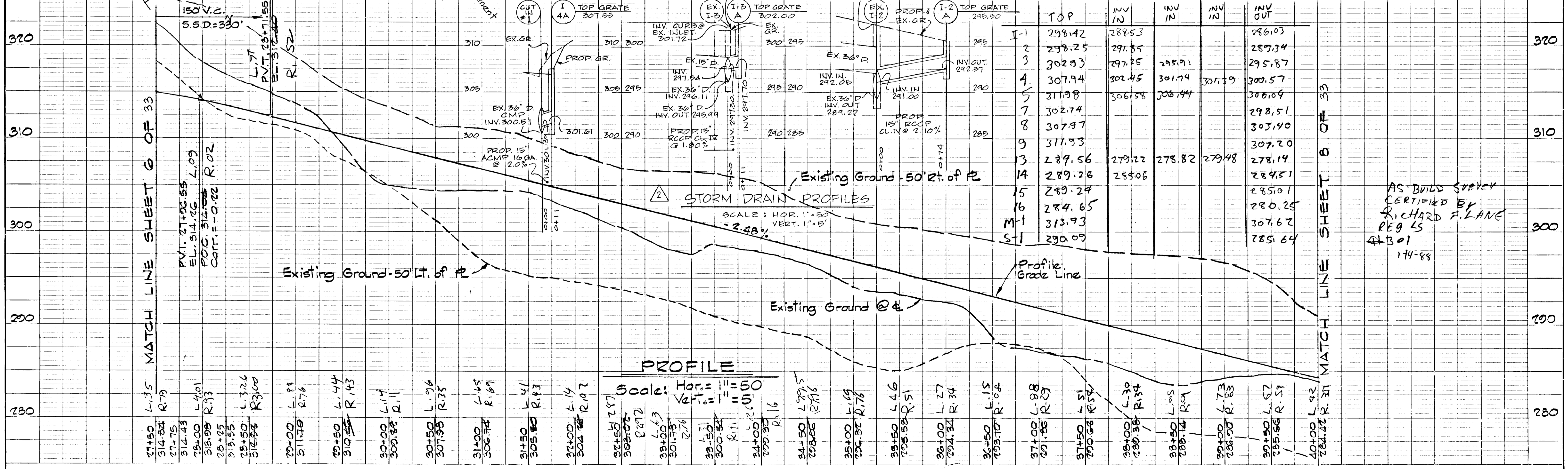
- Notes:  
 1. A-5 Inlets, Howard County Standard S.D. 4.01.  
 2. Standard Manholes, Howard County Standard S.D. 5.01.  
 3. Type A Headwall, Howard County Standard S.D. 5.11.  
 4. For Storm Drain Profiles see Sheets 19 and 20.  
 5. All stubs to be up @ 0.50%.

**TRANSITION CURVE DATA**

NO.	RAD.	Δ	ΔE	TAN	CHORD	CHD. BRG.
1	754.00'	142°21'42"	63.67'	32.00'	63.50'	S70°25'55" E
2	418.00'	142°21'42"	104.77'	52.62'	104.50'	S70°25'57" E
3	442.00'	07°00'45"	54.01'	27.08'	54.06'	N74°06'24" W
4	442.00'	07°00'45"	60.39'	30.78'	60.40'	N74°06'20" W
5	442.00'	07°00'45"	60.49'	30.78'	60.39'	S81°07'04" E
6	442.00'	07°00'45"	54.10'	27.08'	54.06'	S81°07'07" E
7	418.00'	142°21'42"	104.77'	52.62'	104.50'	N84°27'24" W
8	754.00'	142°21'42"	63.67'	32.00'	63.50'	N84°27'34" W

\* Inlets with deflectors + INLET TO BE CAPPED - SEE DETAIL THIS SHEET  
 I-2A Std. A-5 (width 3.5') 295.90 - 292.57' INLET 33.92' RT. STA. 34+40  
 I-3A Std. A-5 (width 3.5') 302.00 - 297.70' INLET 45.92' RT. STA. 34+40  
 I-4A Std. A-5 (width 3.5') 307.95 - 301.01' INLET 45.92' RT. STA. 34+40

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



**PROFILE**  
 Scale: Hor. 1" = 50' Vert. 1" = 5'

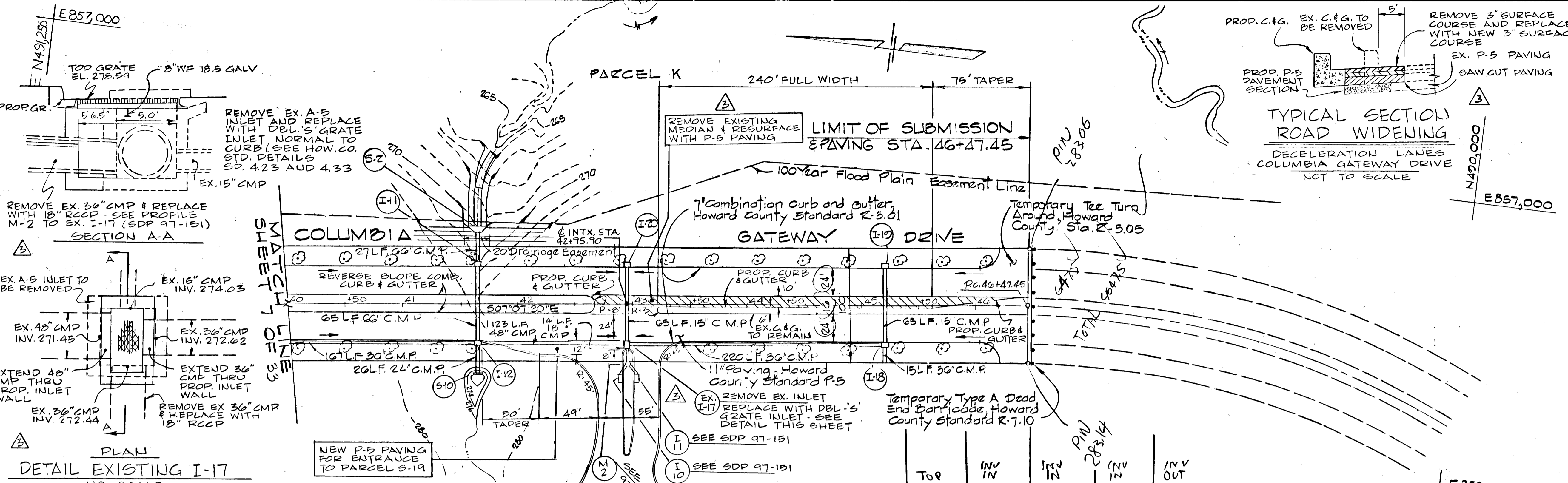
AS-BUILT SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG. LS  
 174-88

DATE	BY	REVISION

DATE	BY	REVISION

DORSEY RUN

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING & ZONING  
 OFFICE OF PLANNING & ZONING  
 DATE: 3-24-86  
 JOHN W. MURPHYMAN 5-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



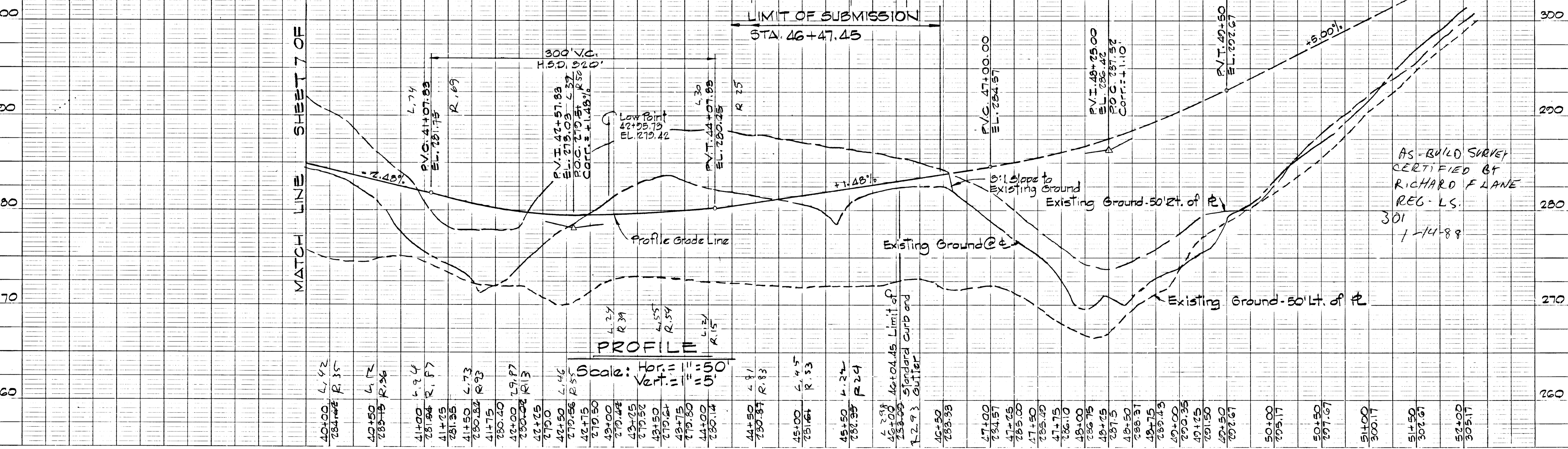
STORM DRAIN STRUCTURE SCHEDULE

NO.	TYPE	TOP EL.	IN. INV.	OUT. INV.	LOCATION
I-11	Std. A-10 Inlet (width 2.5)	280.55	266.74	266.54	inlet 33.92' Lt. & Sta. 41+68
I-12	Std. A-10 Inlet (width 4.0)	280.55	268.63	267.13	inlet 34.67' Rt. & Sta. 41+69
I-17	DBL. 5' GRATE INLET	280.51	274.03	271.45	inlet 34.67' Rt. & Sta. 42+05.90
I-18	Std. A-5 Inlet (width 3.0)	280.08	275.25	273.03	inlet 34.17' Rt. & Sta. 45+20
I-19	Std. A-5 Inlet (width 2.5)	280.23	278.06	278.06	inlet 33.92' Lt. & Sta. 45+20
I-20	Std. A-5 Inlet (width 2.5)	279.54	275.80	275.80	inlet 33.92' Lt. & Sta. 42+95.79
S-2	Type "A" Headwall	273.40	266.40	266.37	inlet 33.92' Lt. & Sta. 41+68
S-10	Type "C" Endwall	274.64	271.16	-	inlet 33.92' Lt. & Sta. 41+68

- Notes:
- A-5 Inlets, Howard County Standard S.D. 4.01.
  - A-10 Inlets, Howard County Standard S.D. 4.02.
  - Type A Headwall, Howard County Standard S.D. 5.11.
  - Type C Endwall, Howard County Standard S.D. 5.21.
  - For Storm Drain Profiles see sheet 20.
  - All Stubs to be up 0.50%.

PLAN Scale: 1"=50'

NO.	TOP	IN. INV.	OUT. INV.
I-11	280.41	266.35	266.26
I-12	280.49	270.64	266.94
I-17	280.35	272.39	272.39
I-18	281.92	276.31	274.61
I-19	281.86	-	277.45
I-20	279.28	-	274.85
S-2	273.52	-	266.37
S-10	275.26	-	271.76



AS-BUILD SURVEY  
 CERTIFIED BY  
 RICHARD FLANE  
 REG. L.S.  
 1-14-88

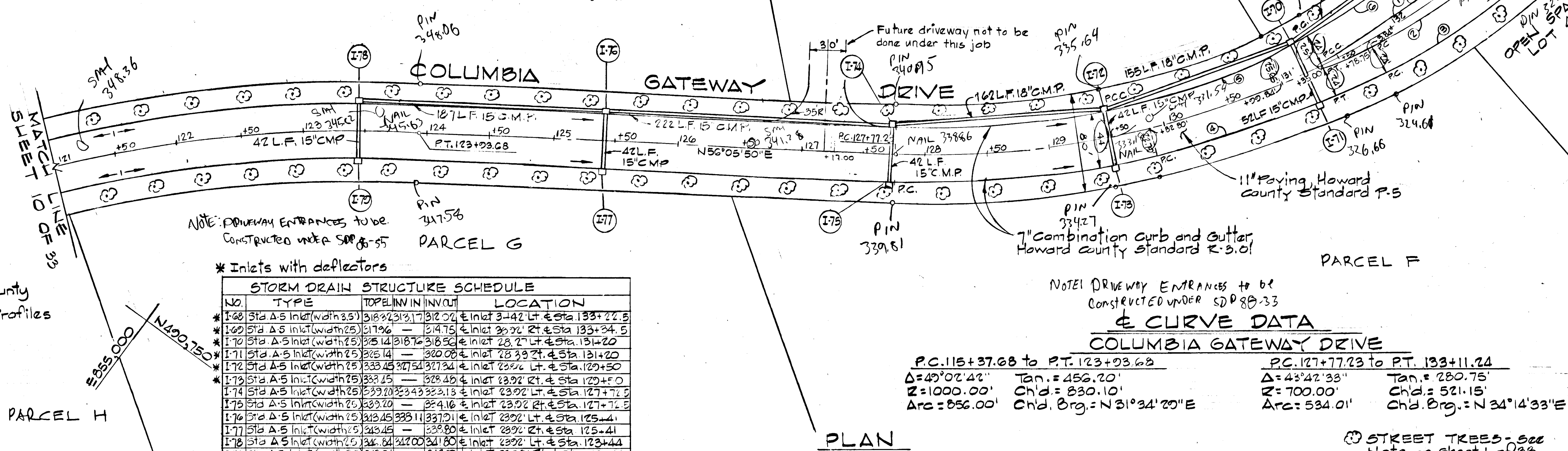
1158



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING & PLANNING  
 OFFICE OF PLANNING & ZONING  
 DATE: 3-22-86  
 325-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE AND ZONING ADMINISTRATION

NO.	RAD.	Δ	ARC	TAN	CHORD	CHD.	BEG.	END.
1	523.05	14°25'32"	131.60	66.07	131.34	519°36'03"W		
2	533.55	14°25'32"	134.33	67.52	133.06	N10°36'03"E		
3	557.55	14°25'32"	140.37	70.56	140.00	N10°36'03"E		
4	506.90	15°08'32"	157.15	79.34	157.20	N34°23'05"E		
5	545.39	15°08'32"	144.03	72.87	144.51	S34°23'05"W		
6	492.05	14°25'32"	125.65	63.16	125.31	S19°36'03"W		

NOTE: DRIVEWAY ENTRANCES TO BE CONSTRUCTED UNDER COP 86-231



NOTE: DRIVEWAY ENTRANCES TO BE CONSTRUCTED UNDER SDP 86-35

NOTE: DRIVEWAY ENTRANCES TO BE CONSTRUCTED UNDER SDP 86-33

\* Inlets with deflectors

NO.	TYPE	TOP ELEV.	INVERT	LOCATION
68	Std. A-5 Inlet (width 25)	318.16	312.86	Inlet 3+42 Lt. & Sta. 133+22.5
69	Std. A-5 Inlet (width 25)	317.77	314.75	Inlet 3+92 Rt. & Sta. 133+34.5
70	Std. A-5 Inlet (width 25)	324.92	320.08	Inlet 28+27 Lt. & Sta. 131+20
71	Std. A-5 Inlet (width 25)	325.14	320.08	Inlet 28+39 Rt. & Sta. 131+20
72	Std. A-5 Inlet (width 25)	333.45	327.24	Inlet 23+02 Lt. & Sta. 129+50
73	Std. A-5 Inlet (width 25)	333.14	327.24	Inlet 23+02 Rt. & Sta. 129+50
74	Std. A-5 Inlet (width 25)	337.42	332.13	Inlet 23+02 Lt. & Sta. 127+72.5
75	Std. A-5 Inlet (width 25)	339.32	333.16	Inlet 23+02 Rt. & Sta. 127+72.5
76	Std. A-5 Inlet (width 25)	343.32	338.15	Inlet 23+02 Lt. & Sta. 125+41
77	Std. A-5 Inlet (width 25)	343.23	338.16	Inlet 23+02 Rt. & Sta. 125+41
78	Std. A-5 Inlet (width 25)	346.70	342.06	Inlet 23+02 Lt. & Sta. 123+44
79	Std. A-5 Inlet (width 25)	346.68	342.06	Inlet 23+02 Rt. & Sta. 123+44

Notes:  
 1. A-5 Inlets, Howard County Standard S.D. 4.01.  
 2. For Storm Drain Profiles see Sheet 21

CURVE DATA

PC	PT	Δ	Tan	R	Chd.	Chd. Org.
115+37.68	123+03.68	49°02'42"	456.20'	700.00'	830.10'	N 31°34'20"E
127+77.23	133+11.24	43°42'33"	280.75'	700.00'	521.15'	N 34°14'33"E

REV. DATE	REV. NO.	REVISION DESCRIPTION
3-17-86	1	As per Planning, DPW and SCS Comments
6-10-86	2	Revised I-68, I-69, I-70, I-71, I-74 and I-75

COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

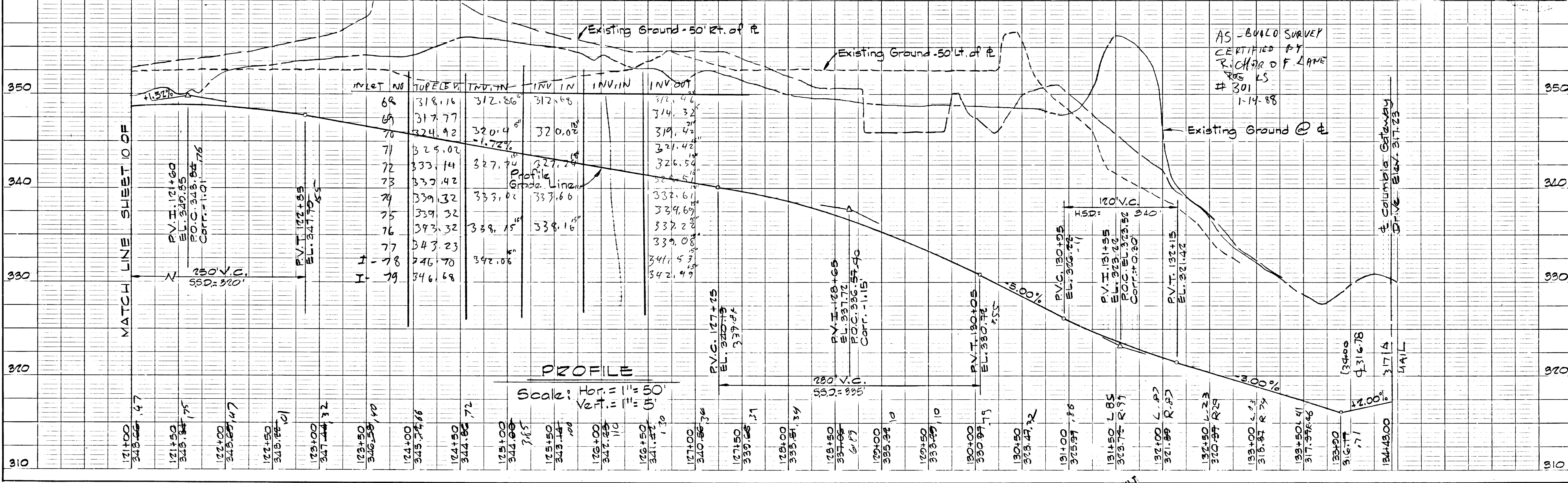
OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 PLAN AND PROFILE  
 COLUMBIA GATEWAY DRIVE  
 STA. 121+00 TO STA. 134+43

SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 Registered Engineer  
 NO. 1974



AS-BUILD SURVEY  
 CERTIFIED BY  
 RICHARD F. LAKE  
 REG. L.S.  
 #301  
 1-14-88

1158

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 DATE: 3-25-86  
 5-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE AND ZONING ADMINISTRATION

REV. DATE	REV. NO.	REVISION DESCRIPTION
6-10-86	2	Revised I-81, I-82, I-86, I-87, I-88, I-91, I-92 changed 2 Pipe Sizes
3-17-86	1	As per Planning, DPW and SCS Comments
1-29-87	3	Revised I-81 to an A-10

**COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND**

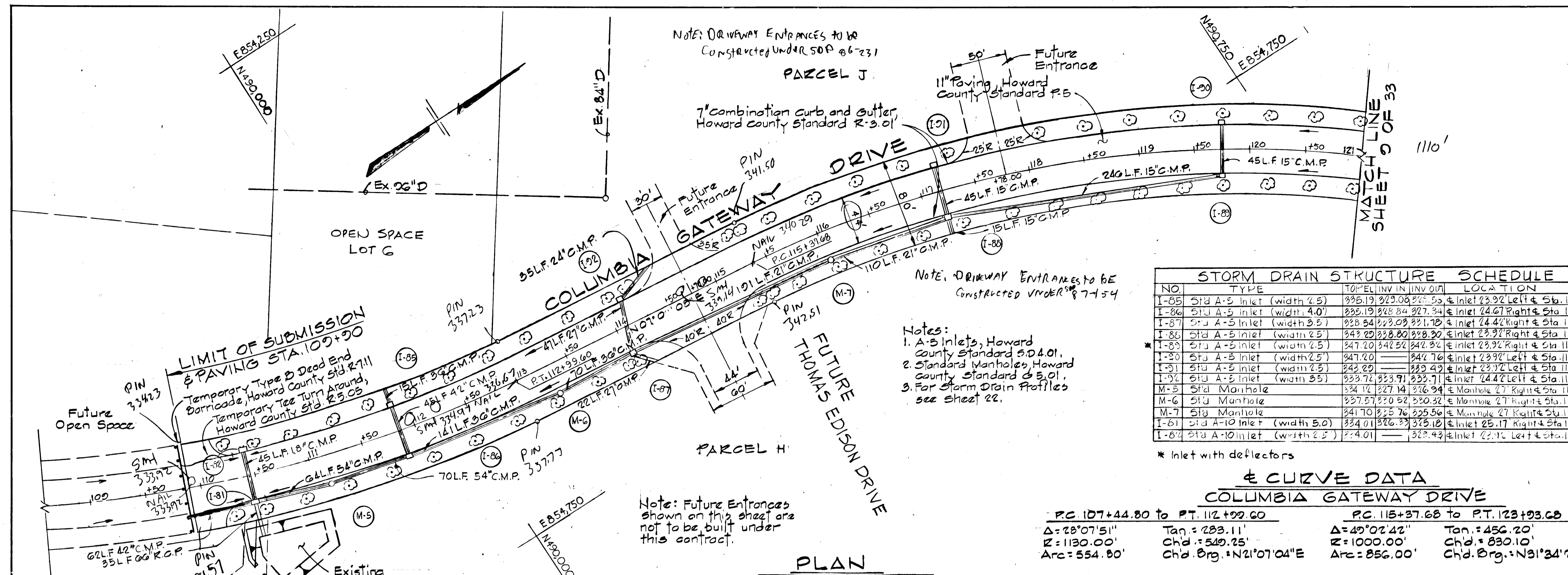
**OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION**

**PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1**

**PROJECT TITLE  
 PLAN AND PROFILE  
 COLUMBIA GATEWAY DRIVE  
 STA. 111+25 TO STA. 121+00**

**SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218**

**Kenneth A. McCord  
 Registered Engineer  
 NO. 1074**



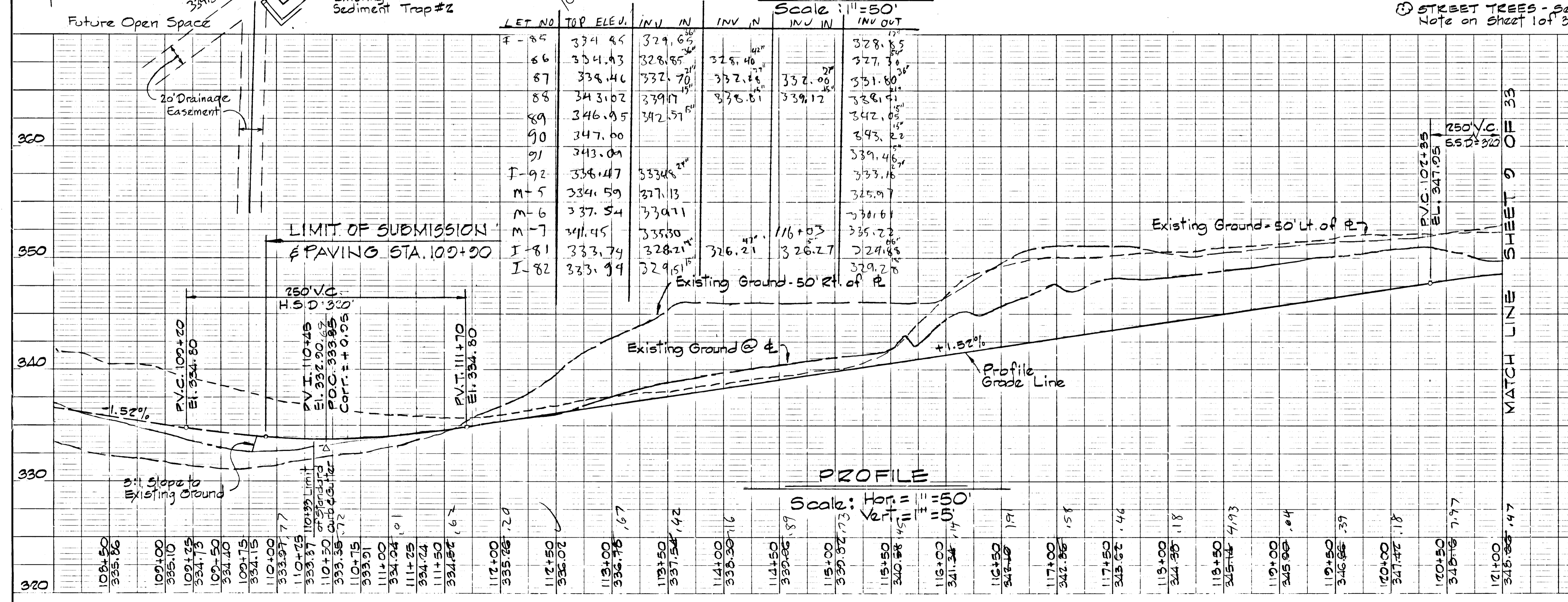
NO.	TYPE	TOP ELEV. IN	INV. IN	INV. OUT	LOCATION
I-85	51J A-5 Inlet (width 2.5)	335.19	323.00	322.50	4 Inlet 23.92' Left of Sta. 111+85
I-86	51J A-5 Inlet (width 4.0)	335.19	328.84	327.34	4 Inlet 24.07' Right of Sta. 111+85
I-87	51J A-5 Inlet (width 2.5)	335.54	323.00	321.70	4 Inlet 24.42' Right of Sta. 114+05
I-88	51J A-5 Inlet (width 2.5)	343.29	328.80	328.30	4 Inlet 23.92' Right of Sta. 117+12
I-89	51J A-5 Inlet (width 2.5)	347.20	342.52	342.34	4 Inlet 23.92' Right of Sta. 119+12
I-90	51J A-5 Inlet (width 2.5)	347.20	342.52	342.76	4 Inlet 23.92' Left of Sta. 119+12
I-91	51J A-5 Inlet (width 2.5)	343.29	323.00	322.42	4 Inlet 23.92' Left of Sta. 117+12
I-92	51J A-5 Inlet (width 2.5)	333.72	323.91	323.71	4 Inlet 24.42' Left of Sta. 114+17
M-5	51J Manhole	334.74	327.14	326.94	4 Manhole 27' Right of Sta. 111+14
M-6	51J Manhole	337.87	330.52	330.32	4 Manhole 27' Right of Sta. 113+48
M-7	51J Manhole	341.70	335.76	335.56	4 Manhole 27' Right of Sta. 117+50
I-81	51J A-10 Inlet (width 5.0)	334.01	326.33	325.10	4 Inlet 25.17' Right of Sta. 110+45
I-82	51J A-10 Inlet (width 2.5)	324.01	322.43	322.43	4 Inlet 22.12' Left of Sta. 110+45

PC: 107+44.80 to PT. 112+92.60	PC: 115+37.68 to PT. 123+93.68
Δ = 28°07'51"	Δ = 49°02'42"
R = 1130.00'	R = 1000.00'
Arc = 554.80'	Arc = 856.00'
Tan = 283.11'	Tan = 456.20'
Chd. = 540.25'	Chd. = 830.10'
Chd. Org. = N21°07'04"E	Chd. Org. = N31°34'20"E

**PLAN**

LET NO.	TOP ELEV.	INV. IN	INV. N	INV. IN	INV. OUT
F-85	334.45	329.65			328.85
86	334.93	328.85	328.40		327.30
87	334.46	332.70	332.46	332.00	331.60
88	343.02	339.17	336.81	339.12	328.41
89	346.95	342.57			342.05
90	347.00				343.22
91	343.04				339.46
F-92	338.47	333.48			333.16
M-5	334.59	327.13			325.97
M-6	337.84	330.11			330.61
M-7	341.45	335.30			335.22
I-81	333.74	328.21	326.21	326.27	324.85
I-82	333.94	329.61			329.28

**PROFILE**



AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG. L.S.  
 #30  
 1-14-86

DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_  
 CHECKED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_  
 CHECKED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

158

### PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

**Site Preparation:** Loosen 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 of 0-10-10 fertilizer (90 lbs/1000 sq ft) and 600 lbs per acre of 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 of 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).
- Acceptable - Apply 2 tons per acre of dolomitic limestone (90 lbs/1000 sq ft) and 1000 lbs per acre of 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 50 lbs per acre of (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru August 31, seed with 60 lbs per acre of the Kentucky 31 Tall Fescue and 2 lbs per acre (0.05 lbs/1000 sq ft) of weeping lovegrass. During the period of October 16 thru February 28, protect site by Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible via the aerator. Option (2) Use seed with 60 lbs of Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

**Mulching -** Apply 1/4 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 2/8 gal sprayer (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 ft or higher, use 3/8 gallon per acre (8 gal/1000 sq ft) for anchoring.

**Maintenance -** Inspect all seeded areas and make needed repairs, replacements and reseedings.

### TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.

**Site Preparation:** Loosen upper three inches of soil by raking, discing or other acceptable means before seeding.

**Soil Amendments:** Apply 600 lbs per acre of 10-10-10 fertilizer (14 lbs/1000 sq ft).

**Seeding -** For periods March 1 thru April 30 and from August 15 thru November 15, seed with 25 bushel per acre of annual ryegrass (0.2 lbs/1000 sq ft). For the period May 1 thru August 31, seed with 3 lbs per acre of weeping lovegrass (0.07 lbs/1000 sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use seed.

**Mulching -** Apply 1/4 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 2/8 gal sprayer (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes, 8 ft or higher, use 3/8 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

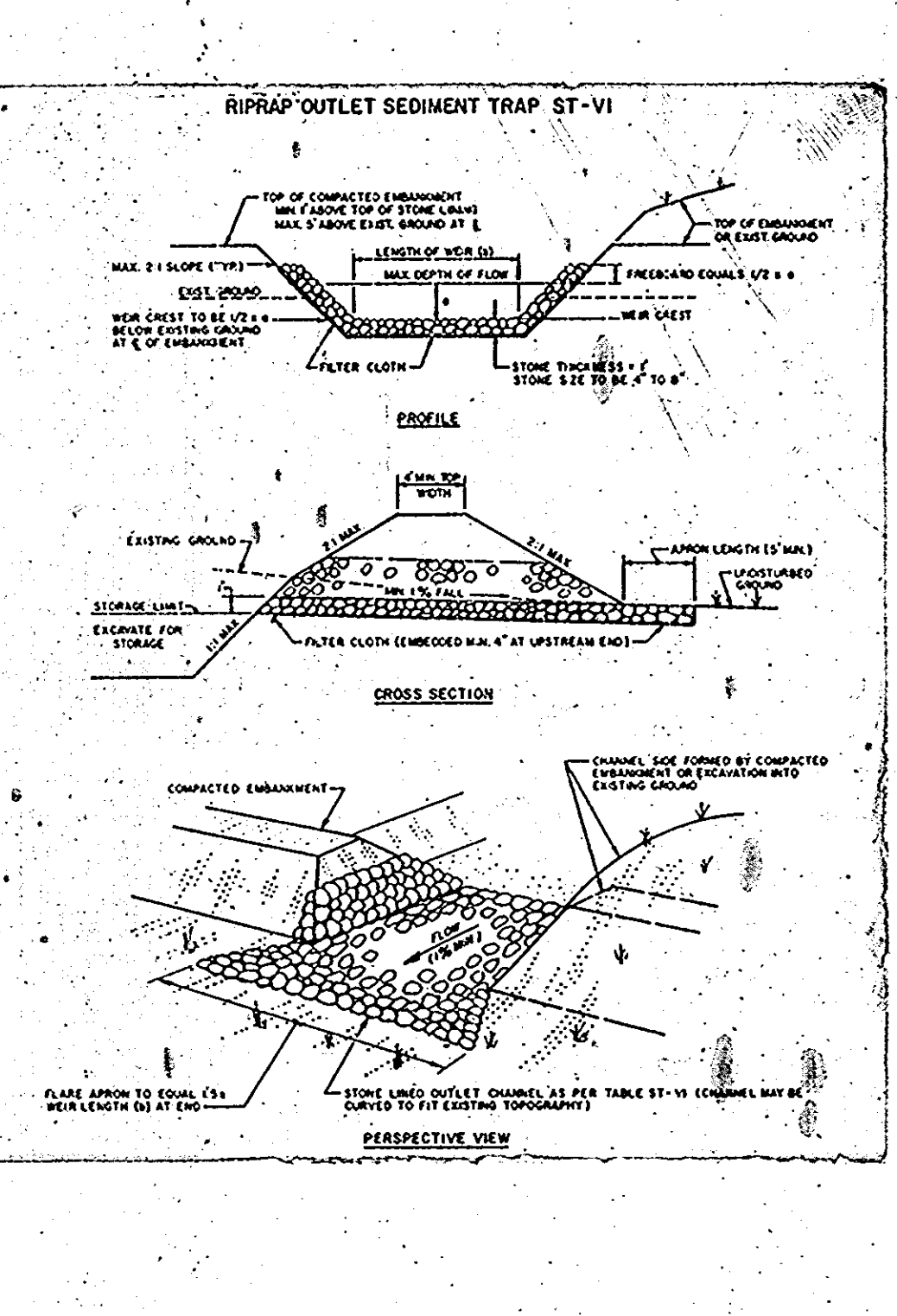
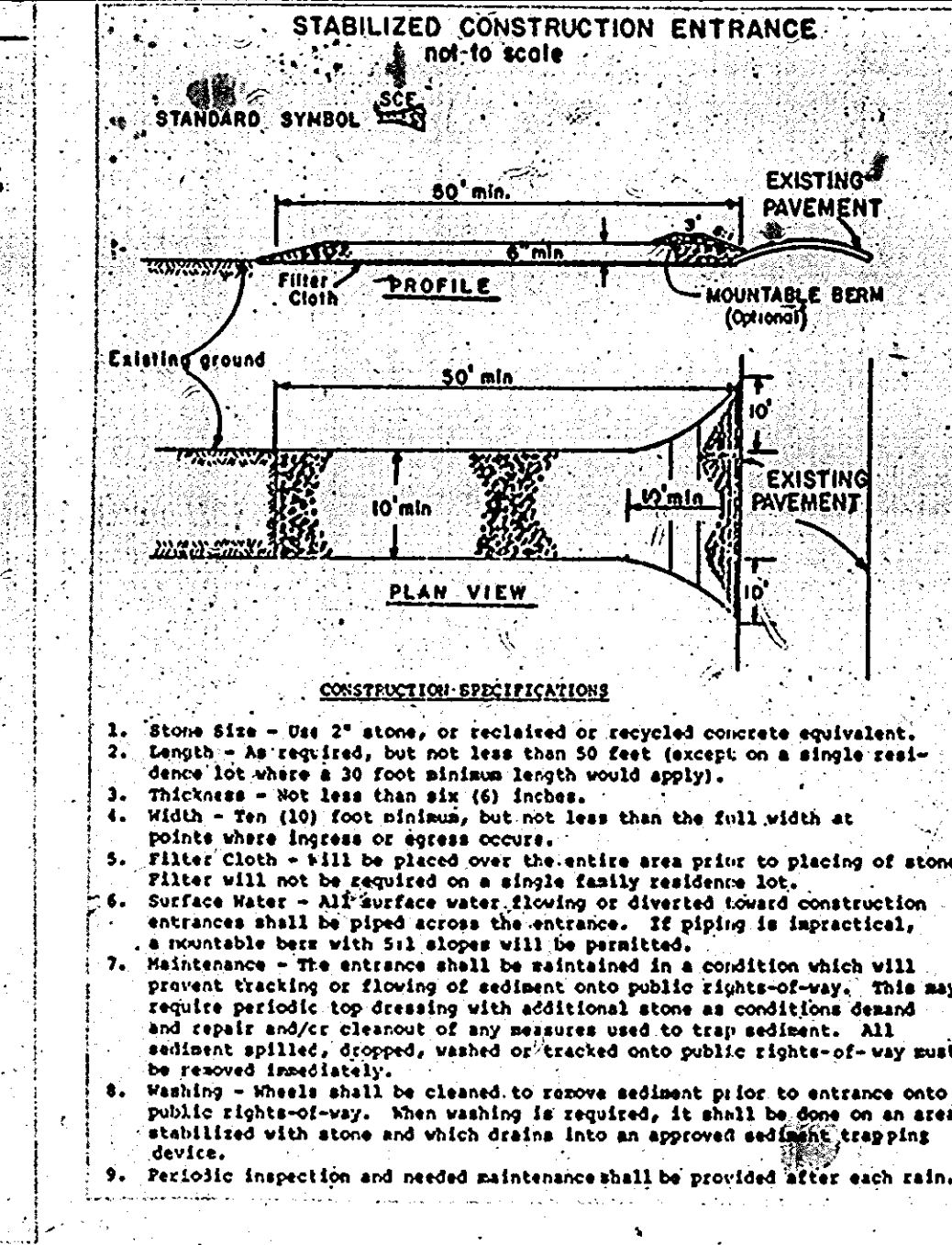
### CONSTRUCTION SPECIFICATIONS

**Site Preparation**  
Areas under the embankment shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, rocks or other objectionable material. In order to facilitate clean-out and reforestation, the pool area within the top of the pipe spillway will be cleared of all brush, trees, and other objectionable materials.

**Out-off-Trench**  
A cut-off trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be two feet. The cut-off trench shall extend both upstream to the water crest elevation. The minimum depth shall be two feet. The cut-off trench shall be constructed by the contractor. The side slopes shall be no steeper than 1:1 and shall be protected with a riprap surface. The trench shall be backfilled during the backfilling-compaction operations.

**Embankment**  
The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Backfill or previous materials such as sand or gravel (Unified Soil Classes SW, SP, SV & SS) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement. The fill material shall contain sufficient moisture so that it can be tamped by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet. For proper compaction, fill material shall be placed in six to eight inch thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the roller track of each layer of the fill is covered by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

**Spillway**  
The riser shall be securely attached to the barrel or barrel and by holding the full circumference forming a weirsight structural connection. The concrete curb shall be attached to the riser at the same elevation (slopes) of grade as the outlet conduit. The connection between the riser and the riser base shall be watertight. All connections between barrel sections must be secured by approved methods (See Appendix B for details). The barrel and riser shall be placed on a firm, smooth foundation of impervious soil. Previous materials such as sand, gravel, or crushed stone shall not be used in the fill. The riser shall be placed in four inch layers and compacted under and around the pipe to at least the same density as the adjacent embankment.



### EMERGENCY SPILLWAY

The emergency spillway shall be installed in undisturbed ground. The elevation of planned elevations, grades, design width, entrance and exit channel slopes shall be sufficient to the successful operation of the emergency spillway and shall be constructed within a tolerance of ± 0.2 feet.

### VEGETATIVE TRENCH

Stabilize the embankment and emergency spillway in accordance with the appropriate vegetative design and specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days.

### EROSION AND POLLUTION CONTROL

Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. State and local laws shall be complied with concerning pollution prevention.

### SAFETY

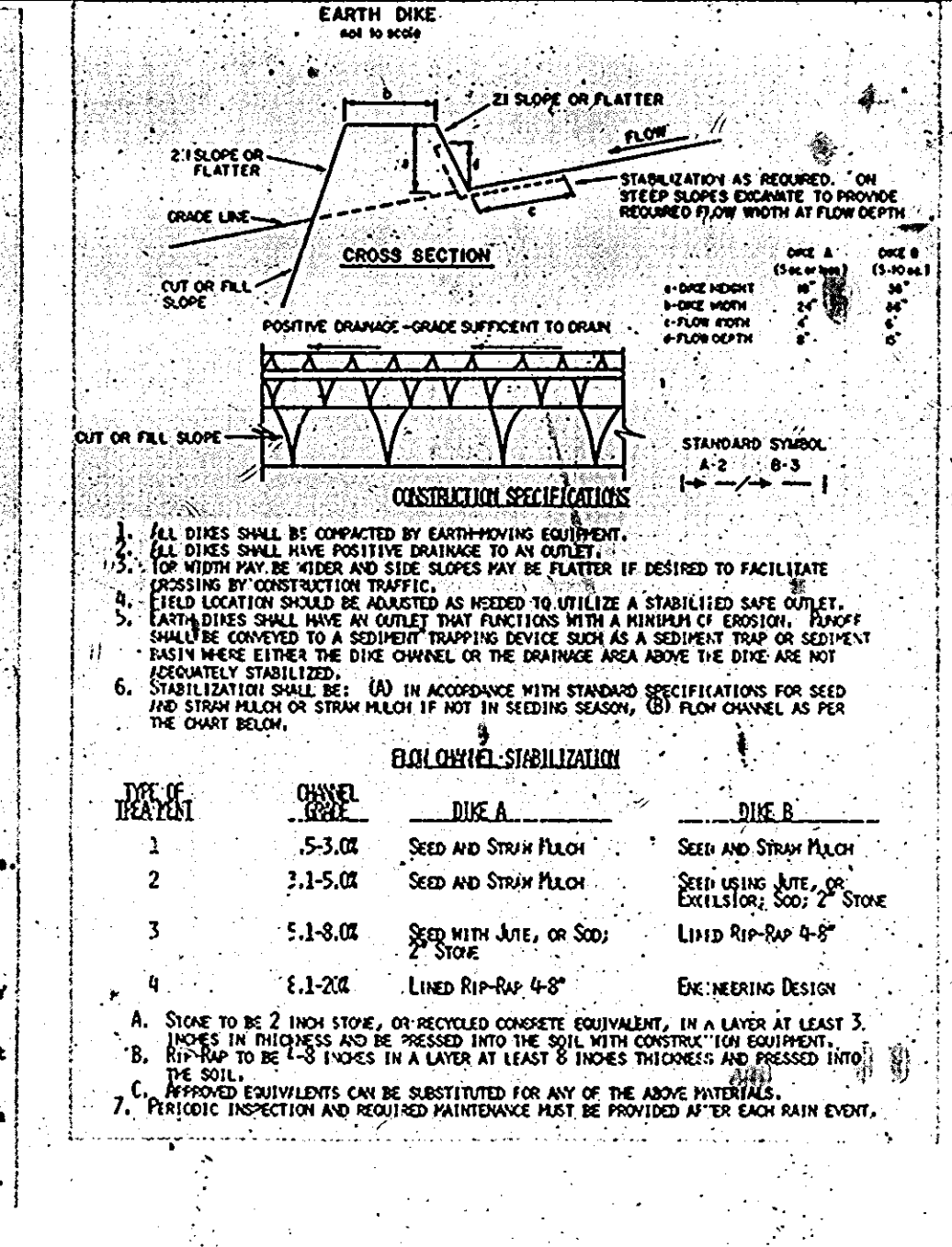
State and local requirements shall be met concerning fencing and safety signs warning the public of hazards of soft sediment and floodwaters.

### MAINTENANCE

- Repair all damages caused by soil erosion and construction equipment at or before the end of each working day.
- Sediment shall be removed from the basin when it reaches the specified elevation at the top of the basin. This sediment shall be placed in a bucket or other container and disposed of off-site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or flood plain.

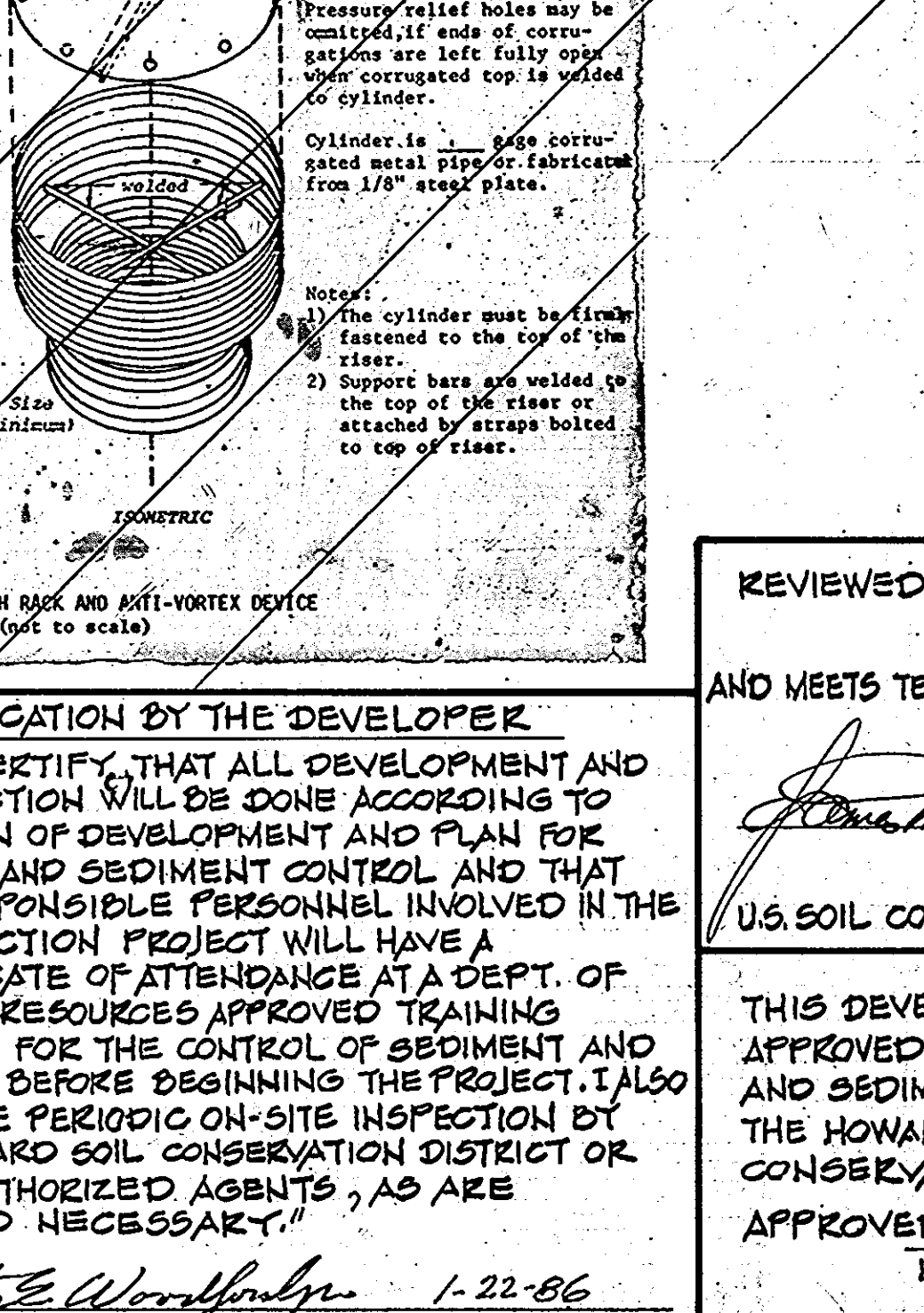
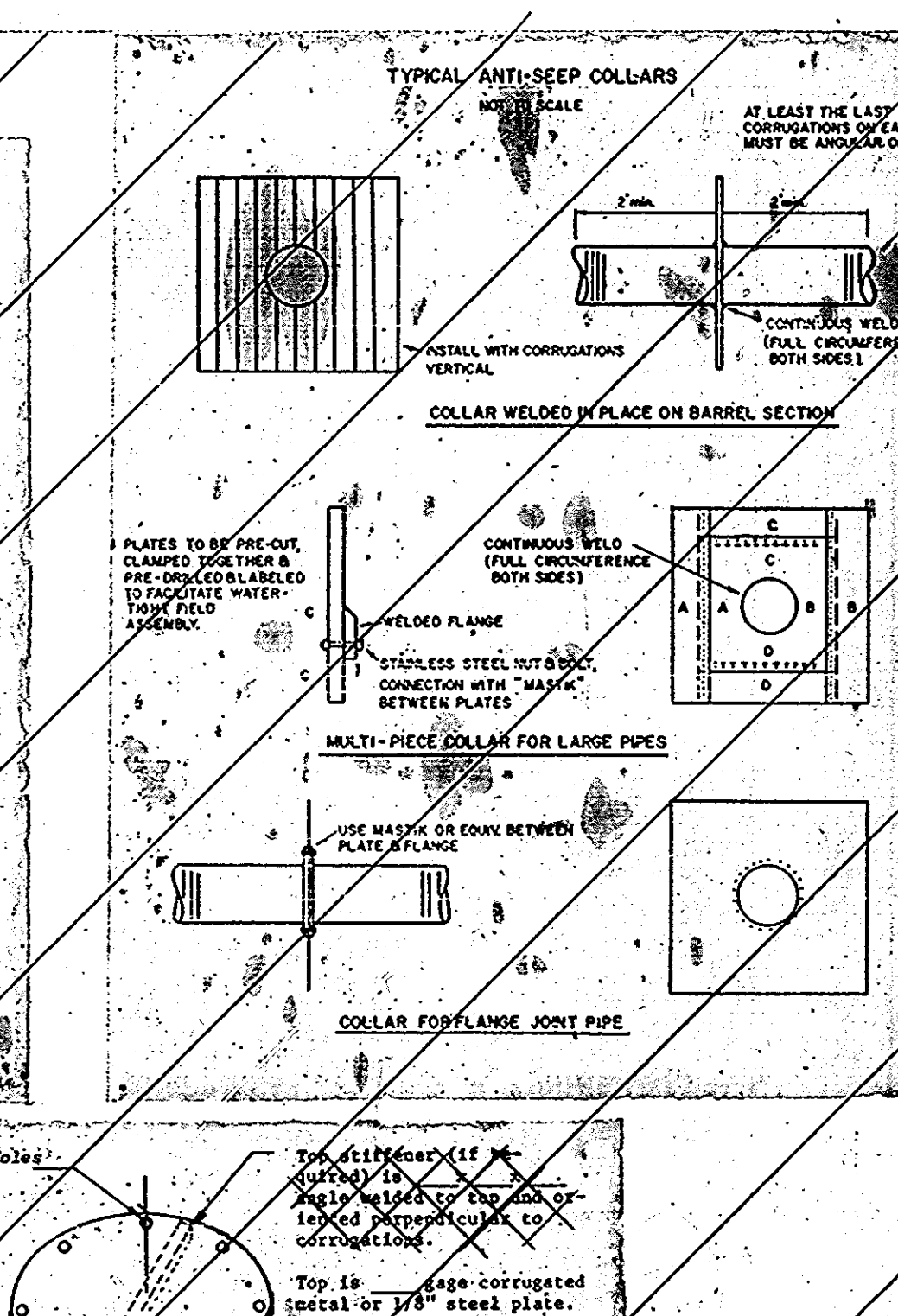
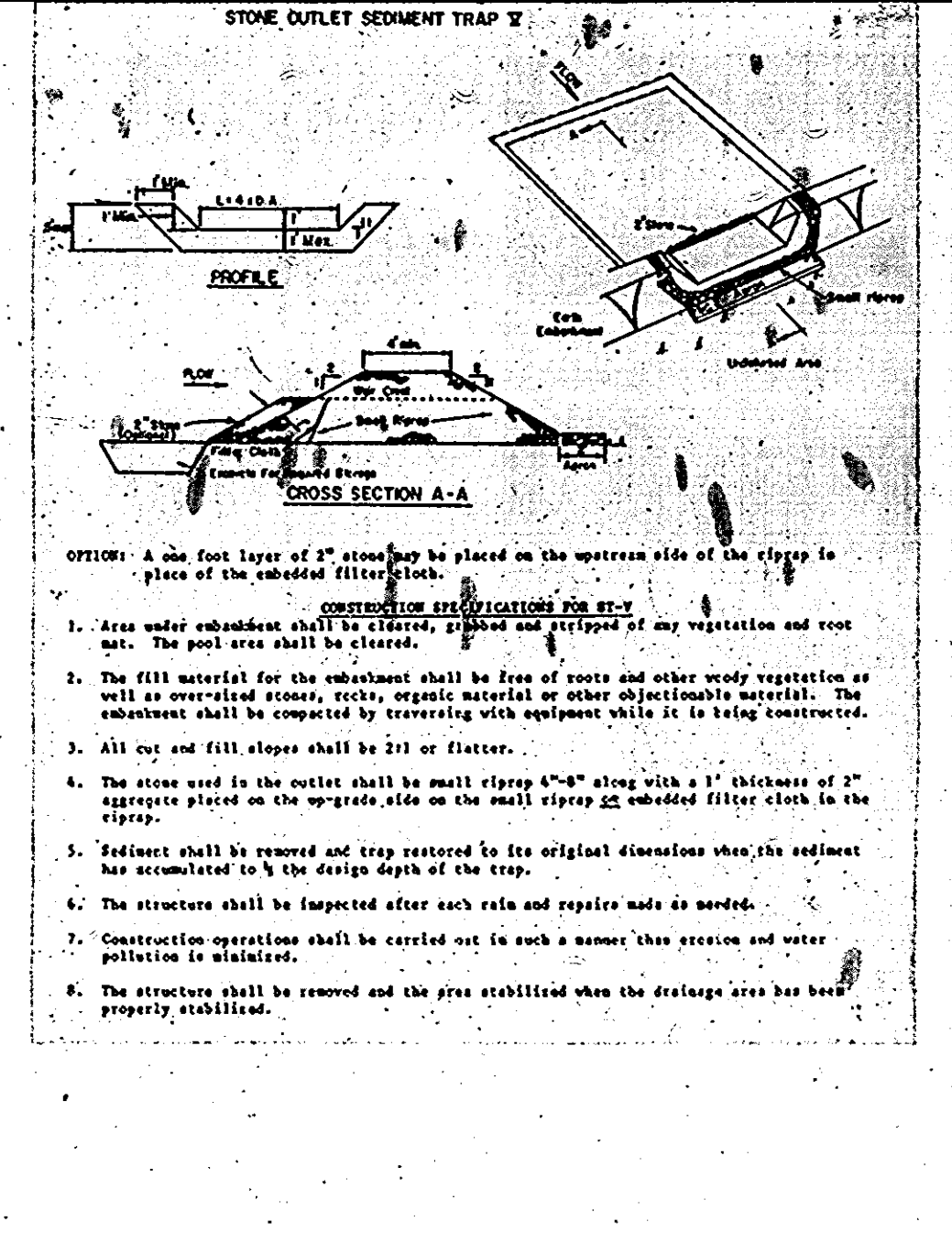
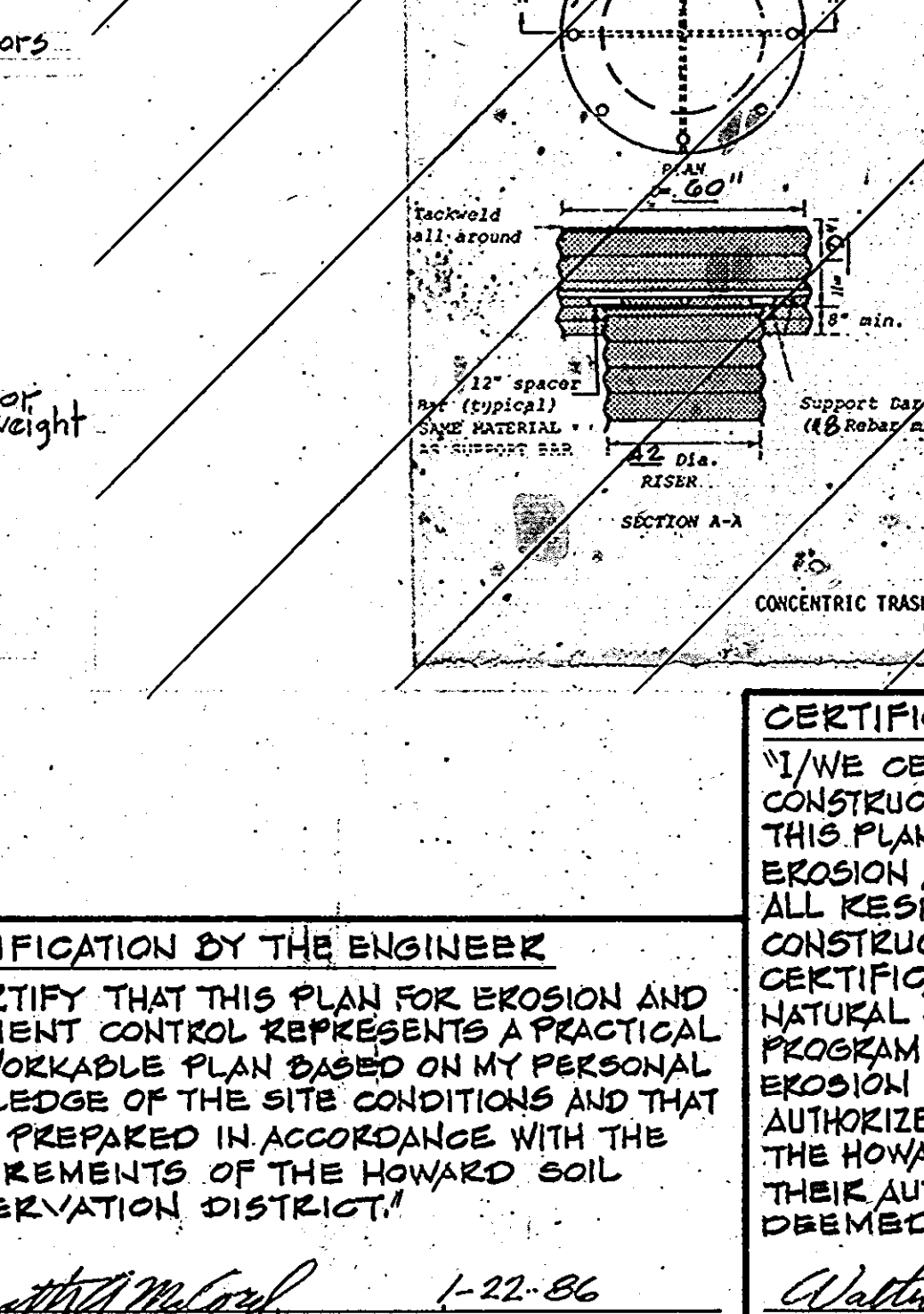
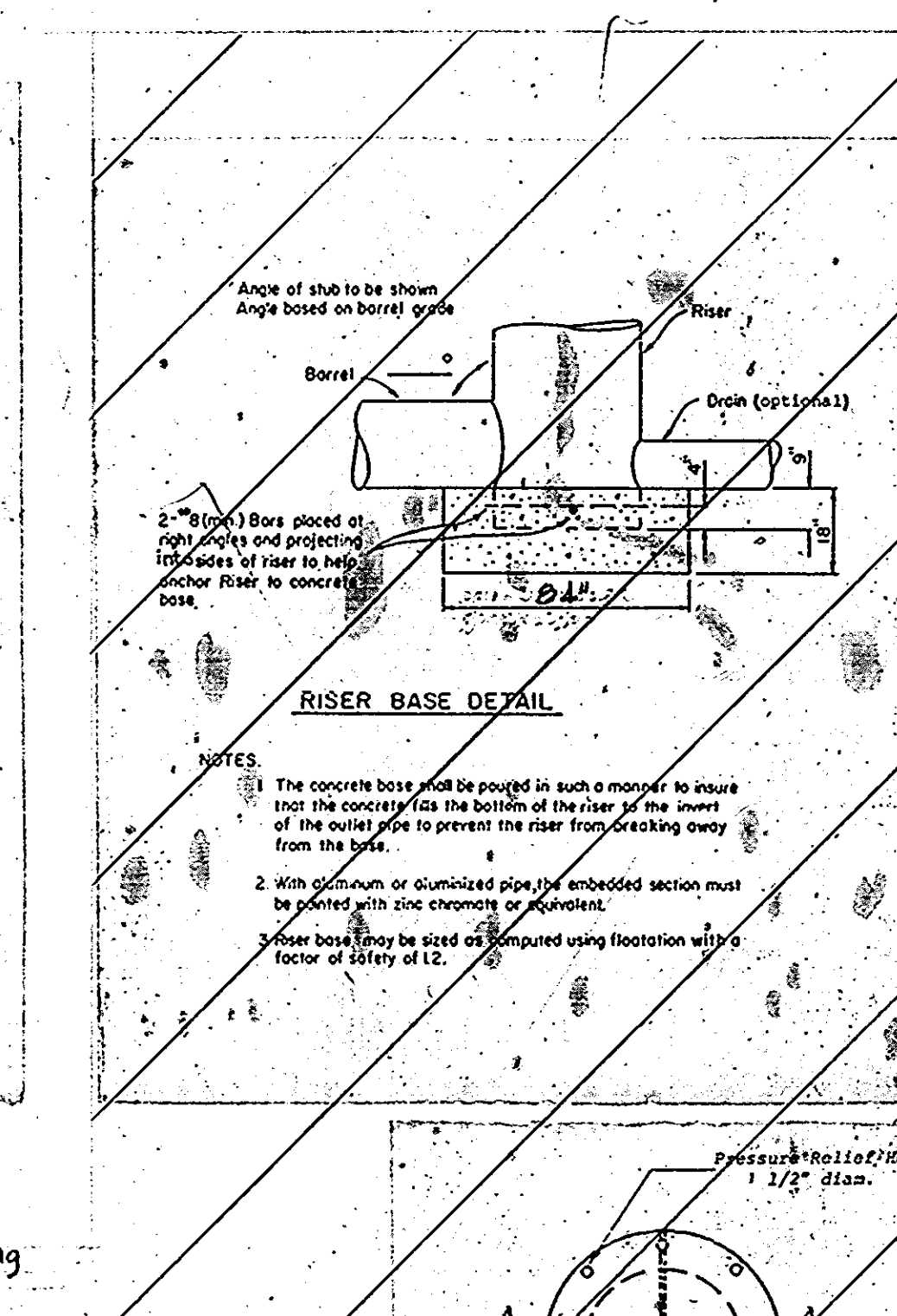
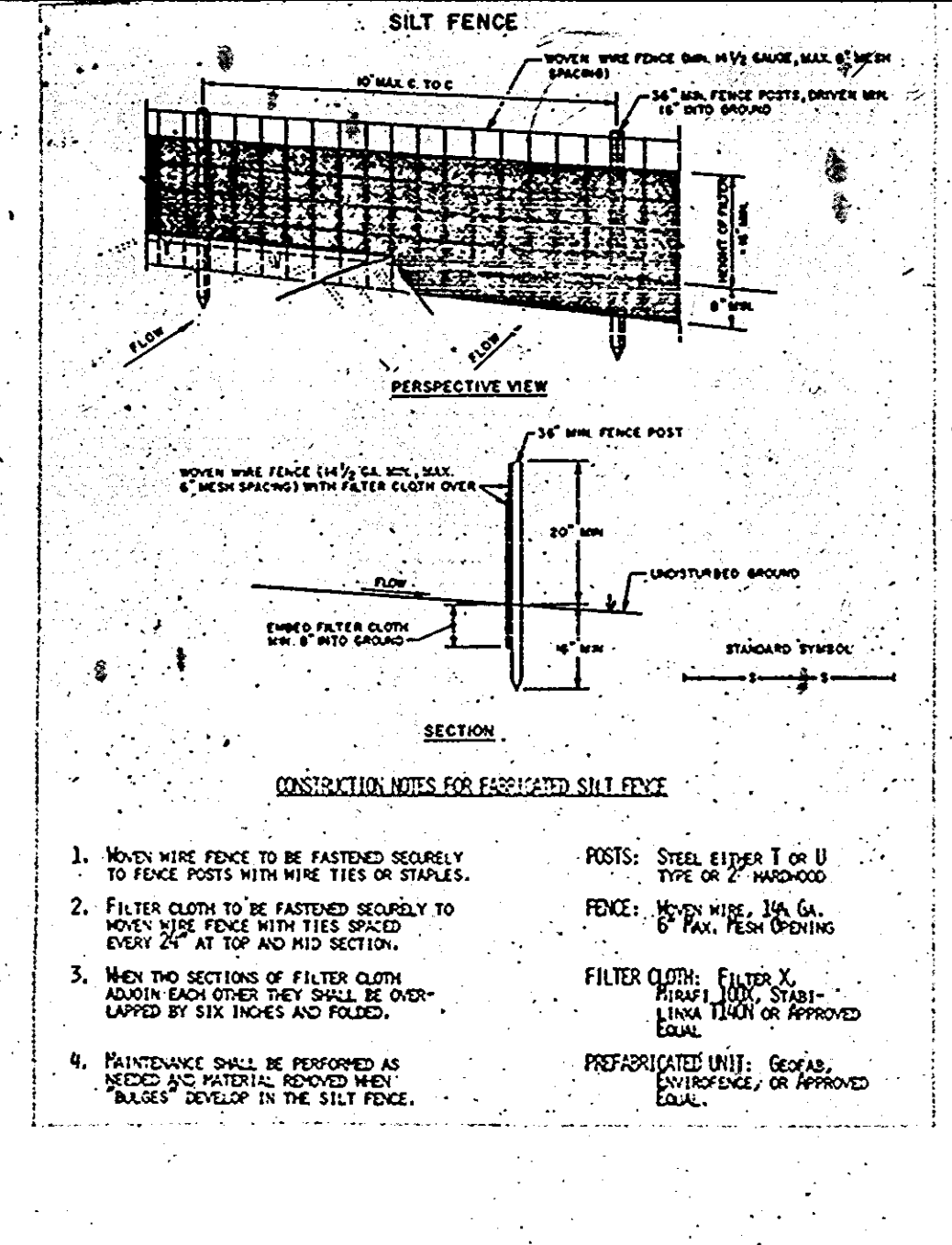
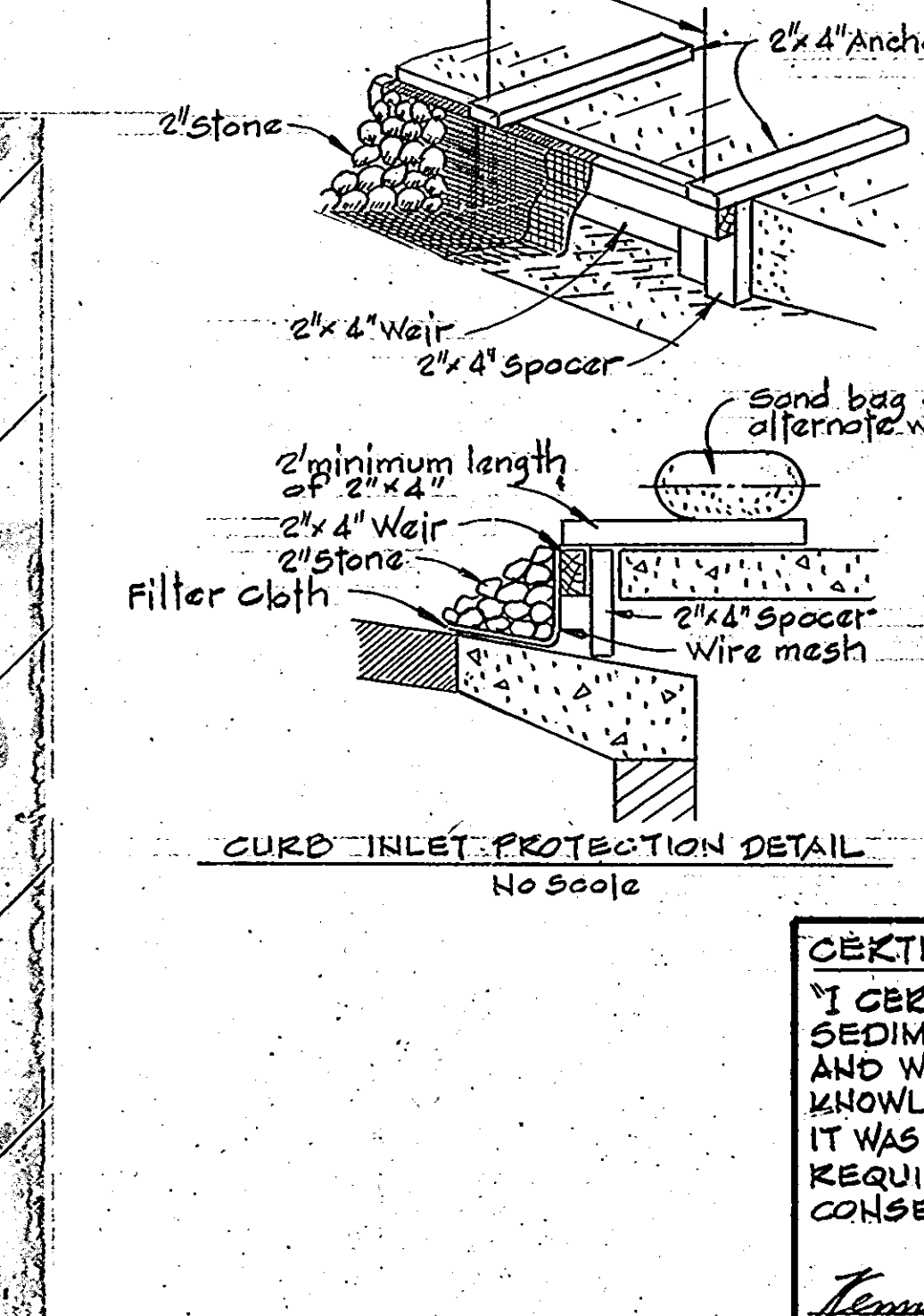
### FINAL DISPOSAL

When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized the embankment and resulting sediment deposits shall be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments shall be removed, safely disposed of, and backfilled with a structural fill. When the basin area is to remain open space the pond may be pumped dry, graded and back filled.



### CONSTRUCTION SPECIFICATIONS FOR ST-VI

- The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
- 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 tamping with equipment while it is being constructed. Maximum height of embankment shall be five (5) feet, measured at centerline of embankment.
- All fill slopes shall be 2:1 or flatter; cut slopes 1:1 or flatter.
- Elevation of the top of any dike directing water into trap must equal or exceed the height of embankment.
- Storage area provided shall be figured by computing the volume available behind the outlet channel up to an elevation of one (1) foot below the level water crest.
- Filter cloth shall be placed over the bottom and sides of the outlet channel prior to placement of stone. Sections of fabric must overlap at least one (1) foot with sections on the opposite face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.
- Stone used in the outlet channel shall be four (4) to eight (8) inches (riprap). To provide a filtering effect, a layer of filter cloth shall be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.
- 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.
- The structure shall be inspected after each rain and repaired as needed.
- Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
- The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.
- Drainage area for this practice is limited to 15 acres or less.

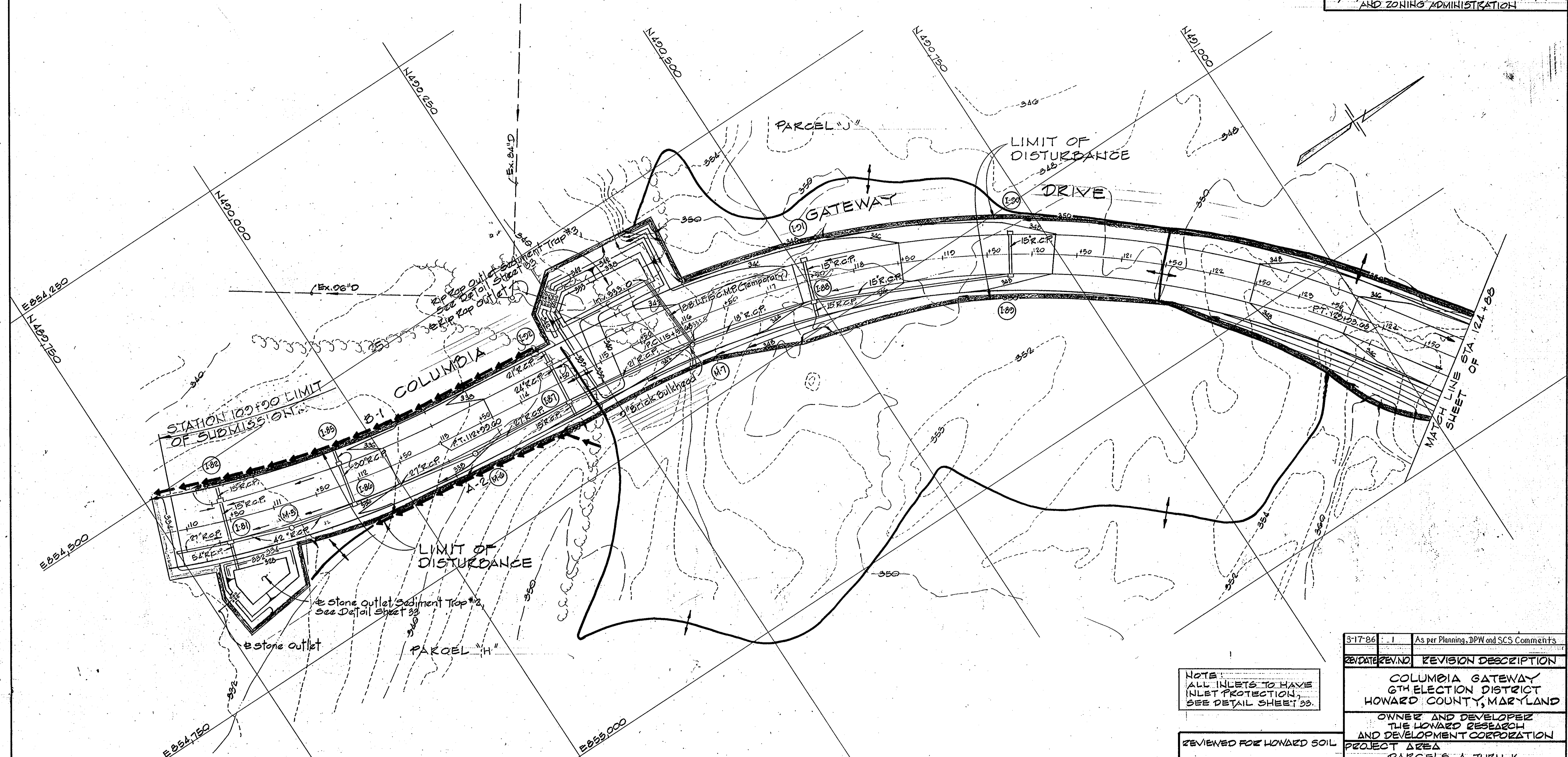


APPROVED: DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF ENGINEERING / DATE  
John W. Woodford 3-25-86  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
AND ZONING ADMINISTRATION

TYPE OF TREATMENT	CHANNEL DRAINAGE	DRAINAGE	R.S.C. - 10-42
1	5-5.00	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	2.1-5.00	SEED AND STRAW MULCH	SEED AND STRAW MULCH
3	5.1-8.00	SEED WITH JUTE OR COCOFIBER	SEED WITH JUTE OR COCOFIBER
4	8.1-20.00	SEED WITH JUTE OR COCOFIBER	SEED WITH JUTE OR COCOFIBER

NO.	DATE	REVISION DESCRIPTION
1	3-17-86	As per Planning, DPW and SCS Comments
<b>COLUMBIA GATEWAY 6TH ELECTION DISTRICT</b>		
<b>HOWARD COUNTY MARYLAND</b>		
<b>OWNER AND DEVELOPER</b>		
<b>THE HOWARD RESEARCH DEVELOPMENT CORPORATION</b>		
<b>PROJECT AREA</b>		
<b>PARCELS A THRU K</b>		
<b>A RESUBDIVISION OF PARCEL B-1</b>		
<b>PROJECT TITLE</b>		
<b>SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION</b>		
<b>SCALE: AS SHOWN</b>		
<b>DATE:</b>		
<b>WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS</b>		
<b>BALTIMORE, MARYLAND 21218</b>		
<b>Kenneth A. McGord</b>		
<b>Registered Engineer</b>		
<b>NO. 1074</b>		

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING 3-26-86  
 OFFICE OF PLANNING & ZONING  
 John W. Murchman 32586  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



**STONE OUTLET SEDIMENT TRAP #2 DESIGN DATA**  
 DRAINAGE AREA: 1.1 ACRES  
 DISTURBED AREA: 1.1 ACRES  
 \* VOLUME REQUIRED: 258 C.Y.  
 VOLUME AVAILABLE: 267 C.Y.  
 TOP BEAM ELEVATION: 333.0  
 WEIR CREST ELEVATION: 332.0  
 STORAGE ELEVATION: 331.0  
 BOTTOM TRAP ELEVATION: 328.0  
 SIZE OF TRAP @ 320 CONTOUR: 32' x 40'  
 LENGTH OF WEIR: 5'  
 \* STORMWATER MANAGEMENT DESIGN GOVERNS

**RIP RAP OUTLET SEDIMENT TRAP #3 DESIGN DATA**  
 DRAINAGE AREA: 0.7 ACRES  
 DISTURBED AREA: 1.3 ACRES  
 \* VOLUME REQUIRED: 620 C.Y.  
 VOLUME AVAILABLE: 630 C.Y.  
 TOP BEAM ELEVATION: 342.0  
 WEIR CREST ELEVATION: 339.0  
 STORAGE ELEVATION: 338.0  
 BOTTOM TRAP ELEVATION: 333.0  
 SIZE OF TRAP @ 333 CONTOUR: 25' x 105'  
 LENGTH OF WEIR: 16'

NOTE: POSITIVE DRAINAGE TO SEDIMENT TRAPS MUST BE MAINTAINED USING DIKES OR SWALES.

**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 HOWARD SOIL CONSERVATION DISTRICT."  
 Kenneth A. McCoard 1-22-86  
 DATE

**CERTIFICATION BY THE DEVELOPER**  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."  
 Walter E. Woodford 1-22-86  
 DATE

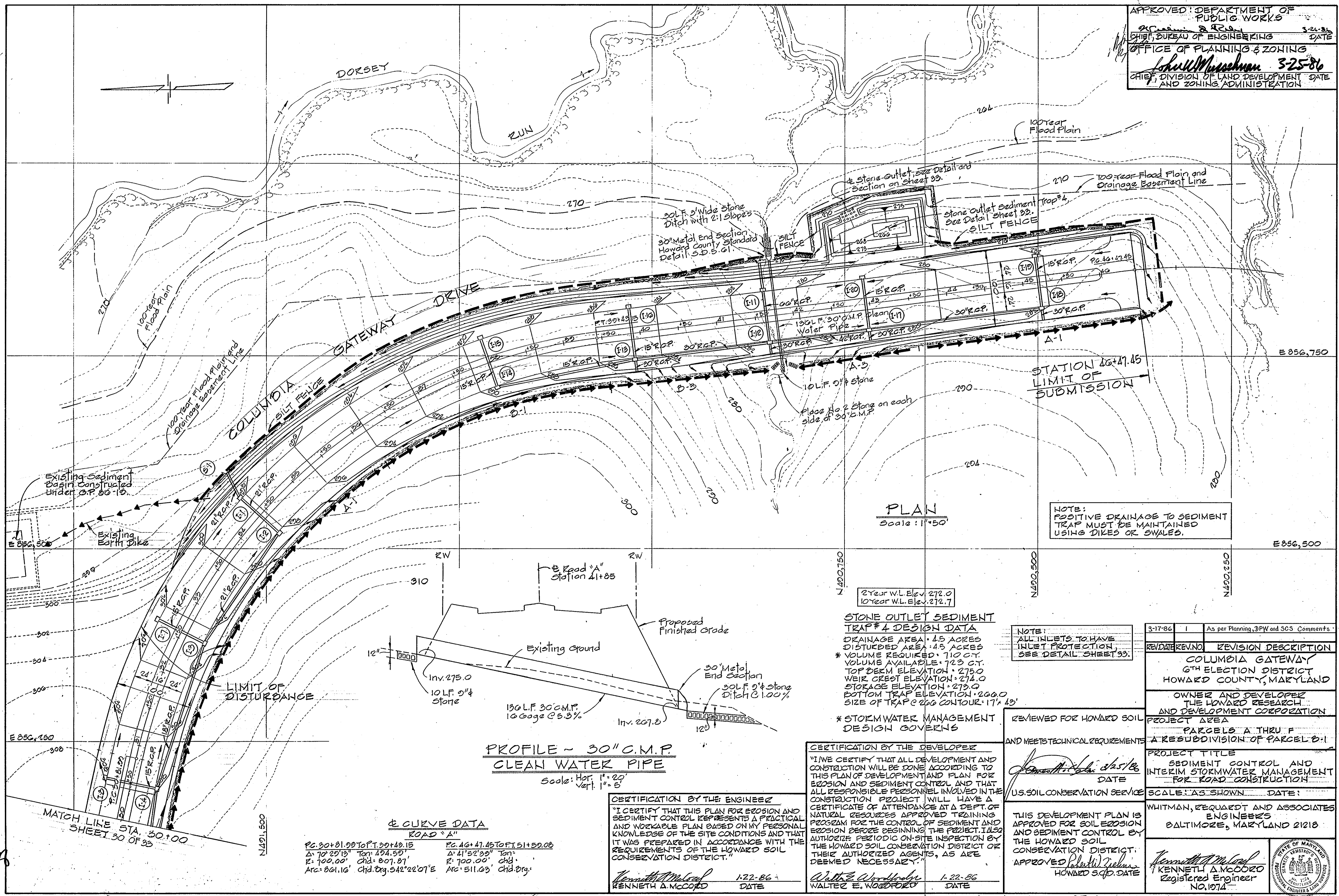
NOTE: ALL INLETS TO HAVE INLET PROTECTION, SEE DETAIL SHEET 33.

REVIEWED FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS  
 DATE: 3/25/86  
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 APPROVED: [Signature] 2/25/86  
 HOWARD S.C.D. DATE

3-17-86	1	As per Planning, DPW and SCS Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL D-1
		PROJECT TITLE SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION
		SCALE: 1" = 50' DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		Kenneth A. McCoard Registered Engineer NO. 1074

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
*John M. Musickman* 3-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



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

NOTE: POSITIVE DRAINAGE TO SEDIMENT TRAP MUST BE MAINTAINED USING DIKES OR SWALES.

2 Year W.L. Elev. 272.0  
 10 Year W.L. Elev. 272.7

**STONE OUTLET SEDIMENT TRAP #4 DESIGN DATA**  
 DRAINAGE AREA: .45 ACRES  
 DISTURBED AREA: .45 ACRES  
 \* VOLUME REQUIRED: 710 C.Y.  
 VOLUME AVAILABLE: 723 C.Y.  
 TOP DECK ELEVATION: 275.0  
 WEIR CREST ELEVATION: 274.0  
 STORAGE ELEVATION: 273.0  
 BOTTOM TRAP ELEVATION: 269.0  
 SIZE OF TRAP @ 266' CONTOUR: 17' x 13'

\* STORMWATER MANAGEMENT DESIGN GOVERNS

NOTE: ALL INLETS TO HAVE INLET PROTECTION, SEE DETAIL SHEET 33.

REVIEWED FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS  
*John M. Musickman* 3/25/86  
 DATE  
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 APPROVED *Robert J. Zielhuis*  
 HOWARD SQD. DATE

3-17-86	1	As per Planning, DPW and SCS Comments.
REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCELS A THRU F A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218

**PROFILE ~ 30" C.M.P. CLEAN WATER PIPE**

Scale: Hor. 1" = 20'  
 Vert. 1" = 5'

**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 HOWARD SOIL CONSERVATION DISTRICT."

*Kenneth A. McCord*  
 KENNETH A. MCCORD  
 DATE 1-22-86

**CERTIFICATION BY THE DEVELOPER**  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

*Walter E. Woodford*  
 WALTER E. WOODFORD  
 DATE 1-22-86

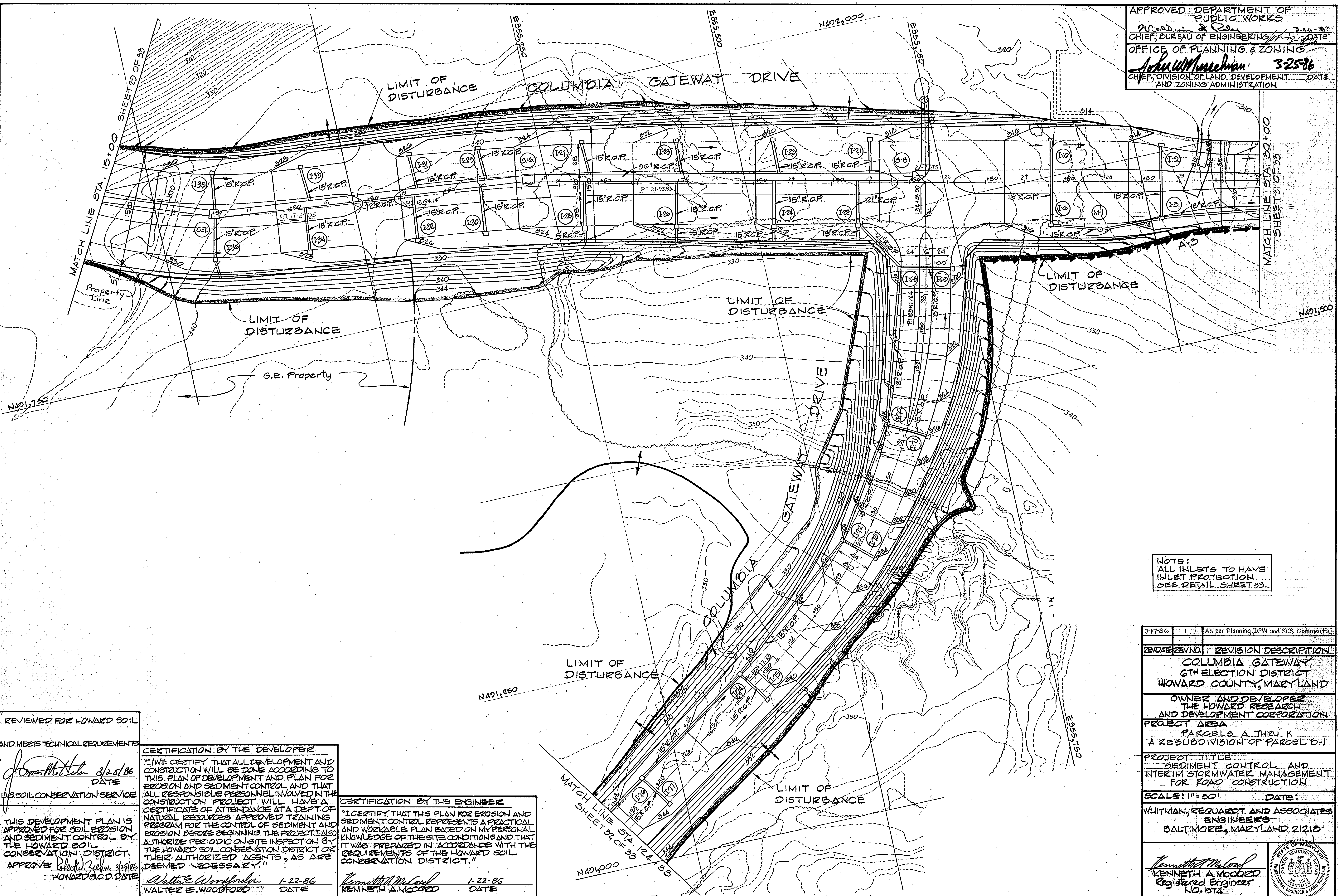
**CURVE DATA ROAD "A"**

PC: 30+81.99 To P.T.: 39+49.15	PC: 46+47.45 To P.T.: 51+59.08
Δ: 70°29'13" Tan: 124.59'	Δ: 41°52'39" Tan: 70.00'
R: 700.00' Chd.: 807.87'	R: 700.00' Chd.: 511.03'
Arc: 861.16' Chd. Dir.: S42°22'07"E	Arc: 511.03' Chd. Dir.:

MATCH LINE STA. 30+100  
 SHEET 30 OF 33

1159

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 John W. Muschman 3-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



NOTE:  
 ALL INLETS TO HAVE  
 INLET PROTECTION  
 SEE DETAIL SHEET 33.

REVIEWED FOR HOWARD SOIL  
 AND MEETS TECHNICAL REQUIREMENTS

*John W. Muschman* 3/25/86  
 DATE  
 U.S. SOIL CONSERVATION SERVICE  
 THIS DEVELOPMENT PLAN IS  
 APPROVED FOR SOIL EROSION  
 AND SEDIMENT CONTROL BY  
 THE HOWARD SOIL  
 CONSERVATION DISTRICT.  
 APPROVED: *Robert J. Ziemer* 3/25/86  
 HOWARD S.C.D. DISTRICT

CERTIFICATION BY THE DEVELOPER  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND  
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 DEEMED NECESSARY."

*Walter E. Woodford* 1-22-86  
 WALTER E. WOODFORD DATE

CERTIFICATION BY THE ENGINEER  
 "I CERTIFY THAT THIS PLAN FOR EROSION AND  
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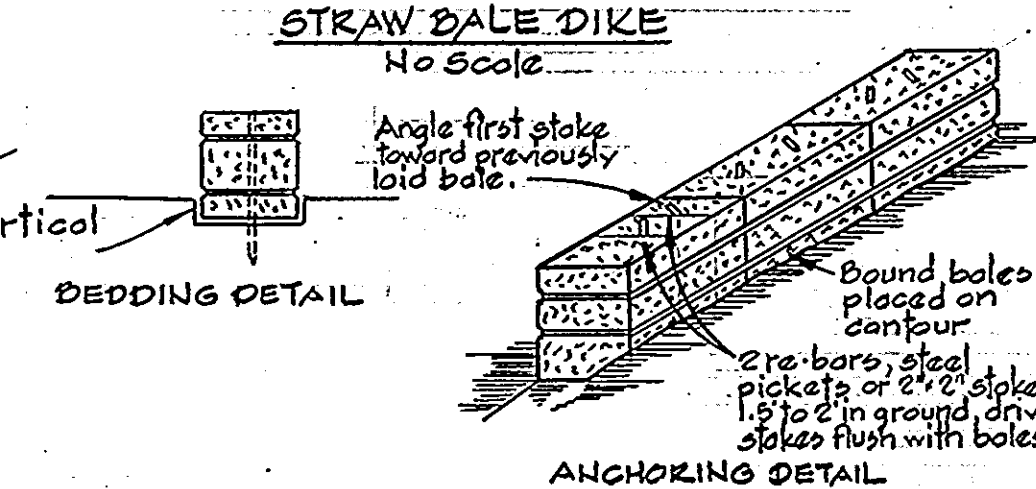
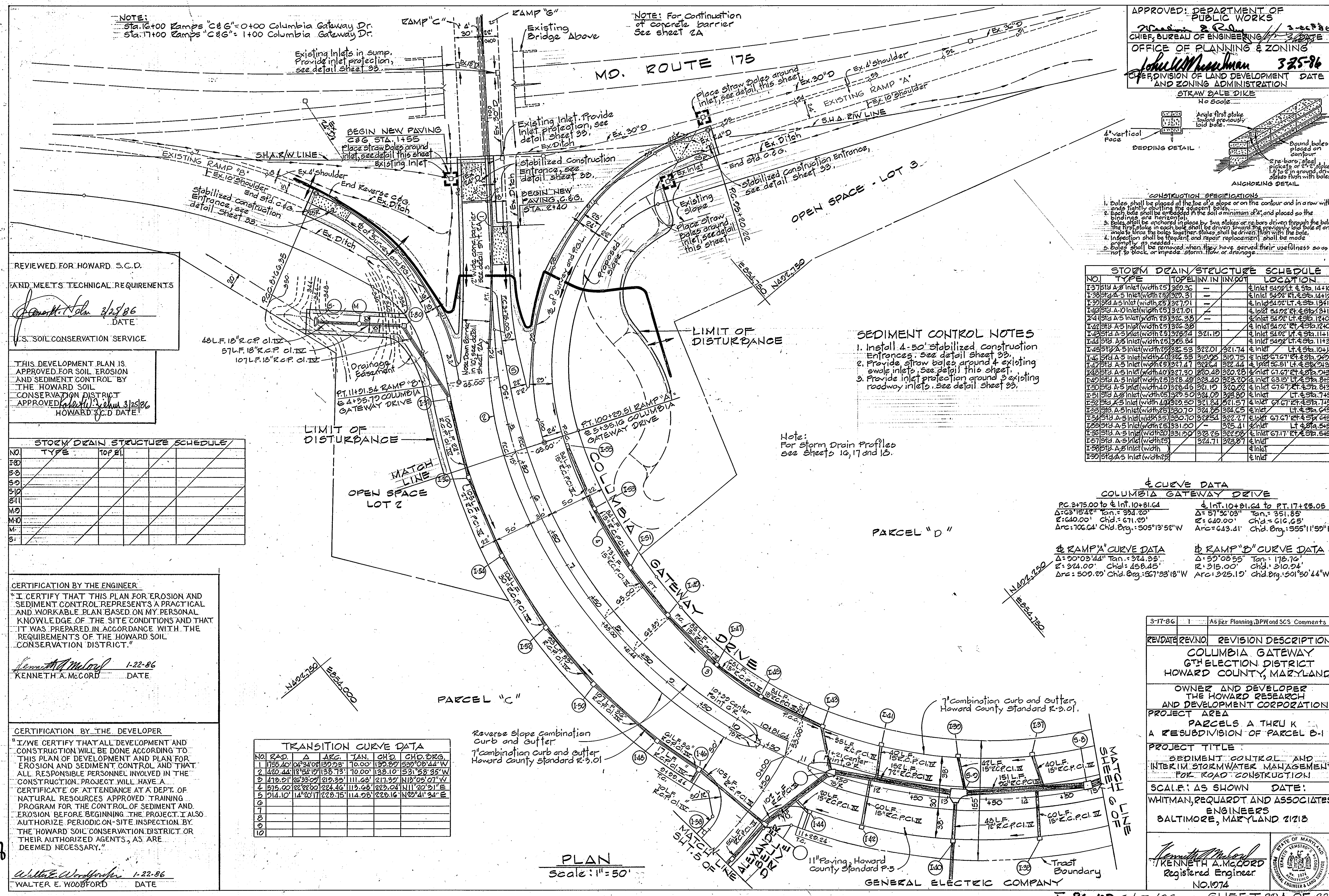
*Kenneth A. McLeod* 1-22-86  
 KENNETH A. MCLEOD DATE

3-17-86	1	As per Planning, DPW and SCS Comments
REVISION NO.	REVISION DESCRIPTION	
	COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
	OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION	
	PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL D-1	
	PROJECT TITLE SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION	
	SCALE: 1" = 50'	DATE:
	WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218	
	<i>Kenneth A. McLeod</i> KENNETH A. MCLEOD Registered Engineer NO. 1574	

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 John W. Woodford 3/25/86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE

NOTE:  
 Sta. 16+00 Ramps "C&G" = 0+00 Columbia Gateway Dr.  
 Sta. 17+00 Ramps "C&G" = 1+00 Columbia Gateway Dr.

NOTE: For Continuation of concrete barrier See sheet 2A



CONSTRUCTION SPECIFICATIONS  
 1. Bales shall be placed at the toe of a slope or on the contour and in a row with ends tight, leaving the gaps in the bales to be filled with soil to a minimum of 2", and placed so the bindings are horizontal.  
 2. Bales shall be anchored in place by two stakes or re-bars driven through the bale. The first stake in each bale shall be driven forward through the bale at an angle to force the bales together. Stakes shall be driven flush with the bale.  
 3. Inspection shall be frequent and repair/replacement shall be made promptly as needed.  
 4. Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.

NO.	TYPE	TOP EL.	IN.	IN.	OUT	LOCATION
I-37	A-5 Inlet (width 25)	320.25				Inlet 5402 Lt. 4 Sta. 1446
I-38	A-5 Inlet (width 25)	320.31				Inlet 5402 Rt. 4 Sta. 1447
I-39	A-5 Inlet (width 25)	321.01				Inlet 5402 Lt. 4 Sta. 1341
I-40	A-5 Inlet (width 25)	321.01				Inlet 5402 Rt. 4 Sta. 1341
I-41	A-5 Inlet (width 25)	321.01				Inlet 5402 Lt. 4 Sta. 1240
I-42	A-5 Inlet (width 25)	321.01				Inlet 5402 Rt. 4 Sta. 1240
I-43	A-5 Inlet (width 25)	321.01				Inlet 5402 Lt. 4 Sta. 1136
I-44	A-5 Inlet (width 25)	321.01				Inlet 5402 Rt. 4 Sta. 1136
I-45	A-5 Inlet (width 25)	322.01				Inlet Lt. 4 Sta. 1045
I-46	A-5 Inlet (width 25)	322.01				Inlet Rt. 4 Sta. 1045
I-47	A-5 Inlet (width 25)	322.44				Inlet 5651 Lt. 4 Sta. 2024
I-48	A-5 Inlet (width 25)	322.44				Inlet 5651 Rt. 4 Sta. 2024
I-49	A-5 Inlet (width 25)	323.40				Inlet 6167 Lt. 4 Sta. 0437
I-50	A-5 Inlet (width 25)	323.40				Inlet 6167 Rt. 4 Sta. 0437
I-51	A-5 Inlet (width 25)	324.00				Inlet Lt. 4 Sta. 7450
I-52	A-5 Inlet (width 25)	324.00				Inlet Rt. 4 Sta. 7450
I-53	A-5 Inlet (width 25)	324.00				Inlet Lt. 4 Sta. 6450
I-54	A-5 Inlet (width 25)	324.00				Inlet Rt. 4 Sta. 6450
I-55	A-5 Inlet (width 25)	324.00				Inlet Lt. 4 Sta. 5450
I-56	A-5 Inlet (width 25)	324.00				Inlet Rt. 4 Sta. 5450
I-57	A-5 Inlet (width 25)	324.71				Inlet 6171 Lt. 4 Sta. 5450
I-58	A-5 Inlet (width 25)	324.71				Inlet 6171 Rt. 4 Sta. 5450
I-59	A-5 Inlet (width 25)					Inlet

SEDIMENT CONTROL NOTES  
 1. Install 4-50' stabilized construction Entrances. See detail sheet 33.  
 2. Provide straw bales around existing swale inlets. See detail this sheet.  
 3. Provide inlet protection around existing roadway inlets. See detail sheet 33.

Note:  
 For Storm Drain Profiles see sheets 16, 17 and 18.

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
 Kenneth A. McCord 3/25/86  
 DATE  
 U.S. SOIL CONSERVATION SERVICE  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
 APPROVED: Kenneth A. McCord 3/25/86  
 HOWARD S.C.D. DATE

NO.	TYPE	TOP EL.	IN.	IN.	OUT	LOCATION
I-37						
I-38						
I-39						
I-40						
I-41						
I-42						
I-43						
I-44						
I-45						
I-46						
I-47						
I-48						
I-49						
I-50						
I-51						
I-52						
I-53						
I-54						
I-55						
I-56						
I-57						
I-58						
I-59						

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 HOWARD SOIL CONSERVATION DISTRICT."  
 Kenneth A. McCord 1-22-86  
 KENNETH A. MCCORD DATE

CERTIFICATION BY THE DEVELOPER  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."  
 Walter E. Woodford 1-22-86  
 WALTER E. WOODFORD DATE

NO.	RAD.	Δ	ARC.	TAN.	CHD.	CHD. ORG.
1	1755.40	04°34'02"	139.23'	10.00'	139.23'	539°08'44" W
2	420.44	18°54'19"	135.73'	10.00'	135.73'	531°58'35" W
3	412.01	26°33'07"	219.25'	111.68'	217.32'	N19°05'07" W
4	575.00	22°22'00"	224.46'	113.68'	222.04'	N11°20'31" E
5	214.10	14°20'17"	228.75'	114.28'	228.16'	N29°41'34" E
6						
7						
8						
9						
10						

Reverse Slope Combination Curb and gutter  
 7" combination curb and gutter Howard County Standard R-3.01

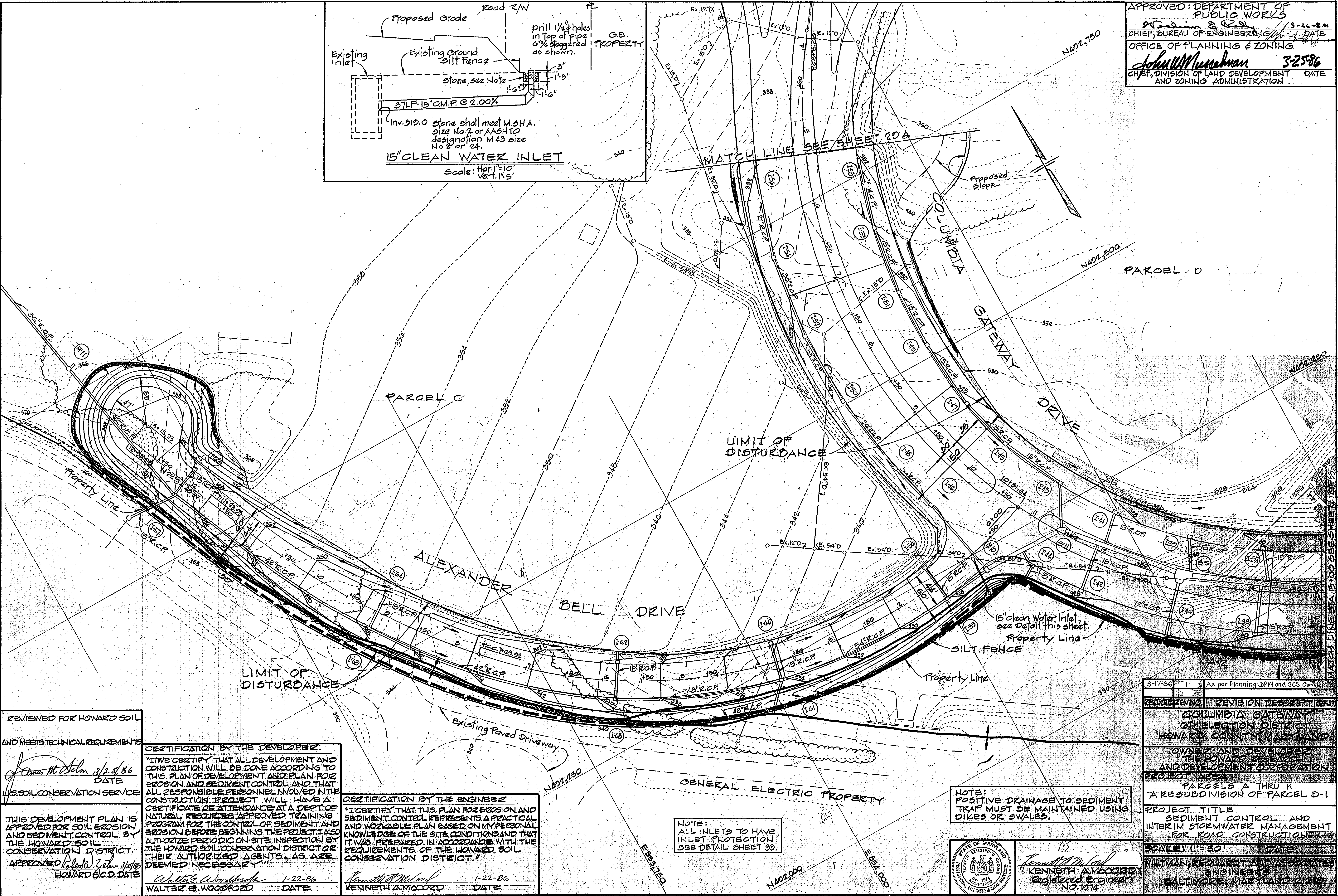
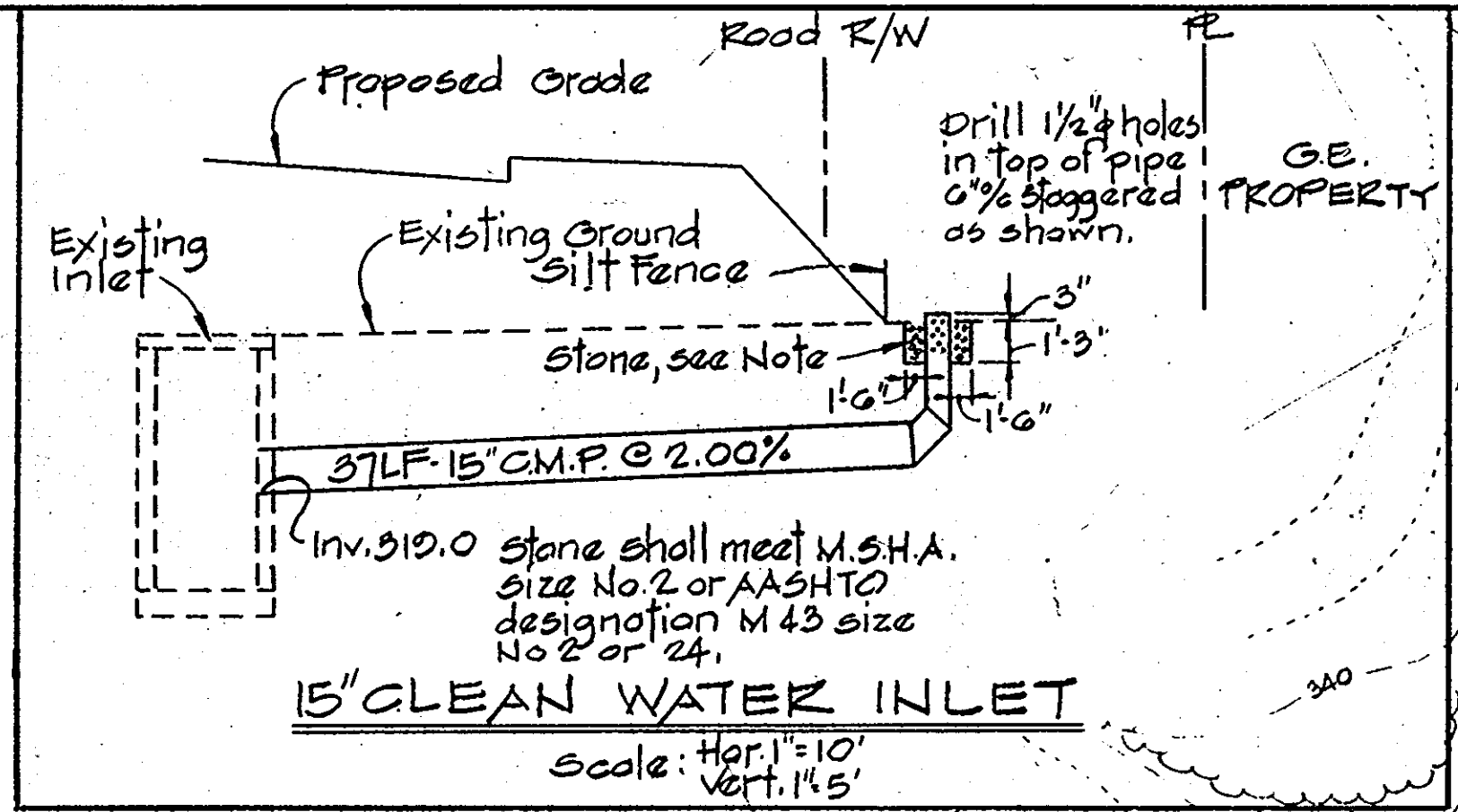
PLAN  
 Scale: 1" = 50'

± CURVE DATA  
 COLUMBIA GATEWAY DRIVE  
 PC: 2+75.00 to Int. 10+81.64 Δ: 63°15'21" Tan: 324.20' R: 640.00' Chd. = 671.09' Arc: 706.04' Chd. Brg.: 505°19'52" W  
 Int. 10+81.64 to PT. 17+25.05 Δ: 57°32'03" Tan: 351.85' R: 640.00' Chd. = 616.65' Arc: 643.41' Chd. Brg.: 555°11'59" E

± RAMP "A" CURVE DATA  
 Δ: 30°03'44" Tan: 324.35' R: 324.00' Chd.: 458.45'  
 Δ: 50°08'55" Tan: 178.76' R: 315.00' Chd.: 310.34' Arc: 325.10' Chd. Brg.: 501°50'44" W

REV. DATE	REV. NO.	REVISION DESCRIPTION
3-17-86	1	As per Planning, DP and SCS Comments
		COLUMBIA GATEWAY GTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION.
		PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		Kenneth A. McCord Registered Engineer NO. 1074

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 3-26-86  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 John M. Muschman 3-2586  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



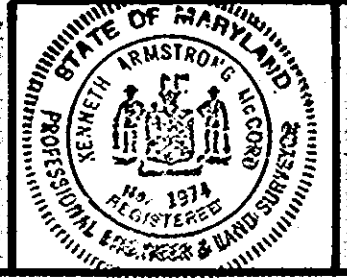
REVIEWED FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS  
 James M. Helm 3/25/86  
 DATE  
 U.S. SOIL CONSERVATION SERVICE

CERTIFICATION BY THE DEVELOPER  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."  
 Walter E. Woodford 1-22-86  
 DATE

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 HOWARD SOIL CONSERVATION DISTRICT."  
 Kenneth A. Moord 1-22-86  
 DATE

NOTE:  
 ALL INLETS TO HAVE INLET PROTECTION SEE DETAIL SHEET 39.

NOTE:  
 POSITIVE DRAINAGE TO SEDIMENT TRAP MUST BE MAINTAINED USING DIKES OR SWALES.

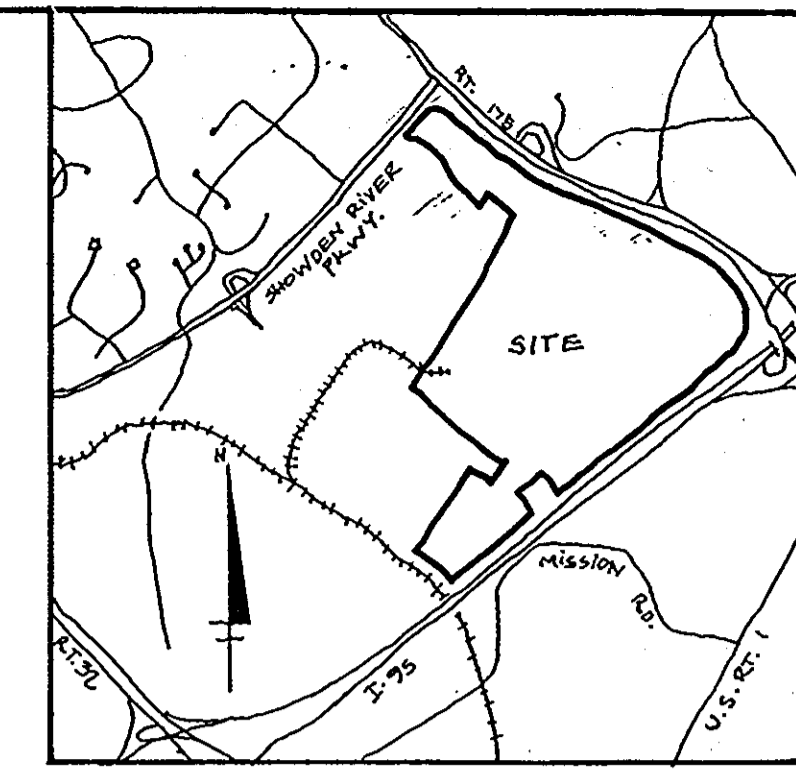


Kenneth A. Moord  
 Registered Engineer  
 No. 1074

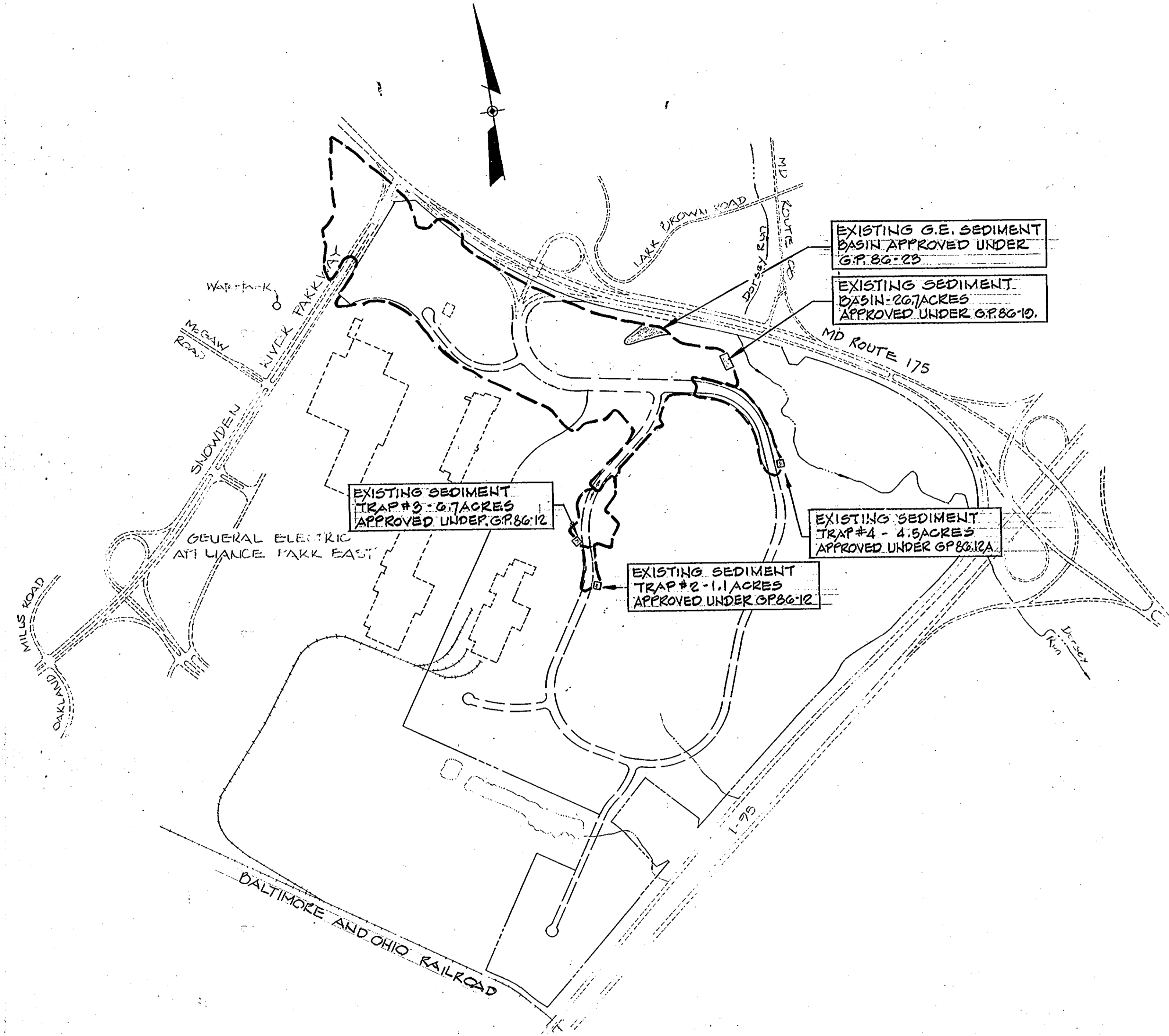
3-17-86	As per Planning, DPW and SCS Comments
REVISION NO.	REVISION DESCRIPTION
	COLUMBIA GATEWAY COLLECTION DISTRICT HOWARD COUNTY, MARYLAND
	OWNER AND DEVELOPER: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
	PROJECT AREA: PARCELS A THRU K A RESUBDIVISION OF PARCEL D-1
	PROJECT TITLE: SEDIMENT CONTROL AND INTERIM STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION
SCALE: 1"=50'	DATE
WHITMAN, REARDART AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21210	



APPROVED DEPARTMENT OF PUBLIC WORKS  
 3-25-86  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 3-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



VICINITY MAP  
 Scale: 1" = 3500'



DRAINAGE AREA MAP  
 Scale: 1" = 800'

SEQUENCE OF CONSTRUCTION

1. Sediment control facilities previously approved for rough grading are existing, see Drainage Area Map on this sheet.
2. Fine grade roads, construct curb and gutter and install paving. (8 Weeks)
3. Seed all disturbed areas. (10 Weeks)
4. Convert existing G.E. Sediment Basin to permanent stormwater management pond. (4 Weeks)
5. Remove sediment basin in the northeast side of Parcel E (Parcel E) in accordance GP 86-19 (2 Weeks)
6. Sediment Trap #2 to remain in place until the storm drain can be extended to a suitable outfall.
7. The 15" clean water C.M.P. in Alexander Bell Drive, 30" clean water C.M.P. of station 4+78, temporary 15" C.M.P. of station 115+05 and Sediment Traps #3 and 4 may be removed after grass is established in the contributing drainage areas. Stabilize Sediment Trap Removal Area. See permanent seeding notes on sheet 28.

\* See detailed method of conversion on sheet 27.

3-17-86 As per Planning, DPW and SCS Comments

NO.	DATE	REVISION DESCRIPTION
-----	------	----------------------

COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

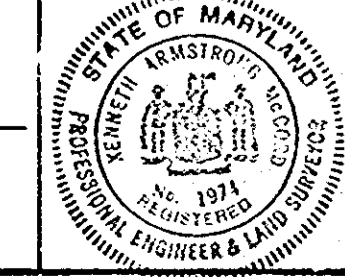
PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1  
 PROJECT TITLE

SEDIMENT CONTROL AND  
 INTERIM STORMWATER MANAGEMENT  
 FOR ROAD CONSTRUCTION

SCALE: AS SHOWN DATE:

WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 Registered Engineer  
 NO. 1974



REVIEWED FOR HOWARD SOIL  
 AND MEETS TECHNICAL REQUIREMENTS

*Kenneth A. McCord* 3-25-86  
 DATE

U.S. SOIL CONSERVATION SERVICE

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

APPROVED *Walter E. Woodford*  
 HOWARD S.C.D. DATE

CERTIFICATION BY THE DEVELOPER

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

*Walter E. Woodford* 1-22-86  
 WALTER E. WOODFORD DATE

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 HOWARD SOIL CONSERVATION DISTRICT."

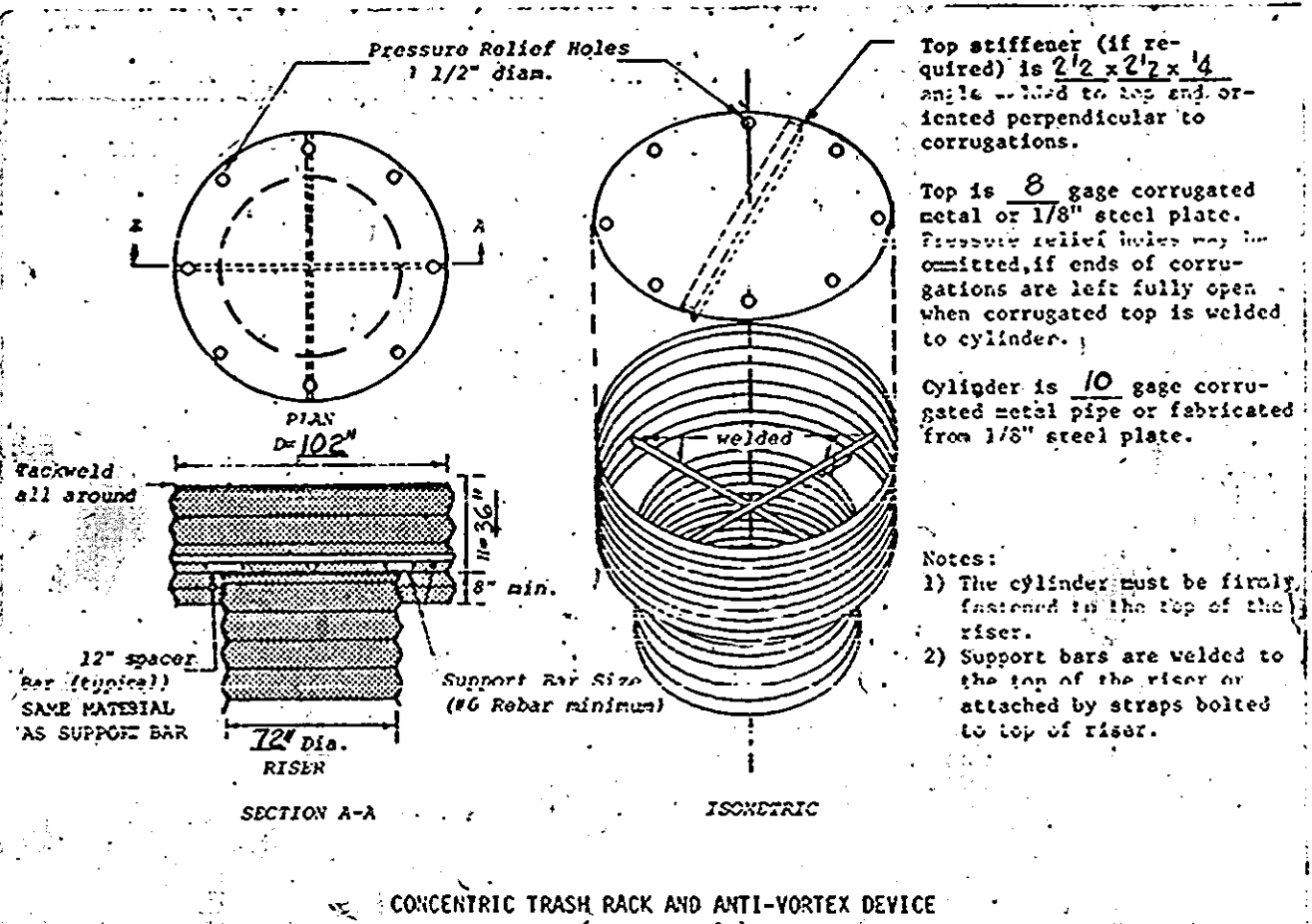
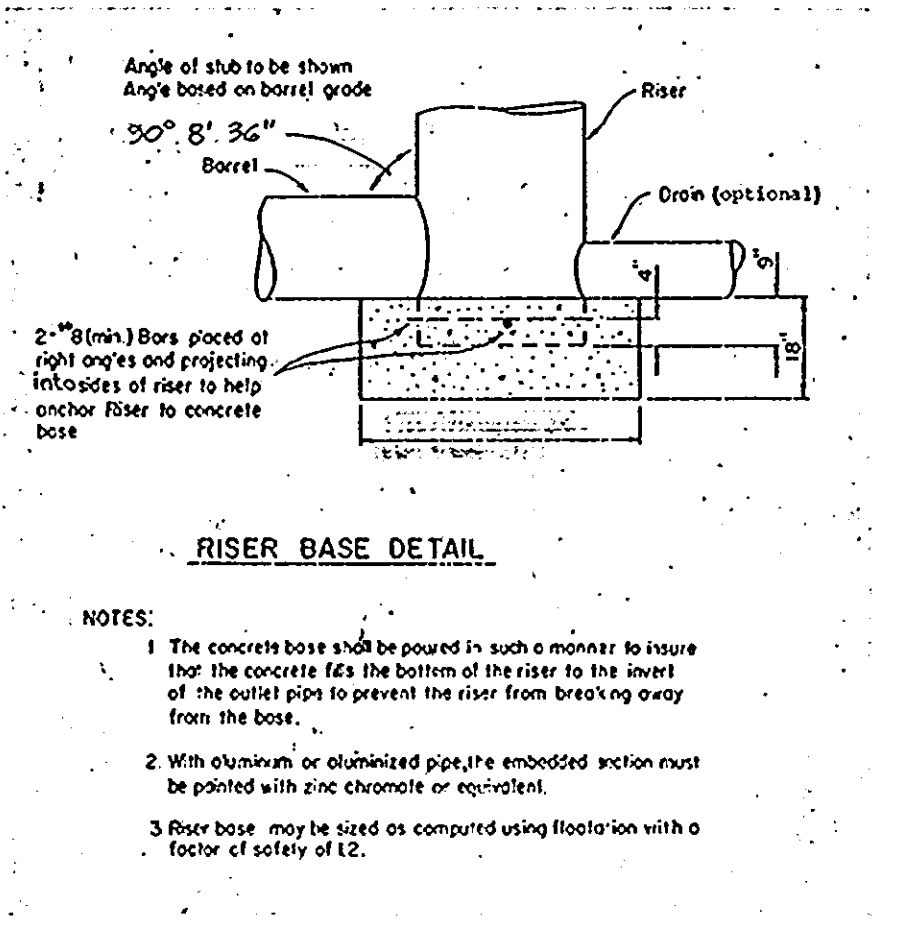
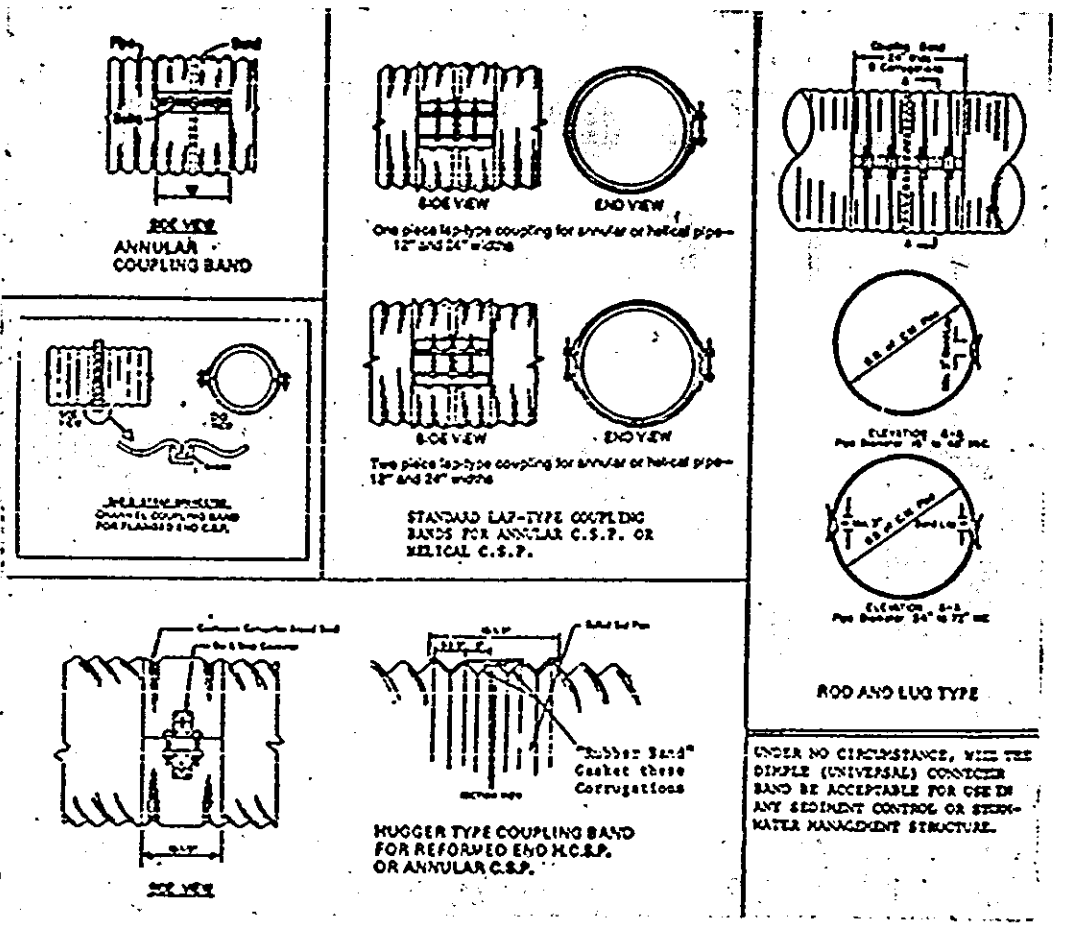
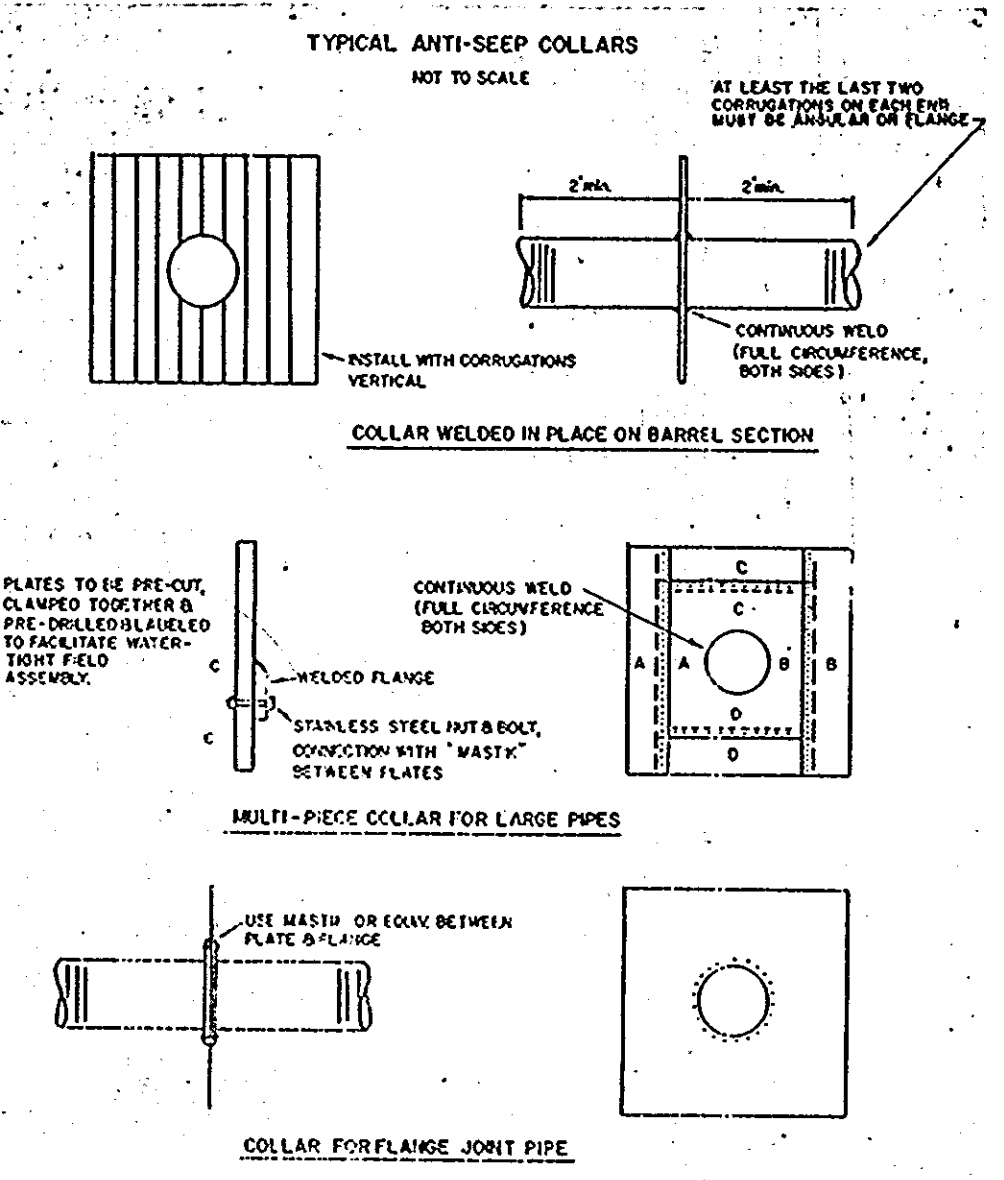
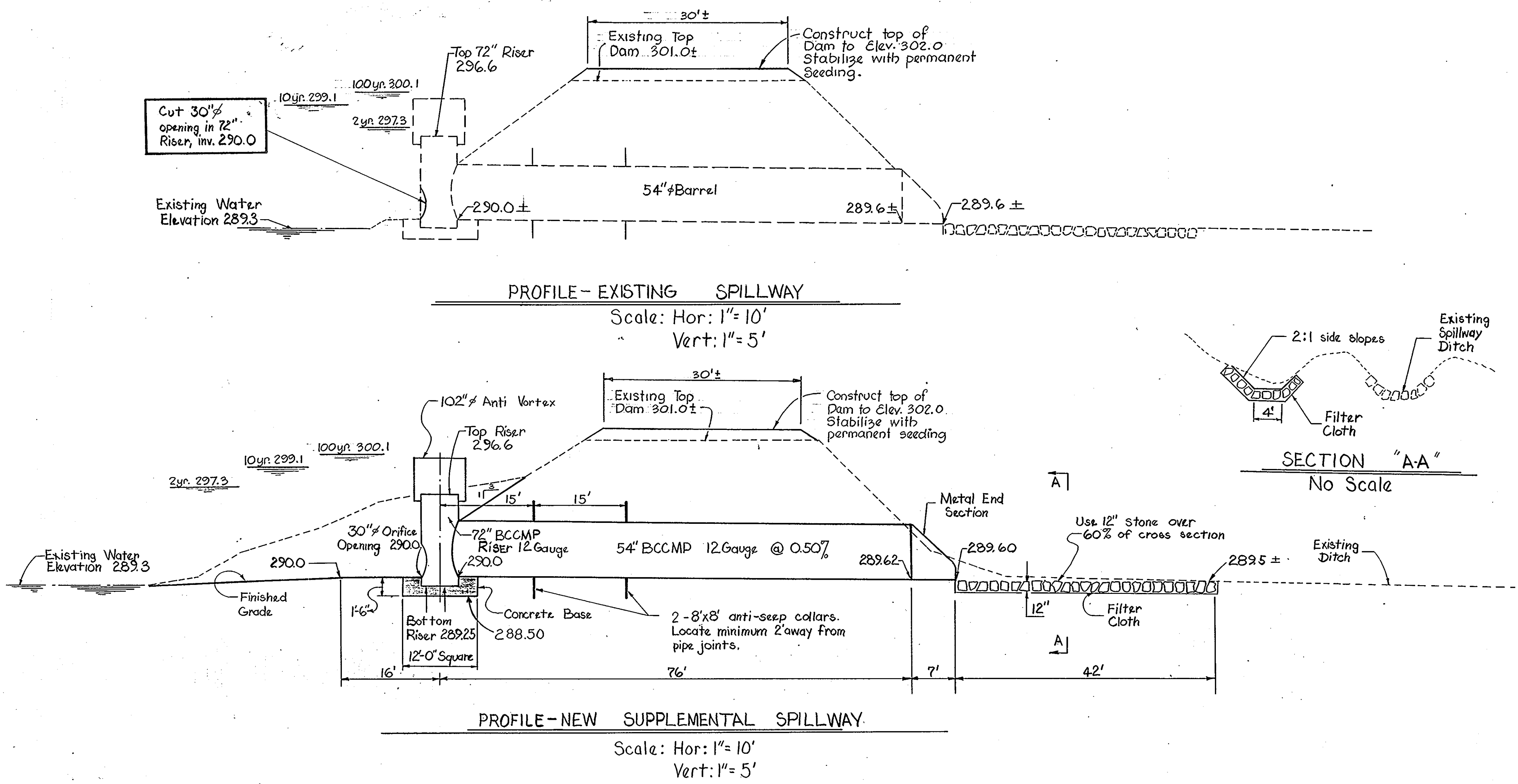
*Kenneth A. McCord* 1-22-86  
 KENNETH A. MCCORD DATE

1158

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 JOHN W. MURPHY  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

**CONVERSION - SEDIMENT CONTROL BASIN TO S.W.M. POND**

1. Drain existing sediment basin. Pump flow through existing 72" riser - 54" barrel spillway.
2. Remove existing pipe spillways (2)
3. Remove existing dam embankment.
4. Construct new core trench.
5. Replace 54" barrel and 72" riser spillway.
6. Cut hole in 72" riser to maintain drainage through pipe spillway.
7. Construct new supplemental 54" barrel and 72" riser spillway.
8. Construct new dam embankment. Stabilize dam embankment.
9. Additional interim controls will be necessary prior to filling the sediment basin area. These interim controls will be outlined on the final S.W.M. pond construction drawings.



3-17-86	-1	As per Planning, DPW and SCS Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
<b>COLUMBIA GATEWAY          6TH ELECTION DISTRICT          HOWARD COUNTY, MARYLAND</b>		
<b>OWNER AND DEVELOPER          THE HOWARD RESEARCH          AND DEVELOPMENT CORPORATION</b>		
<b>PROJECT AREA          PARCELS A THRU K          A RESUBDIVISION OF PARCEL B-1</b>		
<b>PROJECT TITLE          STORM WATER MANAGEMENT POND</b>		
SCALE: AS SHOWN DATE:		
<b>WHITMAN, REQUARDT AND ASSOCIATES          ENGINEERS          BALTIMORE, MARYLAND 21218</b>		
Kenneth A. McCord Registered Engineer No. 1074		

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
 Approved: *[Signature]* 3/25/86  
 Date

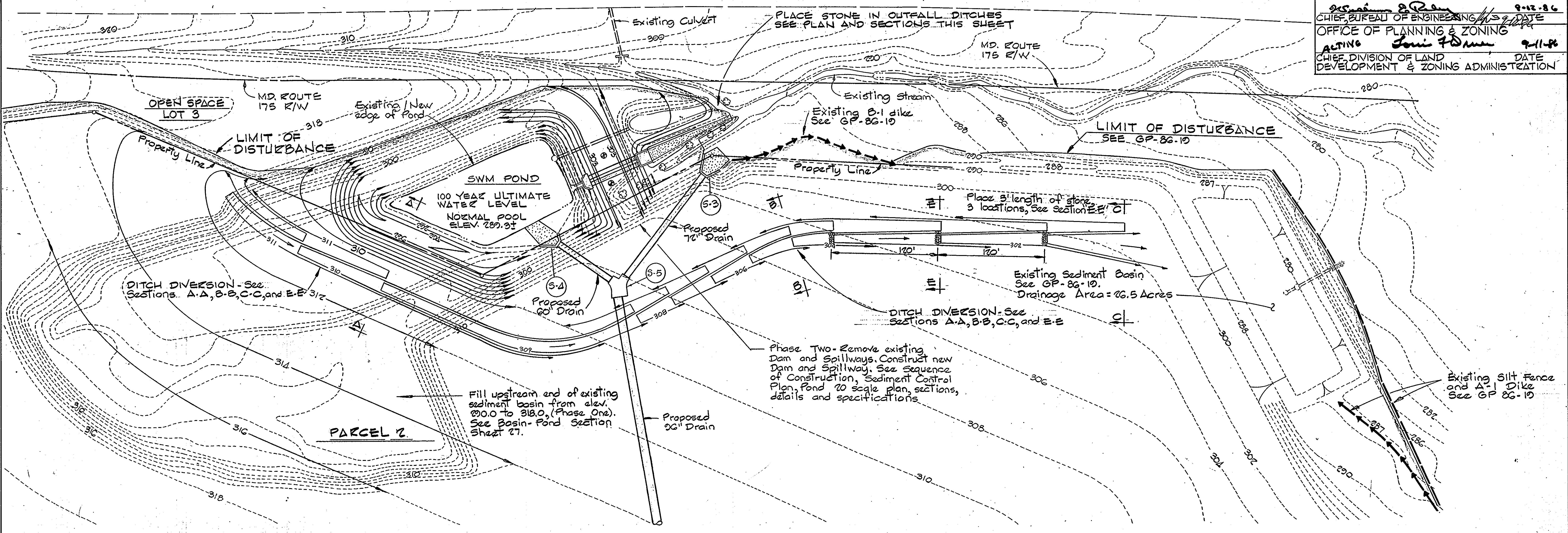
These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
 Approved: *[Signature]* 3/25/86  
 Date

**RESPONSIBLE PERSONNEL CERTIFICATION**  
 I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.  
 Approved: *[Signature]* 1-22-86  
 Date

**CERTIFICATION BY THE ENGINEER**  
 I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *[Signature]* 1-22-86  
 Date

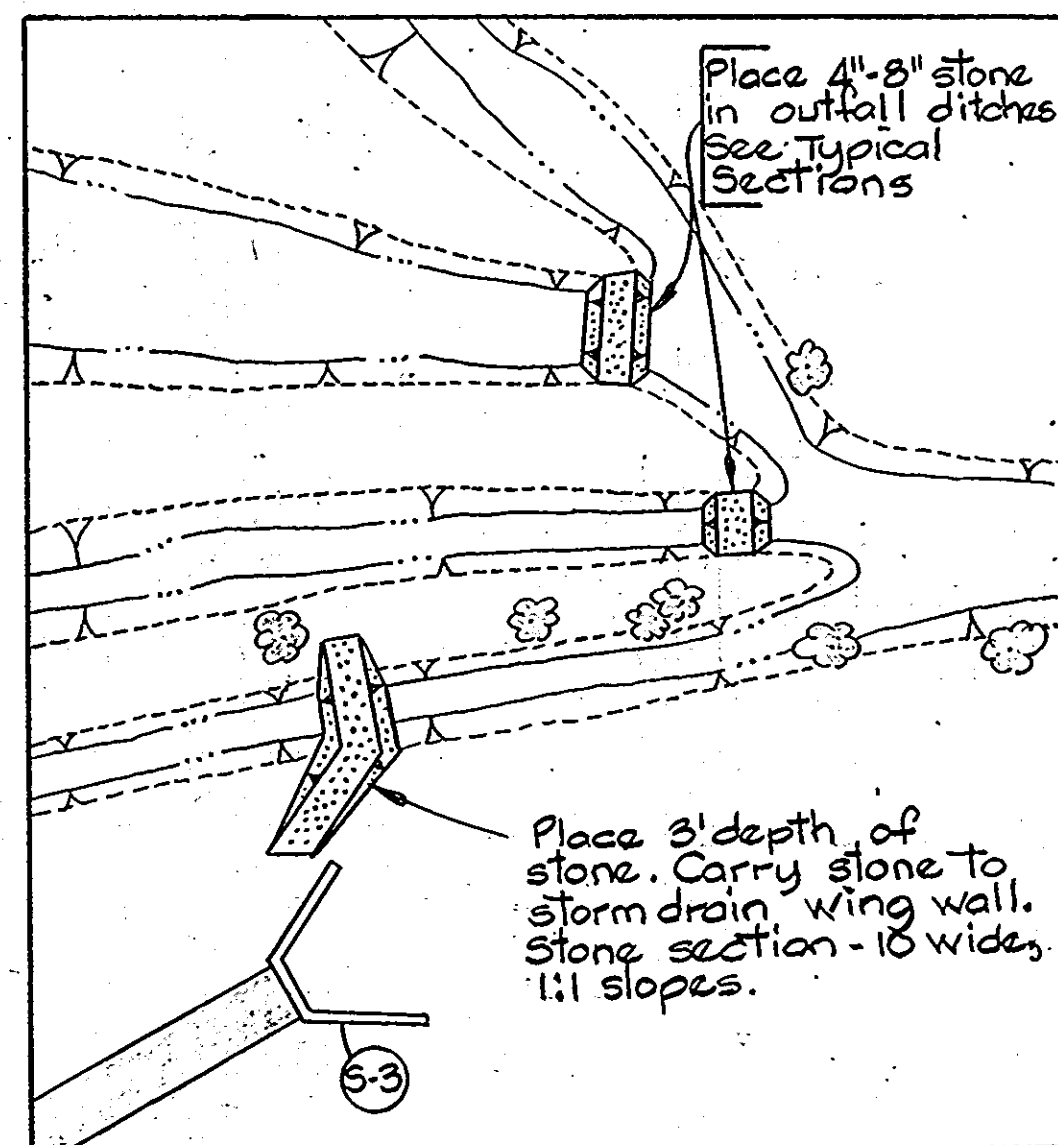
**CERTIFICATION BY THE DEVELOPER**  
 I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made, unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *[Signature]* 1-22-86  
 Date

9-11-86  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 ACTING *Louis F. D...*  
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION



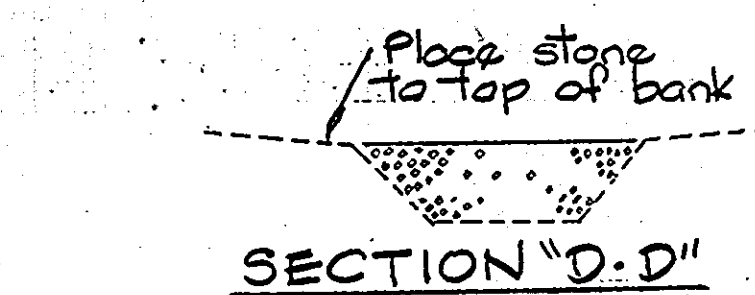
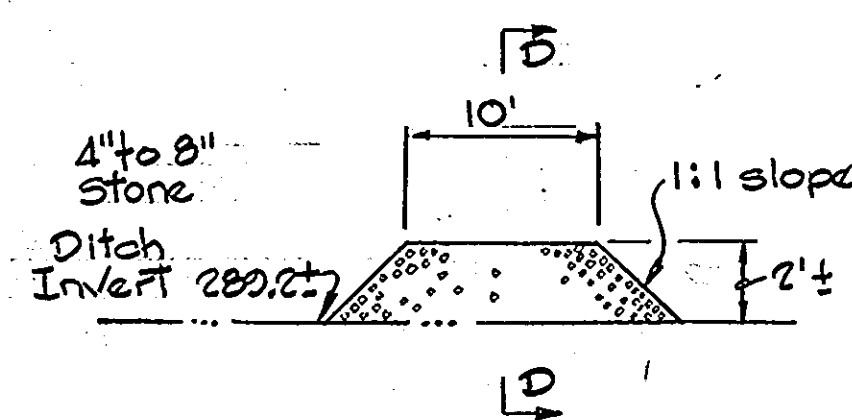
SEDIMENT CONTROL PLAN

Scale: 1" = 50'



PLAN - STONE OUTLETS

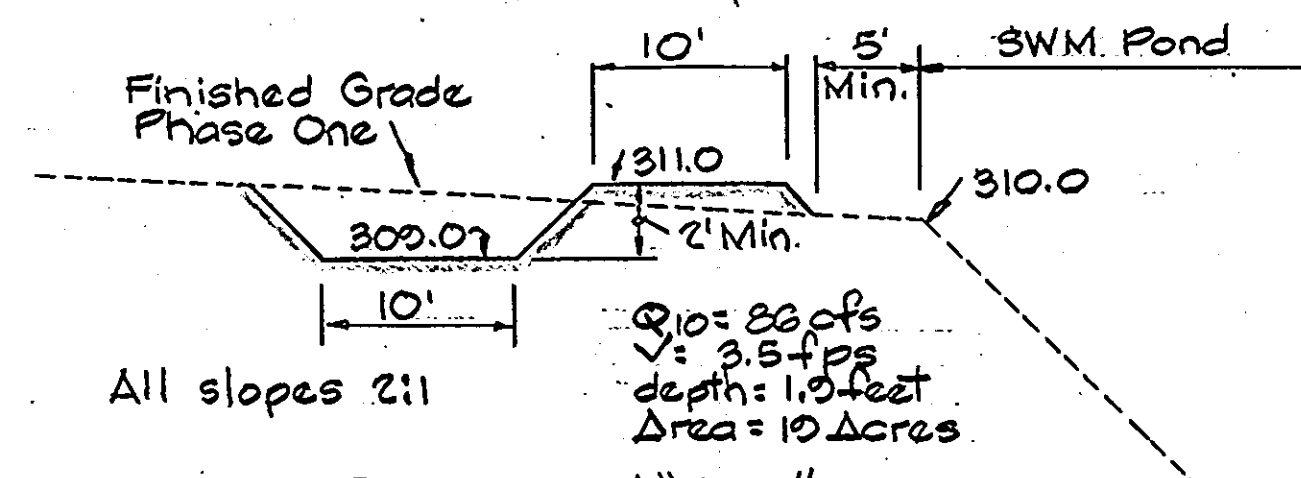
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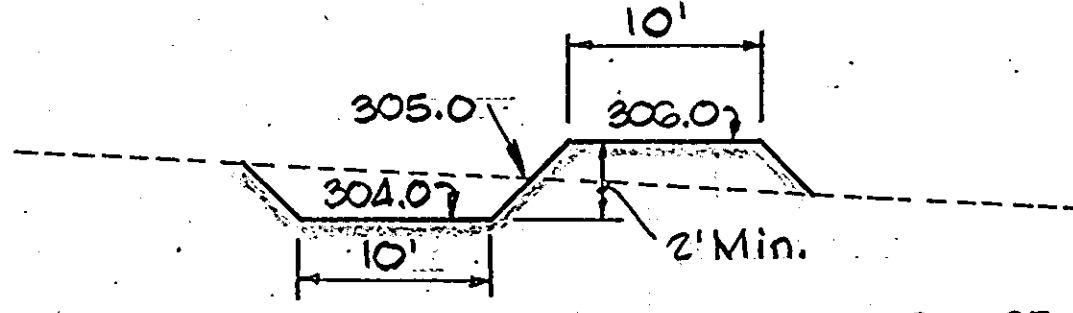
TYPICAL STONE SECTIONS

No Scale

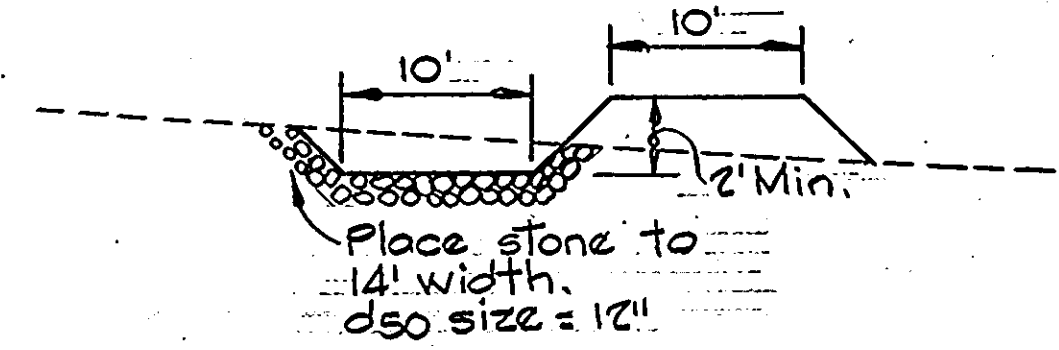
Drainage Area A  
 Area = 2.5 Acres  
 Runoff Volume = 0.9 Ac. Ft.  
 Sediment Volume = 0.1 Ac. Ft.  
 Total Volume = 1.0 Ac. Ft.  
 Volume available @ Elev. 289.2 = 1.2 Ac. Ft. (Min.)  
 Initial work - Dam removal to Elev. 287.0



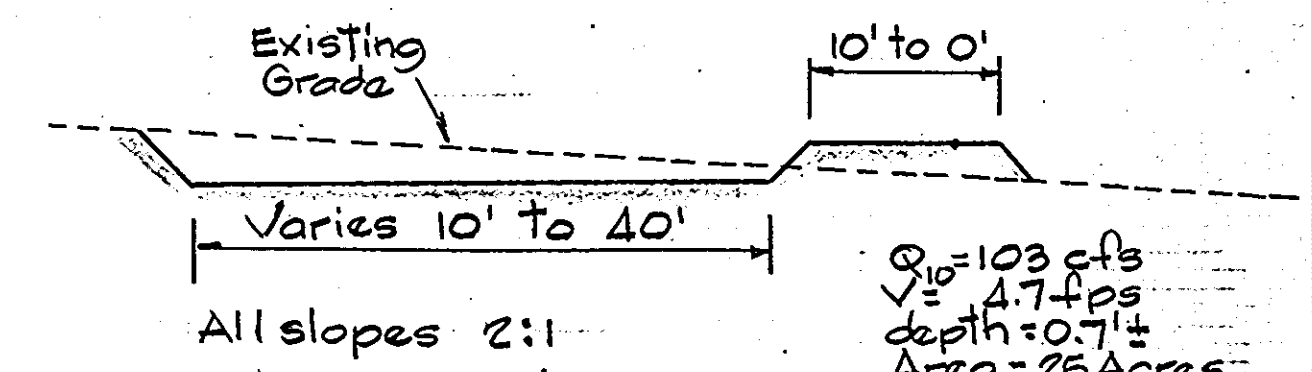
SECTION "A-A"



SECTION "B-B"



SECTION "E-E"



SECTION "C-C"

REVISION NO.	REVISION DESCRIPTION
	COLUMBIA GATEWAY 6 <sup>th</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND
	OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCEL A THRU K A RESUBDIVISION OF PARCEL B-I
	PROJECT TITLE CONVERSION-SEDIMENT BASIN TO STORMWATER MANAGEMENT POND
	SCALE: AS SHOWN DATE:

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District

CERTIFICATION BY THE ENGINEER

"I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion."

CERTIFICATION BY THE DEVELOPER

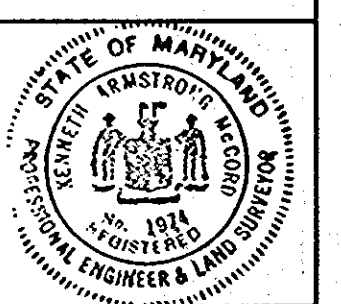
"I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion."

RESPONSIBLE PERSONNEL CERTIFICATION

I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218

*Kenneth A. McCord*  
 KENNETH A. MCCORD  
 Registered Engineer  
 No. 1974



Approved *[Signature]* 9-11-86 Date  
 Howard S.C.D.

Approved *[Signature]* 9-11-86 Date  
 Howard S.C.D.

Approved *[Signature]* 6-18-86 Date  
 KENNETH A. MCCORD P.E. No. 1974

Approved *[Signature]* 6-16-86 Date  
 WALTER WOODFORD

Approved *[Signature]* 6-16-86 Date  
 WALTER WOODFORD

Approved *[Signature]* 6-16-86 Date  
 WALTER WOODFORD

*William B. Ryan*  
 CHIEF BUREAU OF ENGINEERING / DATE  
 OFFICE OF PLANNING & ZONING  
 ACTING *James F. Dineen* 9-11-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION

**CONSTRUCTION SPECIFICATIONS**

**I. SITE PREPARATION**

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.

Areas to be covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

**II. EARTH FILL**

**Material**

The fill material shall be taken from approved designated borrow area or areas. It shall be free of roots, stumps, wood, rubbish, oversize stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

**Placement**

Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the fill. The most porous borrow material shall be placed in the downstream portions of the embankment.

**Compaction**

The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

Where a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density and is to be certified by the Engineer.

**Cutoff Trench**

Where specified, a cutoff trench shall be excavated along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be as shown on the drawings, with the minimum width being four feet. The depth shall be at least four feet or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill material for the cutoff trench shall be the most impervious material available and shall be compacted with equipment or rollers to assure maximum density and minimum permeability.

**III. STRUCTURAL BACKFILL**

Backfill material shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe unless there is a compacted fill of twenty-four inches or greater over the structure or pipe.

**IV. PIPE CONDUITS**

All pipes shall be circular in cross section.

**A. Corrugated Metal Pipe**

1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings are commercially available: Nexon, Plasti-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

2. Connections - All connections with pipes must be completely watertight. Watertight coupling bands are not considered to be watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Laying pipe - The pipe shall be placed with inside circumferential laps pointing downstream and with the longitudinal laps at the sides.

5. Backfilling shall conform to structural backfill as shown above.

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**V. CONCRETE**

**1. Materials**

a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.

b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.

c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.

d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.

e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U.S. gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregates may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.

3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the mixer-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.

4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.

**V. CONCRETE (continued)**

The inside of forms shall be oiled with a non-staining mineral oil or thoroughly wetted before concrete is placed.

Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of the concrete.

5. Reinforcing Steel - All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The steel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.

6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.

7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be reamed and completely filled with dry-patching mortar.

8. Protection and Curing - Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture may be applied by spraying or sprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period. Curing compounds may also be used.

9. Placing Temperature - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 34° with the temperature rising.

**VI. STABILIZATION**

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching (if required) in accordance with the vegetative treatment specifications or as shown on the accompanying drawings.

**VII. EROSION AND SEDIMENT CONTROL**

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

**CERTIFICATION BY THE ENGINEER**

I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.

*Kenneth A. McCord*  
 KENNETH A. MCCORD P.E. No. 1974  
 6-16-86  
 Date

**RESPONSIBLE PERSONNEL CERTIFICATION**

I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

*Walter Woodford*  
 WALTER WOODFORD  
 6-16-86  
 Date

**CERTIFICATION BY THE DEVELOPER**

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

*James F. Dineen*  
 JAMES F. DINEEN  
 9-11-86  
 Date

**CERTIFICATION BY THE DEVELOPER**

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

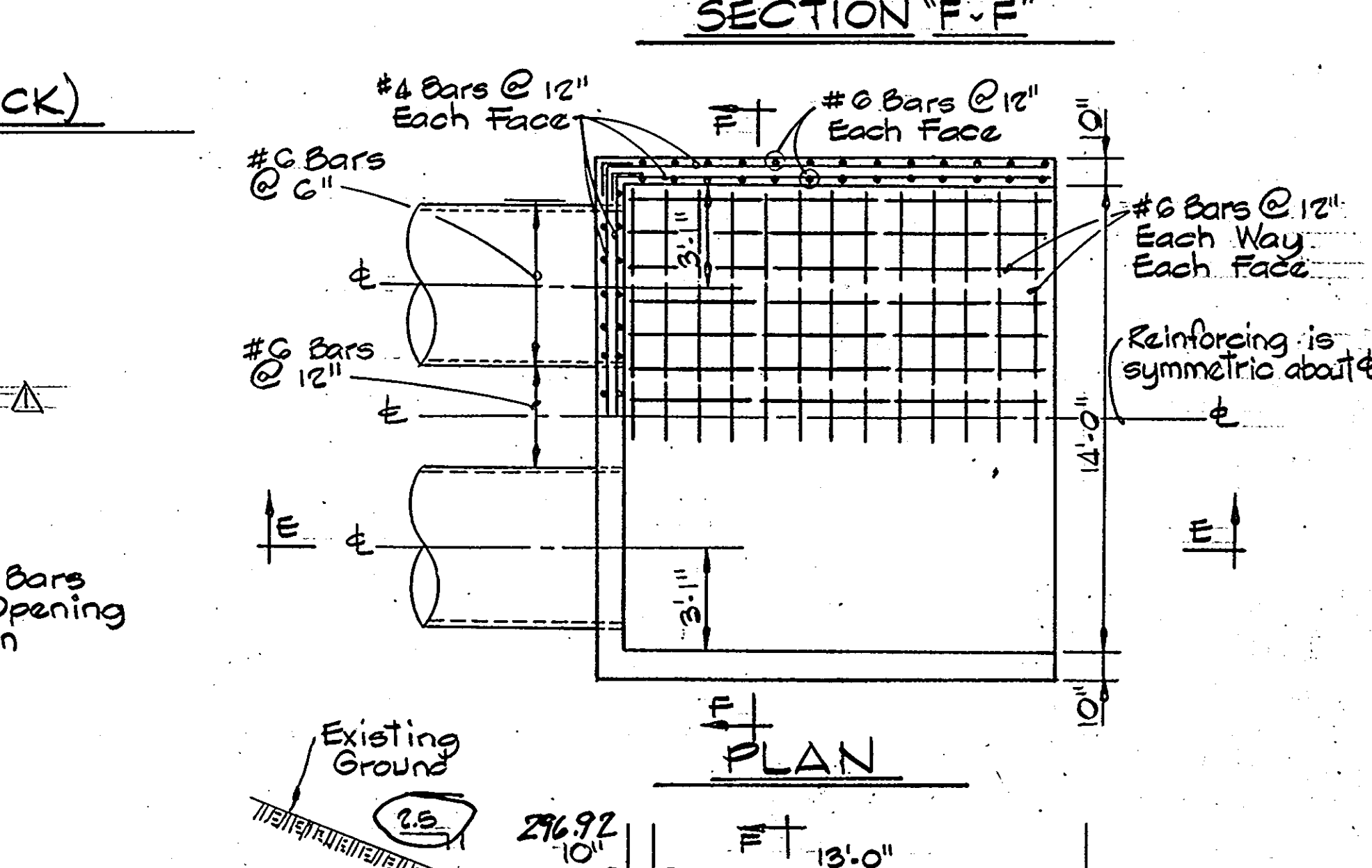
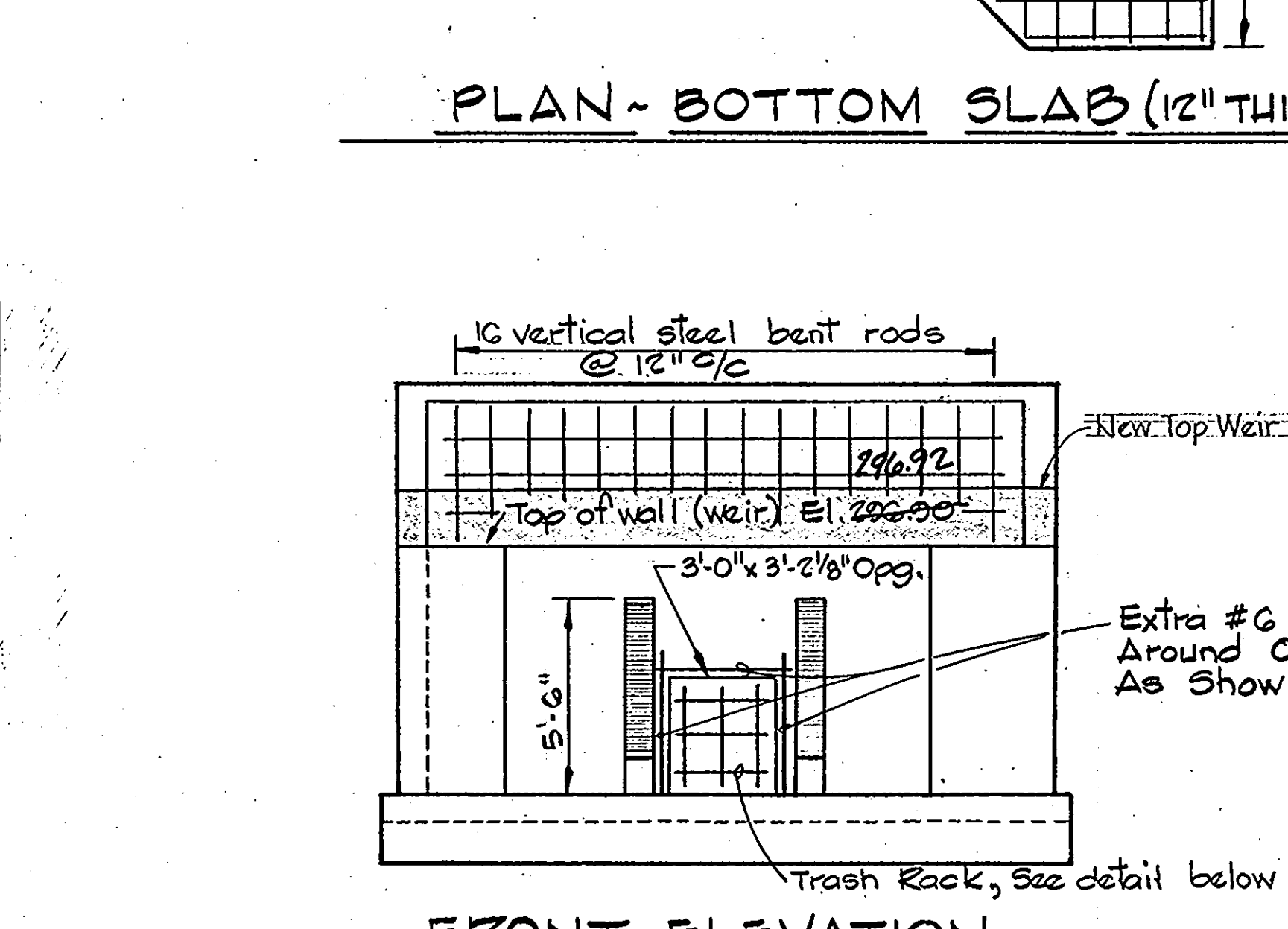
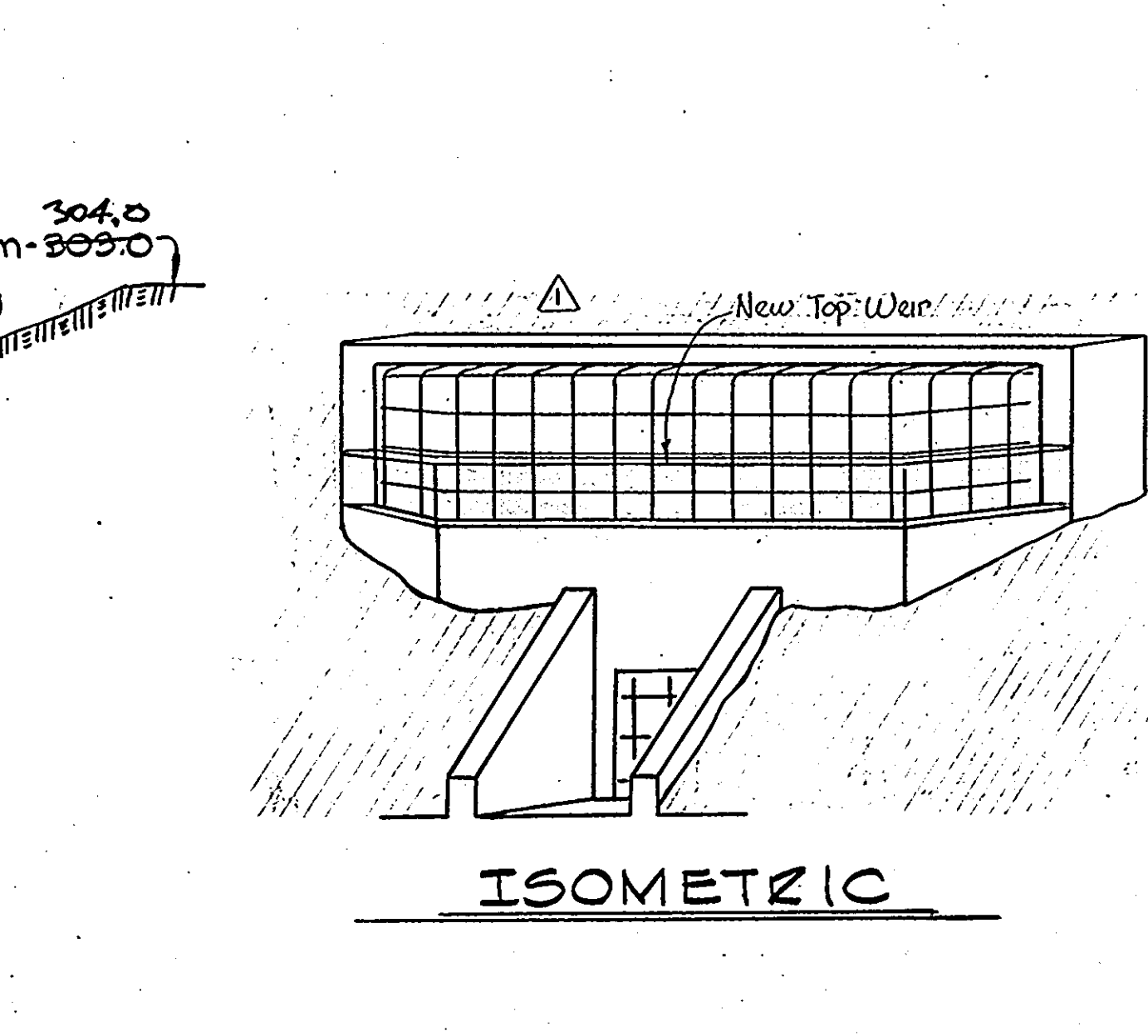
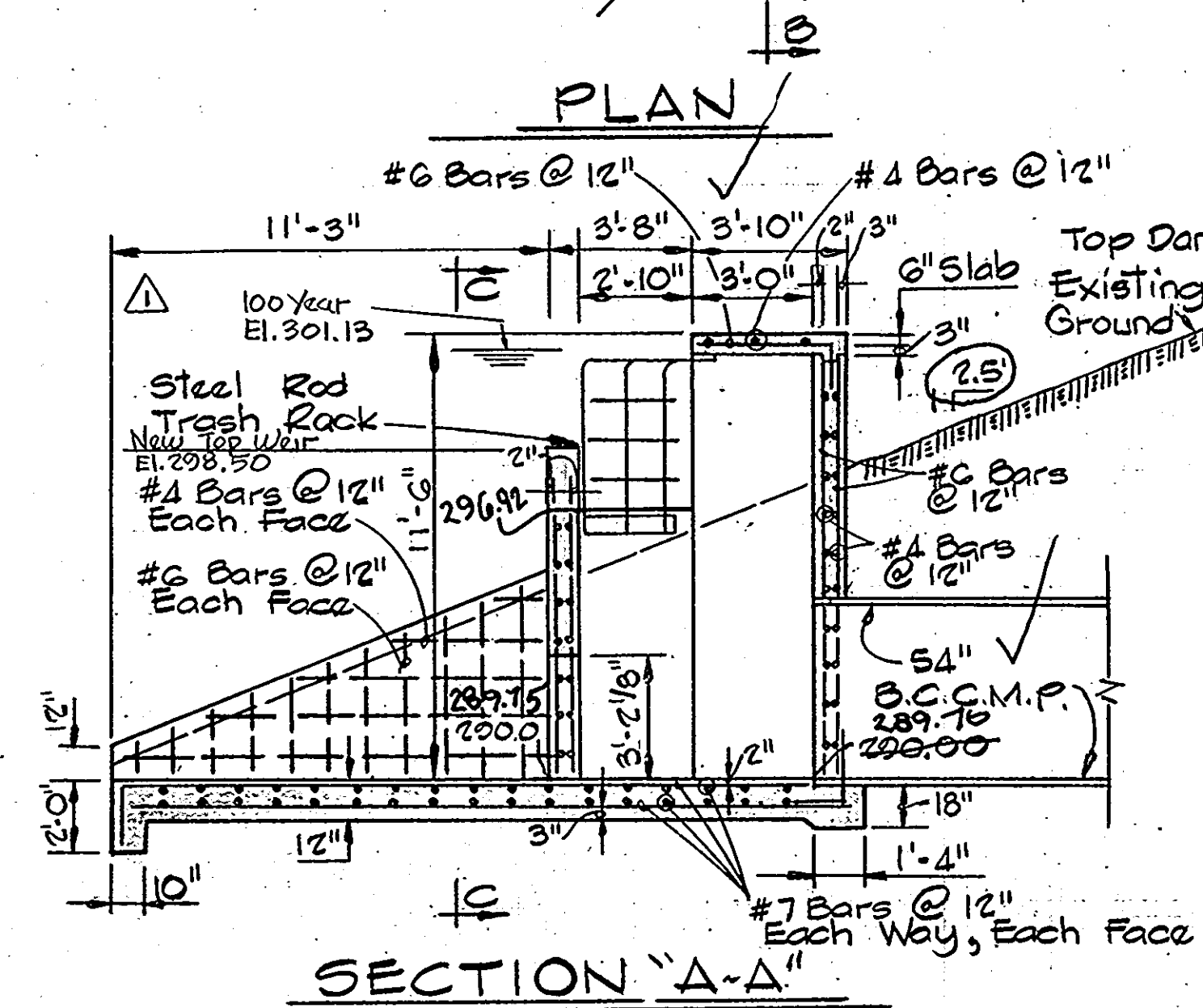
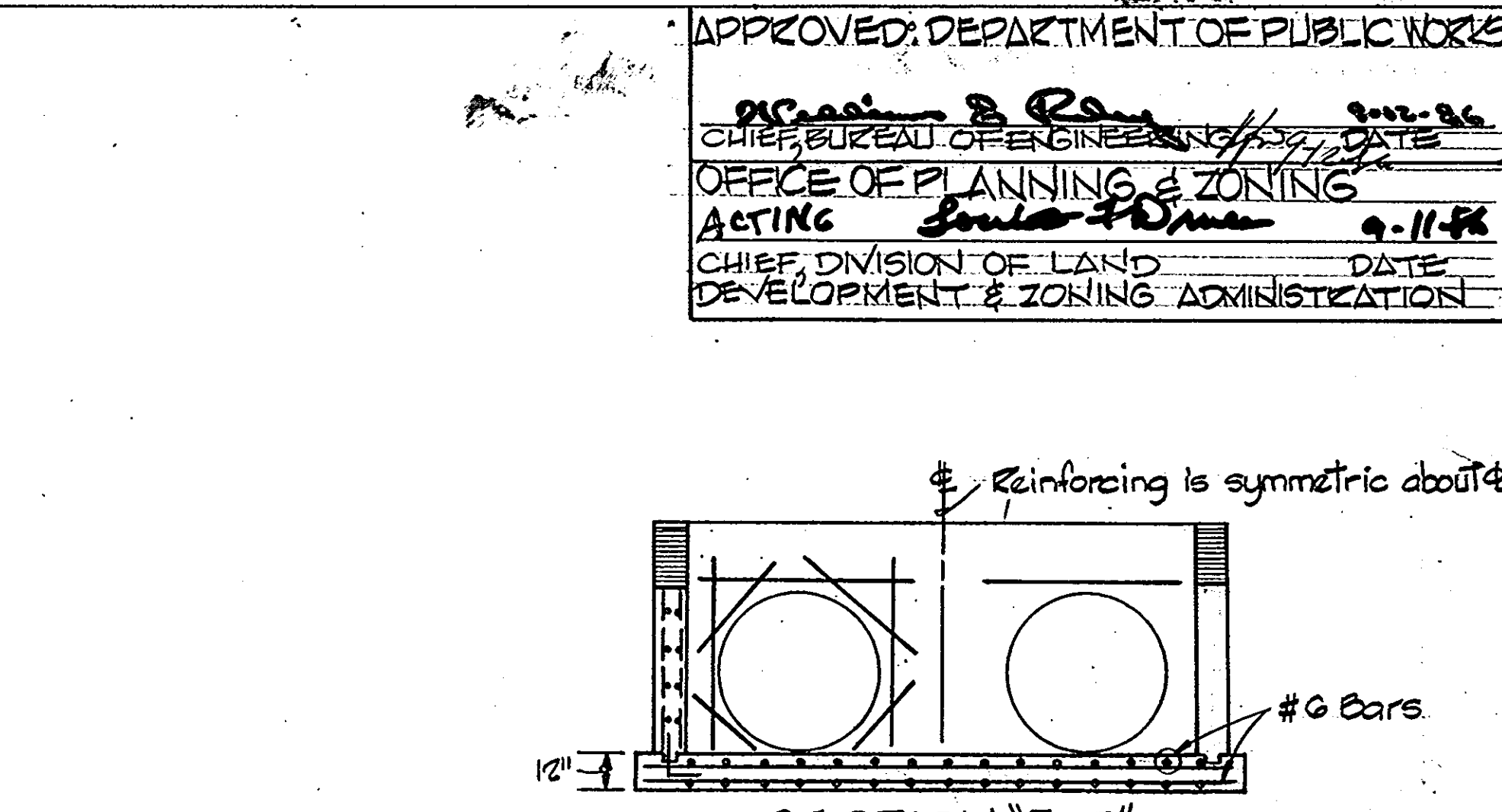
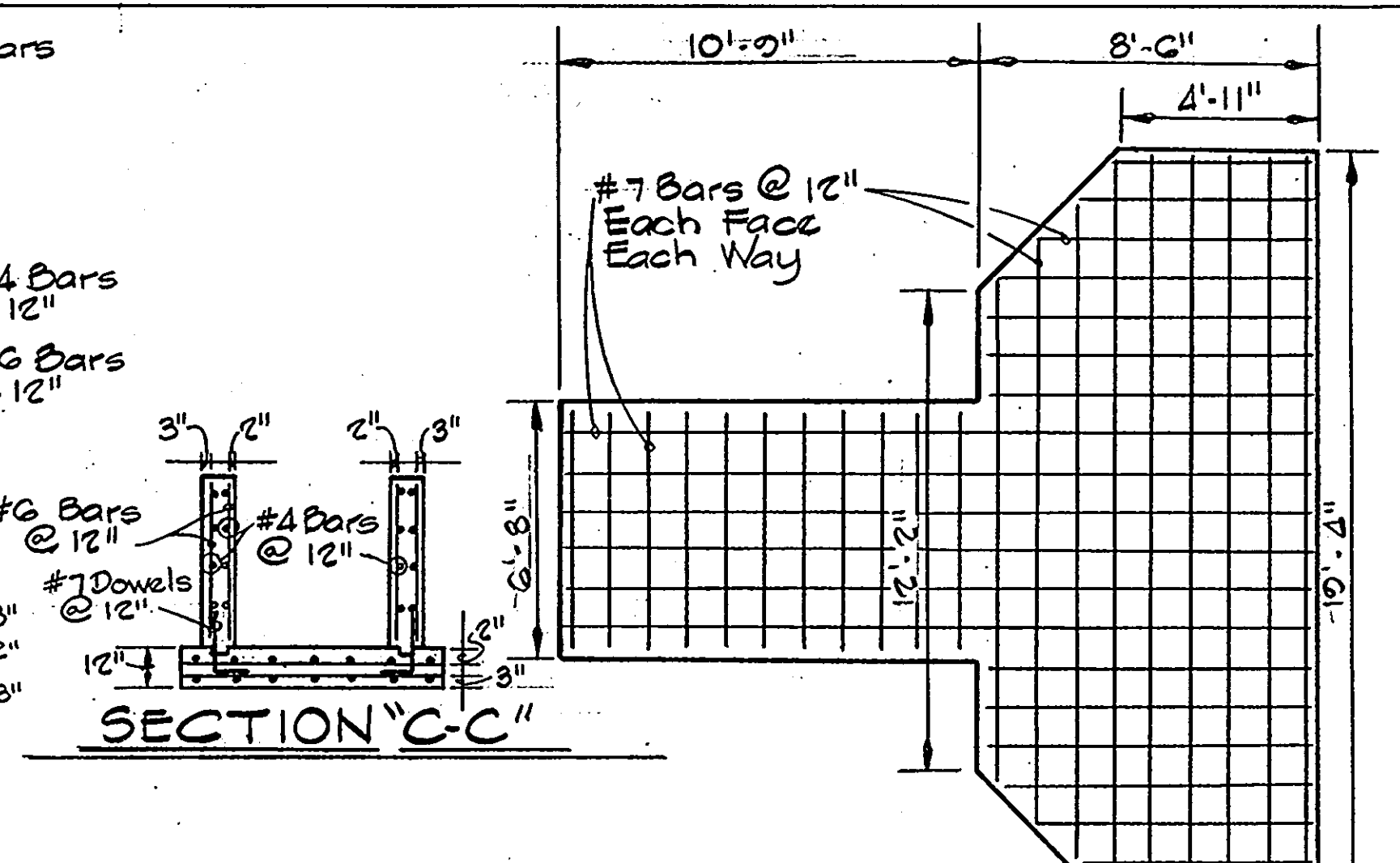
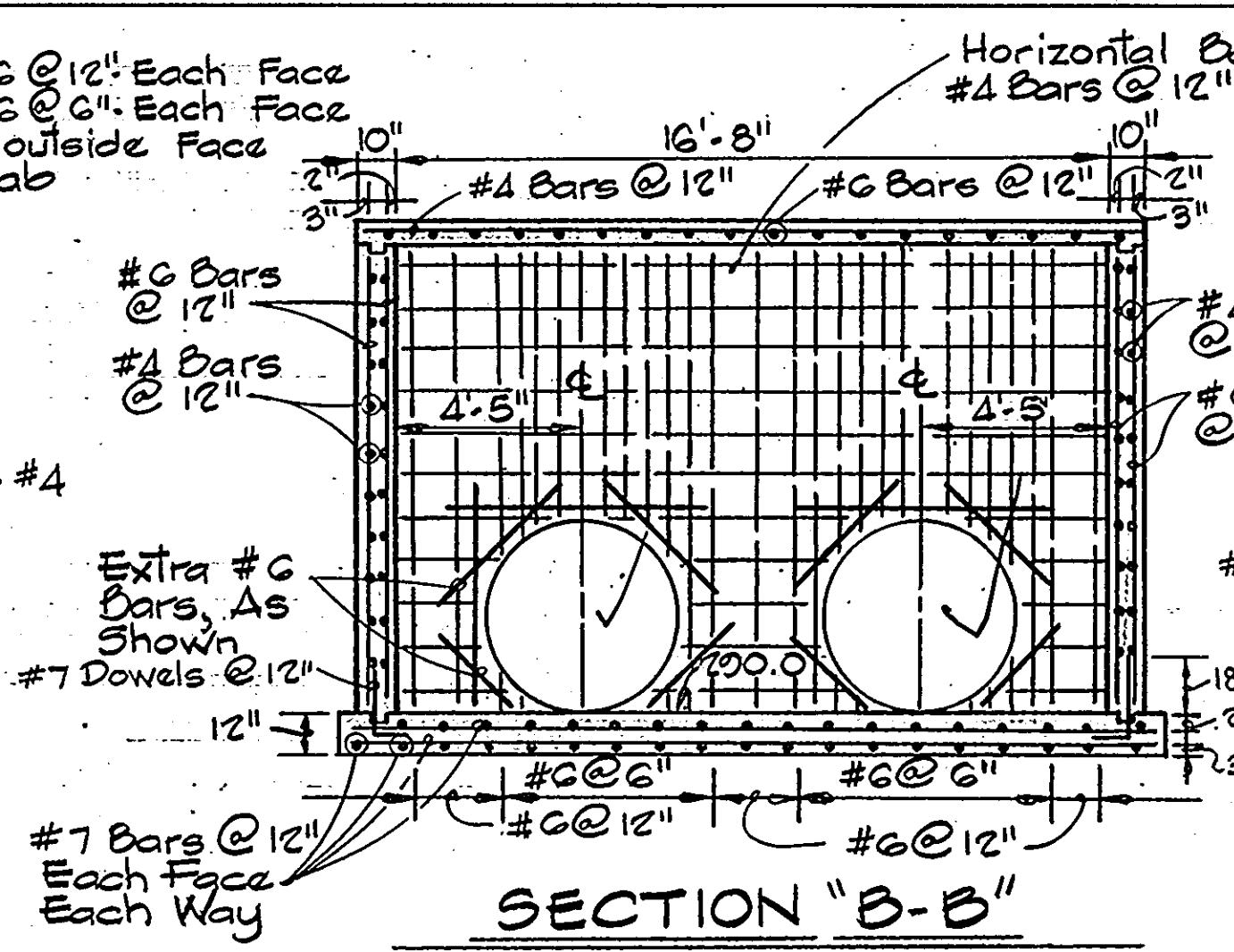
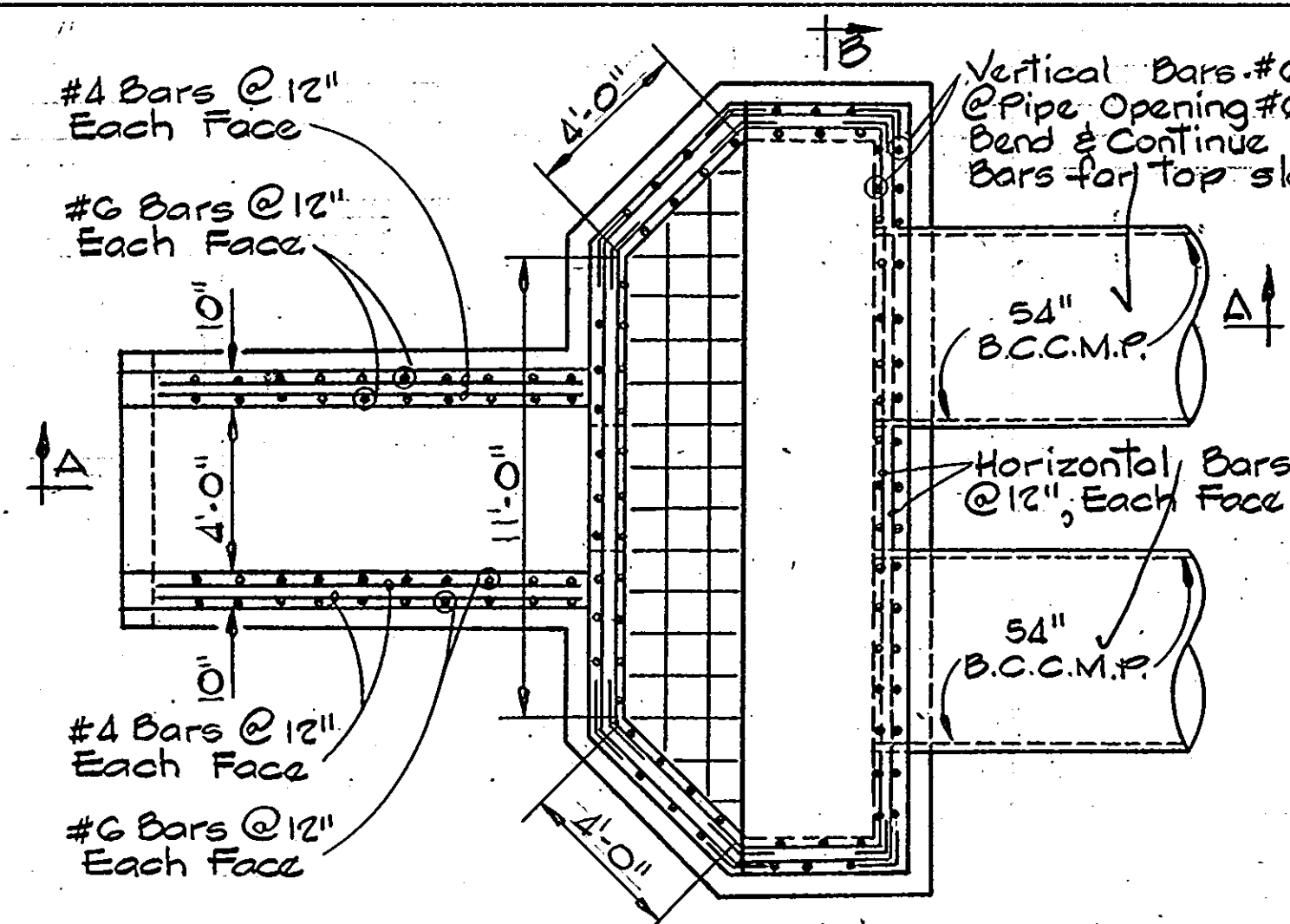
*Walter Woodford*  
 WALTER WOODFORD  
 6-16-86  
 Date

**CERTIFICATION BY THE DEVELOPER**

I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.

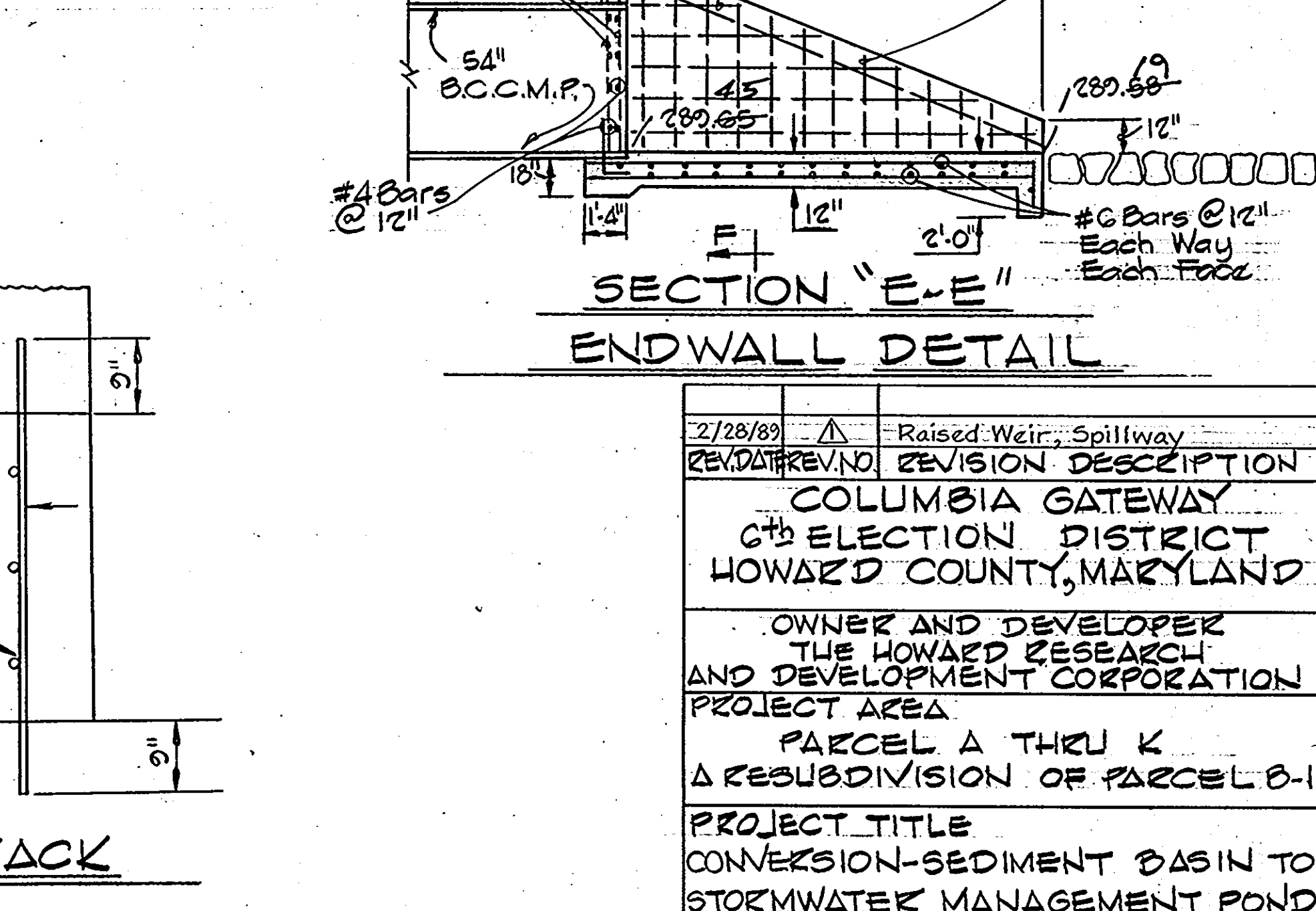
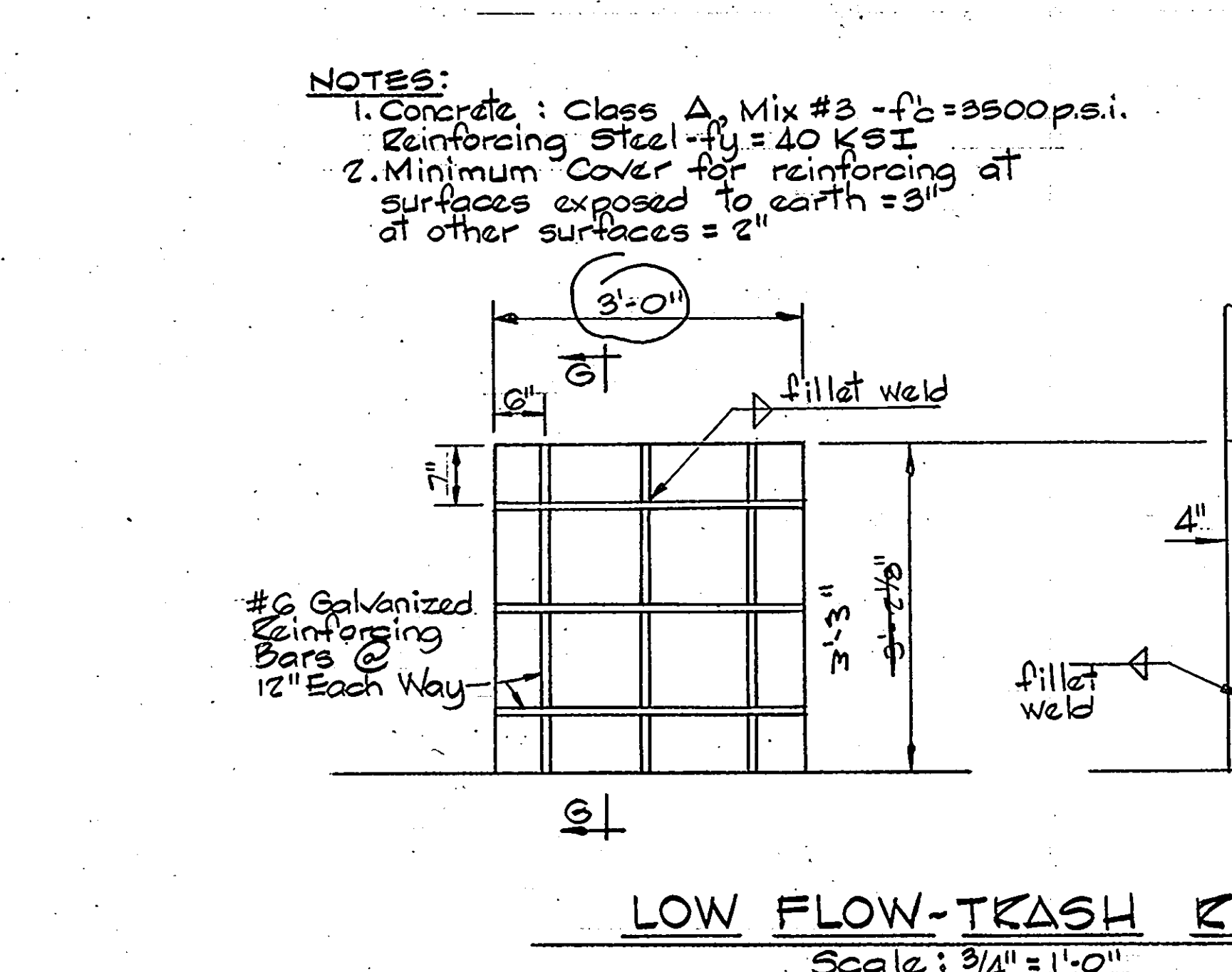
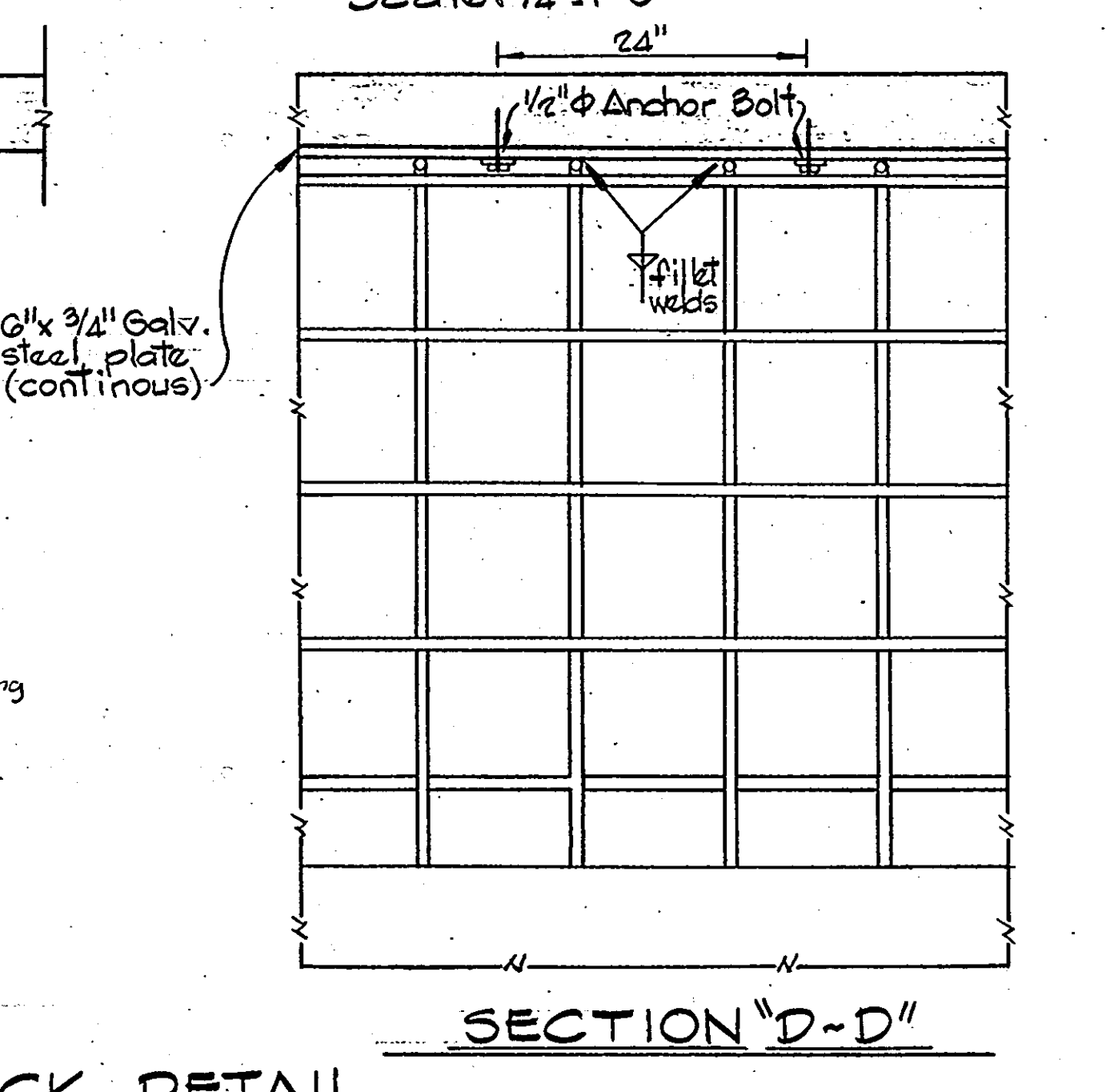
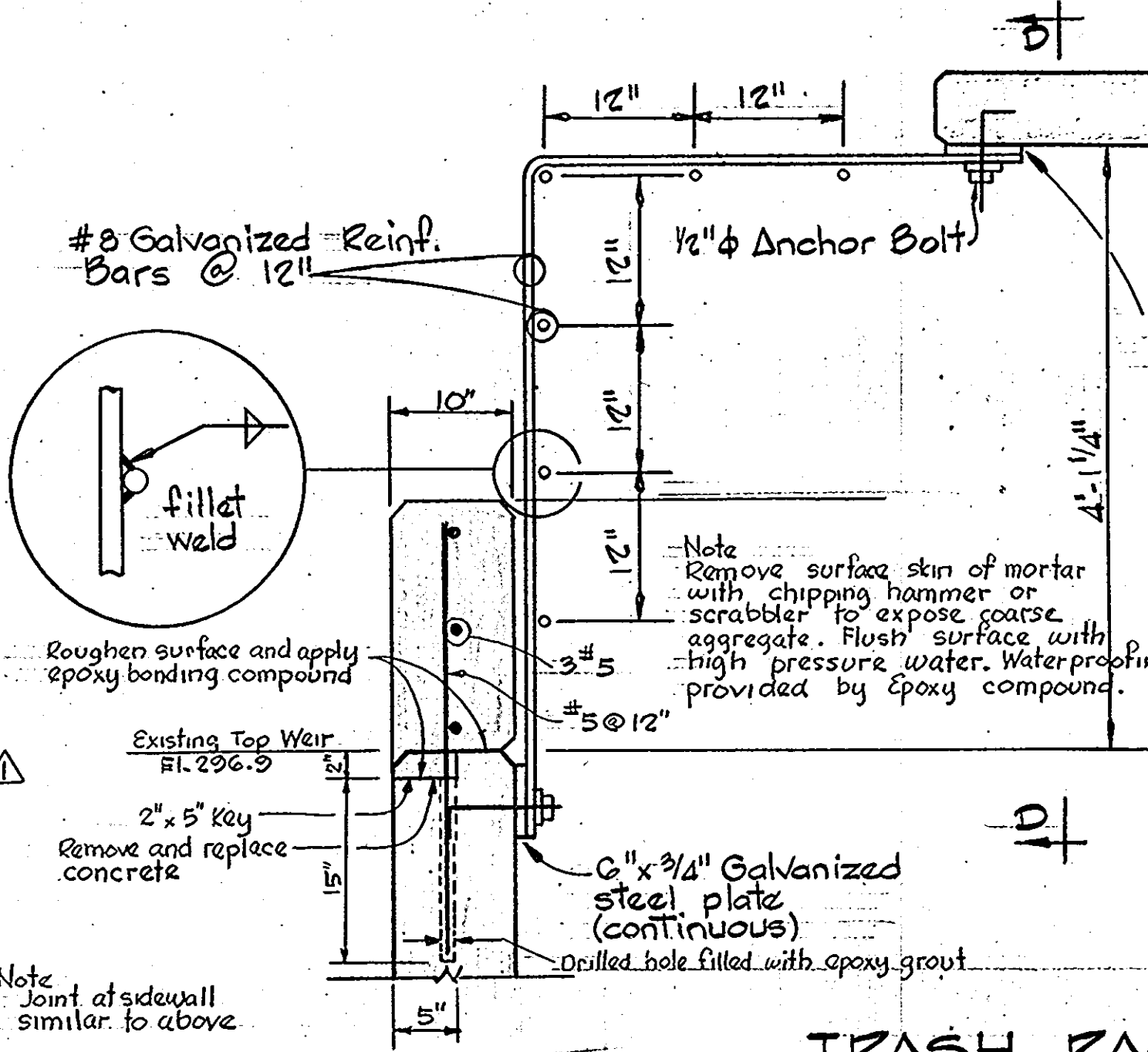
*Walter Woodford*  
 WALTER WOODFORD  
 6-16-86  
 Date

REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE CONVERSION- SEDIMENT BASIN TO STORMWATER MANAGEMENT POND
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUAOT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		<i>Kenneth A. McCord</i> KENNETH A. MCCORD Registered Engineer NO. 1974



DETAIL-CONCRETE INFLOW STRUCTURE  
 Scale: 1/4" = 1'-0"

- NOTES:  
 1. Concrete: Class A, Mix #3 - f<sub>c</sub> = 3500 p.s.i.  
 Reinforcing Steel - f<sub>y</sub> = 40 KSI  
 2. Minimum cover for reinforcing at surfaces exposed to earth = 3" at other surfaces = 2"



TRASH RACK DETAIL  
 Scale: 3/4" = 1'-0"

LOW FLOW-TRASH RACK  
 Scale: 3/4" = 1'-0"

SECTION 'E-E' ENDWALL DETAIL

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
*James M. Vella* 9-1-86  
 Soil Conservation Service Date

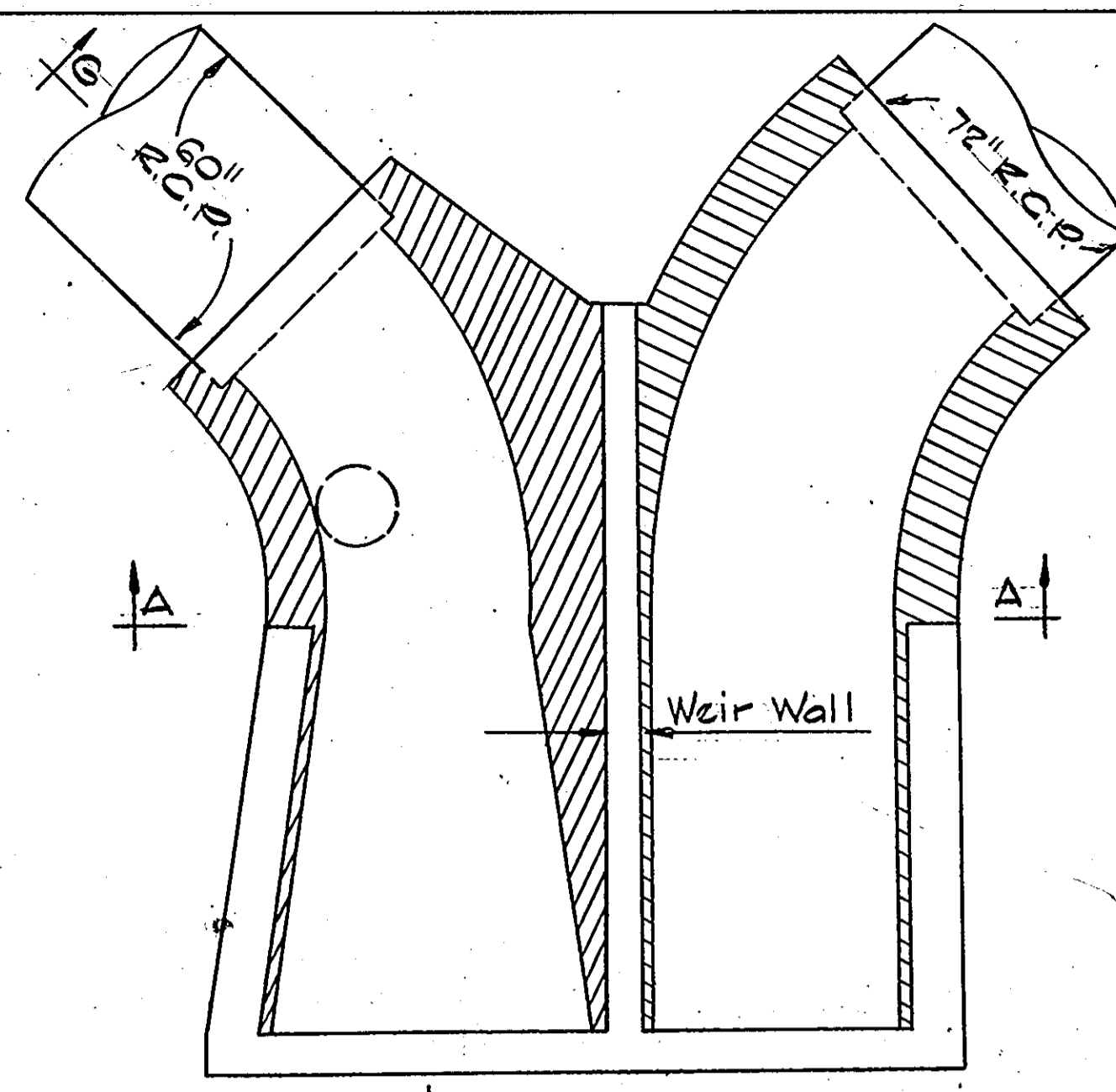
These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
 Approved *Paula Thomas* 9-11-86  
 Howard P.C.D. Date  
 Plan Number

CERTIFICATION BY THE ENGINEER  
 I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
*Kenneth A. McCord* 6-16-86  
 KENNETH A. MCCORD P.E. No. 1074 Date

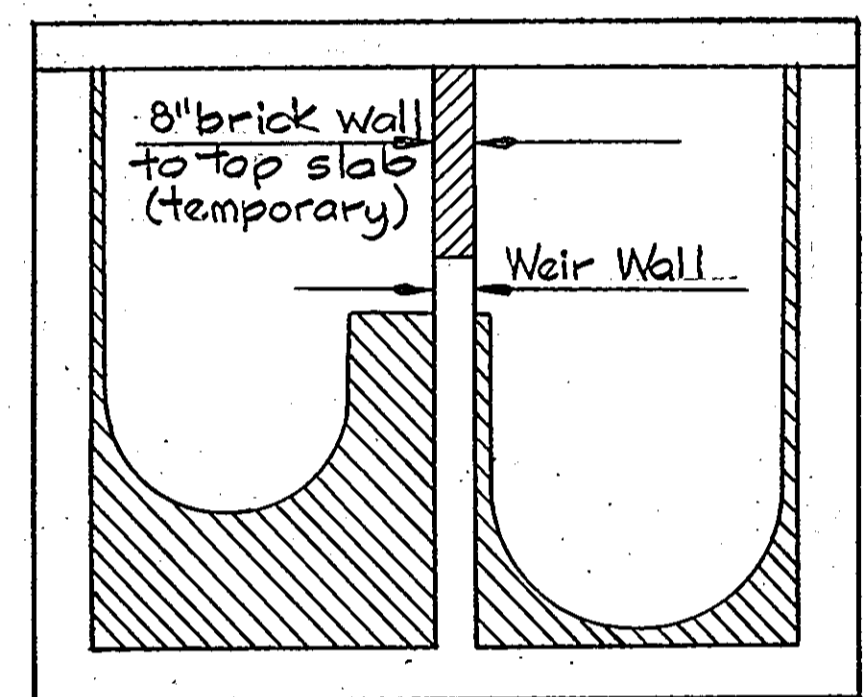
CERTIFICATION BY THE DEVELOPER  
 I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
*Walter Woodford* 6-16-86  
 WALTER WOODFORD Date

RESPONSIBLE PERSONNEL CERTIFICATION  
 I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.  
*Walter Woodford* 6-16-86  
 WALTER WOODFORD Date

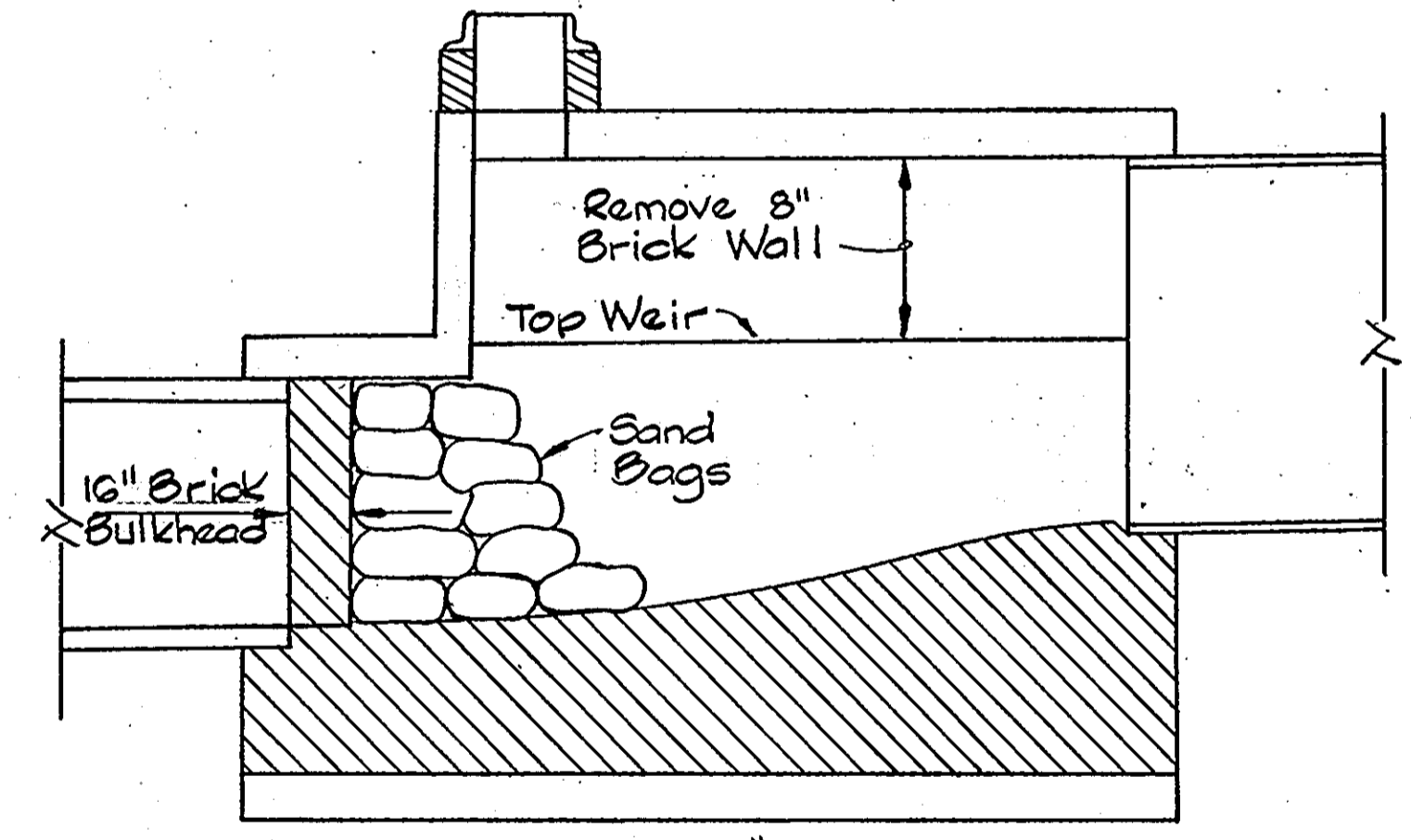
2/28/89	Δ	Raised Weir, Spillway
REVISION	REVISION	DESCRIPTION
COLUMBIA GATEWAY 6 <sup>th</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA		
PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1		
PROJECT TITLE CONVERSION-SEDIMENT BASIN TO STORMWATER MANAGEMENT POND		
SCALE: AS SHOWN		DATE:
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218		
<i>Kenneth A. McCord</i> KENNETH A. MCCORD Registered Engineer No. 1074		



PLAN



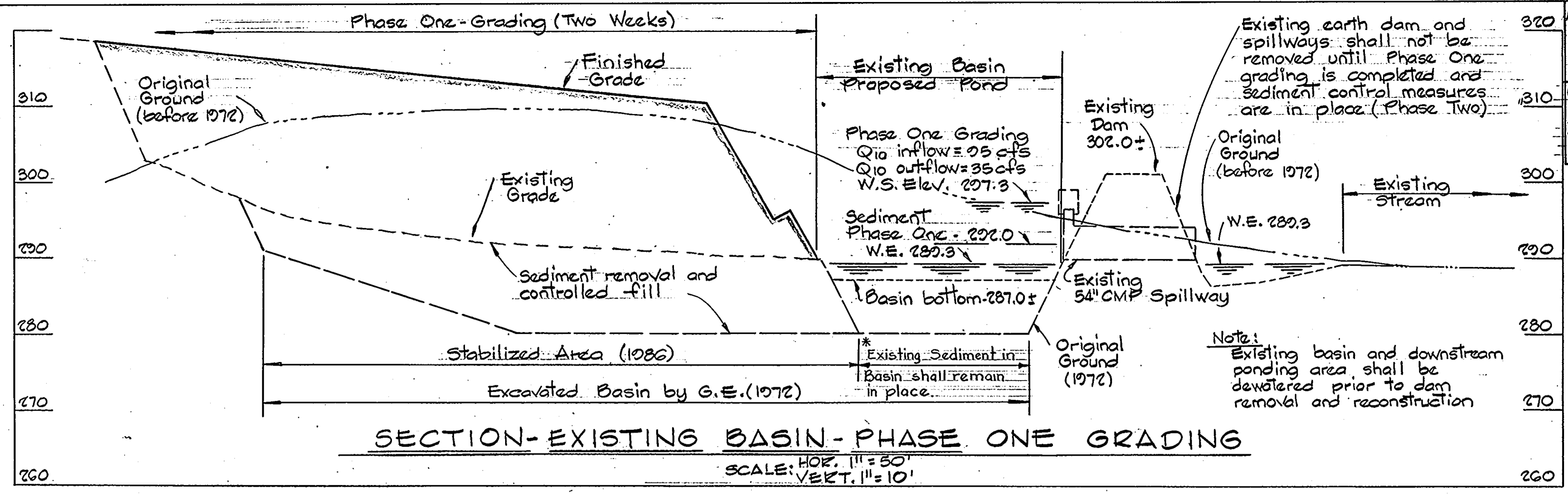
SECTION "A-A"



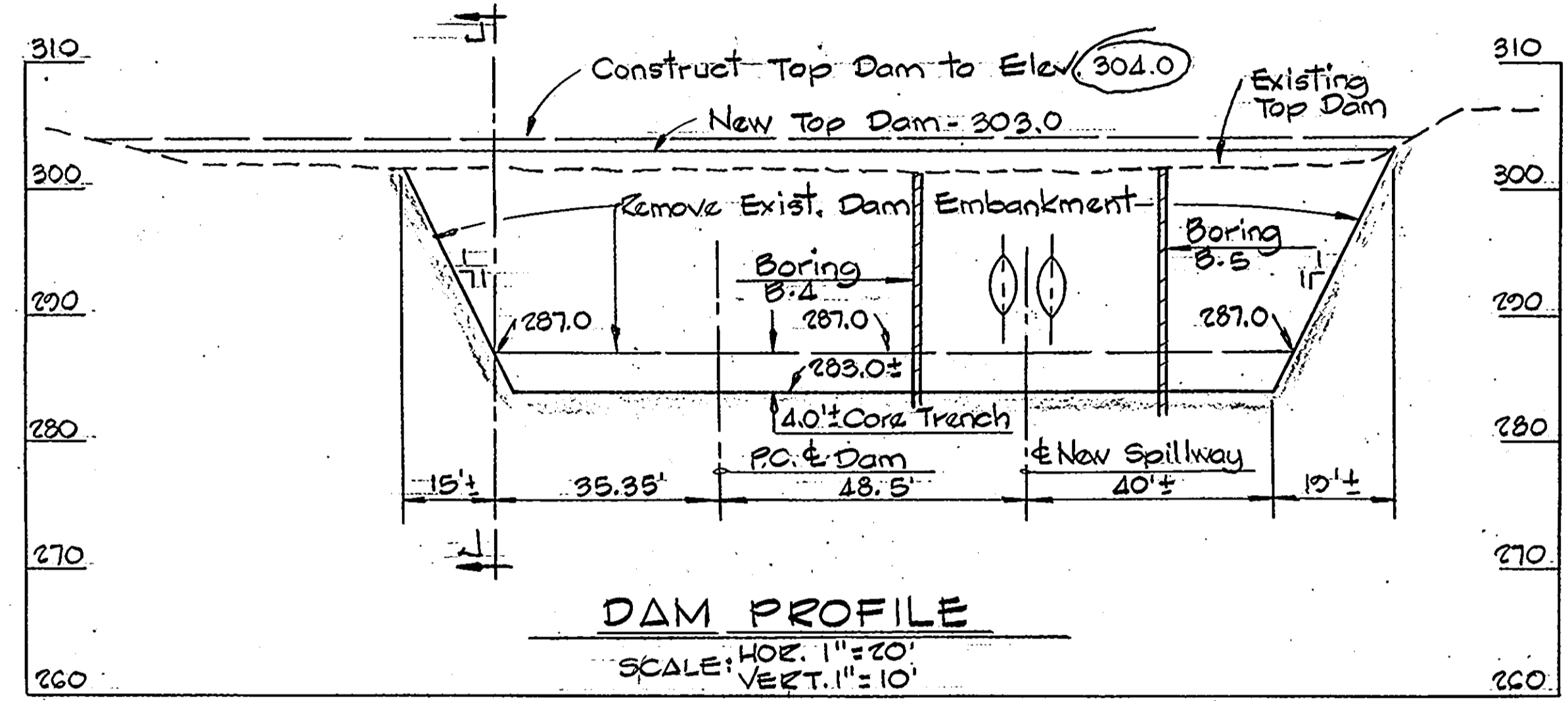
SECTION "G-G"

- NOTES:**
- See Construction Sequence.
  - The temporary, 8" brick wall on top of weir wall directs runoff from area 1 to sediment basin. See Map, sheet 26a.
  - Just prior to conversion of sediment basin to SWM Pond, remove temporary 8" brick wall and build 16" inch brick bulkhead at 60" pipe opening. Provide sand bags behind brick as shown. See Section "G-G".
  - When SWM pond construction is complete and the drainage area is stabilized, remove 16" brick bulkhead and sand bags.

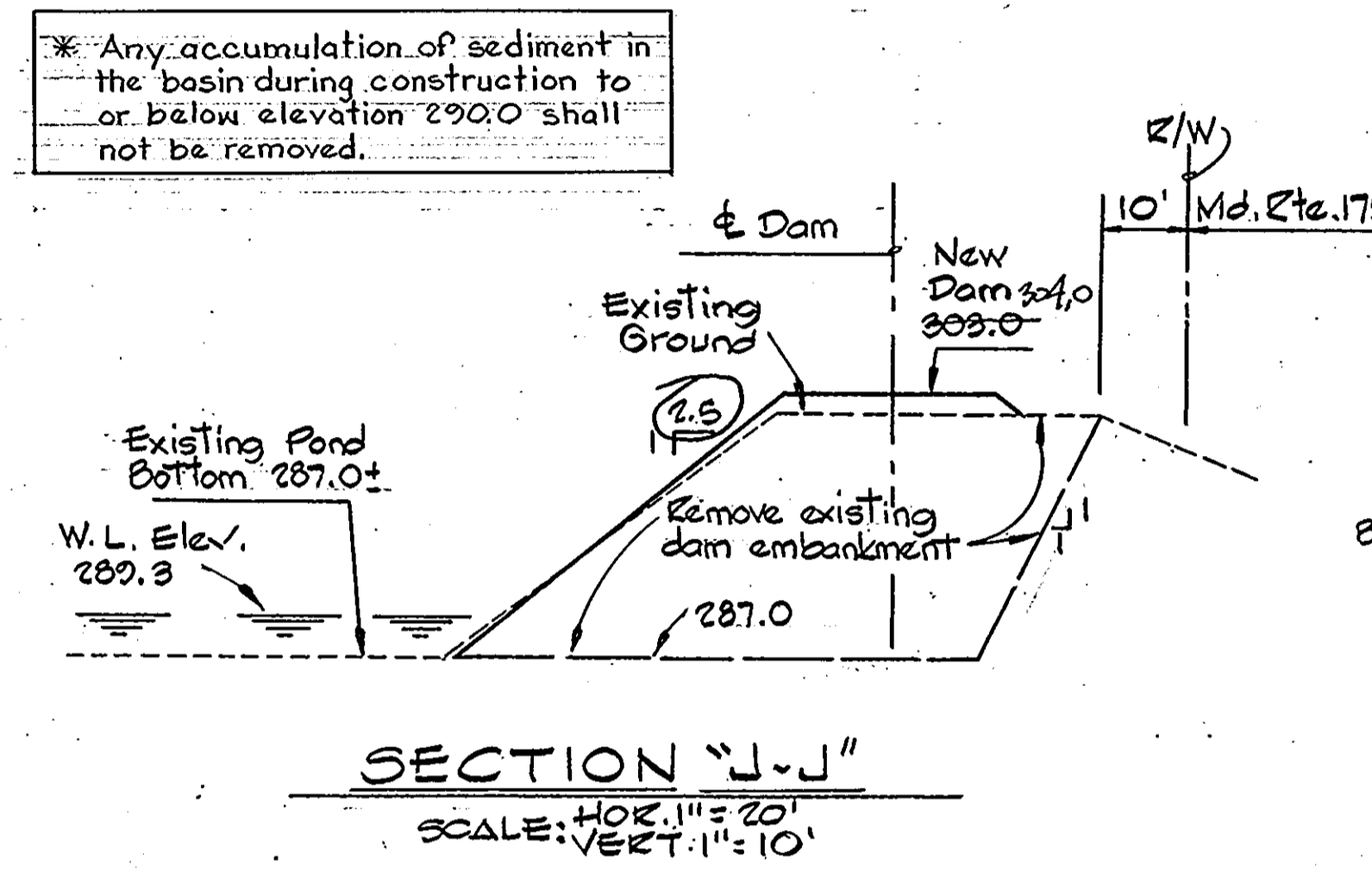
**STORM DRAIN STRUCTURE S-5**  
 No Scale



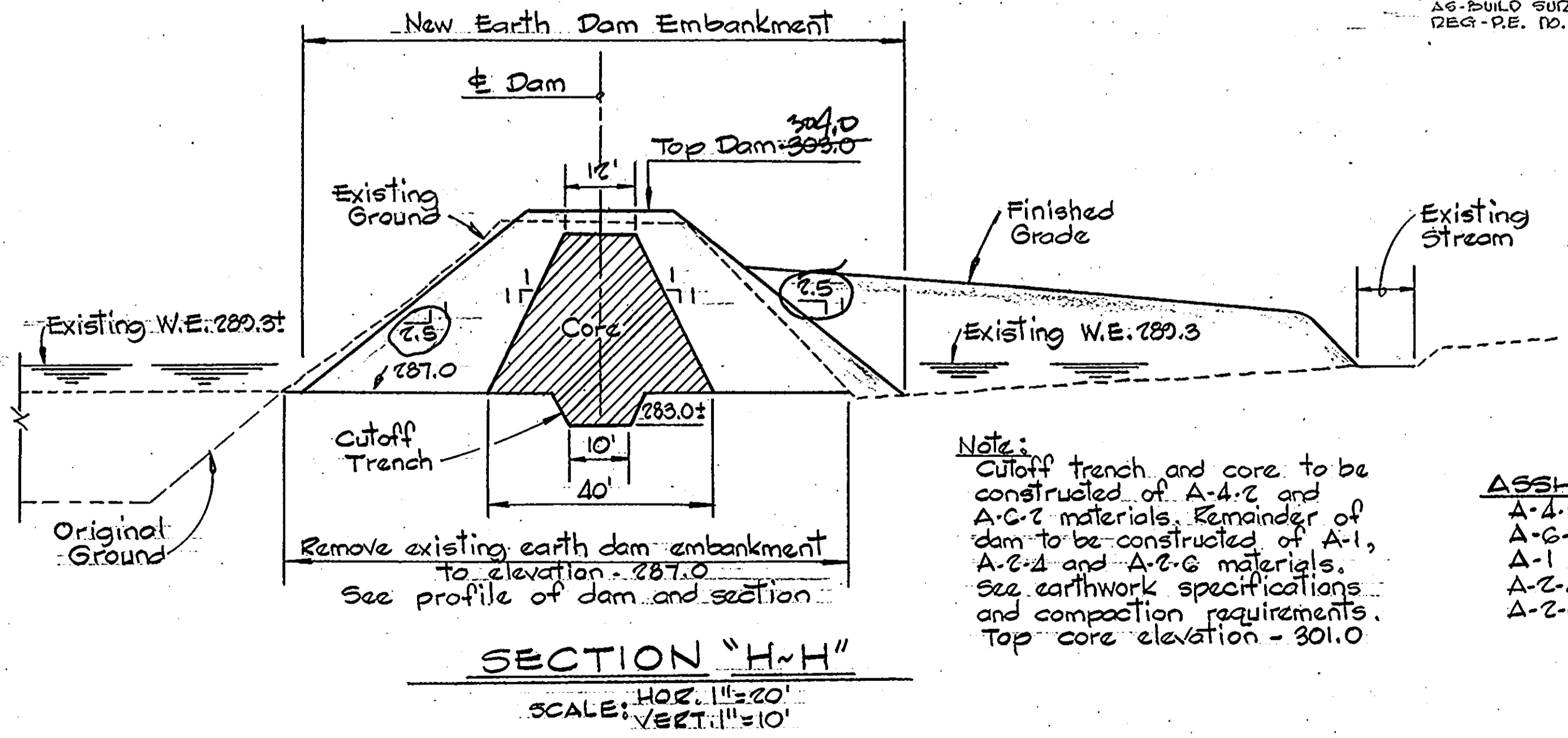
SECTION-EXISTING BASIN-PHASE ONE GRADING



DAM PROFILE



SECTION "J-J"



SECTION "H-H"

**BORING B-4**

Blows/Ft.	301.88	Description
2	301.88	Soft brown clayey silt, little fine to medium sand, trace fine gravel, trace organics
5		medium dense (ML)
8		soft
10	292±	Very soft FILL
11	290±	tan and gray fine to medium sand, some silt (SP) ALLUVIAL
10	288±	medium dense tan and gray fine to medium sand, some silt, little rock fragments (SP) RESIDUAL
19	285±	Medium dense dark gray and reddish brown silt, trace mica (ML)
14		Medium dense greenish-gray silt, trace mica (ML)
20	278±	Dense reddish brown and green fine to medium sand and silt (SM)
25	277±	

Water @ 10.0' depth after 4 days  
 Caved @ 4.5' depth

**BORING B-5**

Blows/Ft.	302.0	Description
4	300±	Loose brown silt, little fine sand, trace organics (ML)
5		Medium dense brown clayey silt, little fine to medium sand, trace rock fragments (MH)
8		FILL
27	294±	Medium dense brown gray silt (ML) ALLUVIAL
10	292±	Medium dense brown gray silt (ML) ALLUVIAL
8	290±	Medium dense gray clayey silt and fine sand, trace organics (ML)
15	287±	Medium dense dark brown clayey silt, little fine sand (ML) ALLUVIAL
11		Medium dense orange fine to medium sand, little silt (residual soil), orange brown gray fine to coarse sand, little silt, trace rock fragments
20	284±	Medium dense gray clayey silt (SP) trace fine sand (MH)
25	279±	Very dense orange white brown gray silt, little fine to medium sand, iron stains (ML)
25	274±	Dense reddish brown fine to coarse sand and medium to fine rock fragments, some clayey silt (SW)
27	273±	

Water @ 10.0' depth  
 Caved @ 14.5' depth

\* Any accumulation of sediment in the basin during construction to or below elevation 290.0 shall not be removed.

AS-BUILT SURVEY CERTIFIED BY RICHARD F. LANE  
 REG. P.E. NO. 301 ON SEPT. 18, 1987

ASHTO	UNIFIED
A-4-2	ML
A-6-2	MH
A-1	GM-GC
A-2-4	SP-SW
A-2-C	SC

SHANBERGER & LANE  
 AS BUILT SURVEY  
 9/18/87  
 Richard F. Lane

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
 Approved: *[Signature]* 9-11-86  
 Date: 9-11-86

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
 Approved: *[Signature]* 9-11-86  
 Date: 9-11-86

**CERTIFICATION BY THE ENGINEER**  
 I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *[Signature]* 6-18-86  
 Date: 6-18-86  
 KENNETH A. McCORD P.E. No. 1074

**CERTIFICATION BY THE DEVELOPER**  
 I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *[Signature]* 6-16-86  
 Date: 6-16-86  
 WALTER WOODFORD

**RESPONSIBLE PERSONNEL CERTIFICATION**  
 I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.  
 Approved: *[Signature]* 6-16-86  
 Date: 6-16-86  
 WALTER WOODFORD

3/12/87 Added Note: Basin Sediment to remain.  
 REVISION NO. 1 REVISION DESCRIPTION

**COLUMBIA GATEWAY**  
 6th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCEL A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 CONVERSION-SEDIMENT BASIN TO  
 STORMWATER MANAGEMENT POND

SCALE: AS SHOWN DATE:

WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

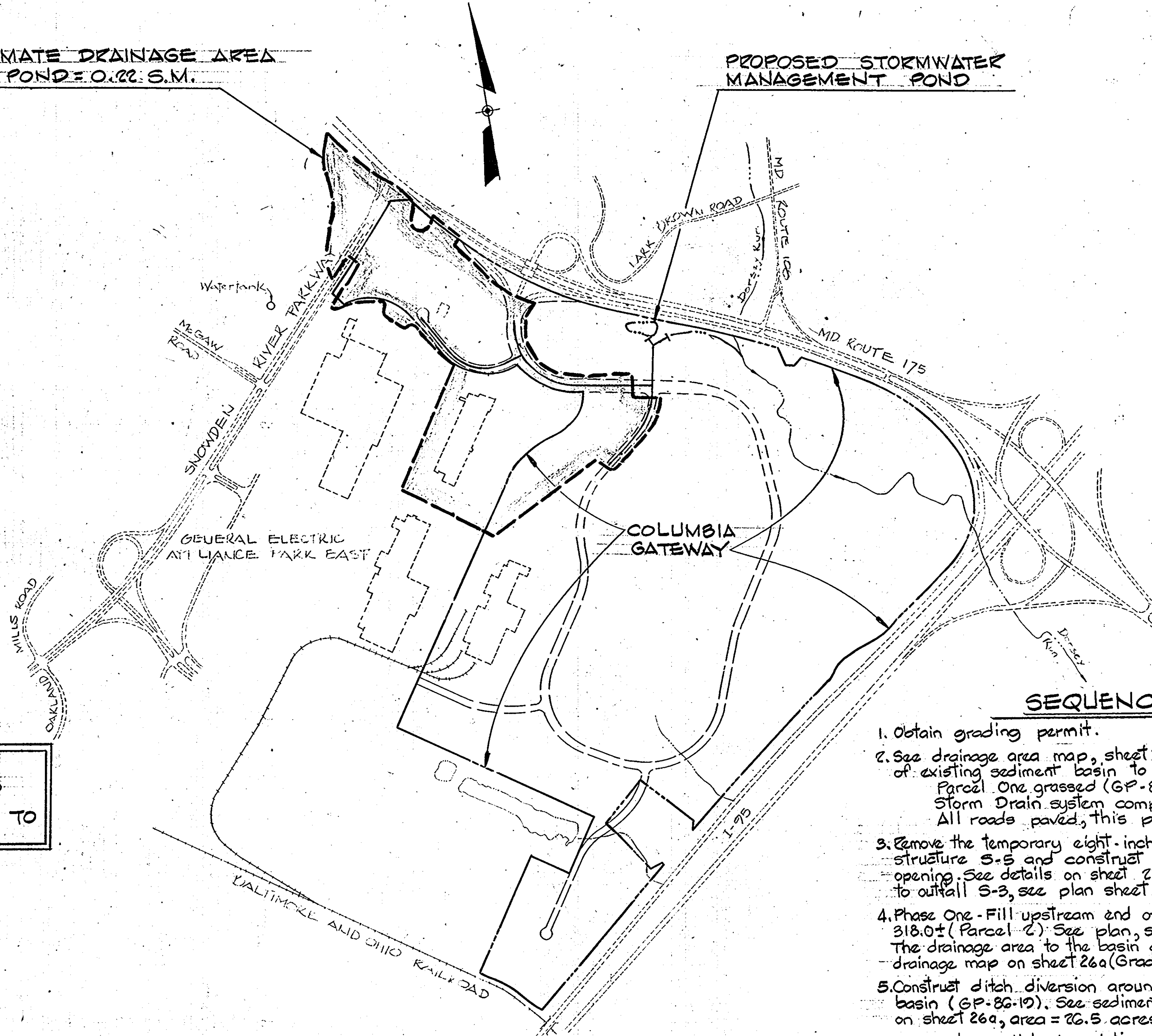
*[Signature]*  
 KENNETH A. McCORD  
 Registered Engineer  
 No. 1074

*[Signature]*  
 WALTER WOODFORD

*James C. Ryan* 2-2-86  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
*John D. Ryan* 9-11-86  
 CHIEF, DIVISION OF LAND  
 DEVELOPMENT & ZONING ADMINISTRATION

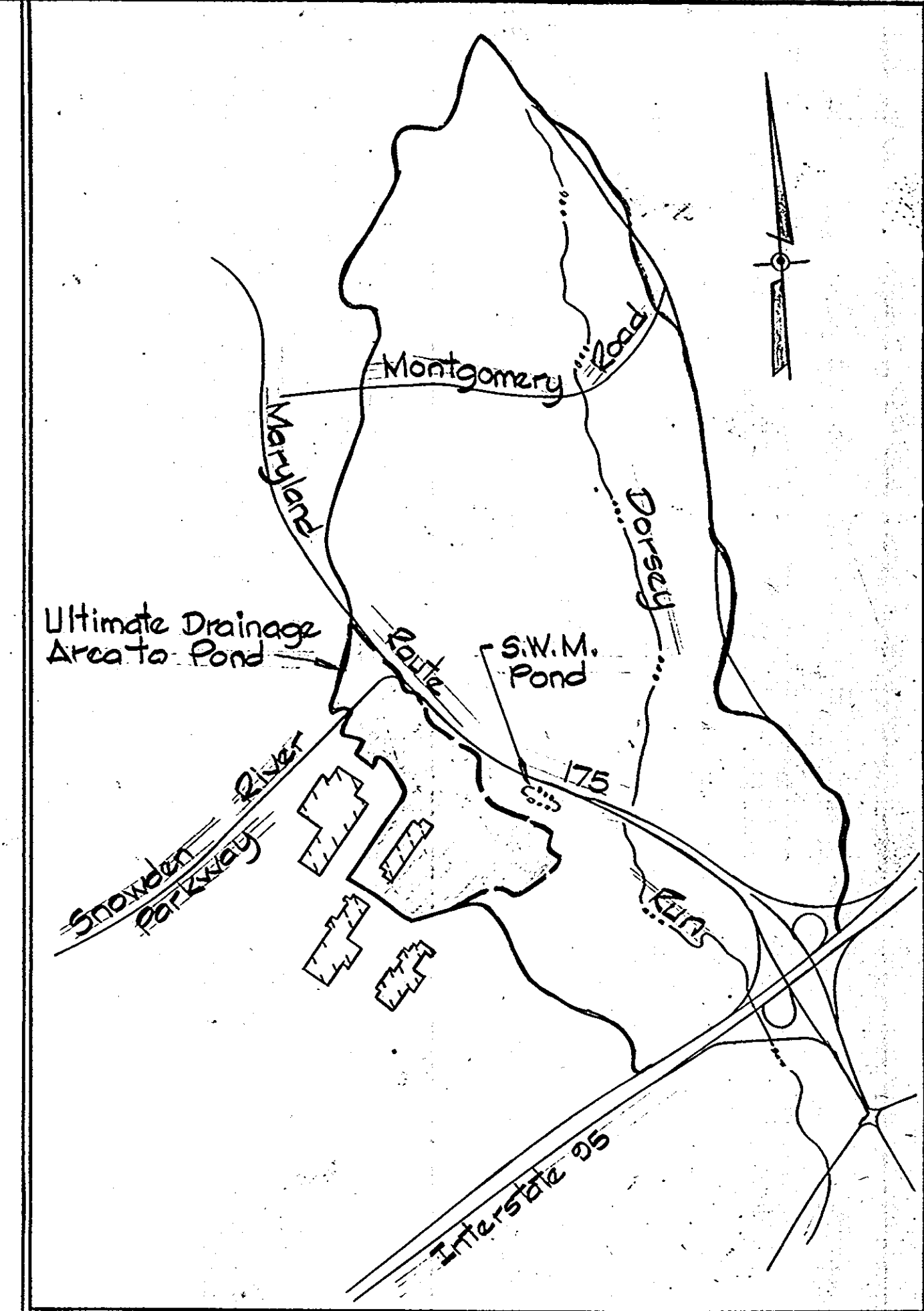
ULTIMATE DRAINAGE AREA TO POND: 0.22 S.M.

PROPOSED STORMWATER MANAGEMENT POND



DRAINAGE AREA MAP

Scale: 1"=800'



DORSEY RUN WATERSHED  
Scale: 1"=2000'

NOTE:  
DEPARTMENT OF PUBLIC WORKS,  
SEDIMENT CONTROL INSPECTOR'S  
APPROVAL IS REQUIRED PRIOR TO  
REMOVAL OF CONTROLS.

SEQUENCE OF CONSTRUCTION

1. Obtain grading permit.
2. See drainage area map, sheet 26a. Area 1 must be stabilized prior to conversion of existing sediment basin to permanent stormwater management pond.  
Parcel One grassed (GP-86-30)  
Storm Drain system complete, this project.  
All roads paved, this project.
3. Remove the temporary eight-inch brick wall atop the weir wall in storm drain structure S-5 and construct brick bulkhead and sandbags to enclose the 60"  $\phi$  opening. See details on sheet 27. Cleanwater from Area 1 will bypass the pond to outfall S-3, see plan sheet 26b. (Two days)
4. Phase One - Fill upstream end of existing basin from toe elevation 290.0± to 318.0± (Parcel 2). See plan, sheet 26b. See basin section on sheet 27. The drainage area to the basin during phase one equals 21 acres. See drainage map on sheet 26a (Grading - Two Weeks)
5. Construct ditch diversion around the proposed pond to existing sediment basin (GP-86-19). See sediment control plan on sheet 27c. See drainage area map on sheet 26a, area = 26.5 acres (One day)
6. Place stone outlets in existing outfalls below the existing dam. Downstream pond and downstream ponding area. See sheet 27c. (Two days)
7. Phase Two - Remove the existing earth dam and two pipe spillways and construct new earth dam embankment, 54 twin pipe spillway and appurtenances (Three weeks)
8. When the pond conversion is complete and stabilized, the stone outlets may be removed. The ditch diversion around the pond shall remain in place (One day)
9. Remove the 16" brick bulkhead and sandbags from the 60"  $\phi$  opening in storm drain structure S-5 (One day).

RESPONSIBLE PERSONNEL CERTIFICATION

I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

*Walter Woodford* 6-16-86  
 WALTER WOODFORD Date

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
*James M. Nelson* 9-11-86  
 U.S. Soil Conservation Service Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
 Approved *Robert W. Zehn* 9-11-86  
 Howard S.D. Date  
 Plan Number

CERTIFICATION BY THE ENGINEER

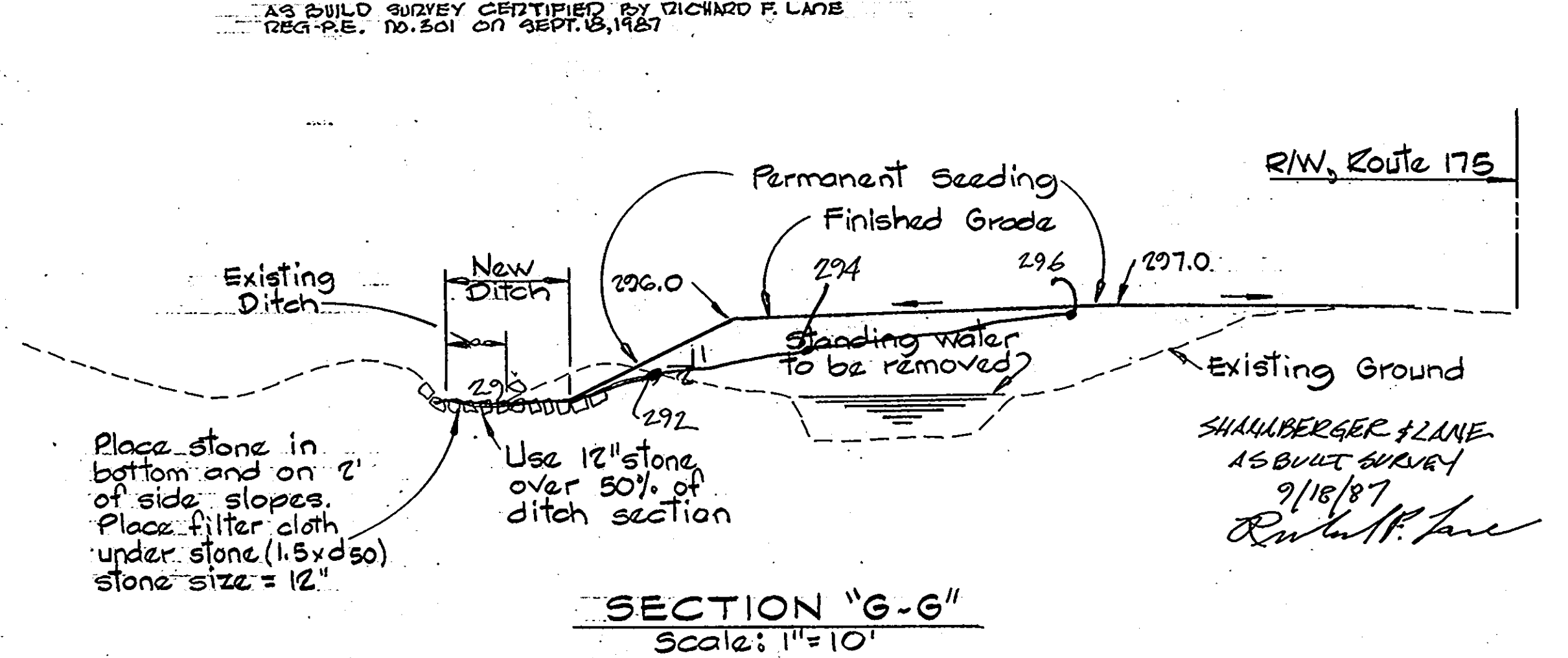
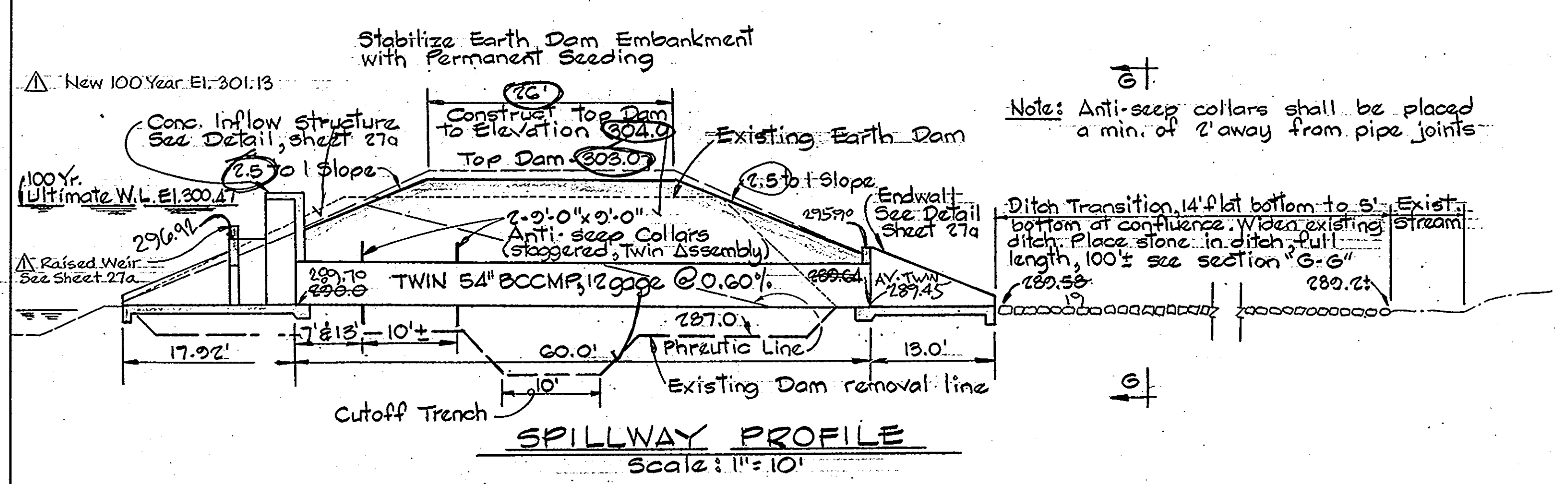
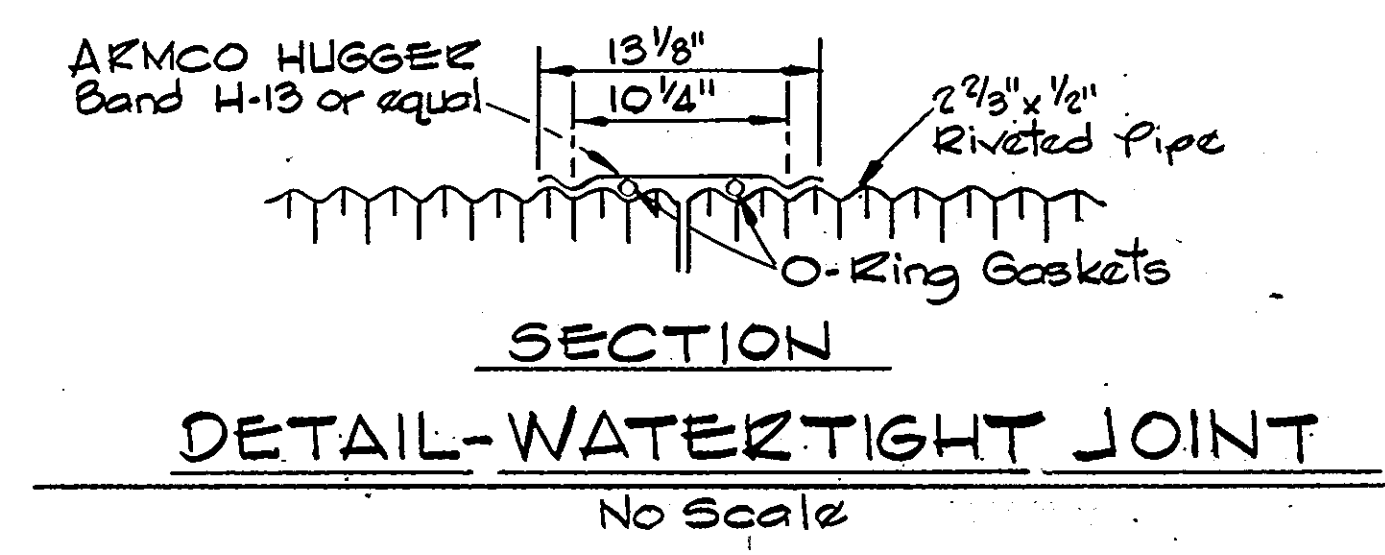
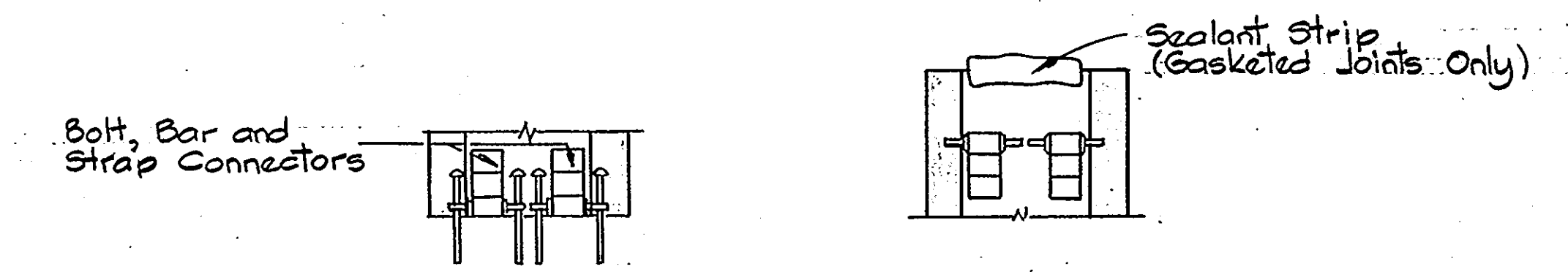
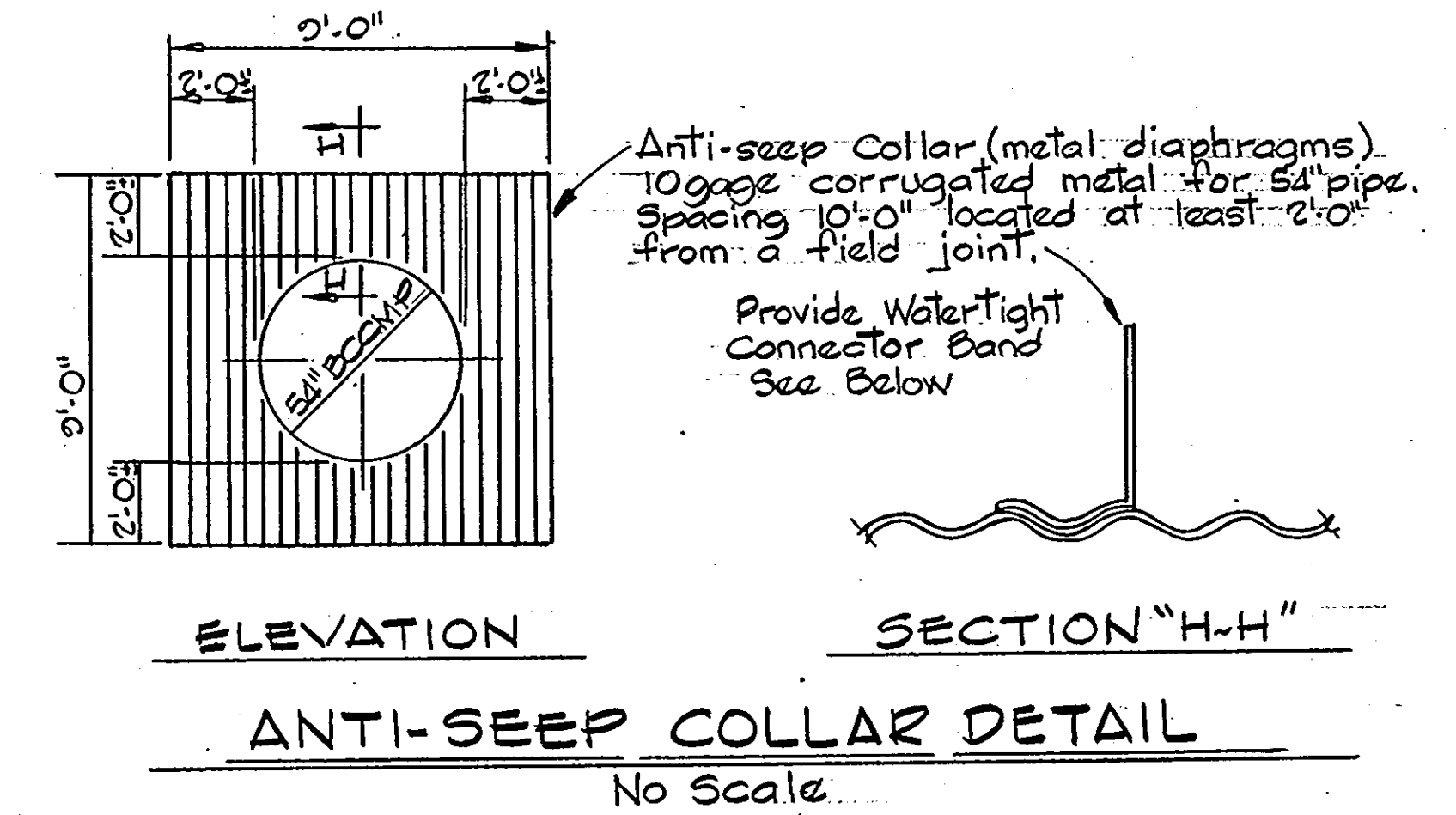
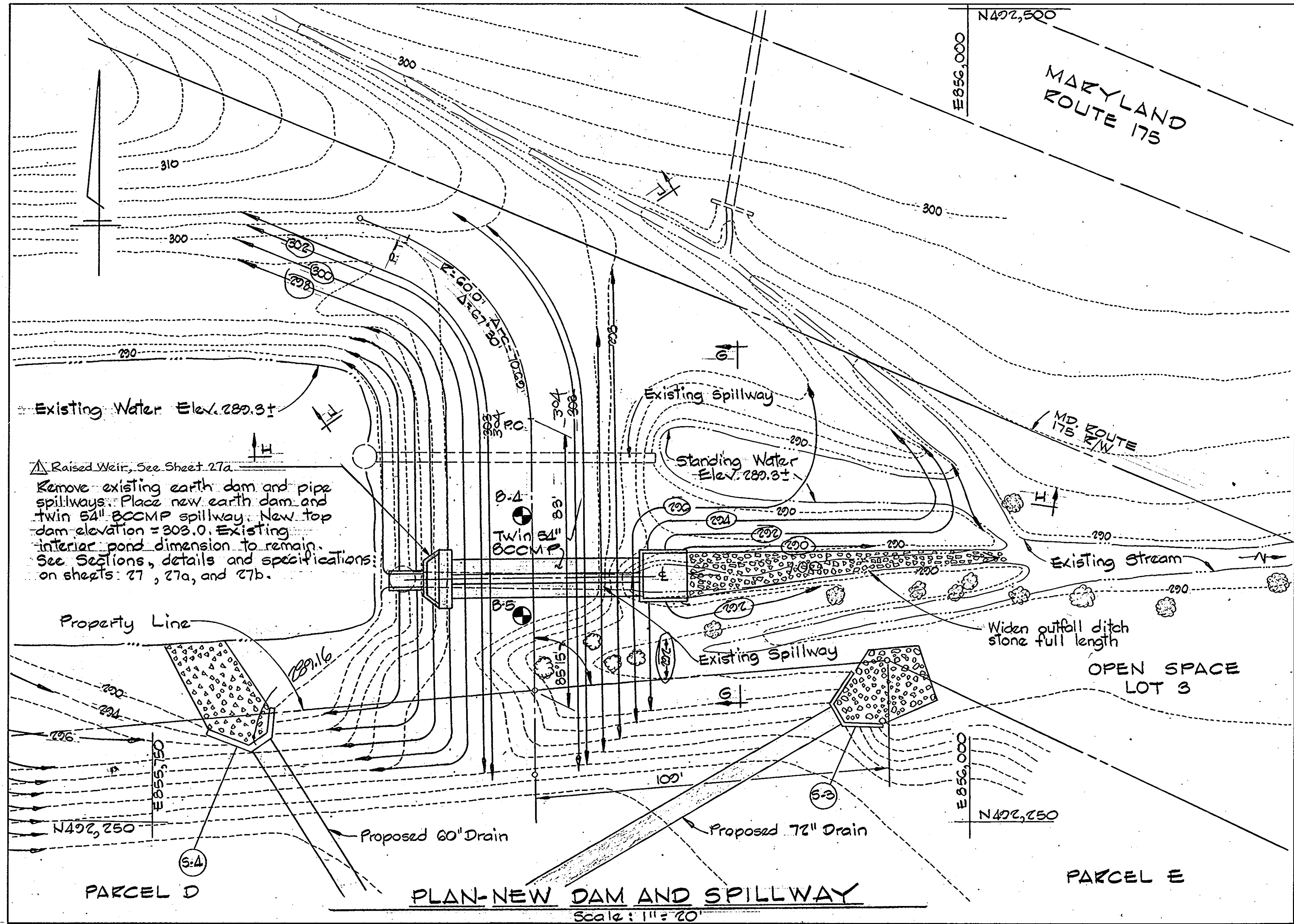
I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
*Kenneth A. McCord* 6-16-86  
 KENNETH A. MCCORD, P.E. No. 1974 Date

CERTIFICATION BY THE DEVELOPER

I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
*Walter Woodford* 6-16-86  
 WALTER WOODFORD Date

NO.	DATE	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE CONVERSION-SEDIMENT BASIN TO STORMWATER MANAGEMENT POND
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		<i>Kenneth A. McCord</i> KENNETH A. MCCORD Registered Engineer NO. 1974

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 Chief, Bureau of Engineering  
 OFFICE OF PLANNING & ZONING  
 ACTING Chief, Division of Land Development & Zoning Administration  
 DATE 9-11-86



7/28/89	REVISION NO.	1	RAISED WEIR, SPILLWAY
COLUMBIA GATEWAY 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND			
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION			
PROJECT AREA PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1			
PROJECT TITLE CONVERSION-SEDIMENT BASIN TO STORMWATER MANAGEMENT POND			
SCALE: AS SHOWN DATE:			

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
 Approved: *James M. Helm* 9-11-86 Date  
 Soils Conservation Service

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
 Approved: *Richard J. Helm* 9-11-86 Date  
 Howard S.C.D.  
 Plan Number

**CERTIFICATION BY THE ENGINEER**  
 I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *Kenneth A. McCord* 6-18-86 Date  
 KENNETH A. MCCORD P.E. No. 1974

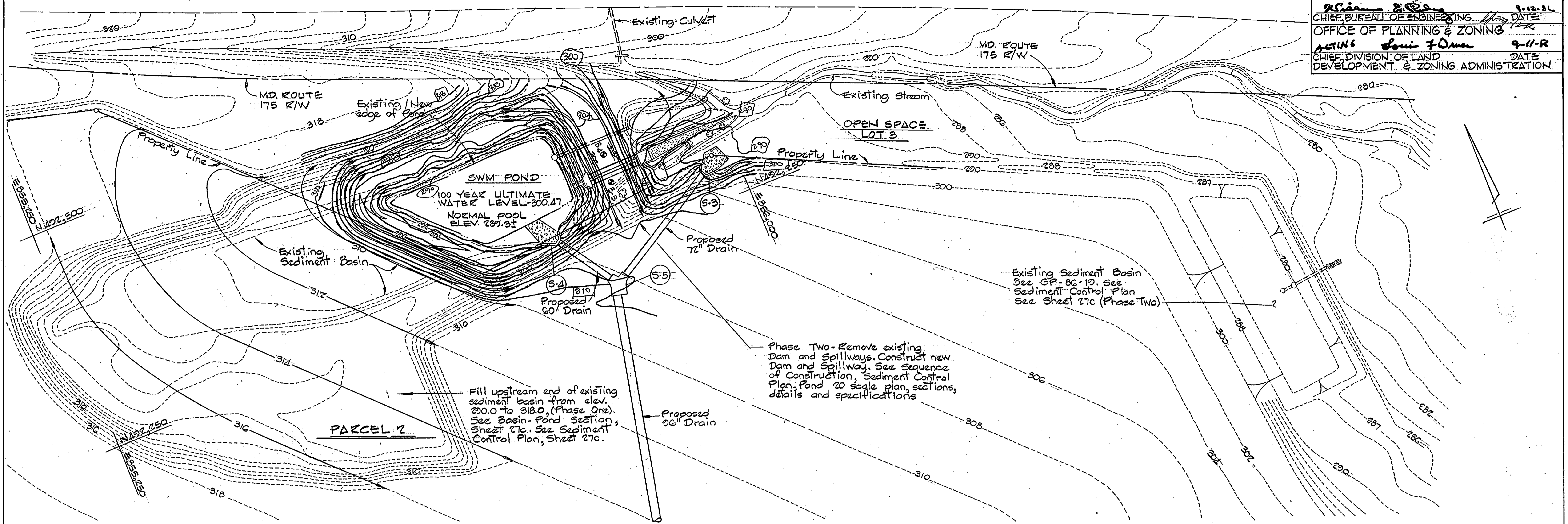
**CERTIFICATION BY THE DEVELOPER**  
 I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
 Approved: *Walter Woodford* 6-16-86 Date  
 WALTER WOODFORD

**RESPONSIBLE PERSONNEL CERTIFICATION**  
 I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.  
 Approved: *Walter Woodford* 6-16-86 Date  
 WALTER WOODFORD

WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218  
 Approved: *Kenneth A. McCord*  
 Registered Engineer  
 No. 1974



CHIEF, BUREAU OF ENGINEERING DATE 9-11-86  
 OFFICE OF PLANNING & ZONING  
 ACTING Louis F. Omer 9-11-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE



PLAN - SWM POND AND PARCEL GRADING

Scale: 1"=50'

WATERSHED HYDROLOGY

FREQUENCY FLOOD EVENT	PRESENT LAND USE DISCHARGE - C.F.S.	* IMPROVED ROADS DISCHARGE - C.F.S.	IMPROVED ROADS/SWM DISCHARGE - C.F.S.
2 YEAR	521	545	511
10 YEAR	1180	1149	1172
100 YEAR	1922	2017	1893

Design Point I-25, Drainage Area = 2.79 square miles.  
\* Includes grassed parcels

POND HYDRAULICS

FREQUENCY FLOOD EVENT	PEAK INFLOW C.F.S.	PEAK OUTFLOW C.F.S.	STORAGE AC.FT.
* 2 YEAR	190	118	3.80
* 10 YEAR	331	290	5.35
* 100 YEAR	372	348	6.30
** 100 YEAR	374	340	6.30

\* Improved Roads, grassed parcels  
\*\* Ultimate Land Use

SPECIAL NOTE:

Storm drain structure S-5 is designed to divert all the two year runoff and part of the 10 year and 100 year runoffs into the stormwater management pond. See details of S-5

2 YEAR PEAK DISCHARGE AT S-5 = 100 cfs  
2 YEAR PEAK DISCHARGE INTO POND = 100 cfs

\* 10 YEAR PEAK DISCHARGE AT S-5 = 413 cfs  
10 YEAR PEAK DISCHARGE INTO POND = 331 cfs  
10 YEAR PEAK DISCHARGE TO S-3 = 82 cfs

100 YEAR PEAK DISCHARGE AT S-5 = 675 cfs  
100 YEAR PEAK DISCHARGE INTO POND = 372 cfs  
100 YEAR BYPASS DISCHARGE TO S-3 = 303 cfs

\*\* 100 YEAR PEAK DISCHARGE AT S-5 = 680 cfs  
100 YEAR PEAK DISCHARGE INTO POND = 374 cfs  
100 YEAR BYPASS DISCHARGE TO S-3 = 306 cfs

\* Improved Roads, grassed parcels  
\*\* Ultimate Land Use

A weir wall in structure S-5 separates incoming flow, diverting reduced flows to the stormwater management pond. See SWM study for determination of pond inflow and bypass discharges; development of 10 year and 100 year split hydrographs; and watershed and pond flood routing. It is estimated that the maximum approx. peak discharge into the pond is equivalent to a 5 year storm.

PERMANENT SEEDING

- ALL DISTURBED AREAS SHALL BE STABILIZED AS FOLLOWS:
- SEEDING PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.
  - SOIL AMENDMENTS: APPLY 2 TON PER ACRE DOLOMITIC LIMESTONE (92 lbs./1,000 sq.ft.) AND 600 lbs. PER ACRE 0-20 FERTILIZER (14 lbs./1,000 sq.ft.) HARROW OR DISC LIME AND FERTILIZER INTO UPPER THREE INCHES OR SOIL. AT TIME OF SEEDING, APPLY 400 lbs. PER ACRE (9.2 lbs./1,000 sq.ft.) OF 38-0-0 UREAFORM FERTILIZER AND 500 lbs. PER ACRE (11.5 lbs./1,000 sq.ft.) OF 10-20-20 FERTILIZER.
  - SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 45 lbs. PER ACRE (1.4 lbs./1,000 sq.ft.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 45 lbs. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 lbs. PER ACRE (.05 lbs./1,000 sq.ft.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT 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 SOD. OPTION (3) - SEED WITH 60 lbs./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.
  - EROSION CONTROL FABRIC: "HOLD GRO" GULF STATE PAPER CORPORATION, P.O.B. NO. 3199 TUSCALOOSA, ALABAMA, 36504, OR AN APPROVED EQUAL. INSTALL AS RECOMMENDED BY THE MANUFACTURER.
  - MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS.
  - ADD CROWN VETCH LIQUORINOUS SEED TO MIXTURE ON 2:1 SLOPES. SEED MIXTURE SHALL BE SOWN AT THE RATE OF 45 POUNDS/ACRE WITH CROWN VETCH SOWN AT 15 POUNDS/ACRE. INOCULANT FOR CROWN VETCH SHALL BE AT THE RATE OF 6.7 oz. POWDER OR LIQUID CULTURE PER 20 POUNDS CROWN VETCH. SEED INOCULATED WITH LIQUID CULTURE SHALL BE SOWN WITHIN 24 HOURS AFTER TREATMENT. SEED INOCULATED WITH POWDERED CULTURE SHALL BE SOWN WITHIN 48 HOURS AFTER TREATMENT. THE SEEDING CONTRACTOR MAY ELECT TO APPLY THE INOCULATED LEQUE SEED DRY AND IN A SEPARATE OPERATION PRIOR TO APPLYING AN AQUEOUS MIXTURE, OR HE MAY APPLY THEM IN THE AQUEOUS MIXTURE WITH THE SEED AND COMMERCIAL FERTILIZER USING FOUR TIMES THE QUANTITY OF INOCULUM RECOMMENDED FOR DRY LEGUMINOUS SEED APPLICATION.

AS-BUILT SURVEY CERTIFIED BY RICHARD F. LAKE, P.E. NO. 501 ON 9-14-87

REVISION NO.	REVISION DESCRIPTION
	COLUMBIA GATEWAY 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND
	OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA
	PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1
	PROJECT TITLE CONVERSION - SEDIMENT BASIN TO STORMWATER MANAGEMENT POND
	SCALE: AS SHOWN DATE:

1158  
These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.  
James M. Nelson  
Soil Conservation Service  
9-11-86 Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.  
Robert W. Ziehm  
Howard S.C.D.  
9-11-86 Date  
Plan Number

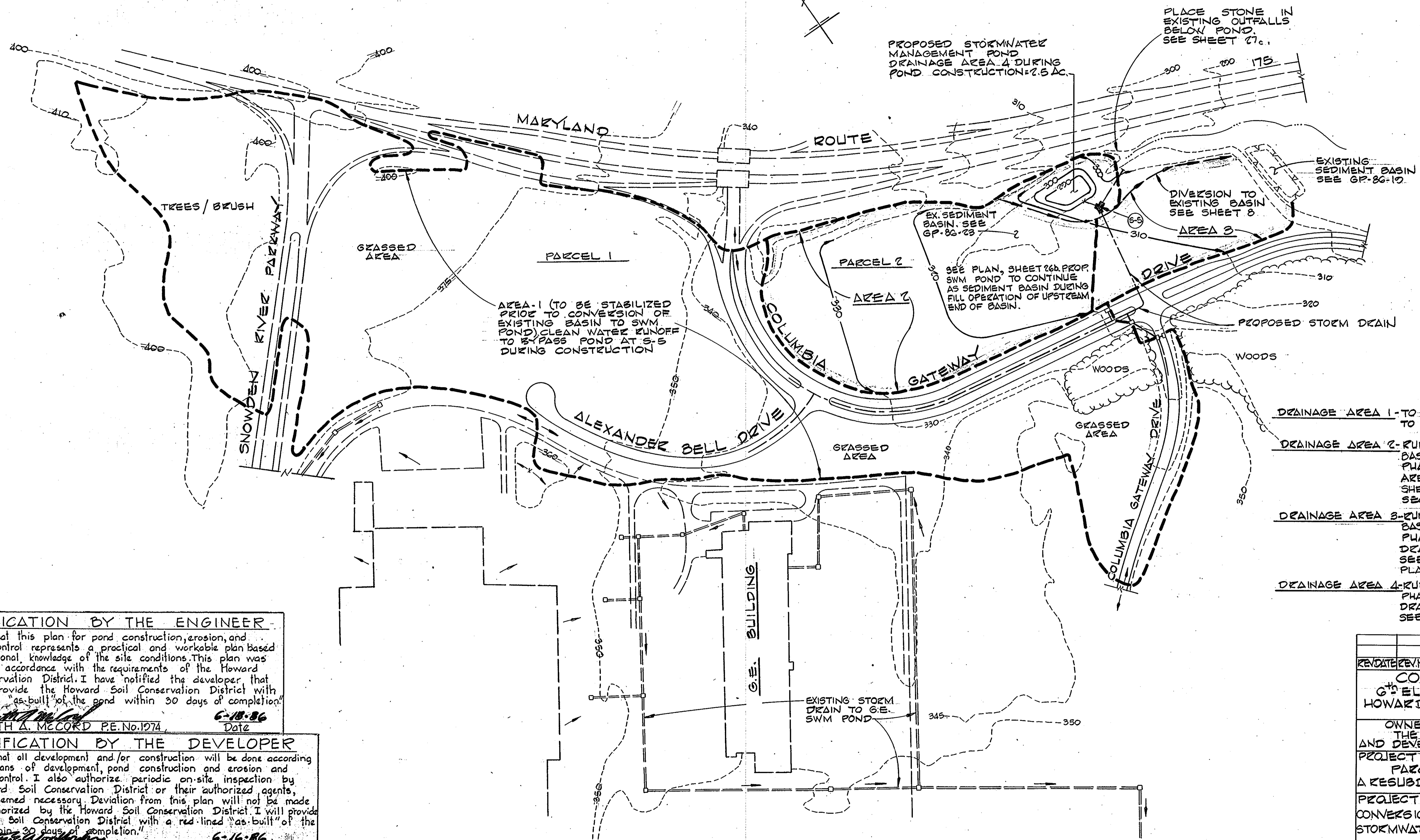
**CERTIFICATION BY THE ENGINEER**  
I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.  
Kenneth A. McCord  
KENNETH A. MCCORD P.E. No. 1974  
6-18-86 Date

**CERTIFICATION BY THE DEVELOPER**  
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Walter Woodford  
WALTER WOODFORD  
6-16-86 Date

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I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.  
Walter Woodford  
WALTER WOODFORD  
6-16-86 Date

WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS  
BALTIMORE, MARYLAND 21218  
Kenneth A. McCord  
Registered Engineer  
No. 1974  
Walter Woodford  
Registered Engineer  
No. 1974

*Kenneth A. McCord* 9-11-86  
 CHIEF, BUREAU OF ENGINEERING DATE  
 OFFICE OF PLANNING & ZONING  
 45116 *James F. Davis* 9-11-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE



- DRAINAGE AREA 1 - TO BE STABILIZED PRIOR TO ANY CONSTRUCTION.
- DRAINAGE AREA 2 - RUNOFF TO EXISTING SEDIMENT BASIN (GP-86-23) DURING PHASE ONE GRADING. DRAINAGE AREA = 21 ACRES. SEE PLAN, SHEET 26b. SEE BASIN SECTION, SHEET 27.
- DRAINAGE AREA 3 - RUNOFF TO EXISTING SEDIMENT BASIN (GP-86-12) DURING PHASE TWO POND CONVERSION. DRAINAGE AREA = 26.5 ACRES. SEE SEDIMENT CONTROL PLAN, SHEET 27c.
- DRAINAGE AREA 4 - RUNOFF TO POND DURING PHASE TWO POND CONVERSION. DRAINAGE AREA = 2.5 ACRES. SEE SHEET 27c.

**CERTIFICATION BY THE ENGINEER**

I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.

*Kenneth A. McCord*  
 KENNETH A. MCCORD P.E. No. 1974  
 Date 6-18-86

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*Walter Woodford*  
 WALTER WOODFORD  
 Date 6-16-86

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

*James F. Davis*  
 JAMES F. DAVIS  
 Date 9-11-86

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Approved *Kenneth A. McCord* 9-11-86  
 Howard S.C.D. Date  
 Plan Number

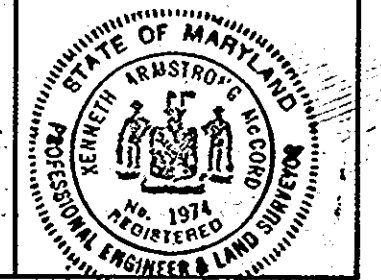
**DRAINAGE AREA MAP - SEDIMENT CONTROL**  
 Scale: 1" = 200'

**RESPONSIBLE PERSONNEL CERTIFICATION**

I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

*Walter Woodford*  
 WALTER WOODFORD  
 Date 6-16-86

REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6 <sup>th</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCEL A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE CONVERSION-SEDIMENT BASIN TO STORMWATER MANAGEMENT POND
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		<i>Kenneth A. McCord</i> KENNETH A. MCCORD Registered Engineer No. 1974



STORM DRAIN STRUCTURE SCHEDULE					
NO.	TYPE	Top El.	In. In.	In. Out.	LOCATION
S-3	Type 'A' Headwall - Std. S.D. 5.11	290.97	290.93		See Plan and Profile
S-5	Special Junction Chamber - Detail 54.2	296.93	291.88		" " " "
S-6	36" Manhole	310.00	295.17		" " " "
M-8	72" - Std. G. 503	293.92	289.41		" " " "
S-4	Type 'A' Headwall - Std. S.D. 5.11	-	289.30		" " " "

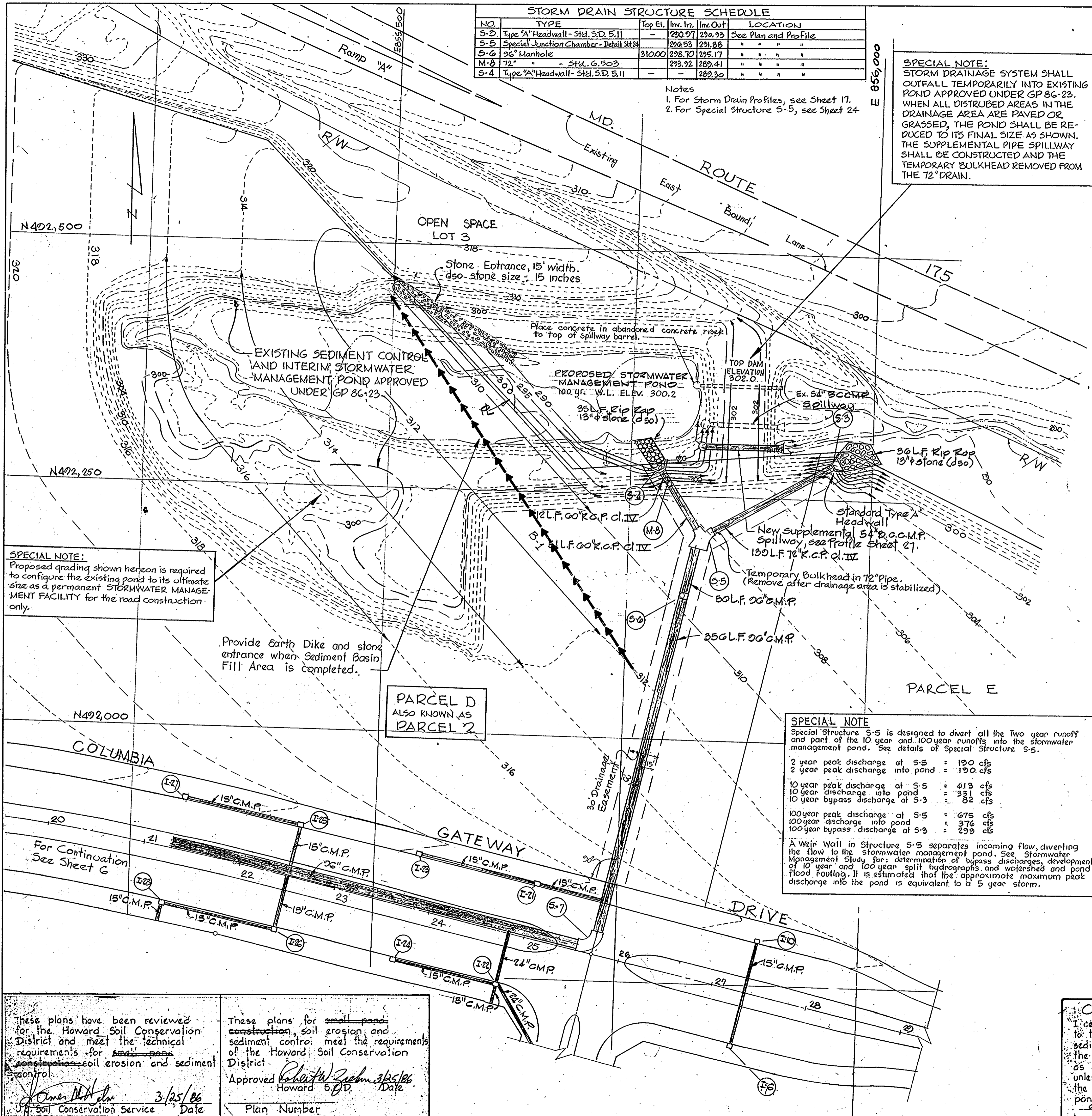
Notes  
 1. For Storm Drain Profiles, see Sheet 17.  
 2. For Special Structure 5-5, see Sheet 24.

**SPECIAL NOTE:**  
 STORM DRAINAGE SYSTEM SHALL OUTFALL TEMPORARILY INTO EXISTING POND APPROVED UNDER GP 86-23. WHEN ALL DISTURBED AREAS IN THE DRAINAGE AREA ARE PAVED OR GRASSED, THE POND SHALL BE REDUCED TO ITS FINAL SIZE AS SHOWN. THE SUPPLEMENTAL PIPE SPILLWAY SHALL BE CONSTRUCTED AND THE TEMPORARY BULKHEAD REMOVED FROM THE 72" DRAIN.

**- SPECIFICATIONS -**

- GENERAL**
- FOR CONSTRUCTION SPECIFICATIONS NOT COVERED HEREIN, THE CONTRACTOR SHALL REFER TO THE "SOIL CONSERVATION SERVICE OF MARYLAND CONSTRUCTION SPECIFICATIONS FOR PONDS, CODE 378", PAGE 378-14 THROUGH 378-19 DATED JULY 1981.
  - THE B.C.C.M.P. PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR OTHER UNSUITABLE SOIL IS ENCOUNTERED UNDER THE PIPE, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
- PERMANENT SEEDING**
- ALL DISTURBED AREAS SHALL BE STABILIZED AS FOLLOWS:
- SEEDING PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.
  - SOIL AMENDMENTS: APPLY 2 TON PER ACRE DOLOMITIC LIMESTONE (92 lbs./1,000 sq.ft.) AND 600 lbs. PER ACRE 0-20 FERTILIZER (14 lbs./1,000 sq.ft.) HARROW OR DISC LIME AND FERTILIZER INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 lbs. PER ACRE (9.2 lbs./1,000 sq.ft.) OF 38-0-0 UREAFORM FERTILIZER AND 500 lbs. PER ACRE (11.5 lbs./1,000 sq.ft.) OF 10-20-20 FERTILIZER.
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  - EROSION CONTROL FABRIC: "HOLD GRO", GULF STATE PAPER CORPORATION, P.O.B. NO. 3199 TUSCALOOSA, ALABAMA, 34504, OR AN APPROVED EQUAL, INSTALL AS RECOMMENDED BY THE MANUFACTURER.
  - MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS.
  - ADD CROWN VETCH LIQUINOUS SEED TO MIXTURE ON 2:1 SLOPES. SEED MIXTURE SHALL BE SOWN AT THE RATE OF 45 POUNDS/ACRE WITH CROWN VETCH SOWN AT 15 POUNDS/ACRE. INOCULANT FOR CROWN VETCH SHALL BE AT THE RATE OF 6.7 oz. POWDER OR LIQUID CULTURE PER 20 POUNDS CROWN VETCH. SEED INOCULATED WITH LIQUID CULTURE SHALL BE SOWN WITHIN 24 HOURS AFTER TREATMENT; SEED INOCULATED WITH POWDERED CULTURE SHALL BE SOWN WITHIN 48 HOURS AFTER TREATMENT. THE SEEDING CONTRACTOR MAY ELECT TO APPLY THE INOCULATED LEQUE SEED DRY AND IN A SEPARATE OPERATION PRIOR TO APPLYING AN AQUEOUS MIXTURE, OR HE MAY APPLY THEM IN THE AQUEOUS MIXTURE WITH THE SEED AND COMMERCIAL FERTILIZER USING FOUR TIMES THE QUANTITY OF INOCULUM RECOMMENDED FOR DRY LEGUMINOUS SEED APPLICATION.

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING AND ZONING  
 DATE: 3/25/86  
 JOHN M. MURPHY  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



**SPECIAL NOTE:**  
 Proposed grading shown hereon is required to configure the existing pond to its ultimate size as a permanent STORMWATER MANAGEMENT FACILITY for the road construction only.

Provide Earth Dike and stone entrance when Sediment Basin Fill Area is completed.

PARCEL D  
 ALSO KNOWN AS  
 PARCEL 2

**SPECIAL NOTE**  
 Special Structure 5-5 is designed to divert all the two year runoff and part of the 10 year and 100 year runoffs into the stormwater management pond. See details of Special Structure 5-5.

2 year peak discharge at 5-5 = 190 cfs  
 2 year peak discharge into pond = 190 cfs  
 10 year peak discharge at 5-5 = 413 cfs  
 10 year discharge into pond = 331 cfs  
 10 year bypass discharge at 5-3 = 82 cfs  
 100 year peak discharge at 5-5 = 675 cfs  
 100 year discharge into pond = 376 cfs  
 100 year bypass discharge at 5-3 = 299 cfs

A Weir Wall in Structure 5-5 separates incoming flow, diverting the flow to the stormwater management pond. See Stormwater Management Study for: determination of bypass discharges, development of 10 year and 100 year split hydrographs, and watershed and pond flood routing. It is estimated that the approximate maximum peak discharge into the pond is equivalent to a 5 year storm.

WATERSHED HYDROLOGY			
FREQUENCY FLOOD EVENT	PRESENT LAND USE DISCHARGE CFS	* IMPROVED ROADS DISCHARGE CFS	IMPROVED ROADS/SWM DISCHARGE CFS
2 YEAR	521	545	516
10 YEAR	1180	1149	1179
100 YEAR	1962	2017	1980

DESIGN POINT - I 95, \* INCLUDES GRASSED PARCELS  
 DRAINAGE AREA - 2.79 SQUARE MILES

POND HYDRAULICS			
FREQUENCY FLOOD EVENT	PEAK INFLOW CFS	PEAK OUTFLOW CFS	STORAGE AC FT
2 YEAR	190	147	3.15
10 YEAR	331	314	4.30
100 YEAR	376	360	4.90

**RESPONSIBLE PERSONNEL CERTIFICATION**  
 I hereby certify that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

WALTER WOODFORD  
 1-22-86 Date

**CERTIFICATION BY THE ENGINEER**  
 I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.

KENNETH A. MCCORD PE No 1974  
 1-22-86 Date

**CERTIFICATION BY THE DEVELOPER**  
 I certify that all development and/or construction will be done according to these plans of development, pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red-lined "as-built" of the pond within 30 days of completion.

WALTER WOODFORD  
 1-22-86 Date

REV. DATE	REV. NO.	REVISION DESCRIPTION
3-17-86	1	As per Planning, DP and SCS Comments
6-10-86	2	Eliminated 54" Stub

COLUMBIA GATEWAY  
 6th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 STORMWATER MANAGEMENT POND AND STORM DRAINS

SCALE: 1" = 50' DATE:

WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS  
 BALTIMORE, MARYLAND 21218

KENNETH A. MCCORD  
 Registered Engineer  
 No. 1974

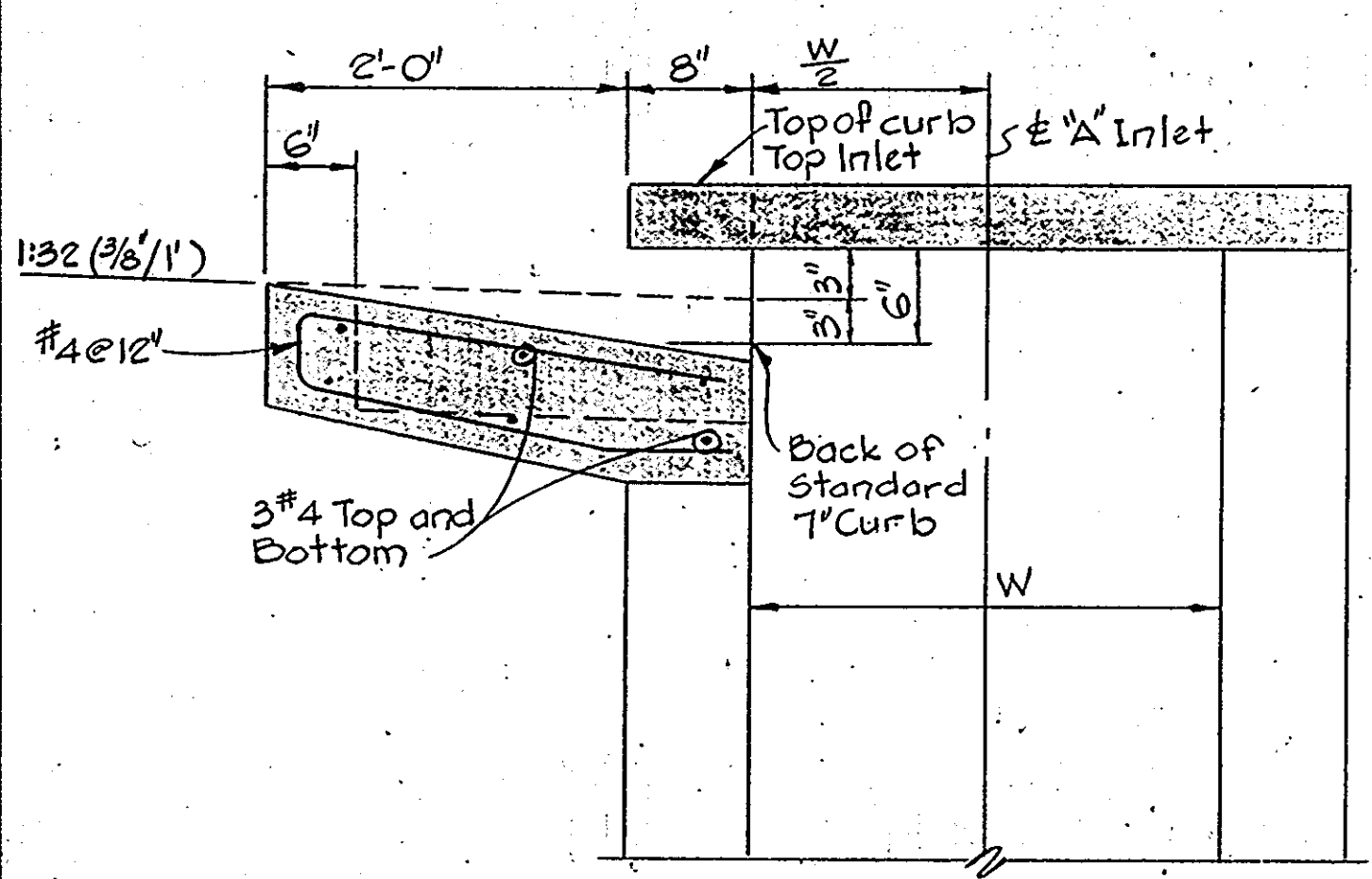
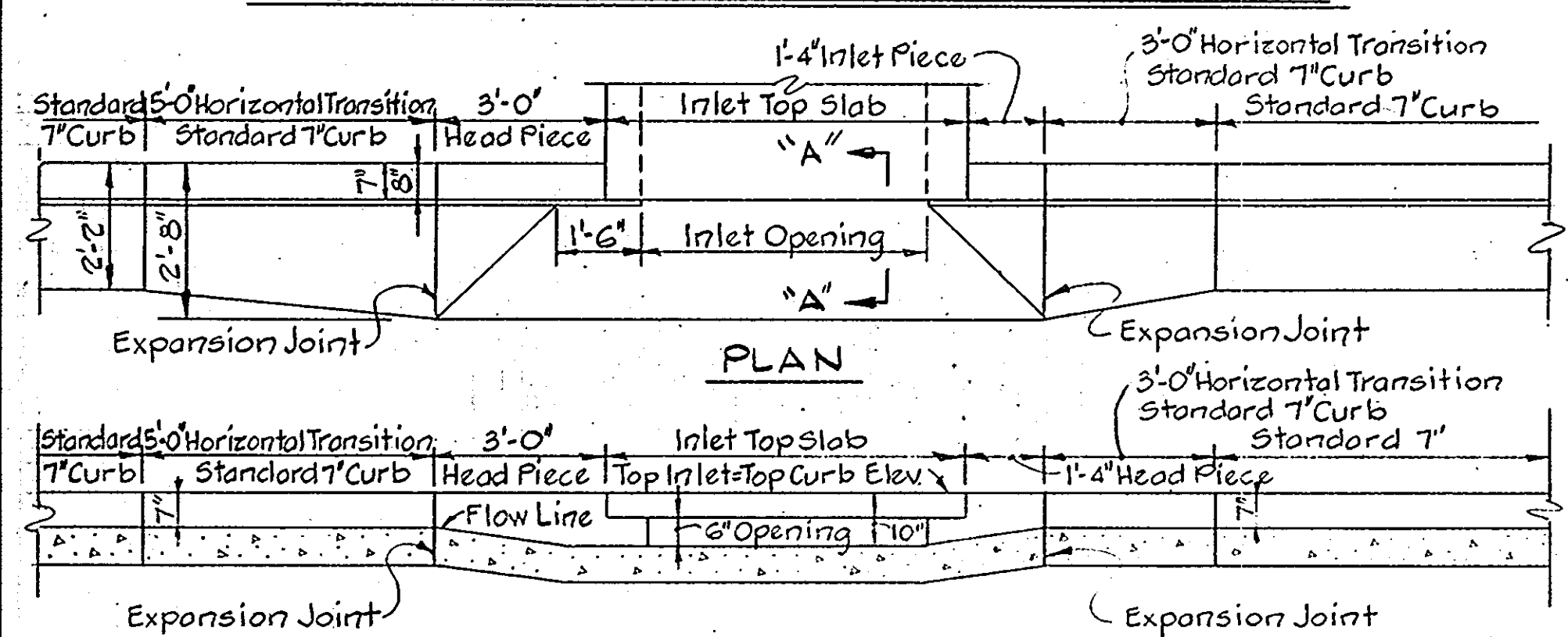
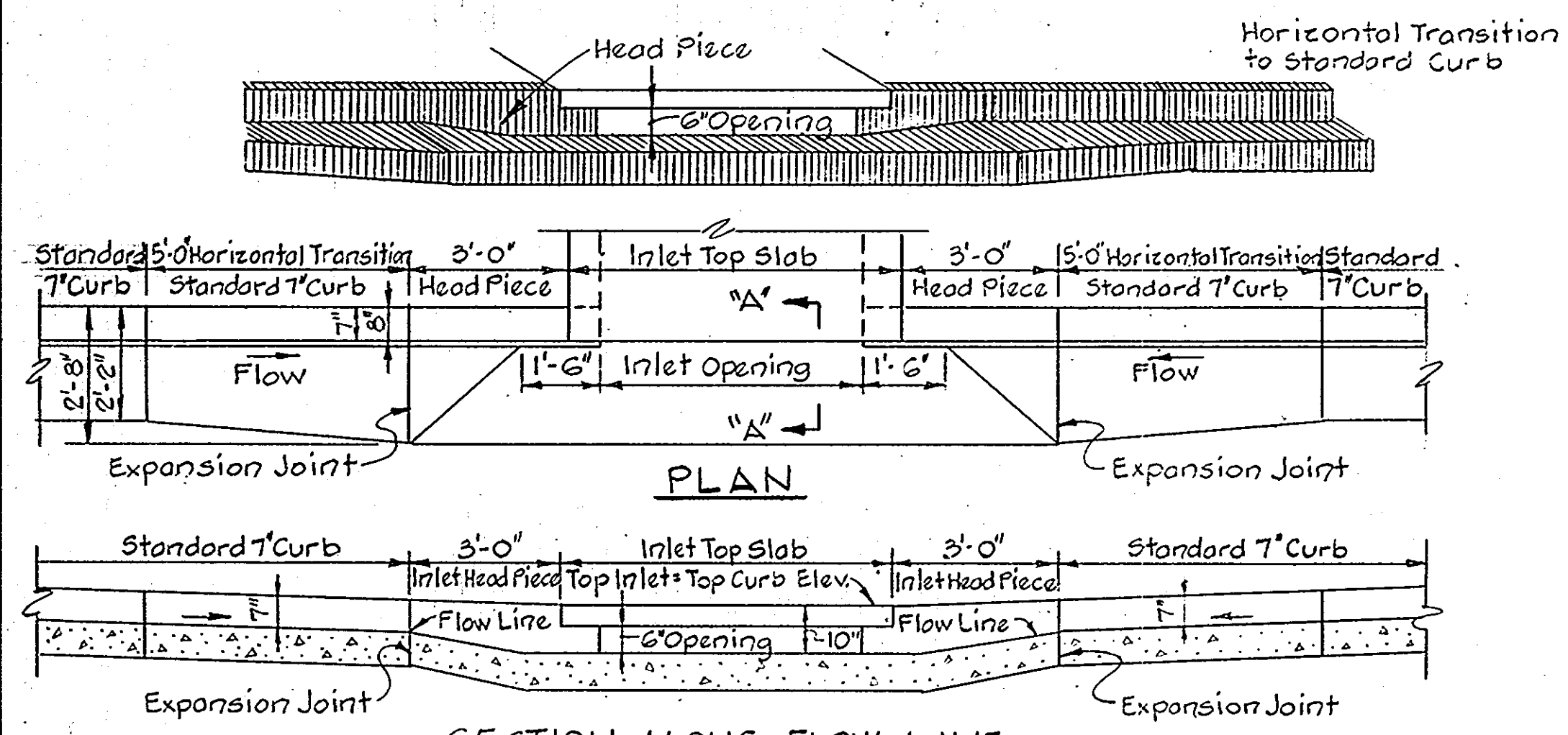
These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

Approved: Robert W. Zehm 3/25/86 Date  
 Howard S.C.D.

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Approved: Robert W. Zehm 3/25/86 Date  
 Howard S.C.D.

Plan Number

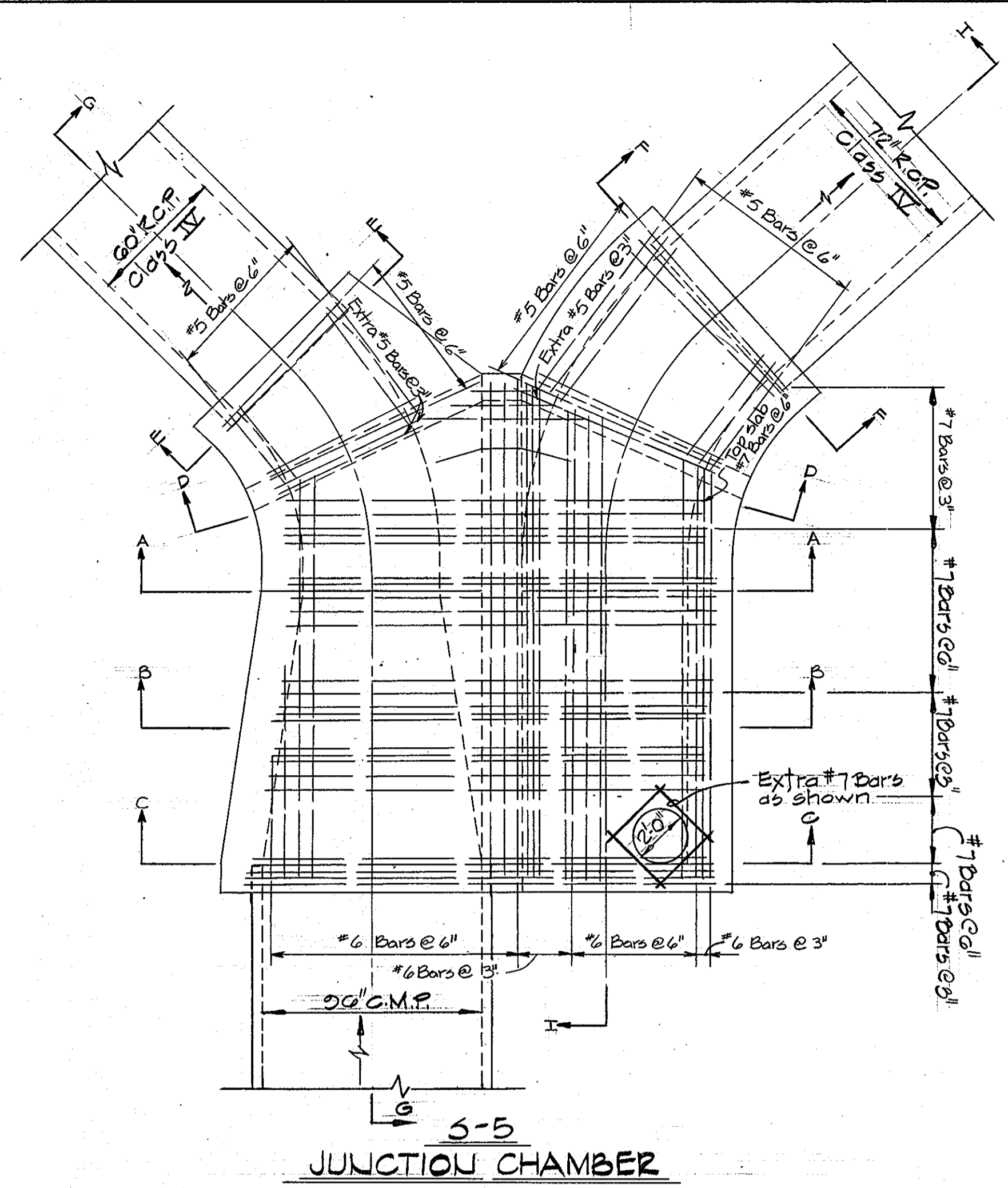


Note: For "A" Inlet dimensions and structural details see standard Howard County Standards SD 4.01 & SD 4.02.

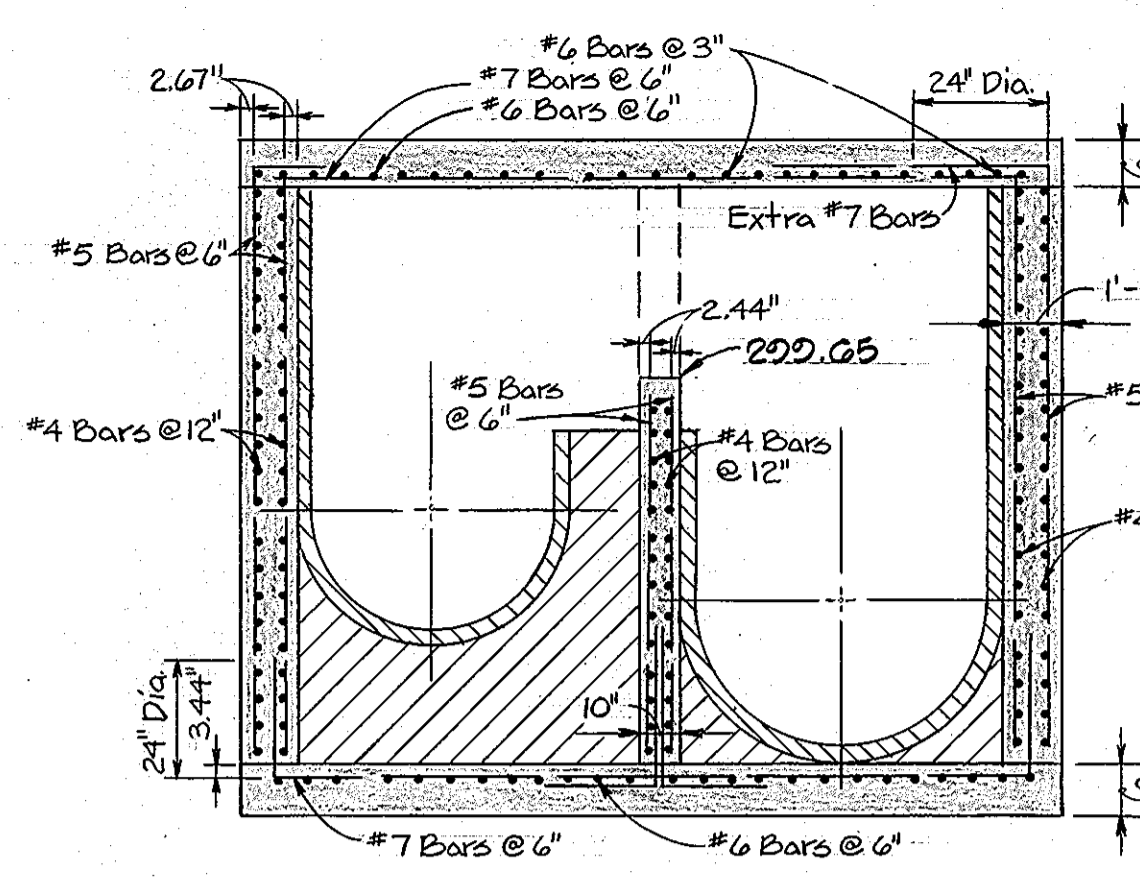
SECTION "A-A"  
 "A" INLET-STANDARD CURB  
 No Scale

3-17-86	1	As per Planning, DPW and SCS Comments
Rev. Date	Rev. No.	Revision Description
COLUMBIA GATEWAY 6 <sup>TH</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION		
PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1		
PROJECT TITLE STORM DRAIN DETAILS		
SCALE: As Shown      DATE:		
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS 2315 ST. PAUL STREET BALTIMORE, MARYLAND 21218		
 KENNETH A. McCORD Registered Engineer No. 1074		

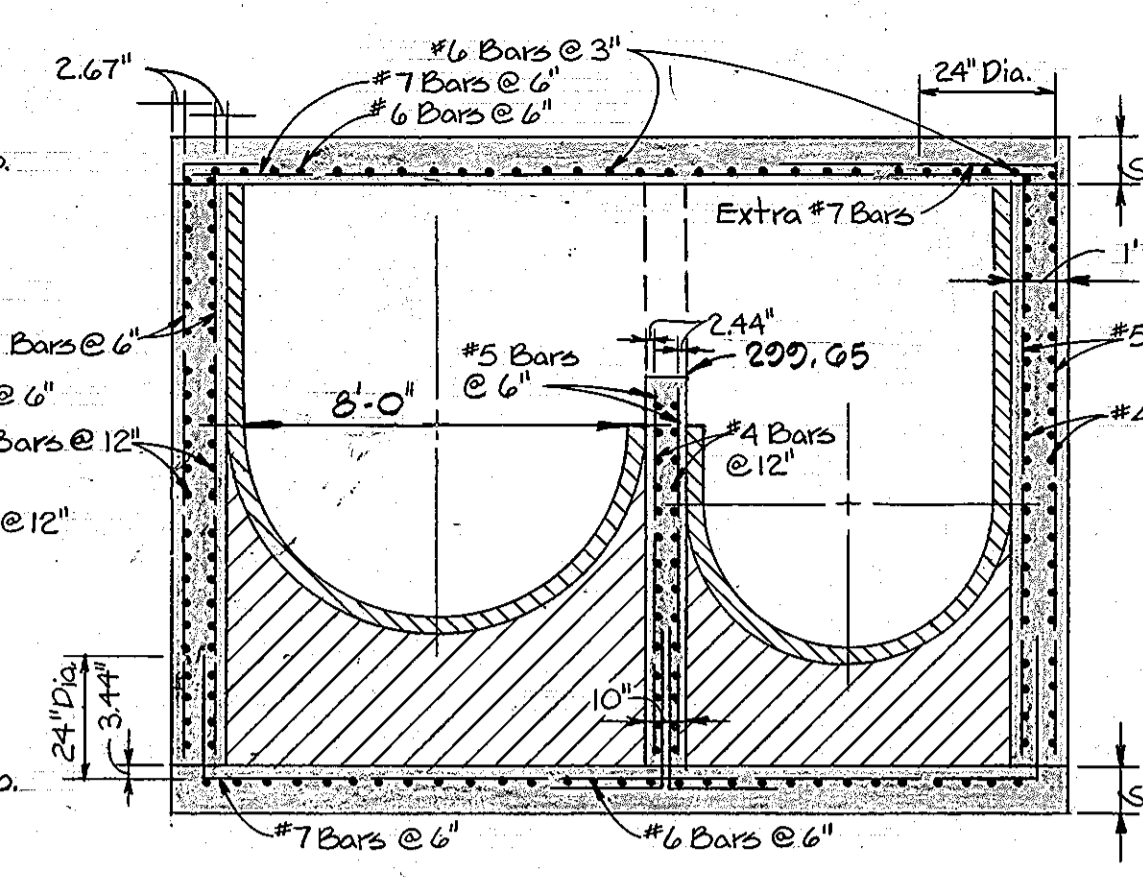
1158



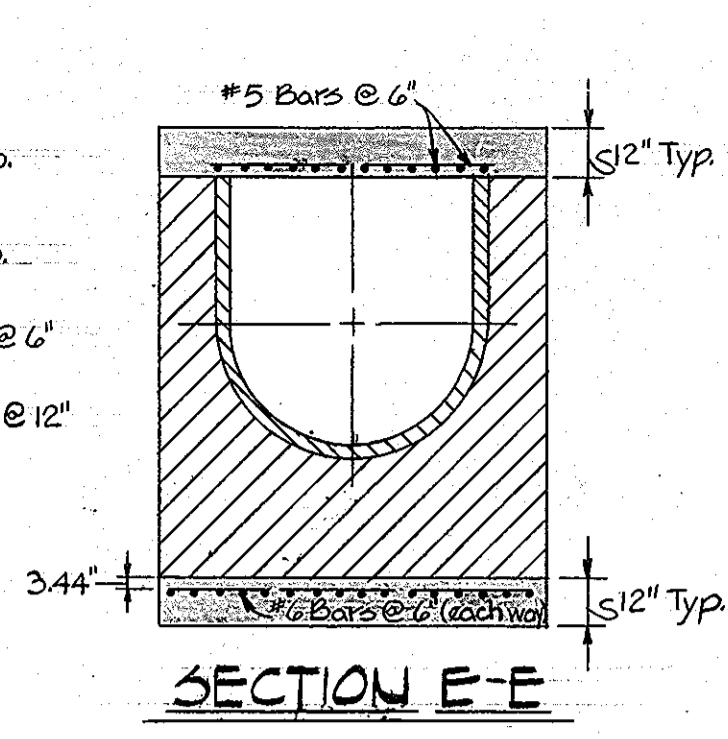
S-5  
 JUNCTION CHAMBER



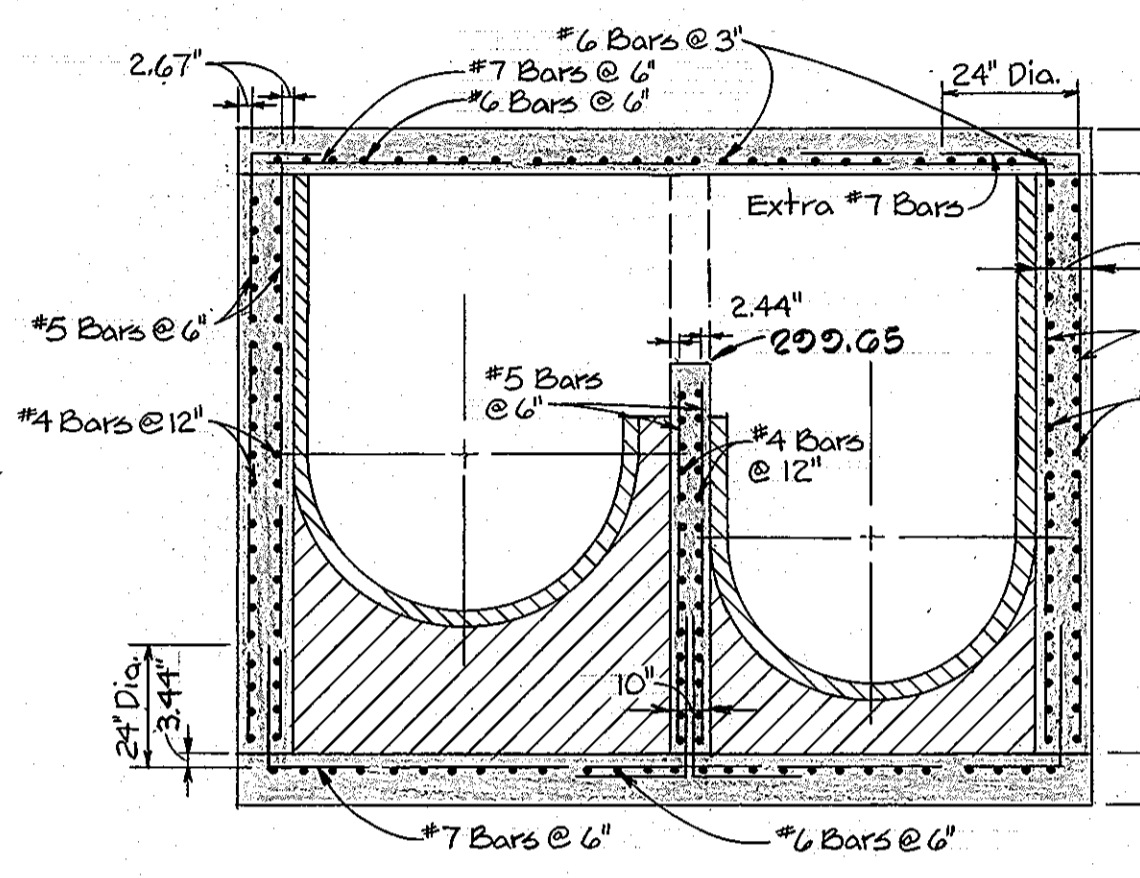
SECTION A-A



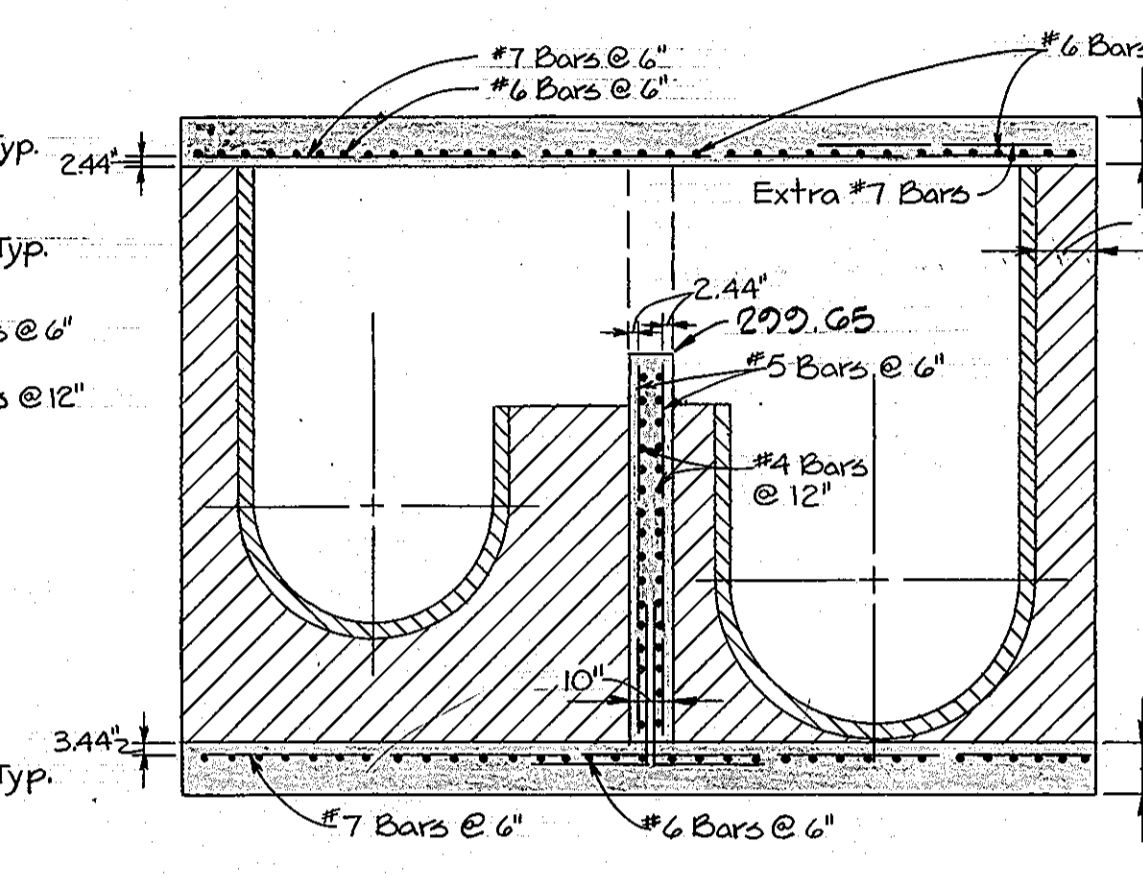
SECTION C-C



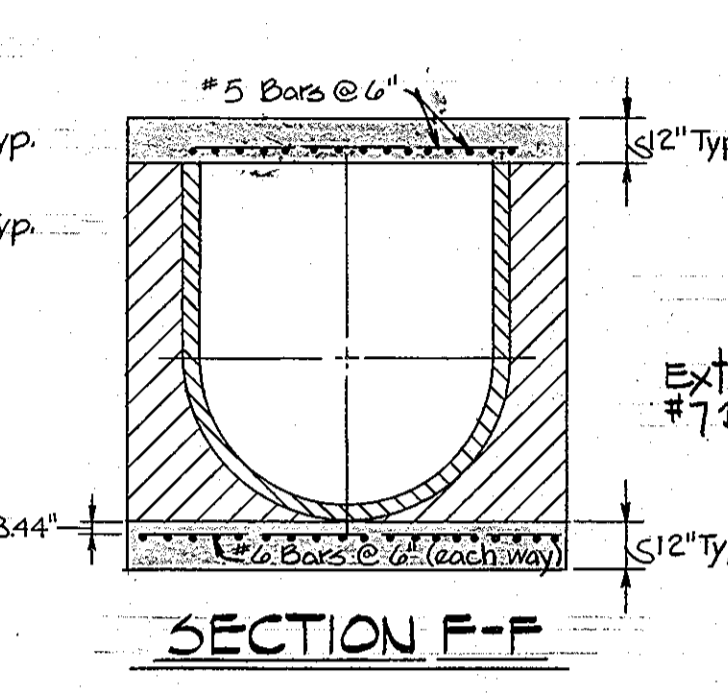
SECTION E-E



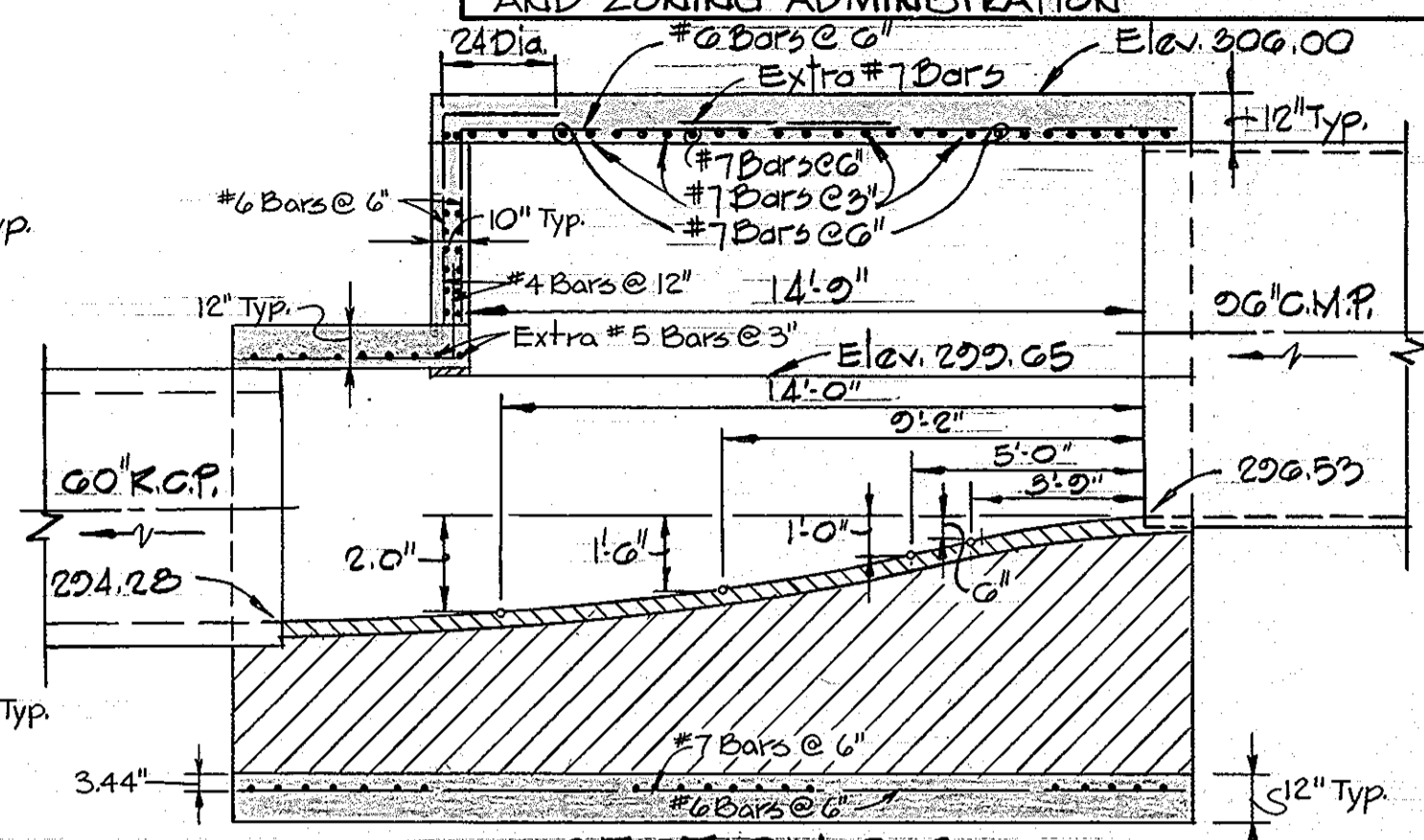
SECTION B-B



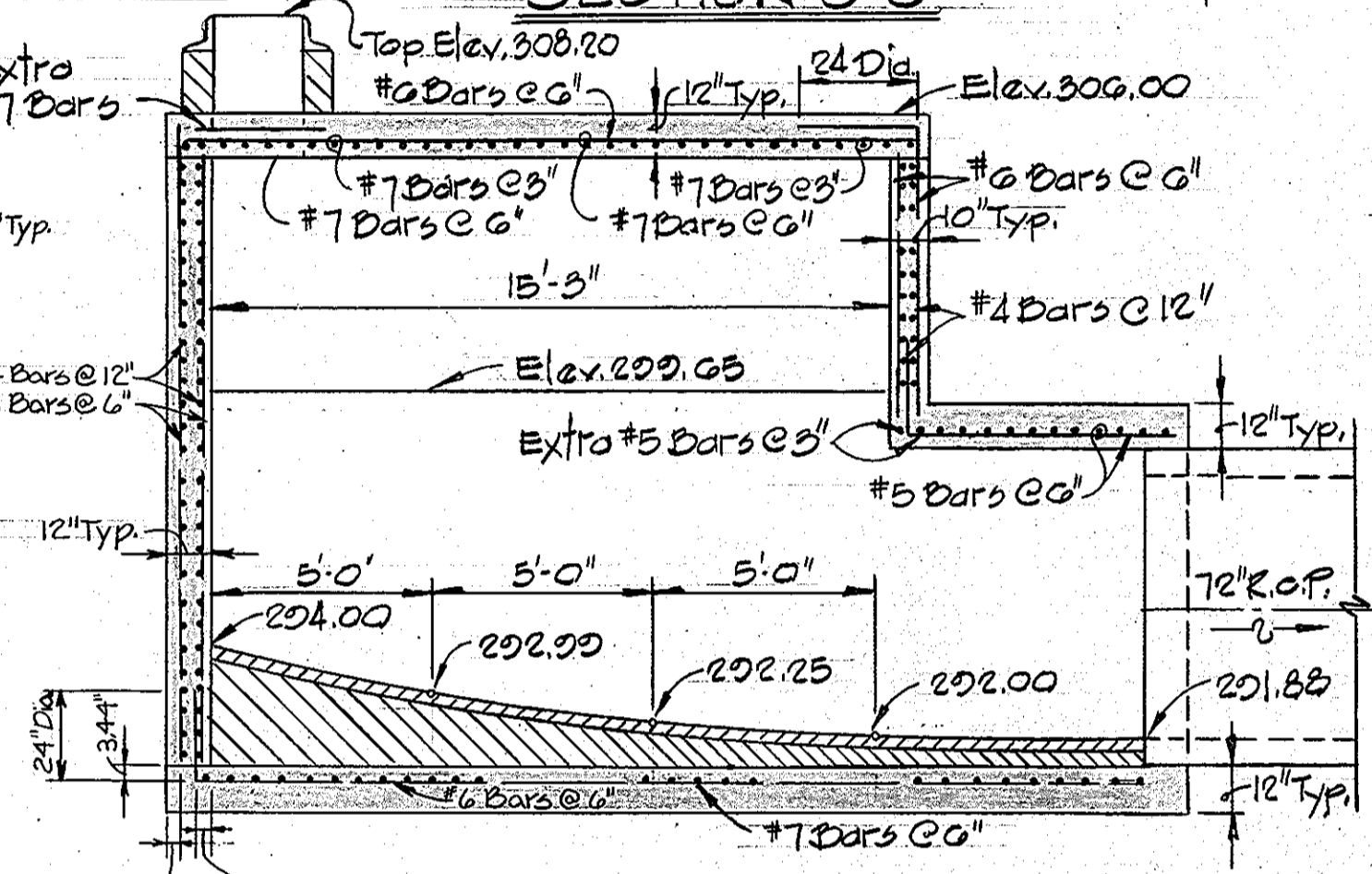
SECTION D-D



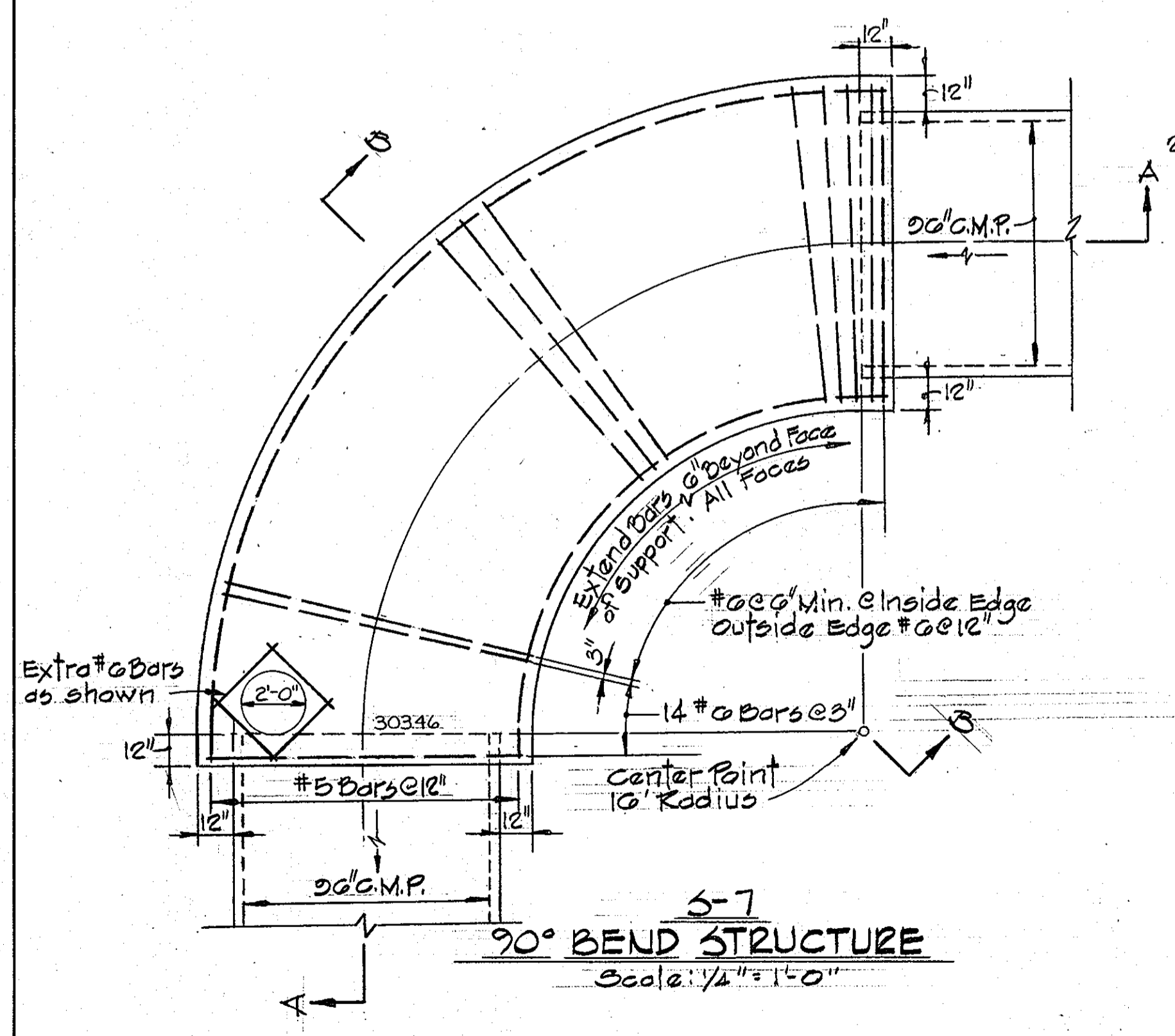
SECTION F-F



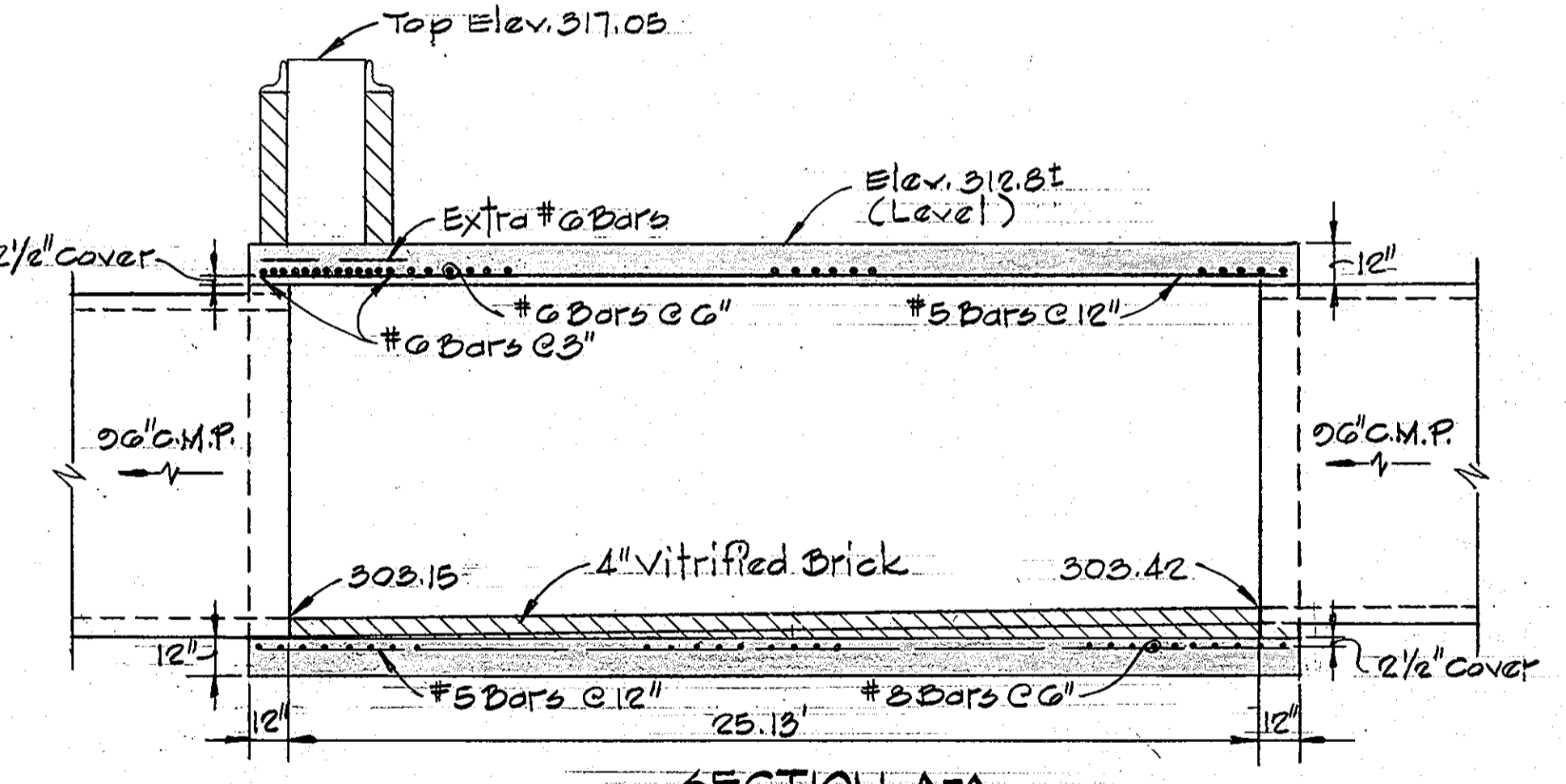
SECTION G-G



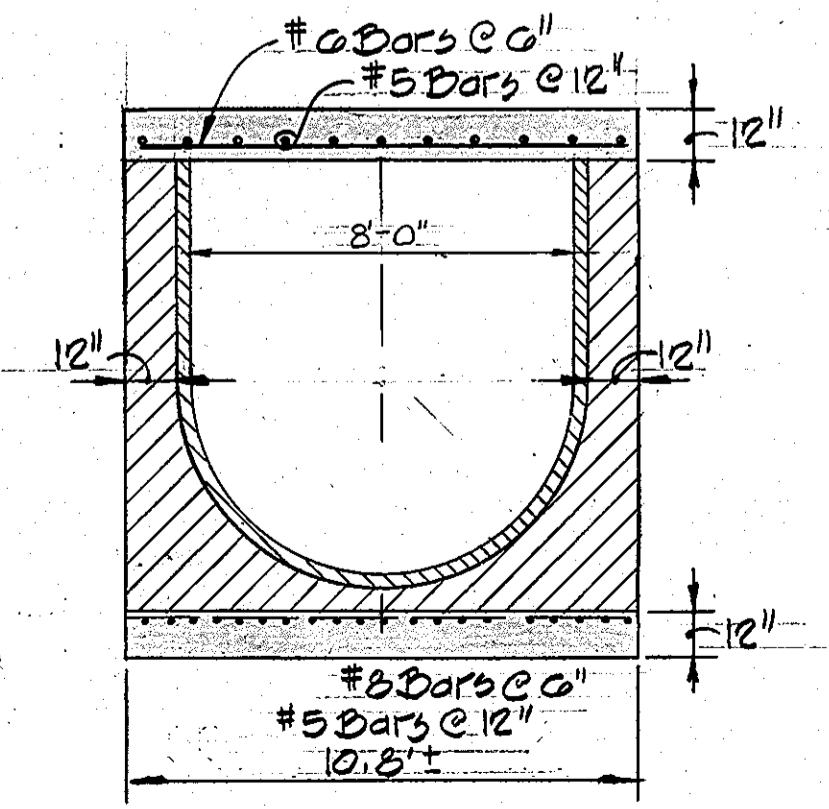
SECTION H-H



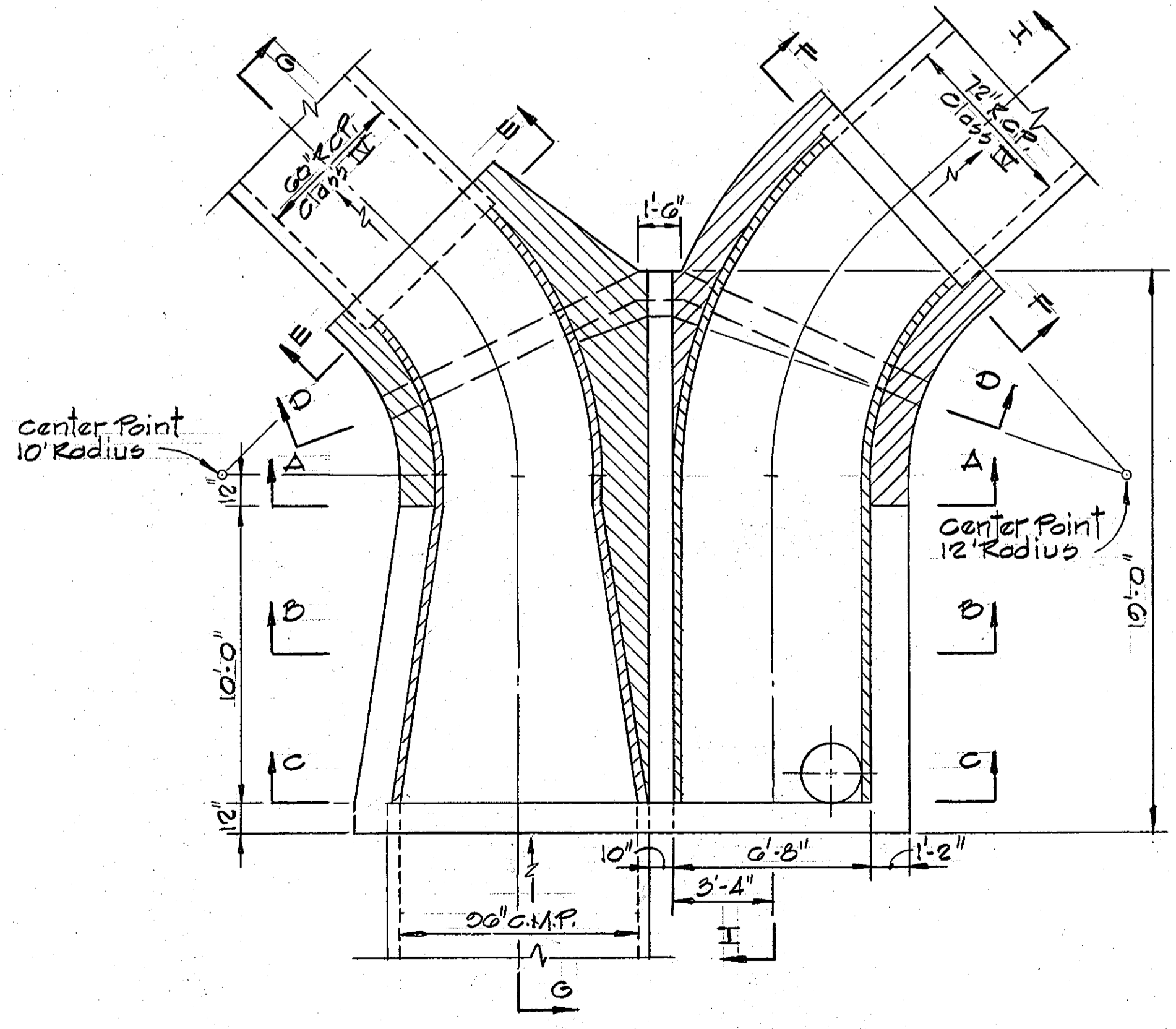
S-7  
 90° BEND STRUCTURE  
 Scale: 1/4" = 1'-0"



SECTION A-A



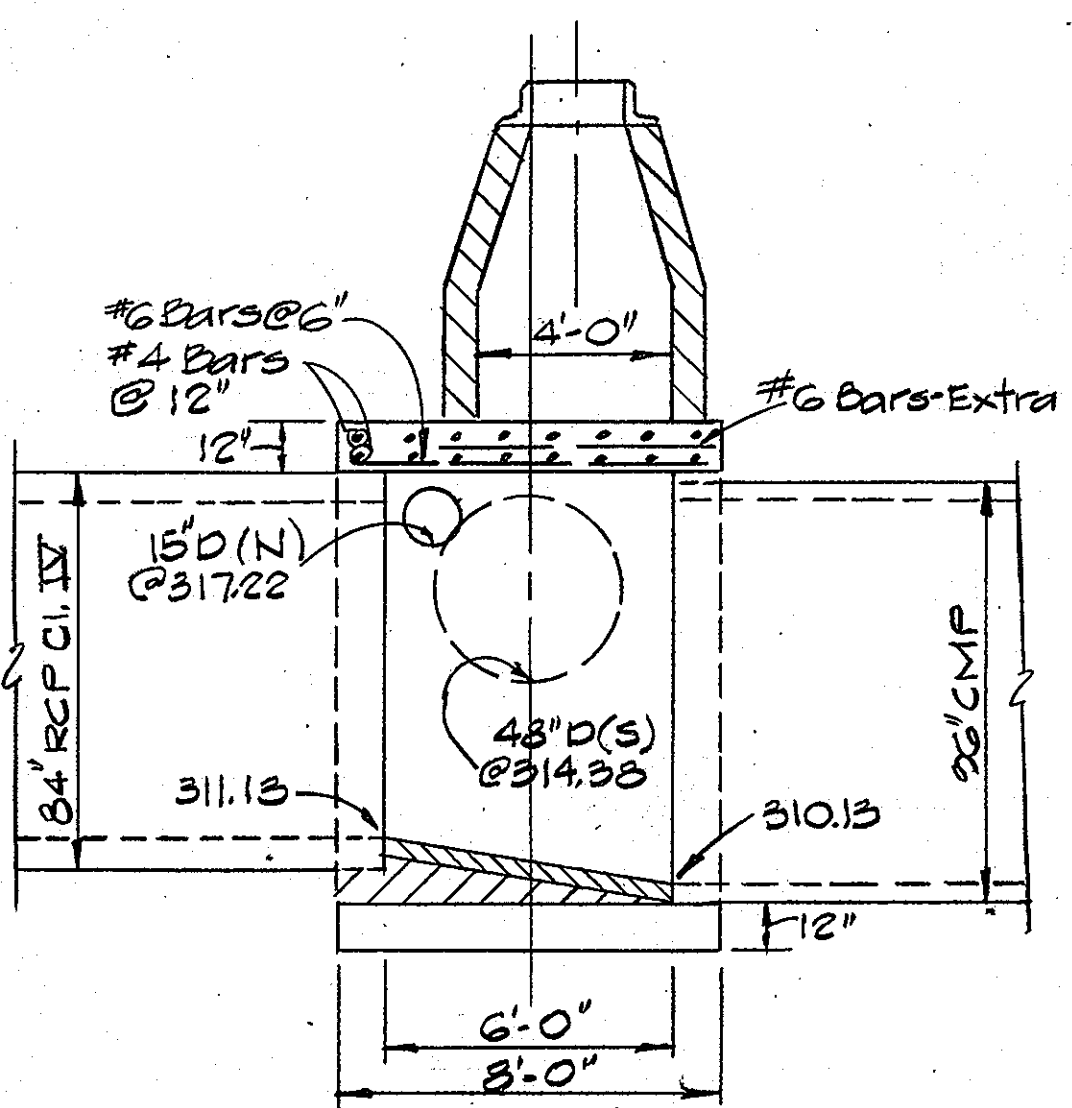
SECTION B-B



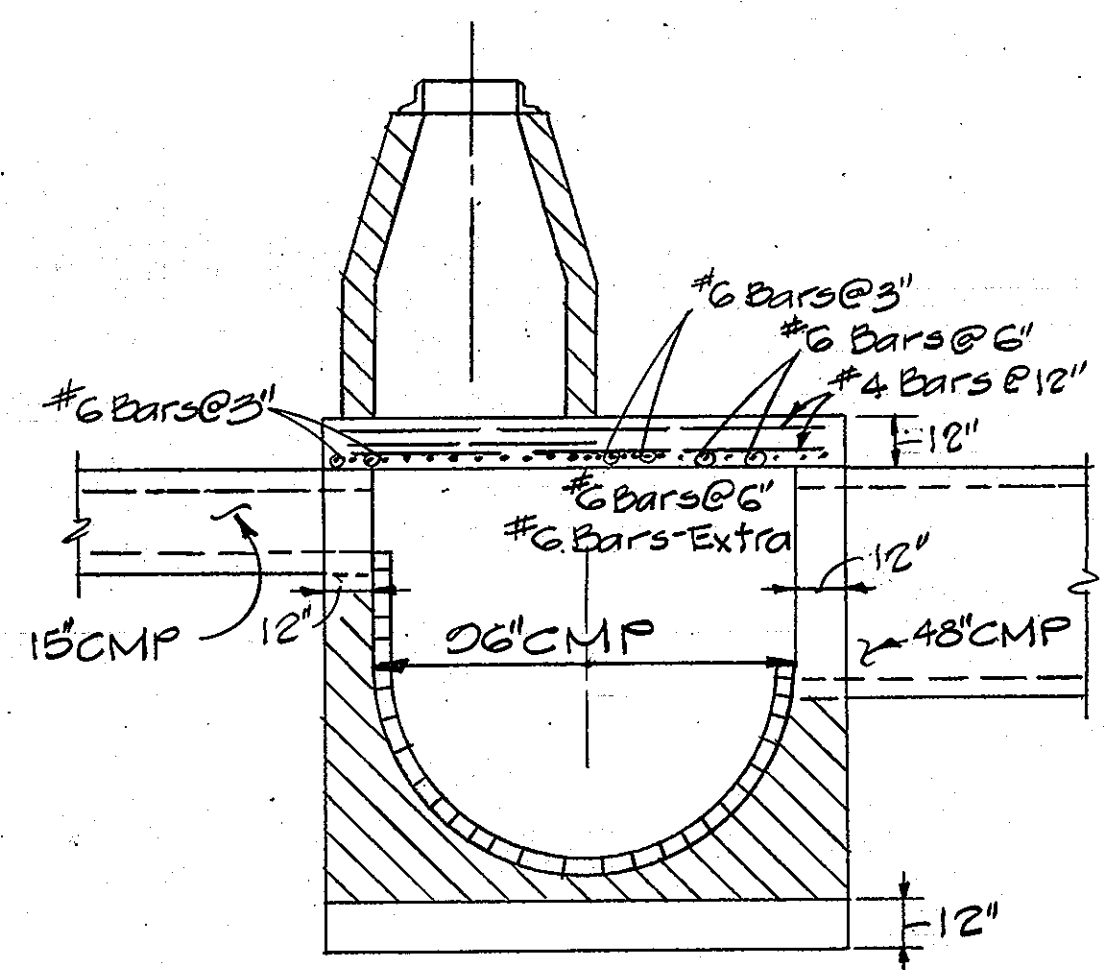
JUNCTION CHAMBER S-5  
 Scale: 1/4" = 1'-0"

3-17-86	1	As per Planning, DPN and SCS Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE STORM DRAIN DETAILS
SCALE: 1/4" = 1'-0"		DATE:
WHITMAN, REQUART AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218		
 KENNETH A. MCCORD Registered Engineer No. 1974		

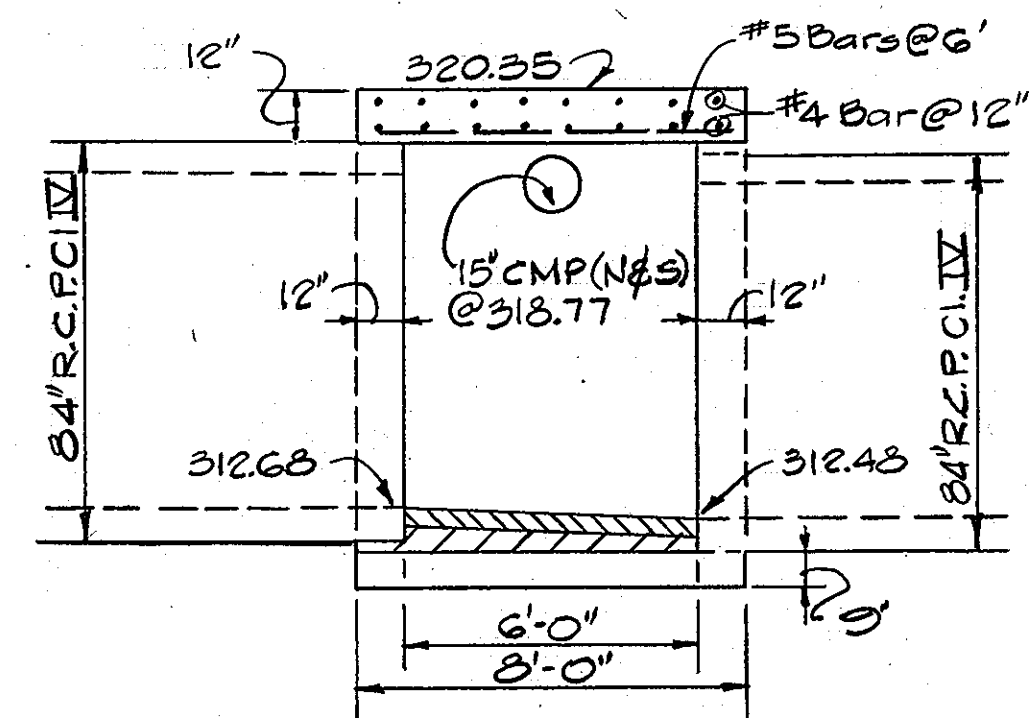
APPROVED: DEPARTMENT OF PUBLIC WORKS  
 Chief, Bureau of Engineering  
 Office of Planning and Zoning  
 DATE: 3-24-86  
 325-86  
 DATE: \_\_\_\_\_  
 Chief, Division of Land Development and Zoning Administration



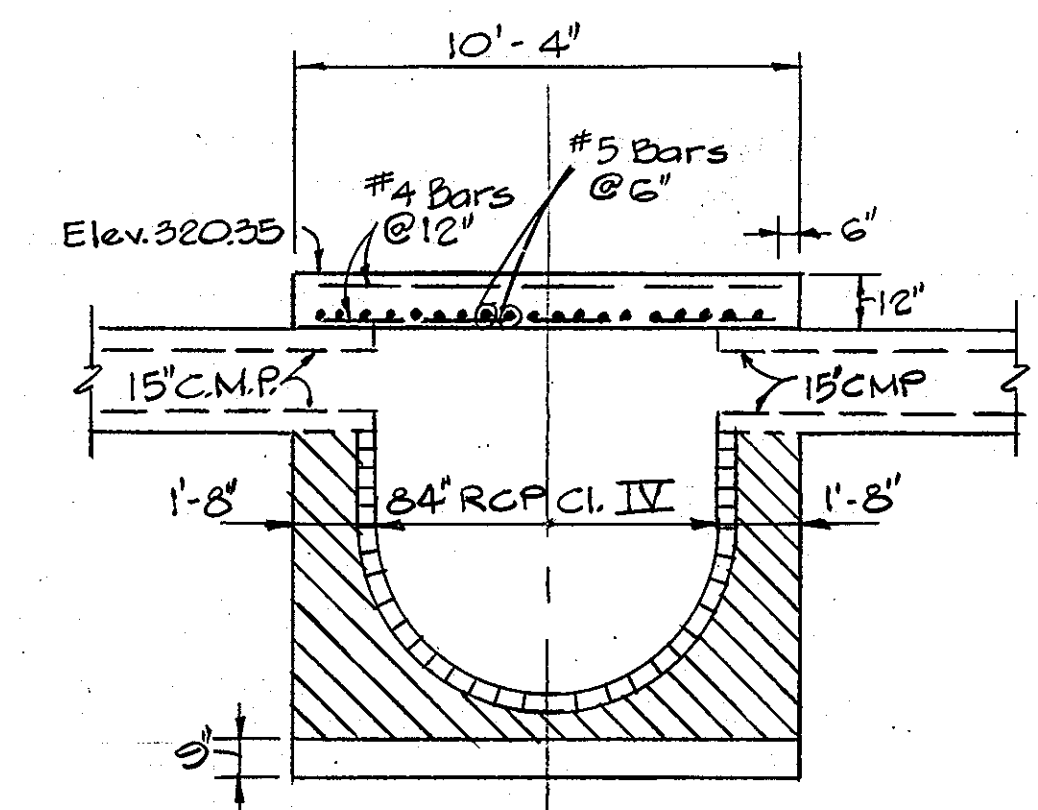
SECTION "A-A"



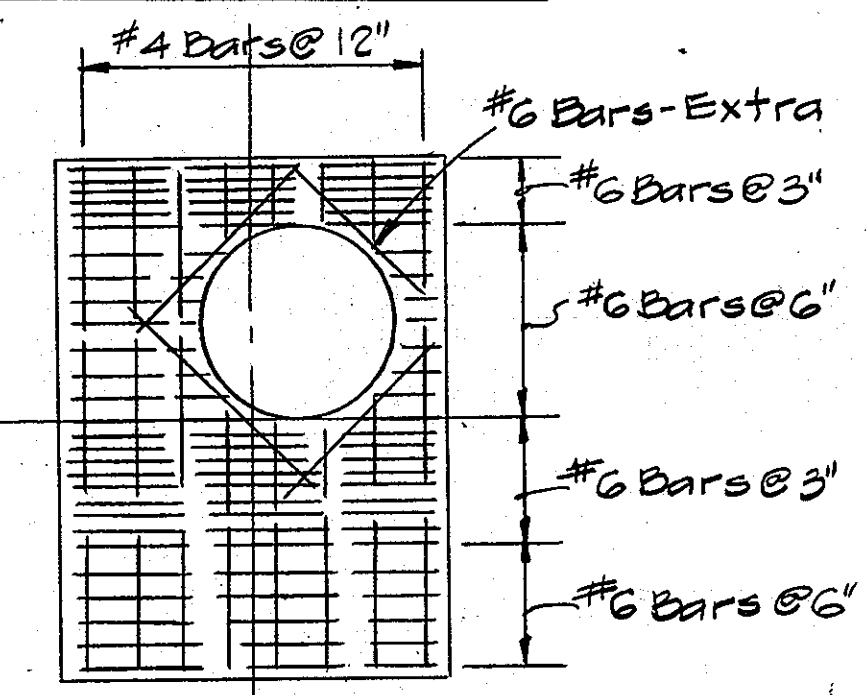
SECTION "B-B"



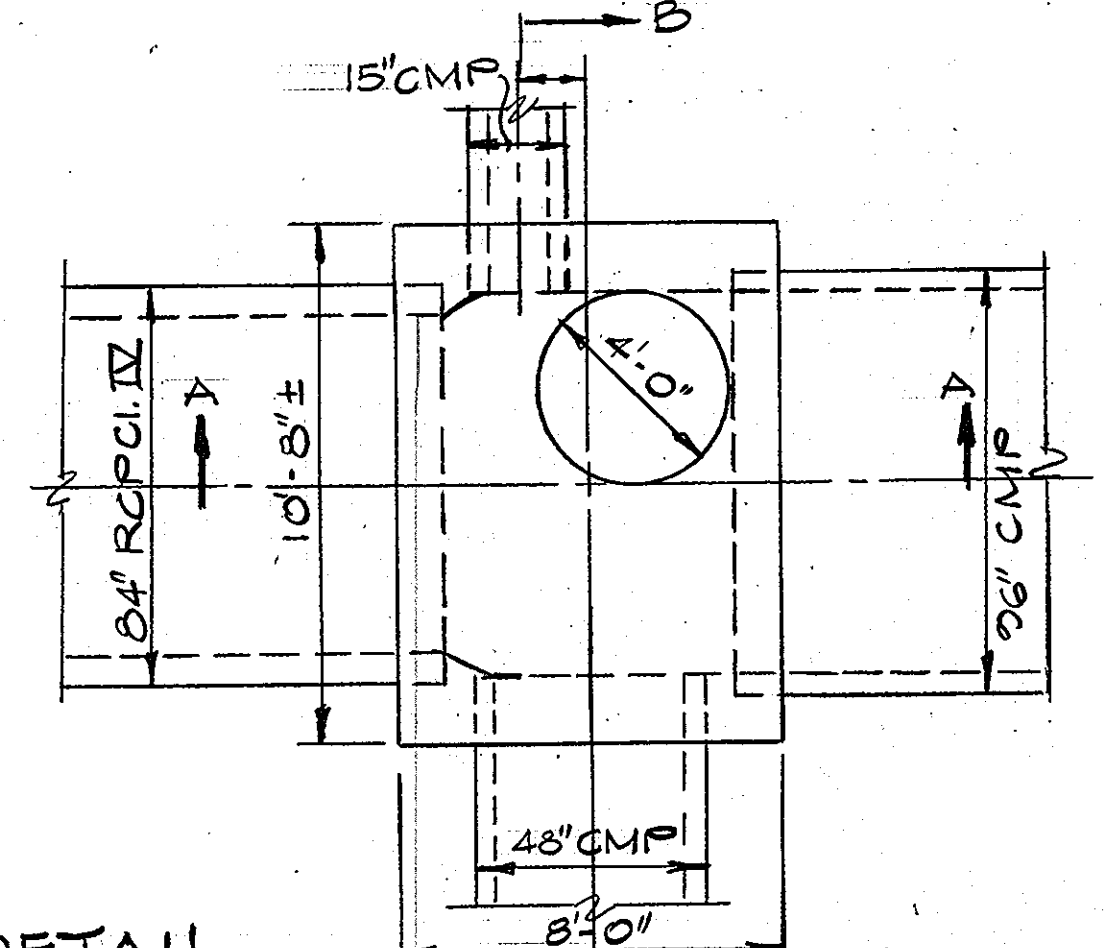
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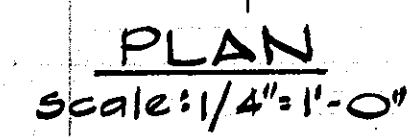
SECTION "B-B"



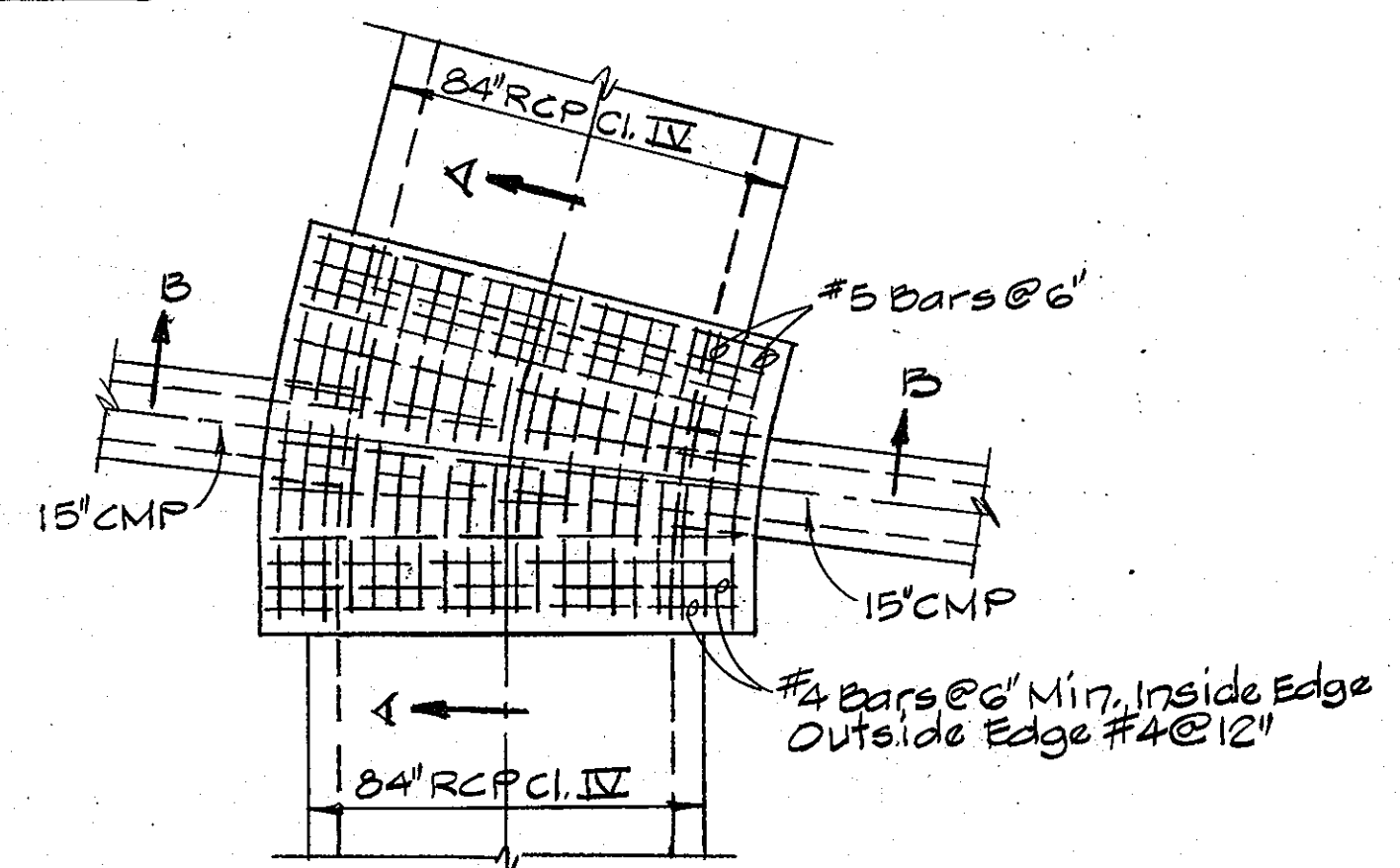
TOP SLAB REINFORCEMENT PLAN  
 Scale: 1/4" = 1'-0"



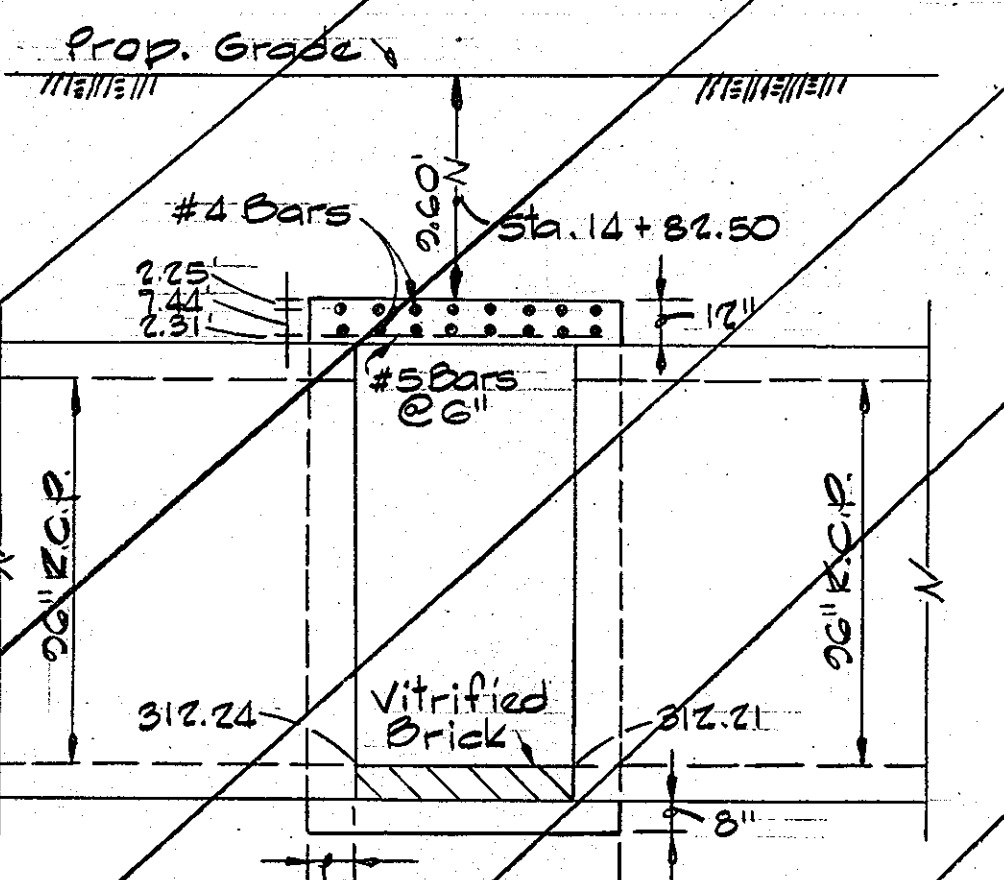
DETAIL STRUCTURE S-8



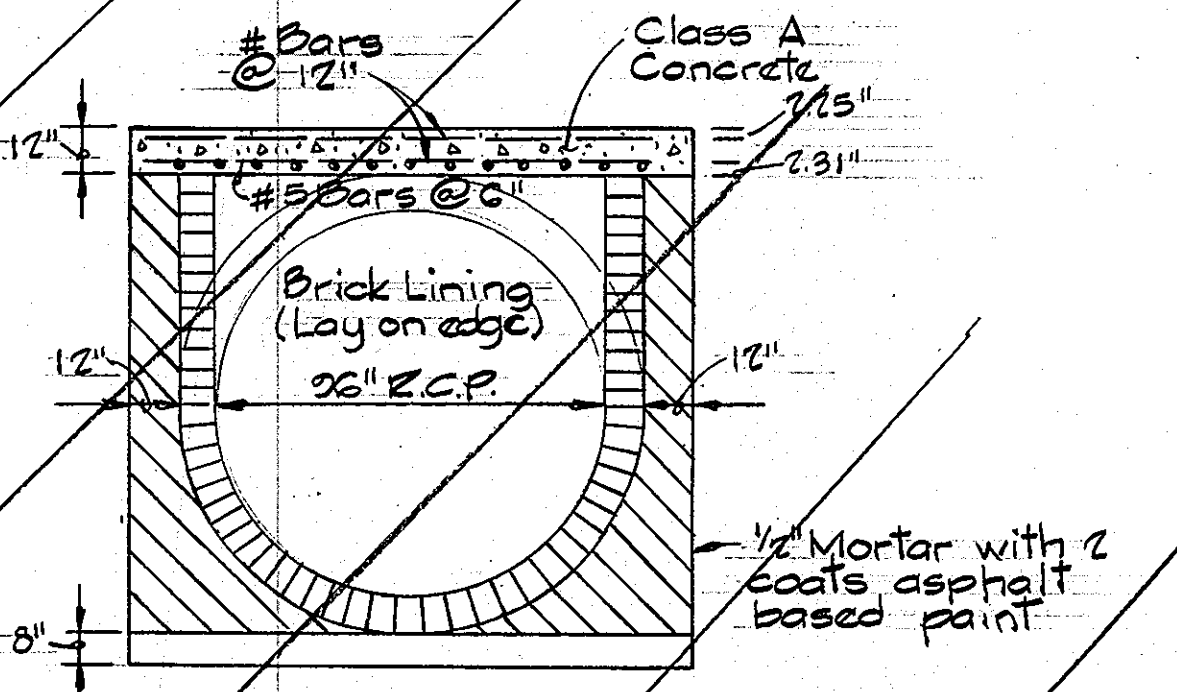
PLAN  
 Scale: 1/4" = 1'-0"



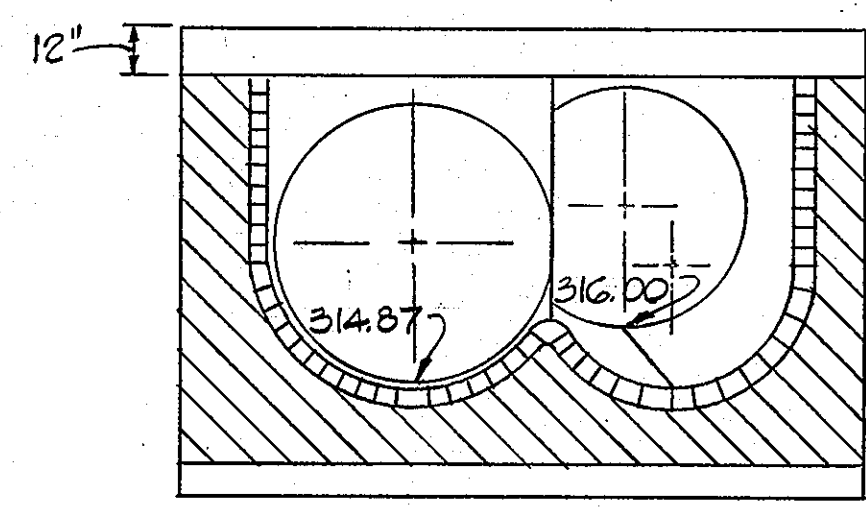
DETAIL-STRUCTURE S-9  
 Scale: 1/4" = 1'-0"



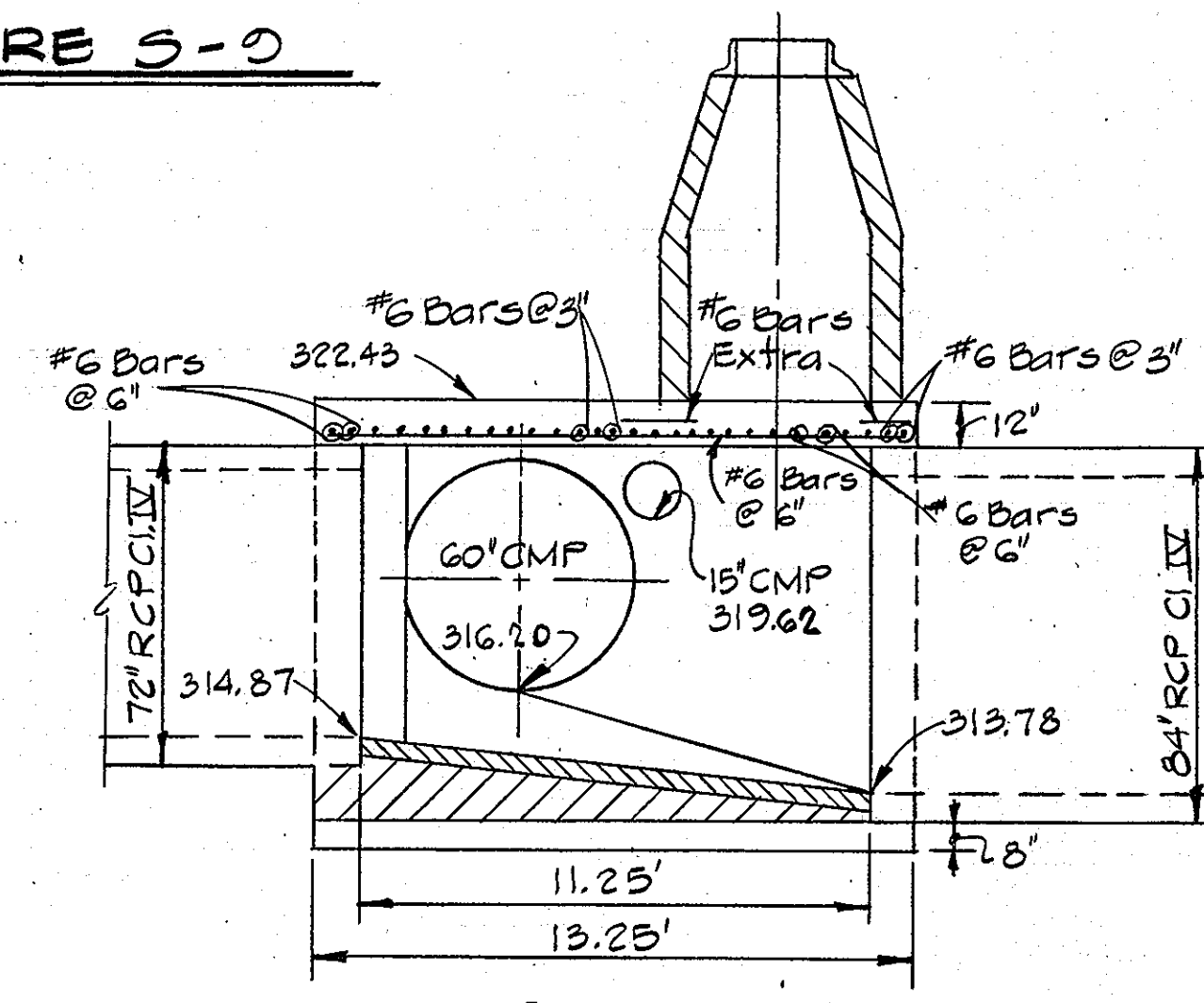
SECTION "A-A"



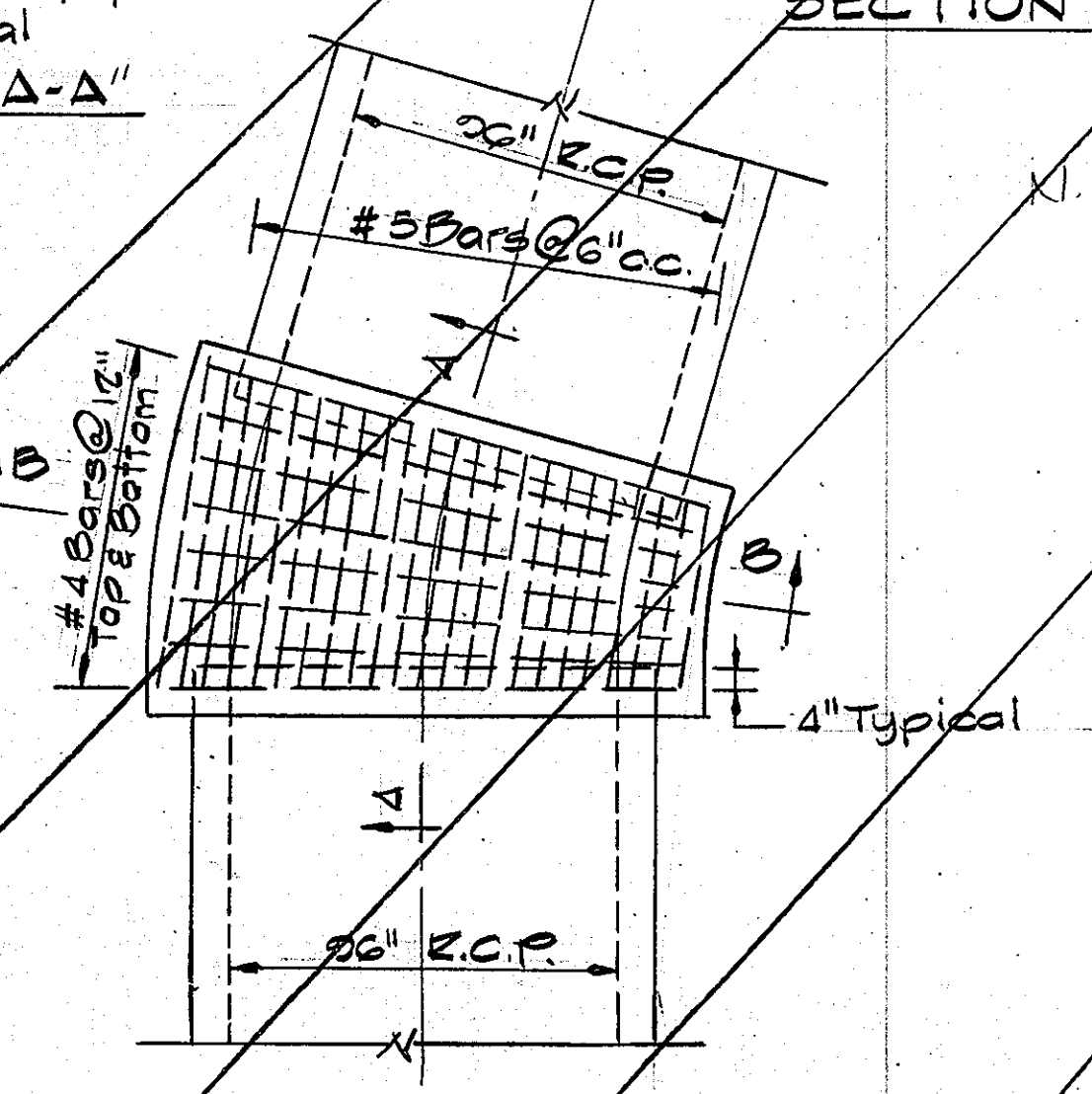
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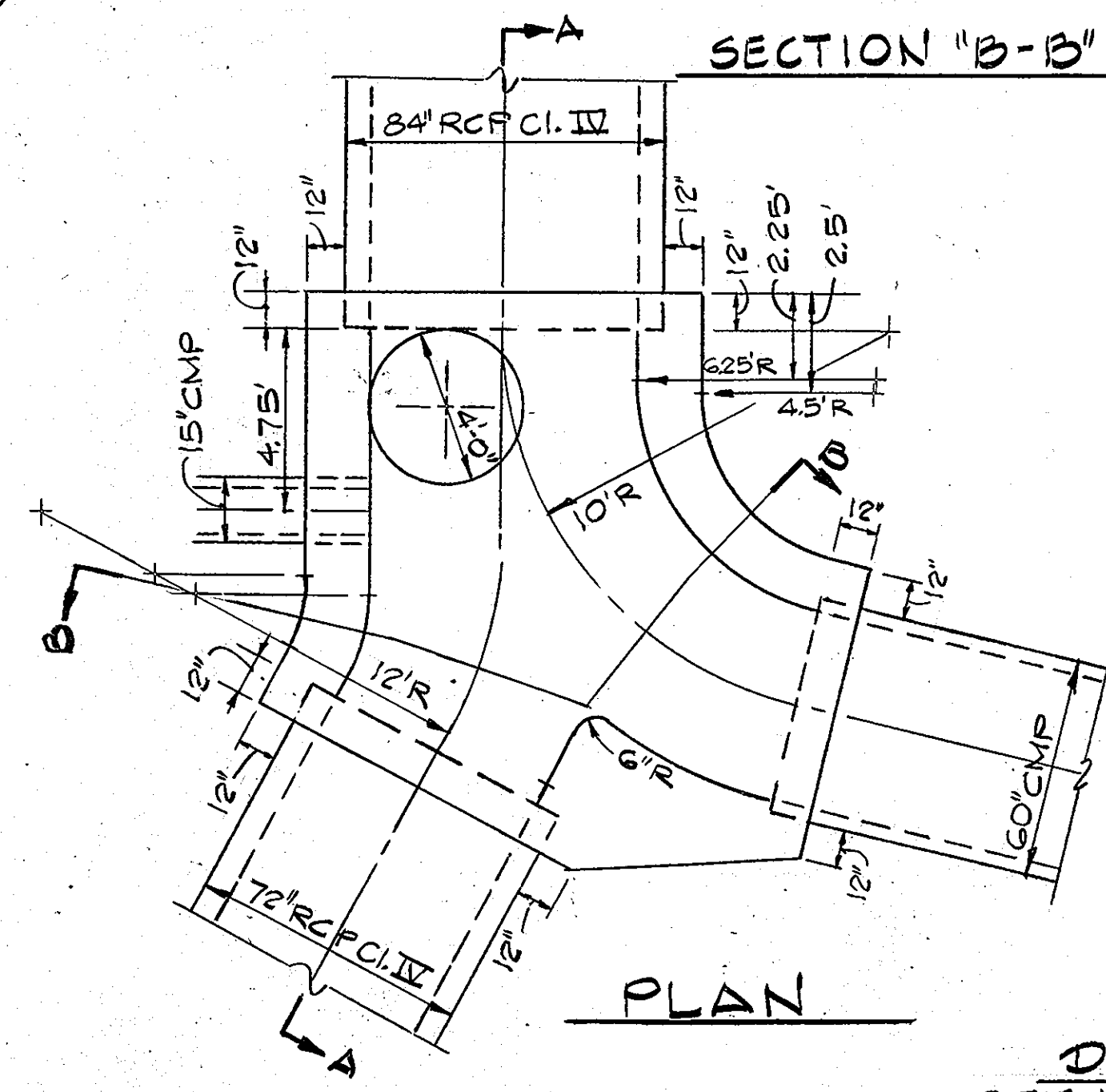
SECTION "B-B"



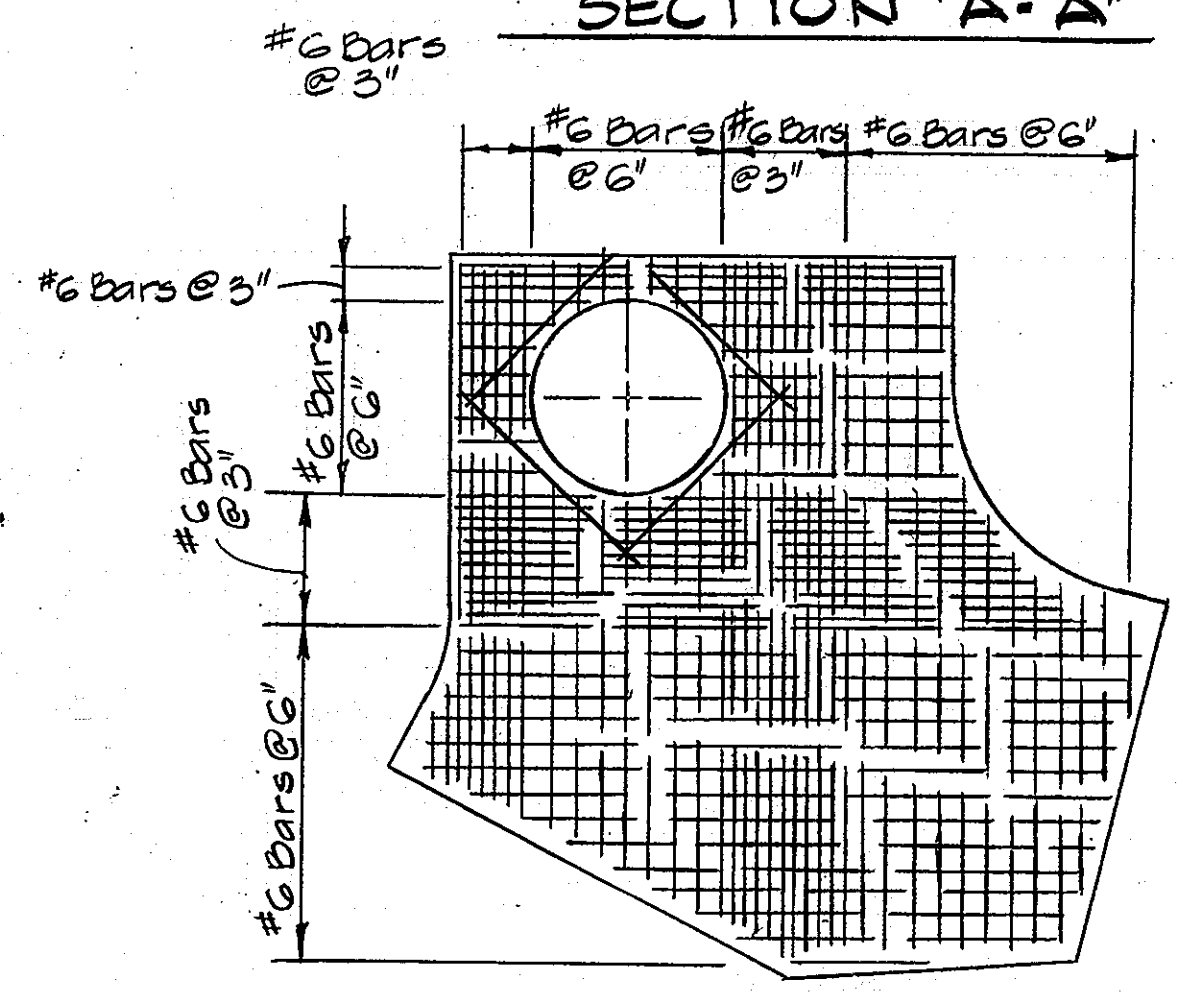
SECTION "A-A"



DETAIL STRUCTURE S-8 (N.I.C.)  
 Scale: 1/4" = 1'-0"



DETAIL STRUCTURE S-11  
 Scale: 1/4" = 1'-0"

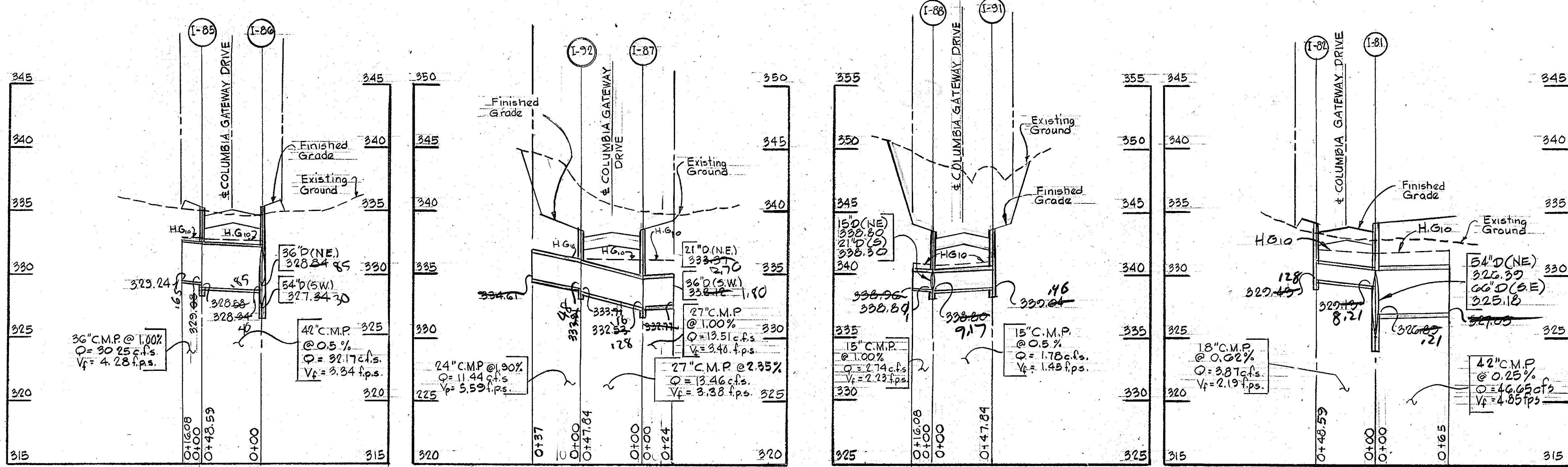
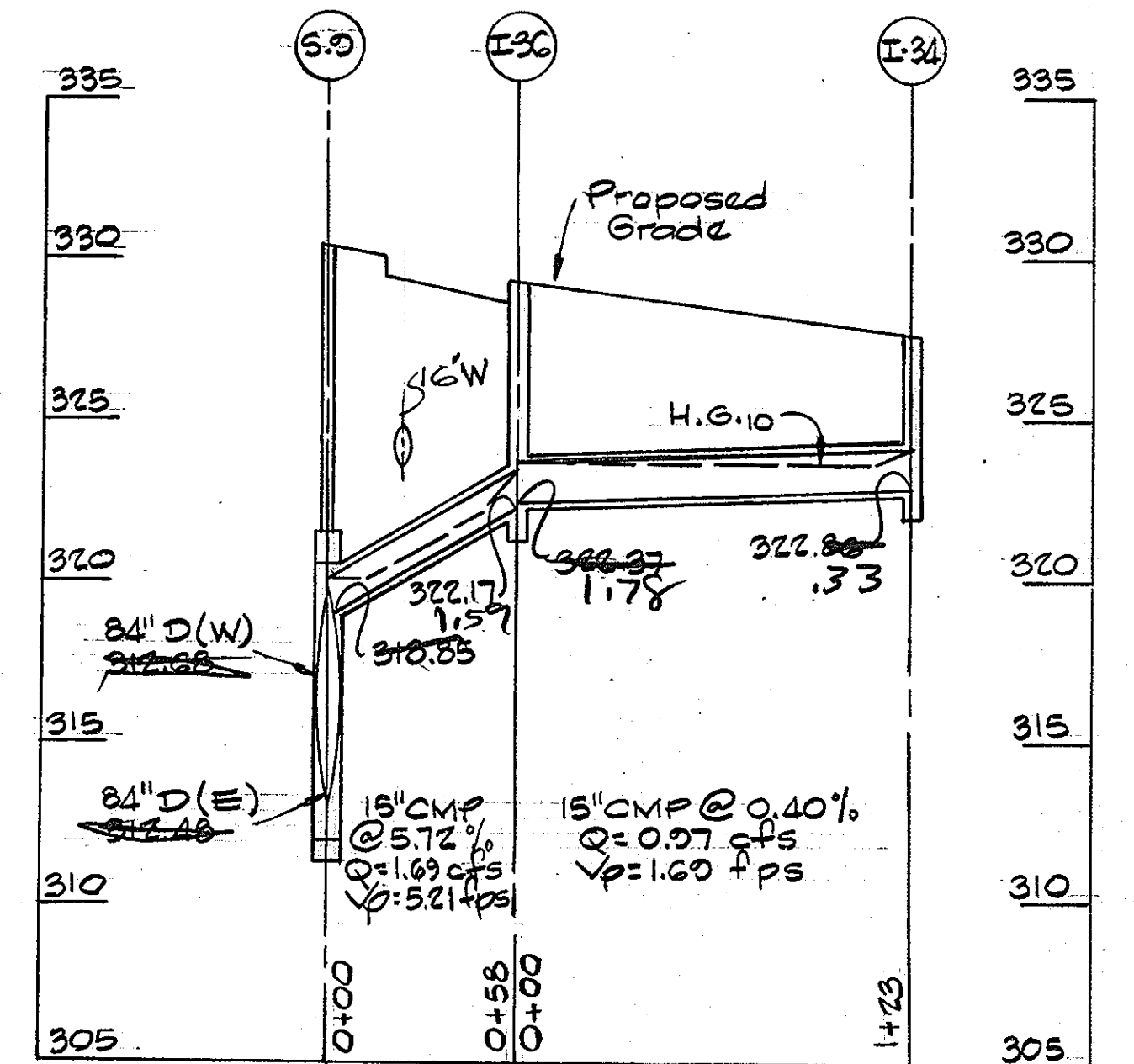
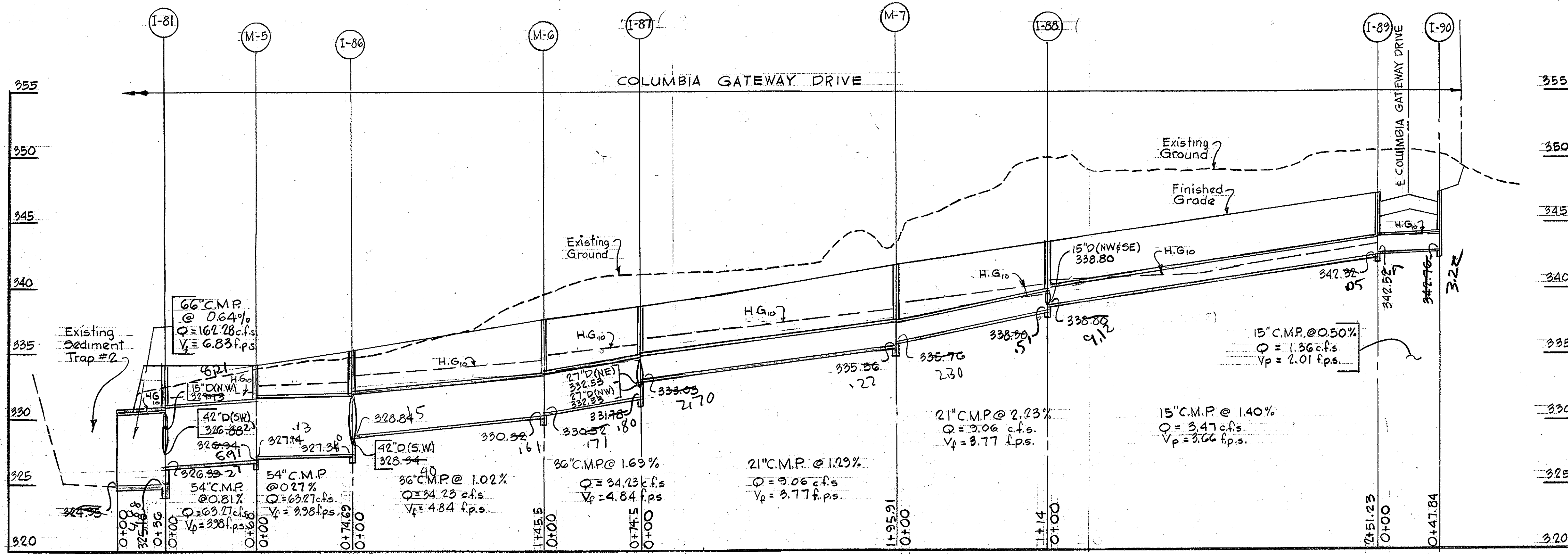


TOP SLAB REINFORCEMENT PLAN

REV. DATE	REV. NO.	REVISION DESCRIPTION
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per SHD Comments

COLUMBIA GATEWAY  
 6<sup>th</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1  
 PROJECT TITLE  
 STORM DRAIN DETAILS  
 SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 Registered Engineer  
 No. 1974



**PROFILES**  
 Scale: Horiz: 1" = 50'  
 Vert: 1" = 5'

AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG 25  
 301  
 1-14-88

REV. DATE	REV. NO.	REVISION DESCRIPTION
6-10-86	3	Changed 2 Pipe Sizes, Revised I-81, I-82, I-87, I-88, I-91 and I-92
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D. Comments

COLUMBIA GATEWAY  
 6<sup>th</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

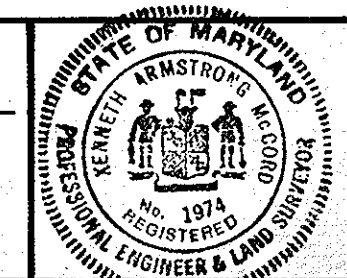
PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 STORM DRAIN PROFILES

SCALE: AS SHOWN DATE:

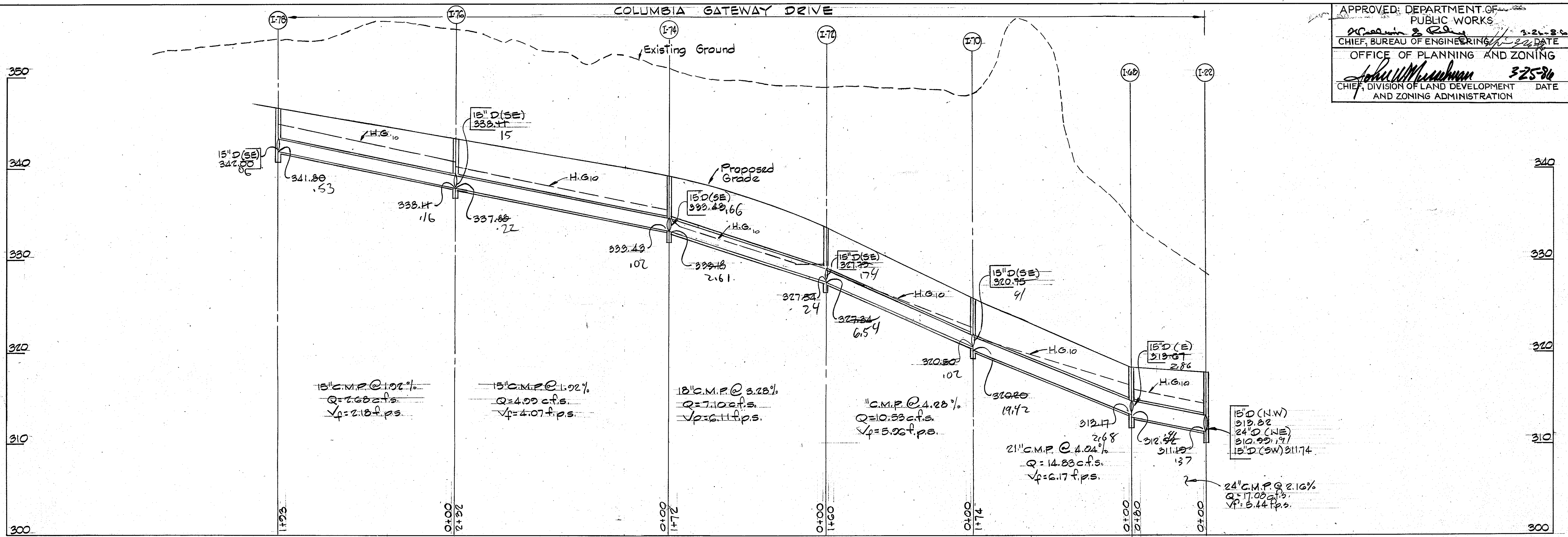
WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 Registered Engineer  
 NO. 1974

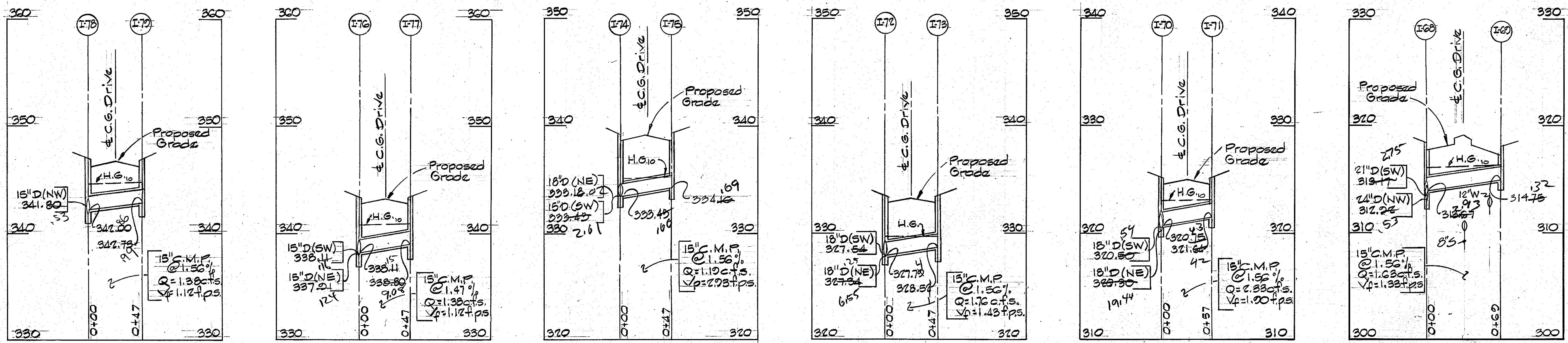


1158

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION  
 DATE: 3-21-86  
 DATE: 3-25-86



AS-BUILD SURVEY  
 CERTIFIED BY  
 RICHARD FLANE  
 REG. L.S.  
 301  
 1-14-86



**PROFILES**  
 Scale: Horiz: 1" = 50'  
 Vert: 1" = 5'

REV. DATE	REV. NO.	REVISION DESCRIPTION
6-10-86	3	Changed 1 Pipe Size, Revised I-72, I-68, I-69, I-74 and I-75
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D Comments

**COLUMBIA GATEWAY**  
 6th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL 0-1

PROJECT TITLE  
**STORM DRAIN PROFILES**

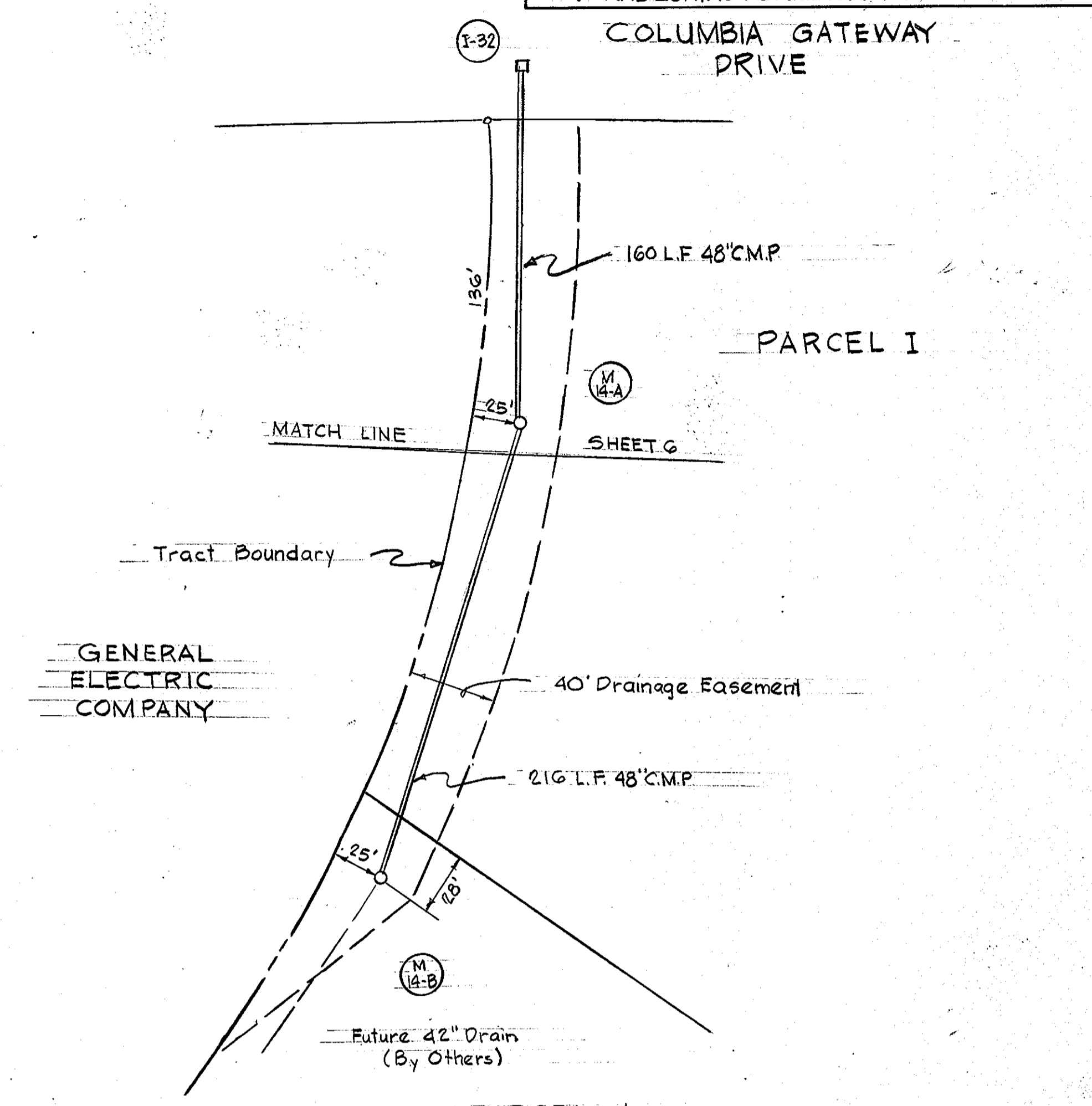
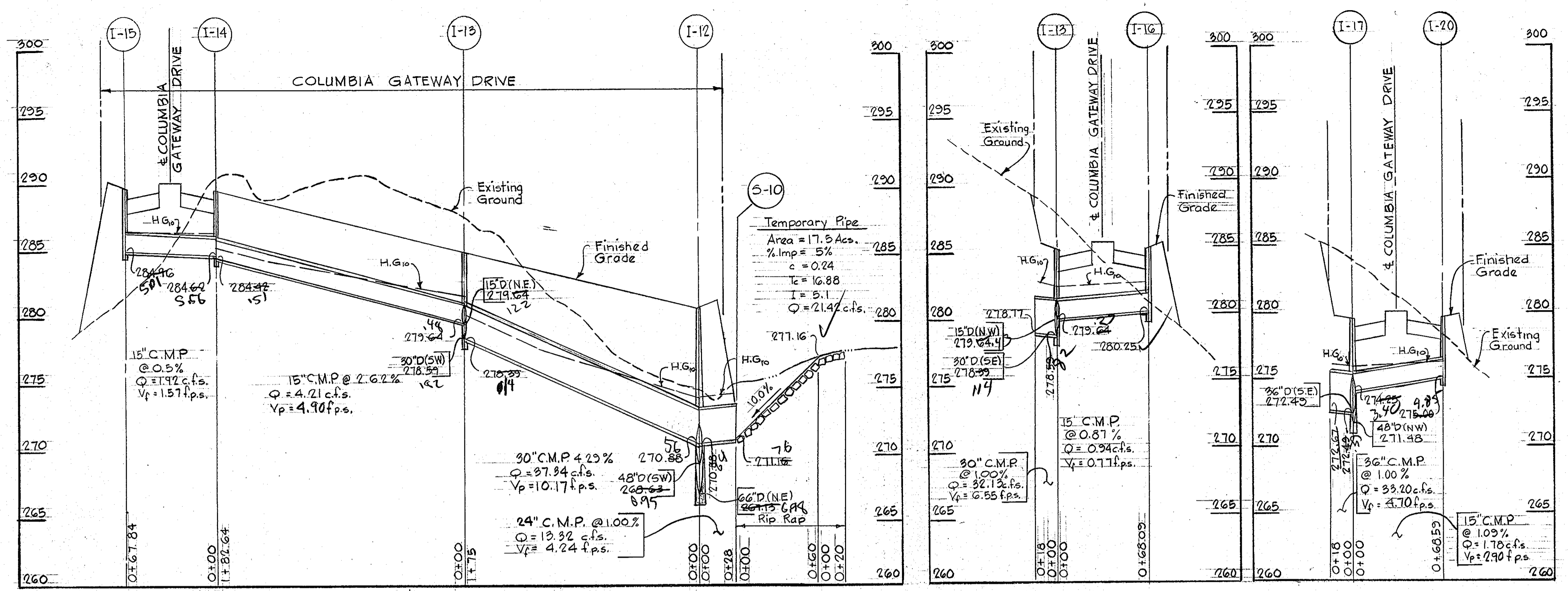
SCALE: AS SHOWN DATE:

WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

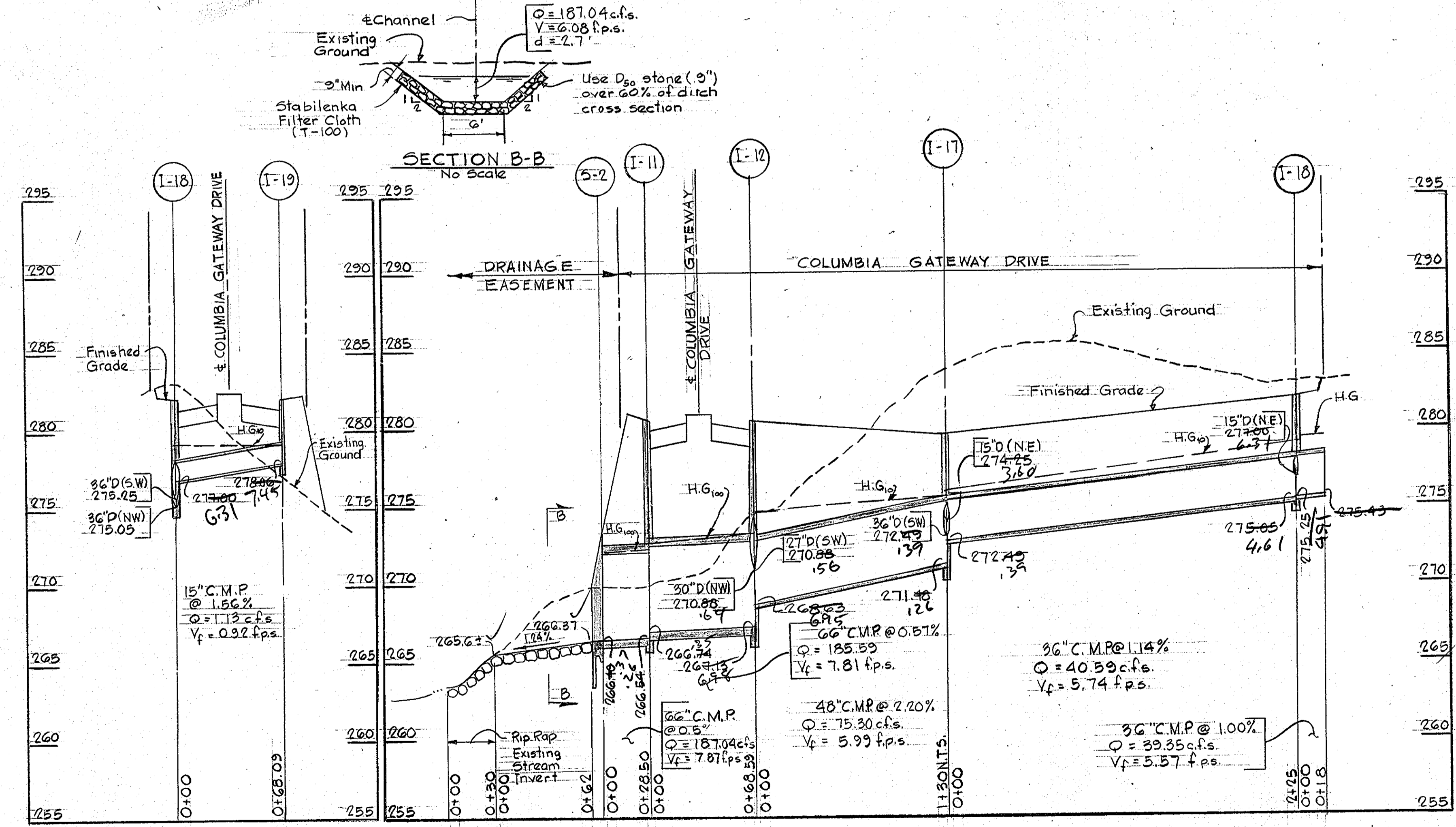
Kenneth A. McCord  
 Registered Engineer  
 No. 1974



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING *[Signature]* DATE 3-21-88  
 OFFICE OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION *[Signature]* DATE 3-25-88



No.	Type	Top Ell	Inv. Ell	Inv. Out	Location
M-14	Standard MH (Std. G50)	247.20	225.70	225.17	See Plan



PROFILES  
 Scale: Horz: 1" = 50'  
 Vert: 1" = 5'

AS-BUILD SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG. L.S.  
 301  
 1-14-88

PLAN  
 Scale 1" = 50'

REV. DATE	REV. NO.	REVISION DESCRIPTION
6-10-86	3	Add Plan for M-14B
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S. H. D. Comments

COLUMBIA GATEWAY  
 6<sup>th</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

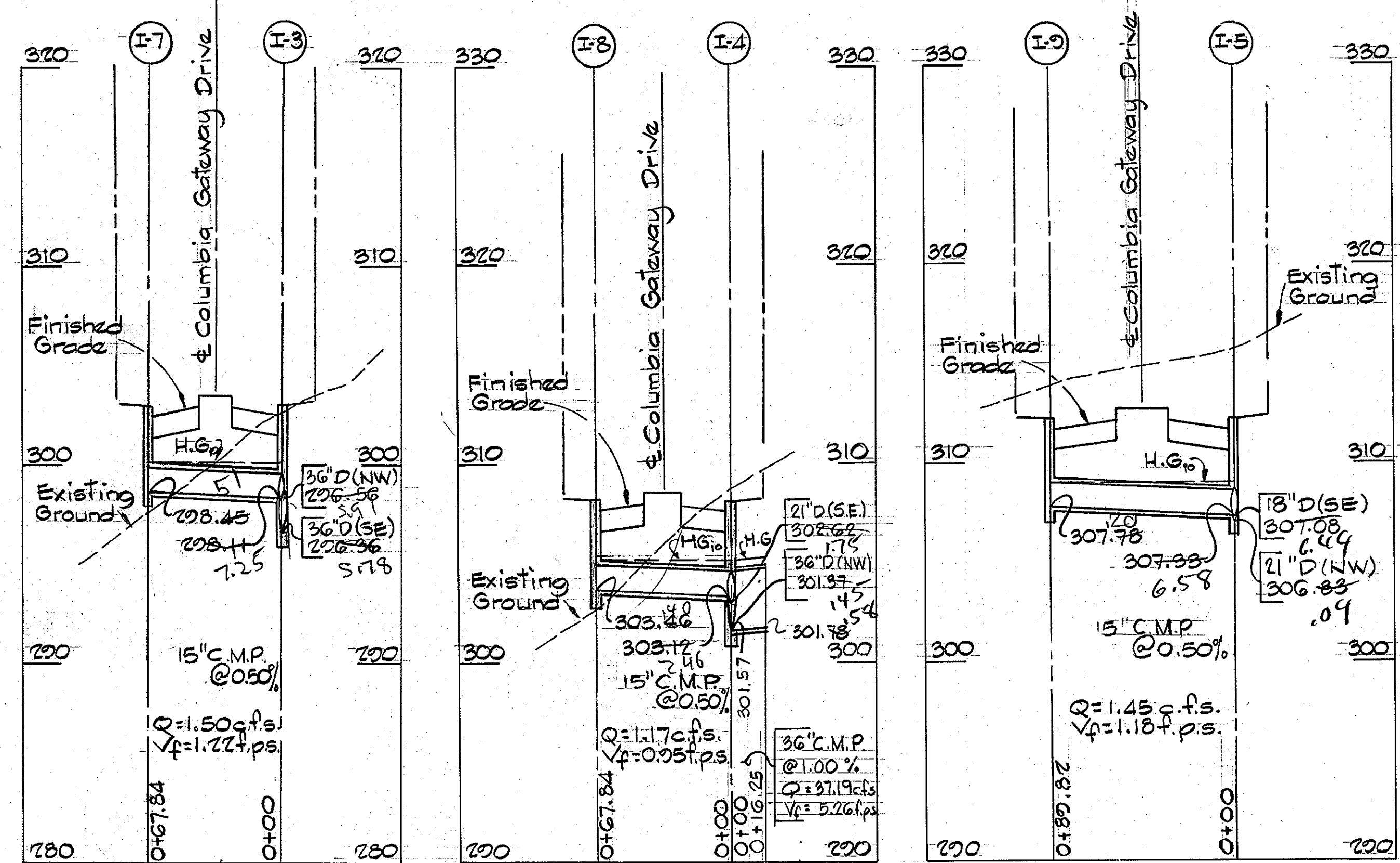
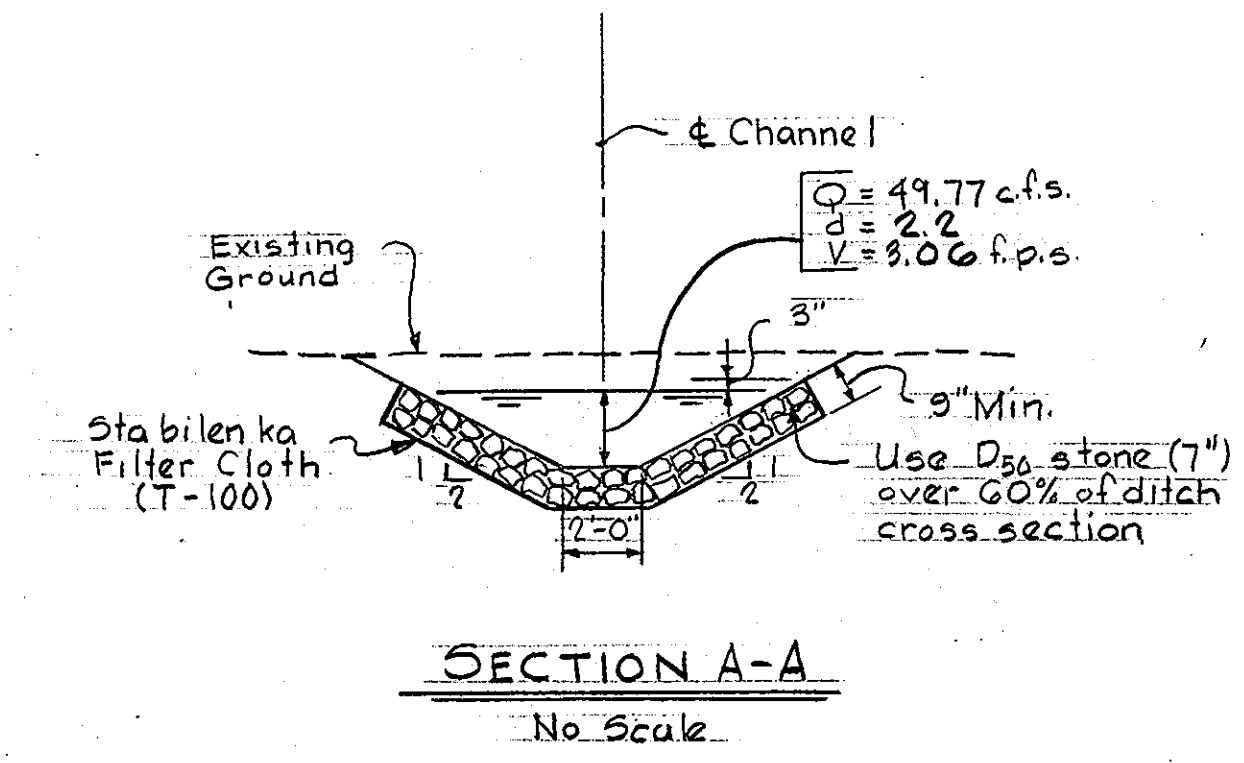
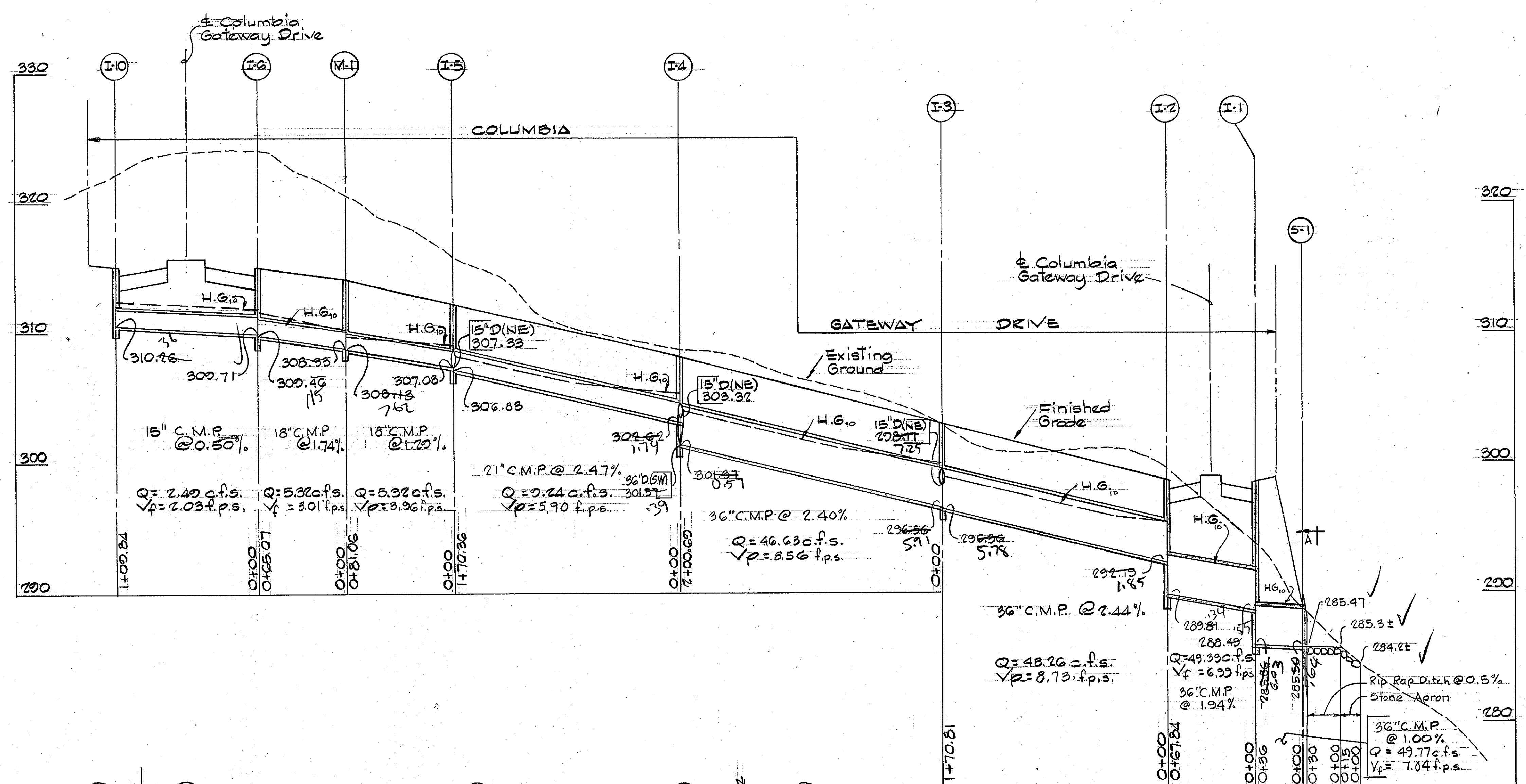
OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 STORM DRAIN PROFILES

SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

*[Signature]*  
 KENNETH A. McCORD  
 Registered Engineer  
 No. 1974



AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG. LG.  
 # 301  
 1-14-86

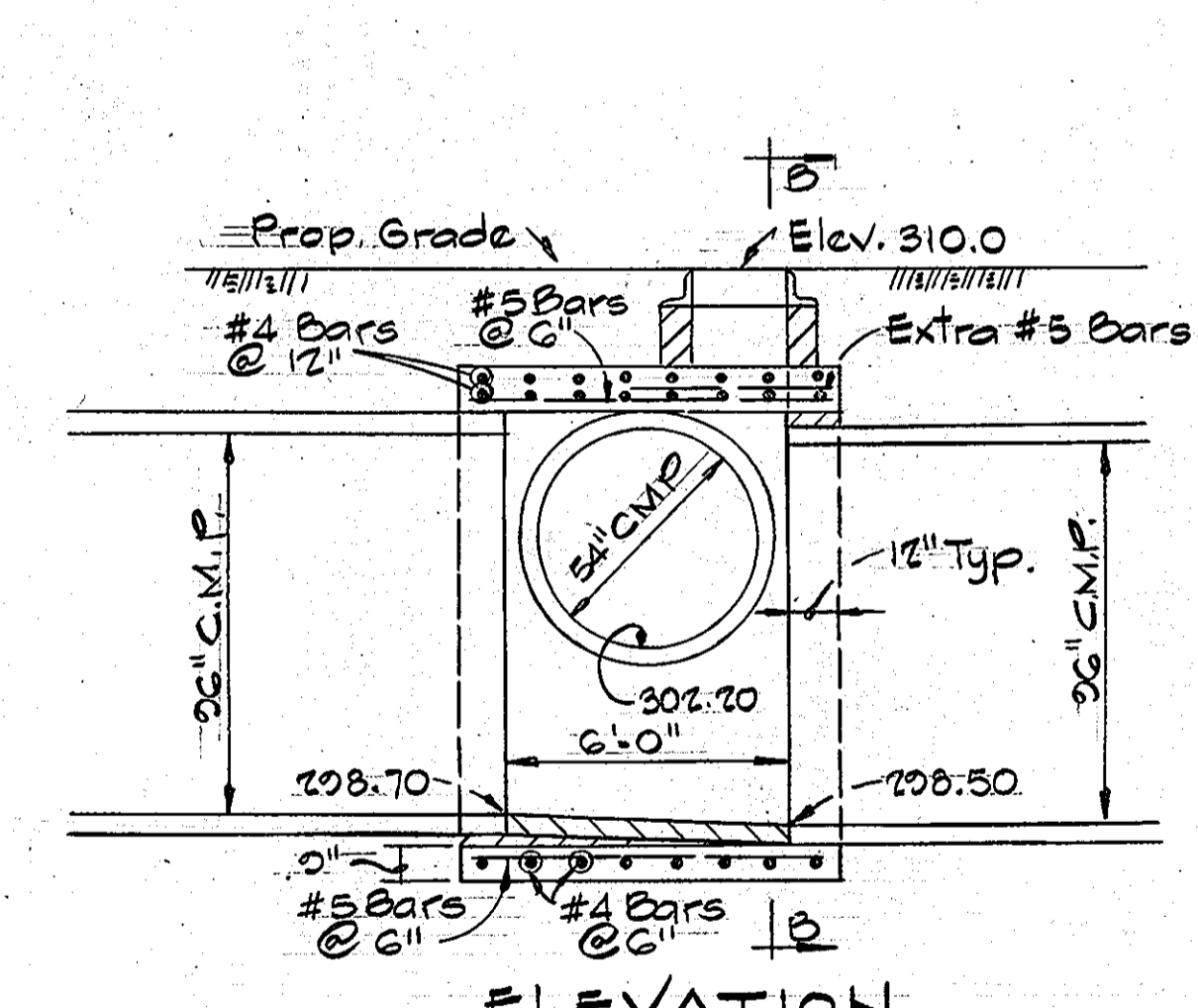
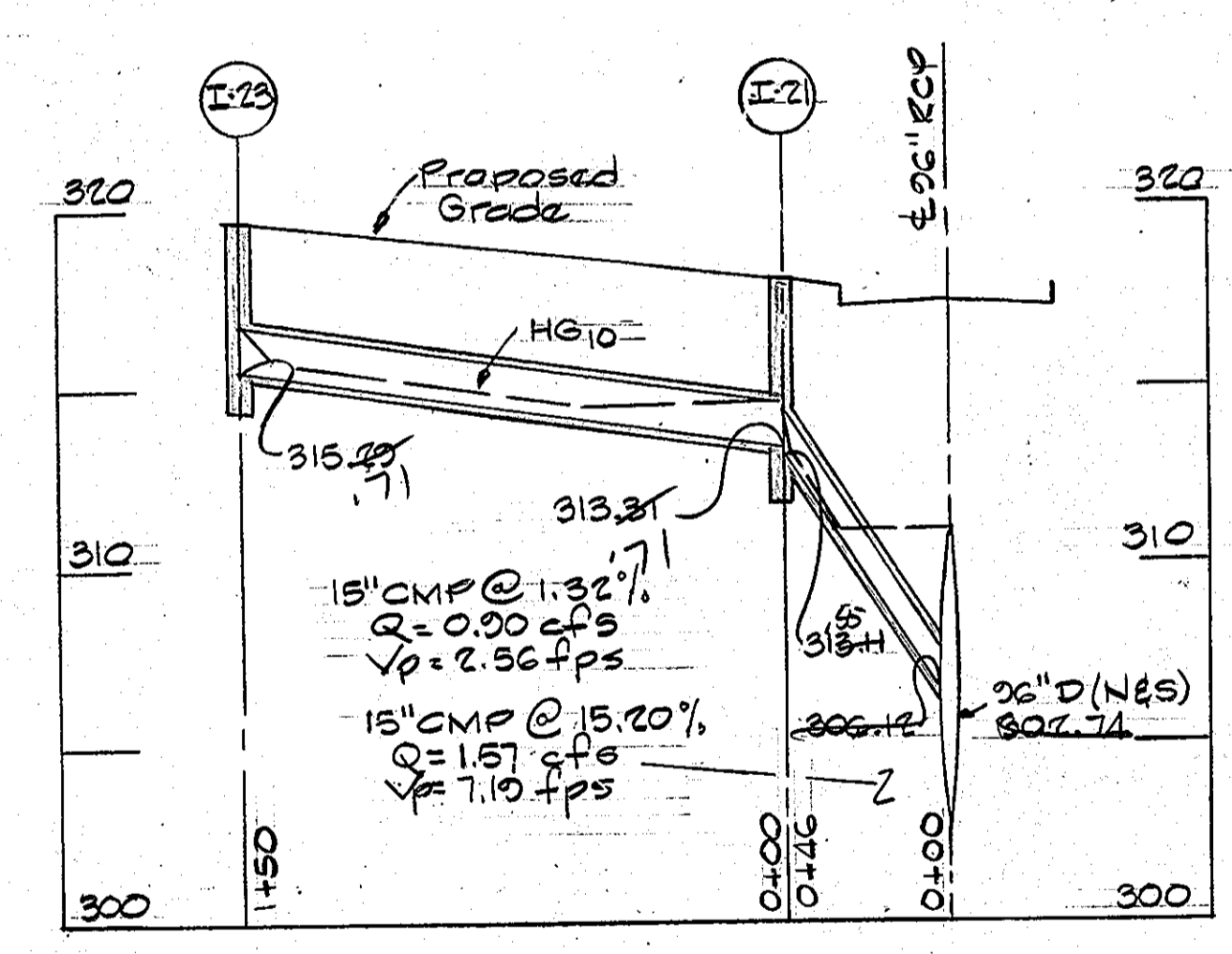
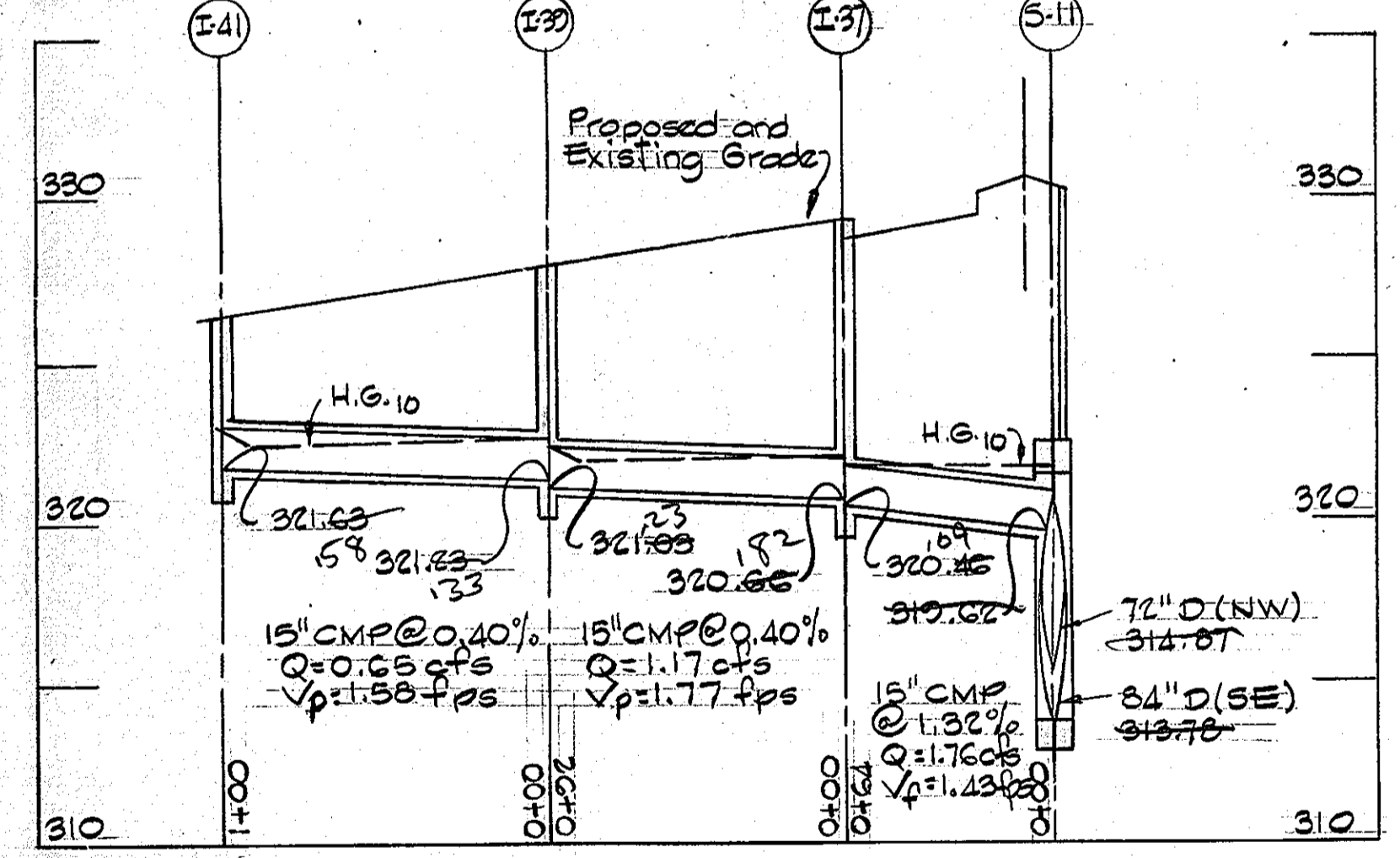
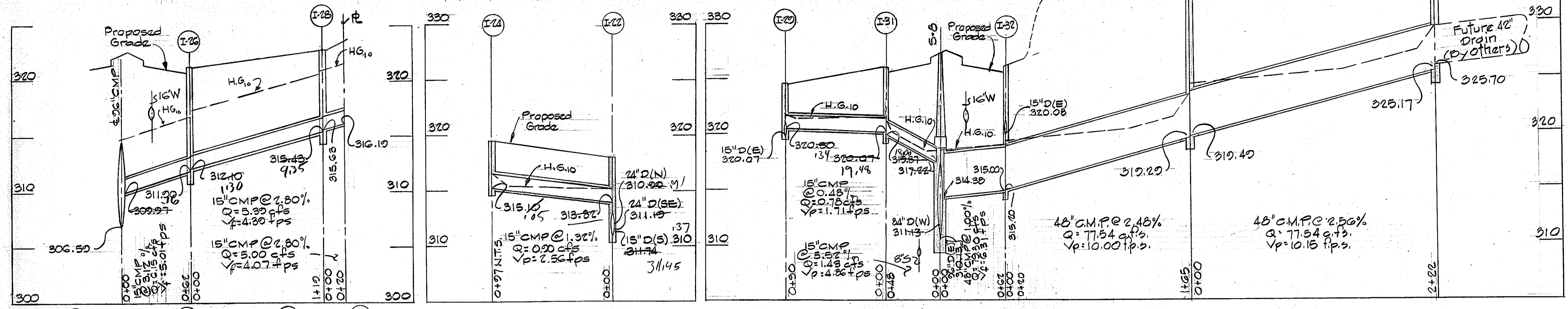
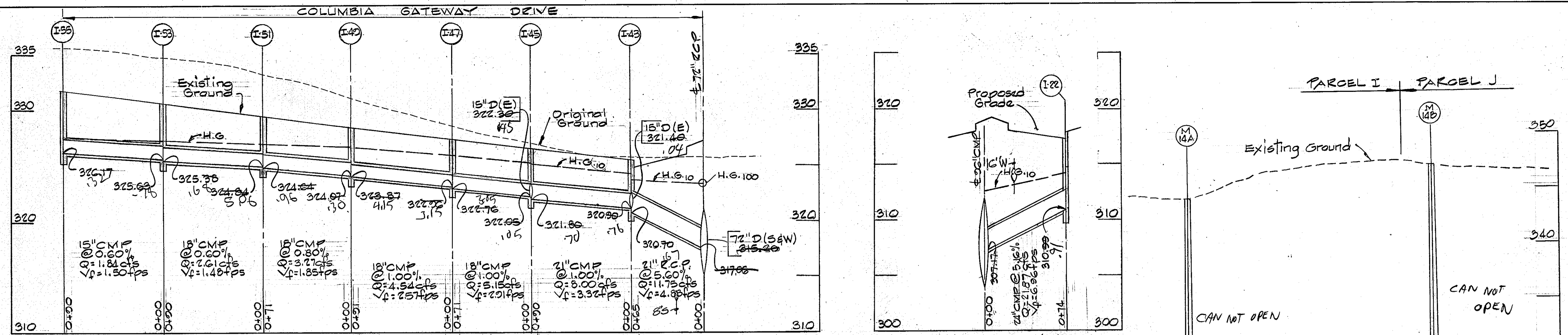
AS-BUILT  
 6-7-86

3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D. Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
COLUMBIA GATEWAY 6 <sup>th</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION		
PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1		
PROJECT TITLE STORM DRAIN PROFILES		
SCALE: AS SHOWN		DATE:
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218		
Kenneth A. McCord Registered Engineer No. 1974		

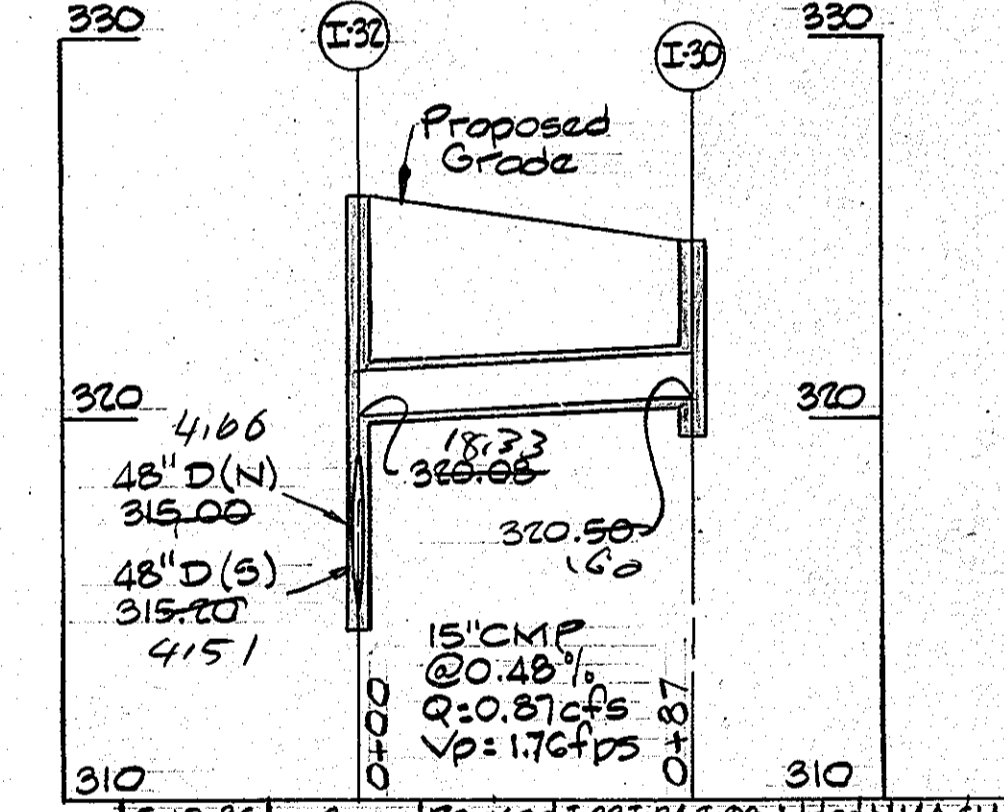
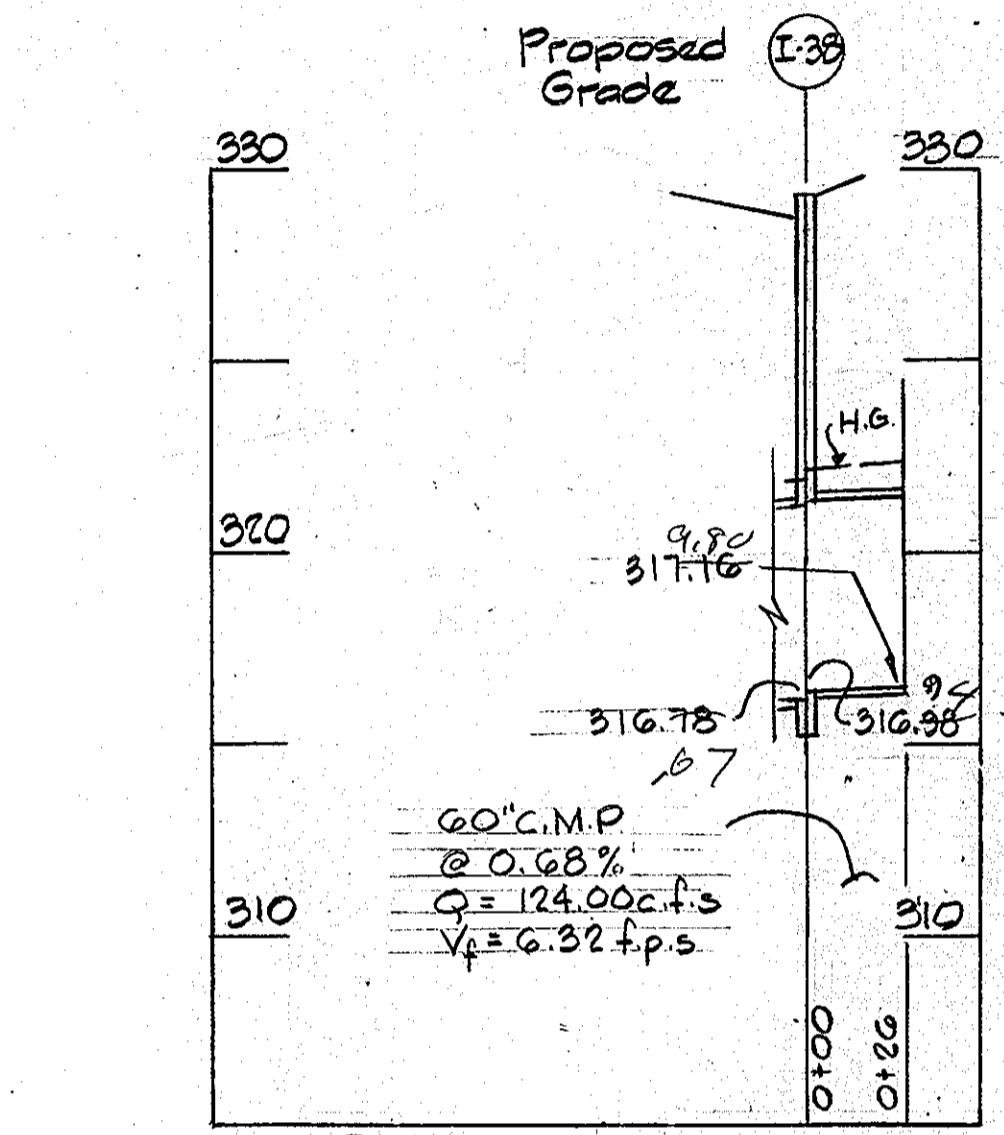
1158

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING AND ZONING  
 John W. Marchman 3/25/86  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

NOTE: 10 Year Hydraulic Gradients have been added to 100 Year Hydraulic Gradient on Main Storm Drain.



AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD FLANE  
 REG. L.S.  
 #301  
 1-14-88



REV. DATE	REV. NO.	REVISION DESCRIPTION
3-10-86	3	Revised I-22, I-24, I-25 Added N14A & N14B
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D. Comments

COLUMBIA GATEWAY  
 6<sup>th</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

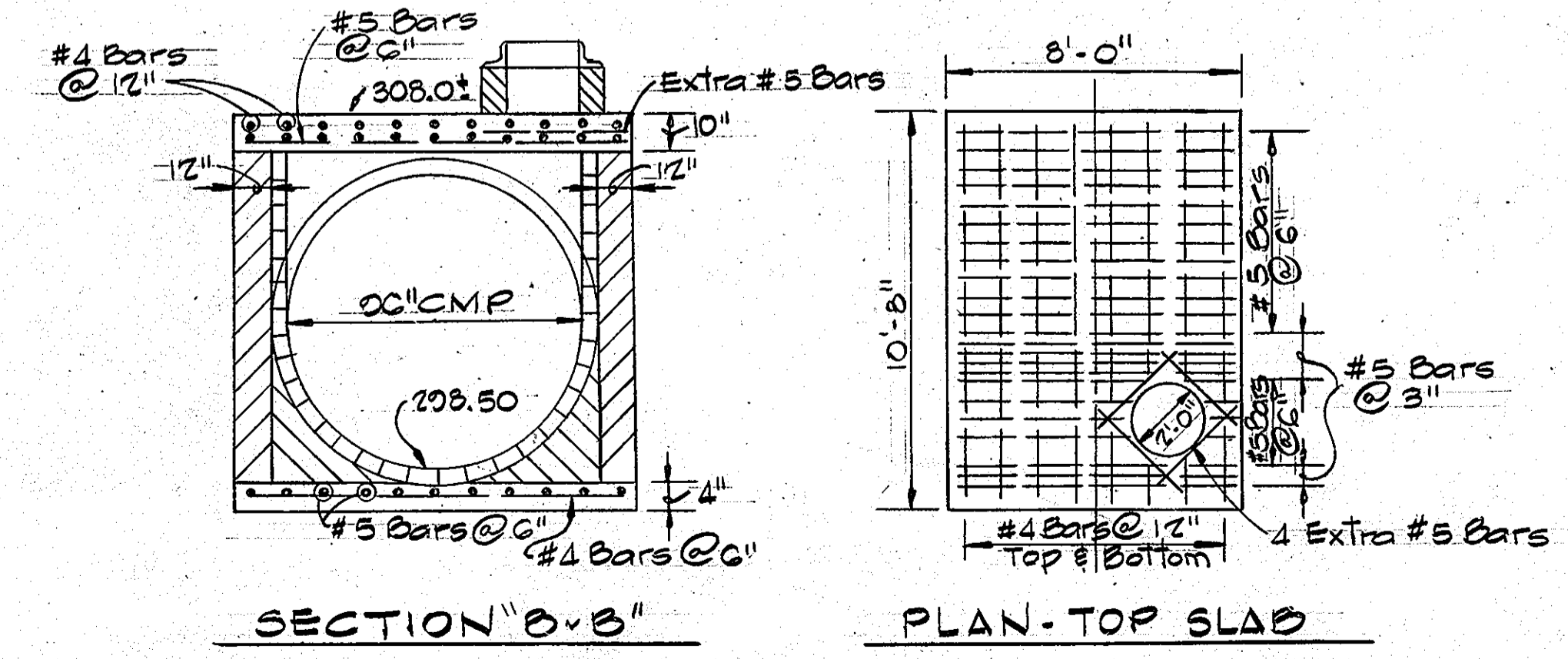
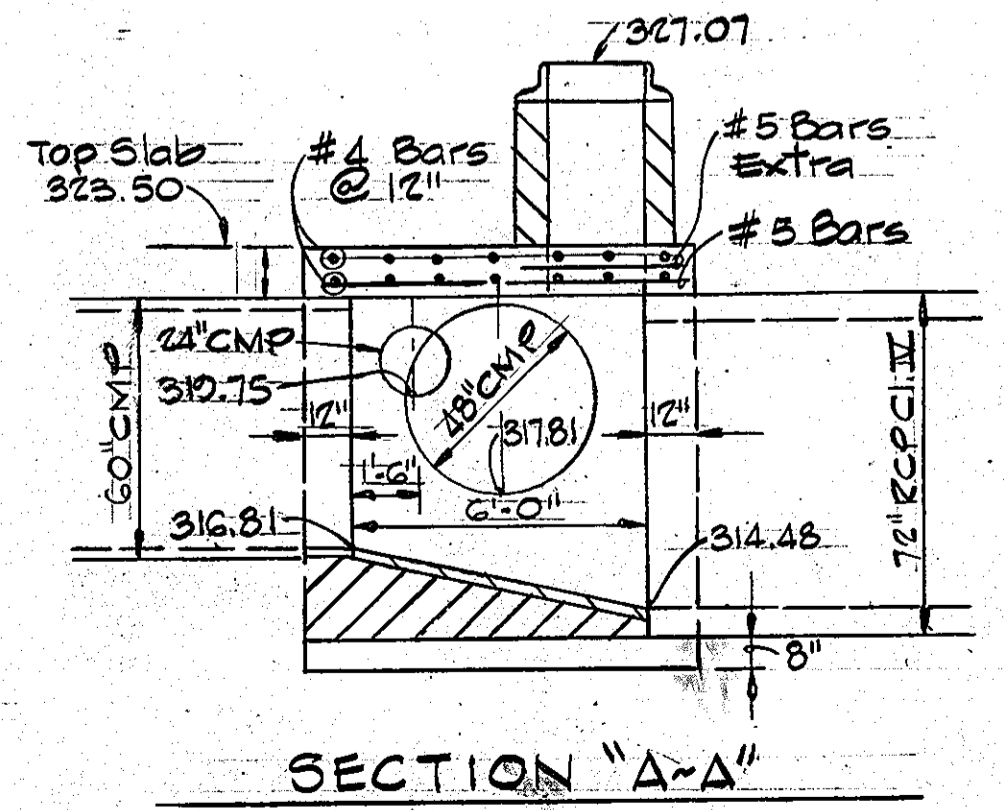
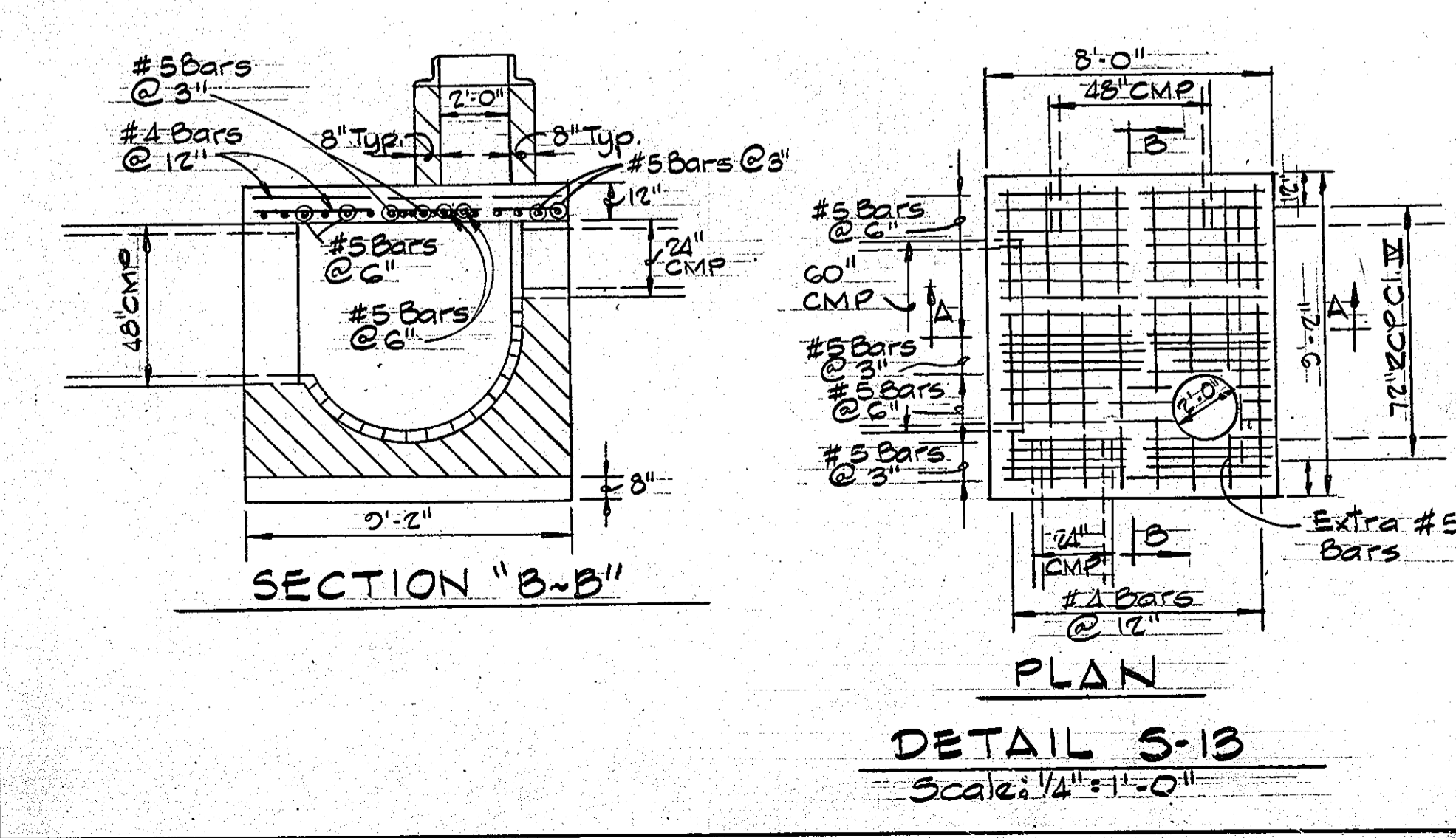
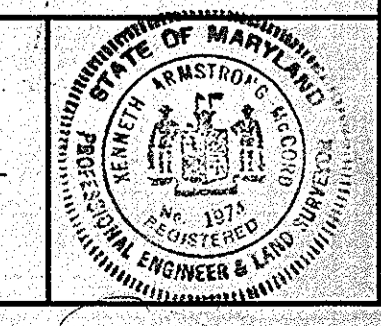
PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 STORM DRAIN PROFILES

SCALE: AS SHOWN DATE:

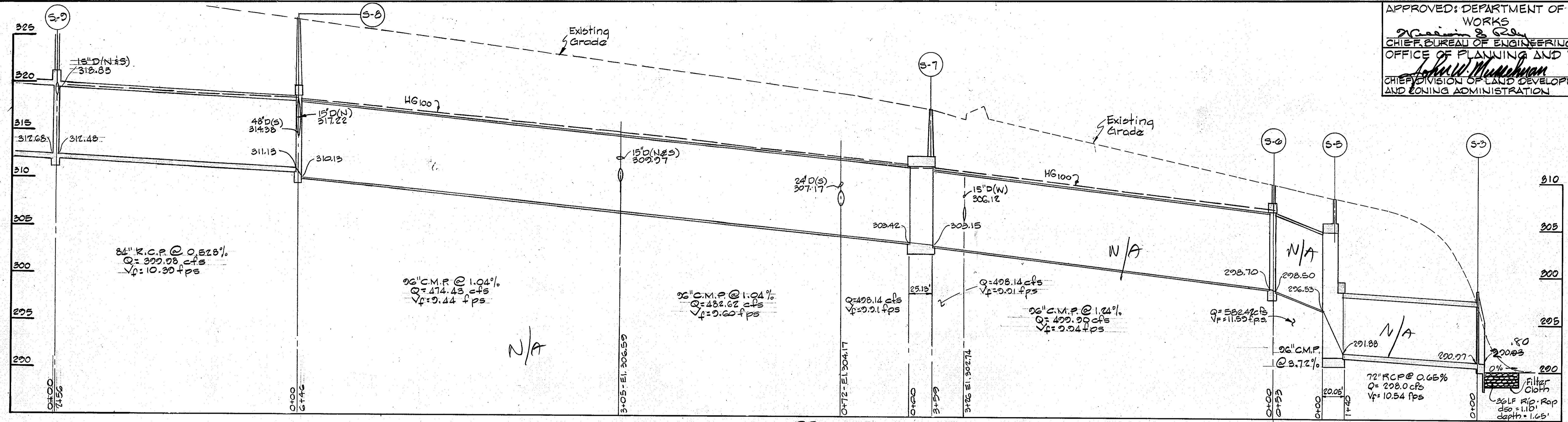
WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21210

Kenneth A. McCord  
 Registered Engineer  
 No. 1974



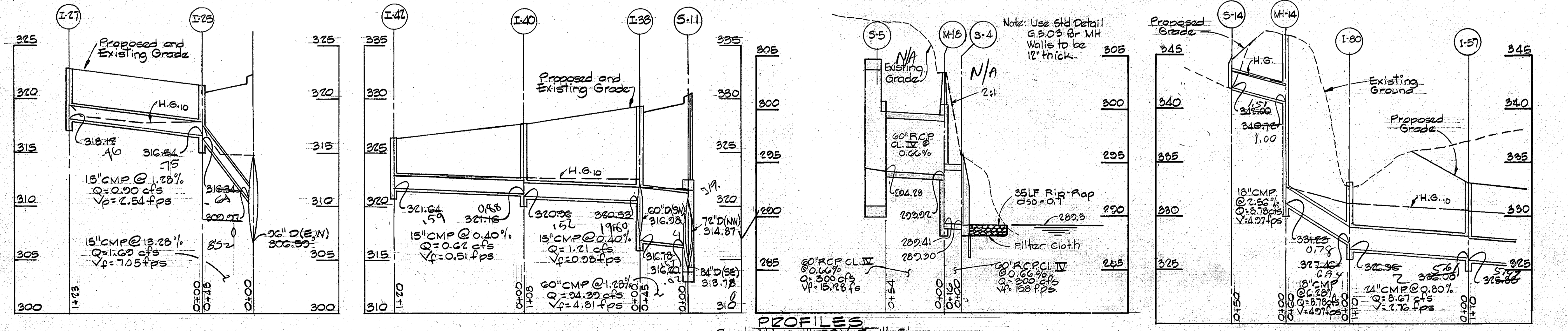
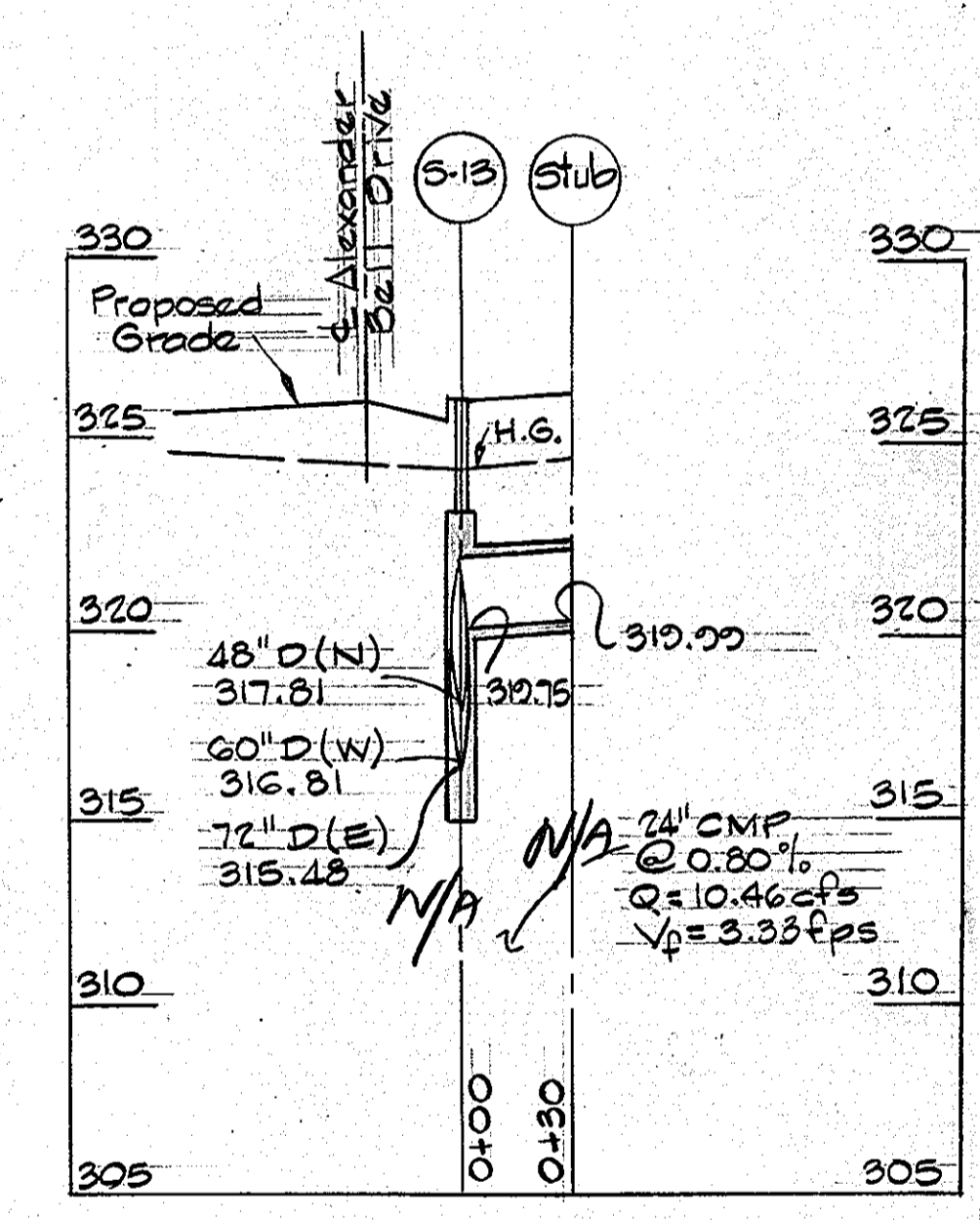
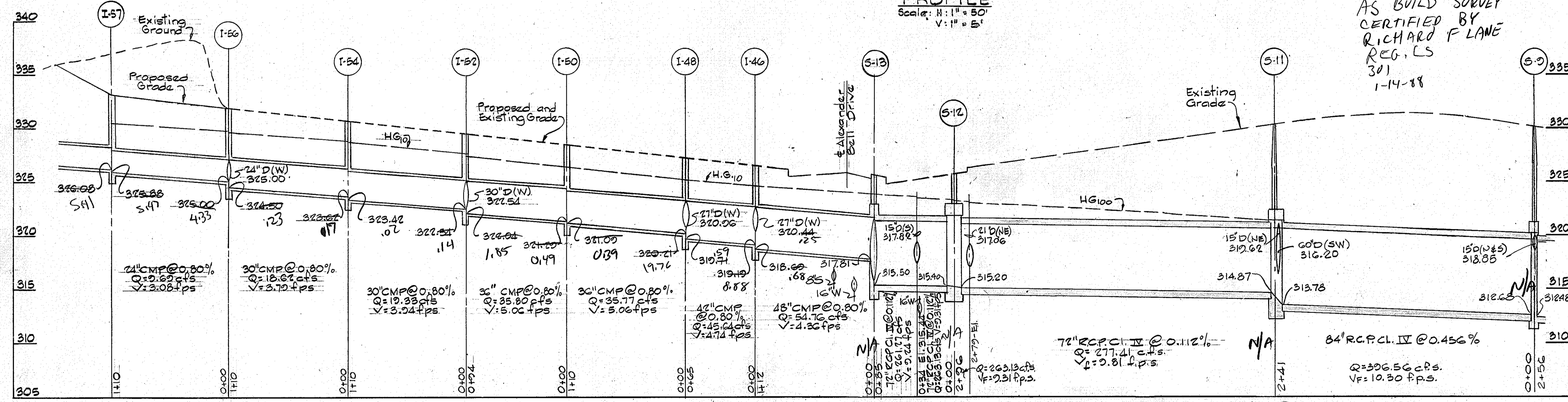
DETAIL S-6  
 Scale: 1/4" = 1'-0"

1158



PROFILE  
 Scale: H: 1" = 50'  
 V: 1" = 5'

AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD F. LANE  
 REG. L.S.  
 301  
 1-14-88



PROFILES  
 Scale: H: 1" = 50', V: 1" = 5'

REV	DATE	NO.	REVISION DESCRIPTION
2-10-86	3		Eliminated 54" Stub
3-17-86	1		As per Planning, DPW and SCS Comments
4-18-86	2		As per S.H.D. Comments

**COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND**

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION

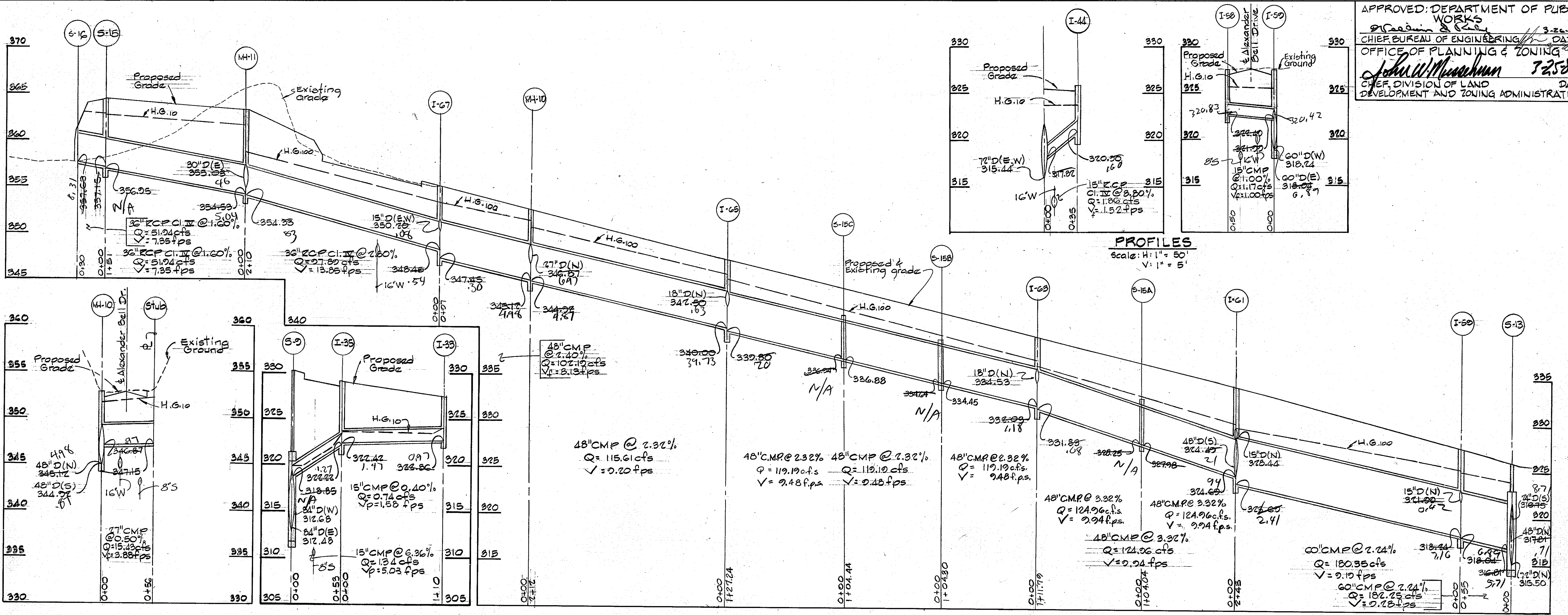
PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL 2-1

PROJECT TITLE  
**STORM DRAIN PROFILES**

SCALE: AS SHOWN DATE:  
 WHITMAN, REQUAEDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

KENNETH A. McCORD  
 Registered Engineer  
 NO. 1974

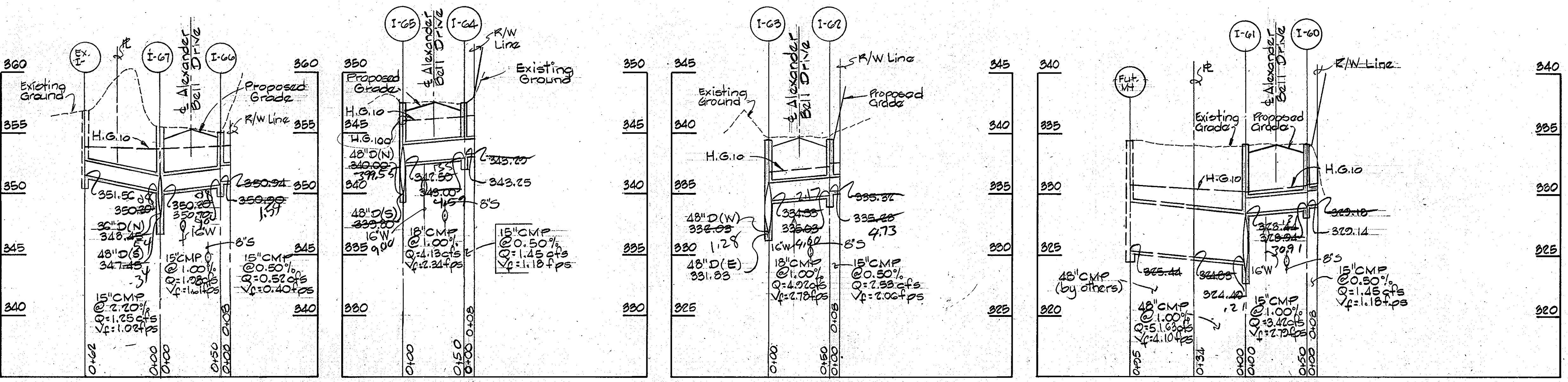
APPROVED: DEPARTMENT OF PUBLIC WORKS  
 DATE 3-26-88  
 CHIEF BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 John W. Mischman 72586  
 DATE  
 DEVELOPMENT AND ZONING ADMINISTRATION



PROFILES  
 Scale: H: 1" = 50'  
 V: 1" = 5'

PROFILES  
 Scale: H: 1" = 50'  
 V: 1" = 5'

NOTE: 10 Year Hydraulic Gradients have been added to 100 year Hydraulic Gradients on Main Storm Drain.



PROFILES  
 Scale: H: 1" = 50'  
 V: 1" = 5'

AS BUILT SURVEY  
 CERTIFIED BY  
 RICHARD FLANE  
 REG. LS  
 301  
 1-14-94

REV. DATE	REV. NO.	REVISION DESCRIPTION
1-29-87	3	Change Profile
3-17-86	1	As per Planning, DPW and SCS Comments
4-18-82	2	As per S.H.D. Comments

COLUMBIA GATEWAY  
 6th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL D-1  
 PROJECT TITLE  
 STORM DRAIN PROFILES  
 SCALE: AS SHOWN DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 KENNETH A. MCCORD  
 Registered Engineer  
 No. 1074



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING  
 OFFICE OF PLANNING & ZONING  
 John W. Mueselman  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



REVDATE	REVNO.	REVISION DESCRIPTION
3-17-86	1	As per Planning, DPW and SGS Comments
4-18-86	2	As per SH D Comments
6-10-86	3	Revised future area

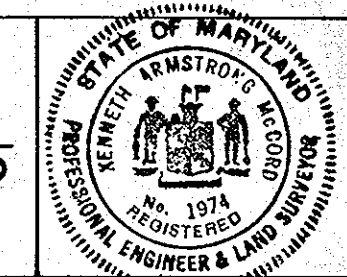
**COLUMBIA GATEWAY  
 6<sup>TH</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND**

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

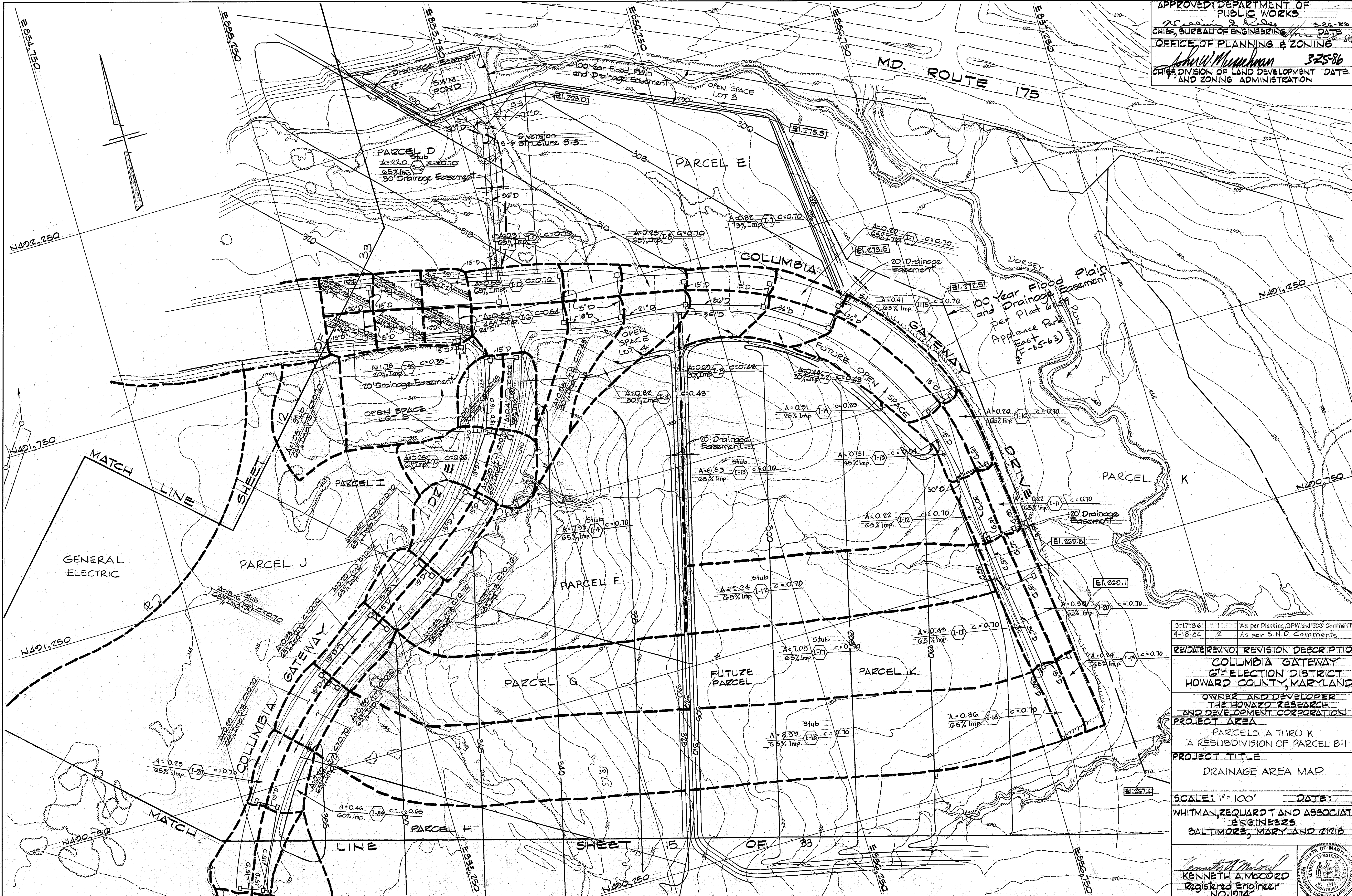
PROJECT TITLE  
 DRAINAGE AREA MAP

SCALE: 1" = 100' DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCard  
 Registered Engineer  
 No. 10724



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING DATE 3-26-86  
 OFFICE OF PLANNING & ZONING  
 JOHN W. MURPHY 32586  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 AND ZONING ADMINISTRATION



3-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D. Comments

REVISION NO. 1  
 REVISION DESCRIPTION  
 COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

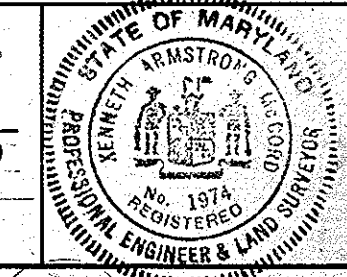
OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

PROJECT TITLE  
 DRAINAGE AREA MAP

SCALE: 1" = 100' DATE:

WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. Moccozo  
 Registered Engineer  
 NO. 0914



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 2/26/86  
 CHIEF, BUREAU OF ENGINEERING DATE  
 OFFICE OF PLANNING & ZONING  
 John W. Marchman 525-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 AND ZONING ADMINISTRATION



5-17-86	1	As per Planning, DPW and SCS Comments
4-18-86	2	As per S.H.D. Comments

REV. DATE REV. NO. REVISION DESCRIPTION  
 COLUMBIA GATEWAY  
 6<sup>TH</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1  
 PROJECT TITLE  
 DRAINAGE AREA MAP

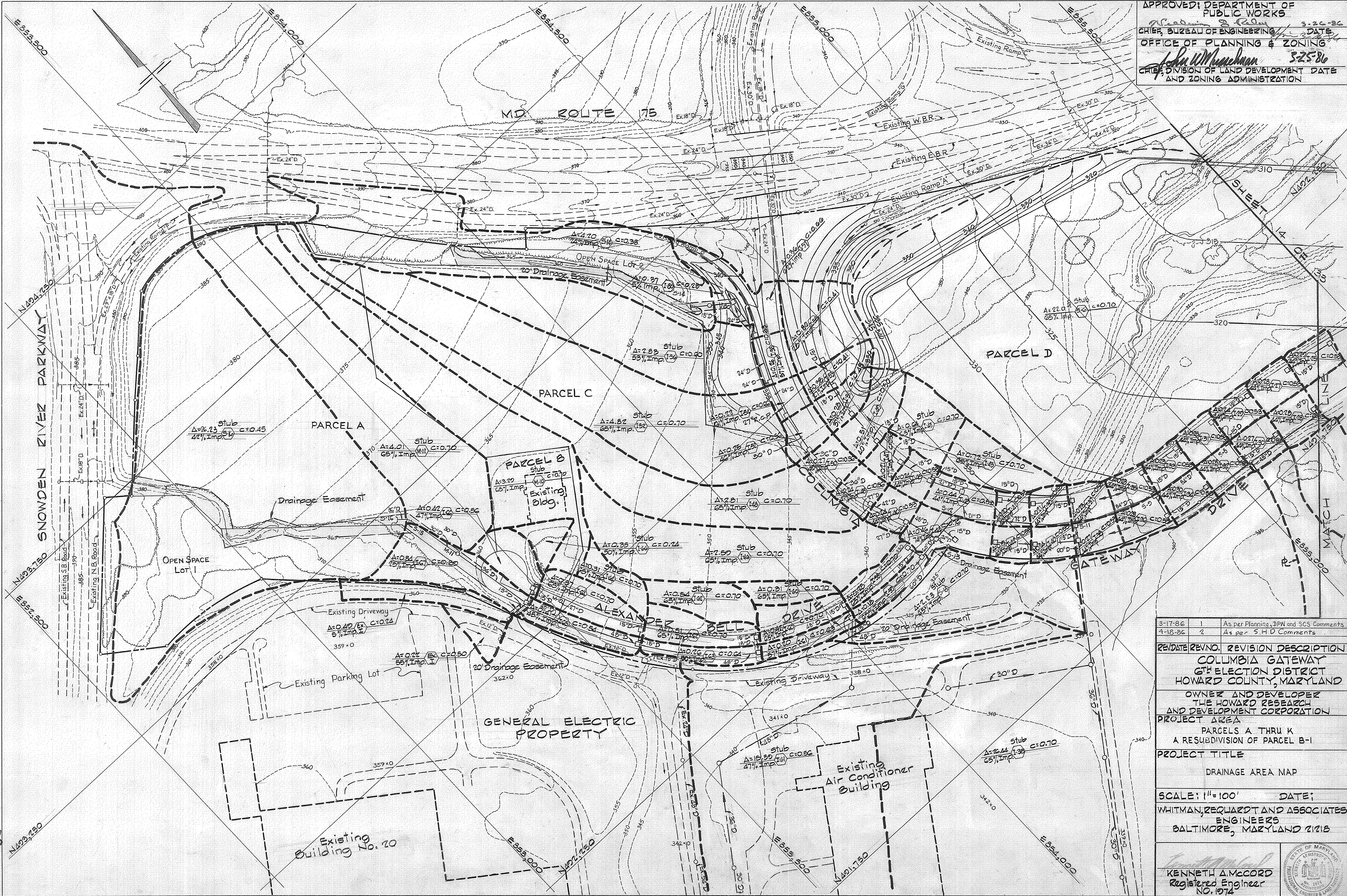
SCALE: 1" = 100' DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord  
 KENNETH A. MCCORD  
 Registered Engineer  
 NO. 1074

1158



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENGINEERING DATE 3-26-86  
 OFFICE OF PLANNING & ZONING  
 John W. Hanchman 3-25-86  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE AND ZONING ADMINISTRATION



3-17-86	1	As per Planning, DPN and SCS Comments
4-18-86	2	As per S.H.D Comments

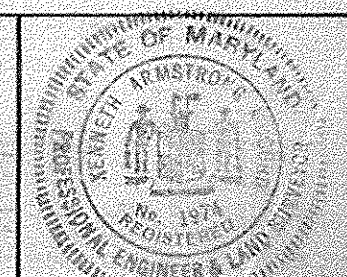
REV. DATE REV. NO. REVISION DESCRIPTION  
**COLUMBIA GATEWAY  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND**

OWNER AND DEVELOPER  
 THE HOWARD RESEARCH  
 AND DEVELOPMENT CORPORATION  
 PROJECT AREA  
 PARCELS A THRU K  
 A RESUBDIVISION OF PARCEL B-1

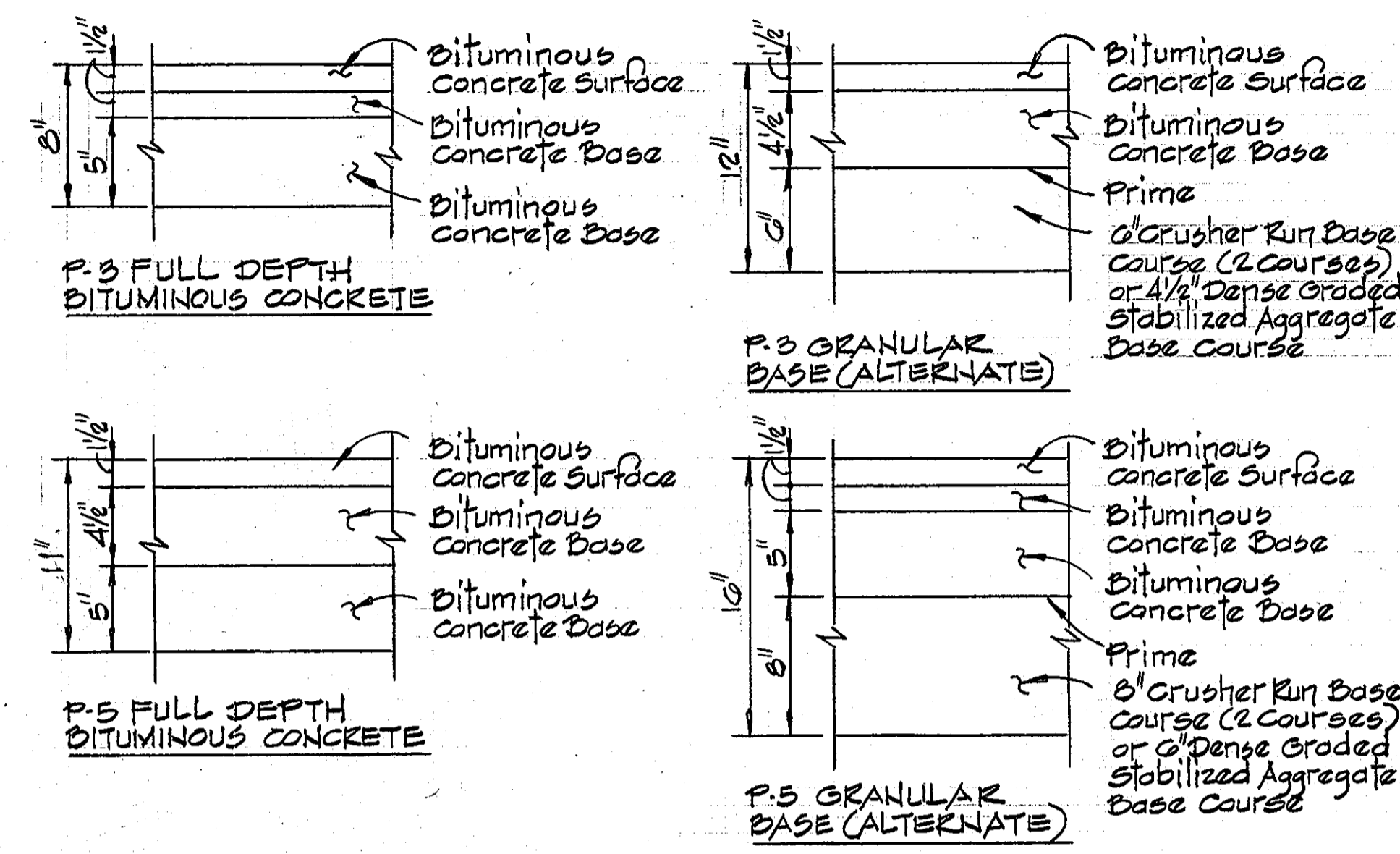
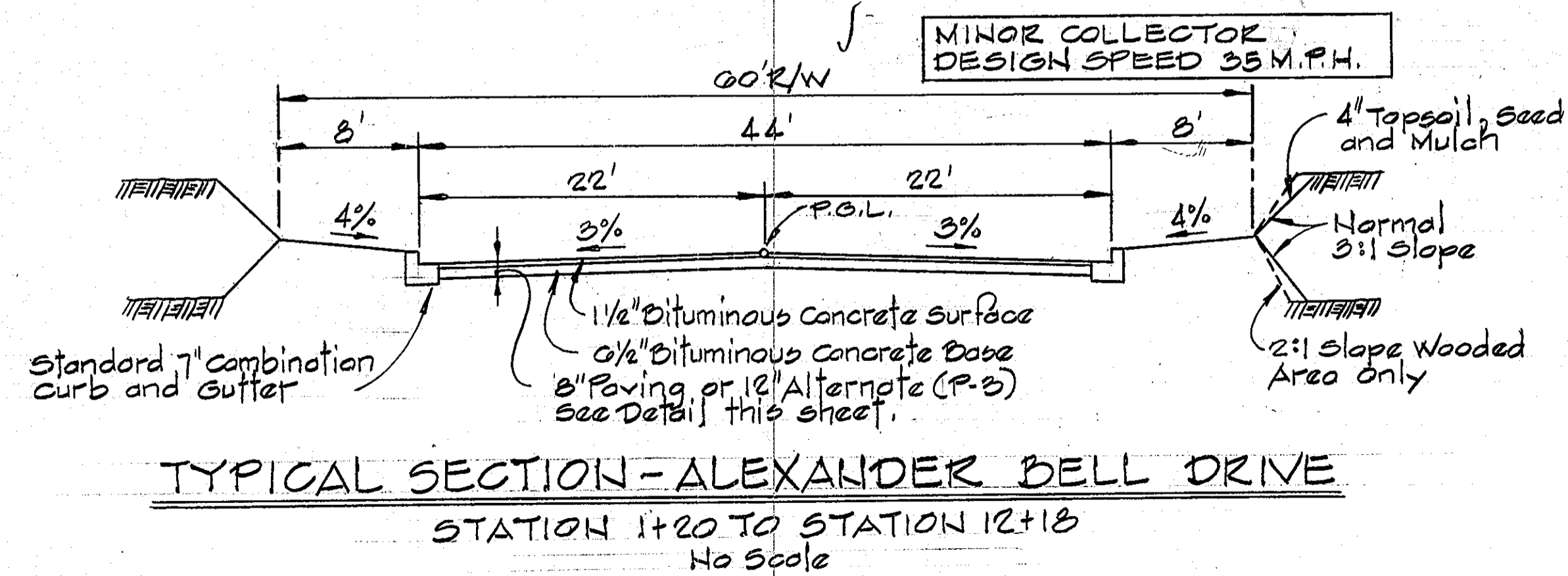
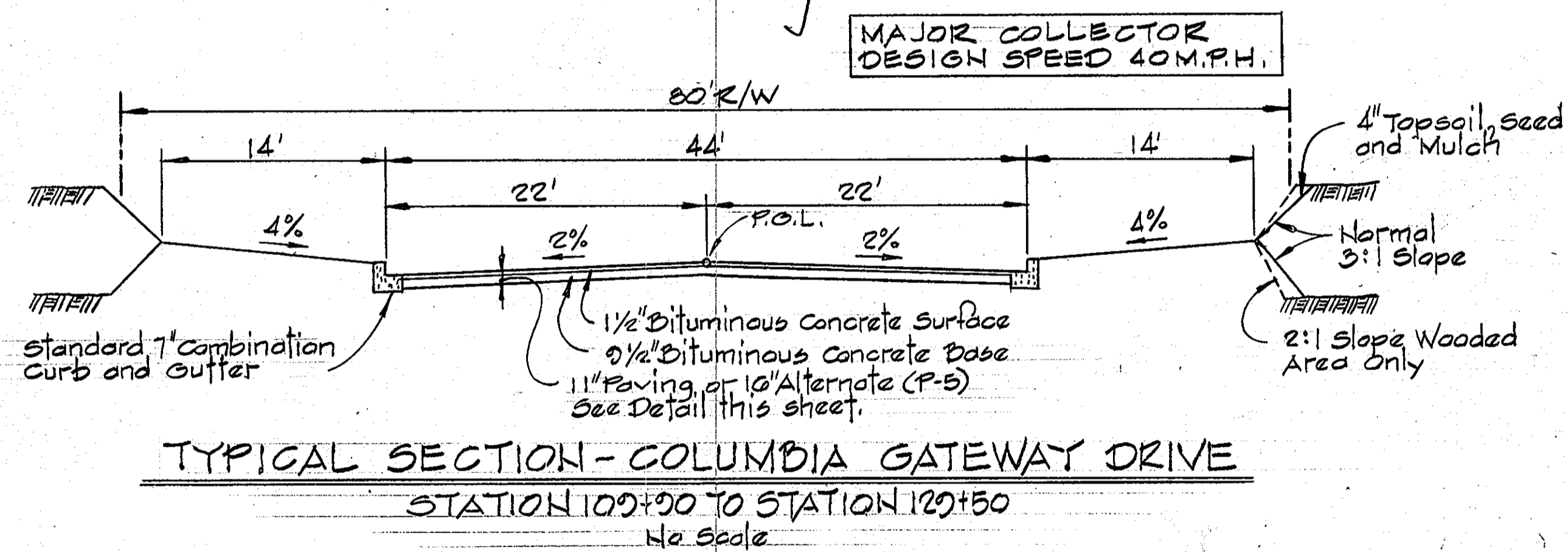
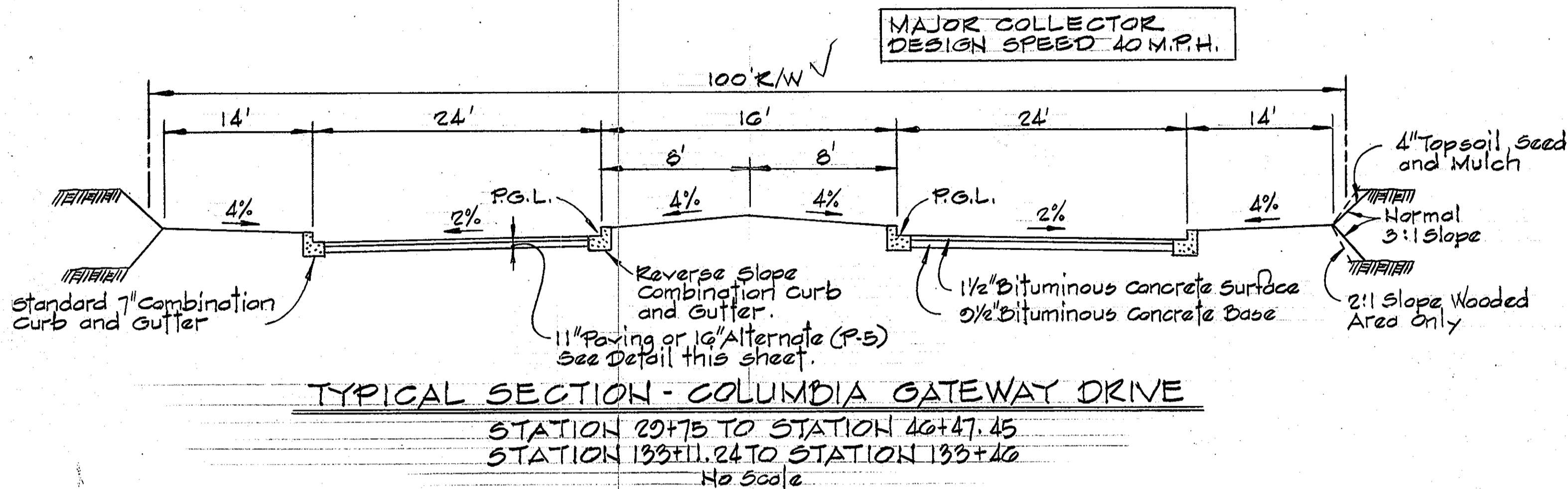
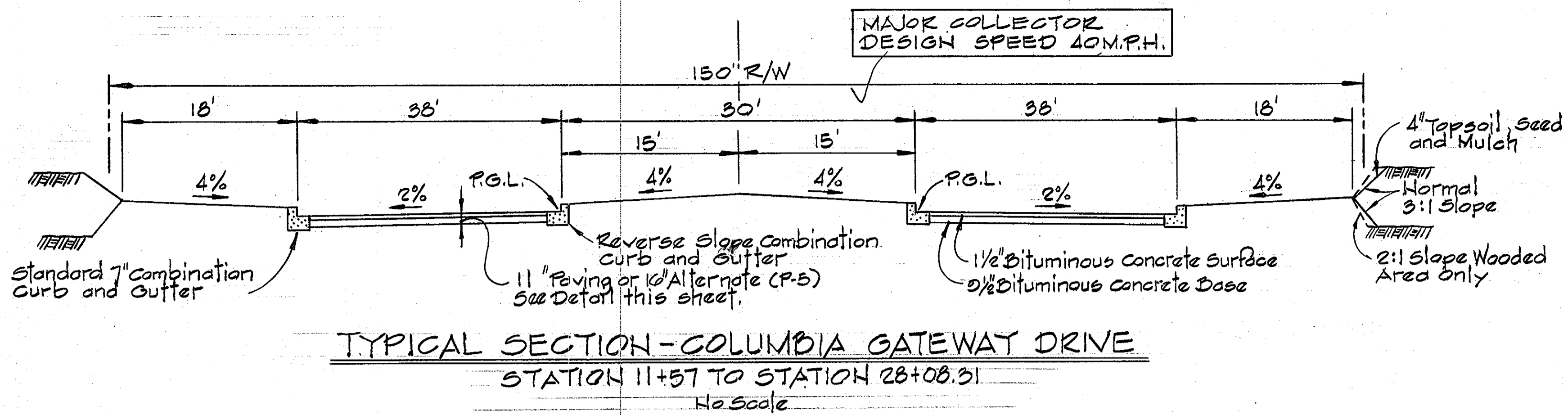
PROJECT TITLE  
 DRAINAGE AREA MAP

SCALE: 1"=100' DATE:  
 WHITMAN, REQUARDT AND ASSOCIATES  
 ENGINEERS  
 BALTIMORE, MARYLAND 21218

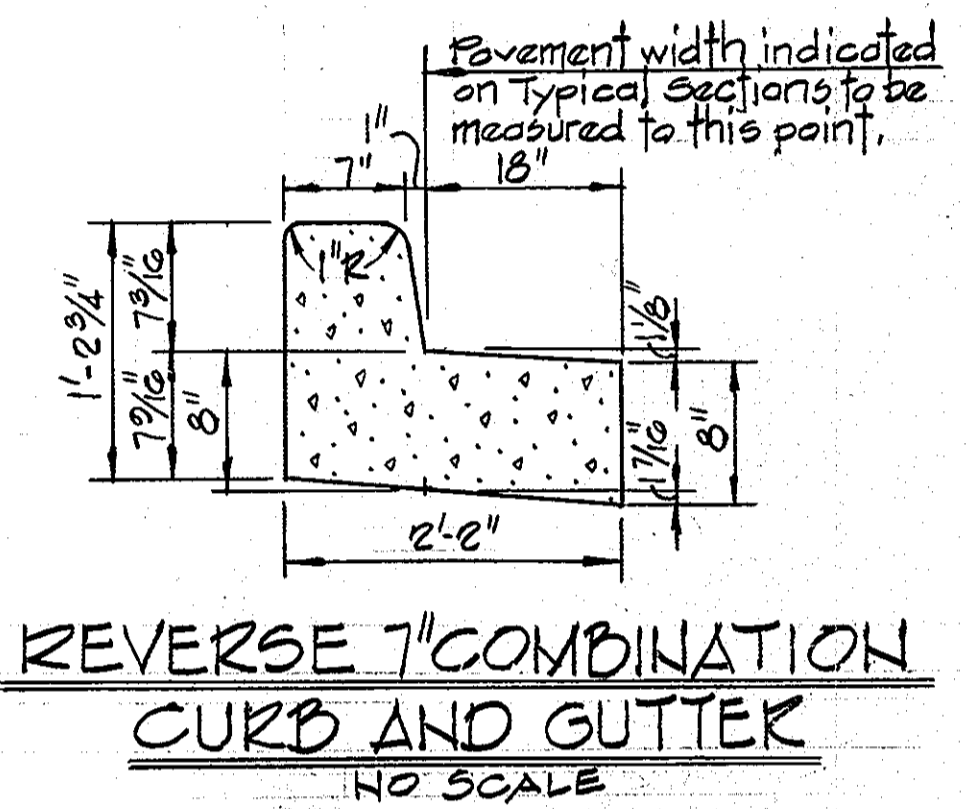
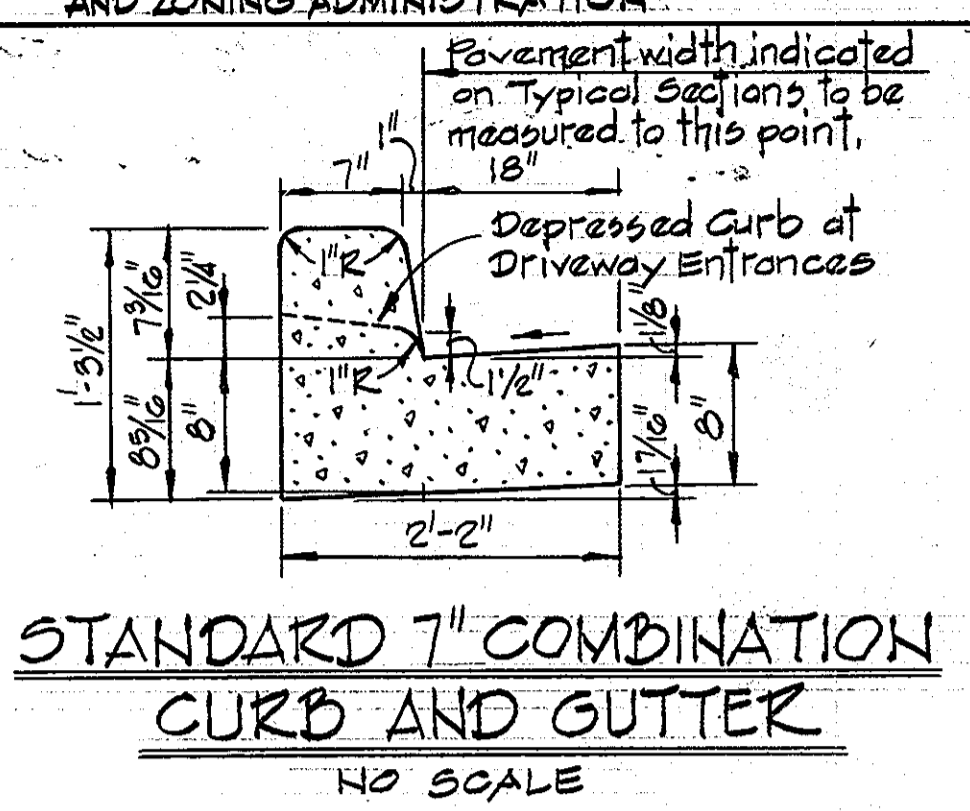
KENNETH A. McCORD  
 Registered Engineer  
 NO. 1974



1158



**TYPICAL PAVING SECTIONS**  
NO SCALE



5-17-86	T	As per Planning, DPN and SCS Comments
REV. DATE	REV. NO.	REVISION DESCRIPTION
		COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
		OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
		PROJECT AREA PARCELS A THRU K A RESUBDIVISION OF PARCEL B-1
		PROJECT TITLE ROAD DETAILS
		SCALE: AS SHOWN DATE:
		WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
		Kenneth A. McCord Registered Engineer NO. 1974