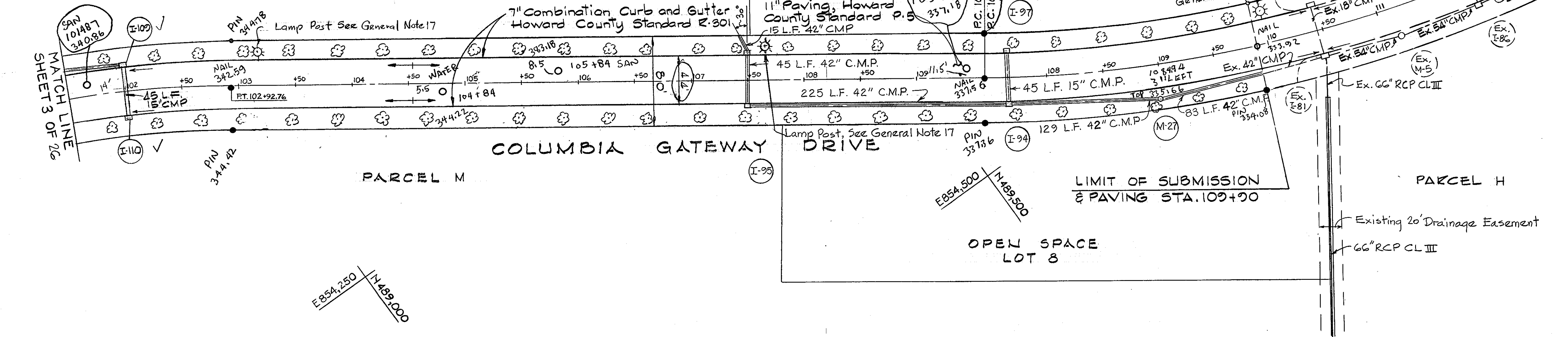


| STORM DRAIN STRUCTURE SCHEDULE | | | | | |
|--------------------------------|---------------------------------|---------|---------|----------|-------------------------------|
| NO | TYPE | TOP EL. | INV. IN | INV. OUT | LOCATION |
| I-94 | Standard A-5 Inlet (width 4.5) | 337.33 | 326.29 | 326.09 | Inlet 24.92 Rt. & Sta. 107+64 |
| I-95 | Standard A-5 Inlet (width 4.0) | 340.82 | 327.64 | 327.44 | Inlet 24.67 Rt. & Sta. 107+59 |
| I-96 | Standard A-5 Inlet (width 2.5) | 340.82 | 328.98 | 328.78 | Inlet 23.92 Lt. & Sta. 107+59 |
| I-97 | Standard A-10 Inlet (width 2.5) | 337.33 | 325.76 | 325.56 | Inlet 23.92 Lt. & Sta. 107+64 |
| M-27 | Standard Manhole | 335.68 | 325.76 | 325.56 | MH 31.0 Rt. & Sta. 108+96 |
| I-109 | Standard A-5 Inlet (width 2.5) | 341.48 | 336.91 | 336.71 | Inlet 23.92 Lt. & Sta. 107+00 |
| I-110 | Standard A-5 Inlet (width 2.5) | 341.48 | 337.01 | 337.01 | Inlet 23.92 Rt. & Sta. 107+00 |

Note:
 All corrugated metal pipe shall be aluminized. Pipe thicknesses (uncoated) and corrugations are as follows:
 2 3/8" x 1/2" Corrugation
 15" thru 48" - 0.0598"
 3' x 1" Corrugations or 5' x 1" Corrugations
 66" thru 90" - 0.0747"
 Wherever aluminized corrugated metal pipe comes into contact with concrete, brick or mortar, pipe shall receive two coats of chromate primer.
PARCEL L

Notes:
 * Inlets with deflectors
 1. All A-5 Inlets shall be Howard County Standard S.D. 4.01
 2. Standard Manhole M-27 shall be Howard County Standard S.D. G.5.03
 3. For Storm Drain Profiles, see sheet 13.



CURVE DATA

| | |
|---|--|
| Int. 98+82.77 to P.T. 102+92.76 | P.C. 107+44.80 Ahd. to P.T. 112+99.60 |
| $\Delta = 26^\circ 0' 3''$ Tan. = 208.62' | $\Delta = 28^\circ 7' 51''$ Tan. = 283.11' |
| R = 900.00' Chd. = 406.46' | R = 1130.00' Chd. = 549.25' |
| Arc = 410.00' Chd. Brg. = N22°7'58"E | Arc = 554.80' Chd. Brg. = N42°7'4"E |

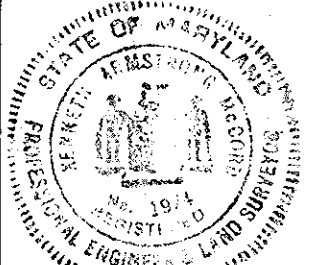
APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF ENGINEERING DATE 6-12-86
 OFFICE OF PLANNING & ZONING DATE 6-7-86
 JOHN W. McSHANE 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

FOR EXISTING COLUMBIA GATEWAY DRIVE, SEE ROAD CONSTRUCTION DRAWINGS F-86-127

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|---|
| 2/8/88 | 3 | Rev. Lamp Post Sta's 103+10, 107+50, 110+00 |
| 7/11/86 | 2 | As per Health Dept. Comments |
| 5/29/86 | 1 | As per Planning, DPW and SCS Comments |

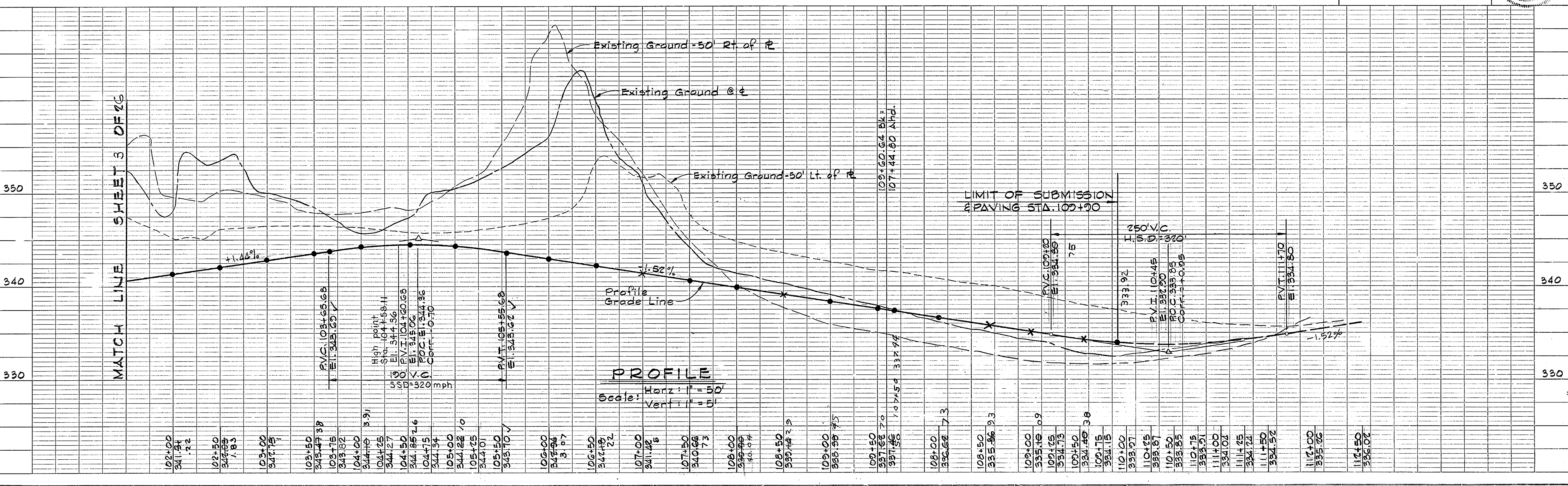
COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
 PLAN AND PROFILE
 COLUMBIA GATEWAY DRIVE
 STA. 101+50 TO STA. 109+90
 SCALE: AS SHOWN DATE:
 WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

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



PLAN
 Scale: 1" = 50'

For Continuation,
 See Sheet 7



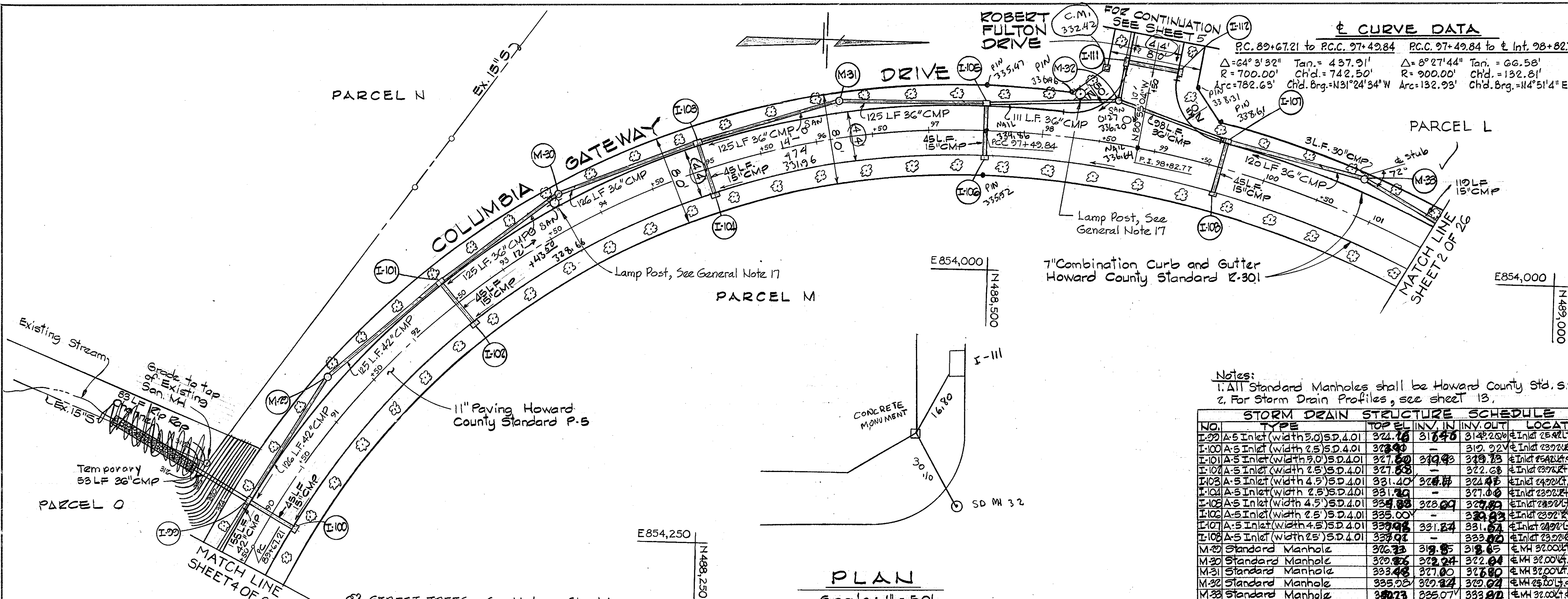
PROFILE
 Scale: Horiz: 1" = 50'
 Vert: 1" = 5'

PLAN
 SURVEYED, DRAWN, CHECKED, APPROVED, DATE
 NOTE BOOK, GRADES CHECKED, B.M. NOTED, STRUCTURE NOTATIONS CHECKED

PROFILE
 SURVEYED, DRAWN, CHECKED, APPROVED, DATE
 NOTE BOOK, GRADES CHECKED, B.M. NOTED, STRUCTURE NOTATIONS CHECKED

1158

APPROVED: DEPARTMENT OF PUBLIC WORKS
John W. Muschner 6-9-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE



STORM DRAIN STRUCTURE SCHEDULE

| NO. | TYPE | TOP E. | INV. IN | INV. OUT | LOCATION |
|-------|----------------------------------|--------|---------|----------|-----------------------------|
| I-99 | A-5 Inlet (width 3.0') S.D. 4.01 | 324.76 | 317.76 | 318.20 | At Inlet 2542.14 Sta. 99+00 |
| I-100 | A-5 Inlet (width 2.5') S.D. 4.01 | 322.90 | - | 319.22 | At Inlet 2322.45 Sta. 99+50 |
| I-101 | A-5 Inlet (width 3.0') S.D. 4.01 | 327.60 | 319.63 | 319.73 | At Inlet 2542.14 Sta. 99+50 |
| I-102 | A-5 Inlet (width 2.5') S.D. 4.01 | 327.63 | - | 322.68 | At Inlet 2322.45 Sta. 99+50 |
| I-103 | A-5 Inlet (width 4.5') S.D. 4.01 | 331.40 | 324.47 | 324.47 | At Inlet 2422.74 Sta. 99+50 |
| I-104 | A-5 Inlet (width 2.5') S.D. 4.01 | 331.20 | - | 327.00 | At Inlet 2322.45 Sta. 99+50 |
| I-105 | A-5 Inlet (width 4.5') S.D. 4.01 | 335.00 | 328.09 | 327.89 | At Inlet 2422.74 Sta. 99+50 |
| I-106 | A-5 Inlet (width 2.5') S.D. 4.01 | 335.00 | - | 333.00 | At Inlet 2322.45 Sta. 99+50 |
| I-107 | A-5 Inlet (width 4.5') S.D. 4.01 | 339.73 | 331.84 | 331.84 | At Inlet 2422.74 Sta. 99+50 |
| I-108 | A-5 Inlet (width 2.5') S.D. 4.01 | 339.73 | - | 333.00 | At Inlet 2322.45 Sta. 99+50 |
| M-29 | Standard Manhole | 326.73 | 319.85 | 319.85 | At MH 3200.45 Sta. 99+50 |
| M-30 | Standard Manhole | 329.27 | 322.24 | 322.24 | At MH 3200.45 Sta. 99+50 |
| M-31 | Standard Manhole | 333.48 | 327.00 | 327.00 | At MH 3200.45 Sta. 99+50 |
| M-32 | Standard Manhole | 335.23 | 329.24 | 329.24 | At MH 2500.45 Sta. 0+39 |
| M-33 | Standard Manhole | 340.73 | 335.07 | 333.00 | At MH 3200.45 Sta. 0+80 |

2/8/86 2 Revised Lamp Post E 93+60
 5/20/86 1 As per Planning, DPW & 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

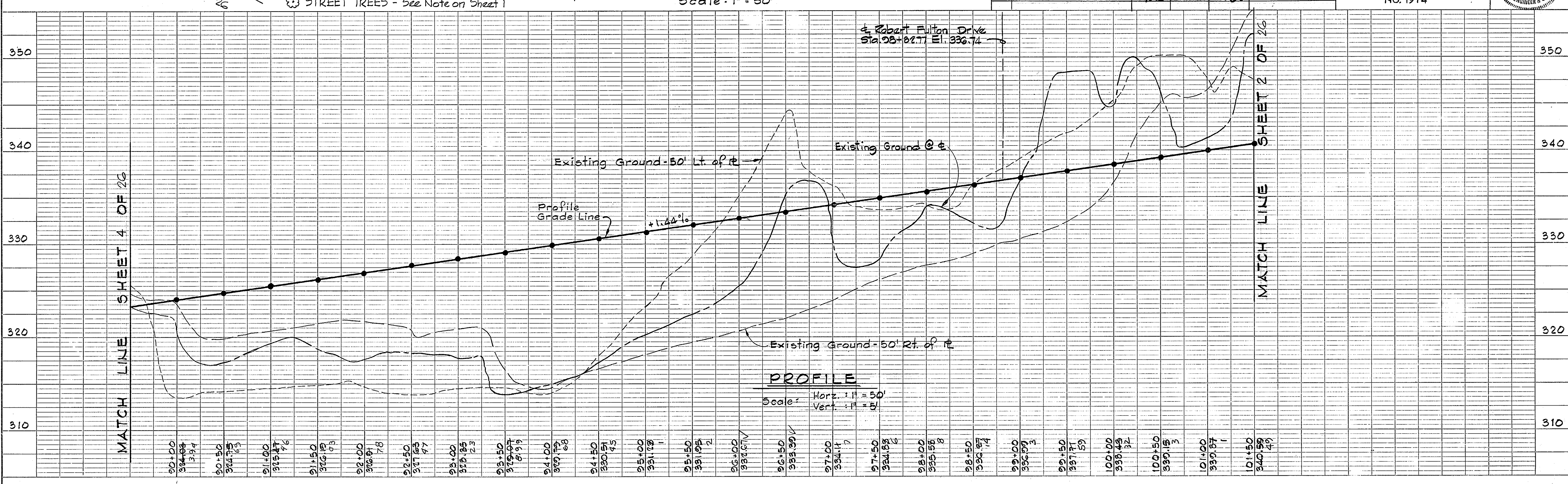
PROJECT AREA
 PARCELS L THRU O.
 A RESUBDIVISION OF PARCEL K

PROJECT TITLE
 PLAN AND PROFILE
 COLUMBIA GATEWAY DRIVE
 STA. 89+50 TO STA. 101+50

SCALE: AS SHOWN DATE:

WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

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



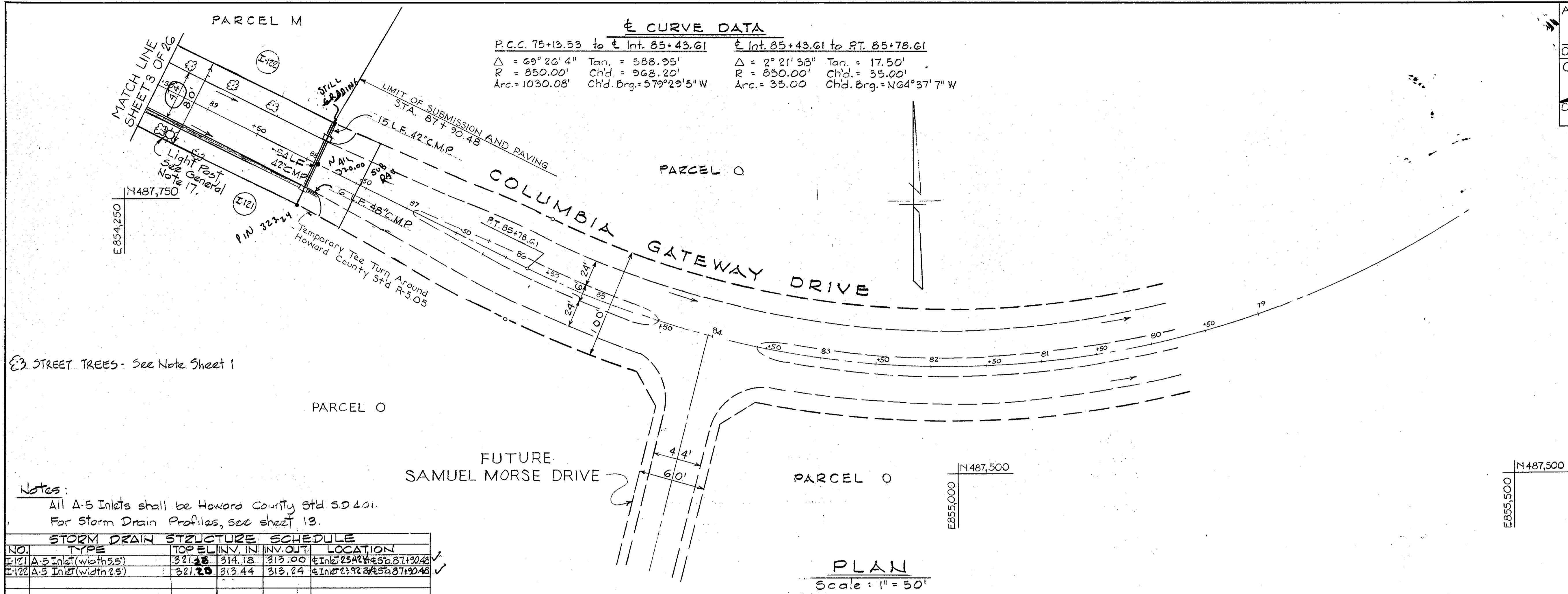
PLAN
 SURVEYED, ALIGNED, GRADES CHECKED, RT. OF WAY CHECKED.
 NOTE BOOK NO. _____
 DATE _____

PROFILE
 SURVEYED, GRADES CHECKED, E. A. S. NOTES, STRUCTURE INDICATIONS CHECKED.
 NOTE BOOK NO. _____
 DATE _____

1158

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING DATE
 JOHN W. MURPHY 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 AND ZONING ADMINISTRATION

± CURVE DATA
 P.C.C. 75+13.53 to ± Int. 85+43.61 ± Int. 85+43.61 to P.T. 85+78.61
 $\Delta = 69^\circ 26' 4''$ Tan. = 588.95' $\Delta = 2^\circ 21' 33''$ Tan. = 17.50'
 R = 850.00' Ch'd. = 968.20' R = 850.00' Ch'd. = 35.00'
 Arc. = 1030.08' Ch'd. Brg. = 579°29'5" W Arc. = 35.00' Ch'd. Brg. = N64°37' 7" W



STREET TREES - See Note Sheet 1

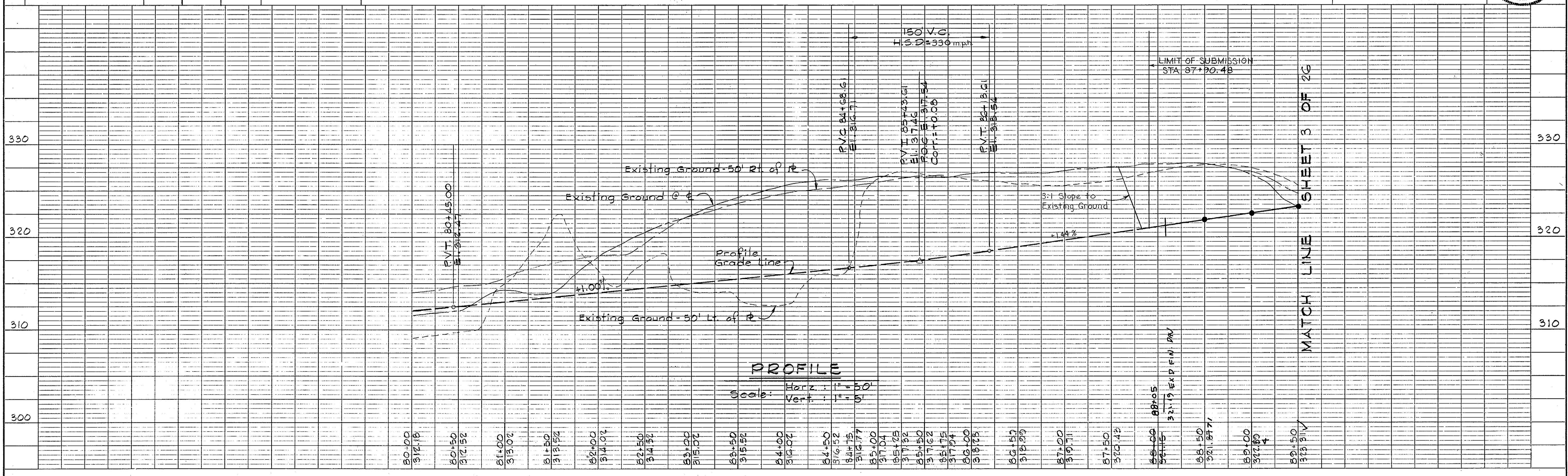
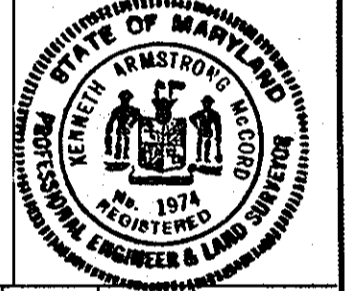
Notes:
 All A-5 Inlets shall be Howard County Std. 5.0401.
 For Storm Drain Profiles, see sheet 13.

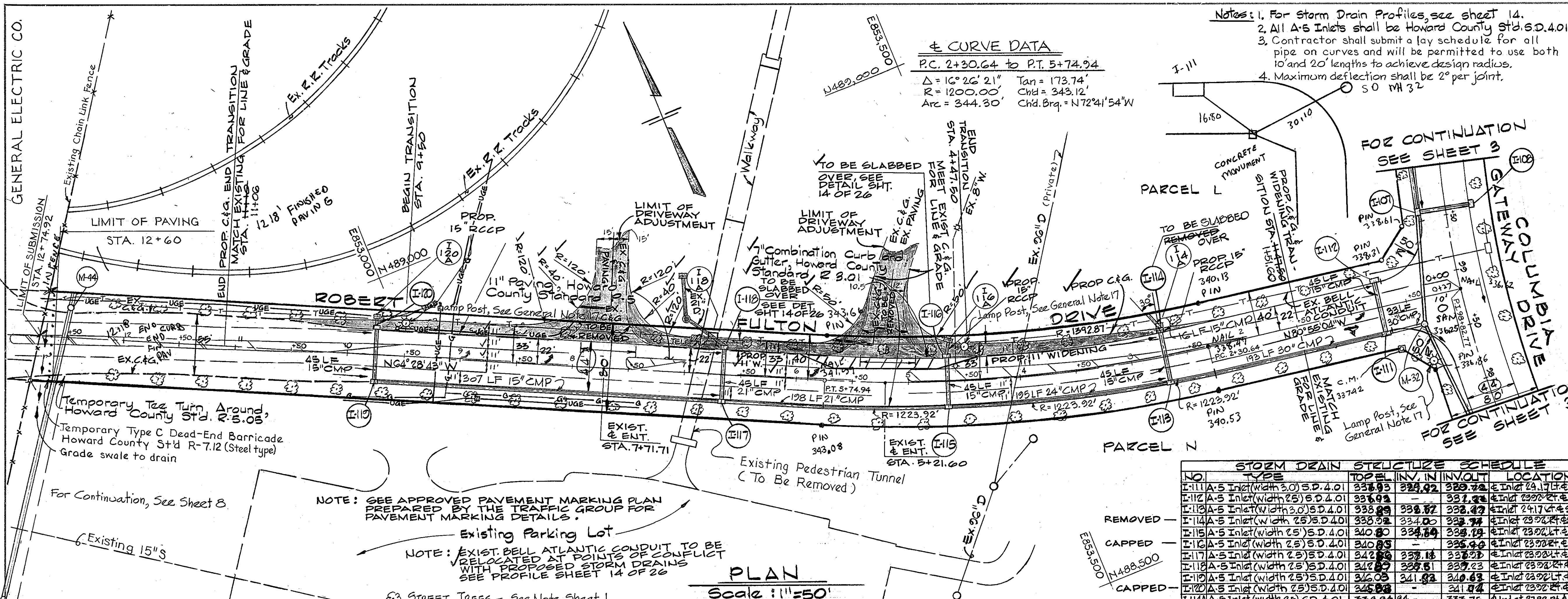
| NO. | TYPE | TOP EL. INV. IN | INV. OUT | LOCATION |
|------|----------------------|-----------------|----------|--------------------------------|
| E121 | A-5 Inlet (width 55) | 321.28 | 314.18 | ± Int. 25+42.45 to 27+30.48 |
| E122 | A-5 Inlet (width 25) | 321.20 | 313.44 | ± Int. 23+92.24 to 25+87+90.48 |

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|------------------------------------|
| 2/8/88 | 3 | Revised Lamp Post |
| 9/15/86 | 2 | As per grading change |
| 5/29/86 | 1 | As per Planning, DPN & SC Comments |

COLUMBIA GATEWAY
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
 PLAN AND PROFILE
 COLUMBIA GATEWAY DRIVE
 STA. 87+90.08 TO STA. 89+50
 SCALE: AS SHOWN DATE:
 WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord
 Registered Engineer
 NO. 1974





± CURVE DATA
 P.C. 2+30.64 to P.T. 5+74.94
 $\Delta = 16^\circ 26' 21''$ Tan = 173.74'
 $R = 1200.00'$ Chd = 343.12'
 $Arc = 344.30'$ Chd. Brq. = $N72^\circ 24' 54'' W$

- Notes:**
- For Storm Drain Profiles, see sheet 14.
 - All A-5 Inlets shall be Howard County Std. S.D. 4.01
 - Contractor shall submit a lay schedule for all pipe on curves and will be permitted to use both 10' and 20' lengths to achieve design radius.
 - Maximum deflection shall be 2" per joint.

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

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 2/1/99 | 4 | ROAD WIDENING & INLET RELOC. |
| 11/6/87 | 3 | Change Barricade to Steel type |
| 7/11/86 | 2 | As per Health Dept. Comments |
| 5/23/86 | 1 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION

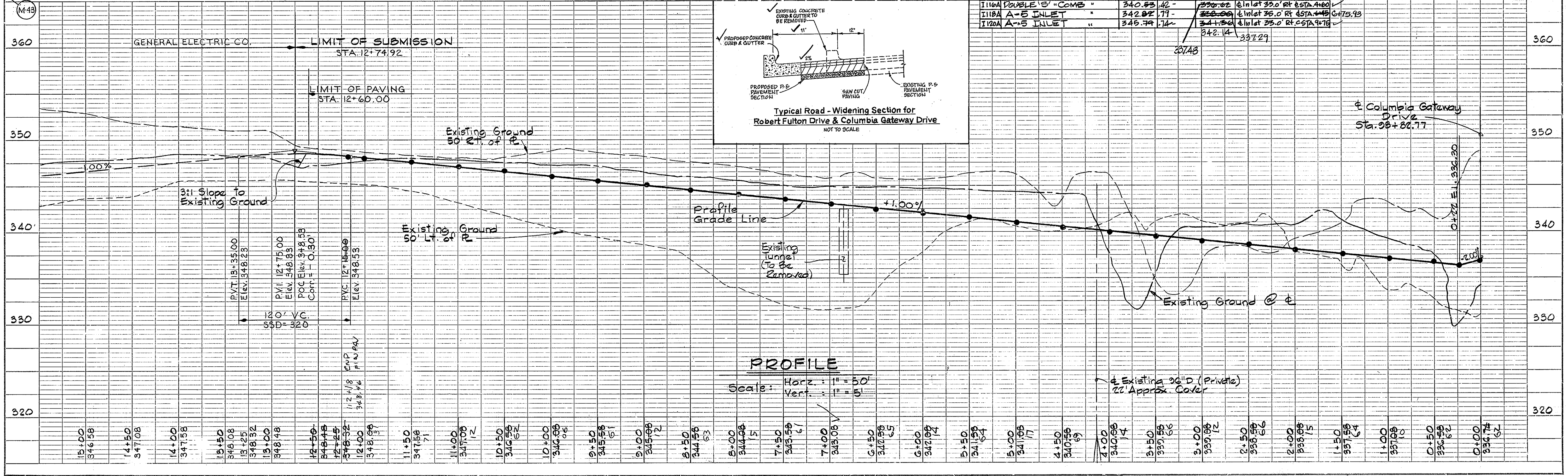
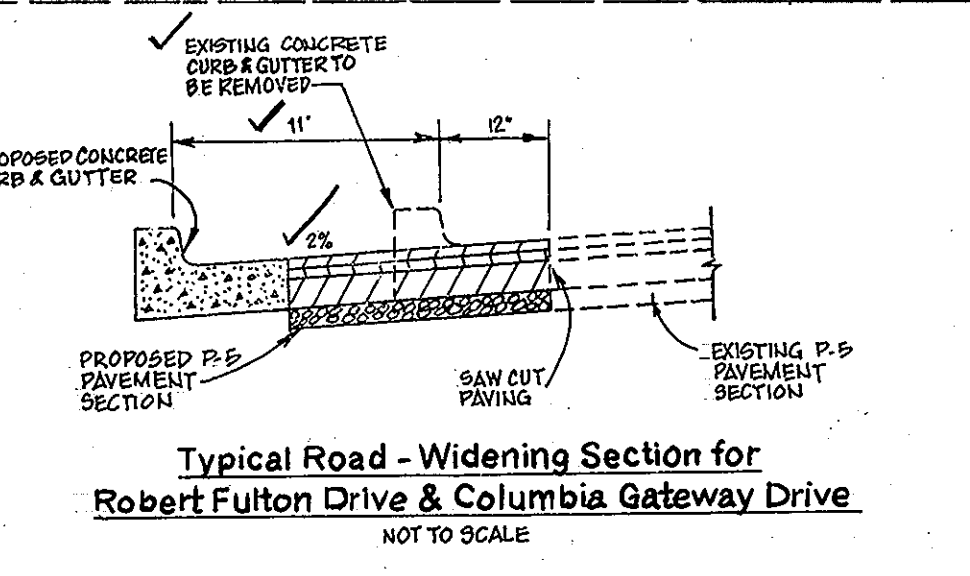
PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

PROJECT TITLE
 PLAN AND PROFILE
 ROBERT FULTON DRIVE
 STA. 0+00 TO STA. 12+74.92

SCALE: AS SHOWN DATE:

STORM DRAIN STRUCTURE SCHEDULE

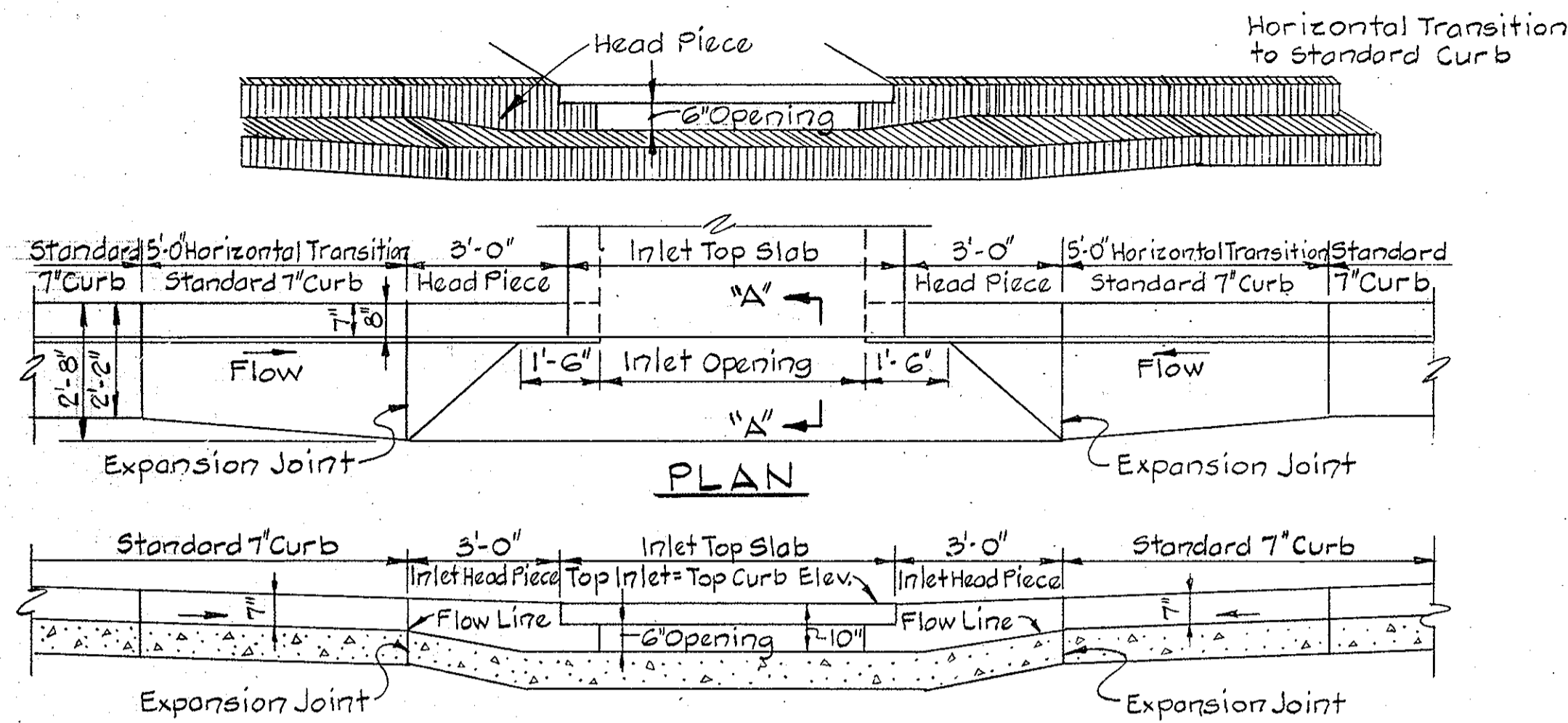
| NO. | TYPE | TOP ELEV. | INVERT | INVERT | LOCATION |
|-------|-------------------------------|-----------|--------|--------|-----------------------|
| I-11A | 5 Inlet (width 5.0) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11B | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11C | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11D | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11E | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11F | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11G | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11H | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11I | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11J | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11K | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11L | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11M | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11N | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11O | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11P | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11Q | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11R | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11S | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11T | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11U | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11V | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11W | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11X | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11Y | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |
| I-11Z | 5 Inlet (width 2.5) S.D. 4.01 | 338.93 | 338.92 | 338.92 | Inlet @ Sta. 12+74.92 |



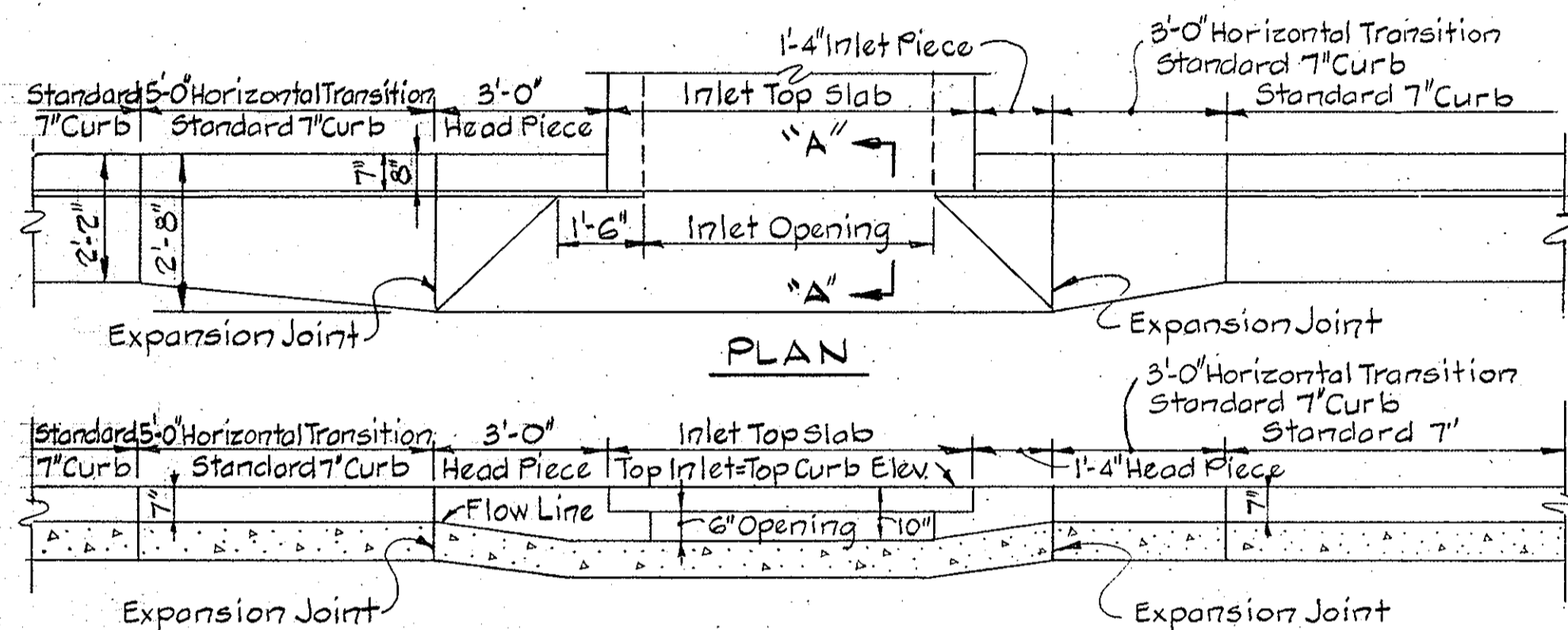
PROFILE
 Scale: Horiz. = 1" = 50'
 Vert. = 1" = 5'

PLAN
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 NOTE BOOK: [Blank]
 DATE: [Blank]

PROFILE
 SURVEYED BY: [Blank]
 NOTE BOOK: [Blank]
 DATE: [Blank]

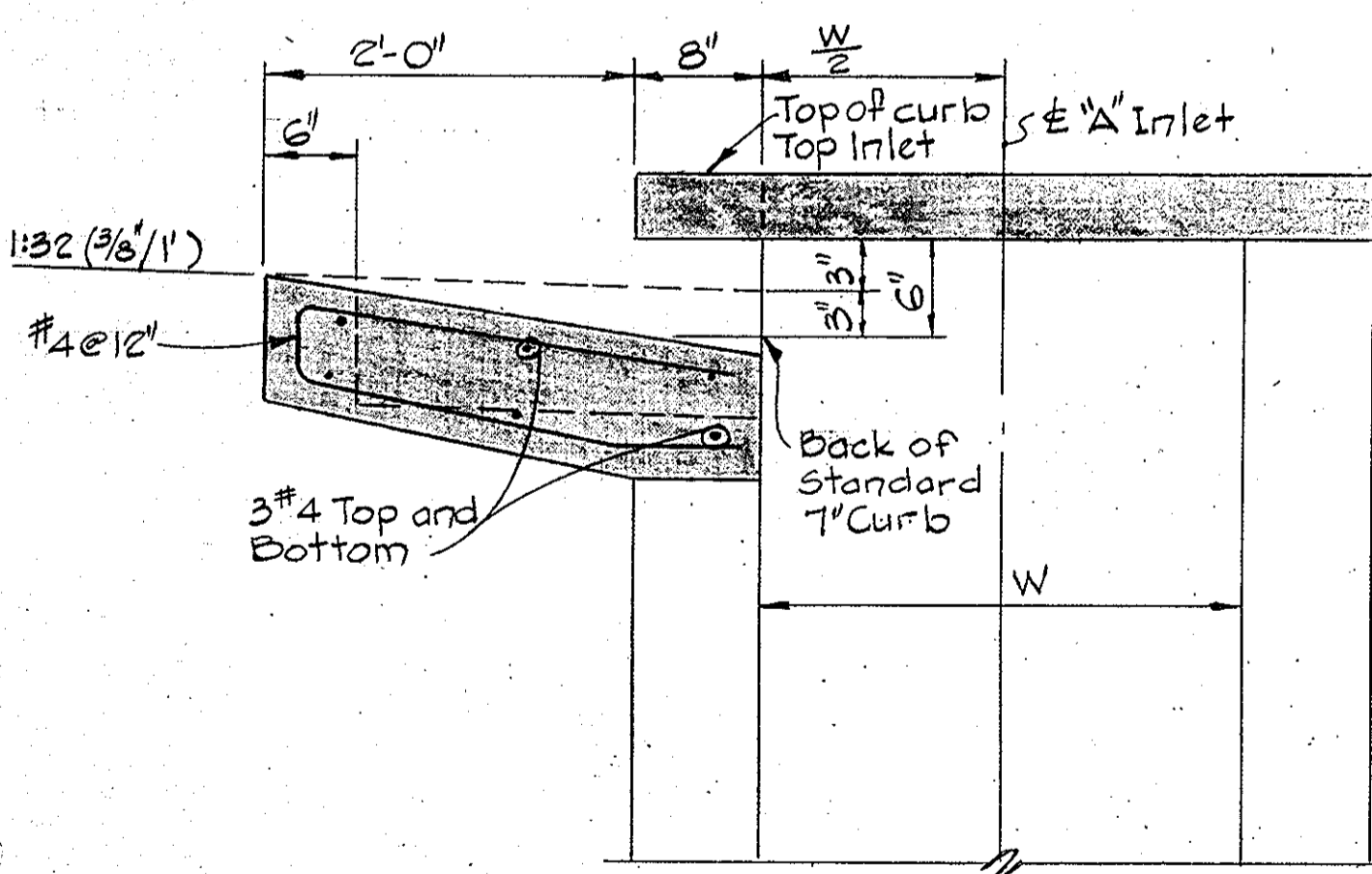


SECTION ALONG FLOW LINE
SUMPED "A" INLETS - STANDARD CURB



SECTION ALONG FLOW LINE
"A" INLETS - STANDARD CURB

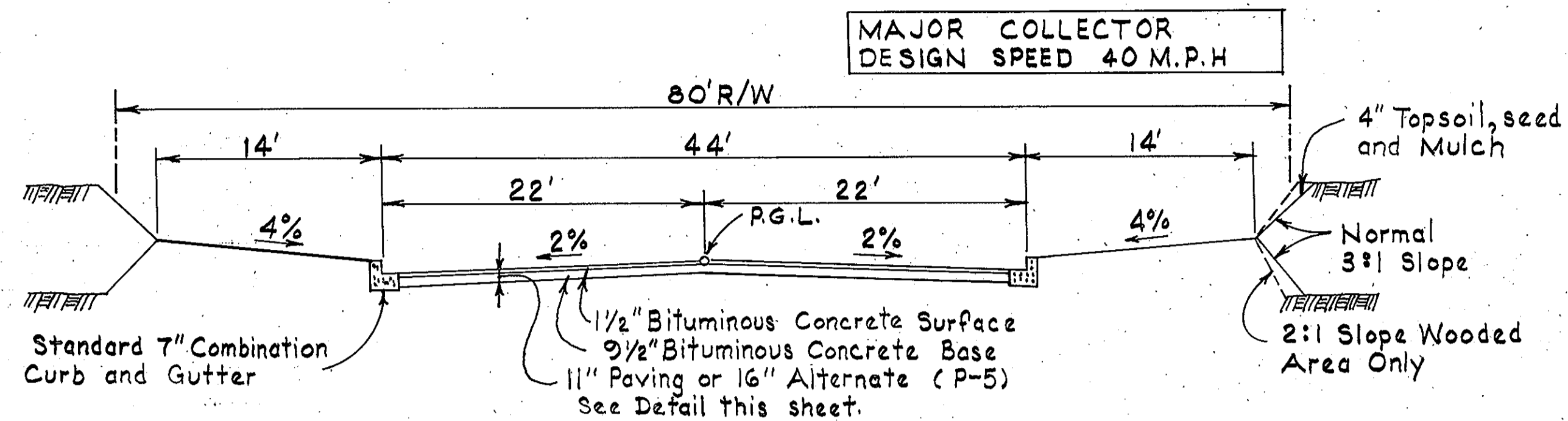
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SECTION "A-A"
"A" INLET-STANDARD CURB

No Scale

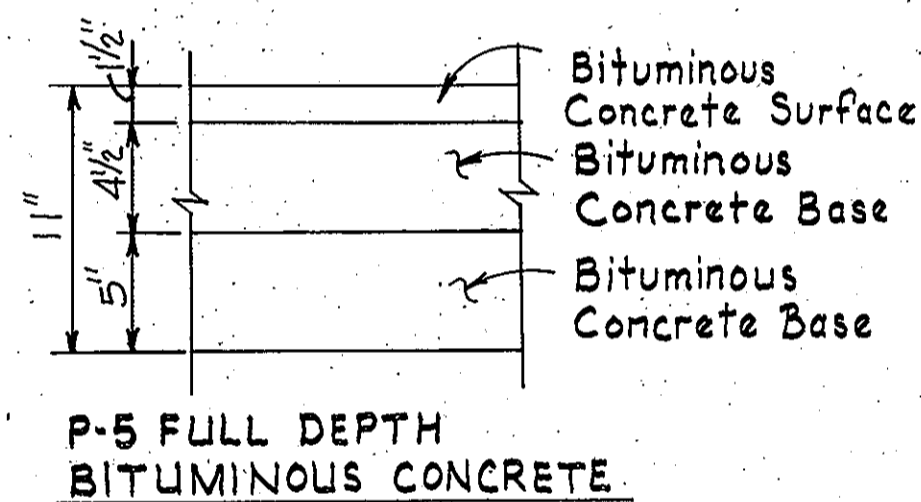
Note: For "A" Inlet dimensions and structural details, see standard Howard County Standards SD 4.01 & SD 4.02.



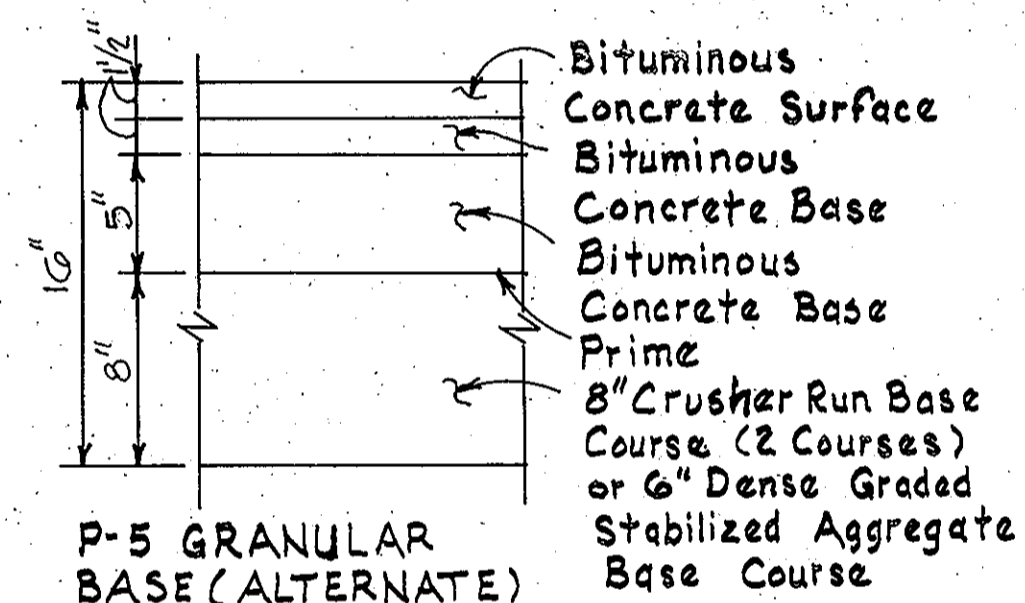
TYPICAL SECTION - COLUMBIA GATEWAY DRIVE
 STATION 89+15 TO STATION 109+90

TYPICAL SECTION - ROBERT FULTON DRIVE
 STATION 0+00 TO STATION 12+74.92

No Scale

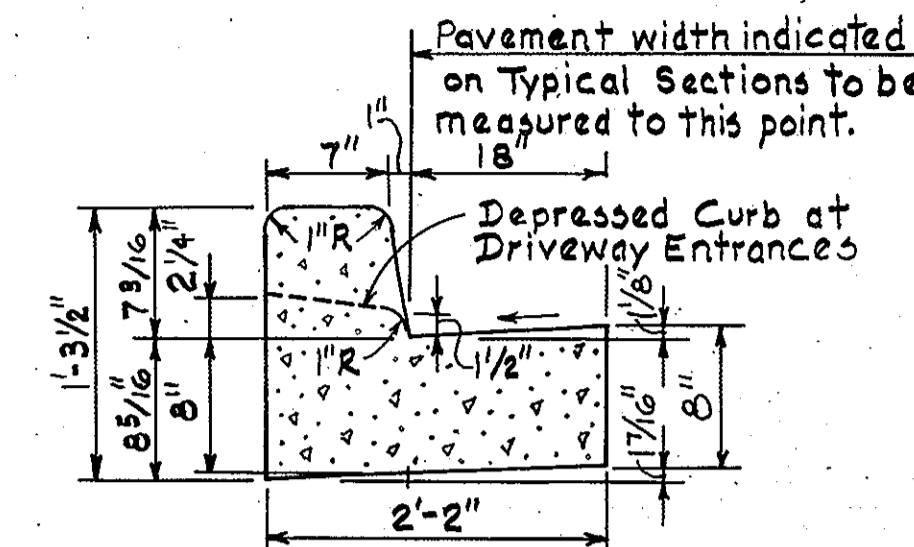


P-5 FULL DEPTH
 BITUMINOUS CONCRETE



P-5 GRANULAR
 BASE (ALTERNATE)

TYPICAL PAVING SECTIONS
 NO SCALE



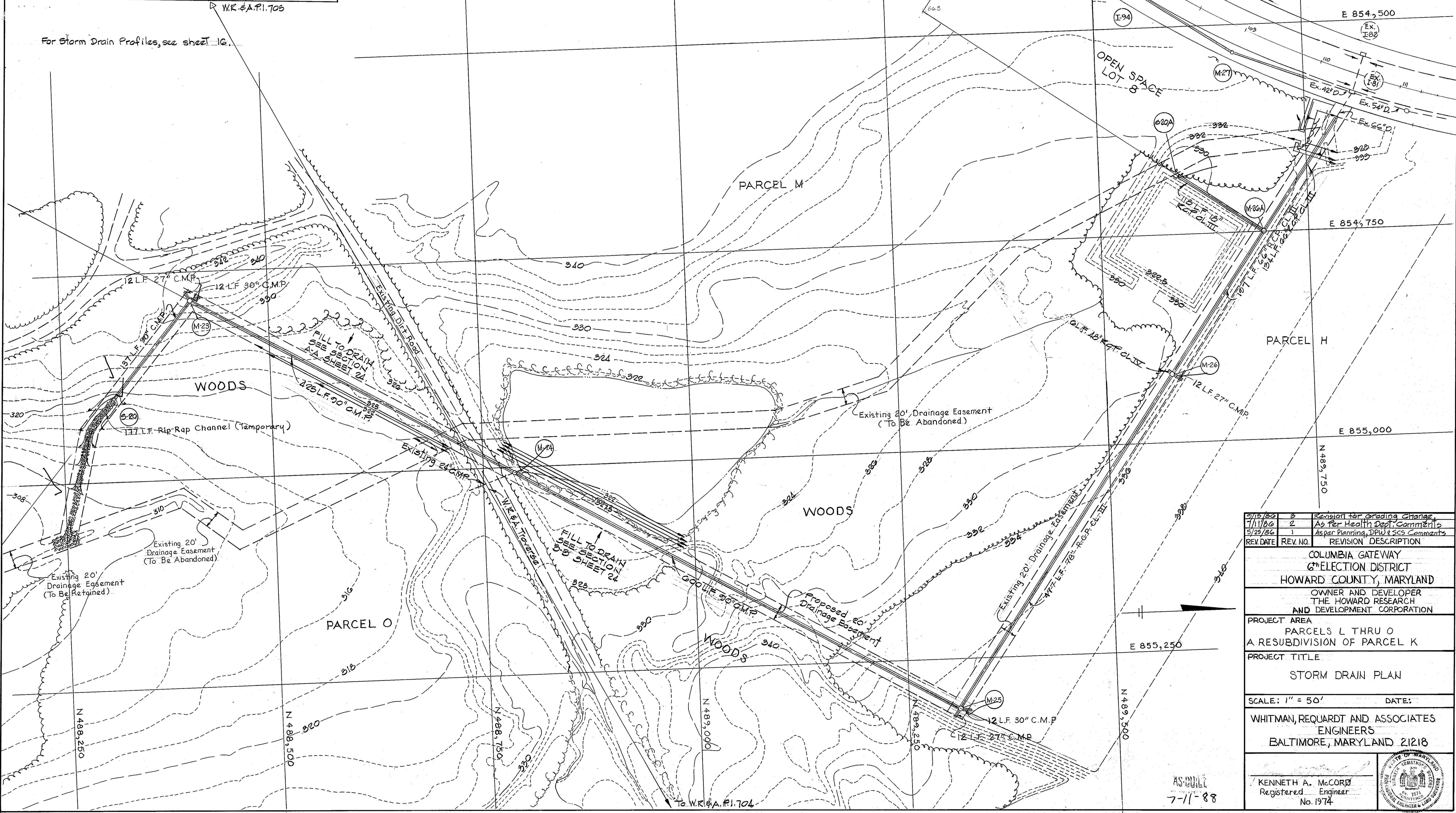
STANDARD 7" COMBINATION
 CURB AND GUTTER
 NO SCALE

| Rev. Date | Rev. No. | Revision Description |
|--|----------|-------------------------------------|
| 5/29/86 | 1 | As per Planning, DPW & SCS Comments |
| COLUMBIA GATEWAY 6 TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K PROJECT TITLE ROADWAY DETAILS 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 | | |

AS-BUILT 7-11-88

| NO. | TYPE | TOP EL. | INV. IN | INV. OUT | LOCATION |
|------|-----------------------|---------|---------|----------|--------------------|
| M-23 | Bend Structure | 327.00 | 314.27 | 314.20 | See Plan & Profile |
| M-24 | Special Structure | 335.28 | 316.52 | 316.22 | See Plan & Profile |
| M-25 | Bend Structure | 332.98 | 319.40 | 319.30 | See Plan & Profile |
| M-26 | Bend Structure | 332.88 | 322.99 | 321.97 | See Plan & Profile |
| I-98 | Type B Inlet 3'x4'x1' | 332.00 | 323.94 | 323.94 | See Plan & Profile |
| | | 331.3 | 328.31 | 313.06 | |

APPROVED: DEPARTMENT OF PUBLIC WORKS
John W. McCord 6-12-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
John W. McCord 6-9-86
 CHIEF DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE



For Storm Drain Profiles, see sheet 16.

For Continuation, See Sheet 2

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 1/15/86 | 1 | Revision for grading change |
| 1/11/86 | 2 | As per Health Dept. Comments |
| 5/23/86 | 1 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION

PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

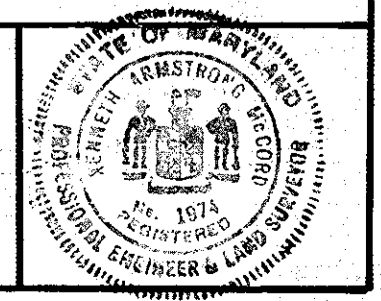
PROJECT TITLE
 STORM DRAIN PLAN

SCALE: 1" = 50' DATE:

WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

KENNETH A. McCord
 Registered Engineer
 No. 1974

AS-BUILT
 7-11-88



F86-182

4/23/86

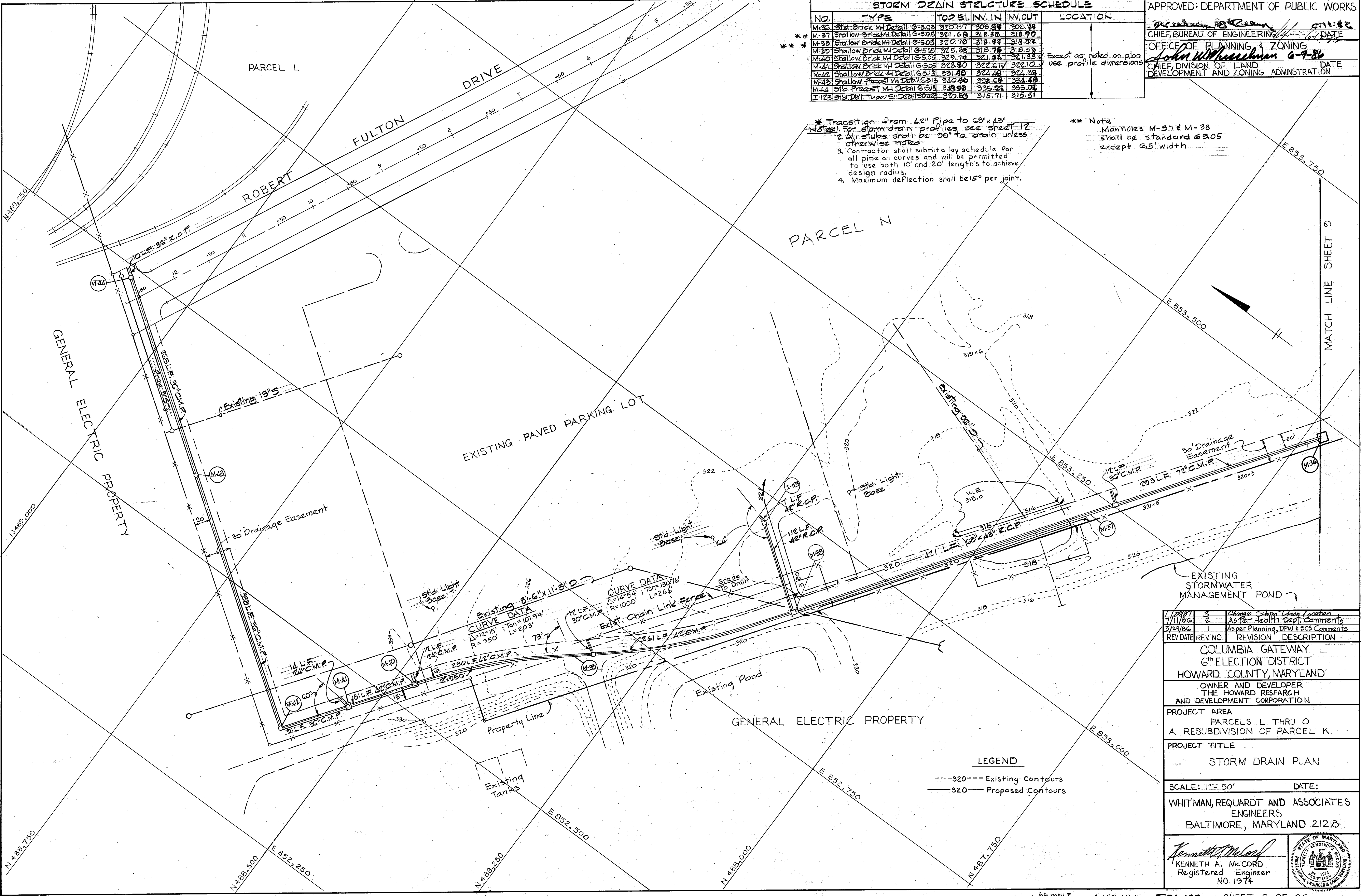
SHEET 7 OF 26

| STORM DRAIN STRUCTURE SCHEDULE | | | | | |
|--------------------------------|---------------------------------|----------|---------|----------|----------|
| NO. | TYPE | TOP E.I. | INV. IN | INV. OUT | LOCATION |
| M-26 | Std. Brick MH Detail G-508 | 320.87 | 308.88 | 308.74 | |
| M-27 | Shallow Brick MH Detail G-503 | 321.68 | 318.80 | 318.40 | |
| M-28 | Shallow Brick MH Detail G-503 | 320.70 | 318.88 | 318.47 | |
| M-32 | Shallow Brick MH Detail G-508 | 325.35 | 318.78 | 318.53 | |
| M-40 | Shallow Brick MH Detail G-508 | 329.74 | 321.98 | 321.33 | |
| M-41 | Shallow Brick MH Detail G-508 | 328.80 | 322.61 | 322.02 | |
| M-42 | Shallow Brick MH Detail G-513 | 331.90 | 324.43 | 324.28 | |
| M-43 | Shallow Precast MH Detail G-513 | 340.46 | 332.68 | 332.48 | |
| M-44 | Std. Precast MH Detail G-513 | 349.98 | 335.24 | 335.08 | |
| T-123 | Std. Del. Type 'S' Detail G-243 | 320.88 | 315.71 | 315.51 | |

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 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING & ZONING
 CHIEF, DIVISION OF AND DEVELOPMENT AND ZONING ADMINISTRATION

- *** Note ***
 * Transition from 42" Pipe to 60"x43"
 1. For storm drain profiles see sheet 12
 2. All stubs shall be 90° to drain unless otherwise noted
 3. Contractor shall submit a lay schedule for all pipe on curves and will be permitted to use both 10' and 20' lengths to achieve design radius.
 4. Maximum deflection shall be 15° per joint.

*** Note ***
 Manholes M-37 & M-38 shall be standard 65.05 except 65' width



| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 7/11/86 | 2 | Change Storm Drain Location |
| 5/23/86 | 1 | As per Health Dept. Comments |
| | 1 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
 STORM DRAIN PLAN

LEGEND
 ---320--- Existing Contours
 —320— Proposed Contours

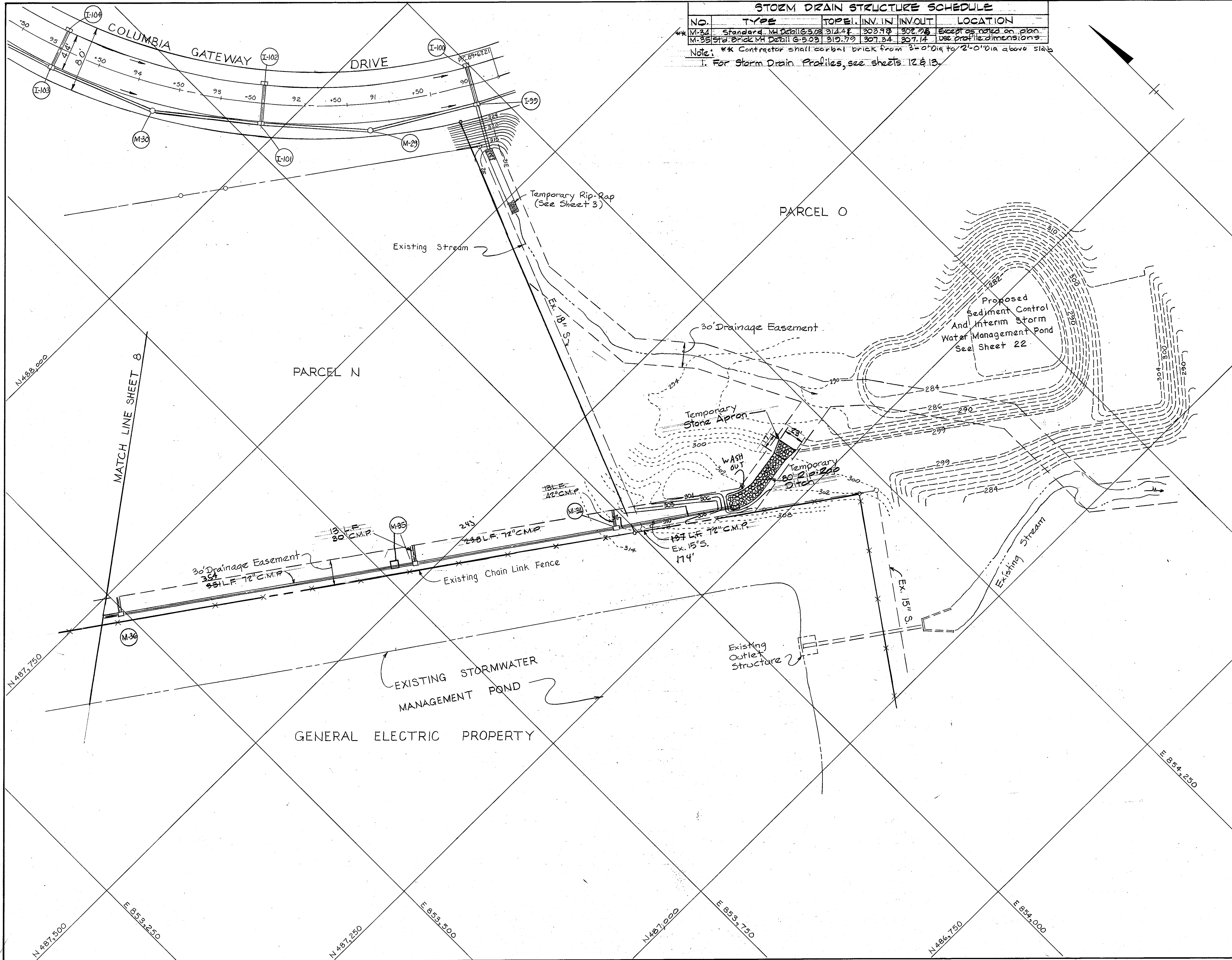
SCALE: 1" = 50' DATE:
 WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218
 Kenneth A. McCord
 Registered Engineer
 NO. 1974

STORM DRAIN STRUCTURE SCHEDULE

| NO. | TYPE | TOPEL. | INV. IN | INV. OUT | LOCATION |
|------|-----------------------------|--------|---------|----------|---|
| M-34 | Standard M Detail 6-5.03 | 312.47 | 303.98 | 302.78 | Except as noted on plan, use profile dimensions |
| M-35 | Std. Brick MH Detail 6-5.03 | 319.79 | 307.34 | 307.14 | use profile dimensions |

Note: ** Contractor shall corral brick from 2'-0" dia to 2'-0" dia above slab
 † For Storm Drain Profiles, see sheets 12 & 13.

APPROVED: DEPARTMENT OF PUBLIC WORKS
John W. Muschman 6-9-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
John W. Muschman 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE



| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 11/29/87 | 2 | Change Storm Drain Location |
| 5/25/86 | 1 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

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 AND DEVELOPMENT CORPORATION

PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

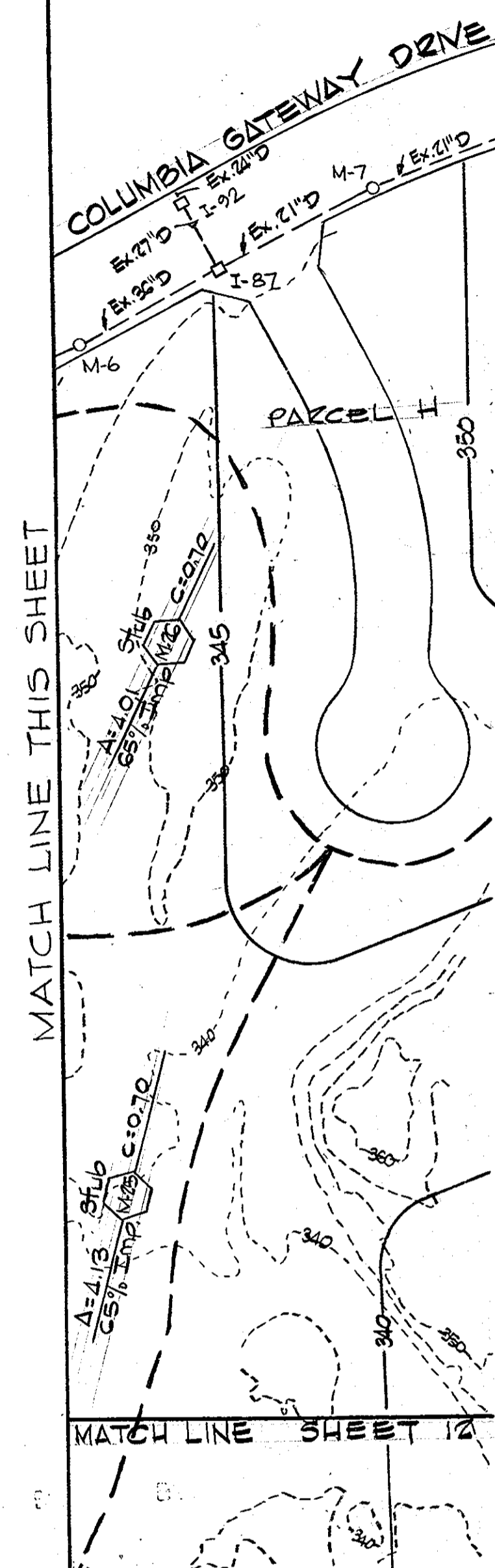
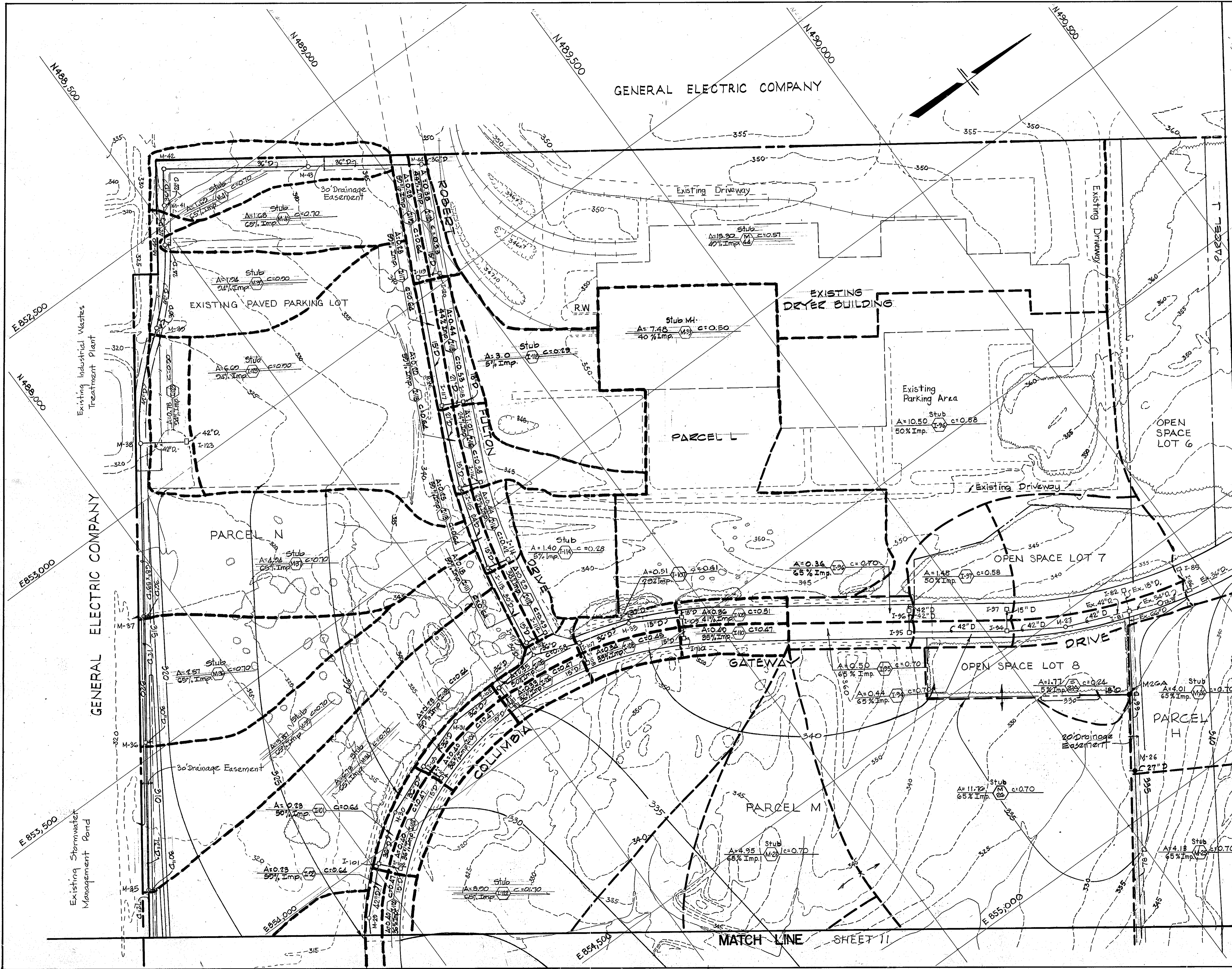
PROJECT TITLE
 STORM DRAIN PLAN

SCALE: 1" = 50' DATE:

WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord
 KENNETH A. McCORD
 Registered Engineer
 No. 1974

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING DATE
 JOHN W. WHITMAN 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE



| REVISION NO. | REVISION DESCRIPTION |
|--------------|-------------------------------------|
| 1 | As per Health Dept. Comment |
| 2 | As per Planning, DPW & SES Comments |
| 3 | Revised per Grading Change |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION

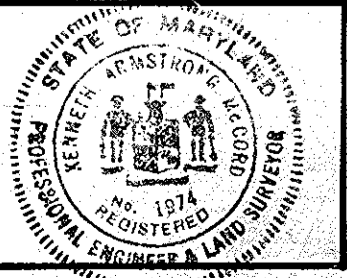
PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

PROJECT TITLE
 DRAINAGE AREA MAP

SCALE: 1" = 100' DATE:

WHITMAN, REQUARDT AND ASSOCIATED
 ENGINEERS
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord
 Registered Engineer
 No. 1974



APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 4-12-86
 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING & ZONING
 DATE: 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION



| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|------------------------------------|
| 5/15/86 | 3 | Revised for grading change |
| 7/11/86 | 2 | As per Health Dept. Comments |
| 5/22/86 | 1 | As per Planning, DWF, SCS Comments |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION

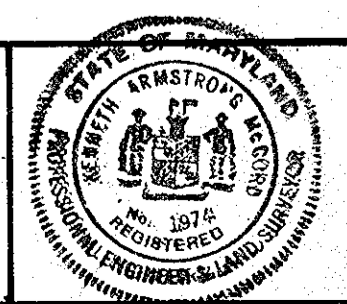
PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

PROJECT TITLE
 DRAINAGE AREA MAP

SCALE: 1" = 100' DATE:

WHITMAN, REQUARD AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

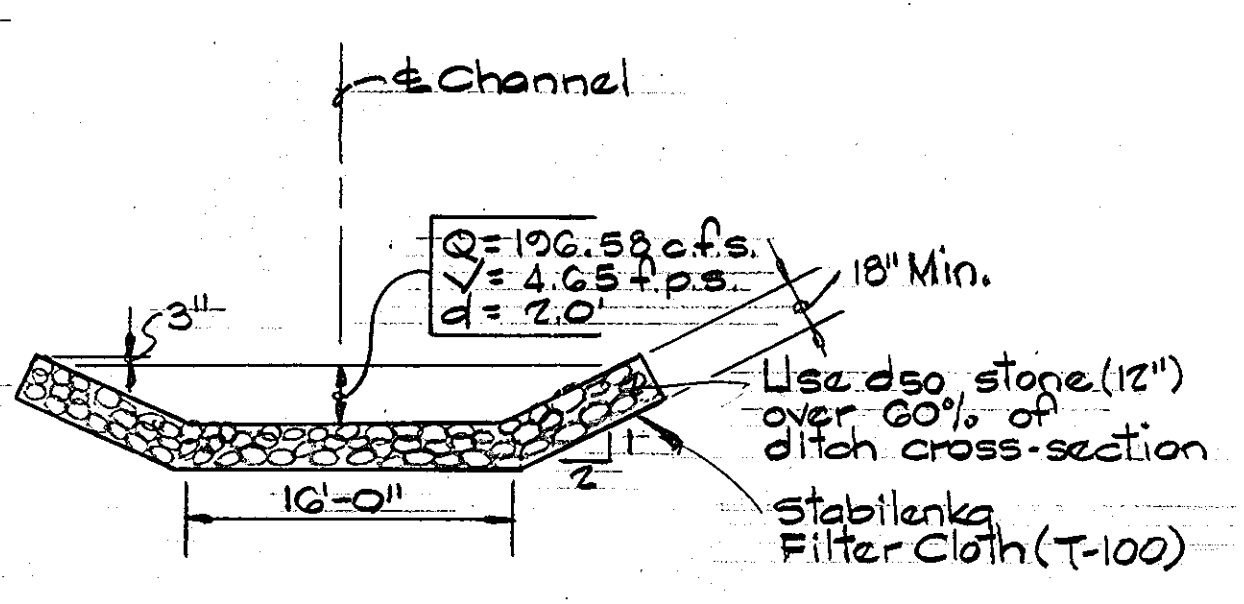
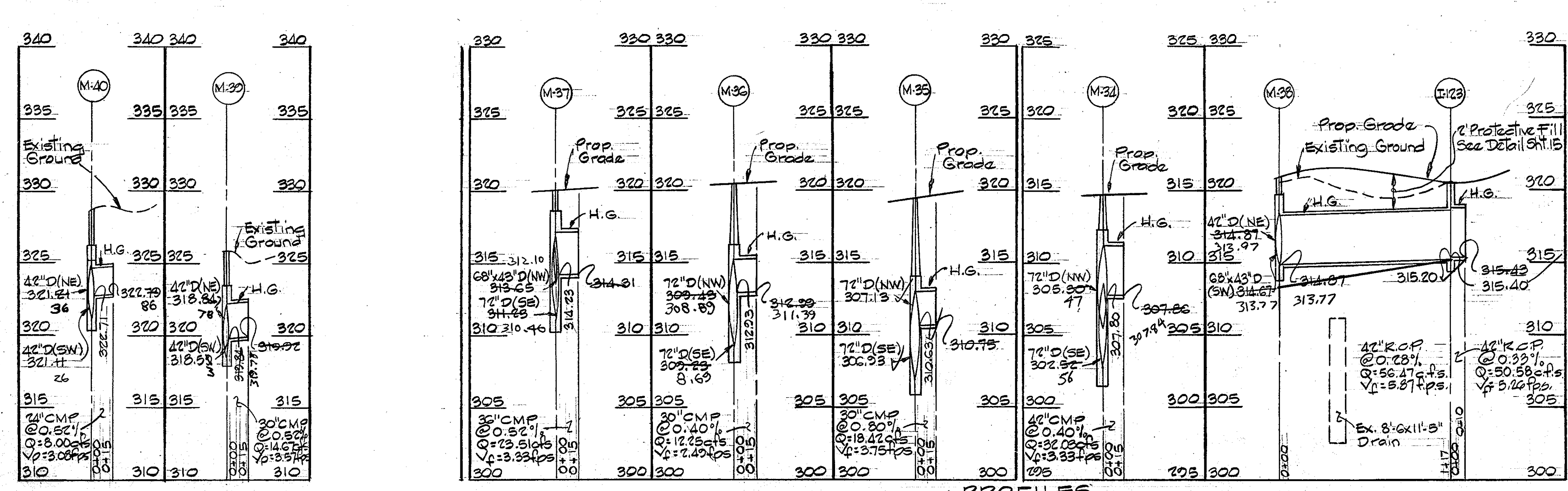
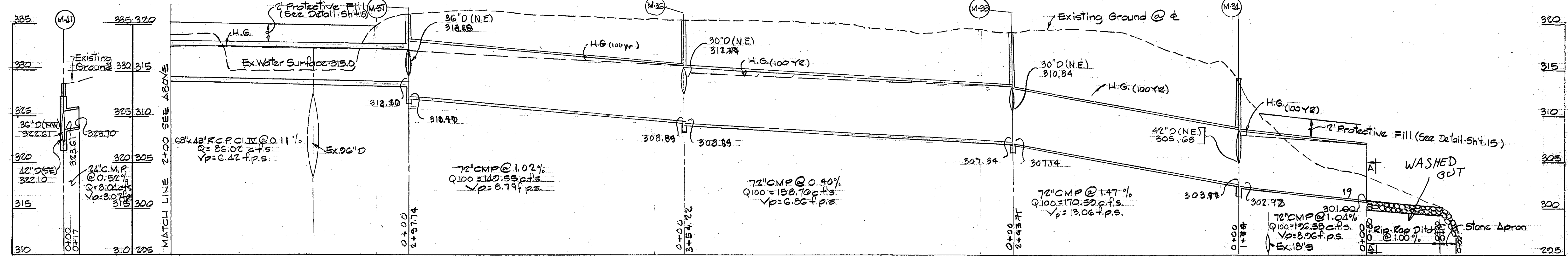
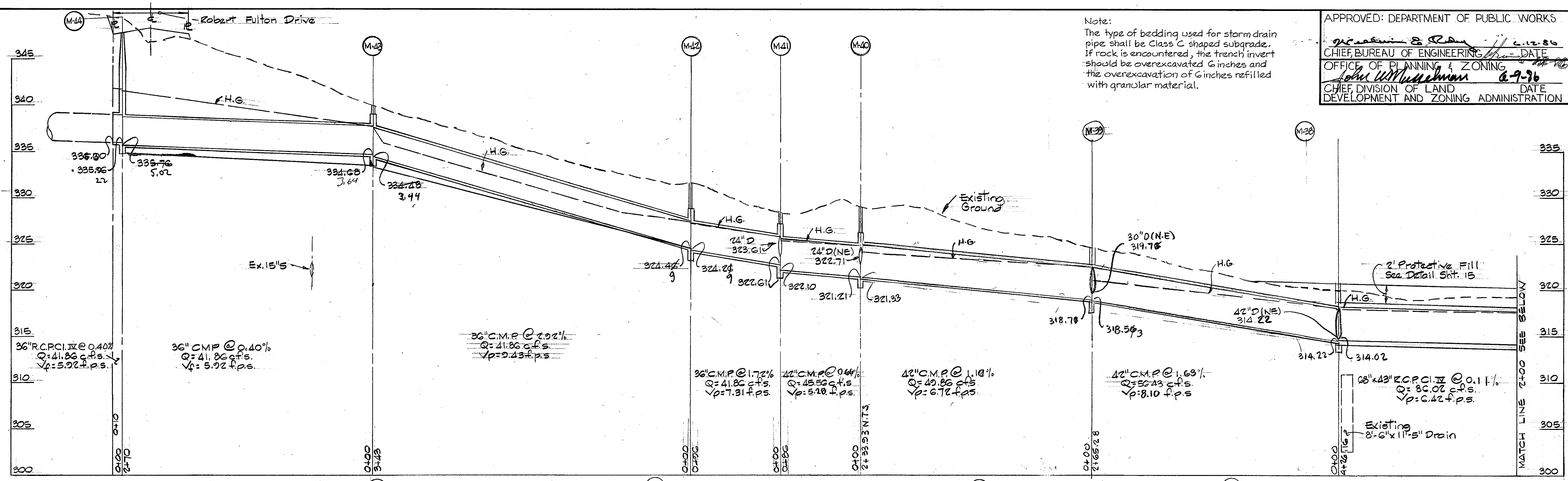
Kenneth A. McCord
 KENNETH A. MCCORD
 Registered Engineer
 No. 1074



158

APPROVED: DEPARTMENT OF PUBLIC WORKS
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 OFFICE OF PLANNING & ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

Note:
 The type of bedding used for storm drain pipe shall be Class C shaped subgrade. If rock is encountered, the trench invert should be overexcavated 6 inches and the overexcavation of 6 inches refilled with granular material.

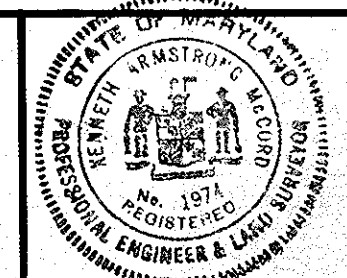


NOTE:
 All 'Q's' shown are 10 year except as otherwise noted.

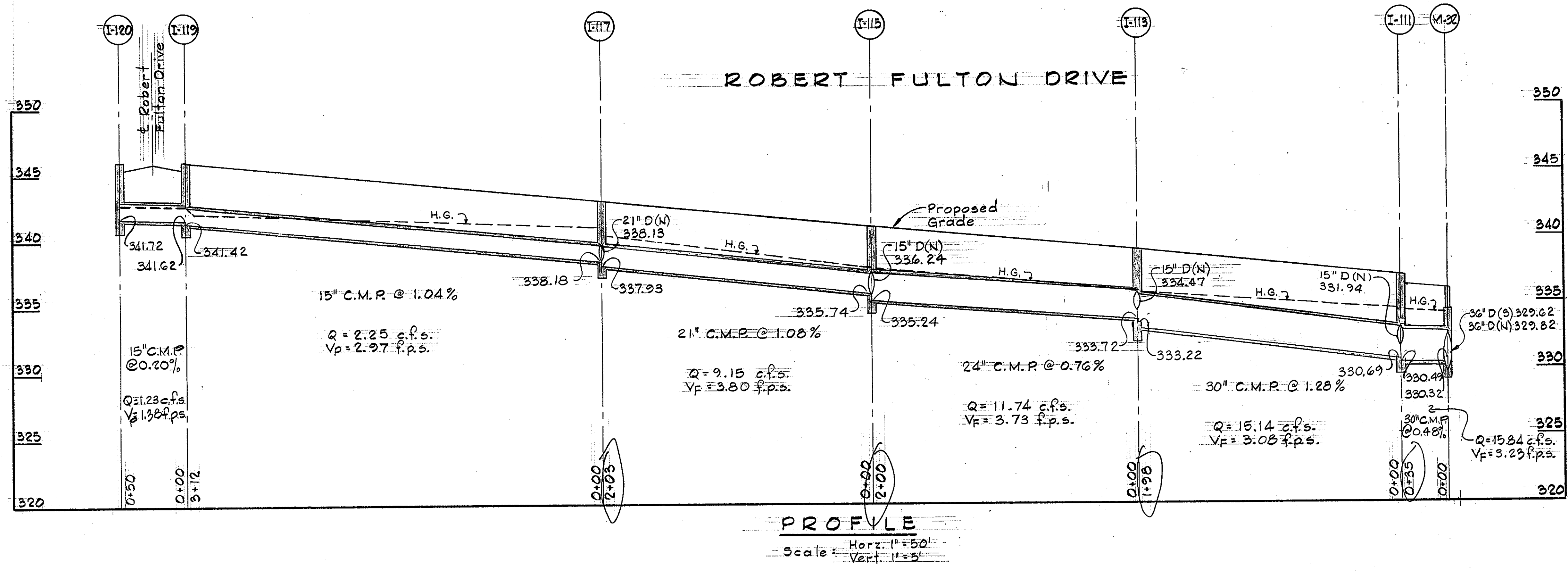
| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|--------------------------------------|
| 7/11/80 | 3 | Change Profile Between M-23 and M-24 |
| 5/29/80 | 2 | As per Health Dept. Comments |
| | 1 | As per Planning, DPW & ZC Comments |

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

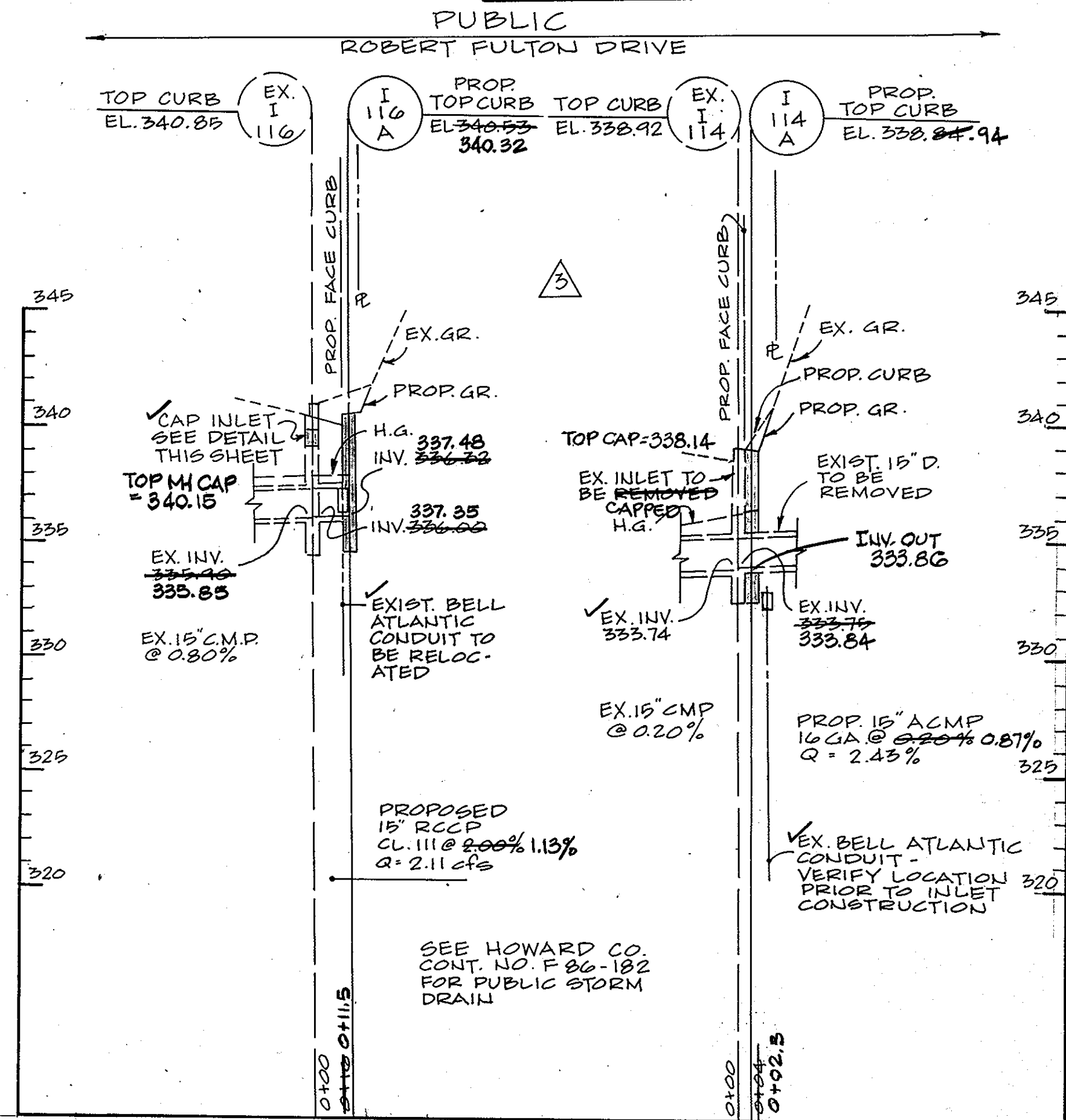
Kenneth A. McCord
 Registered Engineer
 No. 1974



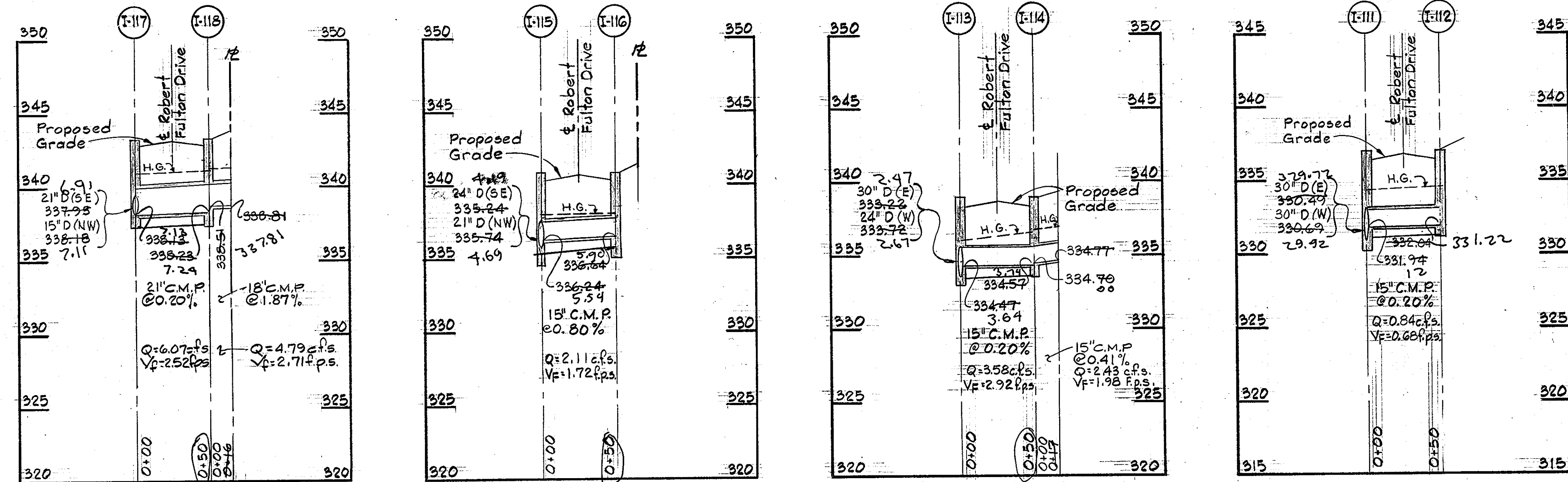
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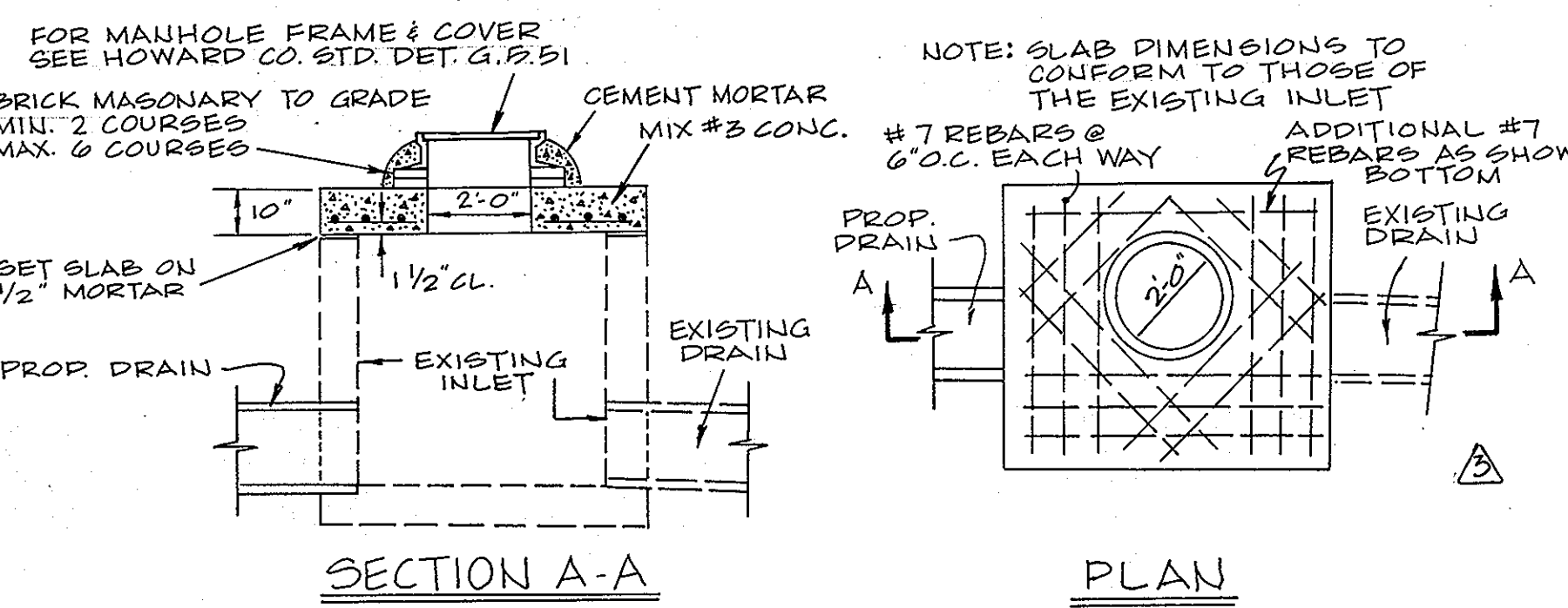
PROFILE
 Scale: Horiz. 1"=50'
 Vert. 1"=5'
 NOTE: ALL Q VALUES SHOWN ARE FOR A 10 YEAR STORM



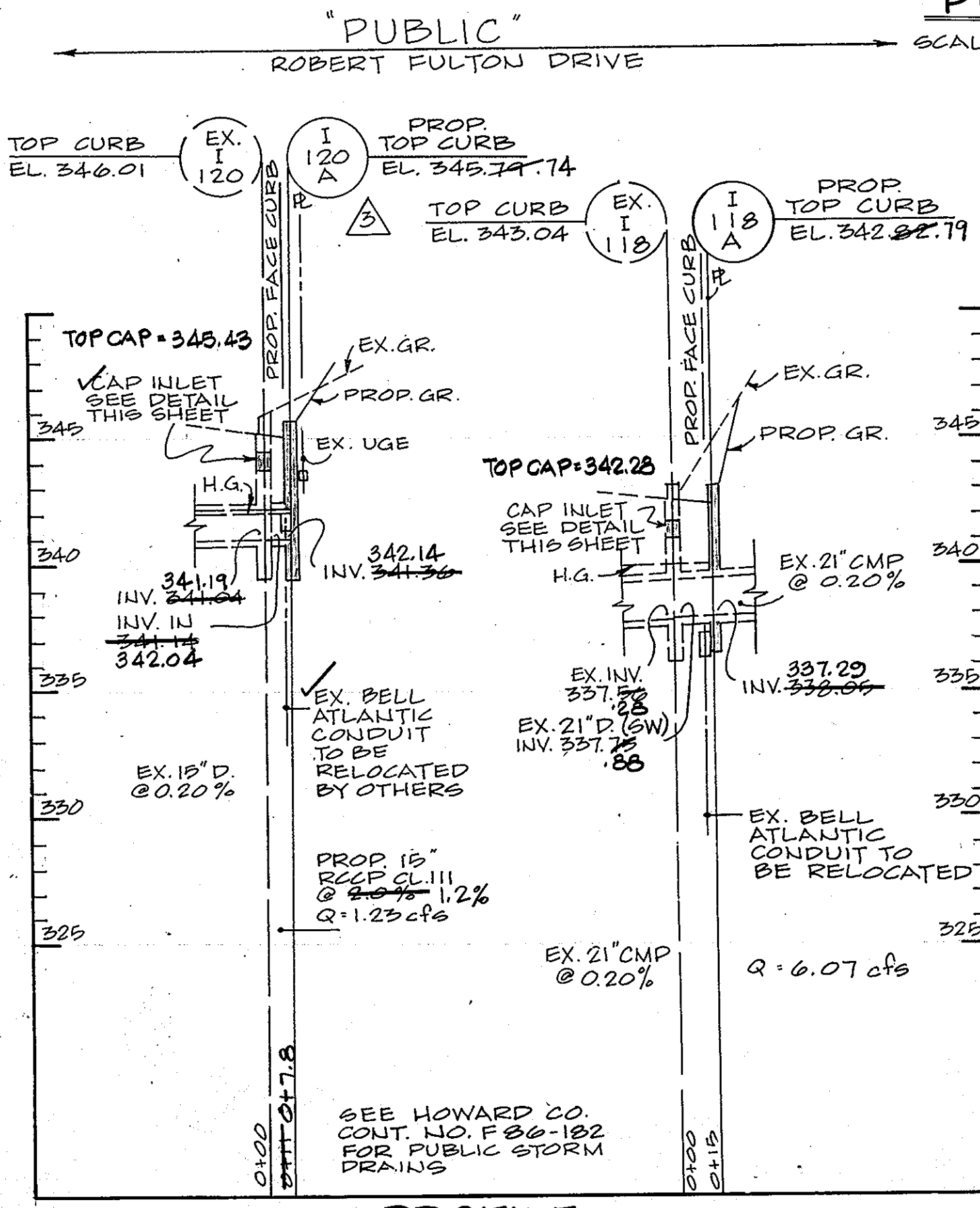
PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'



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



INLET CAPPING DETAIL
 NO SCALE

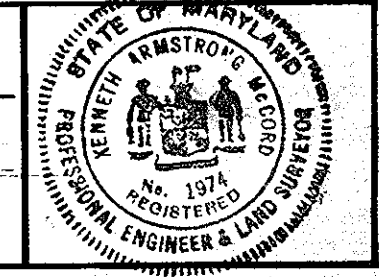


PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'

| DATE | REV. NO. | REVISION DESCRIPTION |
|---------|----------|-------------------------------------|
| 2/17/81 | 1 | STORM DRAIN PROF. FOR RD. WIDENING |
| 7/11/80 | 2 | As per Health Dept. Comments |
| 5/29/86 | 3 | As per Planning, DPW & ZCS Comments |

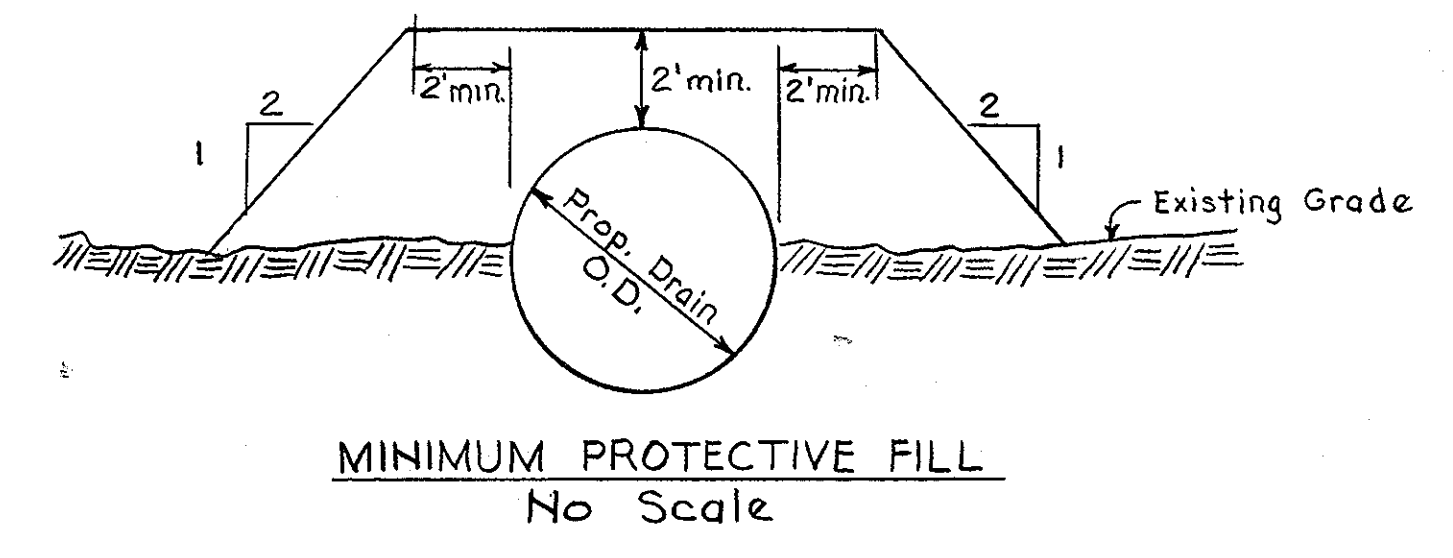
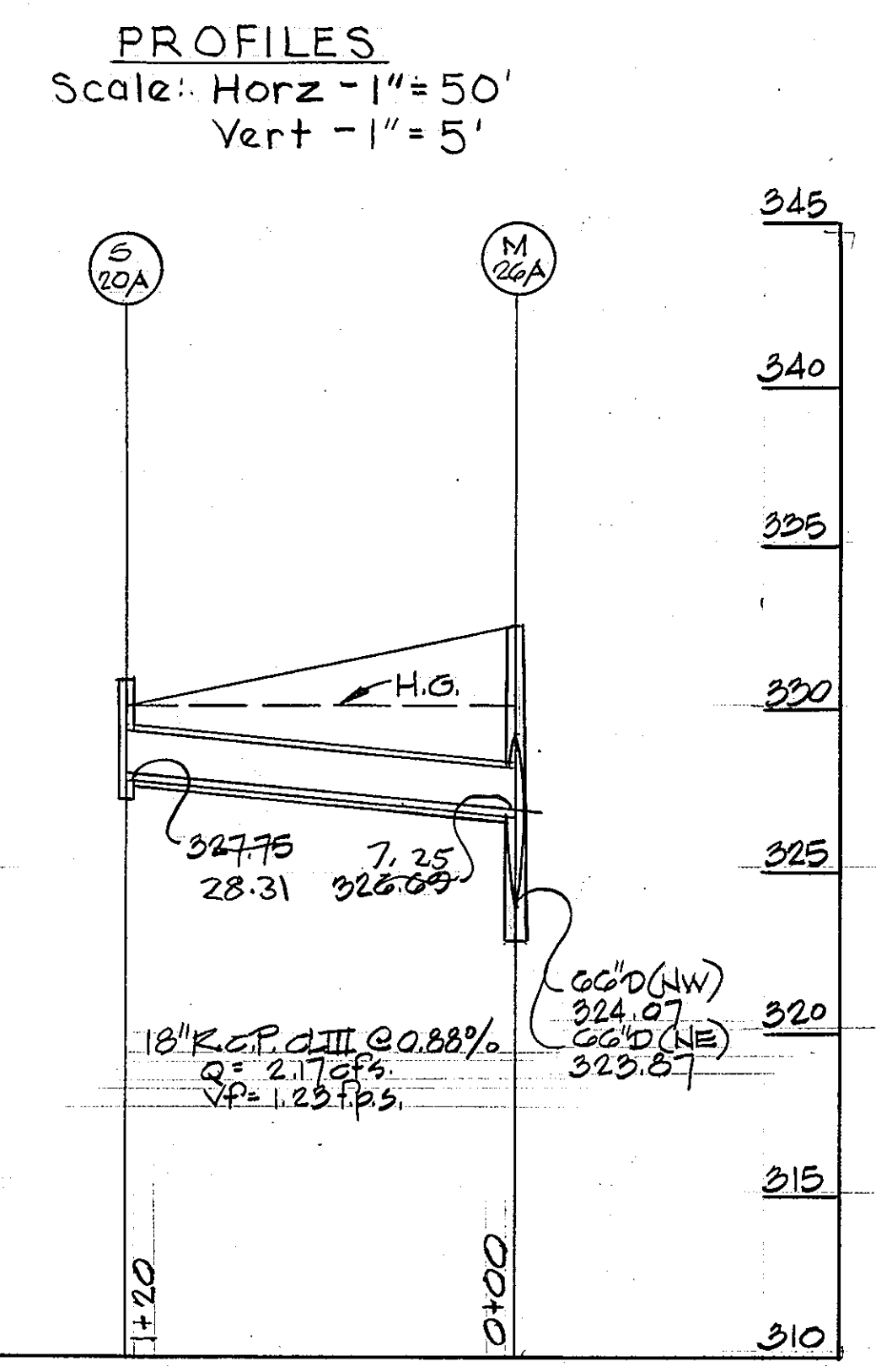
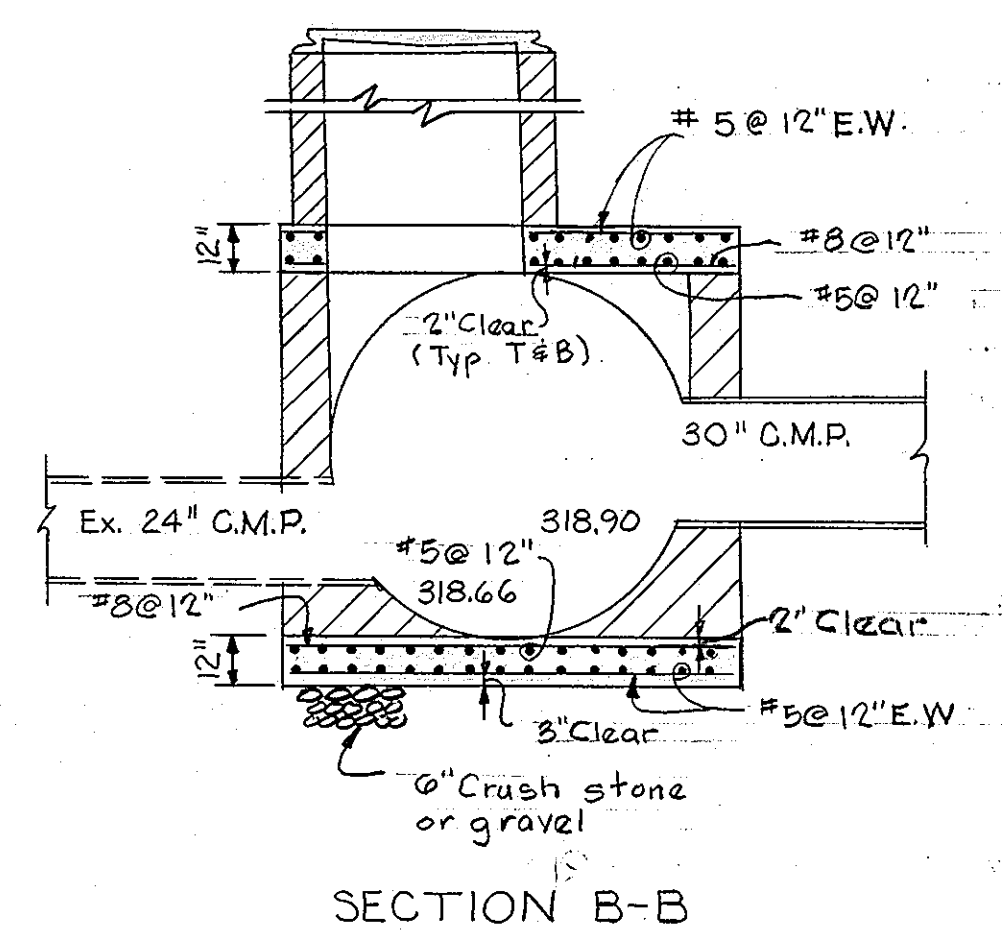
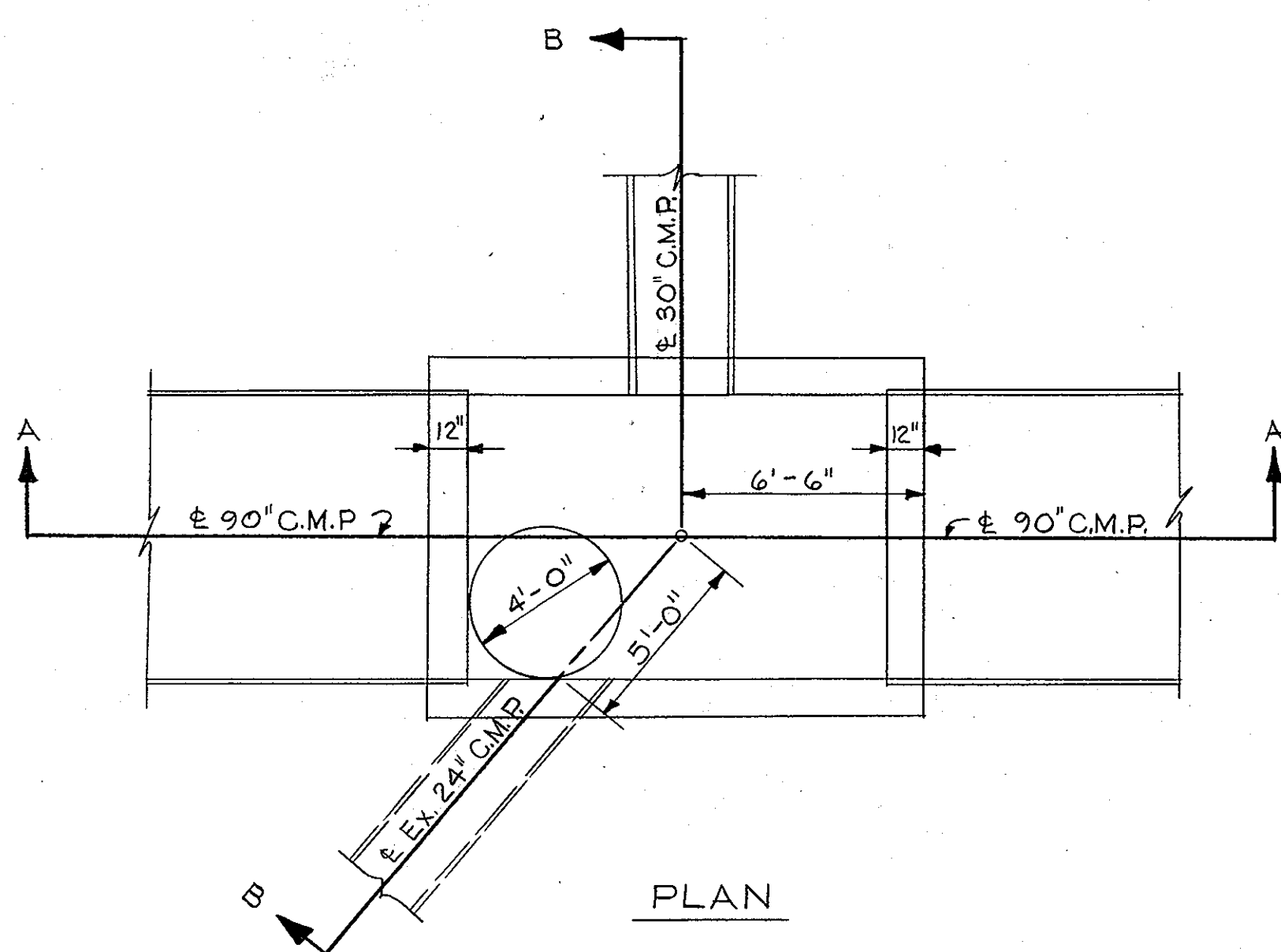
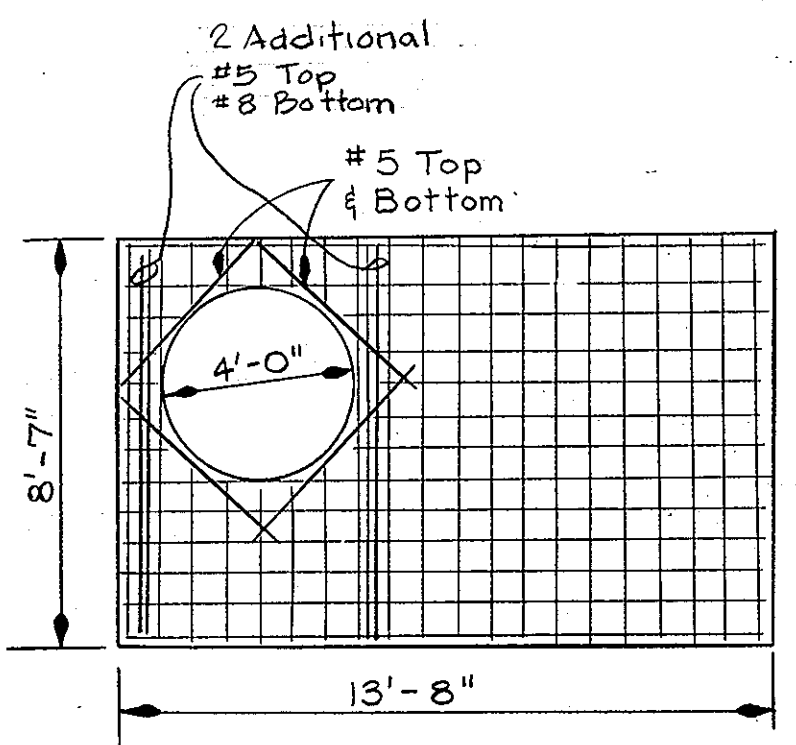
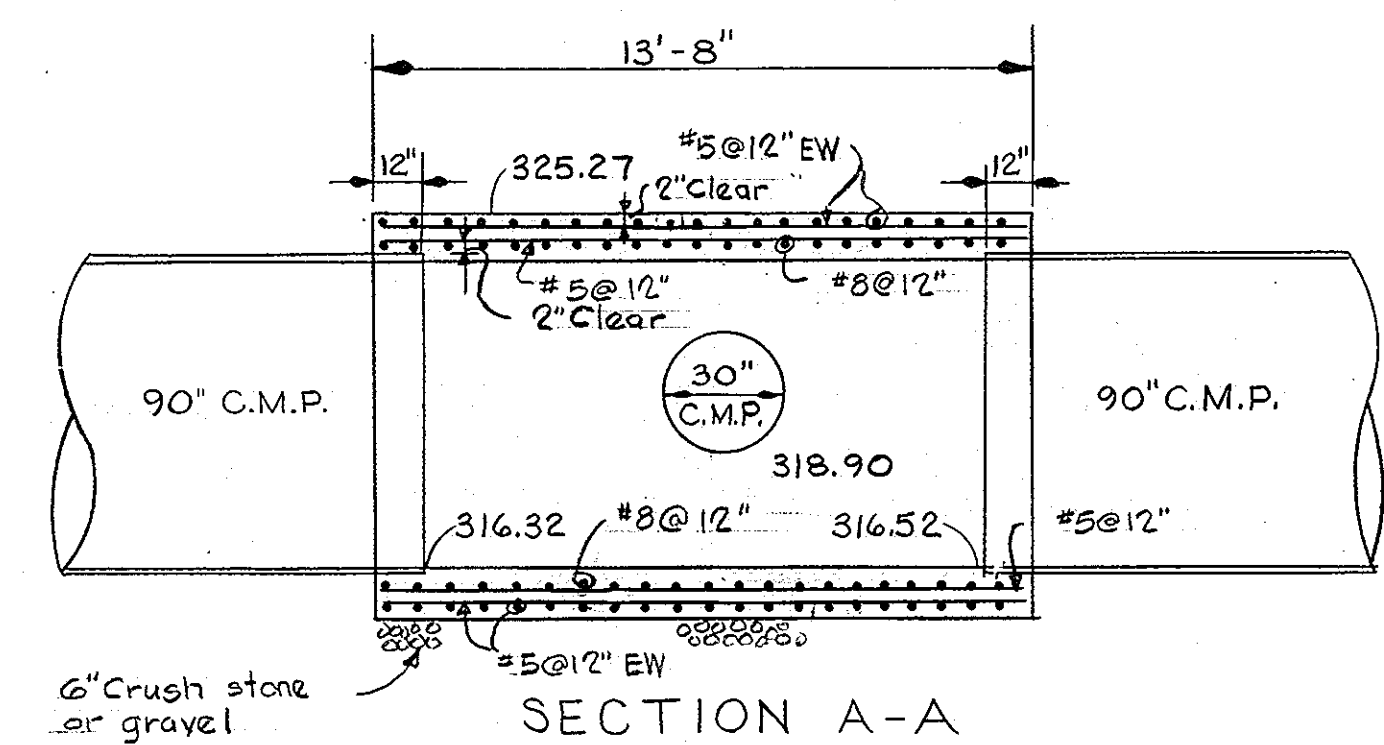
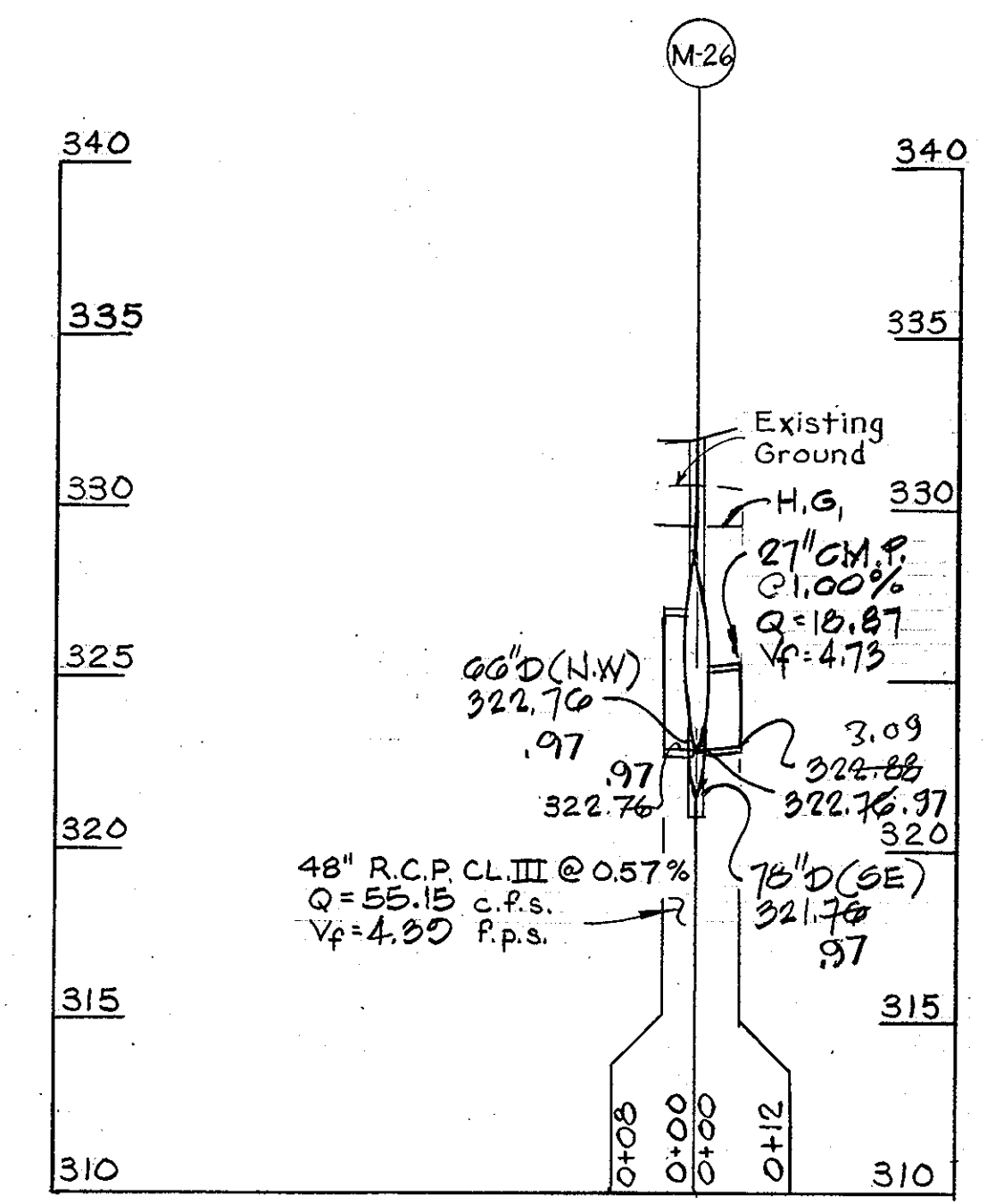
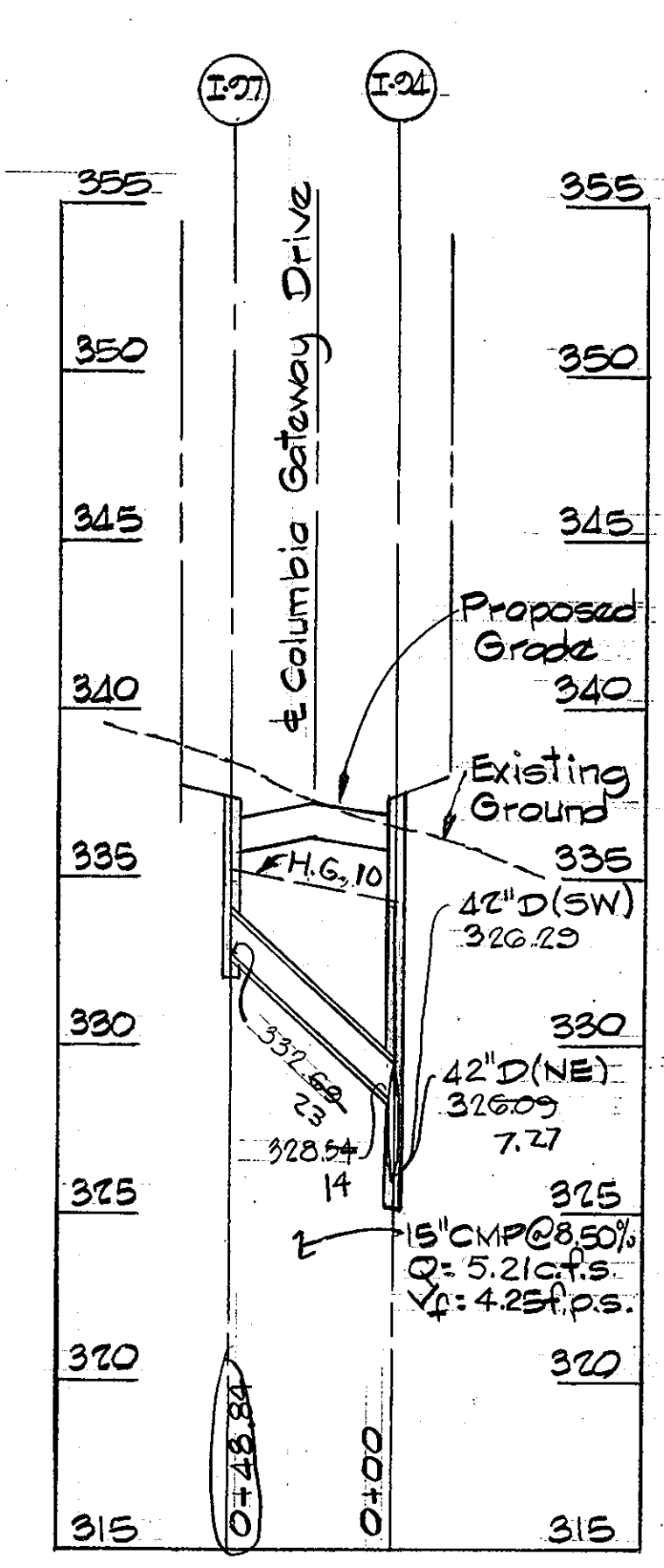
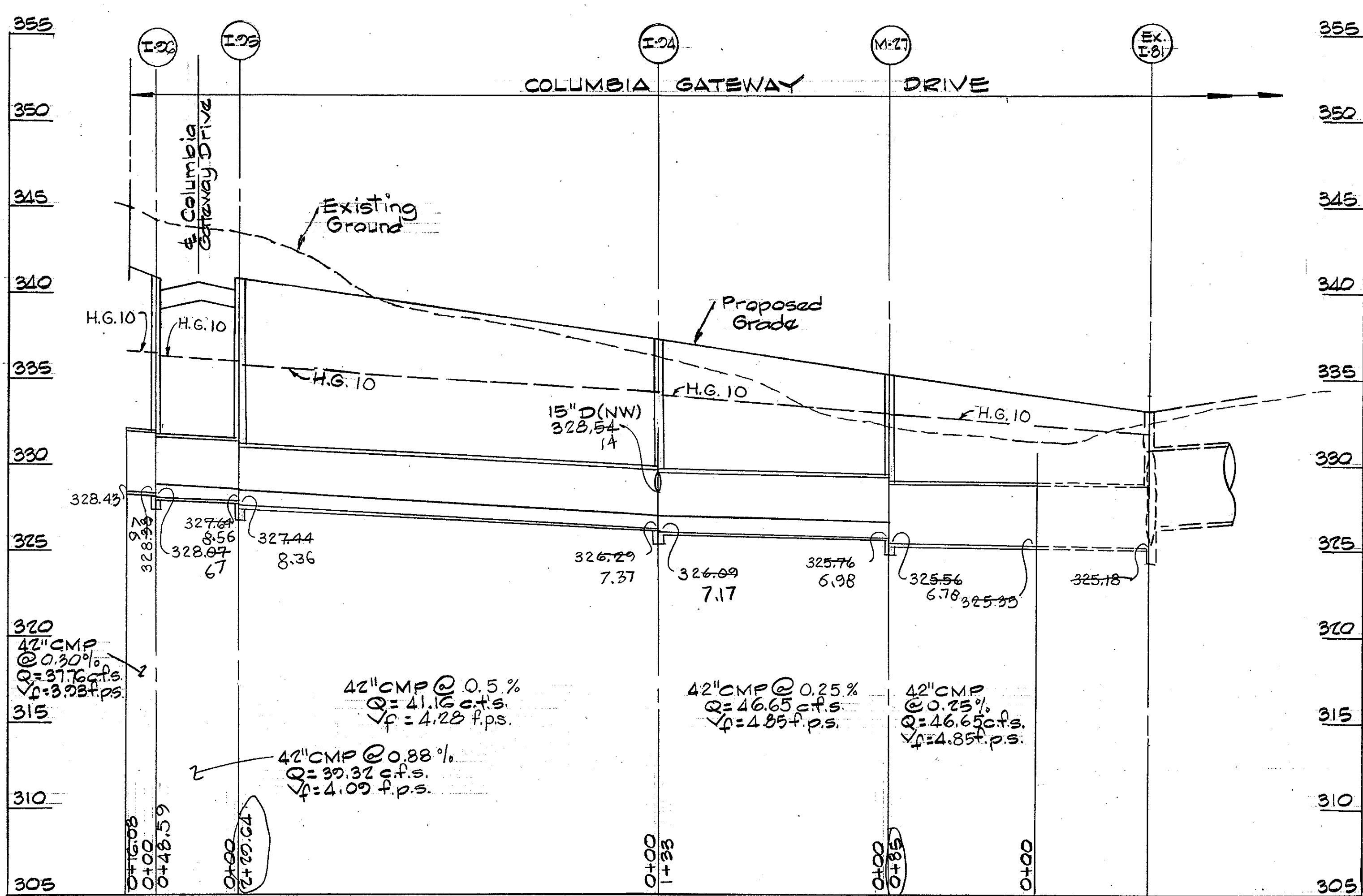
COLUMBIA
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
STORM DRAIN PROFILES
 SCALE: AS SHOWN DATE
 WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21215

Kenneth A. McCord
KENNETH A. MCCORD
 Registered Engineer
 NO. 19714



John W. Muschman 6-9-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE

Note:
 All Q's shown hereon are for a 10 Year Storm

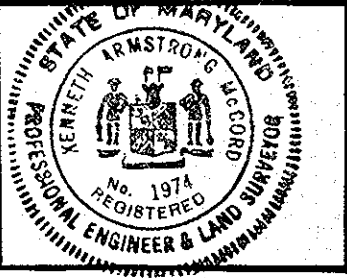


DETAIL STRUCTURE M-24
 Scale: 1/4" = 1'-0"

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 01/15/80 | 3 | Revised for Grading Change |
| 7/11/80 | 2 | As Per Health Dept. Comments |
| 5/29/86 | 1 | As per Planning, DPW & SCS Comments |

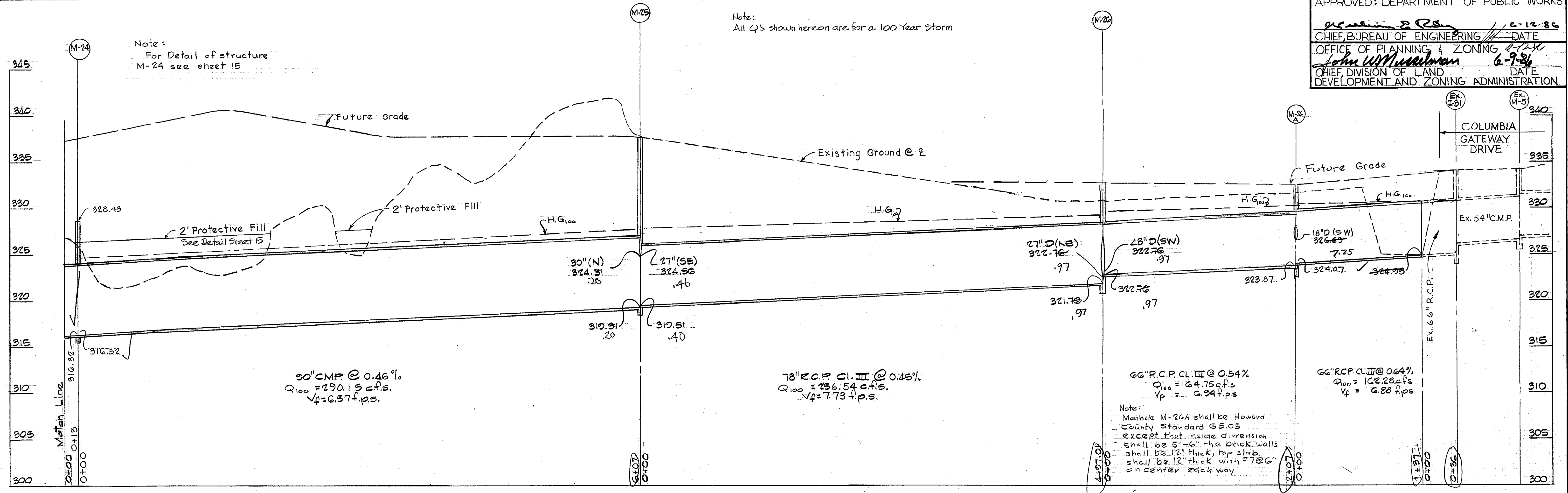
COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
**STORM DRAIN PROFILES
 AND DETAILS**
 SCALE: AS SHOWN DATE:
 WHITMAN, REQUARDT AND ASSOCIATES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

Kenneth A. McCord
 KENNETH A. McCORD
 Registered Engineer
 No. 1974



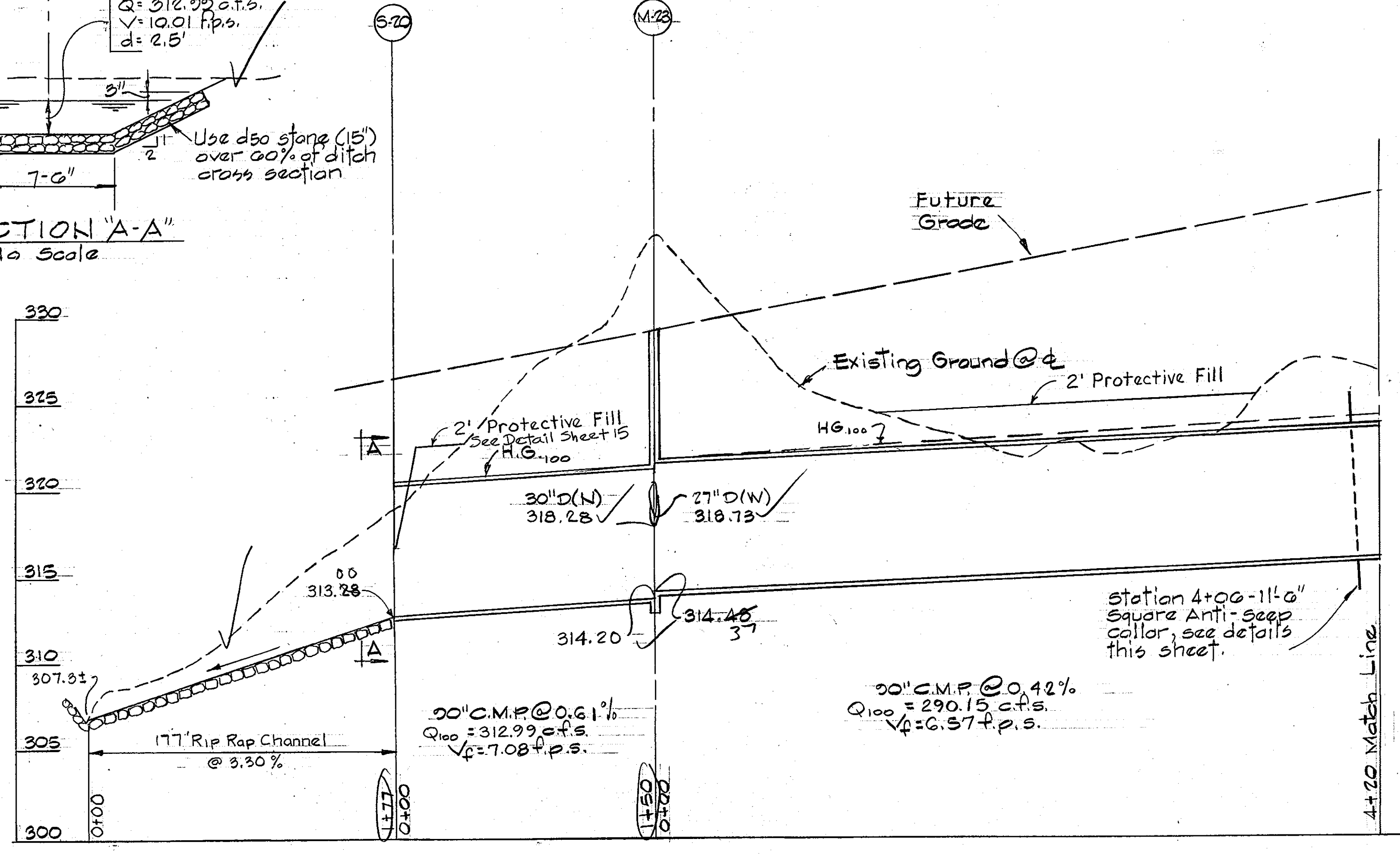
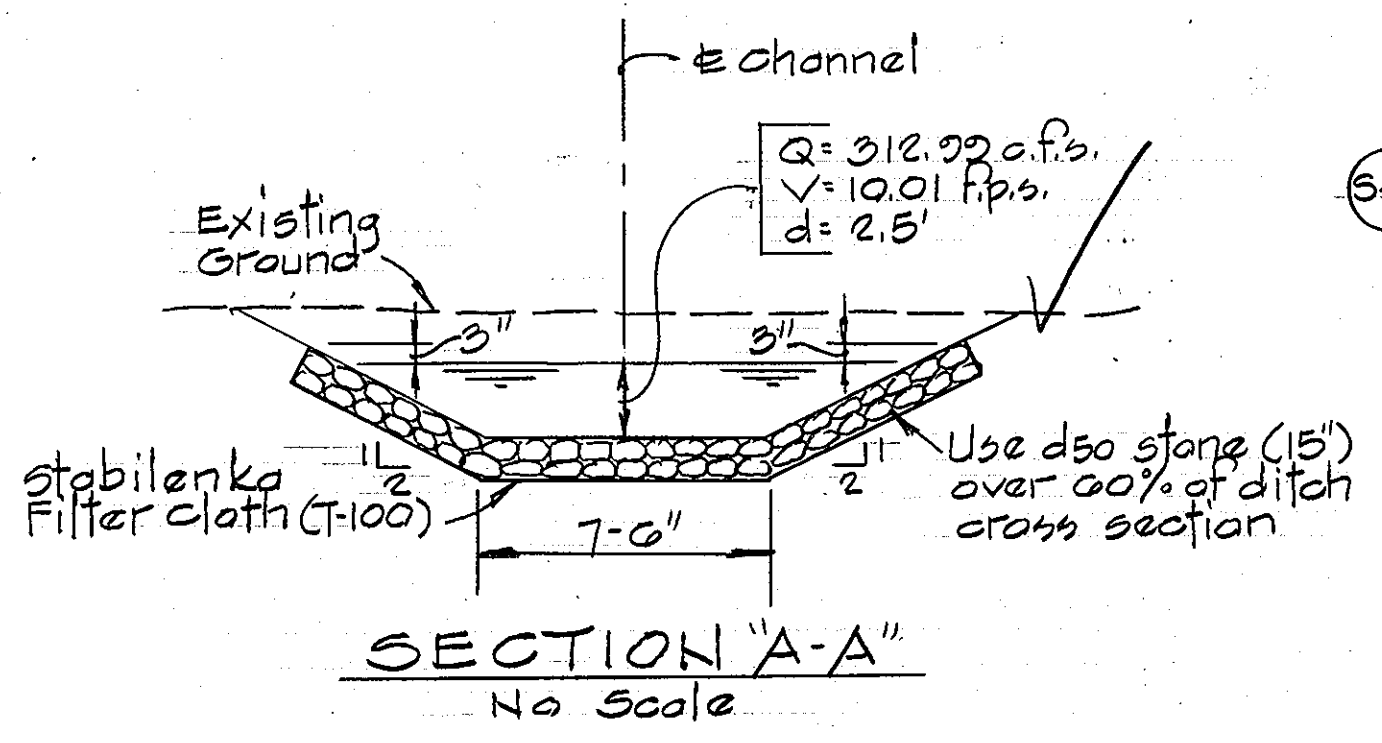
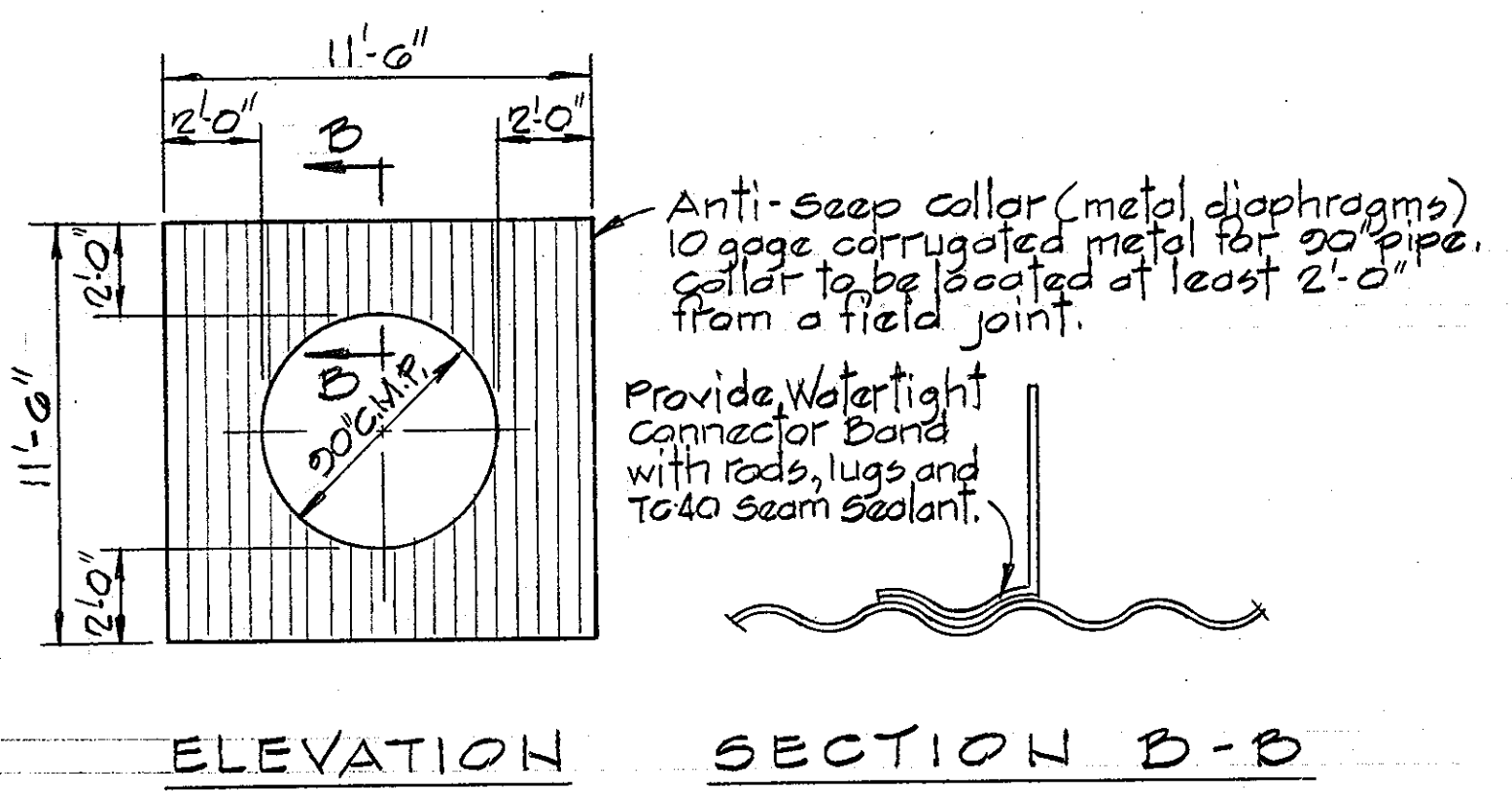
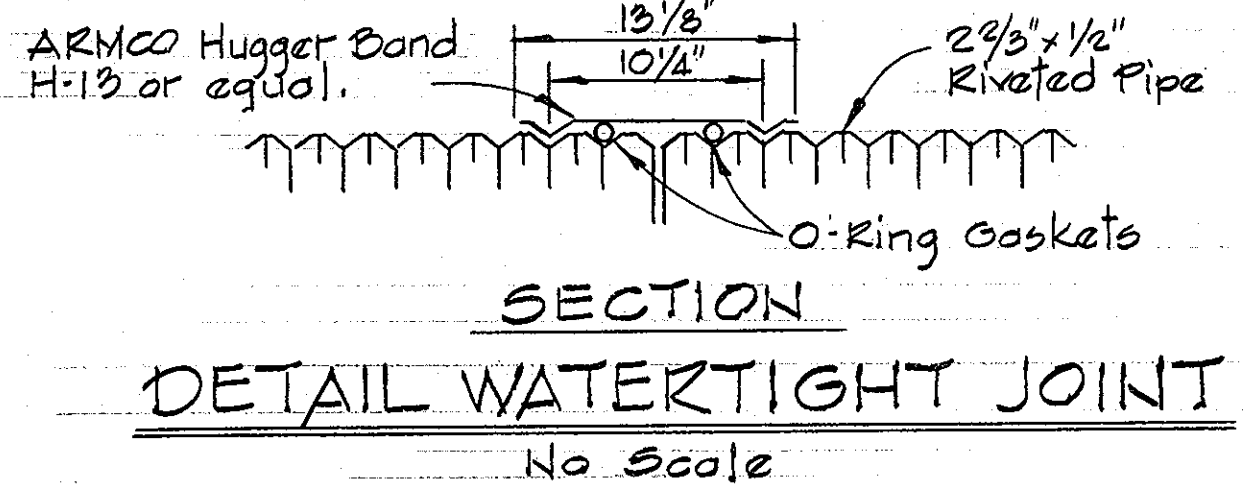
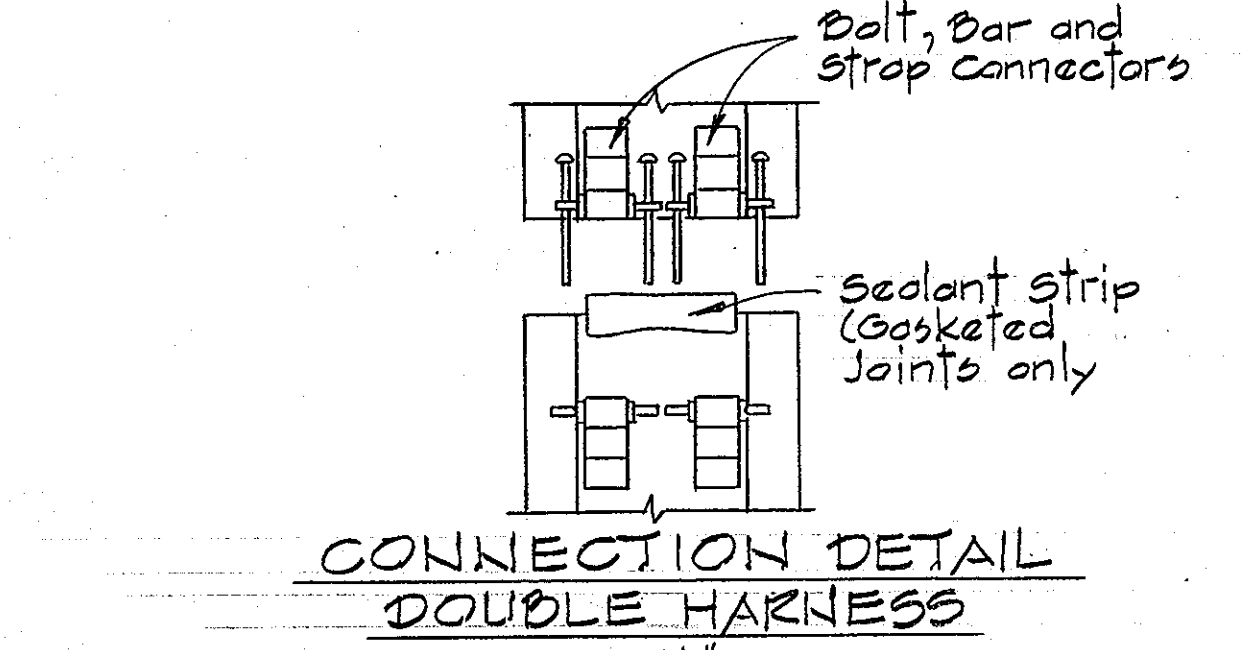
Note:
 All Q's shown hereon are for a 100 Year Storm

Note:
 For Detail of structure
 M-24 see sheet 15



Note:
 Manhole M-24 shall be Howard County Standard G 5.05 except that inside dimensions shall be 5'-6" the brick walls shall be 12" thick, top slab shall be 12" thick with #7 @ 6" on center each way

Note:
 All stubs to be sloped up at 1.00%



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

| REV. DATE | REV. NO. | REVISION DESCRIPTION |
|-----------|----------|-------------------------------------|
| 7/11/86 | 3 | As per Grading Change |
| 5/20/86 | 2 | As per Health Dept. Comments |
| 5/20/86 | 1 | As per Planning, DPW & SCS Comments |

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

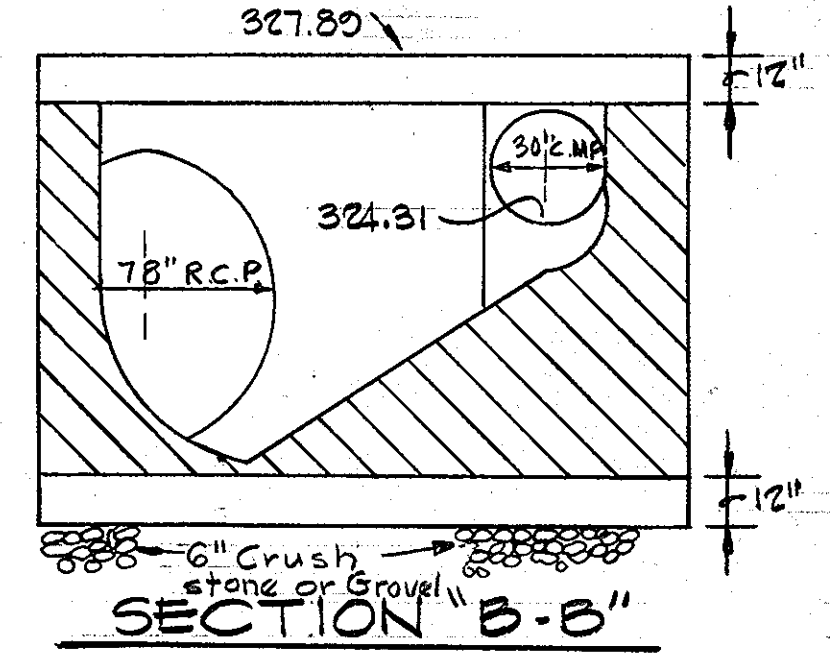
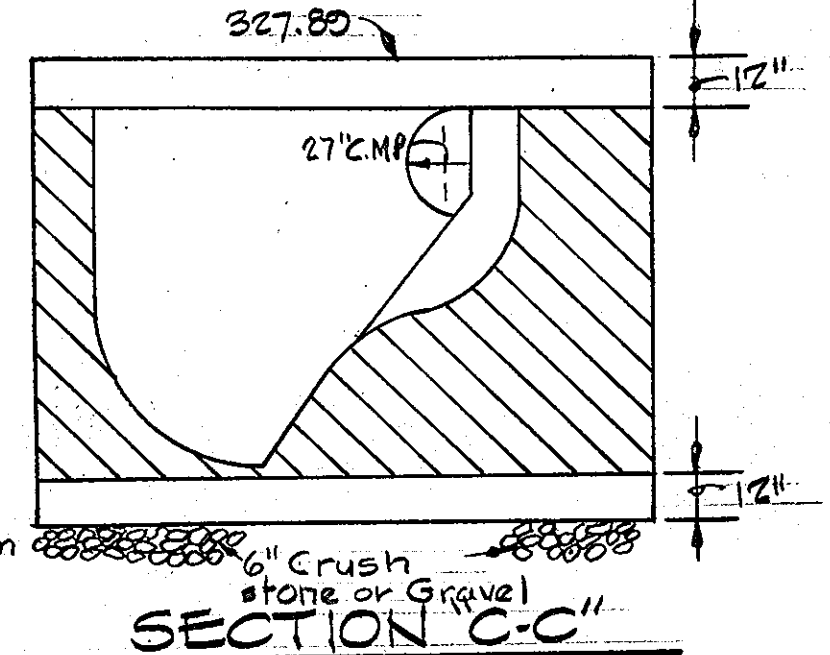
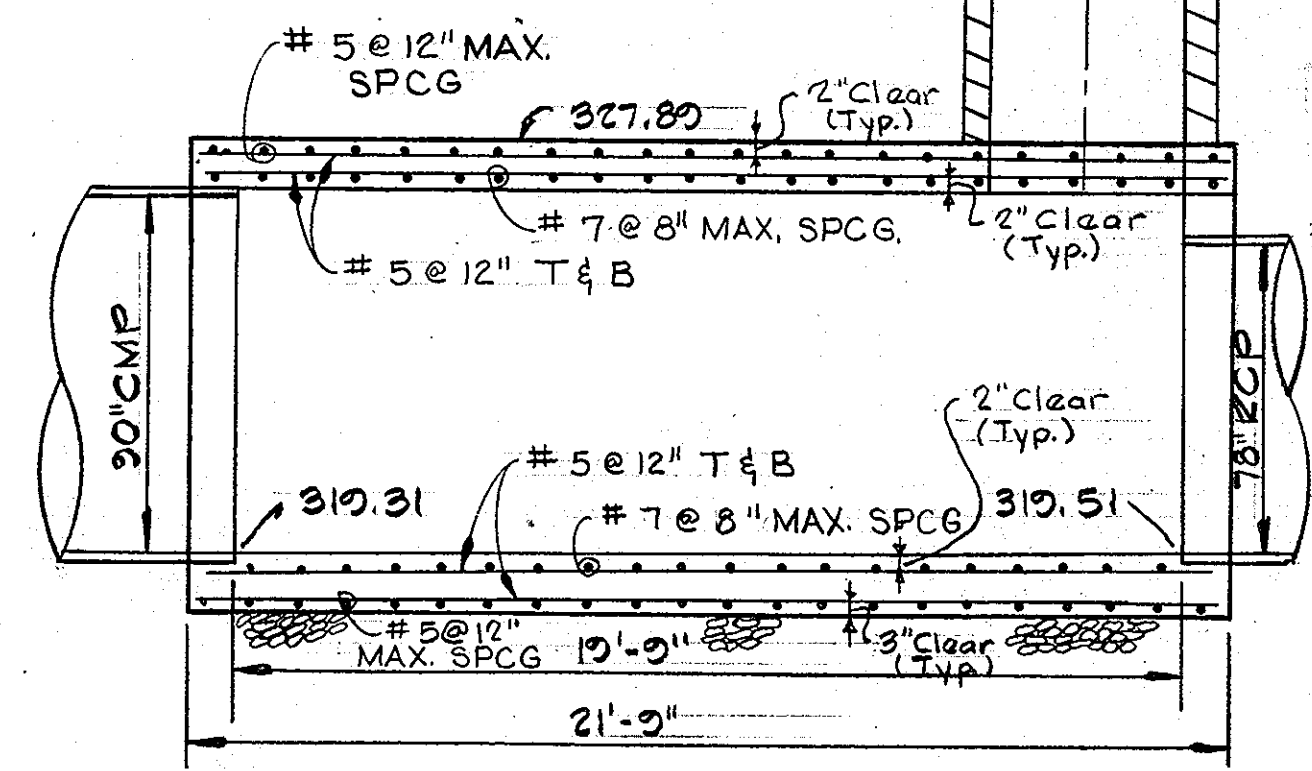
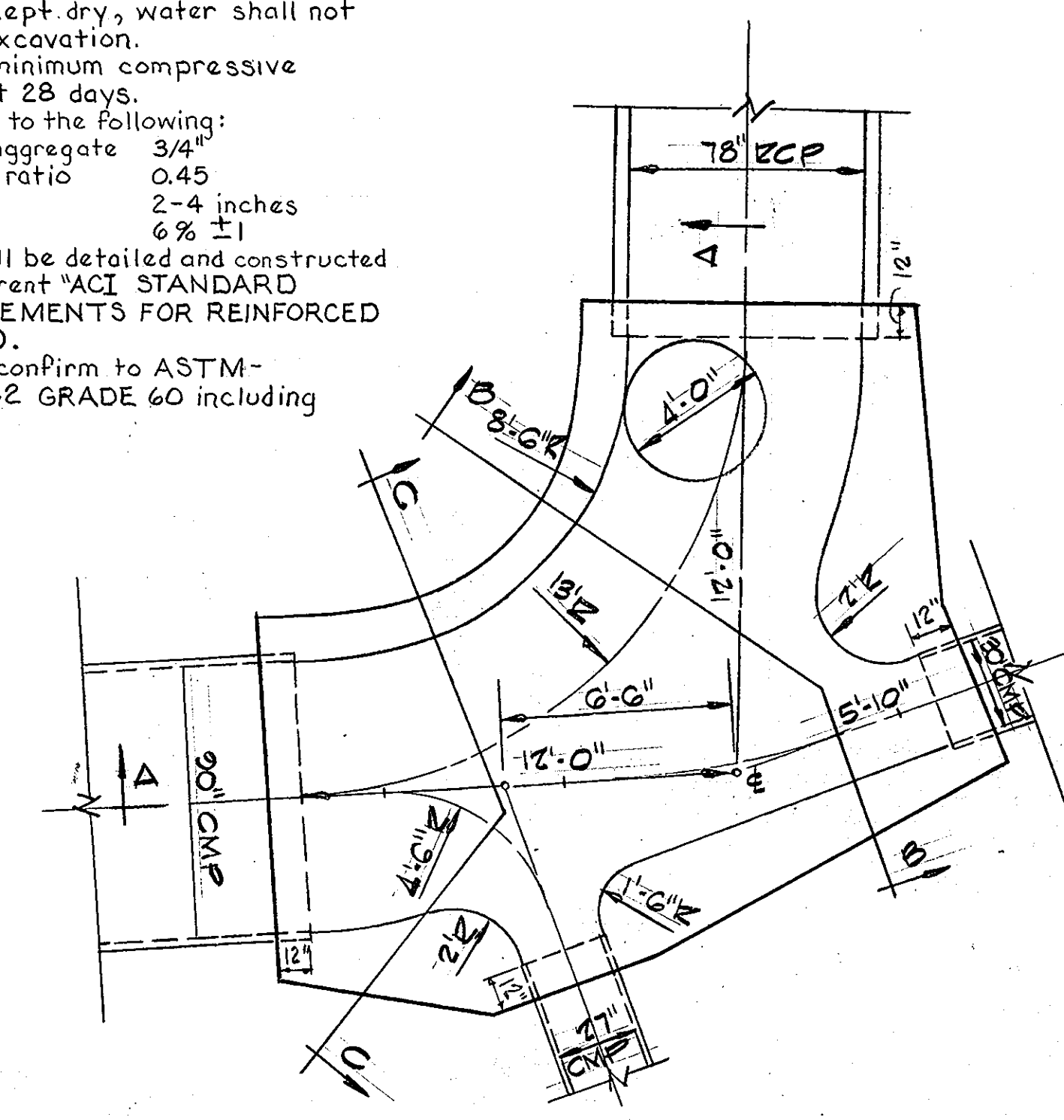
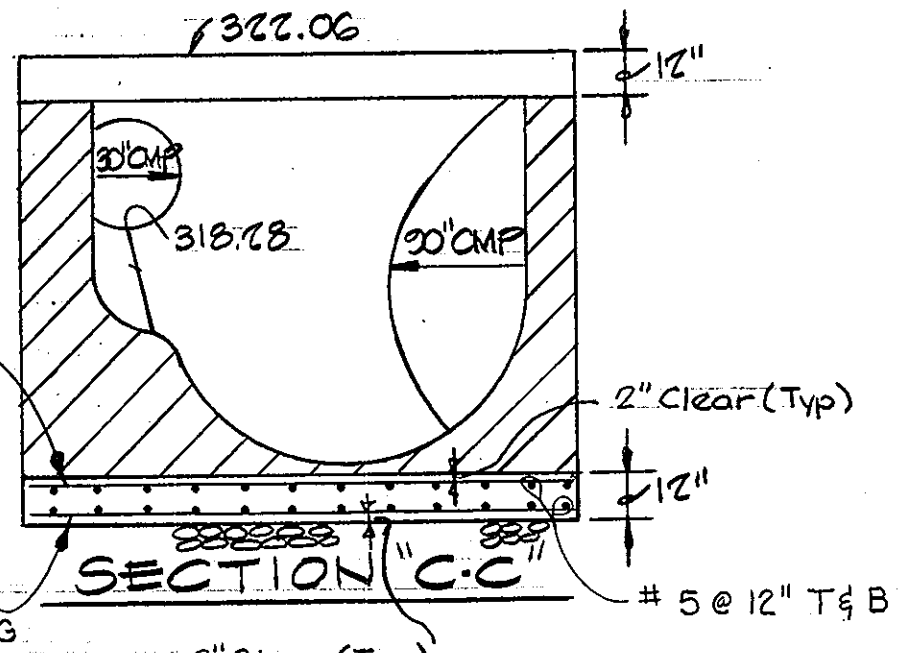
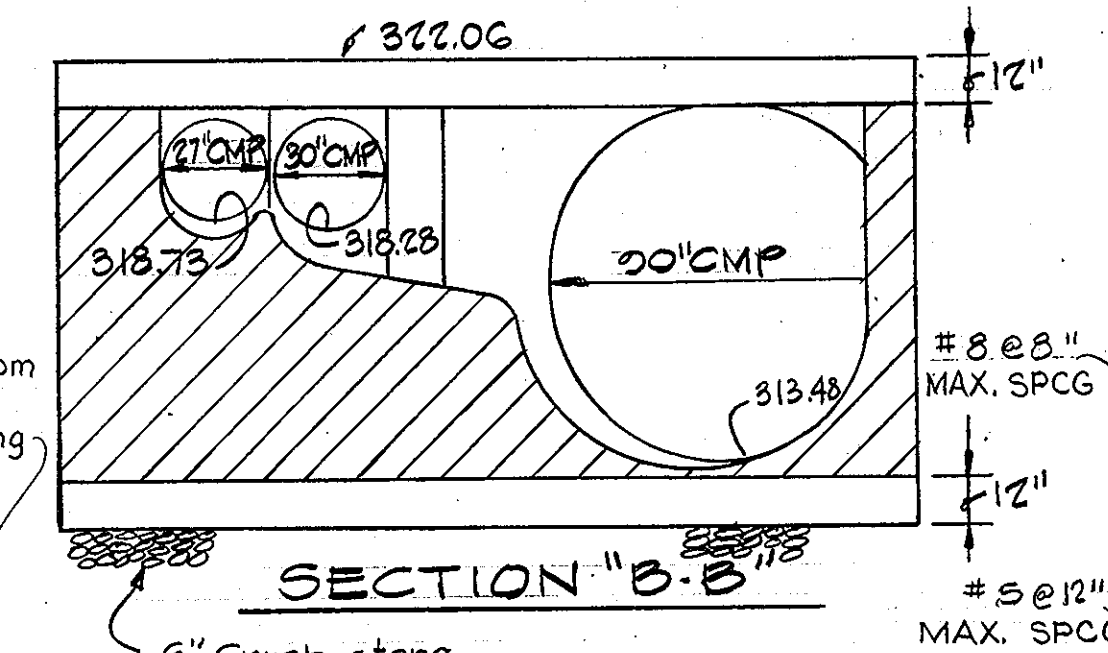
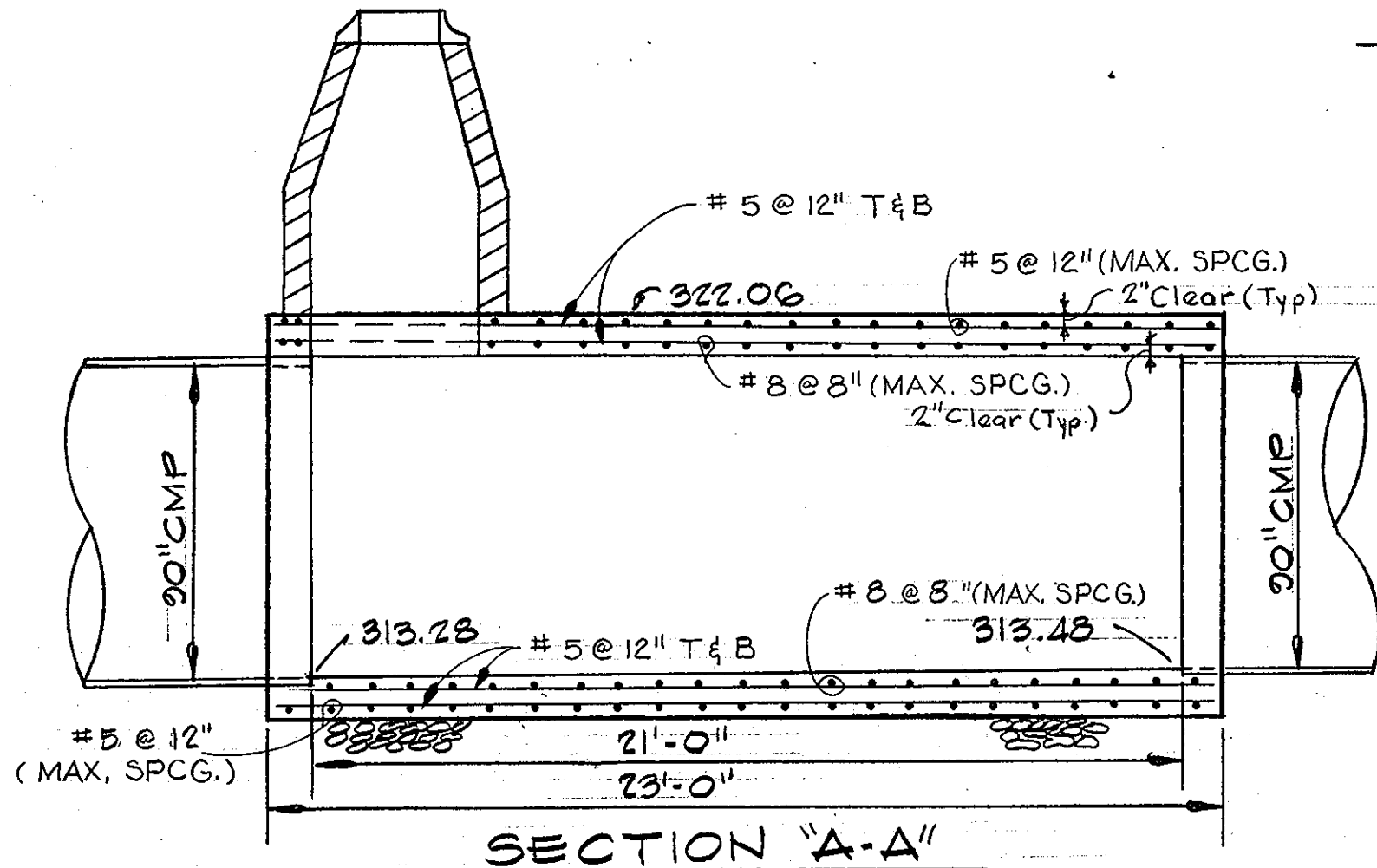
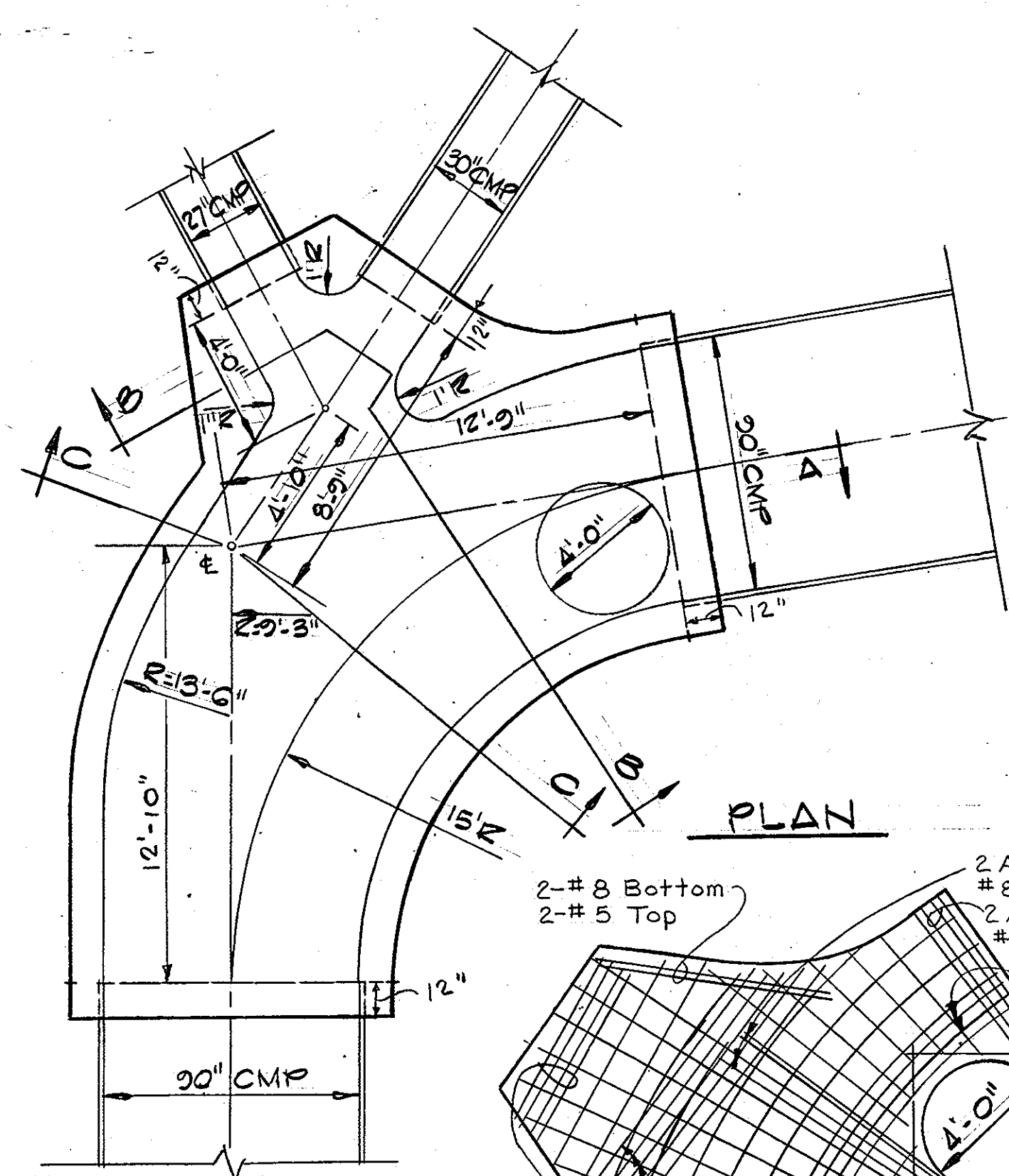
Kenneth A. McCord
 Registered Engineer
 No. 1974

1158

STRUCTURAL NOTES:

- Any excavation below the elevation of the concrete shall be filled with approved compacted fill material.
- All excavation shall be kept dry, water shall not be allowed to stand in excavation.
- All concrete shall have a minimum compressive strength of 4000 psi at 28 days.
- All concrete shall conform to the following:
 - Maximum size of coarse aggregate 3/4"
 - Maximum water cement ratio 0.45
 - Slump 2-4 inches
 - Total air content 6% ±
- Reinforced concrete shall be detailed and constructed in accordance with the current "ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (318-83).
- All reinforcement shall conform to ASTM-SPECIFICATION A-615-82 GRADE 60 including SUPPLEMENT S-1.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING & ZONING
 JOHN W. MULLERMAN 6-9-86
 CHIEF DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

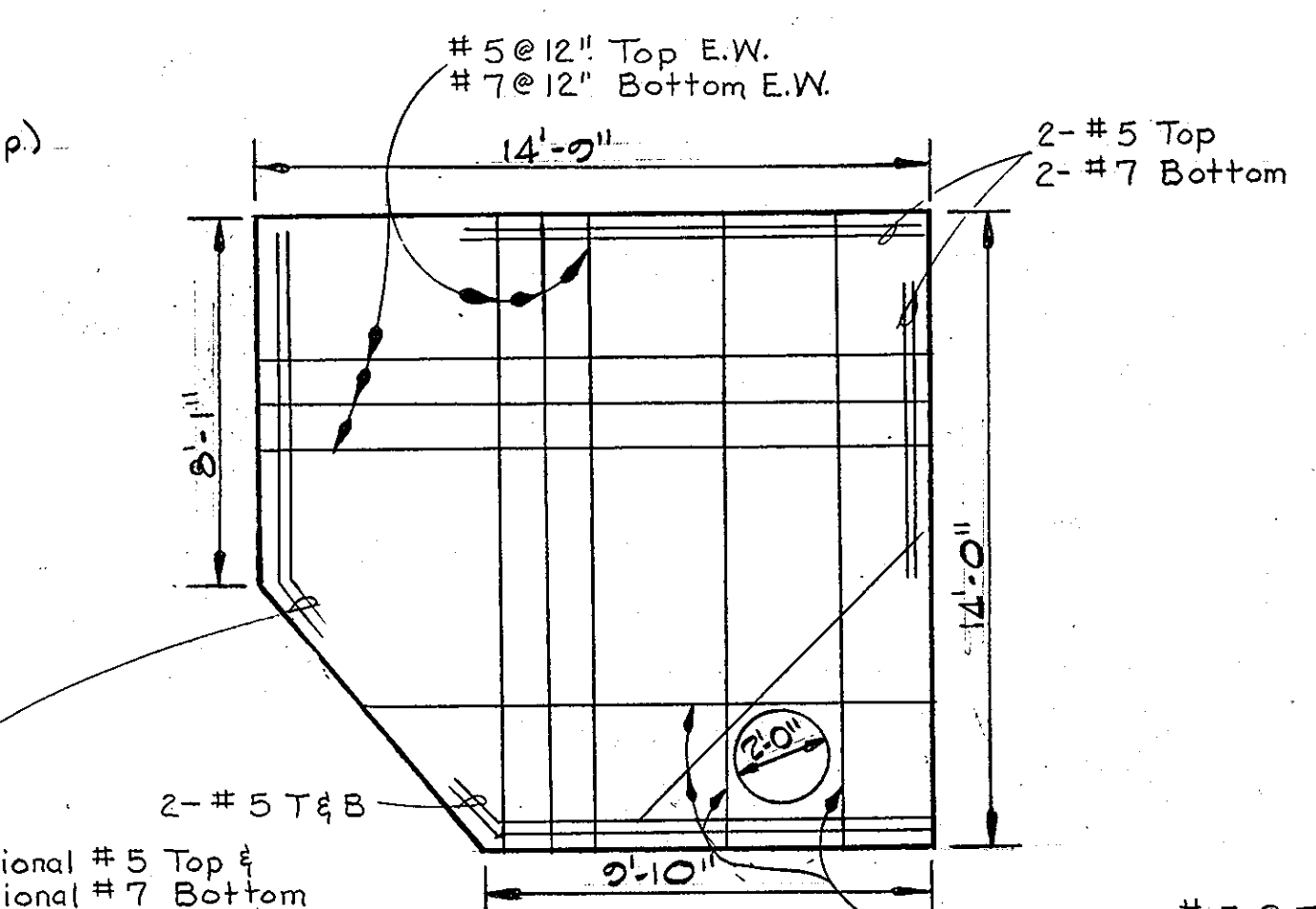
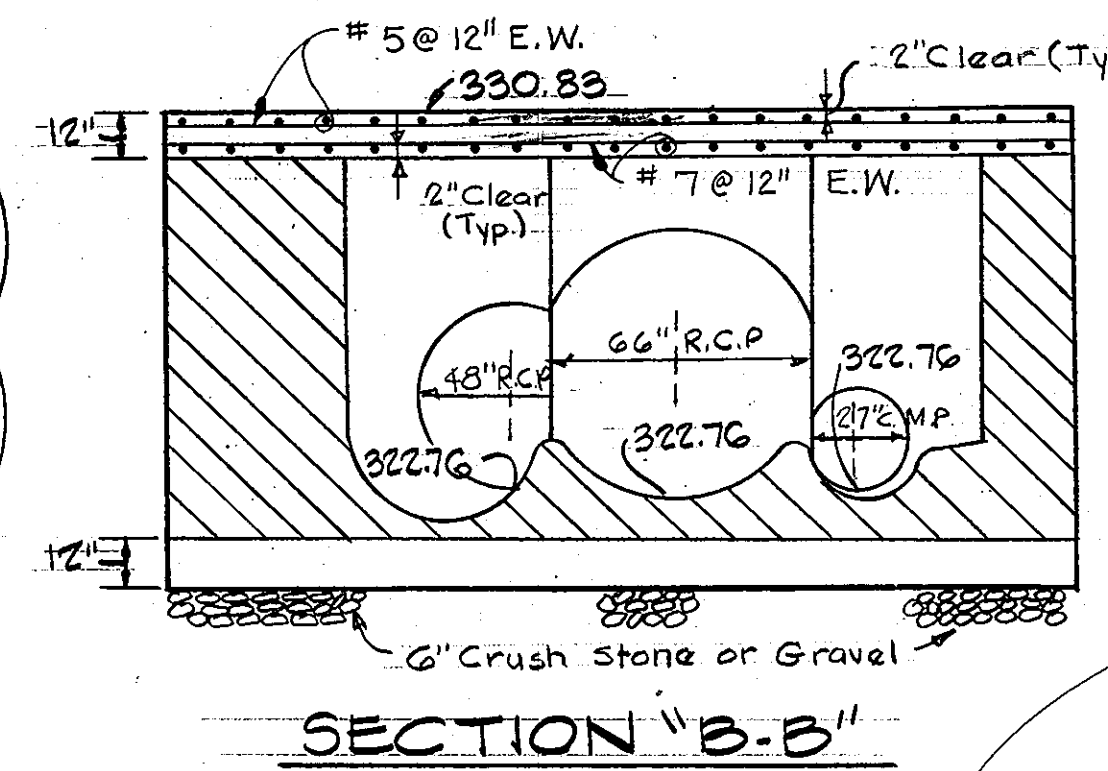
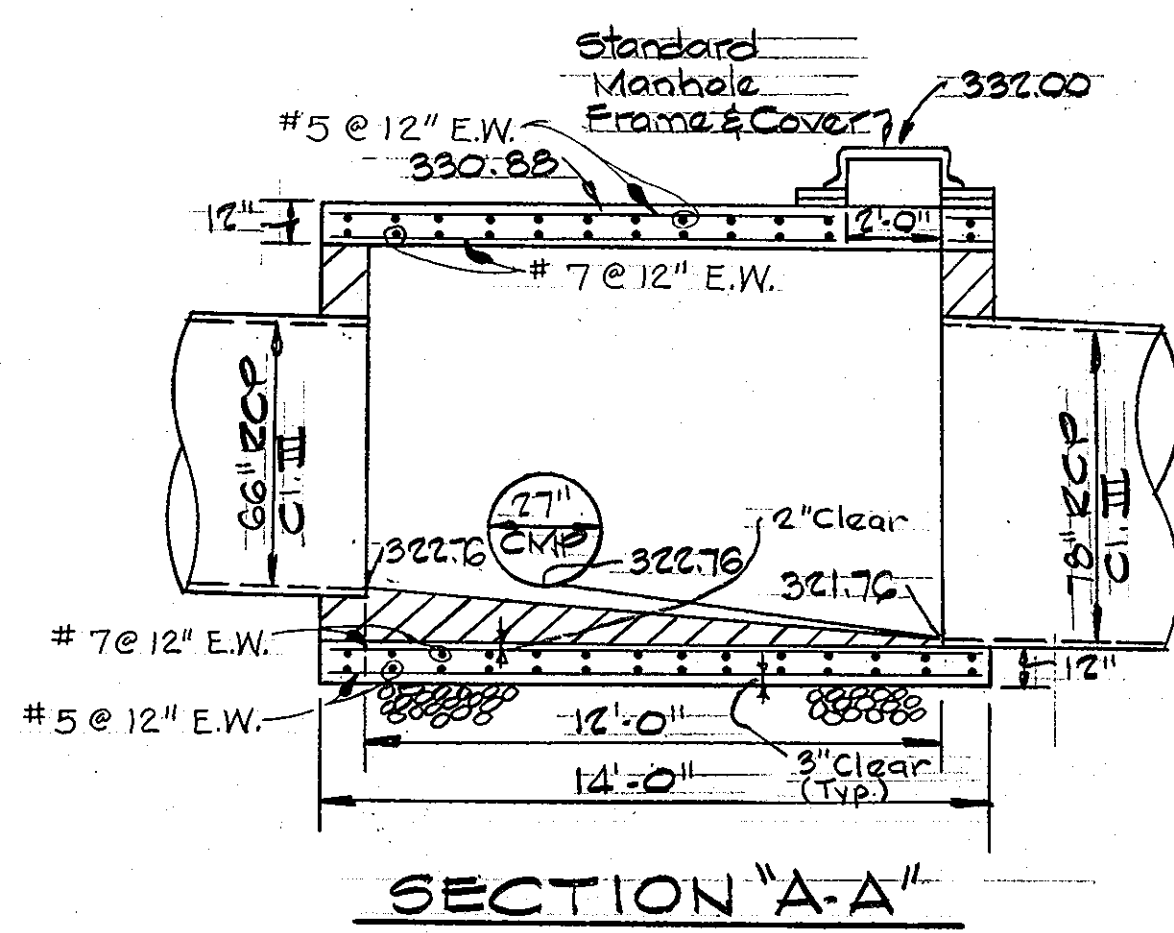
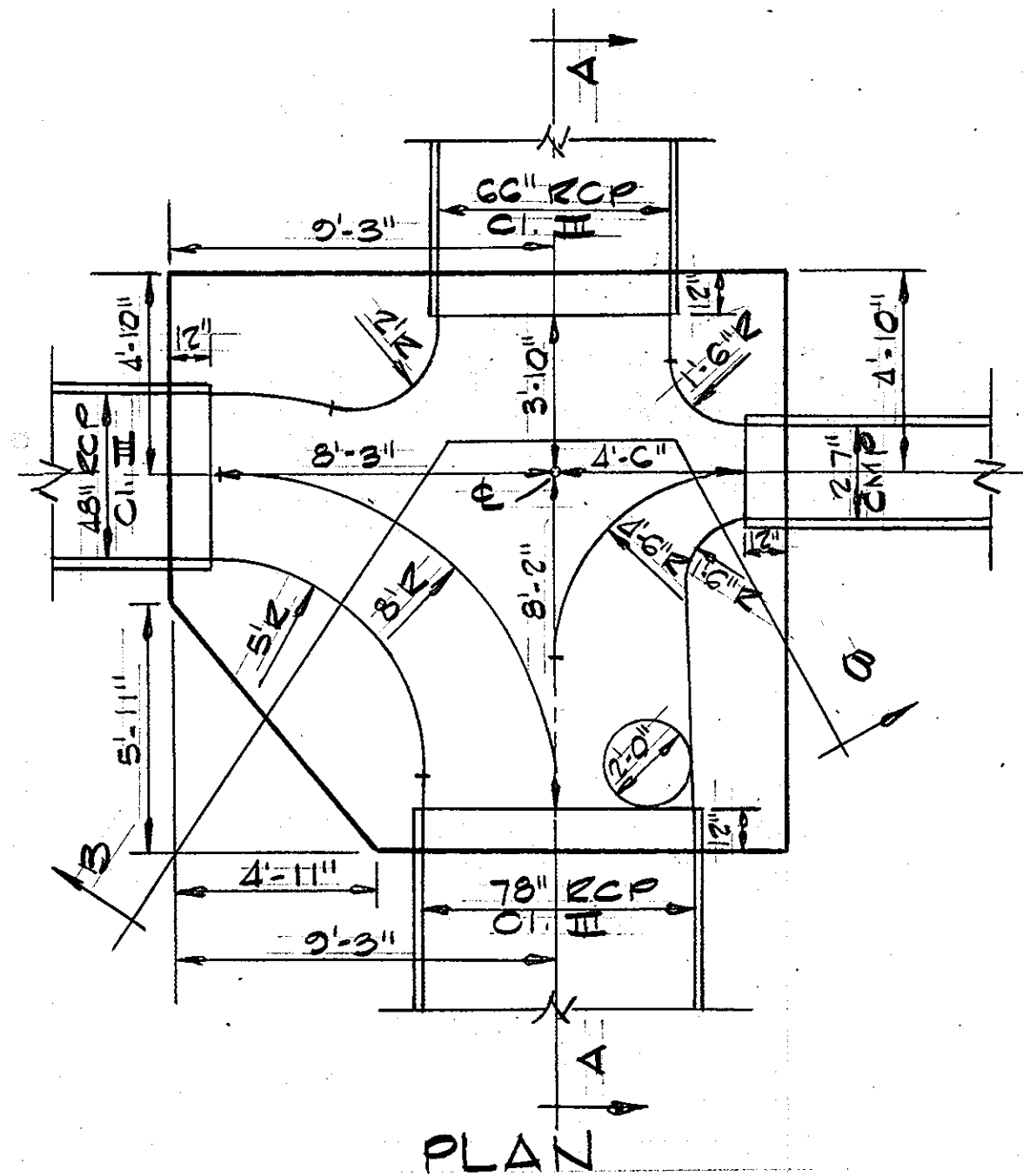


TOP SLAB REINFORCEMENT PLAN

DETAIL-MANHOLE M-23
Scale: 1/4" = 1'-0"

TOP SLAB REINFORCEMENT PLAN

DETAIL-MANHOLE M-25
Scale: 1/4" = 1'-0"



DETAIL-MANHOLE M-26
Scale: 1/4" = 1'-0"

TOP SLAB REINFORCEMENT PLAN

| REV. DATE | REV. NO. | DESCRIPTION |
|-----------|----------|-------------------------------------|
| 5/29/86 | 1 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION

PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K

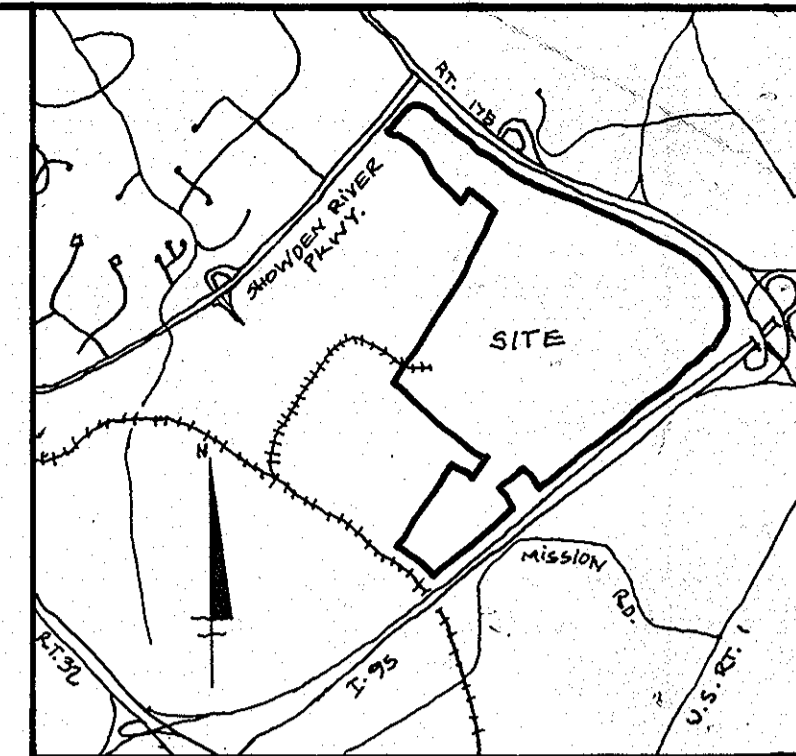
PROJECT TITLE
STORM DRAIN DETAILS

SCALE: AS SHOWN DATE

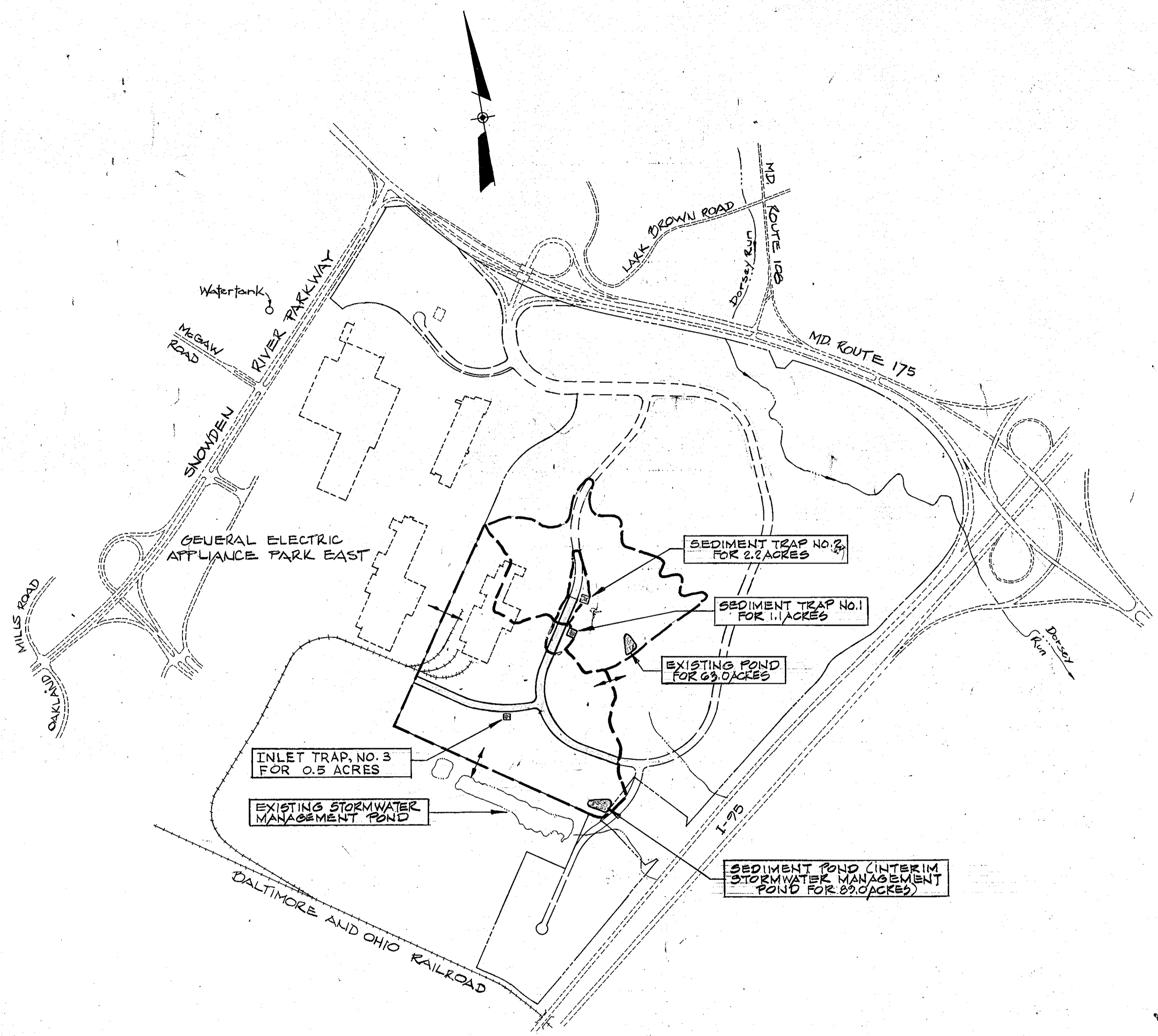
WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

Kenneth A. McCord
 Registered Engineer
 No. 1974

APPROVED: DEPARTMENT OF PUBLIC WORKS
 2/2/86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
 Kenneth A. McCord 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 AND ZONING ADMINISTRATION



VICINITY MAP
 Scale: 1" = 3500'



DRAINAGE AREA MAP
 Scale: 1" = 800'

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. CLEAR AND GRUB AREAS FOR SEDIMENT CONTROL FACILITIES ONLY. (2 WEEKS)
- * 3. INSTALL STABILIZED CONSTRUCTION ENTRANCE, ENLARGE EXISTING SEDIMENT TRAP NO. 2, CONSTRUCT SEDIMENT TRAP NO. 1, NO. 3 AND SEDIMENT POND, INSTALL TEMPORARY PIPES AT STATIONS 00+95, 00+80 AND 100+50, INSTALL SILT FENCE AND EARTH DIKES. (2 WEEKS)
4. STABILIZE EARTH DIKES WITH TEMPORARY SEEDING, SEE SEEDING NOTES ON SHEET 25. (2 DAYS)
5. STRIP AND ROUGH GRADE LIMITS OF CONSTRUCTION. (5 WEEKS)
6. INSTALL INTERCEPTOR SWALE AT STATION 107+15. (1 DAY)
7. SEED ALL SLOPES WITH TEMPORARY SEEDING, SEE SEEDING NOTES ON SHEET 25. (1 WEEK)
8. CONSTRUCT ALL UTILITIES. (10 WEEKS)
9. FINE GRADE ROADS, CONSTRUCT CURB AND GUTTER AND INSTALL PAVING. (4 WEEKS)
10. SEED ALL DISTURBED AREAS. (4 WEEKS)
11. ALL SEDIMENT CONTROL FACILITIES (EXCEPT STORMWATER MANAGEMENT POND AND EXISTING POND ON PARCEL M) MAY BE REMOVED AFTER GRASS IS ESTABLISHED IN THE CONTRIBUTING DRAINAGE AREAS. STABILIZE "SEDIMENT TRAP REMOVAL AREA" SEE TEMPORARY SEEDING NOTES ON SHEET 25.

* 3A ALSO REFURBISH EXISTING POND FOR SEDIMENT CONTROL FOR STORM DRAIN CONSTRUCTION.

| NO. | DATE | REVISION DESCRIPTION |
|-----|---------|-------------------------------------|
| 1 | 5/29/86 | As per Planning, DPW & SCS Comments |

COLUMBIA GATEWAY
 6TH ELECTION DISTRICT
 HOWARD COUNTY MARYLAND
 OWNER AND DEVELOPER
 THE HOWARD RESEARCH
 AND DEVELOPMENT CORPORATION
 PROJECT AREA
 PARCELS L THRU O
 A RESUBDIVISION OF PARCEL K
 PROJECT TITLE
 SEDIMENT CONTROL AND
 STORMWATER MANAGEMENT
 FOR ROAD CONSTRUCTION
 SCALE: AS SHOWN DATE:
 WHITMAN, REQUARDT AND ASSOCIATES
 ENGINEERS
 BALTIMORE, MARYLAND 21218

REVIEWED FOR HOWARD SOIL
 AND MEETS TECHNICAL REQUIREMENTS

James M. Allen 6-6-86
 DATE
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS
 APPROVED FOR SOIL EROSION
 AND SEDIMENT CONTROL BY
 THE HOWARD SOIL
 CONSERVATION DISTRICT
 APPROVED *Charles J. Zeller*
 HOWARD S.C.D. DATE
 6/9/86

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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

Walter E. Woodford 4-1-86
 WALTER E. WOODFORD DATE

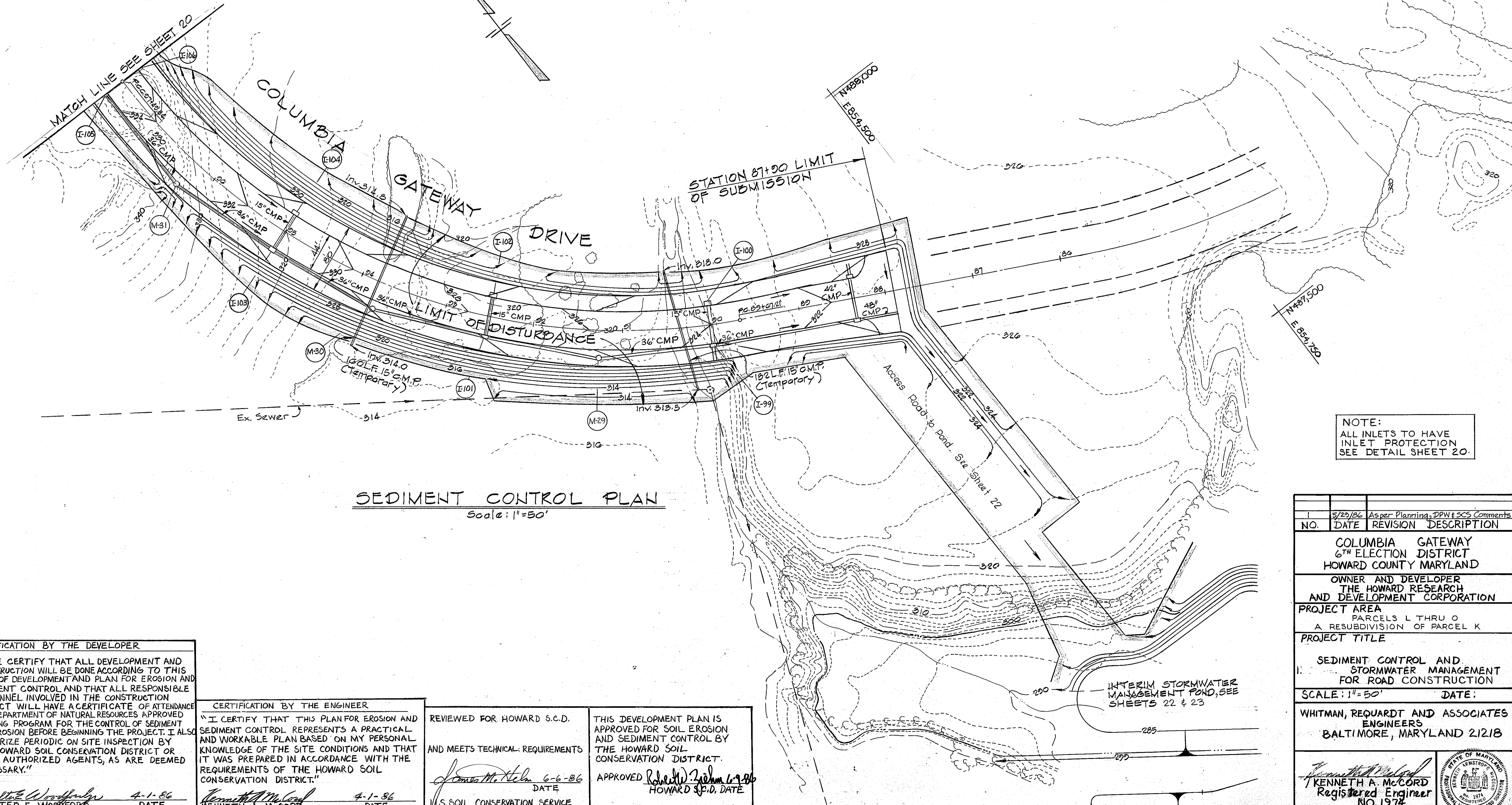
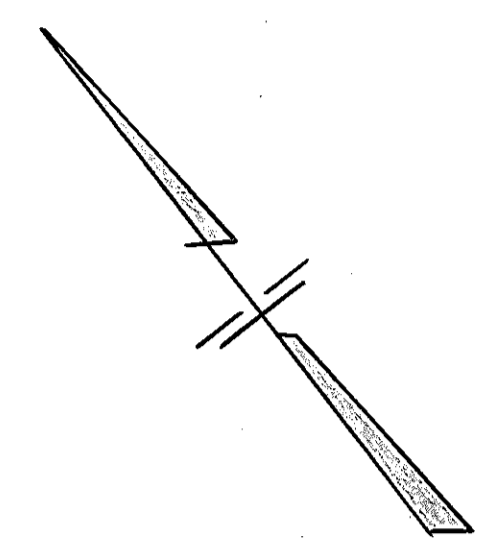
CERTIFICATION BY THE ENGINEER
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Kenneth A. McCord 4-1-86
 KENNETH A. MCCORD DATE



John W. Woodford 4-1-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
John W. Woodford 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE

☉ CURVE DATA
 P.C. 87+07.21 TO P.O.C. 97+149.84
 $\Delta = 64^{\circ}09'32''$ Tan = 487.91'
 $R = 700.00'$ Chd. = 742.50'
 $Area = 782.63'$ Chd. Brg. = $N31^{\circ}24'34''W$



SEDIMENT CONTROL PLAN
Scale: 1" = 50'

NOTE:
ALL INLETS TO HAVE
INLET PROTECTION
SEE DETAIL SHEET 20.

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 DEPARTMENT 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 4-1-86
 WALTER E. WOODFORD DATE

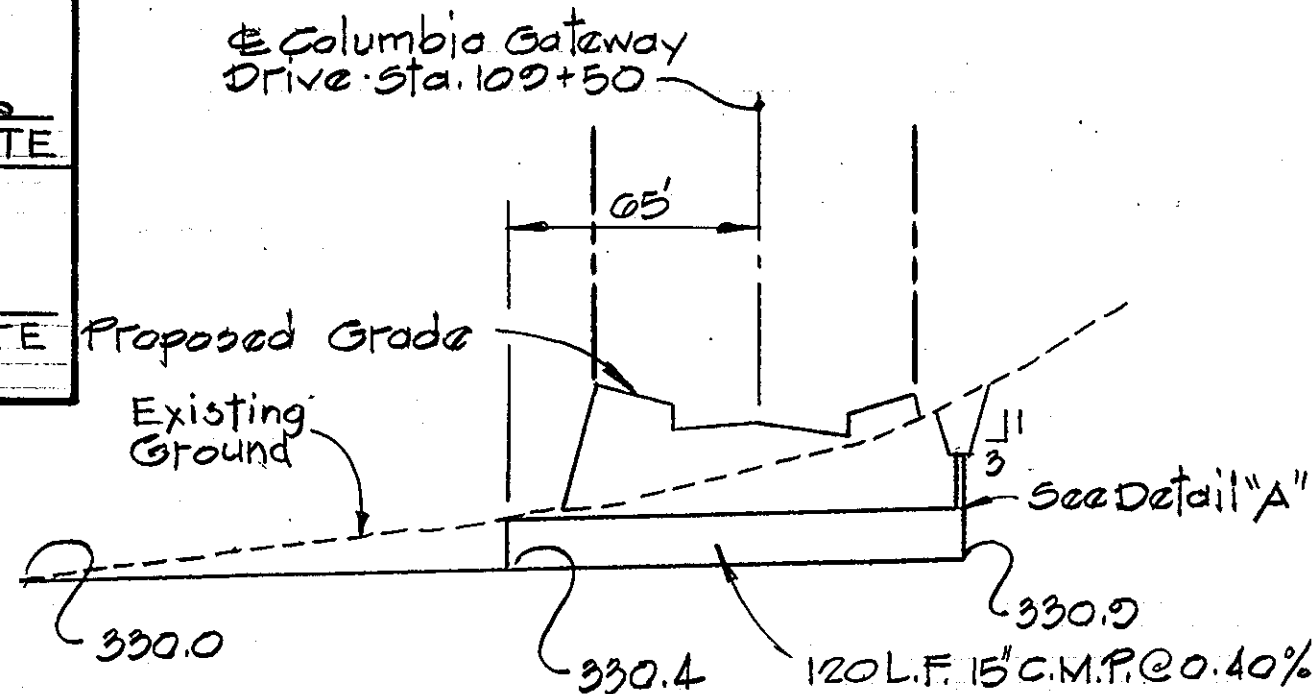
CERTIFICATION BY THE ENGINEER
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
Kenneth A. McCord 4-1-86
 KENNETH A. MCCORD DATE

REVIEWED FOR HOWARD S.C.D.
 AND MEETS TECHNICAL REQUIREMENTS
James M. Nelson 6-6-86
 DATE
 U.S. SOIL CONSERVATION SERVICE

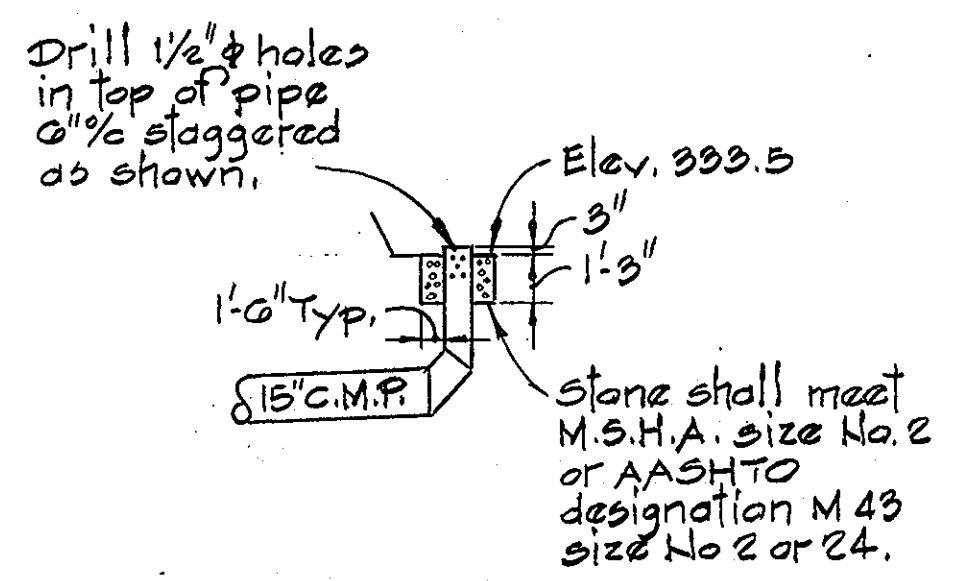
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED *Robert W. Johnson* 6-9-86
 HOWARD S.C.D. DATE

| NO. | DATE | REVISION DESCRIPTION |
|-----|---------|-------------------------------------|
| 1 | 5/29/86 | As per Planning, DPW & SCS Comments |

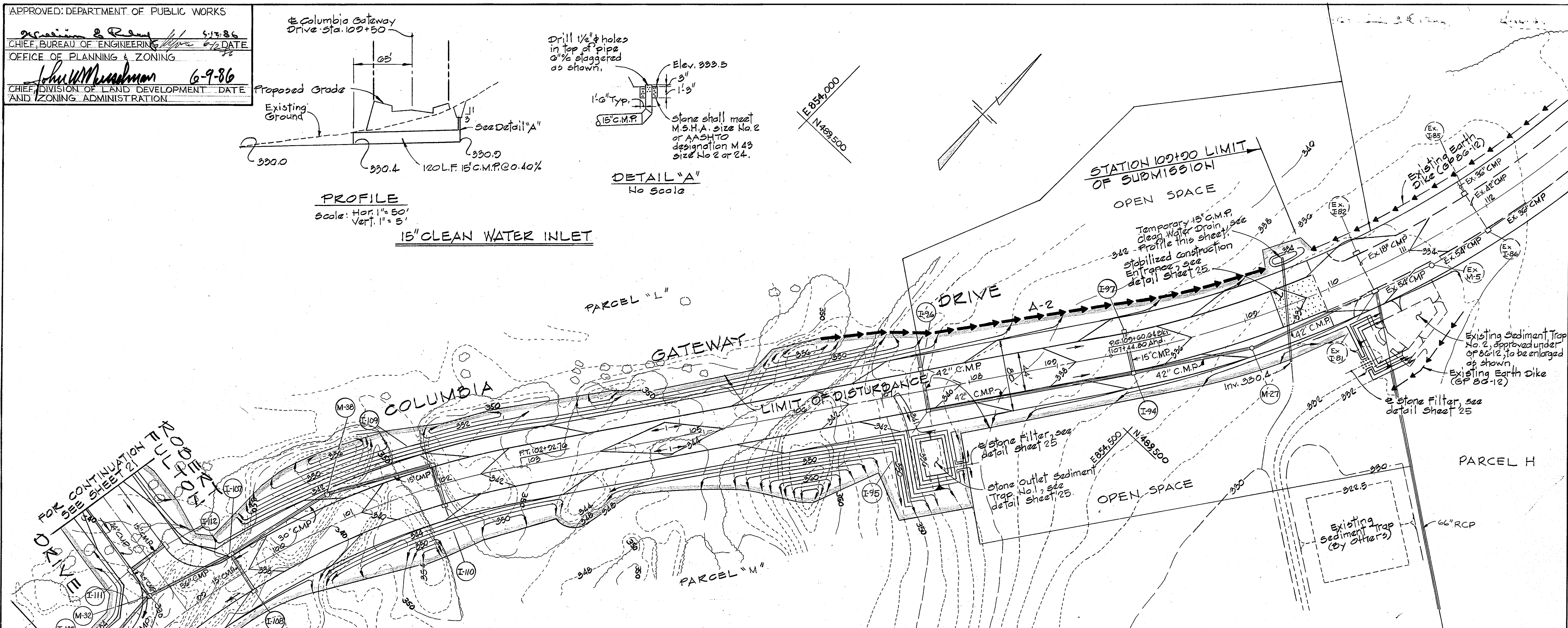
COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND
OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K
PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION
SCALE: 1" = 50' DATE:
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
Kenneth A. McCord
KENNETH A. MCCORD Registered Engineer NO. 1974



PROFILE
 Scale: Hor. 1" = 50'
 Vert. 1" = 5'
15" CLEAN WATER INLET



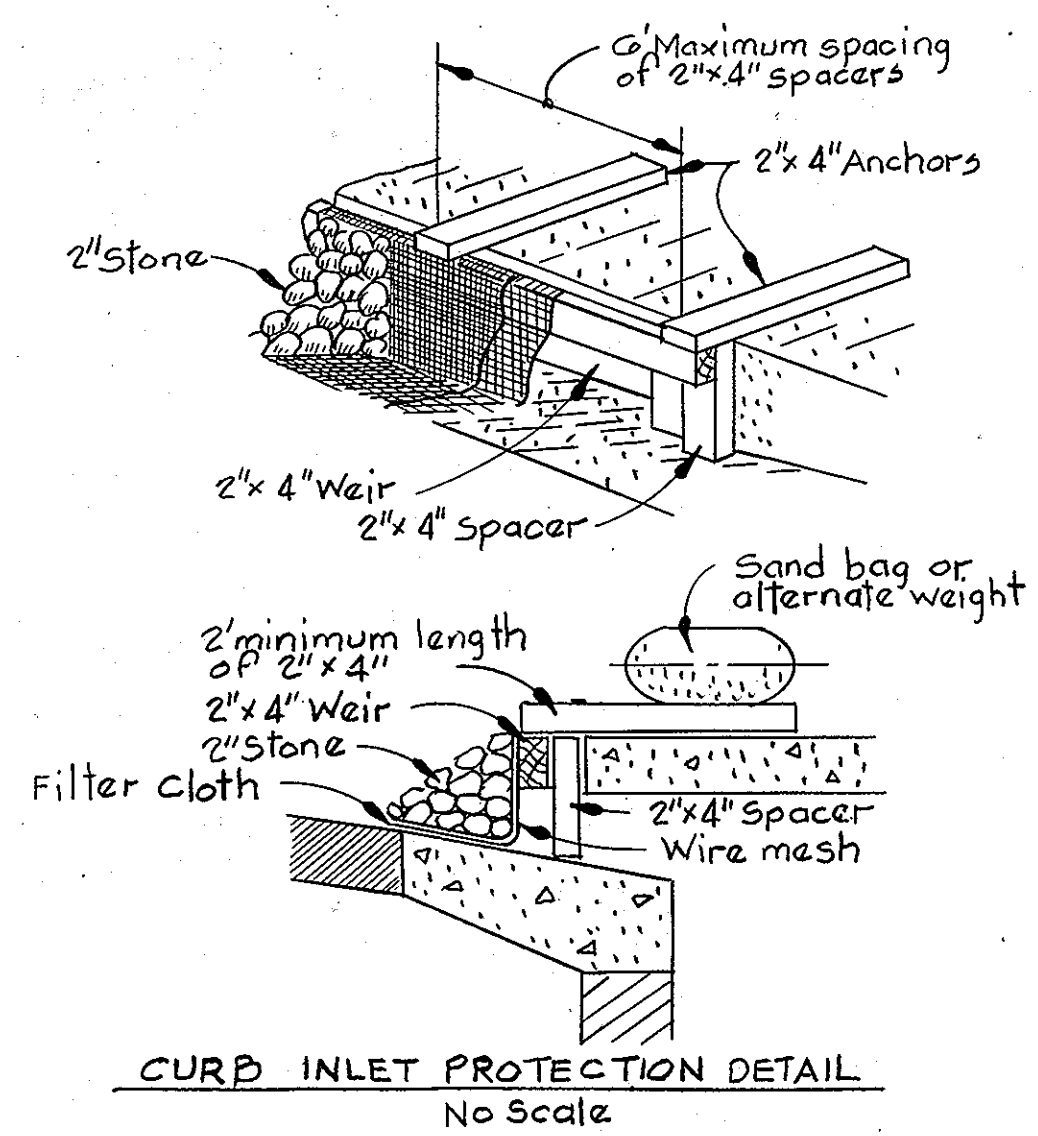
DETAIL "A"
 No Scale



SEDIMENT CONTROL PLAN
 Scale: 1" = 50'

CURVE DATA

| | |
|---|---|
| PT. 102+22.77 TO PT. 102+22.70 | PC. 107+44.80 TO PT. 112+22.00 |
| $\Delta = 26^{\circ}06'05''$ Tan: 208.62' | $\Delta = 28^{\circ}07'51''$ Tan: 283.11' |
| $R = 200.00'$ chd: 400.40' | $R = 1130.00'$ chd: 549.25' |
| Arc: 410.00' chd: 222^{\circ}07'58'' E | Arc: 554.80' chd: 210^{\circ}04'' E |



CURB INLET PROTECTION DETAIL
 No Scale

SEDIMENT TRAP DESIGN DATA

| | |
|--|---|
| <p>STONE OUTLET SEDIMENT TRAP NO. 1</p> <p>DRAINAGE AREA = 1.1 ACRES DISTURBED AREA = 1.1 ACRES * VOLUME REQUIRED = 210 CY VOLUME AVAILABLE = 234 CY TOP OF BERM ELEVATION = 342.0 WEIR CREST ELEVATION = 341.0 STORAGE ELEVATION = 340.0 BOTTOM TRAP ELEVATION = 336.0 SIZE OF TRAP @ CONTOUR 336 = 25' x 40' LENGTH OF WEIR = 5'</p> | <p>EXISTING STONE OUTLET SEDIMENT TRAP NO. 2</p> <p>DRAINAGE AREA = 2.2 ACRES DISTURBED AREA = 2.2 ACRES * VOLUME REQUIRED = 387.2 CY VOLUME AVAILABLE = 300 CY TOP OF BERM ELEVATION = 333.0 WEIR CREST ELEVATION = 332.0 STORAGE ELEVATION = 331.0 BOTTOM TRAP ELEVATION = 328.0 SIZE OF TRAP @ CONTOUR 328 = 28' x 40' LENGTH OF WEIR = 9'</p> |
|--|---|

* STORMWATER MANAGEMENT DESIGN GOVERNS

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
 Kenneth A. Mc Cord 6-6-86 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. Mc Cord 6-9-86 HOWARD S.C.D. DATE

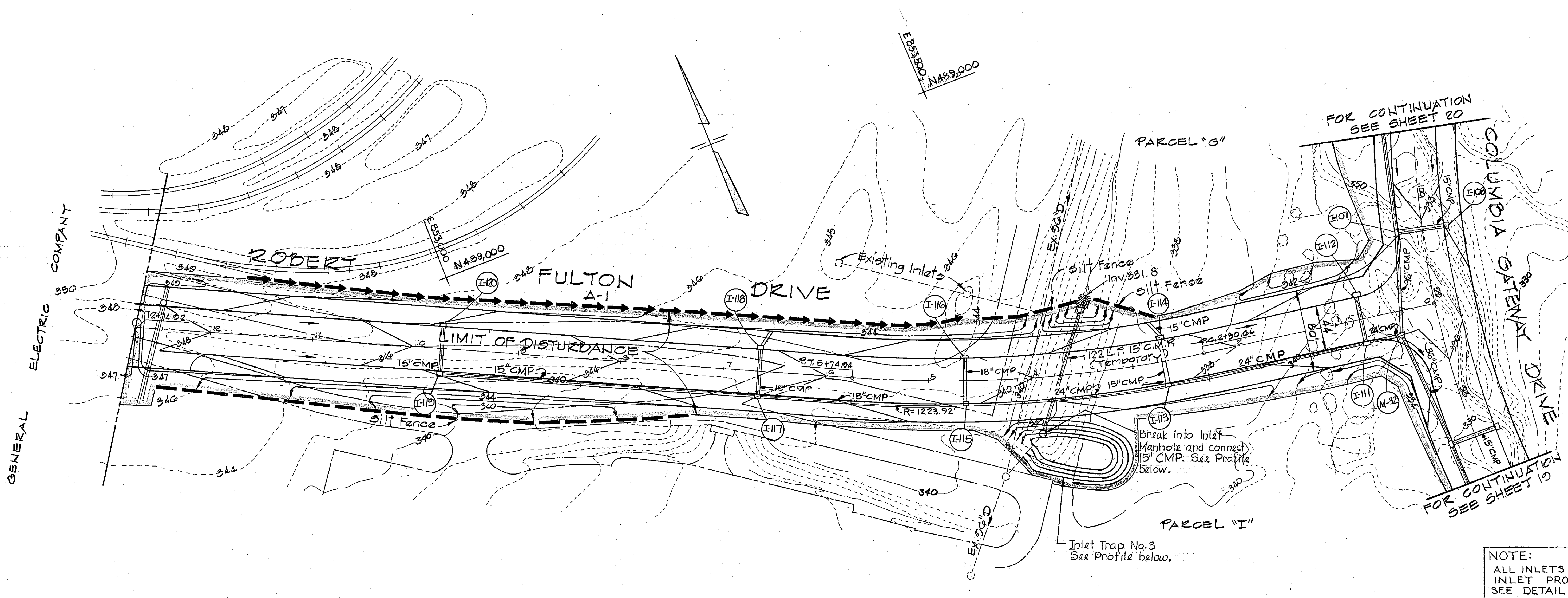
CERTIFICATION BY THE ENGINEER
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
 Kenneth A. Mc Cord 4-1-86 DATE
 KENNETH A. McCORD

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 DEPARTMENT 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. Woodruff 4-1-86 DATE
 WALTER E. WOODRUFF

| | | |
|--|---------|-------------------------------------|
| NO. | DATE | REVISION DESCRIPTION |
| 1 | 5/29/86 | As per Planning, DPW & SCS Comments |
| COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION SCALE: AS SHOWN DATE: WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218 Kenneth A. Mc Cord Registered Engineer NO. 1974 | | |

6-12-86
 CHIEF, BUREAU OF ENGINEERING
 OFFICE OF PLANNING & ZONING
 John W. Muschman 6-9-86
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

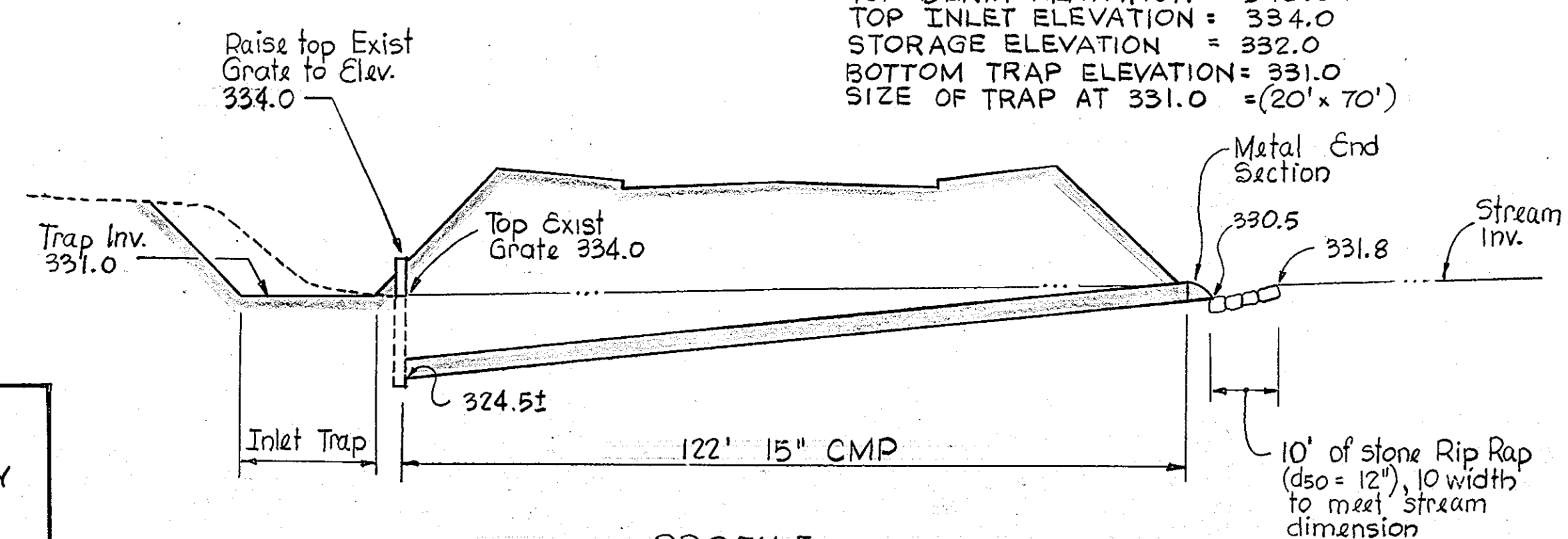
CURVE DATA
 P.C. 2+30.61 TO P.T. 5+74.94
 Δ = 16° 26' 21" Tan = 179.94'
 R = 1200.00' chd. = 843.12'
 Arc = 344.30' chd. Org. = N72° 41' 54" W



NOTE:
 ALL INLETS TO HAVE
 INLET PROTECTION
 SEE DETAIL SHEET 20

SEDIMENT CONTROL PLAN
 Scale: 1" = 50'

INLET TRAP NO. 3
 DRAINAGE AREA = 0.2 ACRES
 DISTURBED AREA = 0.5 ACRES
 VOLUME REQUIRED = 34 C.Y.
 VOLUME AVAILABLE = 61 C.Y.
 TOP BERM ELEVATION = 340.0 +
 TOP INLET ELEVATION = 334.0
 STORAGE ELEVATION = 332.0
 BOTTOM TRAP ELEVATION = 331.0
 SIZE OF TRAP AT 331.0 = (20' x 70')



PROFILE
 Scale: 1" = 20'
 1" = 10'

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 DEPARTMENT 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 4-1-86
 WALTER E. WOODFORD DATE

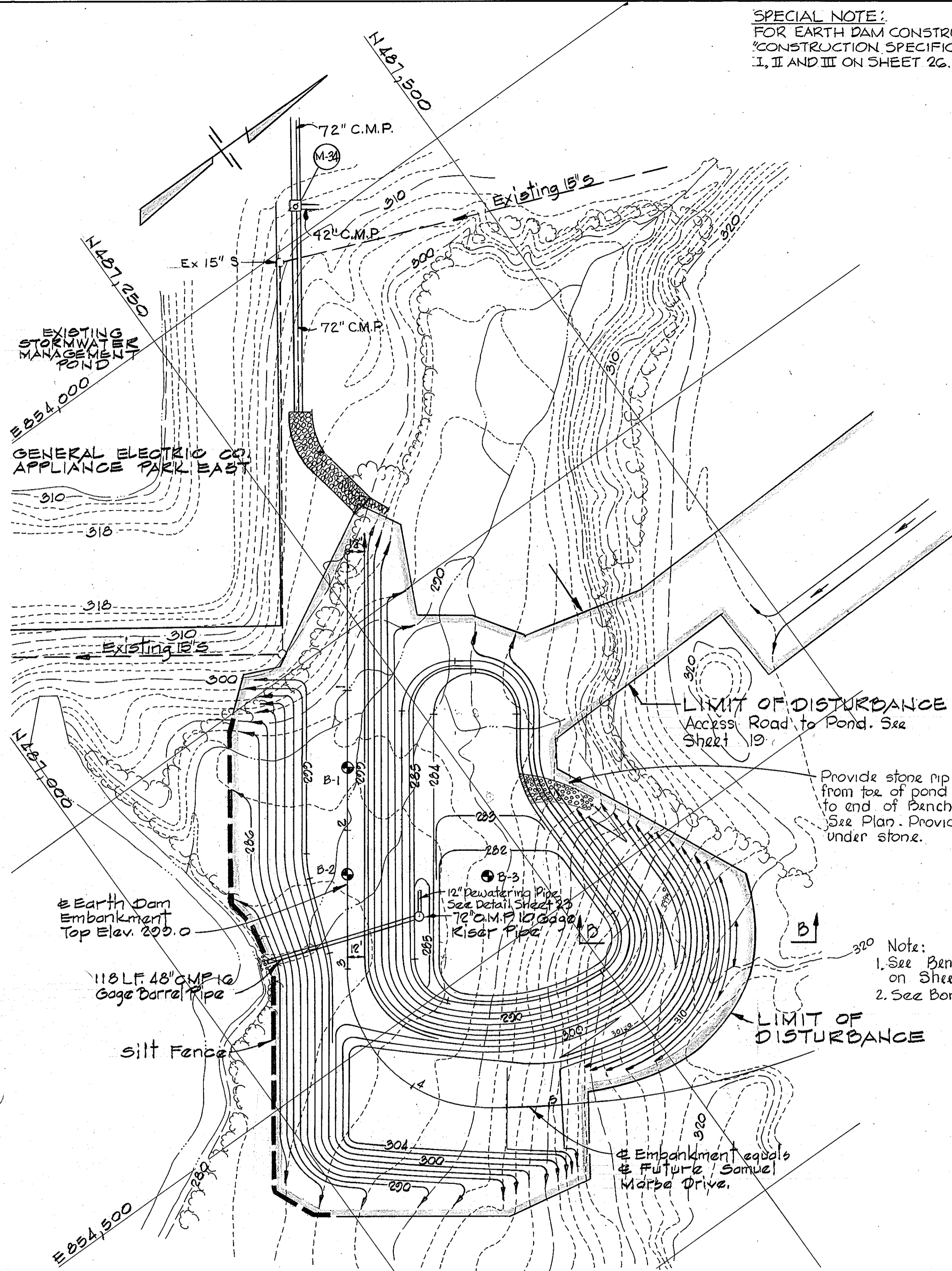
CERTIFICATION BY THE ENGINEER
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
 Kenneth A. McCord 4-1-86
 KENNETH A. MCCORD DATE

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
 APPROVED FOR HOWARD S.C.D. DATE 6-6-86
 U.S. SOIL CONSERVATION SERVICE
 APPROVED FOR HOWARD S.C.D. DATE 6-9-86
 HOWARD S.C.D. DATE

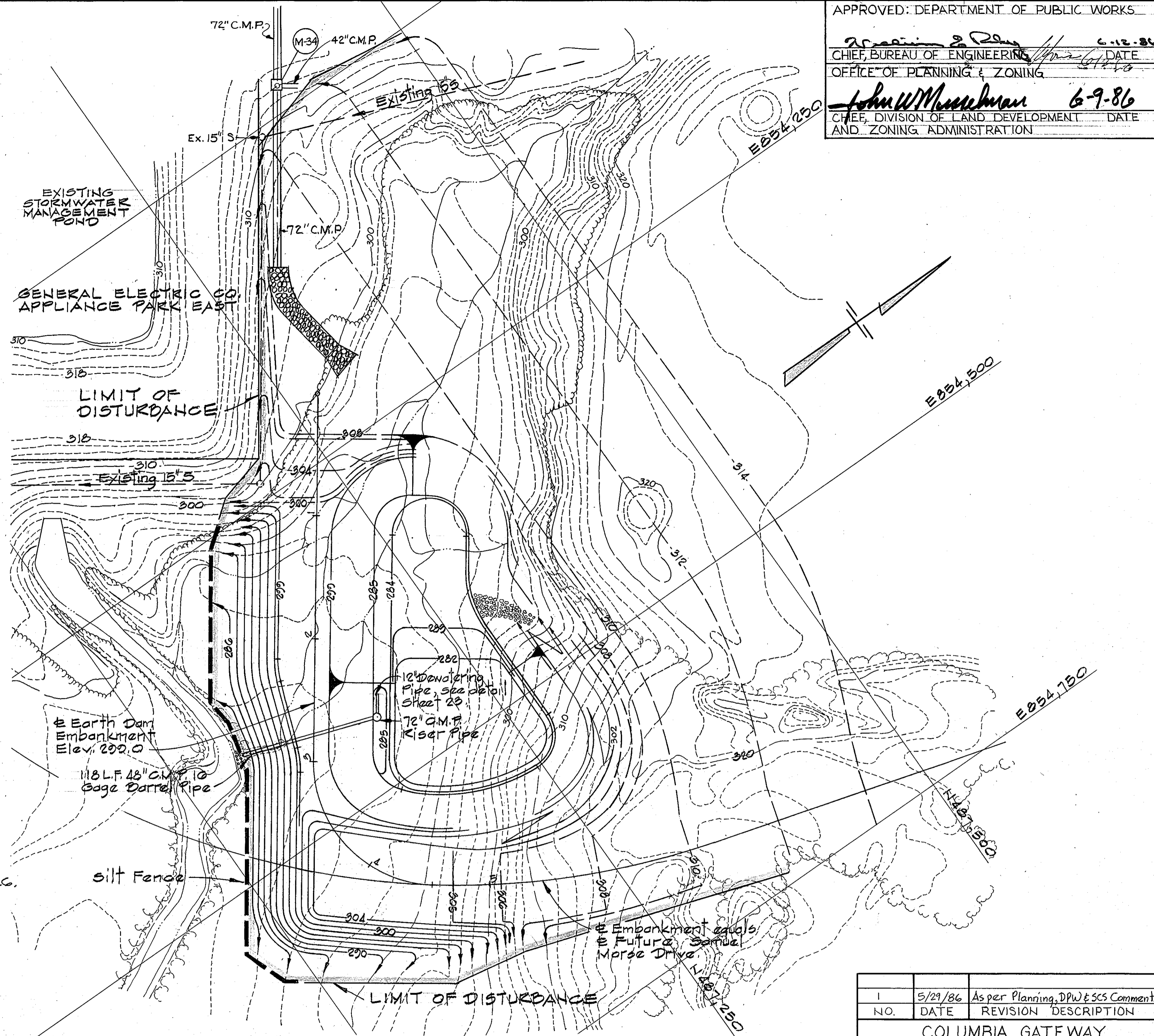
| NO. | DATE | REVISION | DESCRIPTION |
|--|---------|----------|-------------------------------------|
| 1 | 5/29/86 | | As per Planning, DPW & SCS Comments |
| COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND | | | |
| OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION | | | |
| PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K | | | |
| PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION | | | |
| SCALE: 1" = 50' | | DATE: | |
| WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218 | | | |
| Kenneth A. McCord Registered Engineer NO. 1974 | | | |

John W. Muschman 6-9-86
 CHIEF, BUREAU OF ENGINEERING DATE
 OFFICE OF PLANNING & ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 AND ZONING ADMINISTRATION

SPECIAL NOTE:
 FOR EARTH DAM CONSTRUCTION, SEE
 "CONSTRUCTION SPECIFICATIONS", ITEMS
 I, II AND III ON SHEET 26.



INITIAL POND CONSTRUCTION
 Scale: 1" = 50'



FUTURE POND FOR PARCEL GRADING
 Scale: 1" = 50'

Provide stone rip rap (d50 = 12")
 from toe of pond (20' width)
 to end of bench (10' width).
 See Plan. Provide filter cloth
 under stone.

Note:
 1. See Bench Section BB
 on Sheet 23.
 2. See Boring Logs on Sheet 26.

LEGEND
 ---320--- EXISTING CONTOURS
 ---299--- PROPOSED CONTOURS
 FOR INITIAL GRADING
 ---312--- FUTURE CONTOURS
 FOR PARCEL GRADING

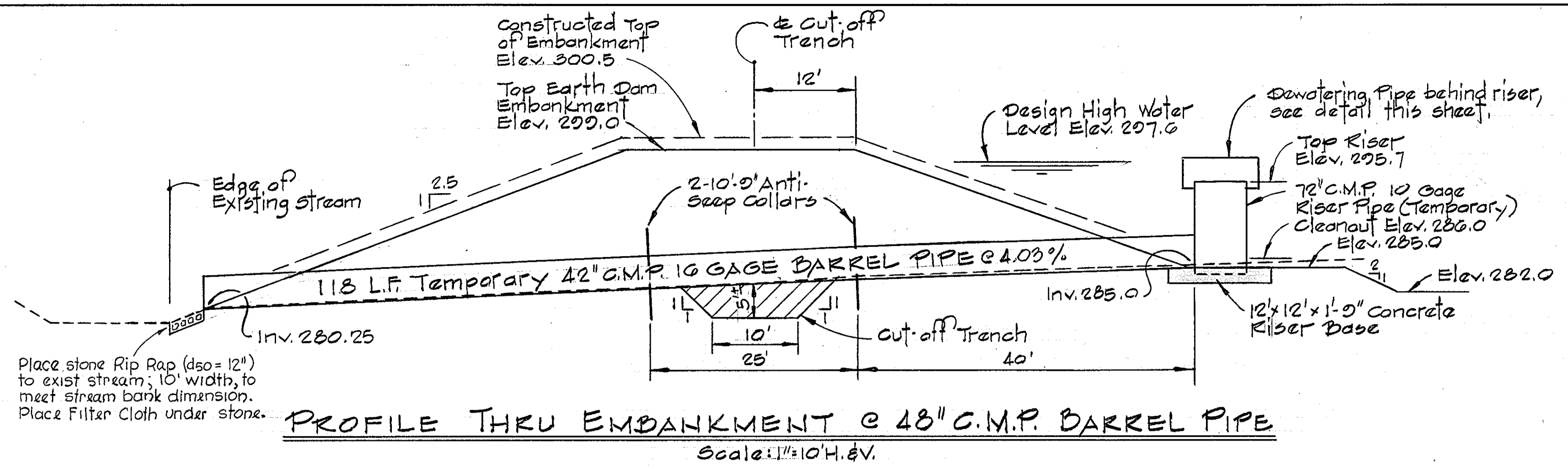
CERTIFICATION BY THE DEVELOPER
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT 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 OTHER AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."
 Walter E. Woodford 4-1-86 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. McCord 4-1-86 DATE

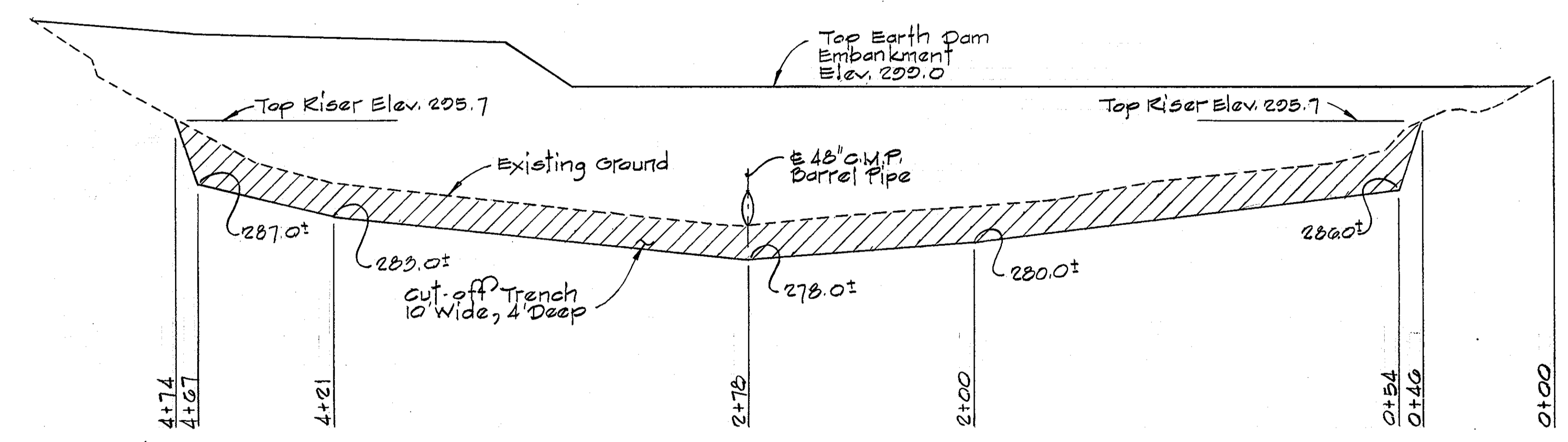
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED: [Signature] 6-6-86 DATE
 HOWARD S.O.D. DATE
 REVIEWED FOR HOWARD S.C.D AND MEETS TECHNICAL REQUIREMENTS
 [Signature] 6-6-86 DATE
 U.S. SOIL CONSERVATION SERVICE

NOTE:
 FOR POND STAKEOUT DIMENSIONS, 48" C.M.F. PROFILE AND SECTION THRU EMBANKMENT SEE SHEET 23.
 FOR POND DETAILS SEE SHEET 23

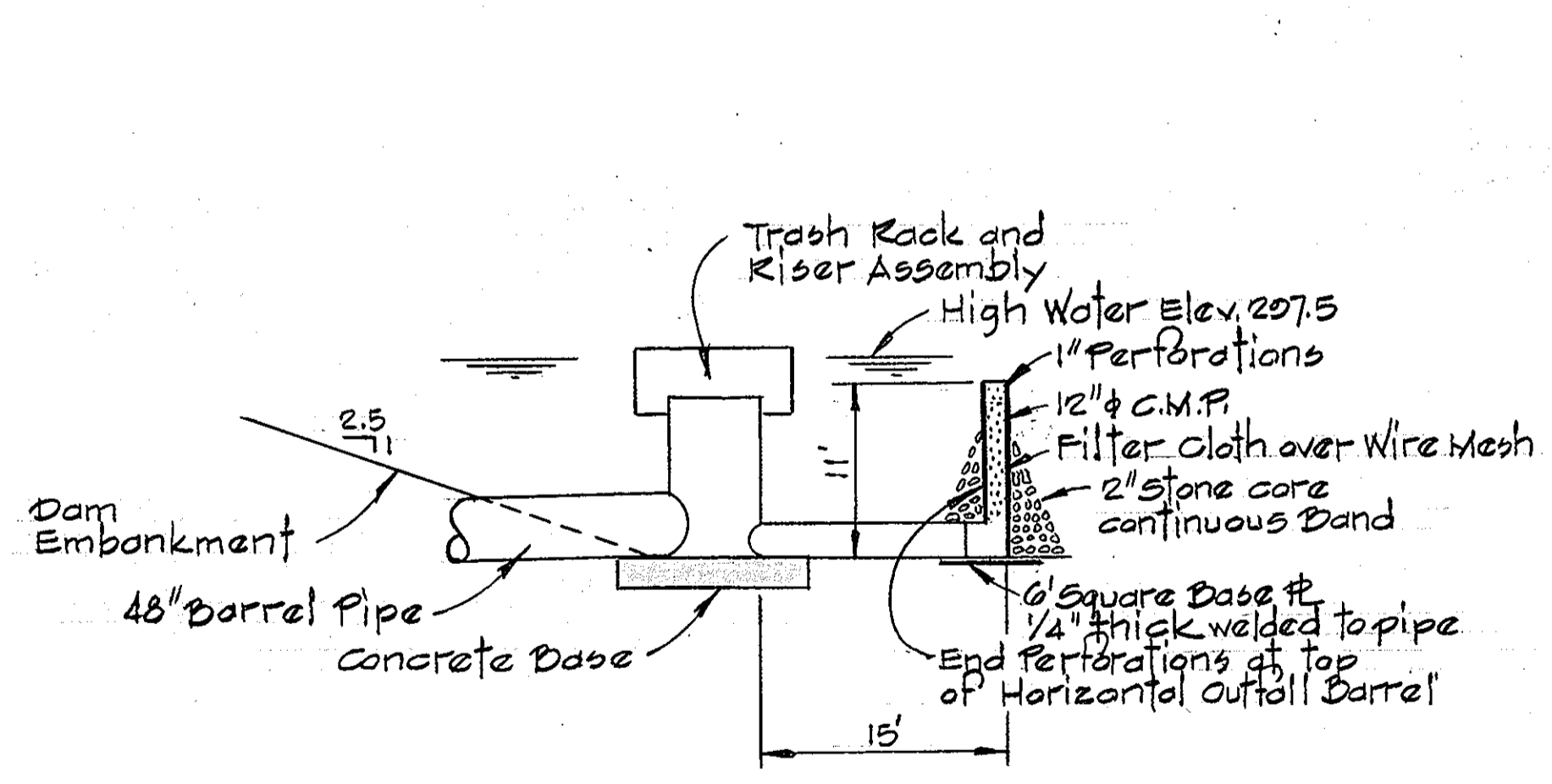
| | | |
|---|---------|-------------------------------------|
| NO. | DATE | REVISION DESCRIPTION |
| 1 | 5/29/86 | As per Planning, DPW & SCS Comments |
| COLUMBIA GATEWAY 6 TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION. SCALE: 1" = 50' DATE: WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218 Kenneth A. McCord Registered Engineer NO. 1974 | | |



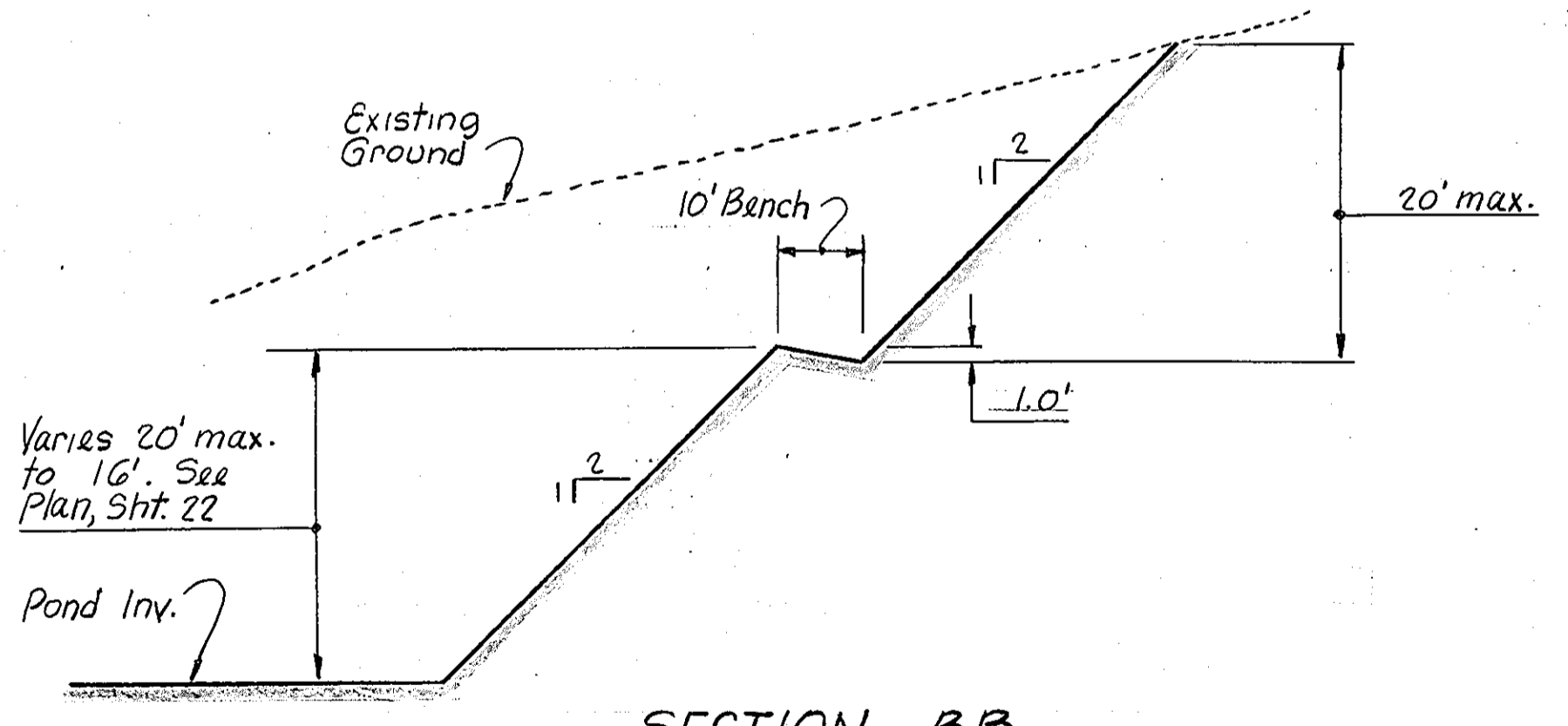
PROFILE THRU EMBANKMENT @ 48" C.M.P. BARREL PIPE
 Scale: 1" = 10' H. & V.



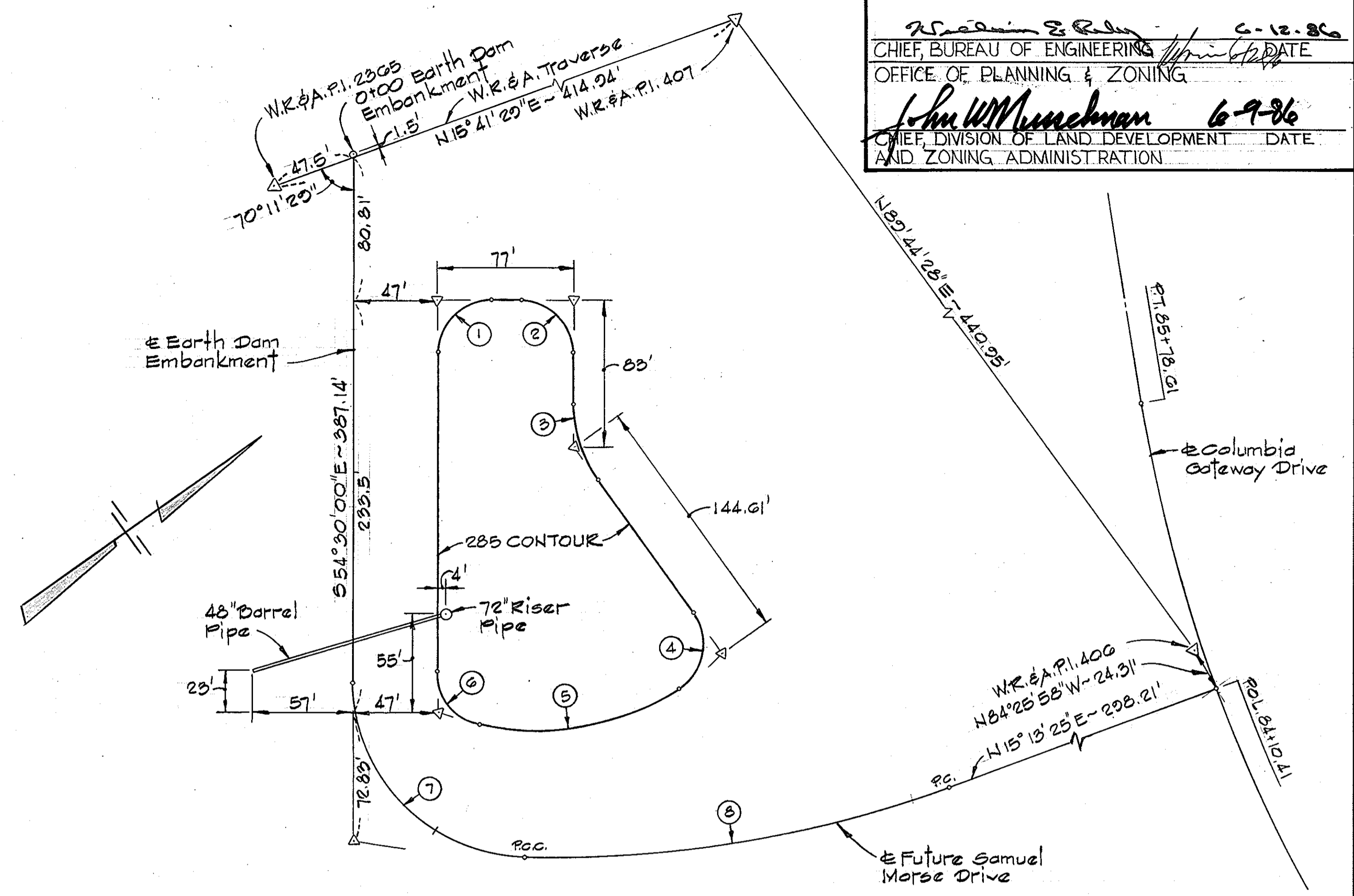
SECTION "A-A"
 Scale: Hor. 1" = 30'
 Vert. 1" = 10'



PROFILE - 12" C.M.P. DEWATERING PIPE
 Scale: 1" = 10' H. & V.



SECTION B-B
 Scale: 1" = 20'
 1" = 10'



CURVE DATA

| | | | |
|---|--|---|--|
| ① Δ = 90°00'00" R = 30.00' Arc = 47.12' Tan = 30.00' Chd = 42.43' Chd. Brg. = N00°30'00"E | ② Δ = 90°00'00" R = 30.00' Arc = 47.12' Tan = 30.00' Chd = 42.43' Chd. Brg. = N60°30'00"E | ③ Δ = 35°30'00" R = 75.00' Arc = 46.47' Tan = 24.01' Chd = 45.73' Chd. Brg. = S72°15'00"E | ④ Δ = 92°51'46" R = 30.00' Arc = 48.62' Tan = 31.54' Chd = 45.47' Chd. Brg. = S43°34'07"E |
| ⑤ Δ = 44°52'48" R = 150.00' Arc = 117.50' Tan = 61.95' Chd = 114.52' Chd. Brg. = S25°15'09"W | ⑥ Δ = 77°45'27" R = 90.00' Arc = 40.71' Tan = 24.19' Chd = 37.66' Chd. Brg. = S86°37'17"W | ⑦ Δ = 88°30'58" R = 100.00' Arc = 154.49' Tan = 97.44' Chd = 199.58' Chd. Brg. = N81°14'31"E | ⑧ Δ = 21°45'37" R = 640.00' Arc = 243.07' Tan = 129.02' Chd = 241.01' Chd. Brg. = N26°06'19"E |

POND STAKEOUT PLAN
 Scale: 1" = 50'

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
 [Signature] 6-6-86
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED [Signature] 6-9-86
 HOWARD S.C.D. 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."
 [Signature] 4-1-86
 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 DEPARTMENT 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, AS ARE DEEMED NECESSARY."
 [Signature] 4-1-86
 WALTER E. WOODFORD DATE

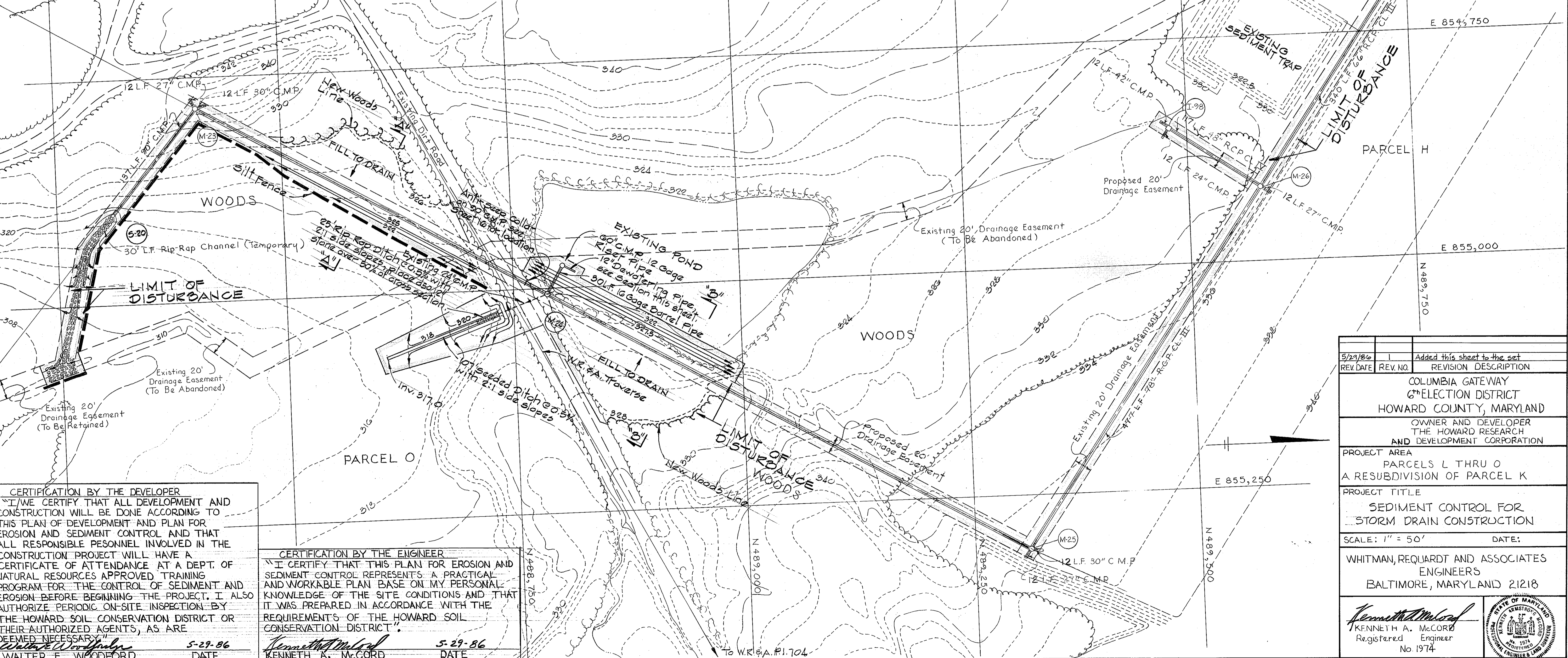
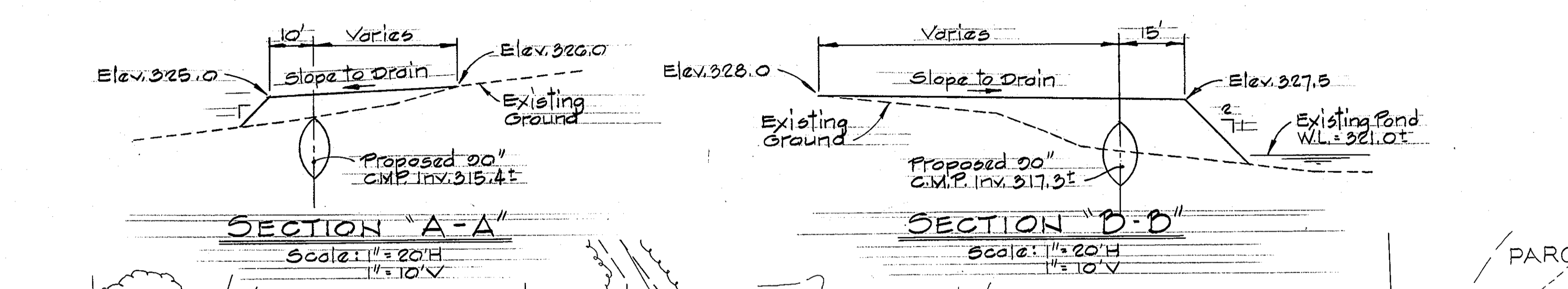
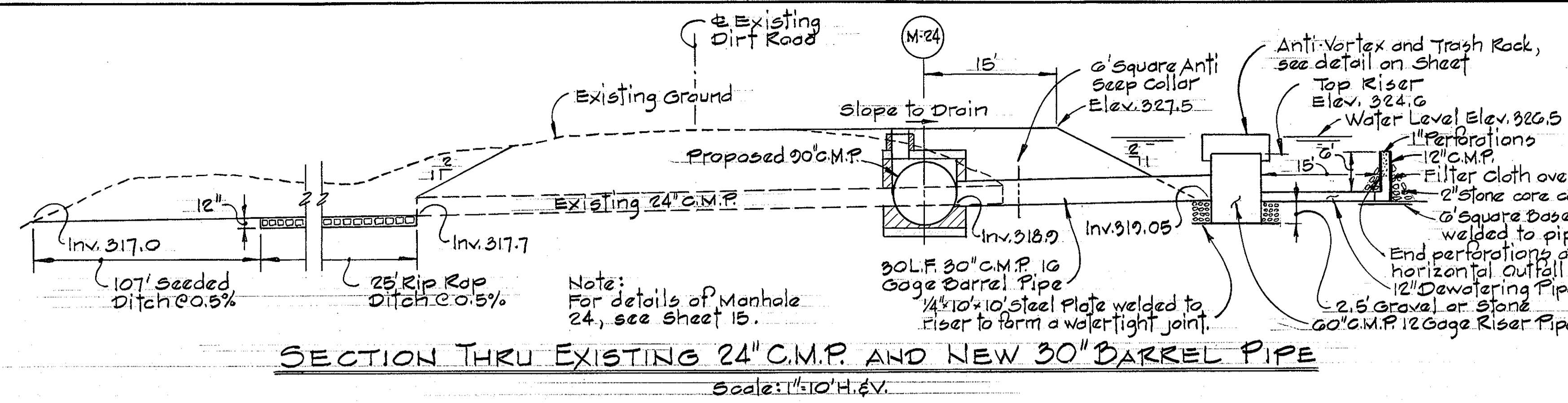
| | | |
|--|---------|-------------------------------------|
| NO. | DATE | REVISION DESCRIPTION |
| 1 | 5/29/86 | As per Planning, DPW & ZCS Comments |
| COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND | | |
| OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION | | |
| PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K | | |
| PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT FOR ROAD CONSTRUCTION. | | |
| SCALE: AS SHOWN DATE: | | |
| WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218 | | |
| [Signature] KENNETH A. McCORD Registered Engineer NO. 1974 | | [Seal] |

5/29/86 1 Added this sheet to the set
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 L THRU O
A RESUBDIVISION OF PARCEL K
PROJECT TITLE
SEDIMENT CONTROL FOR
STORM DRAIN CONSTRUCTION
SCALE: 1" = 50' DATE:
WHITMAN, REQUARDT AND ASSOCIATES
ENGINEERS
BALTIMORE, MARYLAND 21218
Kenneth A. McGord
KENNETH A. MCGORD
Registered Engineer
No. 1974

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT APPROVED [Signature] DATE 6-6-86 HOWARD S.O.D. DATE [Signature] U.S. SOIL CONSERVATION SERVICE
REVIEW FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS

SEDIMENT CONTROL NOTES FOR STORM DRAIN CONSTRUCTION

- 1. CONSTRUCT OUTFALL DITCH AND DEWATER EXISTING POND.
- 2. CONSTRUCT MANHOLE 24 AND PRINCIPAL SPILLWAY.
- 3. INSTALL SILT FENCE AS SHOWN.
- 4. CONSTRUCT EMBANKMENT FOR STORM DRAIN CONSTRUCTION, SEE SECTIONS A-A AND B-B THIS SHEET.
- 5. CONSTRUCT STORM DRAIN FROM 5-20 TO MANHOLE 24. PROVIDE ANTI-SEEP COLLAR ON 90" DRAIN, SEE SHEET 10 FOR LOCATION. CONTINUE STORM DRAIN CONSTRUCTION TO 300' ABOVE MANHOLE 20.
- 6. AFTER CONTRIBUTING DRAINAGE AREA TO SEDIMENT TRAP NO. 2 IS STABILIZED, CLEAN TRAP AND CONSTRUCT REMAINDER OF 66" DRAIN.
- 7. REMOVE SEDIMENT TRAP NO. 2.
- 8. PLUG UP 24" OPENING IN MANHOLE 24 AND REMOVE EXISTING 24" C.M.P. AND OUTFALL DITCH.

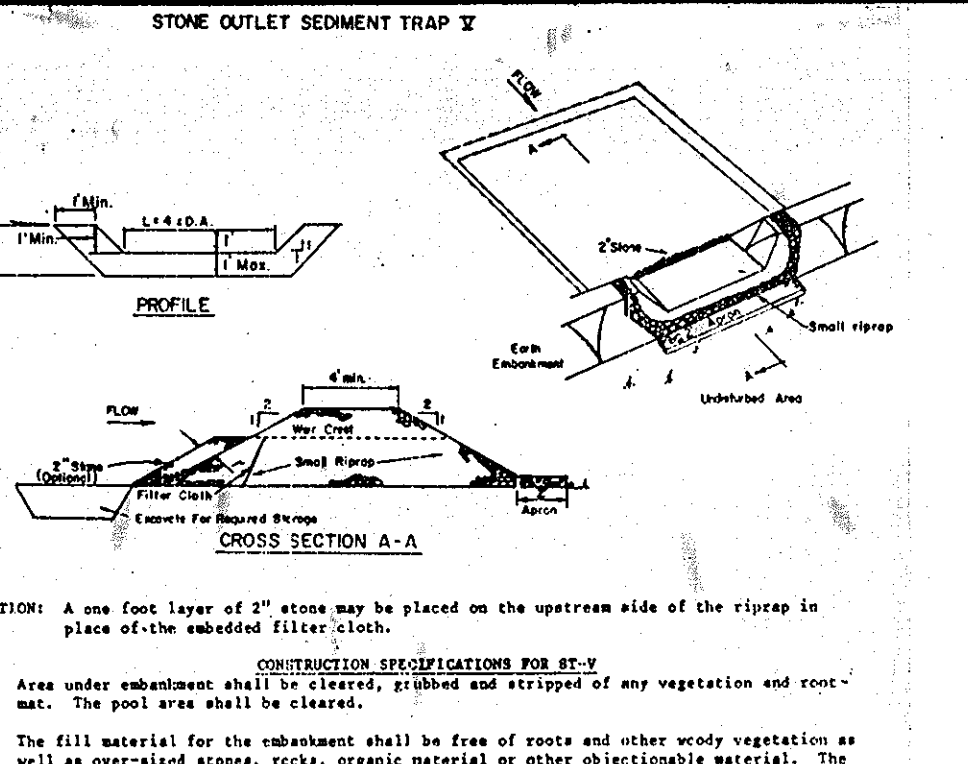
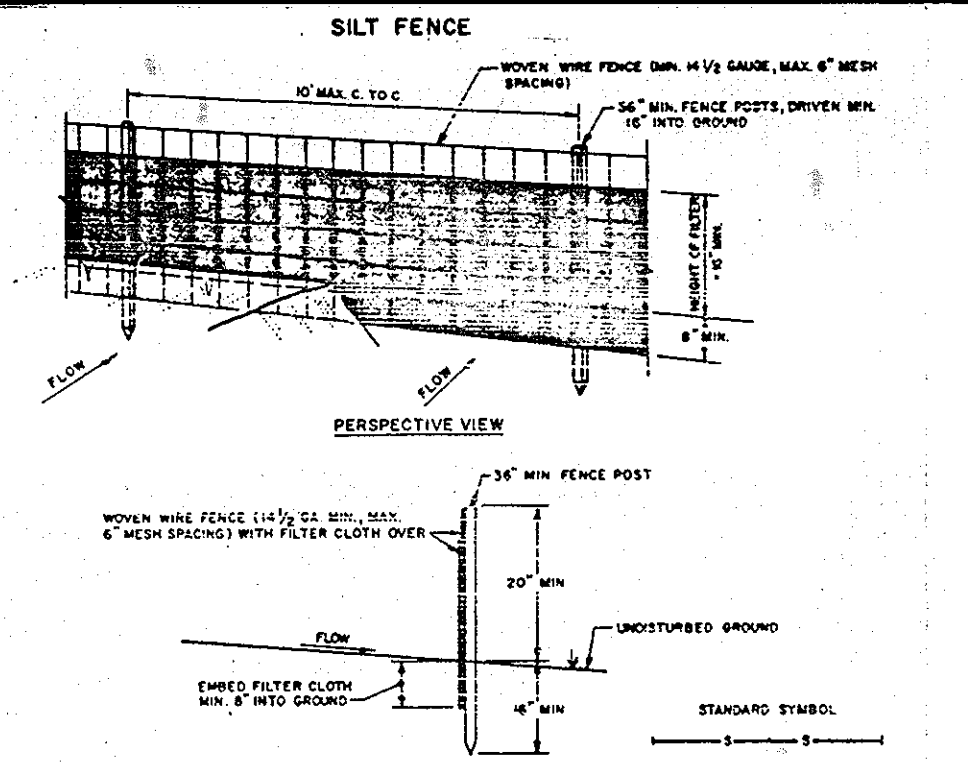
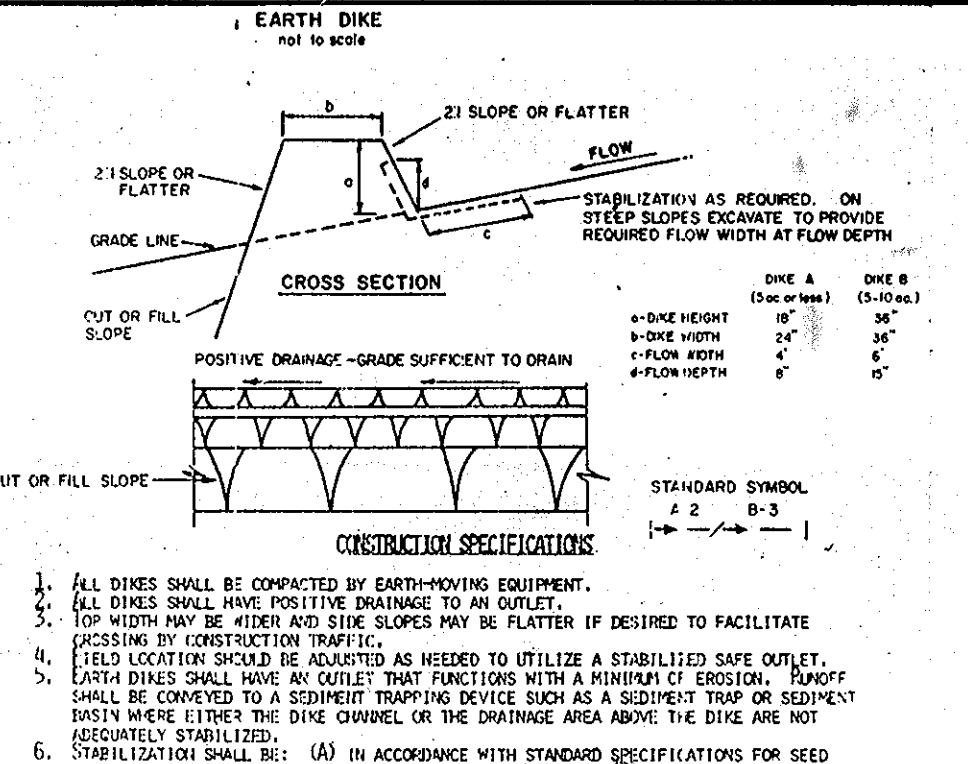
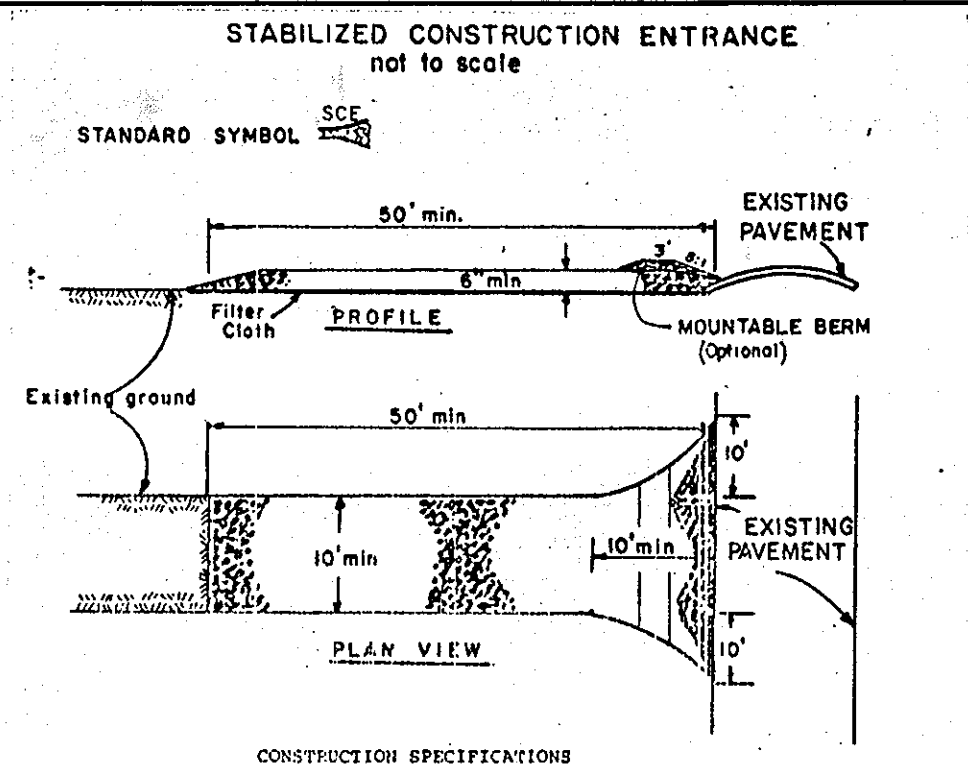


CERTIFICATION BY THE DEVELOPER
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPT. OF NATURAL 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
WALTER E. WOODFORD
5-29-86
DATE

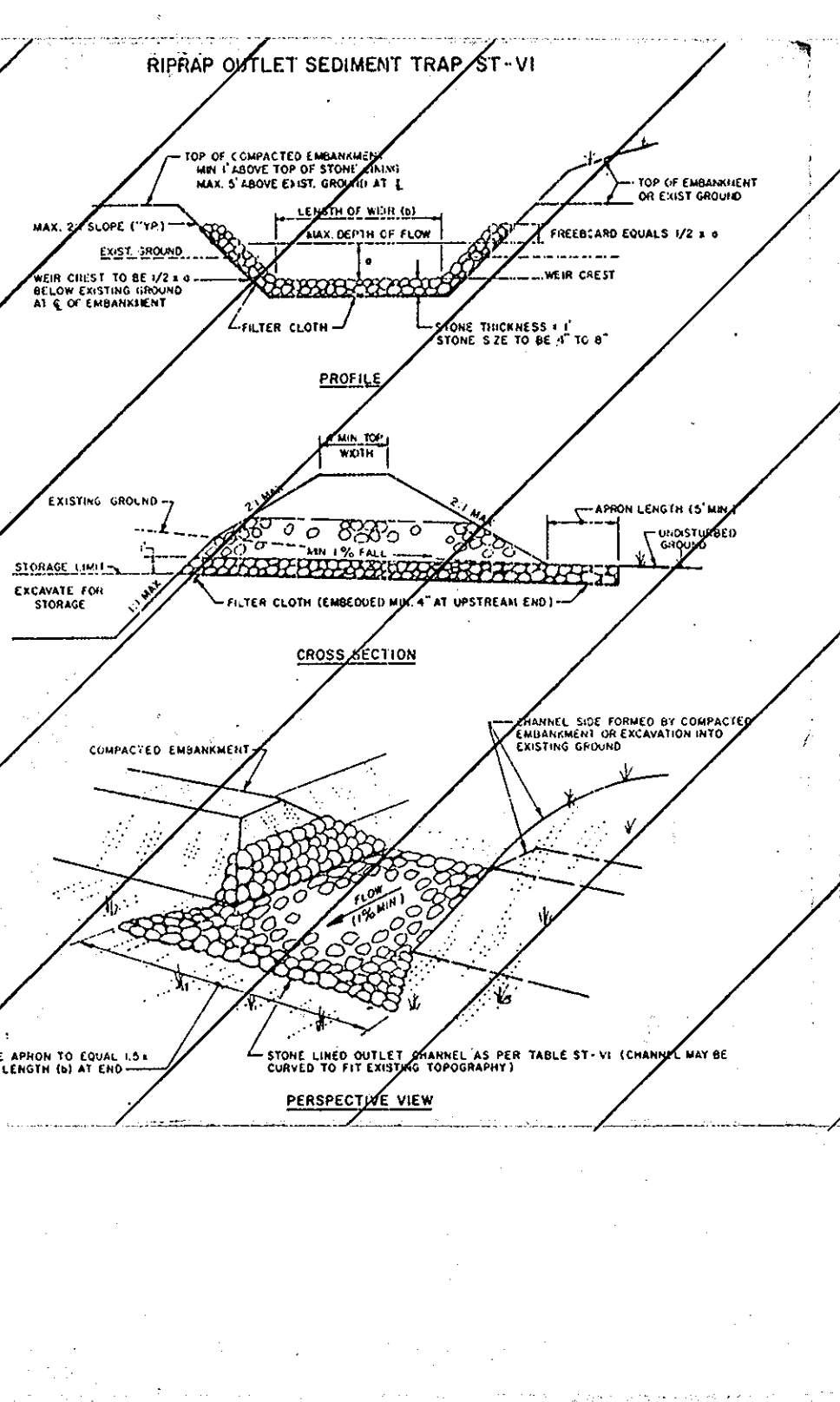
CERTIFICATION BY THE ENGINEER
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
Kenneth A. McGord
KENNETH A. MCGORD
5-29-86
DATE

CHIEF, BUREAU OF ENGINEERING 6-12-86
OFFICE OF PLANNING & ZONING
John W. ... 6-9-86
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
AND ZONING ADMINISTRATION

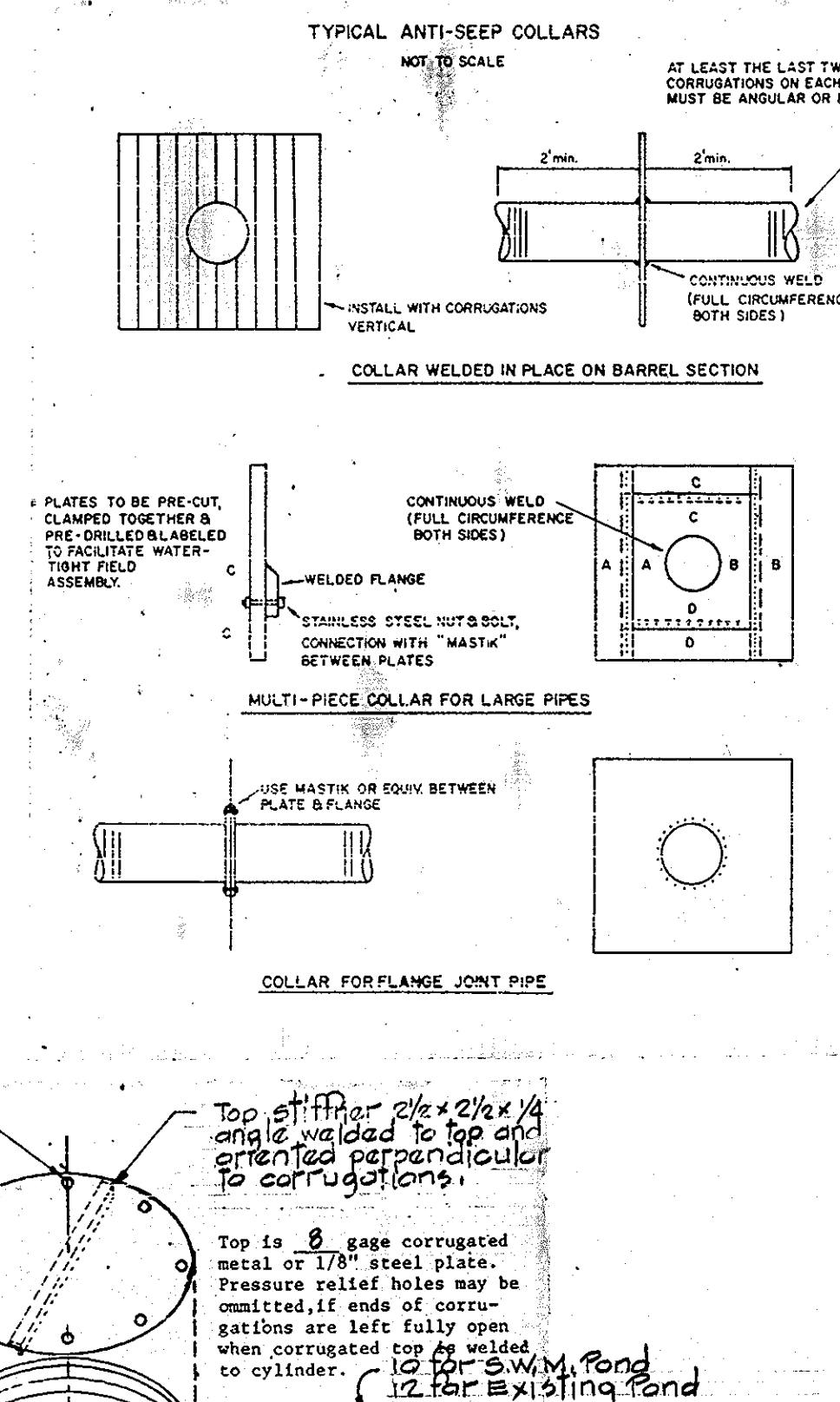
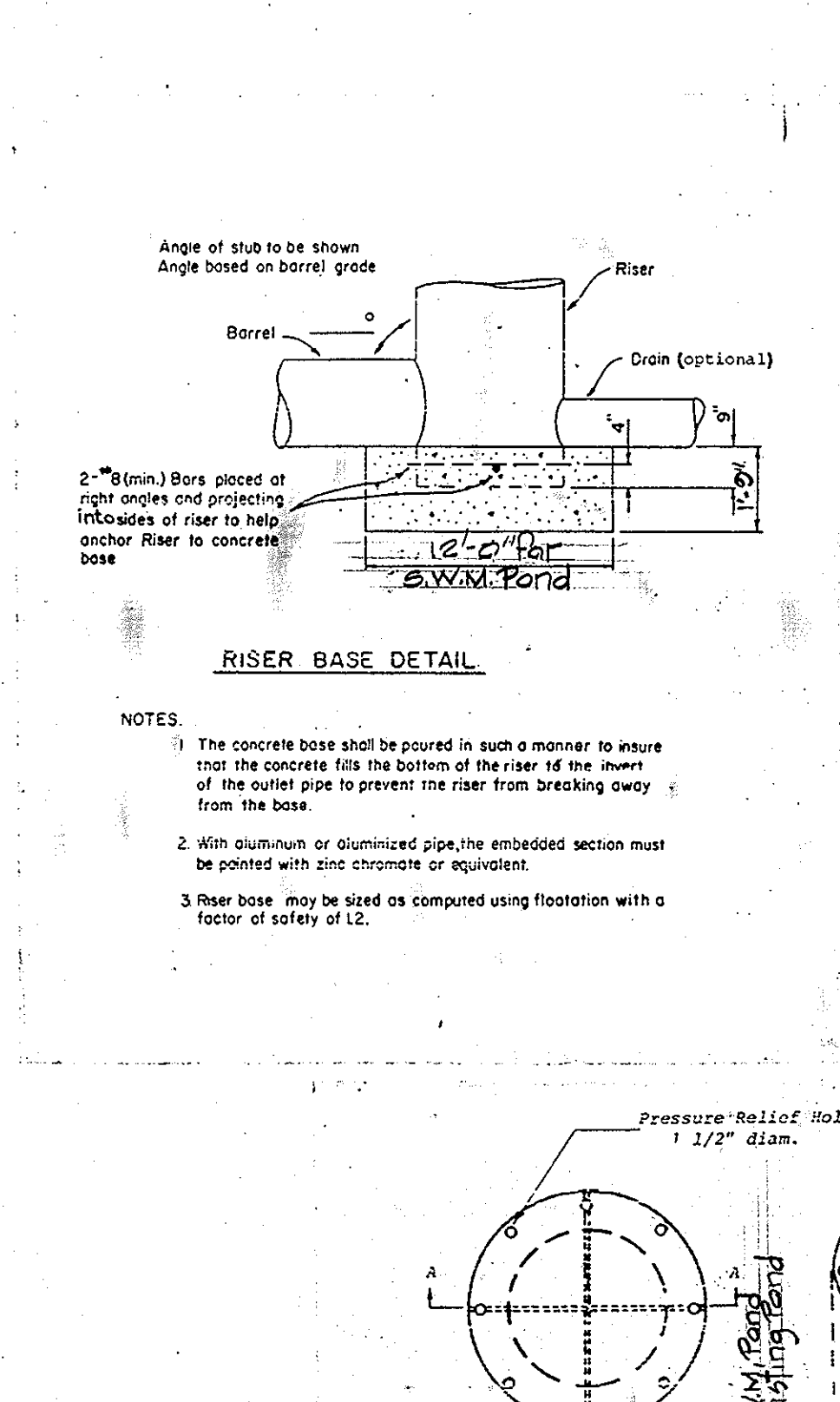
PERMANENT SEEDING NOTES
Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding.
Soil Amendments: In lieu of soil test recommendations, use one of the following schedules...



SEEDING NOTES
1) A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction.
2) All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
3) Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within a 7 calendar days for all perimeter sediment control structures, ditches, parceller slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.



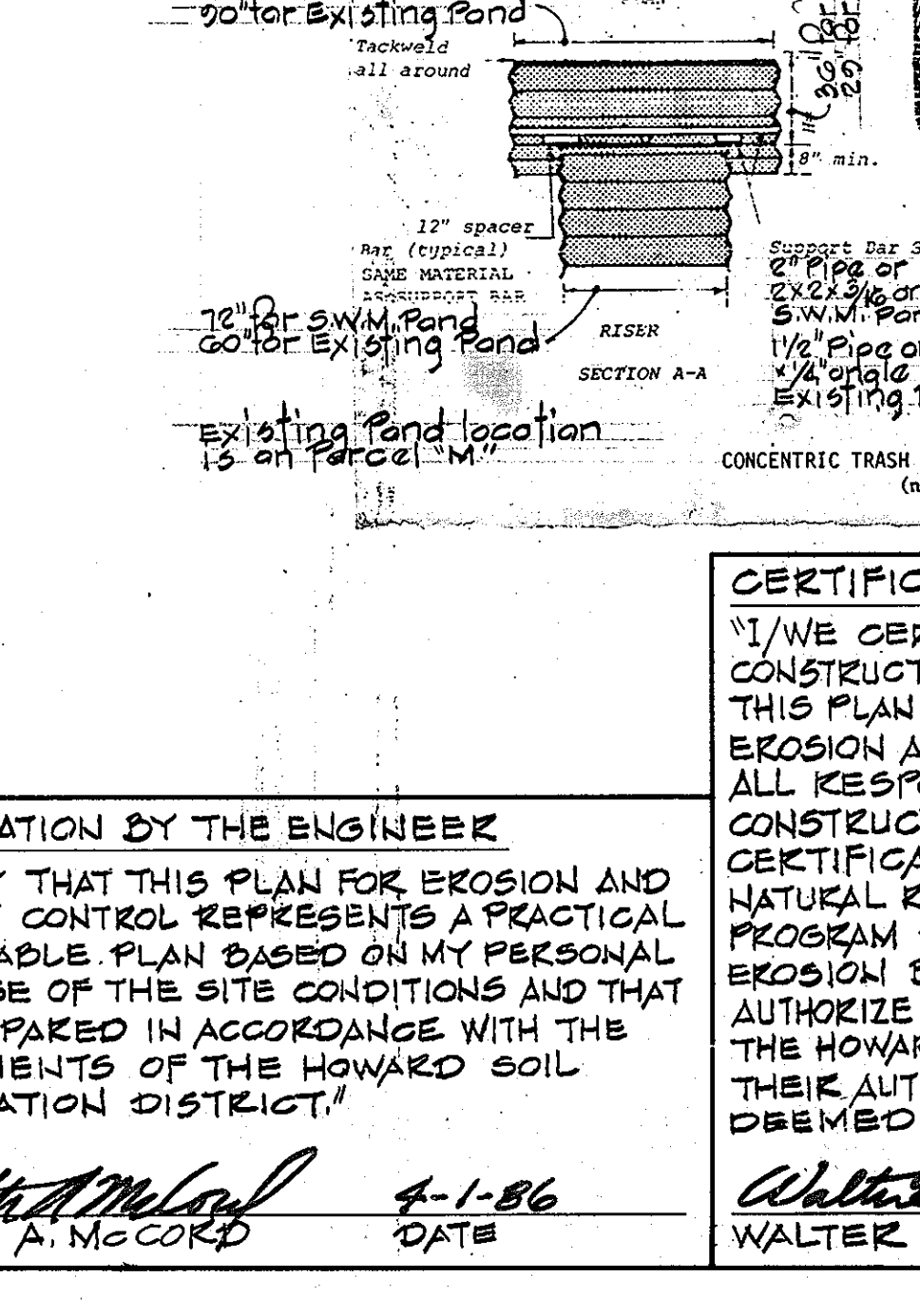
CONSTRUCTION SPECIFICATIONS FOR ST-VI
1. The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be five (5) feet, measured at confluence of embankment.



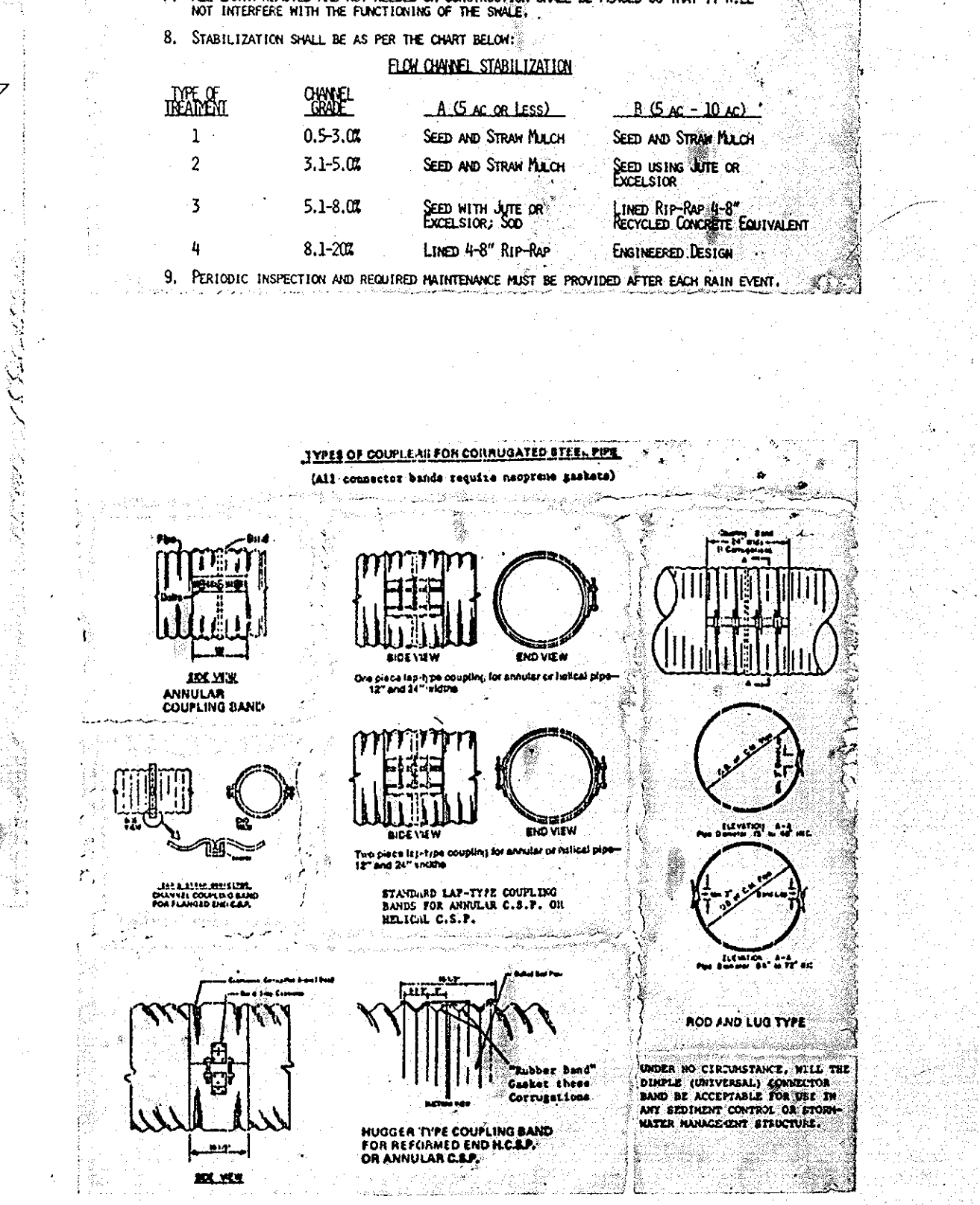
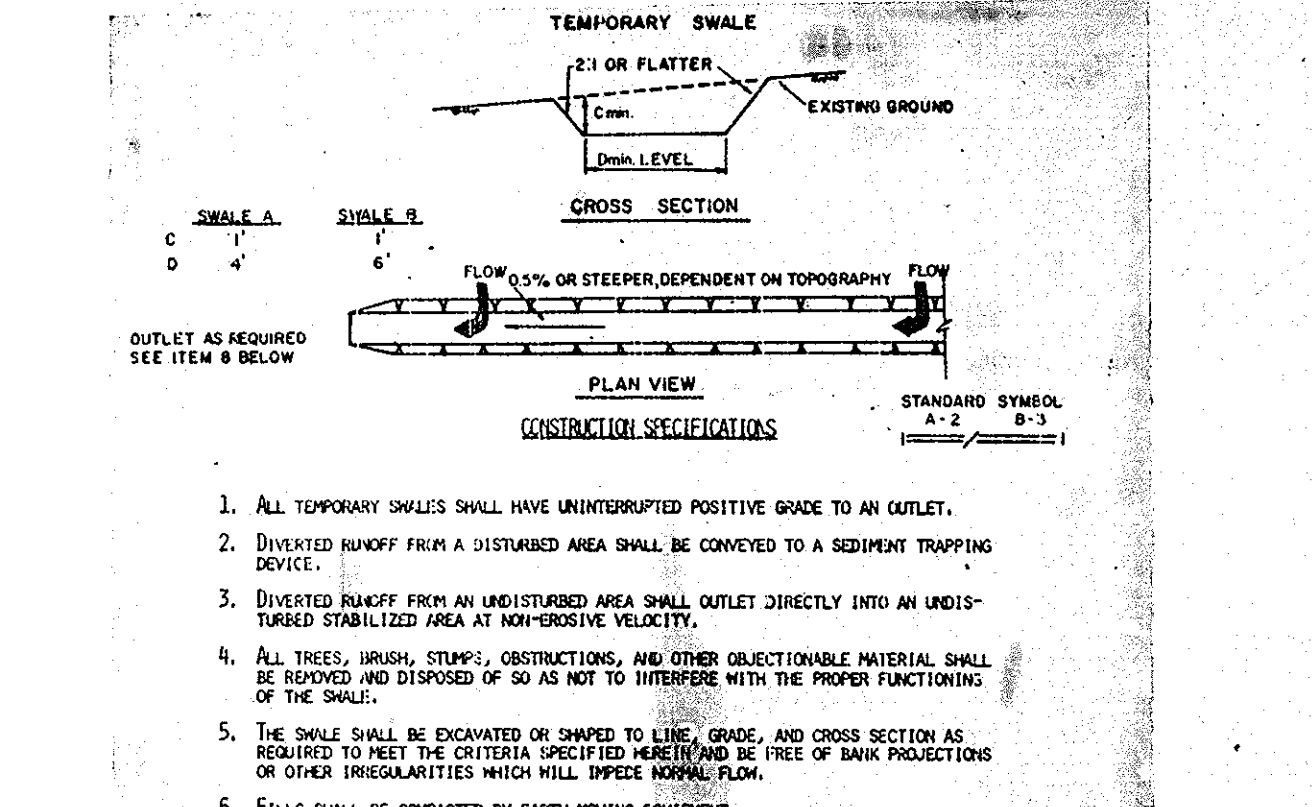
CONSTRUCTION SPECIFICATIONS
Site Preparation
Areas under the embankment shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots or other objectionable material. In order to facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) will be cleared of all brush, trees, and other objectionable materials.
Out-of-Trench
A cut-off trench shall be excavated along the centerline of each fill embankment. The minimum depth shall be two feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be four feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for embankment. The trench shall be dewatered during the backfilling-construction operations.

Emergency Spillway
The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of +/- 0.2 feet.
Vegetative Treatment
Stabilize the embankment and emergency spillway in accordance with the appropriate vegetative Standards 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 abatement.
Safety
State and local requirements shall be met concerning fencing and signs, warning the public of hazards of soft sediment and floodwater.
Maintenance
1. Repair all damages caused by soil erosion and construction equipment at or before the end of each work day.
2. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or flood plain.

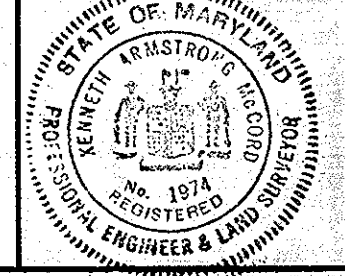
CONSTRUCTION SPECIFICATION FOR ST-IV
1. The swale sediment trap shall be constructed in accordance with the dimensions provided on the design drawings or sized to provide the minimum storage necessary 1800 cubic feet of storage for each acre of drainage area.
2. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Sediment shall be deposited in a suitable area and in such a manner that it will not erode.
3. The structure shall be inspected after each rain and repairs made as needed.
4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
5. The sediment trap shall be removed and the area stabilized when the drainage area has been properly reseeded.
6. The swale sediment trap will be properly backfilled and the swale or Maximum Drainage Area: 2 Acres



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 4-1-86 DATE



COLUMBIA GATEWAY 6TH ELECTION DISTRICT HOWARD COUNTY MARYLAND
OWNER AND DEVELOPER THE HOWARD RESEARCH DEVELOPMENT CORPORATION
PROJECT AREA PARCELS L THRU O A RESUBDIVISION OF PARCEL K.
PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT DETAILS AND SPECIFICATIONS
SCALE: AS SHOWN DATE:
WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218
APPROVED FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS
REVIEWED FOR HOWARD SOIL AND MEETS TECHNICAL REQUIREMENTS
KENNETH A. MCCORD 6/9/86 DATE
WALTER E. WOODFORD 4-1-86 DATE



Note:
 WOH = Weight of Hammer

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 sheepfoot, 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.

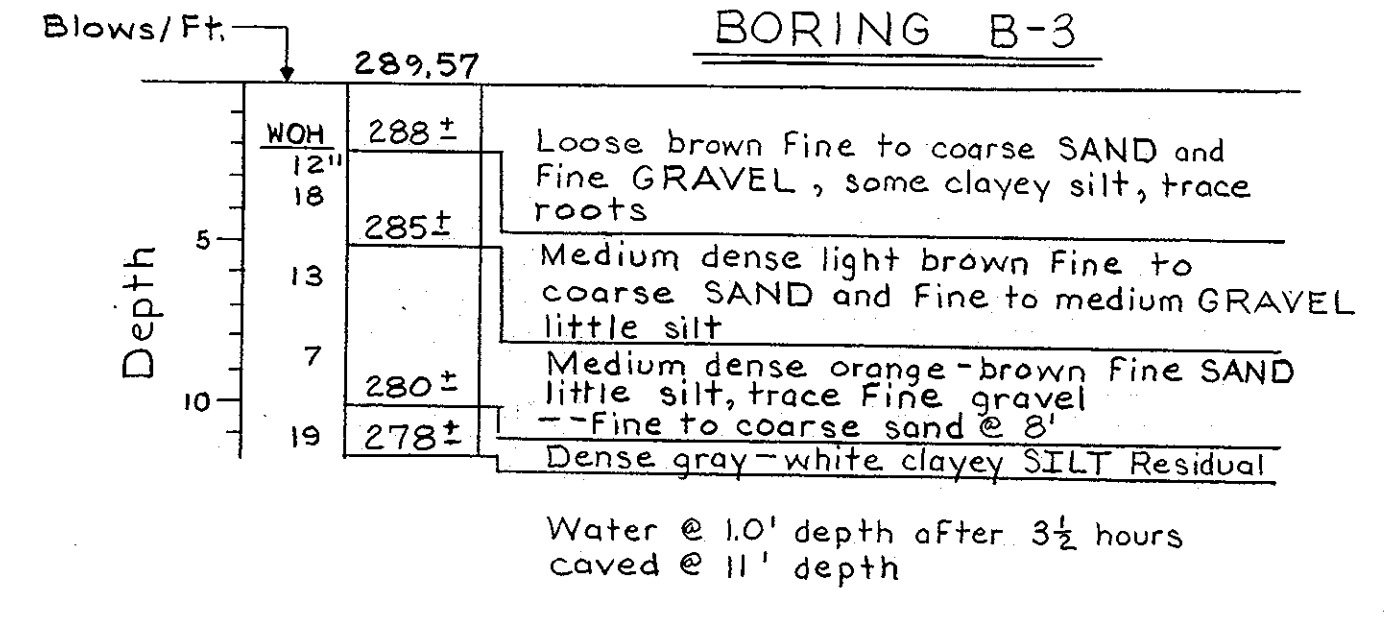
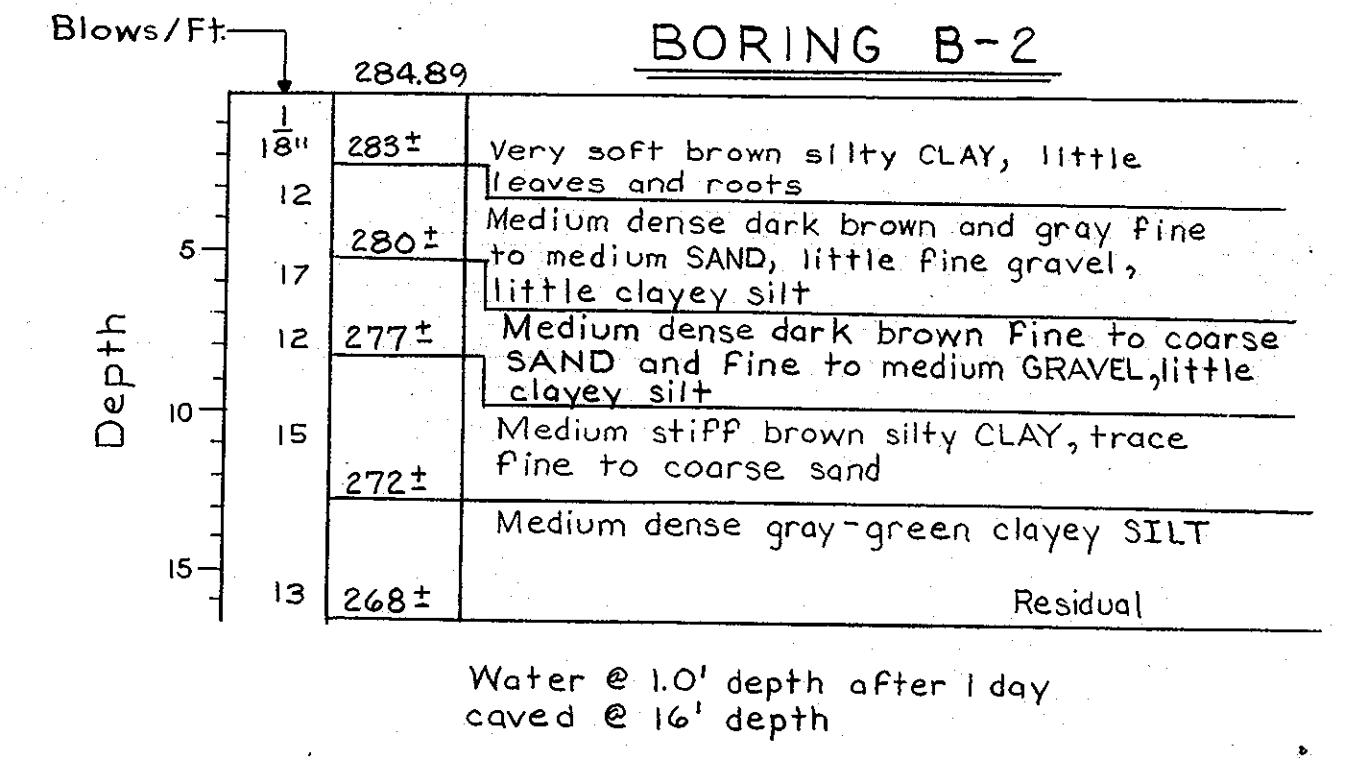
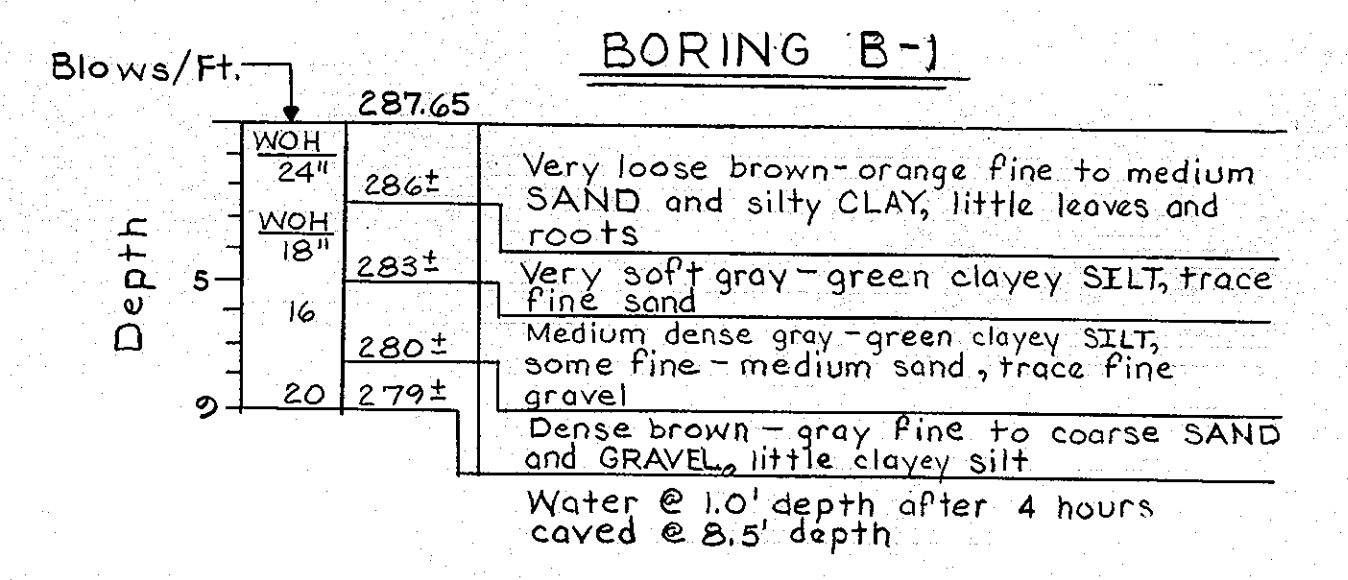
9. Placing Temperature - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 34° with the temperature rising.

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.



| | | |
|---|-----|-----------------------------|
| 5/29/86 | 1 | Added this sheet to the set |
| REVISION | NO. | REVISION DESCRIPTION |
| COLUMBIA GATEWAY 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND | | |
| OWNER AND DEVELOPER THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION PROJECT AREA PARCEL L THRU O A RESUBDIVISION OF PARCEL K | | |
| PROJECT TITLE SEDIMENT CONTROL AND STORMWATER MANAGEMENT SPECIFICATIONS | | |
| SCALE: AS SHOWN DATE: | | |
| WHITMAN, REQUAOT AND ASSOCIATES ENGINEERS BALTIMORE, MARYLAND 21218 | | |
| Kenneth A. McCord Registered Engineer NO. 1974 | | |

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 PE No. 1974
 5-29-86
 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
 5-29-86
 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
 5-29-86
 Date

CERTIFICATION BY THE SOIL CONSERVATION SERVICE

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. Allen
 JAMES M. ALLEN
 6-6-86
 Date

CERTIFICATION BY THE HOWARD SOIL CONSERVATION DISTRICT

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

Howard S.C.D.
 HOWARD S.C.D.
 6-9-86
 Date