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FINAL ROAD CONSTRUCTION, GRADING AND SEDIMENT CONTROL PLANS

GTW'S WAVERLY WOODS APFO MITIGATION PLAN

(PROPERTY OF G.T.W. JOINT VENTURE)

LIBER 2222, FOLIO 36 AND LIBER 2221, FOLIO 288

ZONING: PSC

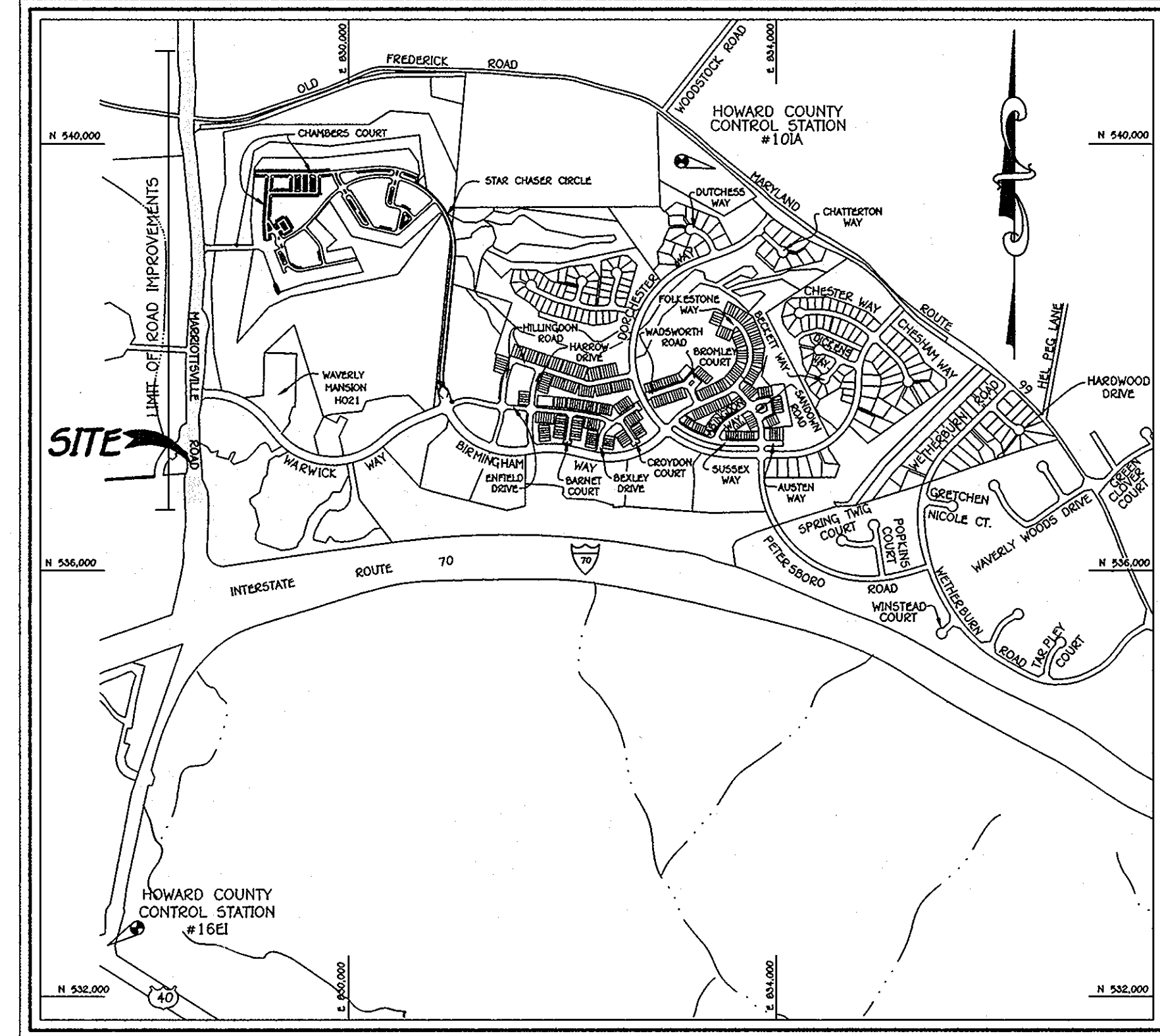
TAX MAP No. 16

APPROVED: DEPARTMENT OF PUBLIC WORKS
W. B. ... 1-20-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. ... 1/22/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W. ... 1/21/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

STREET LIGHT CHART			
STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE
MARRIOTTVILLE ROAD	1+88	66'R	250-WATT HPS VAPOR SAG FIXTURE MOUNTED AT 30' USING A 12' ARM
MARRIOTTVILLE ROAD	3+30	55'R	250-WATT HPS VAPOR SAG FIXTURE MOUNTED AT 30' USING A 12' ARM
MARRIOTTVILLE ROAD	24+10	42'L	400-WATT HPS VAPOR SAG FIXTURE MOUNTED AT 30' USING A 12' ARM
MARRIOTTVILLE ROAD	26+25	41'L	400-WATT HPS VAPOR SAG FIXTURE MOUNTED AT 30' USING A 12' ARM
MARRIOTTVILLE ROAD	4+00 NORTH	35'R	400-WATT HPS VAPOR SAG FIXTURE MOUNTED AT 30' USING A 12' ARM
MARRIOTTVILLE ROAD	30+42	87'R	SEE STREET LIGHT NOTE, SHEET 4



VICINITY MAP
SCALE: 1" = 1200'

THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1000 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAY ADMINISTRATION (SHA) PERMIT INSPECTOR (301-624-8120) 48 HOURS BEFORE THE COMMENCEMENT OF WORK AND PRIOR TO EACH STAGE OF WORK.
- STREET LIGHTS WILL BE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- TOPOGRAPHIC INFORMATION ESTABLISHED AT 2 FOOT CONTOUR INTERVALS BASED ON AERIAL PHOTOGRAPHIC CONTOUR MAPPING ON OR ABOUT NOVEMBER 2000 PROVIDED BY HARFORD AERIALS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY CONTROL STATIONS 10A AND 16E1 WERE USED FOR THIS PROJECT.
 HOWARD COUNTY MONUMENT 10A N 540246.1 ELEV. = 442.714
 E 832922.5
 HOWARD COUNTY MONUMENT 16E1 N 532502.1 ELEV. = 464.611
 E 827774.8
- PUBLIC WATER AND SEWER TO BE UTILIZED. EXISTING UTILITIES ARE BASED ON CURRENT HOWARD COUNTY CONTRACT DRAWINGS.
 EX. 12" WATER - CONTRACT NO. 44-3480
 EX. 8" SEWER - CONTRACT NO. 20-4068-D
- "STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY AND MARYLAND 370 SPECIFICATIONS. WATER QUALITY WILL BE PROVIDED BY APPROPRIATE BEST MANAGEMENT PRACTICES. CVP IS NOT NECESSARY FOR THIS ROAD WIDENING. GRASS CHANNEL AND SHEET FLOW TO BUFFER CREEKS ARE BEING UTILIZED THROUGHOUT THE PROJECT TO PROVIDE WQV. VARIOUS LEVEL SPREADER DEVICES ARE PROPOSED AT THE TOE OF SLOPE.
- THE ORIGINAL OR BASE MODEL FLOODPLAIN STUDY FOR GTW'S WAVERLY WOODS WAS PREPARED BY MILDENBERG, BOENDER & ASSOC., DATED OCT. 1994 AND WAS APPROVED UNDER 5-94-007 IN OCTOBER, 1994.
 A REVISED FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY FISHER, COLLINS & CARTER, INC. DATED NOVEMBER, 2006 AND APPROVED UNDER THIS PLAN.
- THE WETLANDS DELINEATION WAS PREPARED BY EXPLORATION RESEARCH, INC. DATED JULY 21, 2009.
- THE TRAFFIC STUDY FOR GTW'S WAVERLY WOODS WAS PREPARED BY THE TRAFFIC GROUP, INC. AND APPROVED ON JULY 14, 1994 AS PART OF 5-94-007.
 AN AMENDED TRAFFIC STUDY FOR THIS PROJECT AND 5-06-013 WAS PREPARED BY THE TRAFFIC GROUP, INC. DATED SEPTEMBER, 2006.
- THE FOREST STAND DELINEATION PREPARED BY ECO-SCIENCE PROFESSIONALS DATED APRIL, 2006.
- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS.
- SOILS INFORMATION TAKEN FROM SOIL MAP NO. 17. SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1969 1550E. THE SOILS INVESTIGATION REPORT WAS PREPARED BY I.T.E., INC. ON JUNE 28, 1994.
- PERMITS APPLICABLE FOR THIS SUBDIVISION ARE AS FOLLOWS: MDE TRACKING NUMBER 200960925/09-NT-3085
- ALL HANDICAP RAMPS SHALL MEET CURRENT ADA REQUIREMENTS.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE PERSONNEL ON THE JOB SITE PERFORMING THE MODIFICATIONS AND/OR IMPROVEMENTS MUST HAVE A COPY OF SHA'S APPROVED PERMIT AND PLANS AT ALL TIMES. THEY MUST HAVE FULL KNOWLEDGE OF THE CONTENTS OF THE PERMIT. THE SHA PERMIT INSPECTOR HAS THE OPTION OF STOPPING ALL WORK WHERE THE JOB SITE PERSONNEL DO NOT HAVE A COPY OF THE APPROVED PERMIT AND PLANS AND/OR ARE NOT COMPLYING WITH ITS CONTENTS.
- THE FOREST CONSERVATION EASEMENTS SHOWN ON THIS PLAN AS 'TO BE DISTURBED' HAVE BEEN ACCOUNTED FOR UNDER THE F-04-058 FOREST CONSERVATION PLAN AND THE 5-06-013 PLAN. THE FOREST CONSERVATION OBLIGATION FOR GTW WAVERLY WOODS EAST OF MARRIOTTVILLE ROAD WAS FINALIZED UNDER THE F-04-058 PLAN AND THE FOREST CONSERVATION OBLIGATION FOR GTW WAVERLY WOODS WEST OF MARRIOTTVILLE ROAD HAS BEEN ESTABLISHED UNDER THE 5-06-013 PLAN.
- PLAN IS SUBJECT TO WAVER PETITION WP-07-126. ON JULY 20, 2007 HOWARD COUNTY APPROVED A WAIVER FROM SECTION 16.119.f.1 TO PERMIT VEHICULAR ACCESS TO TWO VEHICULAR ACCESS RESTRICTED ROADS (ROUTE 99 - MINOR ARTERIAL AND MARRIOTTVILLE ROAD - INTERMEDIATE ARTERIAL), INCLUDING THE HIGHER CLASSIFICATION VEHICULAR ACCESS RESTRICTED MARRIOTTVILLE ROAD, SEE 50P-07-082.
- THE WETLANDS AND BUFFER DISTURBANCES APPROVED UNDER MDE PERMIT TRACKING NUMBER 200960925/09-NT-3085 (SEE GENERAL NOTE NO. 16) ARE CONSIDERED ESSENTIAL DISTURBANCES IN ACCORDANCE WITH SECTION 16.116.e.1. OF THE HOWARD COUNTY SUBDIVISION REGULATIONS.

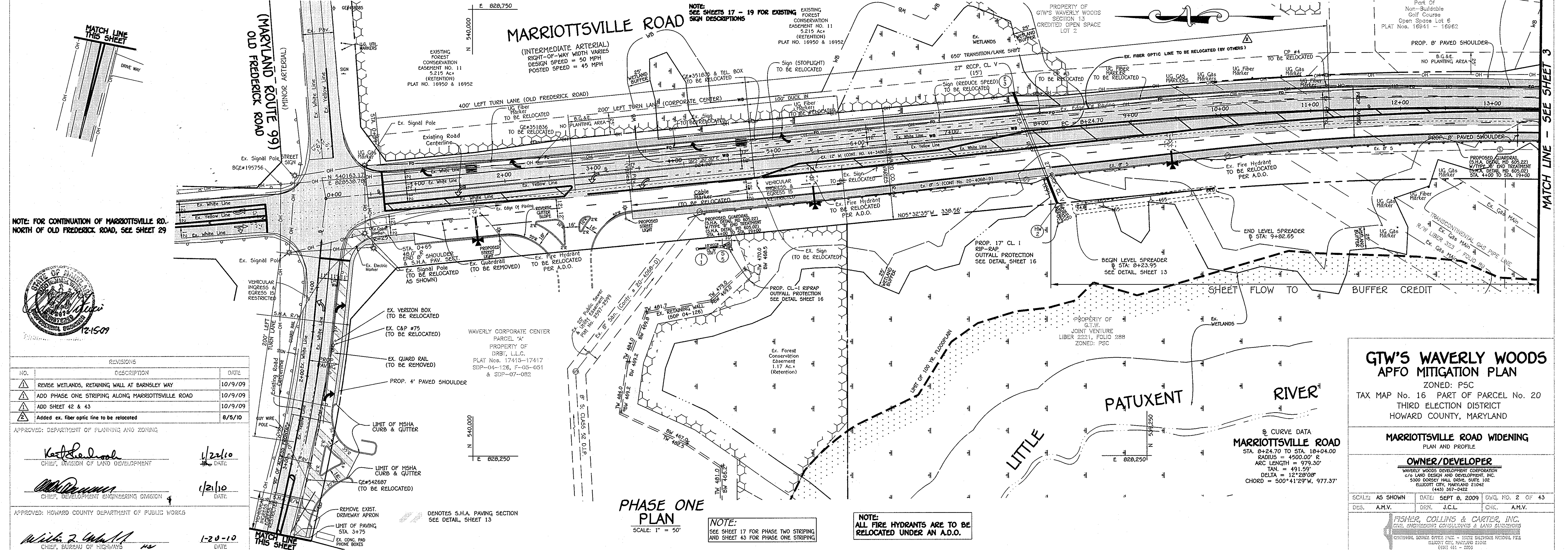
NO.	DESCRIPTION	DATE
1	ADDED RELOCATION OF EX. STREET LIGHT IN PLAN & NOTE	7/21/08
2	REVISE WETLANDS, RETAINING WALL AT BARNESLEY WAY, ADD PHASE ONE STRIPING ALONG MARRIOTTVILLE ROAD, ADD SHEET 42 & 43	10/9/09
REVISIONS		

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE PARK - 10722 BALDWIN NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2895

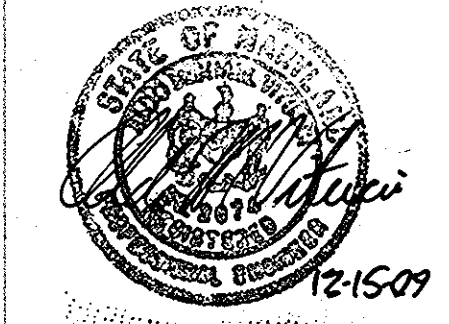
OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (443) 367-0422

W. ... 12-15-09
 DATE
 "I, the undersigned, hereby certify that these documents were prepared by me, and that I am a duly licensed Professional Engineer, under the laws of the State of Maryland, License No. 20740, Expiration Date 2-22-11."

**GTW'S WAVERLY WOODS
APFO MITIGATION PLAN**
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 8, 2009
 SHEET 1 OF 43



NOTE: FOR CONTINUATION OF MARIOTTVILLE RD. NORTH OF OLD FREDERICK ROAD, SEE SHEET 29



NO.	REVISIONS DESCRIPTION	DATE
1	REVISE WETLANDS, RETAINING WALL AT BARNESLEY WAY	10/9/09
2	ADD PHASE ONE STRIPING ALONG MARIOTTVILLE ROAD	10/9/09
3	ADD SHEET 42 & 43	10/9/09
4	Added ex. fiber optic line to be relocated	8/5/10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 1/22/10 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 1/21/10 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: [Signature] 1-20-10 DATE
 CHIEF, BUREAU OF HIGHWAYS

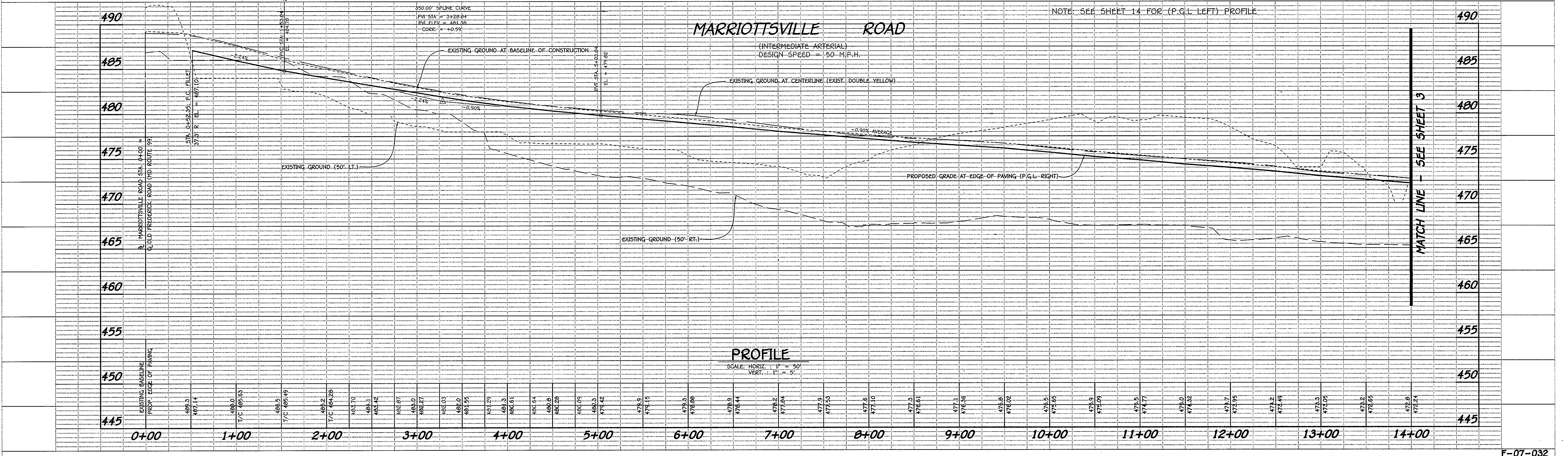
GTW'S WAVERLY WOODS APFO MITIGATION PLAN
 ZONED: PSC
 TAX MAP No. 16 PART OF PARCEL No. 20
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

MARIOTTVILLE ROAD WIDENING
 PLAN AND PROFILE

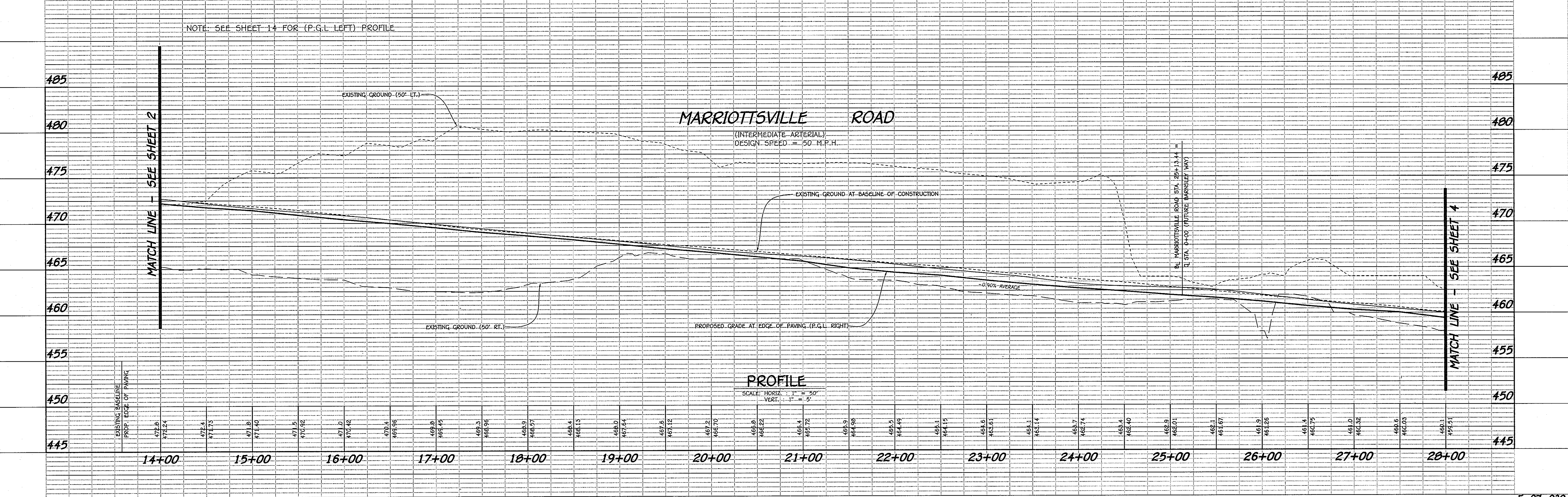
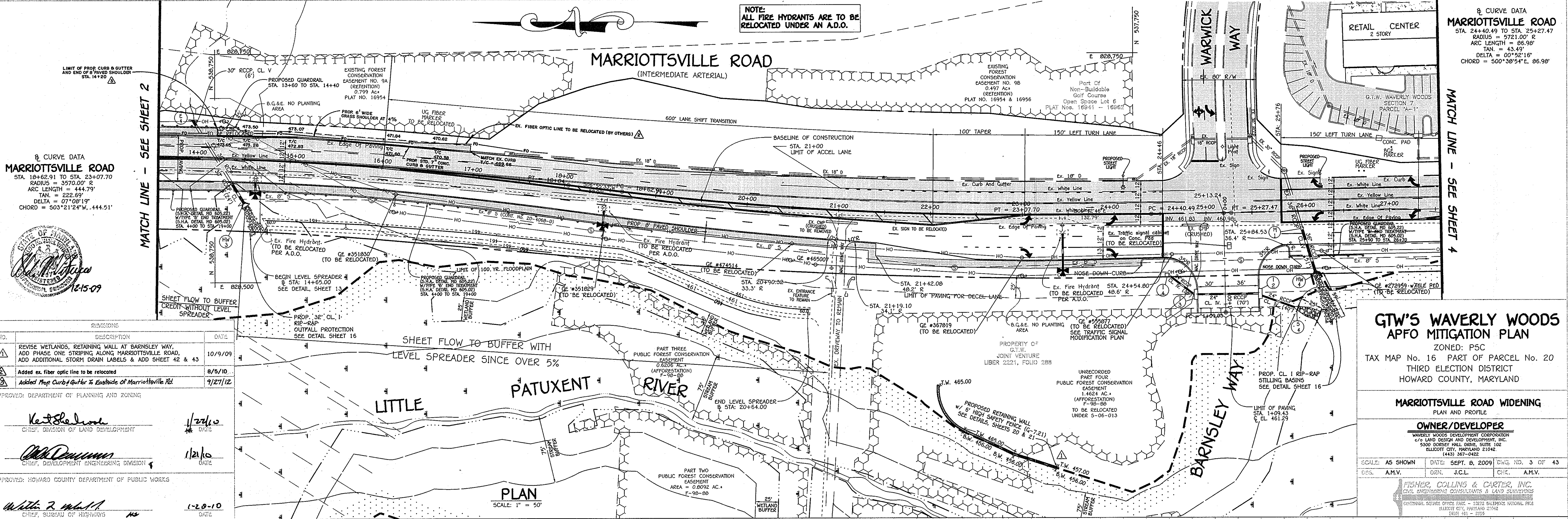
OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (443) 367-0422

SCALE: AS SHOWN DATE: SEPT 8, 2009 DWG. NO. 2 OF 43
 DES. A.M.V. DRN. J.C.L. CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND DEVELOPERS
 CENTENNIAL SQUARE OFFICE BUILDING - 10024 BAYVIEW NATIONAL PARK
 ELICOTT CITY, MARYLAND 21042
 (410) 481-2202



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



REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE WETLANDS, RETAINING WALL AT BARNESLEY WAY. ADD PHASE ONE STRIPING ALONG MARRIOTTSVILLE ROAD. ADD ADDITIONAL STORM DRAIN LABELS & ADD SHEET 42 & 43	10/9/09
2	Added ex. fiber optic line to be relocated	8/5/10
3	Added Prop Curb & Gutter to Eastside of Marriottsville Rd.	9/27/12

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kate Shelton
CHIEF, DIVISION OF LAND DEVELOPMENT

Chris DeWinn
CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Walter R. M... II
CHIEF, BUREAU OF HIGHWAYS

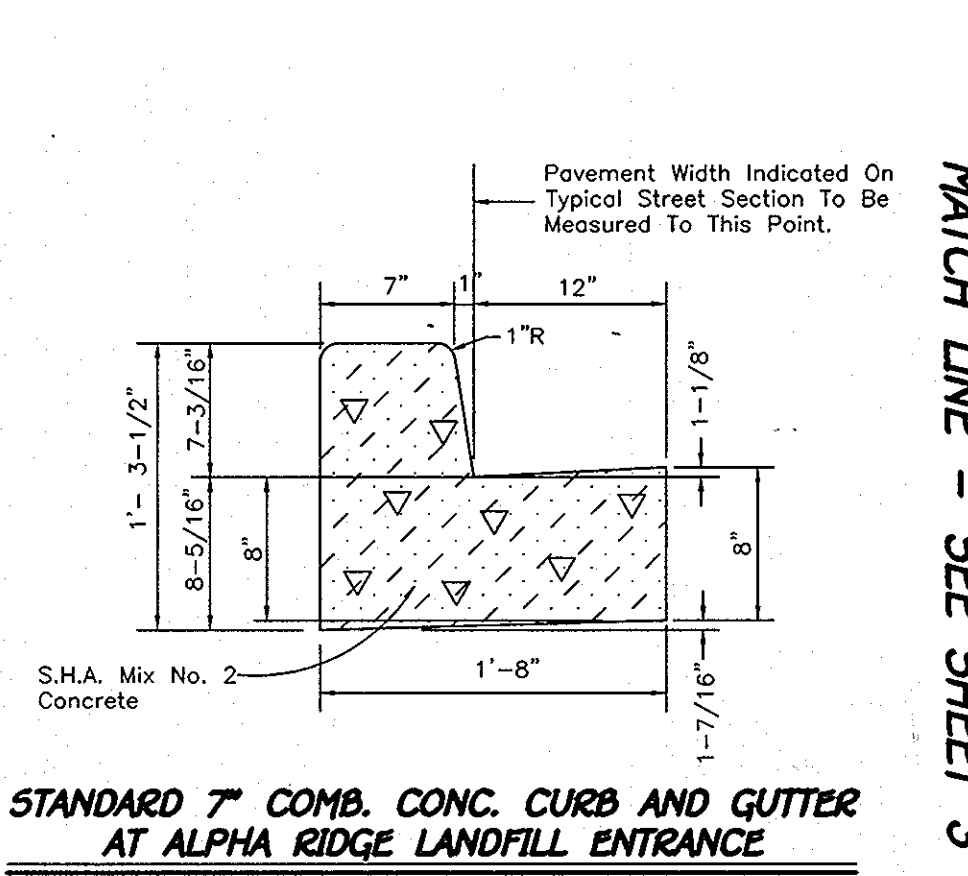
1/22/10 DATE

1/21/10 DATE

1-2-0-10 DATE

MARRIOTTSVILLE ROAD
STA. 18+62.91 TO STA. 23+07.70
RADIUS = 3570.00' R
ARC LENGTH = 444.79'
TAN. = 222.69'
DELTA = 07°02'19"
CHORD = 503'21"24"W, 444.51'





NO.	DESCRIPTION	DATE
1	ADDED RELOCATION OF EX. STREET LIGHT IN PLAN VIEW & NOTE	7/21/09
2	REVISE WETLANDS, RETAINING WALL AT BARNESLEY WAY, ADD PHASE ONE STRIPING ALONG MARRIOTTSVILLE ROAD, ADD ADDITIONAL STORM DRAIN LABELS AND ADD SHEET 42 & 43	10/9/09
3	Revised Dump Road Entrance And Striping	7/8/11

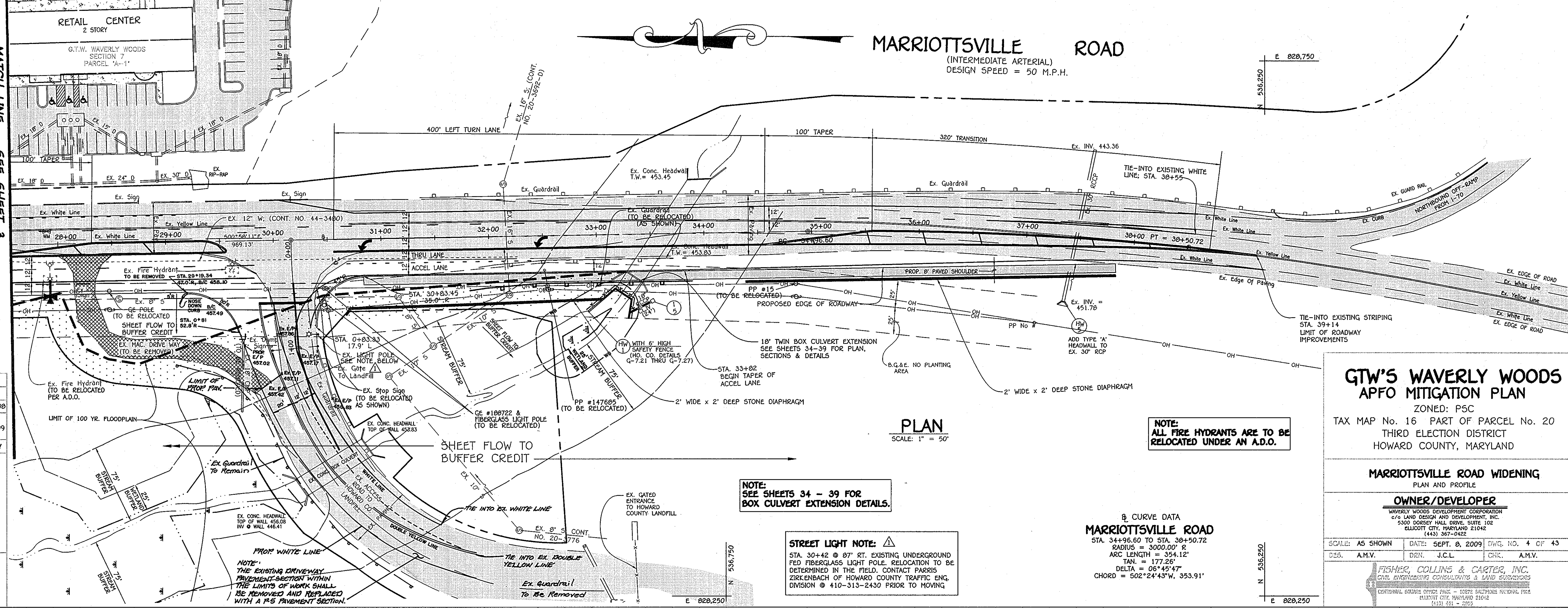
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kent Sheehy
CHIEF, DIVISION OF LAND DEVELOPMENT
12/10/10 DATE

John Dammann
CHIEF, DEVELOPMENT ENGINEERING DIVISION 4
12/10/10 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

William Z. McNeil
CHIEF, BUREAU OF HIGHWAYS
1-20-10 DATE



GTW'S WAVERLY WOODS APFO MITIGATION PLAN
ZONED: PSC
TAX MAP No. 16 PART OF PARCEL No. 20
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

MARRIOTTSVILLE ROAD WIDENING
PLAN AND PROFILE

OWNER/DEVELOPER
MARRIOTTSVILLE DEVELOPMENT CORPORATION
c/o LAND DESIGN AND DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLSWORTH CITY, MARYLAND 21042
(410) 367-0422

SCALE: AS SHOWN DATE: SEPT. 8, 2009 DWG. NO. 4 OF 43
DES. A.M.V. DRN. J.C.L. CHK. A.M.V.

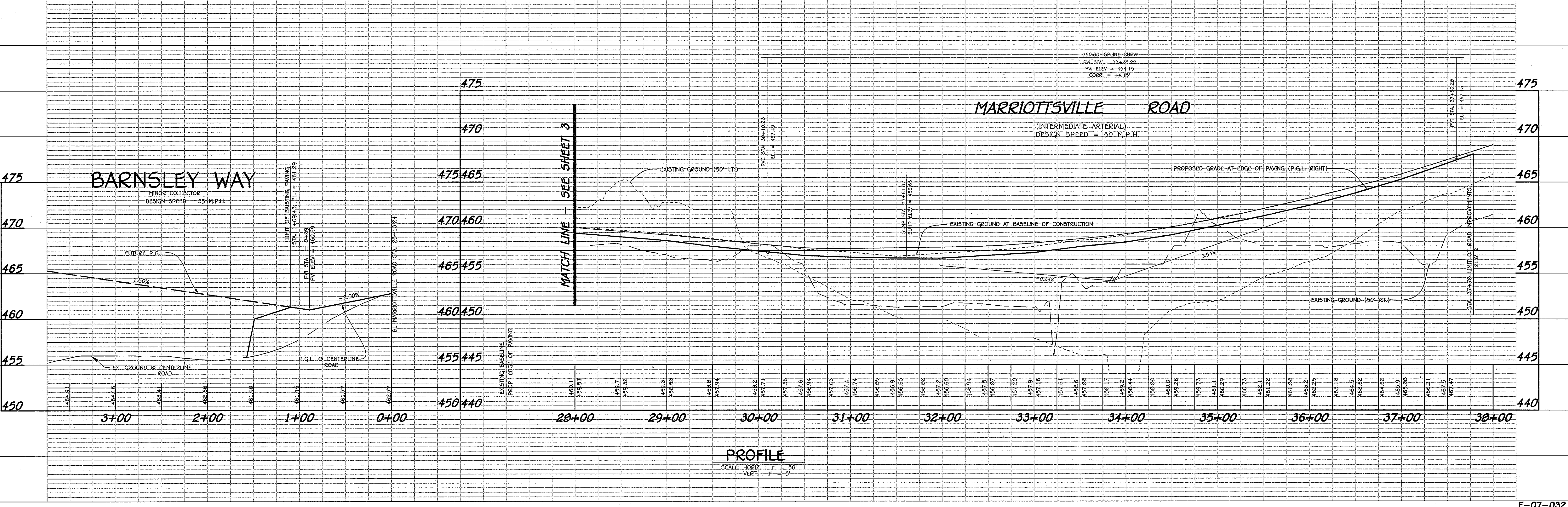
FIGHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE BLDG. - 15070 BALTIMORE NATIONAL PIKE
ELLSWORTH CITY, MARYLAND 21042
(410) 851-2005

NOTE:
SEE SHEETS 34 - 39 FOR
BOX CULVERT EXTENSION DETAILS.

STREET LIGHT NOTE:

STA. 30+42 @ 87' RT. EXISTING UNDERGROUND
FED FIBERGLASS LIGHT POLE. RELOCATION TO BE
DETERMINED IN THE FIELD. CONTACT PARRIS
ZIRKENBACH OF HOWARD COUNTY TRAFFIC ENG.
DIVISION @ 410-313-2430 PRIOR TO MOVING

8 CURVE DATA
MARRIOTTSVILLE ROAD
STA. 34+96.60 TO STA. 38+50.72
RADIUS = 3000.00' R
ARC LENGTH = 354.12'
TAN. = 177.25'
DELTA = 06°45'47"
CHORD = 502'24"43"W, 353.91'



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

ENGINEER'S CERTIFICATE
 I Herewith Certify That This Plan For Erosion And Sediment Control Represents A Feasible Plan Based On My Personal Knowledge Of The Site And That It Was Prepared In Accordance With The Requirements Of The Howard County Soil Conservation District.
 Signature: *[Signature]* Date: 6/20/08

DEVELOPER'S CERTIFICATE
 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 County Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary.
 Signature Of Developer: *[Signature]* Date: 6/2/08

Reviewed For Howard County Soil Conservation District Technical Requirements.
 U.S.A. Natural Resources Conservation Service Date: *[Signature]*

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard County Soil Conservation District.
 District Howard County Soil Conservation District Date: 6/12/08

Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development Date: 6/24/08

Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways Date: 6-10-08

ENGINEER'S CERTIFICATE
 I Herewith Certify That This Plan For Erosion And Sediment Control Represents A Feasible Plan Based On My Personal Knowledge Of The Site And That It Was Prepared In Accordance With The Requirements Of The Howard County Soil Conservation District.
 Signature: *[Signature]* Date: 6/20/08

SUMMARY TABLE #1

The following is a summary of the peak discharges from each of the drainage areas and study points.

EXISTING CONDITIONS	One-Year Storm (cfs)	Ten-Year Storm (cfs)	100-Year Storm (cfs)
Study Point A	0.6	2.4	4.1
B	0.6	3.4	6.5
C	0.60	2.50	4.40
D	1.30	4.60	7.60
E	0.50	3.10	5.90
F	1.40	6.50	11.60
G	1.80	7.70	13.40
H	0.70	2.60	4.40
I	1.10	3.50	5.70
J	0.50	1.80	2.90
K	0.50	2.10	3.70

0.00 / 0.00 Denotes Proposed Q / Proposed Q with credits.

PROPOSED CONDITIONS	One-Year Storm (cfs)	Ten-Year Storm (cfs)	100-Year Storm (cfs)
Study Point A	0.6	2.6	4.5
B	0.6	2.6	4.5
C	1.40	3.70	6.60
D	0.60 / 0.00	1.60 / 0.90	2.30 / 1.60
E	0.60 / 0.07	1.50 / 0.90	2.30 / 1.70
F	0.90 / 0.09	2.50 / 1.30	3.80 / 2.40
G	0.90 / 0.05	2.70 / 0.80	4.30 / 1.90
H	1.40	5.00	8.50
I	0.80	1.60	2.30
J	0.09	0.70	0.90
K	0.50 / 0.04	1.50 / 0.10	2.30 / 1.00
L	0.90 / 0.04	2.60 / 1.30	4.10 / 2.60
M	1.00 / 0.00	2.40 / 1.60	3.50 / 2.70
N	0.04	1.40	2.30
O	0.04	1.40	2.50
P	1.20 / 0.00	3.20 / 0.90	5.00 / 2.10

SUMMARY TABLE #2

The following is a summary of the Revol, WQvol, and CPV, Requirements:

TYPE OF REQUIREMENT	VOLUME REQUIRED	VOLUME PROVIDED & NOTES
Revol. (Recharge Vol. for Entire Site)	0.9625 Acres w/ 1 Area or 0.0797% ac-ft. w/ 1 Volume	2.198 acres w/ 1 Area Volume via grass channel credits
WQvol		
Study Point "A"-Grass Channel	0.0136 Ac Ft.	Provided by Grass Channel Credit
Study Point "B"-Grass Channel	0.0282 Ac Ft.	Provided by Grass Channel Credit
Study Point "C"-Grass Channel	0.0330 Ac Ft.	Provided by Grass Channel Credit
Study Point "D"-Sheet Flow to Buffer	0.01343 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "E"-Sheet Flow to Buffer	0.0122 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "F"-Sheet Flow to Buffer	0.0200 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "G"-Sheet Flow to Buffer	0.0262 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "H"-Grass Channel	0.08083 Ac Ft.	Provided by Grass Channel Credit
Study Point "I"-Sheet Flow to Buffer	0.02025 Ac Ft.	0.0327 within Level Spreader for I & J
Study Point "J"-Sheet Flow to Buffer	0.00871 Ac Ft.	0.0327 within Level Spreader for I & J
Study Point "K"-Sheet Flow to Buffer	0.01535 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "L"-Sheet Flow to Buffer	0.01992 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "M"-Sheet Flow to Buffer	0.02102 Ac Ft.	Provided by Sheet Flow to Buffer Credit
Study Point "N"-Grass Channel	0.01248 Ac Ft.	Provided by Grass Channel Credit
Study Point "O"-Grass Channel	0.0113 Ac Ft.	Provided by Grass Channel Credit
Study Point "P"-Sheet Flow to Buffer	0.03380 Ac Ft.	Provided by Sheet Flow to Buffer Credit
CPvol		
Study Point "A"	N/A	Less Than < 2.0 cfs.
Study Point "B"	N/A	Less Than < 2.0 cfs.
Study Point "C"	N/A	Less Than < 2.0 cfs.
Study Point "D"	N/A	Less Than < 2.0 cfs.
Study Point "E"	N/A	Less Than < 2.0 cfs.
Study Point "F"	N/A	Less Than < 2.0 cfs.
Study Point "G"	N/A	Less Than < 2.0 cfs.
Study Point "H"	N/A	Less Than < 2.0 cfs.
Study Point "I"	N/A	Less Than < 2.0 cfs.
Study Point "J"	N/A	Less Than < 2.0 cfs.
Study Point "K"	N/A	Less Than < 2.0 cfs.
Study Point "L"	N/A	Less Than < 2.0 cfs.
Study Point "M"	N/A	Less Than < 2.0 cfs.
Study Point "N"	N/A	Less Than < 2.0 cfs.
Study Point "O"	N/A	Less Than < 2.0 cfs.
Study Point "P"	N/A	Less Than < 2.0 cfs.

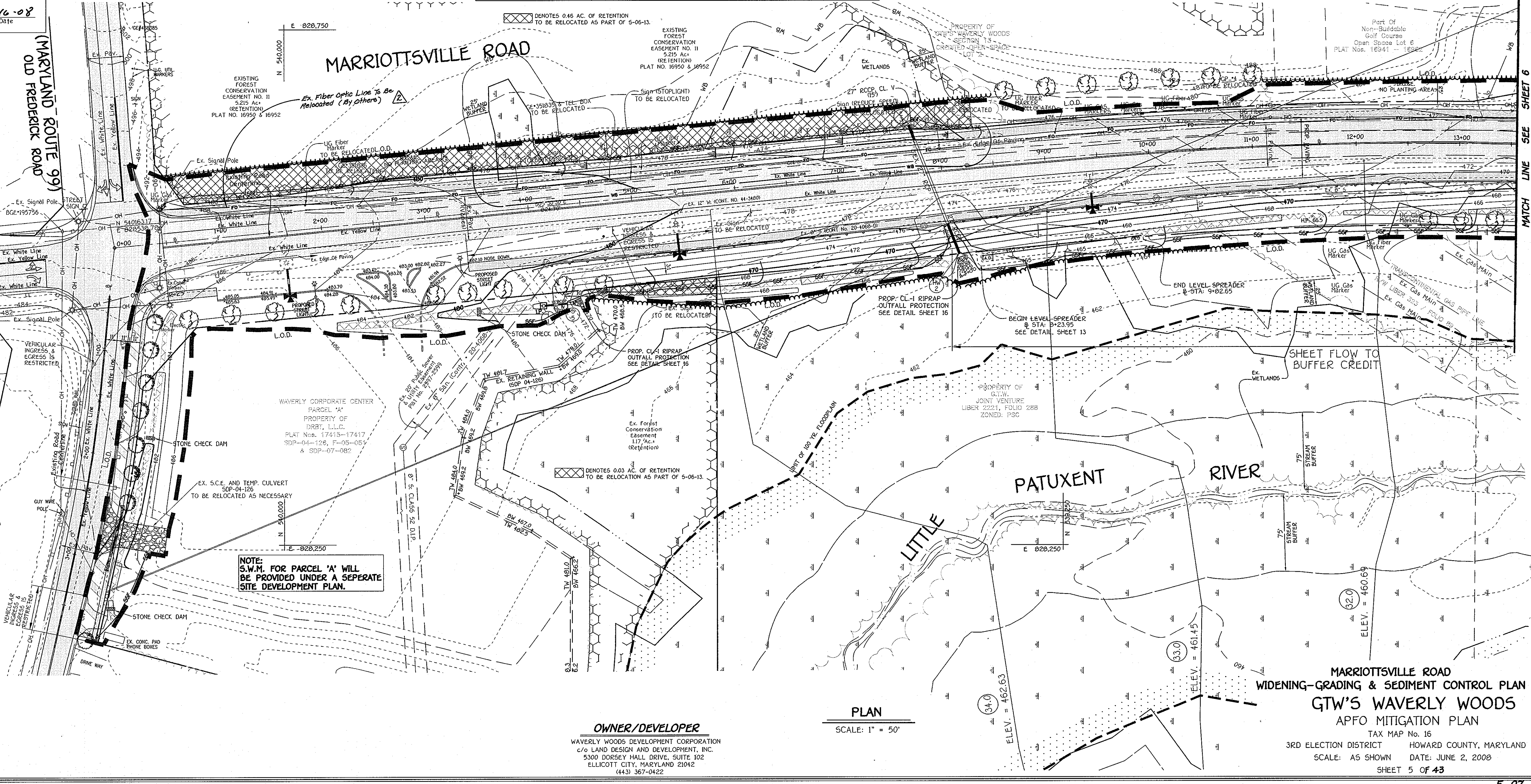
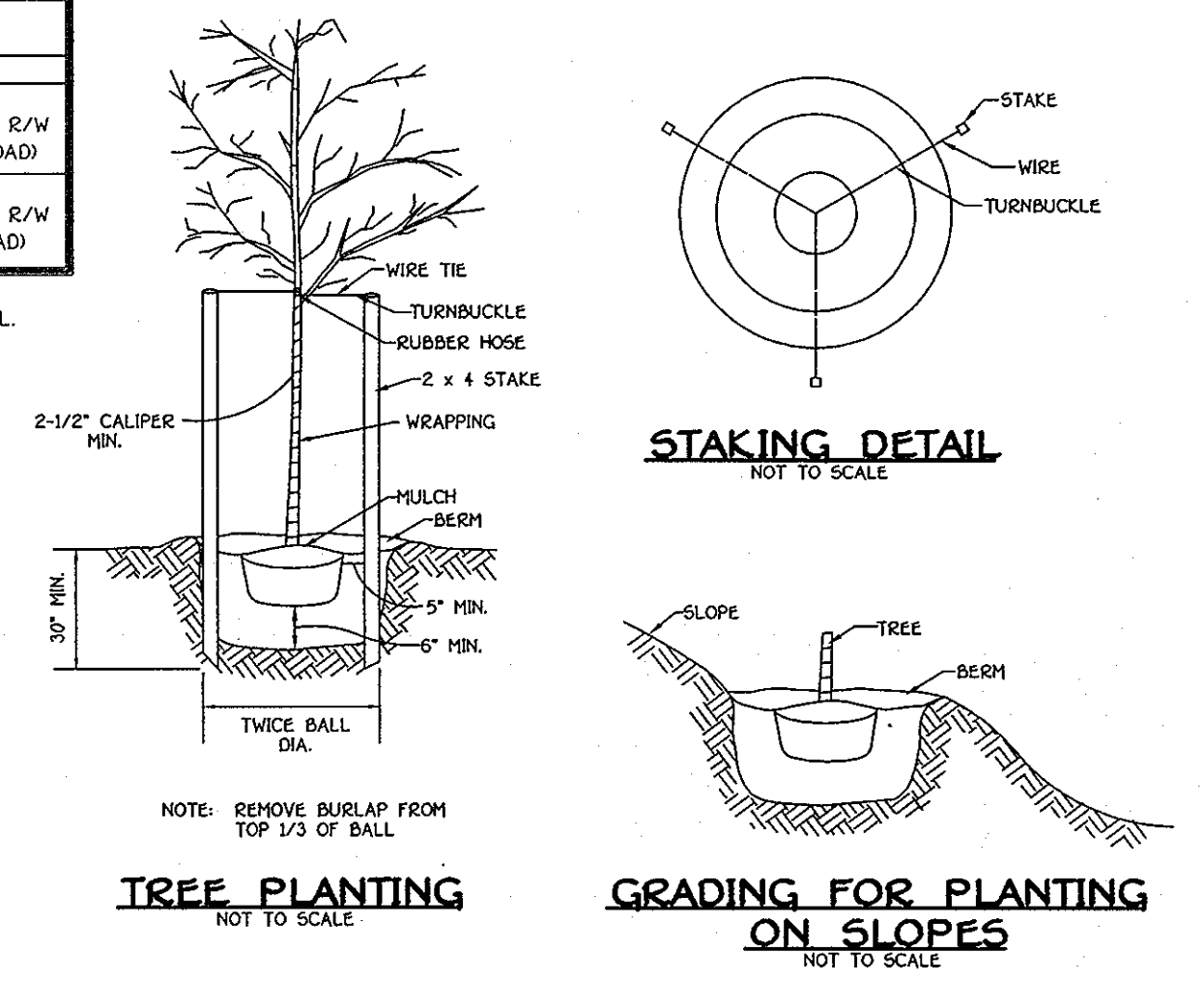
STREET TREE SCHEDULE

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	2625 L.F. / 40 = 66	ACER RUBRUM 'OCTOBER GLORY'	2 1/2"-3" CAL.	40' APART ON PUBLIC R/W (MARRIOTTVILLE ROAD)
	260 L.F. / 40 = 7	RED MAPLE		
	325 L.F. / 40 = 8	PLATANUS OCCIDENTALIS 'BLOODGOOD'	2 1/2"-3" CAL.	40' APART ON PUBLIC R/W (OLD FREDERICK ROAD)
	8 TREES	LONDON PLANETREE		

NOTE: STREET TREE TYPES ARE ONLY A RECOMMENDATION AND MAY BE SUBSTITUTED WITH A COUNTY ACCEPTED EQUIVALENT FROM THE HOWARD COUNTY LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE 81 REQUIRED STREET TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$ 24,300.00.

NO.	DESCRIPTION	DATE
1	Added Ex Fiber Optic Line To Be Relocated	8/6/10
2	REVISE WETLANDS, RETAINING WALL AT BARNSELY WAY, ADD PHASE ONE STRIPING ALONG MARRIOTTVILLE ROAD, ADD SHEET 42 & 43	10/9/09

NOTE: ALL FIRE HYDRANTS ARE TO BE RELOCATED UNDER AN A.D.O.



NOTES:
 1. SEE SHEET 30 FOR IMPROVEMENTS NORTH OF OLD FREDERICK ROAD
 2. SEE SHEETS 17 - 19 FOR PROPOSED STRIPING AND SIGNAGE

LEGEND

- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- 100 YEAR FLOODPLAIN
- PROPOSED STORM DRAIN
- EXISTING FOREST CONSERVATION EASEMENT
- EXISTING FOREST CONSERVATION EASEMENT TO BE REMOVED
- WETLAND BUFFER
- WETLANDS
- L.O.D. LIMIT OF DISTURBANCE
- SOF SUPER SILT FENCE
- PROPOSED STREET TREES

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE BLDG. - 1072 BALTIMORE NATIONAL FIRE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

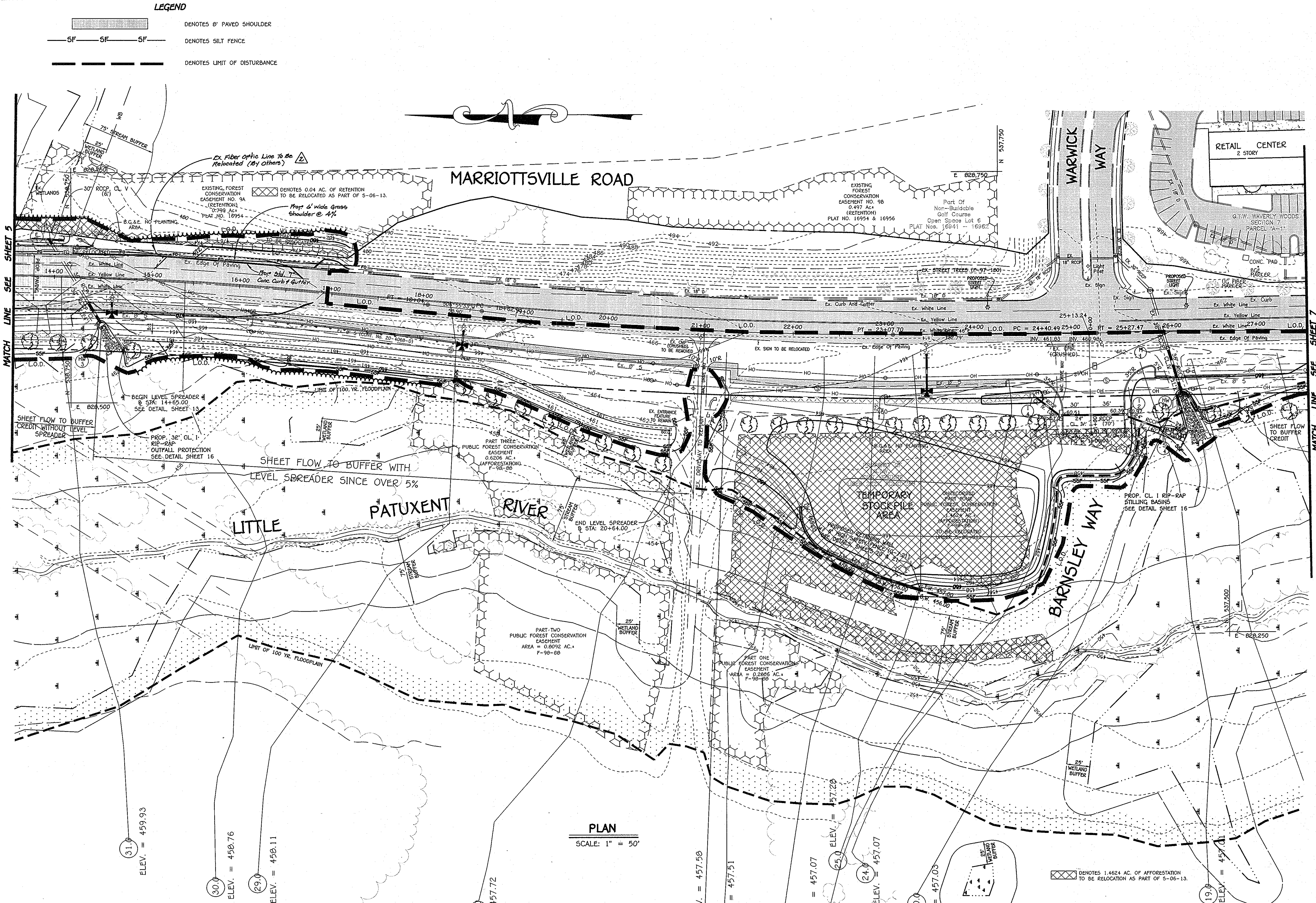
PLAN
 SCALE: 1" = 50'

MARRIOTTVILLE ROAD
WIDENING-GRADING & SEDIMENT CONTROL PLAN
GTW'S WAVERLY WOODS
APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 5 OF 43

ENGINEER'S CERTIFICATE
 I Herewith Certify That This Plan For Erosion And Sediment Control Represents A Feasible And Workable Plan Based On My Personal Knowledge Of The Site And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.
 Signature: *[Signature]* Date: 12/15/09

DEVELOPER'S CERTIFICATE
 "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."
 Signature Of Developer: *[Signature]* Date: 12/15/09

Approved For Howard County Soil Conservation District And Meets Technical Requirements:
 Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.
 District Howard Soil Conservation Dist. Date: 1/7/10
 Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development Date: 1/22/10
 Chief, Development Engineering Division Date: 1/21/10
 Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways Date: 1-20-10



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING, CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE 1902 - 10222 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2995

DATE OF EXPIRATION: 12-15-09

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

NOTE:
 ALL FIRE HYDRANTS ARE TO BE RELOCATED UNDER AN A.D.O.

**MARRIOTTSVILLE ROAD
 WIDENING-GRADING & SEDIMENT CONTROL PLAN
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN**
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 8, 2009
 SHEET 6 OF 43

ENGINEER'S CERTIFICATE

I hereby certify that this Plan For Erosion And Sediment Control Represents A Feasible 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: *[Signature]* Date: 12/15/09

DEVELOPER'S CERTIFICATE

"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."

Signature of Developer: *[Signature]* Date: 12/15/09

Approved For Howard County Soil Conservation District And Meets Technical Requirements:

USDA Natural Resources Conservation Service

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

Signature: *[Signature]* Date: 1/7/10

Approved: Department Of Planning And Zoning

Signature: *[Signature]* Date: 1/22/10

Chief, Division Of Land Development

Signature: *[Signature]* Date: 1/21/10

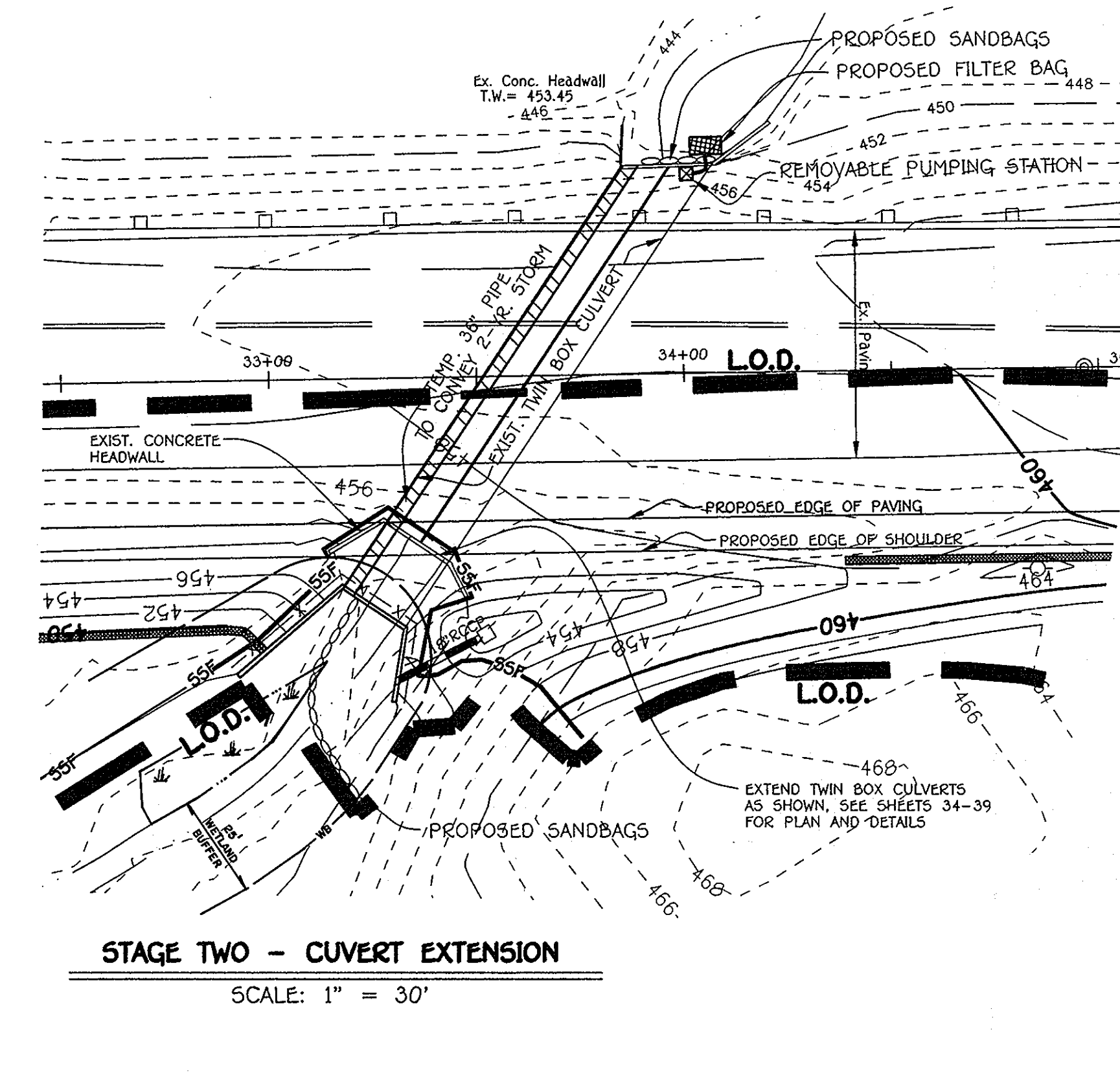
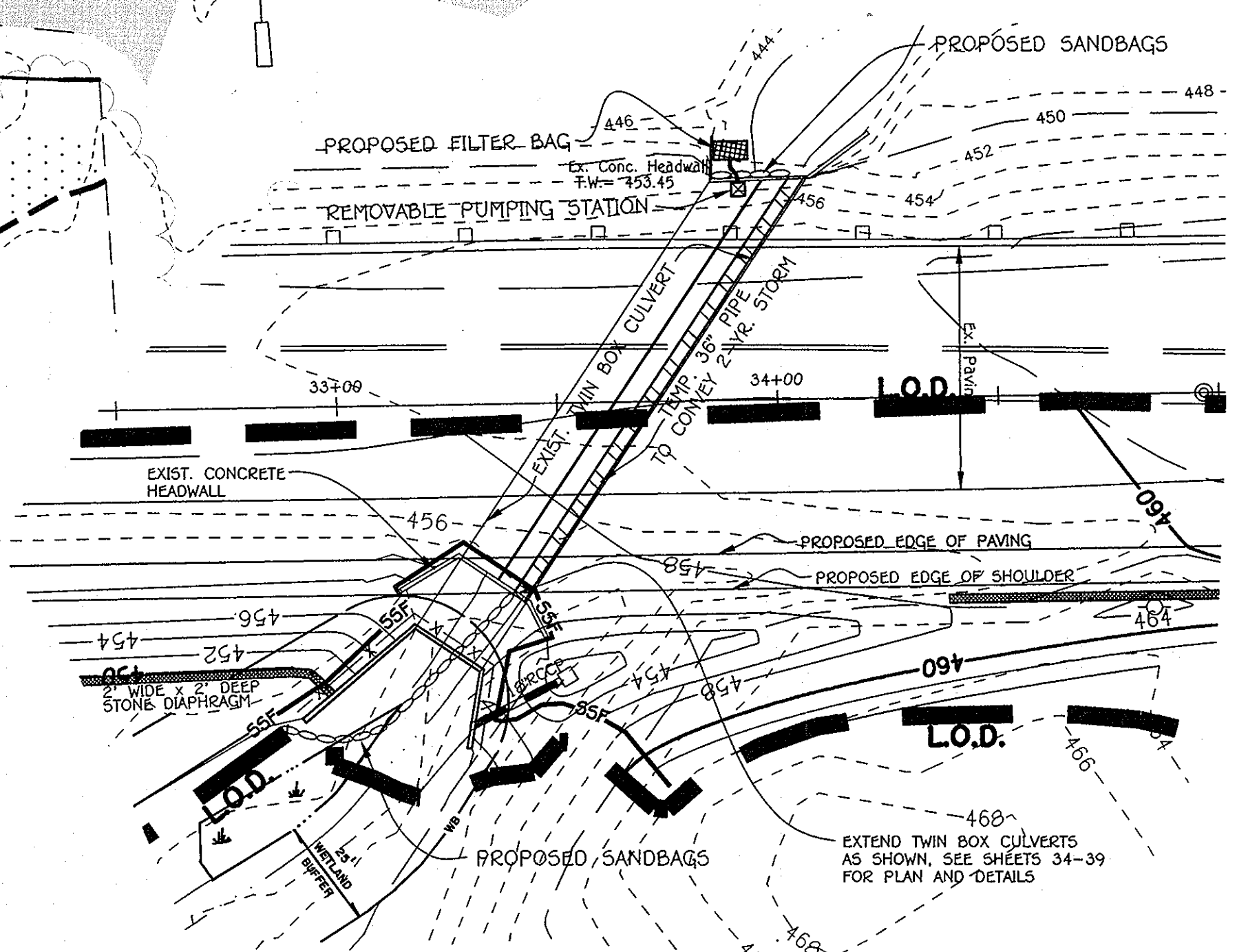
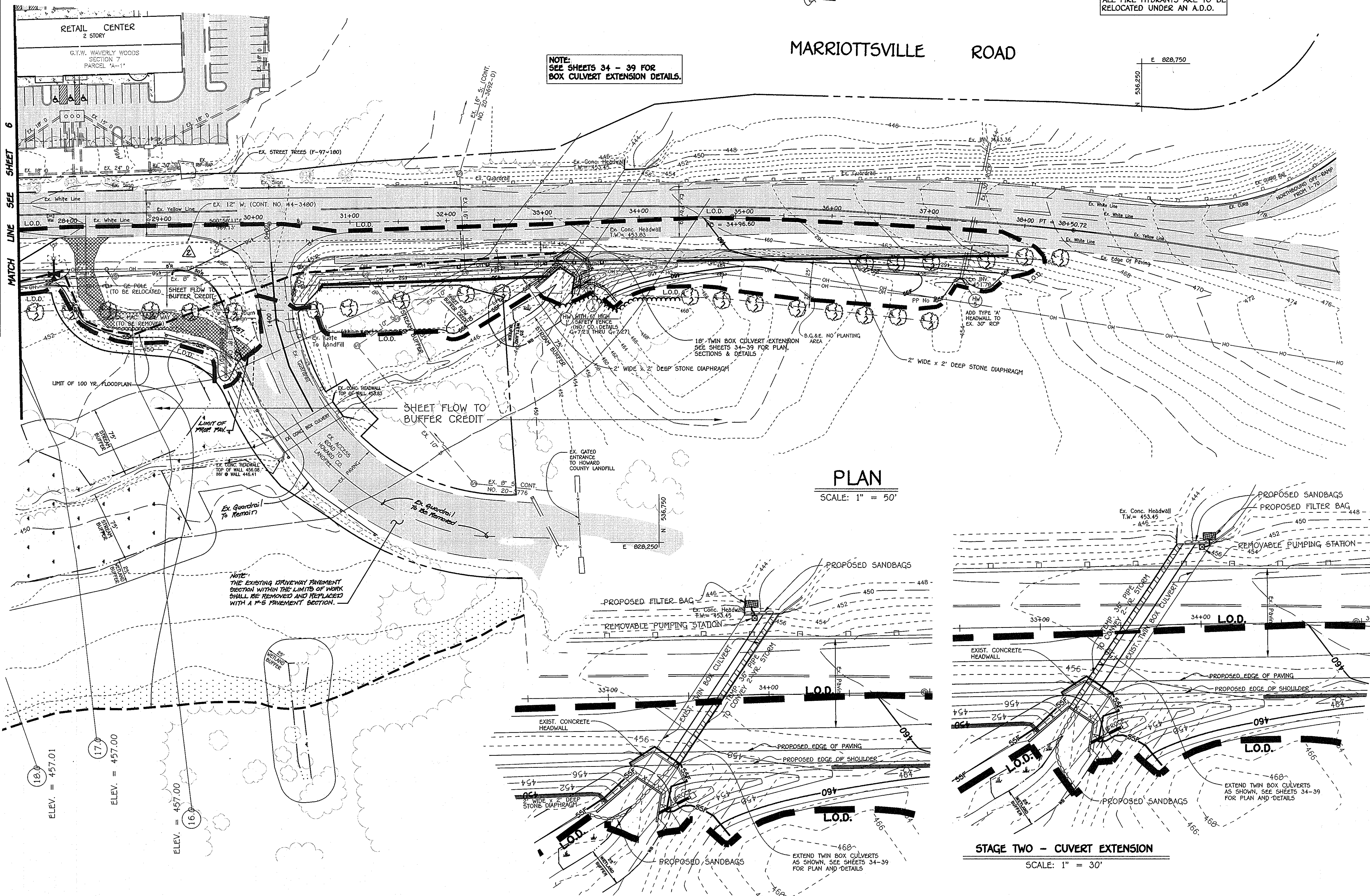
Chief, Development Engineering Division

Approved: Howard County Department Of Public Works

Signature: *[Signature]* Date: 1-20-10

Chief, Bureau Of Highways

NOTE: ALL FIRE HYDRANTS ARE TO BE RELOCATED UNDER AN A.D.O.



NO.	DESCRIPTION	DATE
1	Revised Dump Road Entrance	7/8/11
2	REVISE WETLANDS, RETAINING WALL AT BARNSLEY WAY, ADD PHASE ONE STRIPING ALONG MARRIOTTVILLE ROAD, ADD SHEET 42 & 43	10/9/09

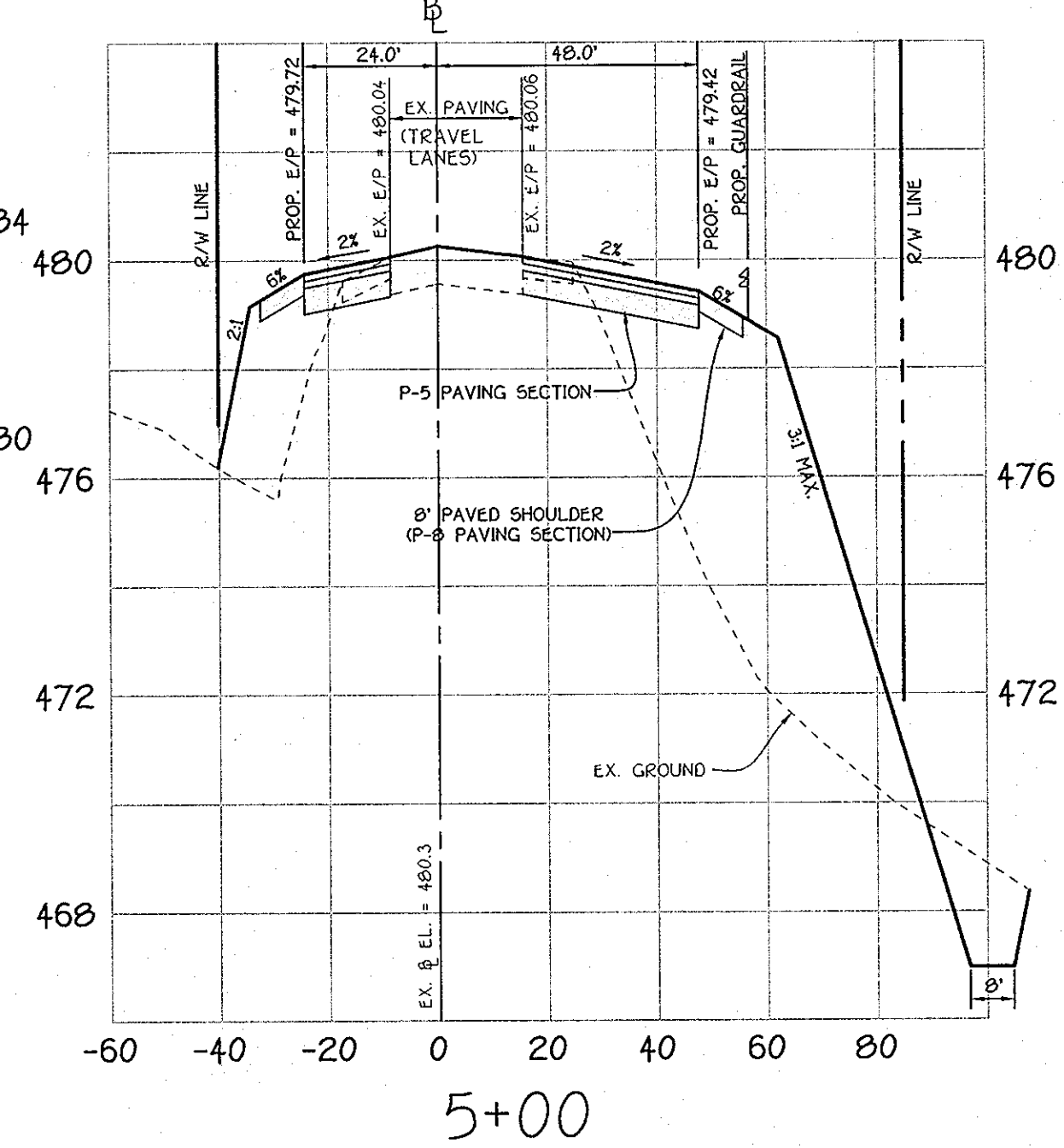
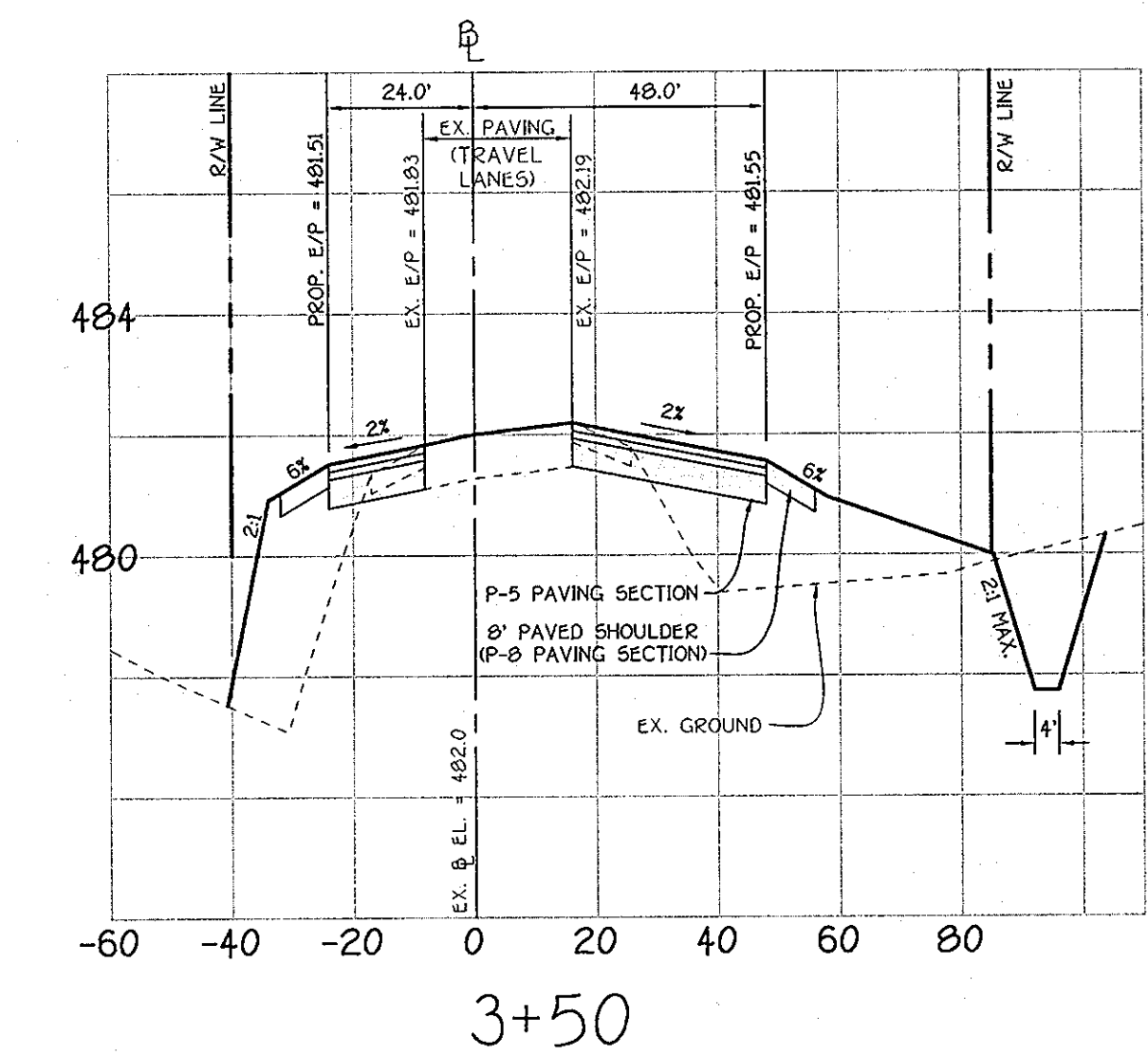
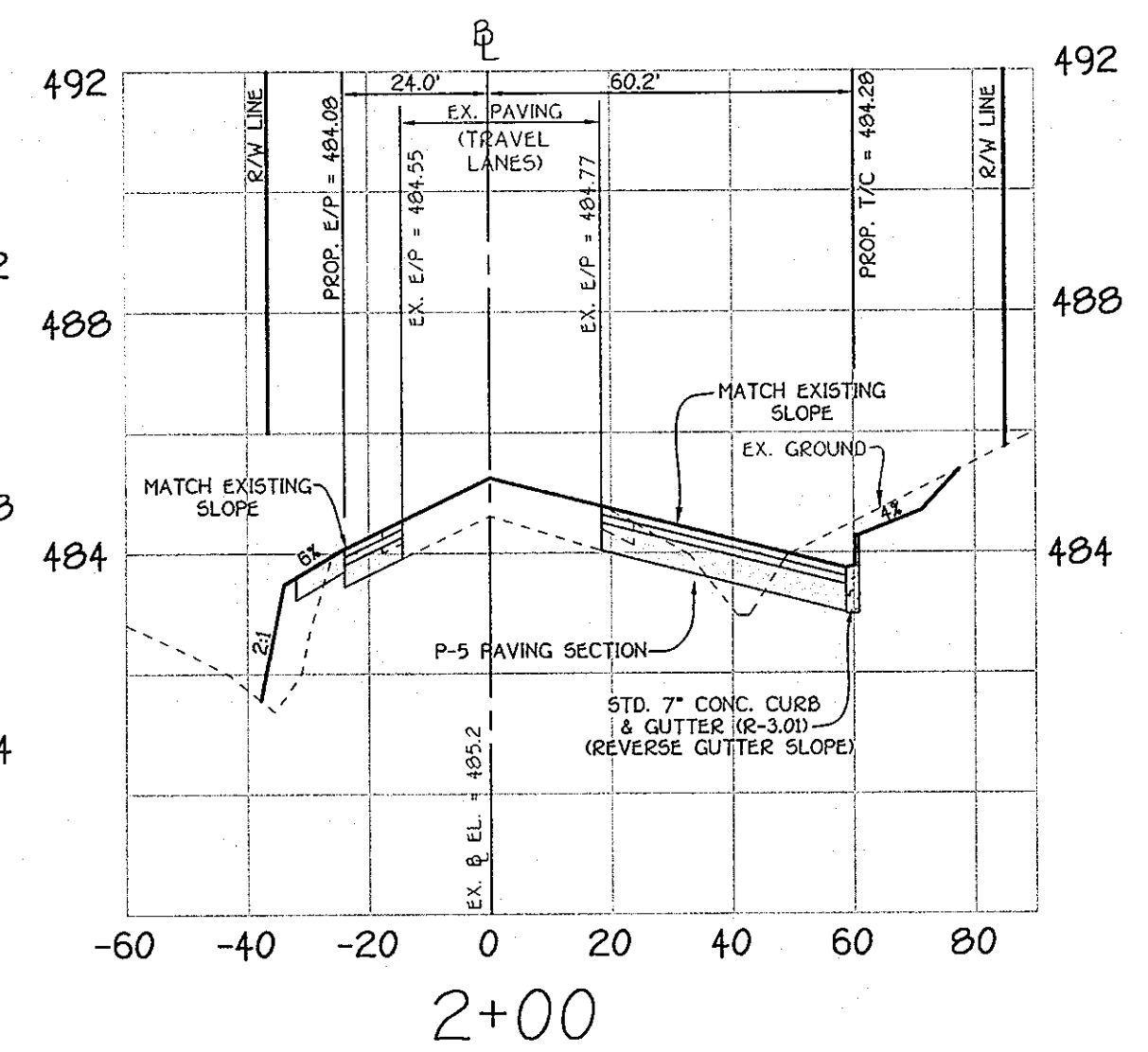
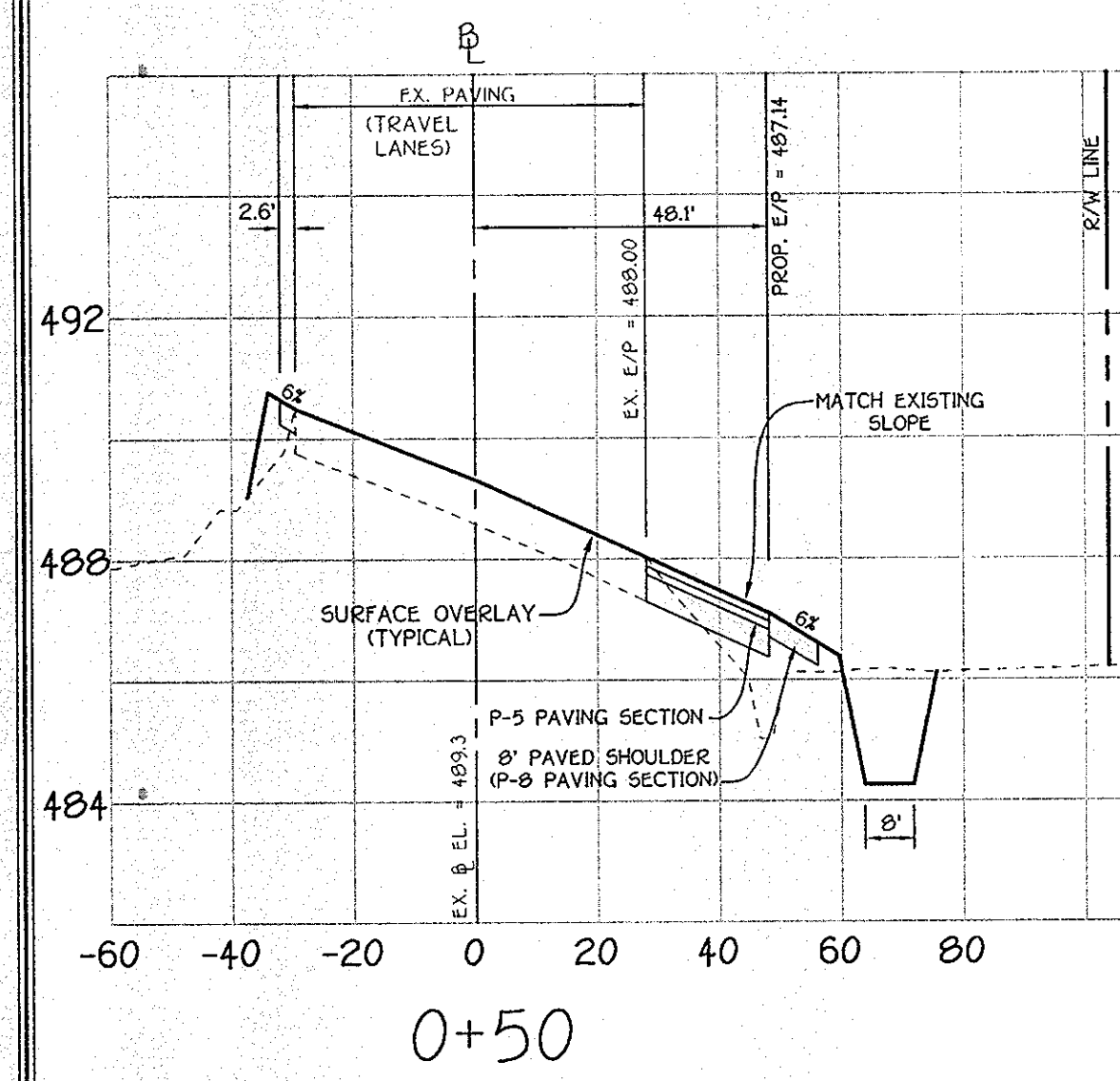
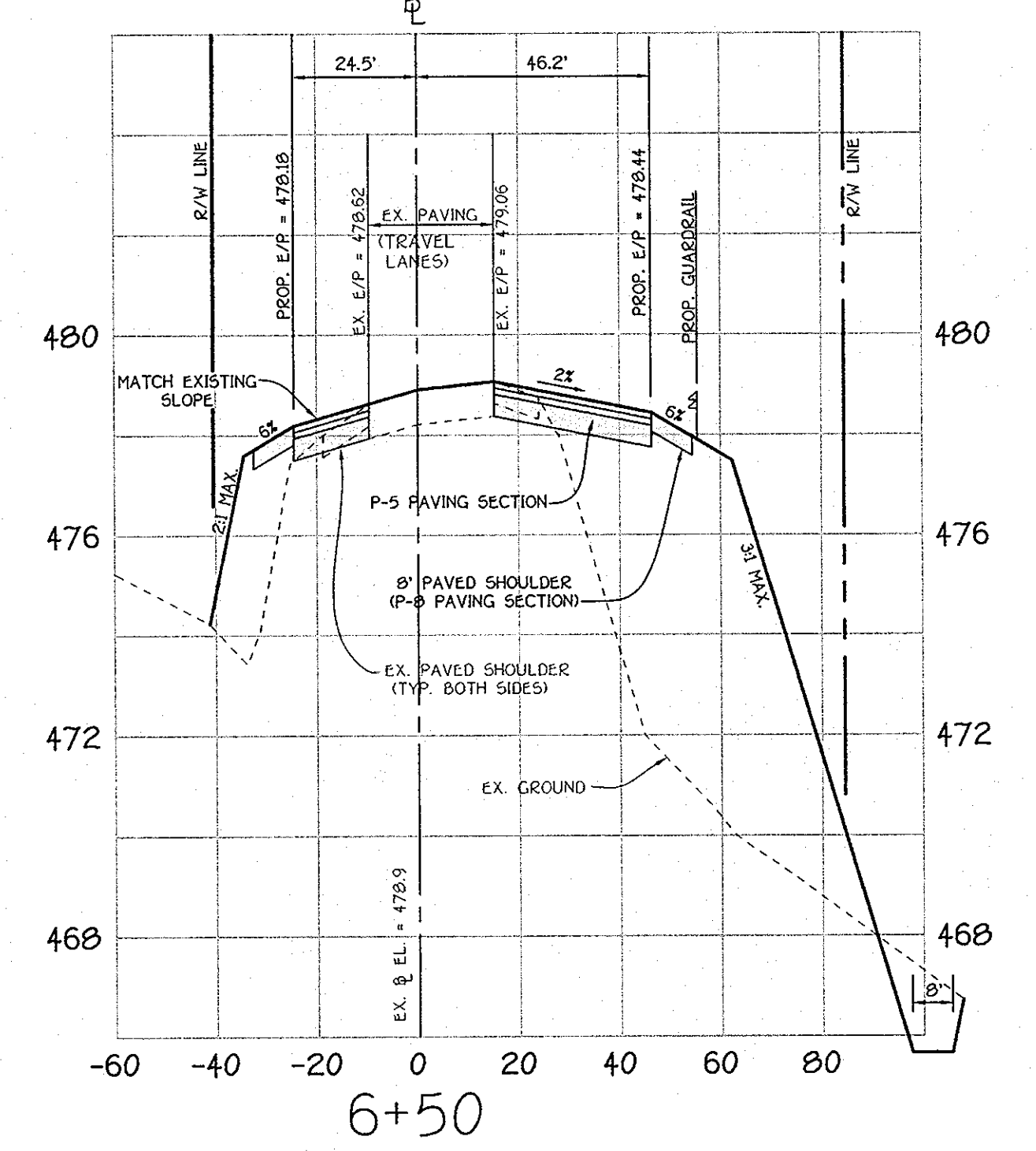
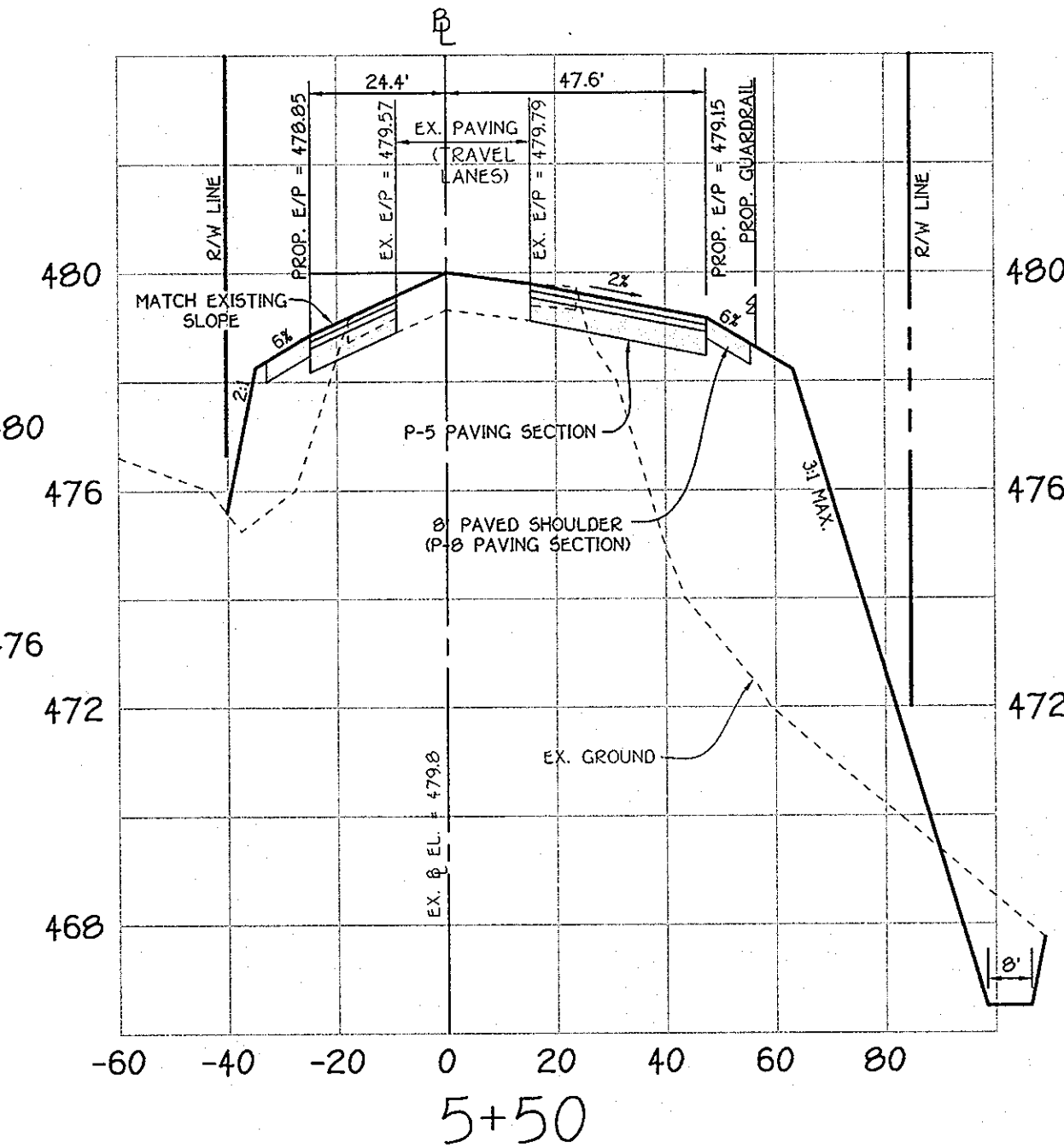
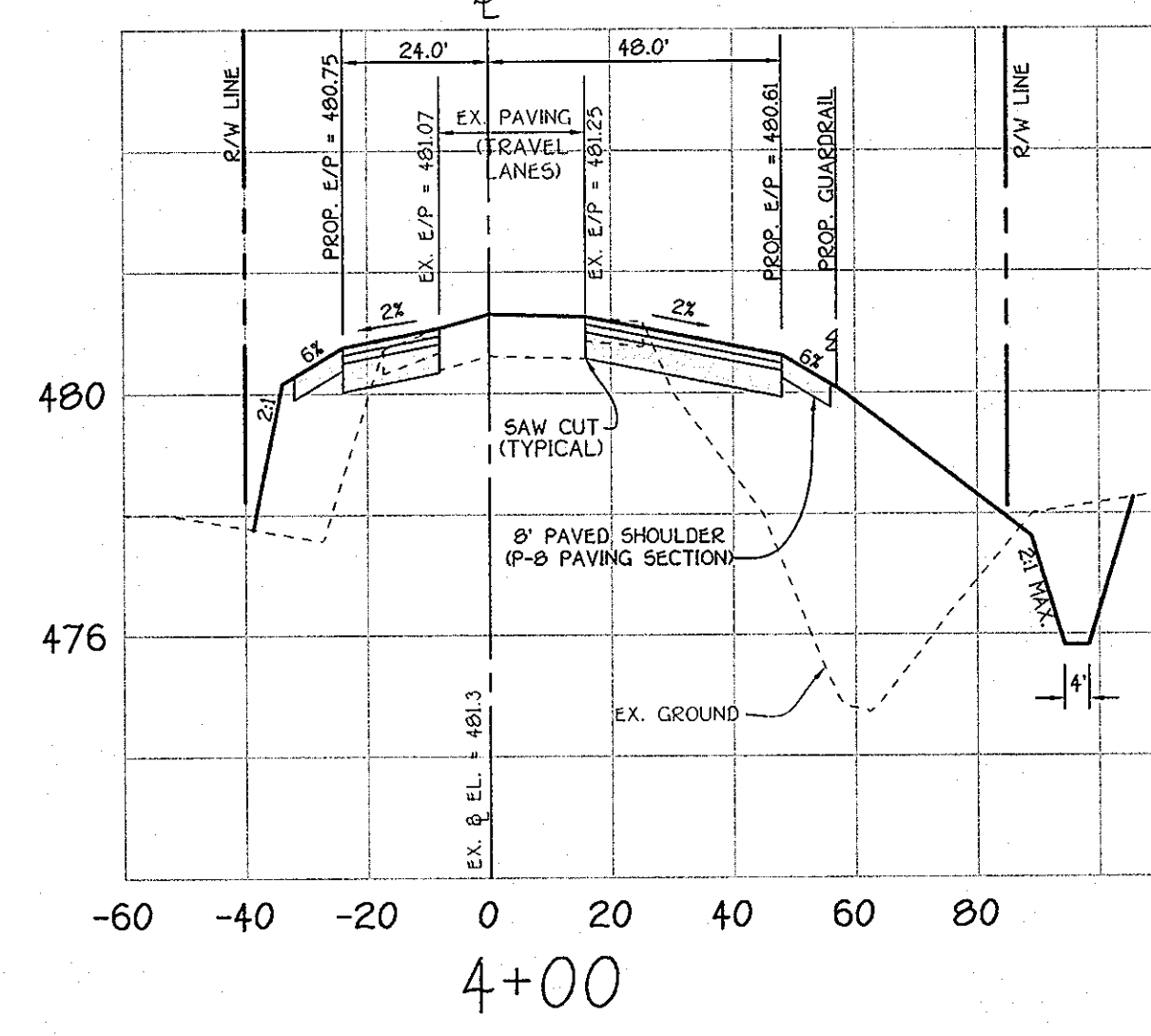
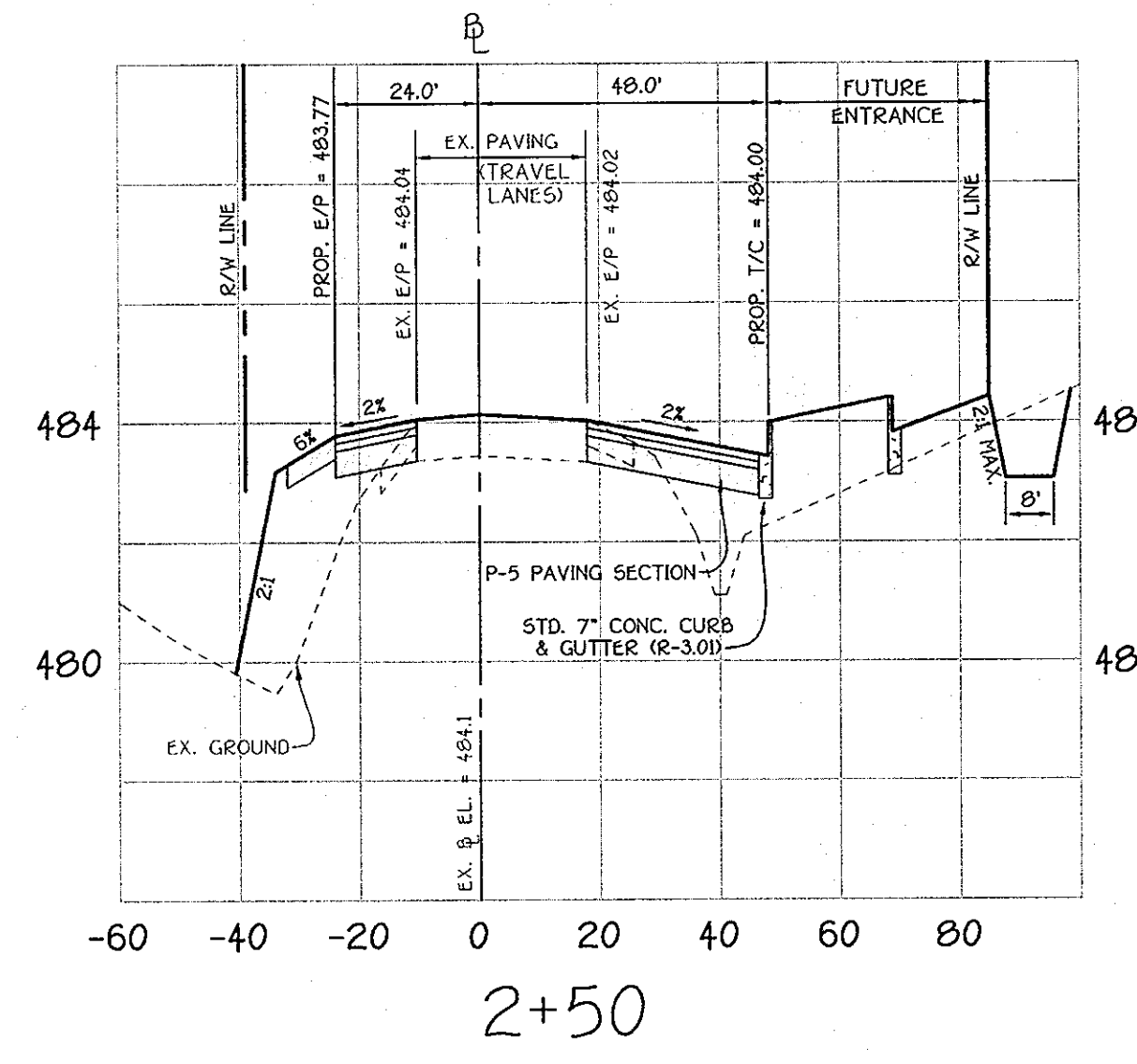
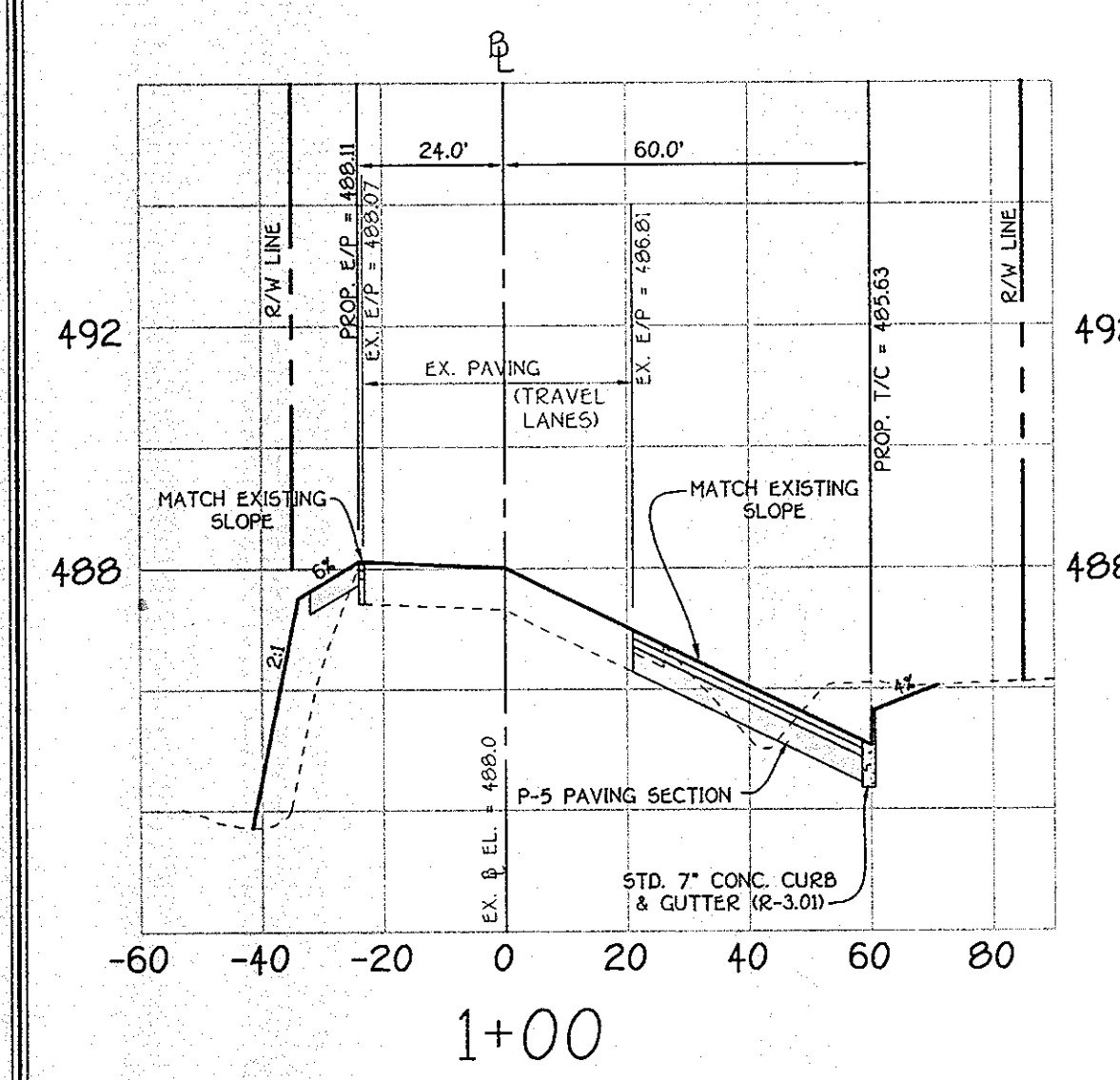
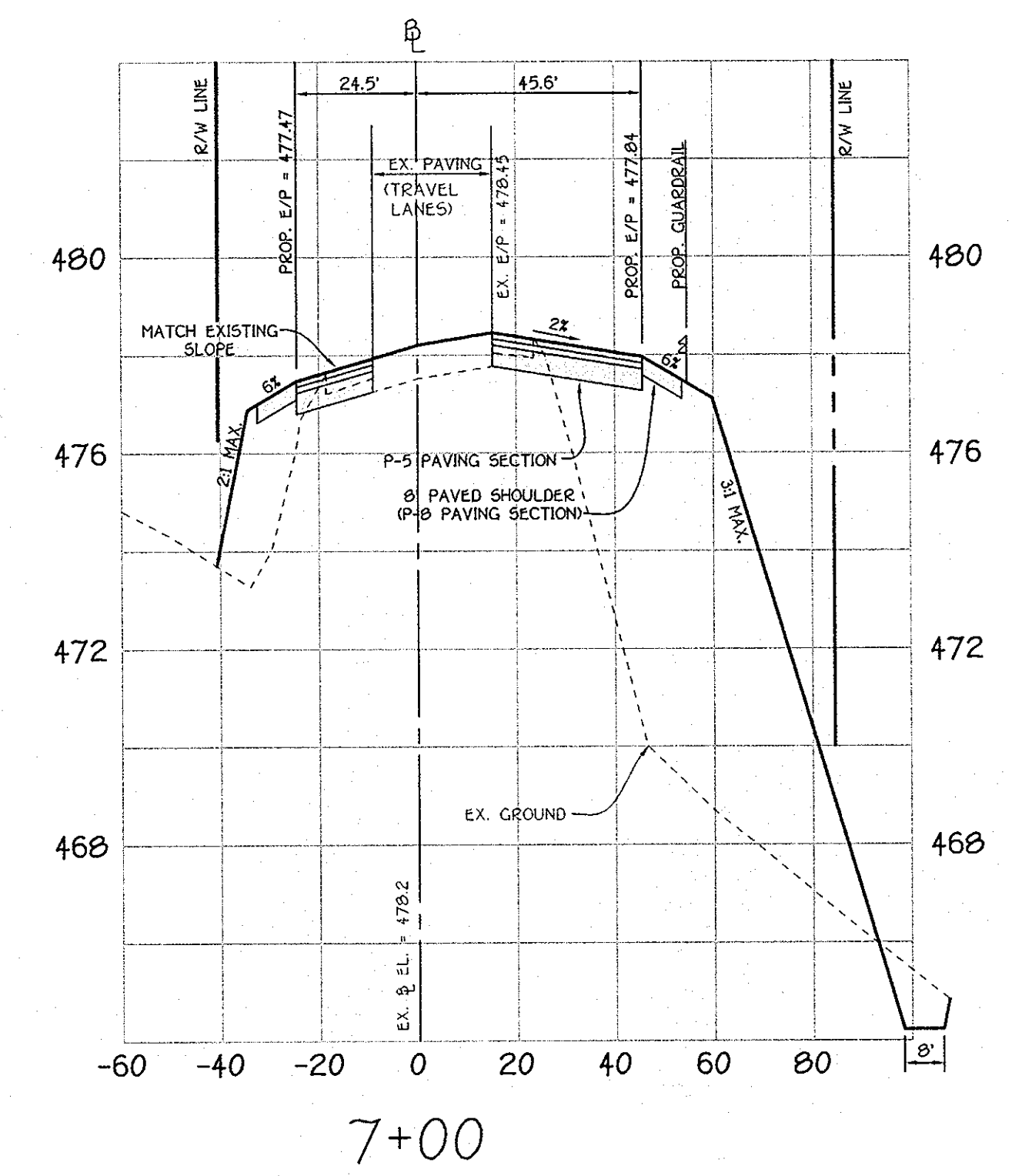
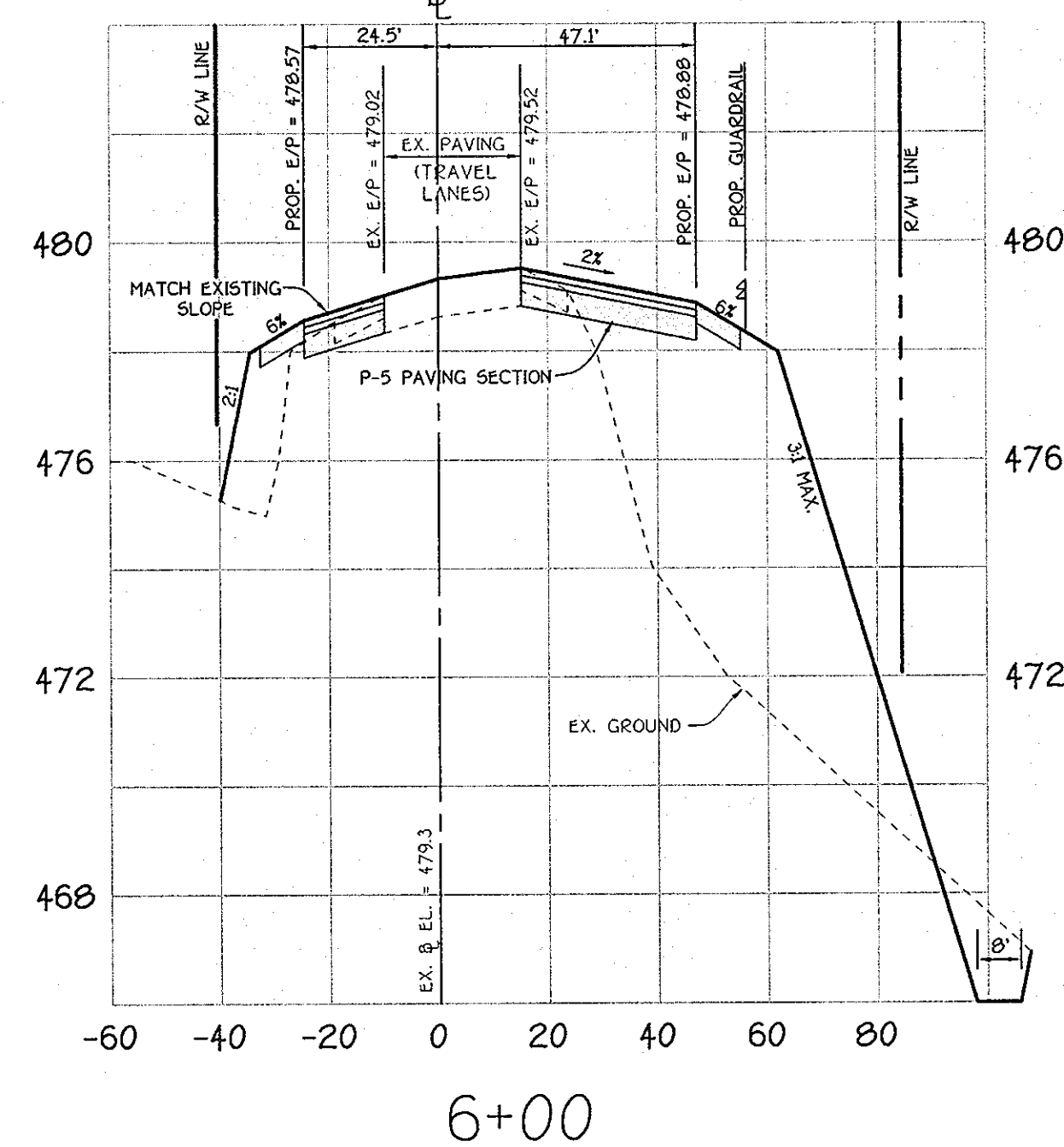
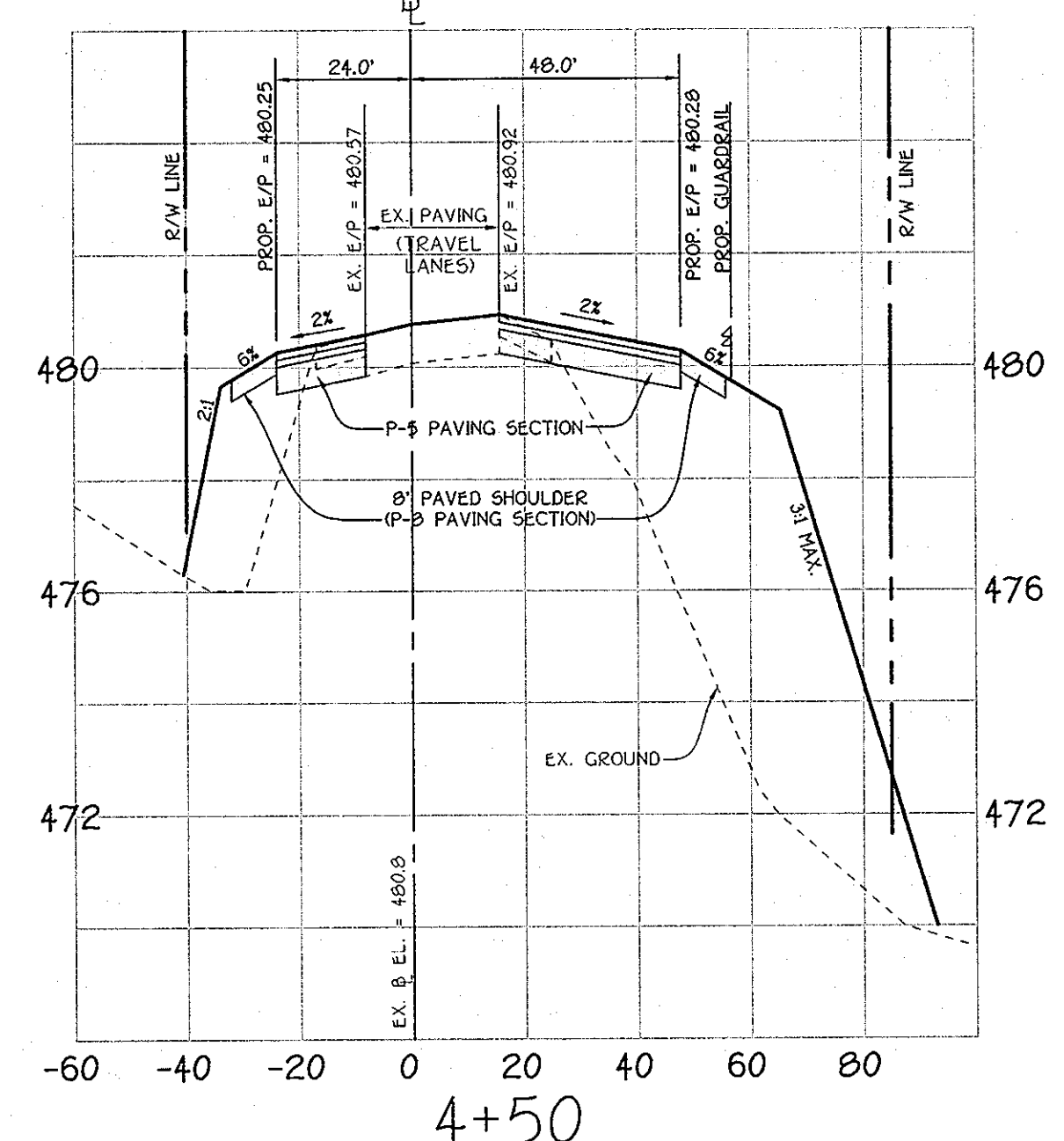
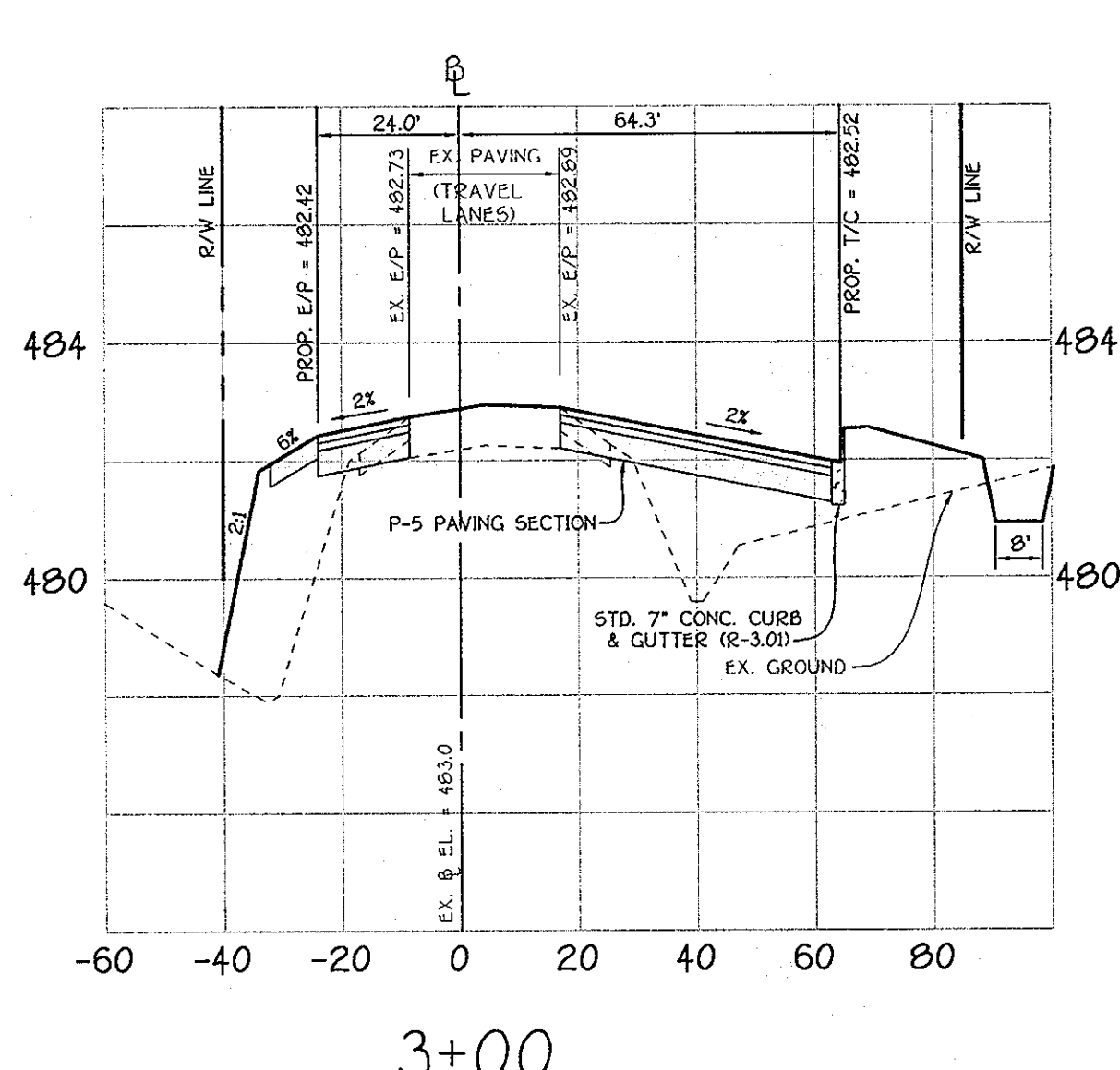
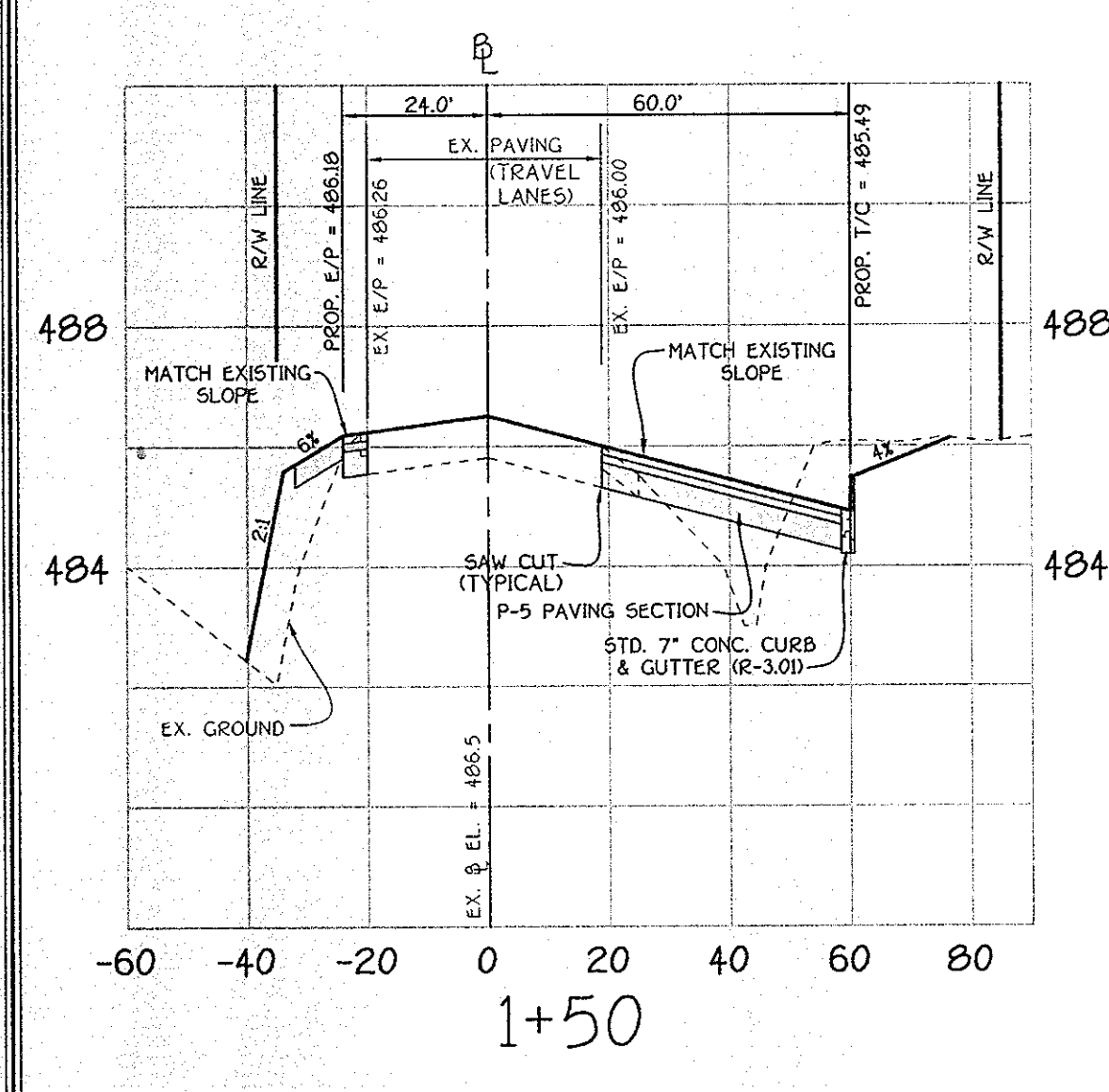
OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

MARRIOTTVILLE ROAD
WIDENING-GRADING & SEDIMENT CONTROL PLAN
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 8, 2009
 SHEET 7 OF 43

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE 1902 - 10271 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461 - 2995

I:\2009\04017\dwg\MARRIOTTVILLE WIDENING\grd\marrillan.sht SHEET 7.dwg, 11/29/2009 10:37:56 AM, James

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. Mahan 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Candy Harris 6/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
John Demme 6/21/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-180 STANDARDS.

MARRIOTTVILLE ROAD CROSS-SECTIONS
 STA. 0+50 TO STA. 7+00
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: A5 SHOWN DATE: JUNE 2, 2008
 SHEET 8 OF 41

CROSS-SECTIONS

SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

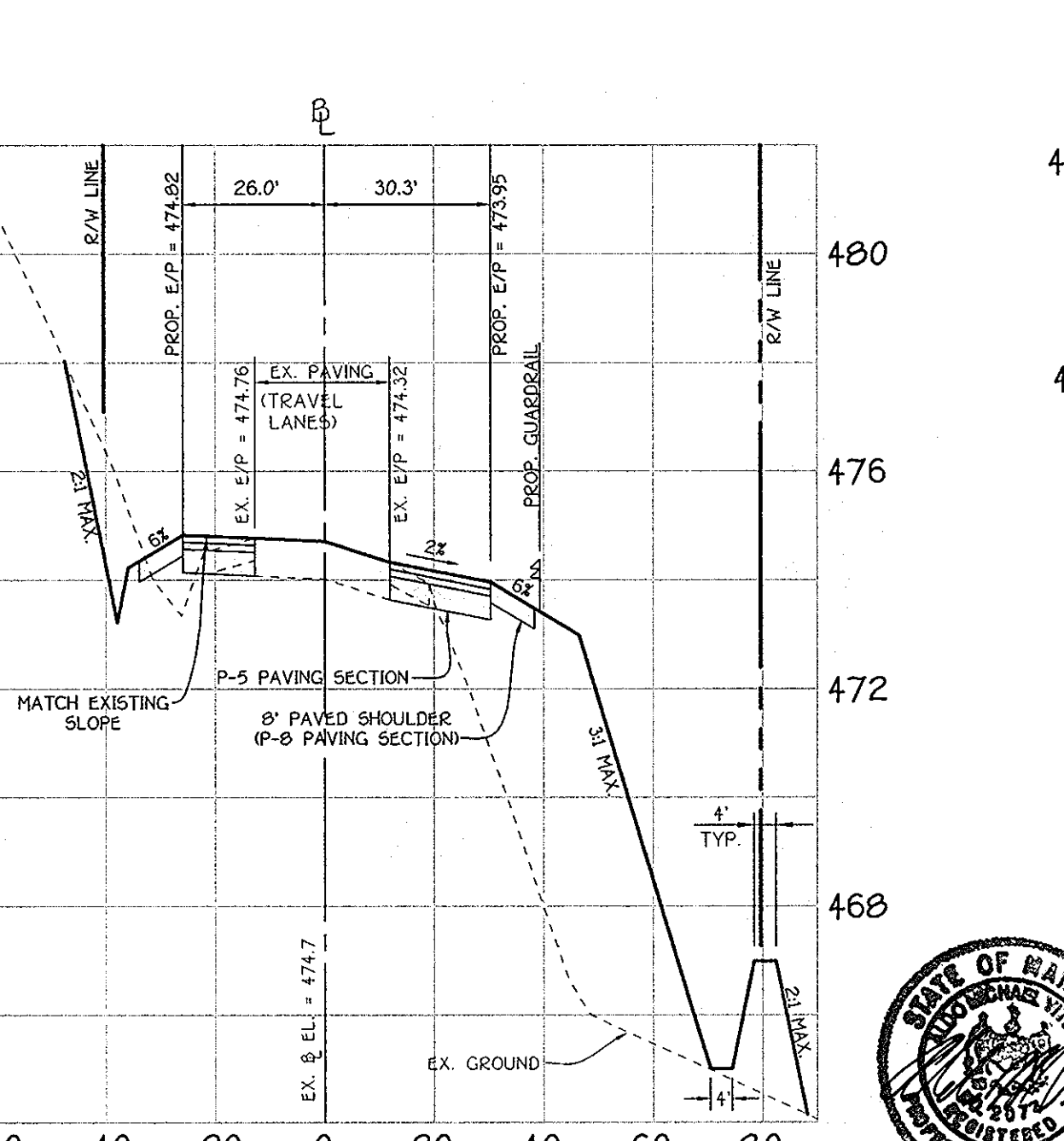
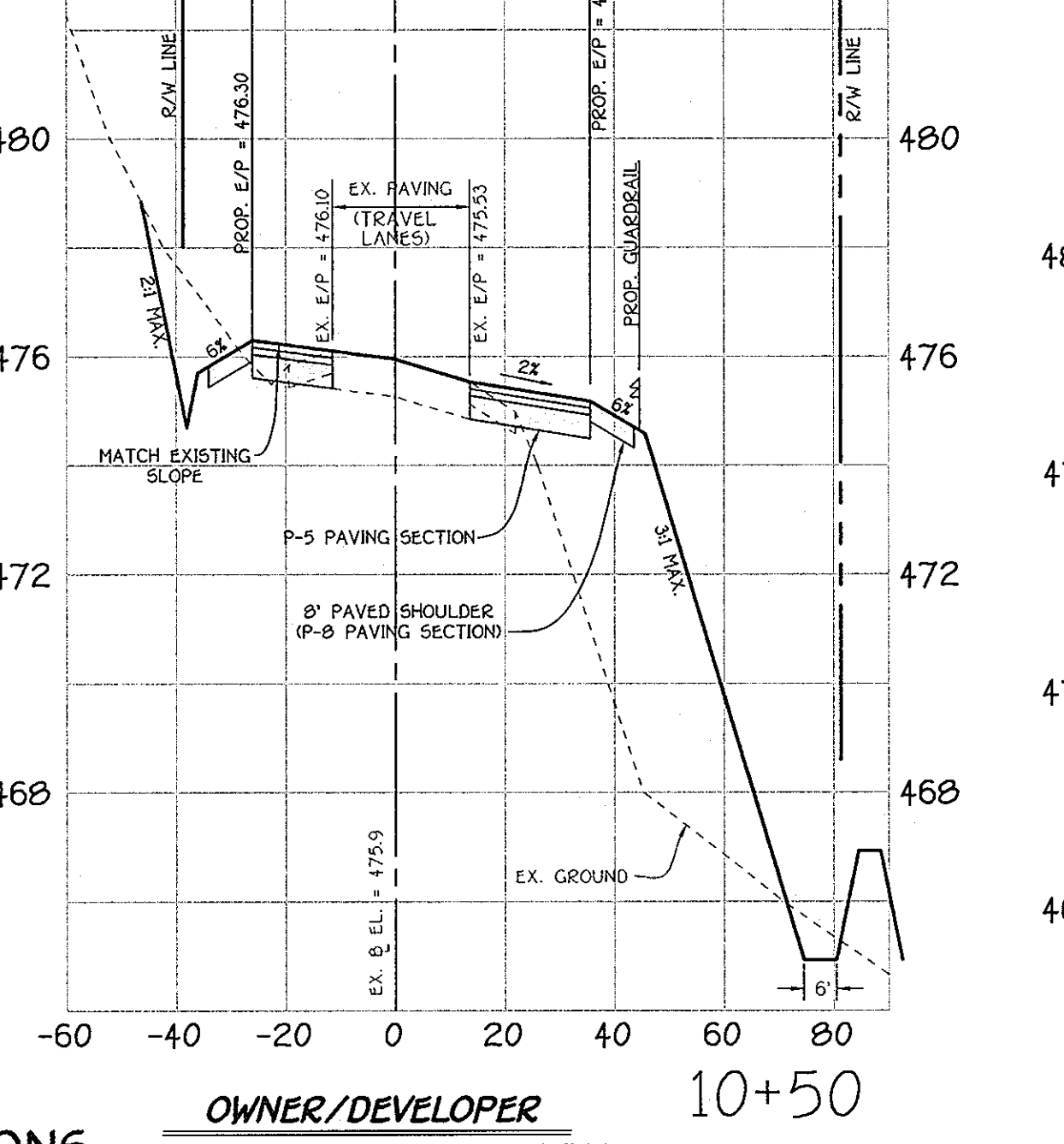
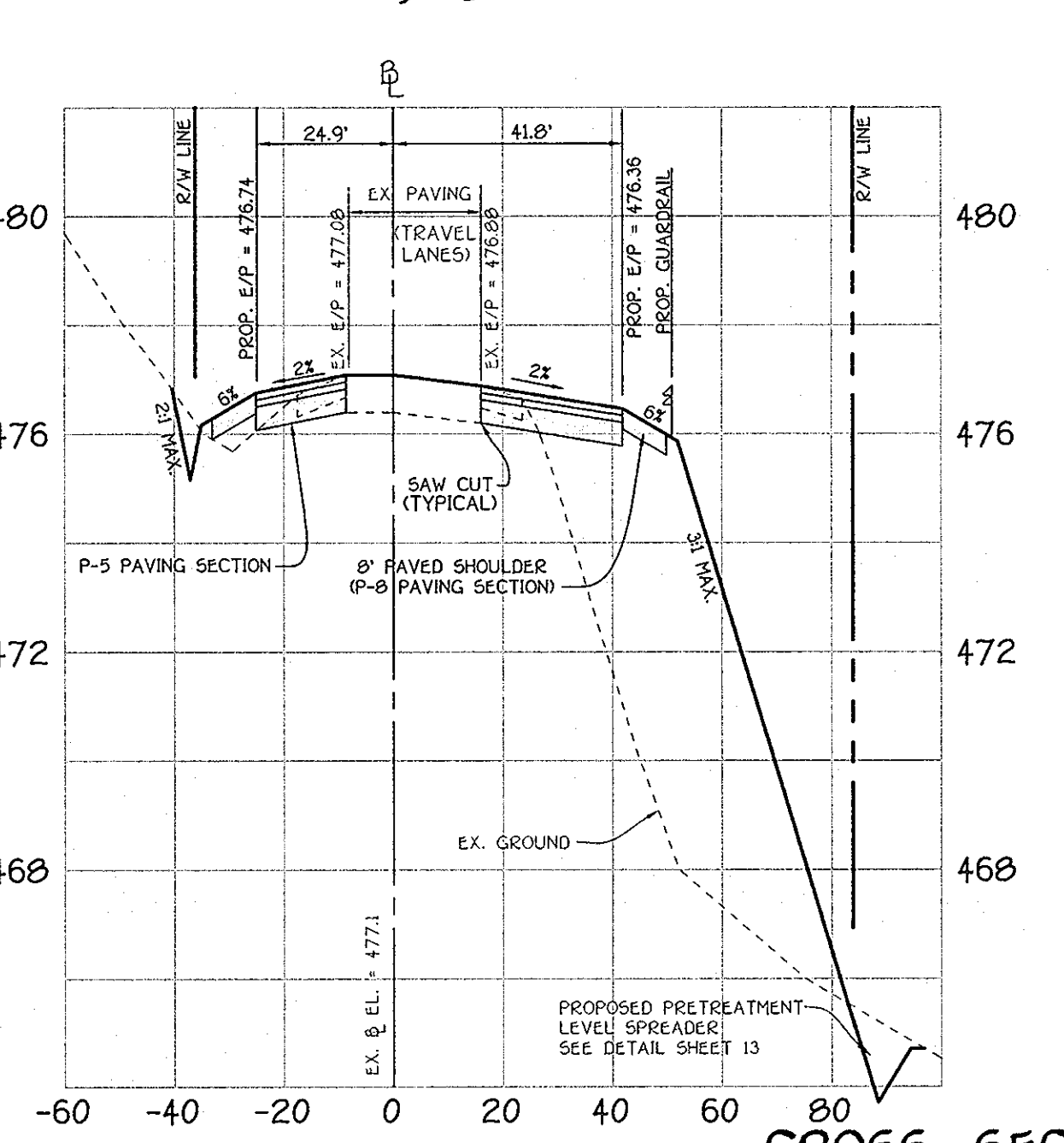
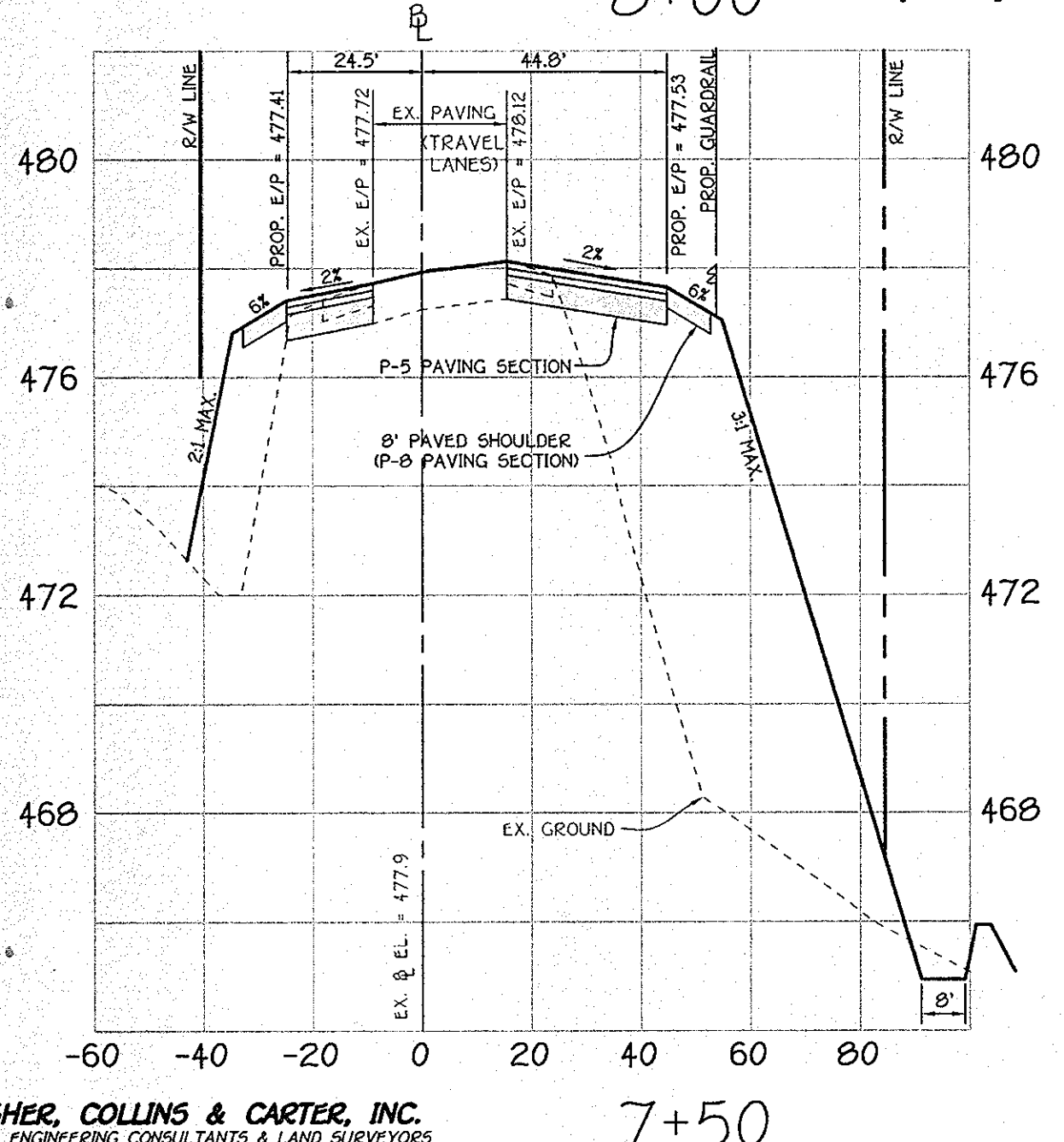
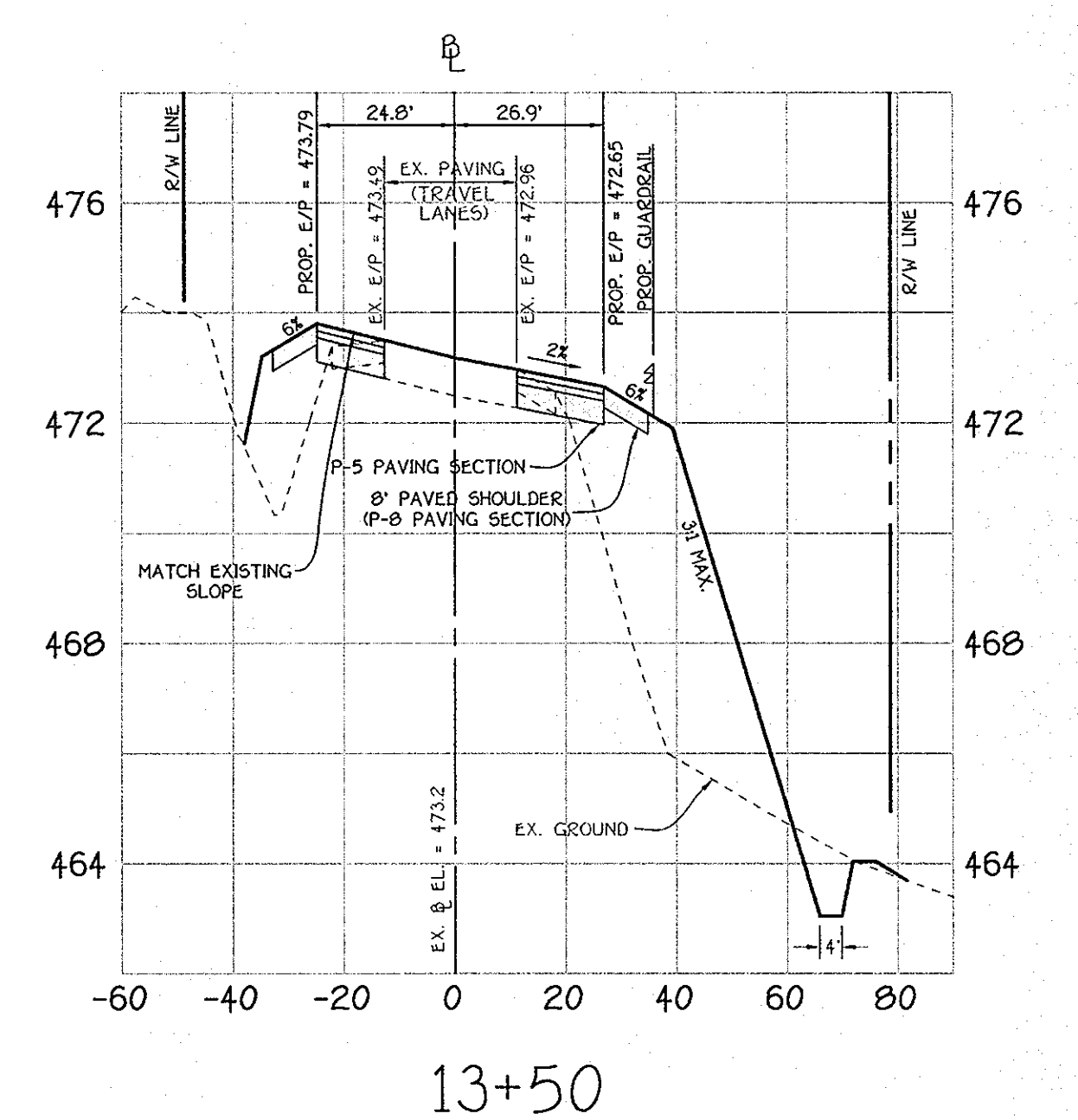
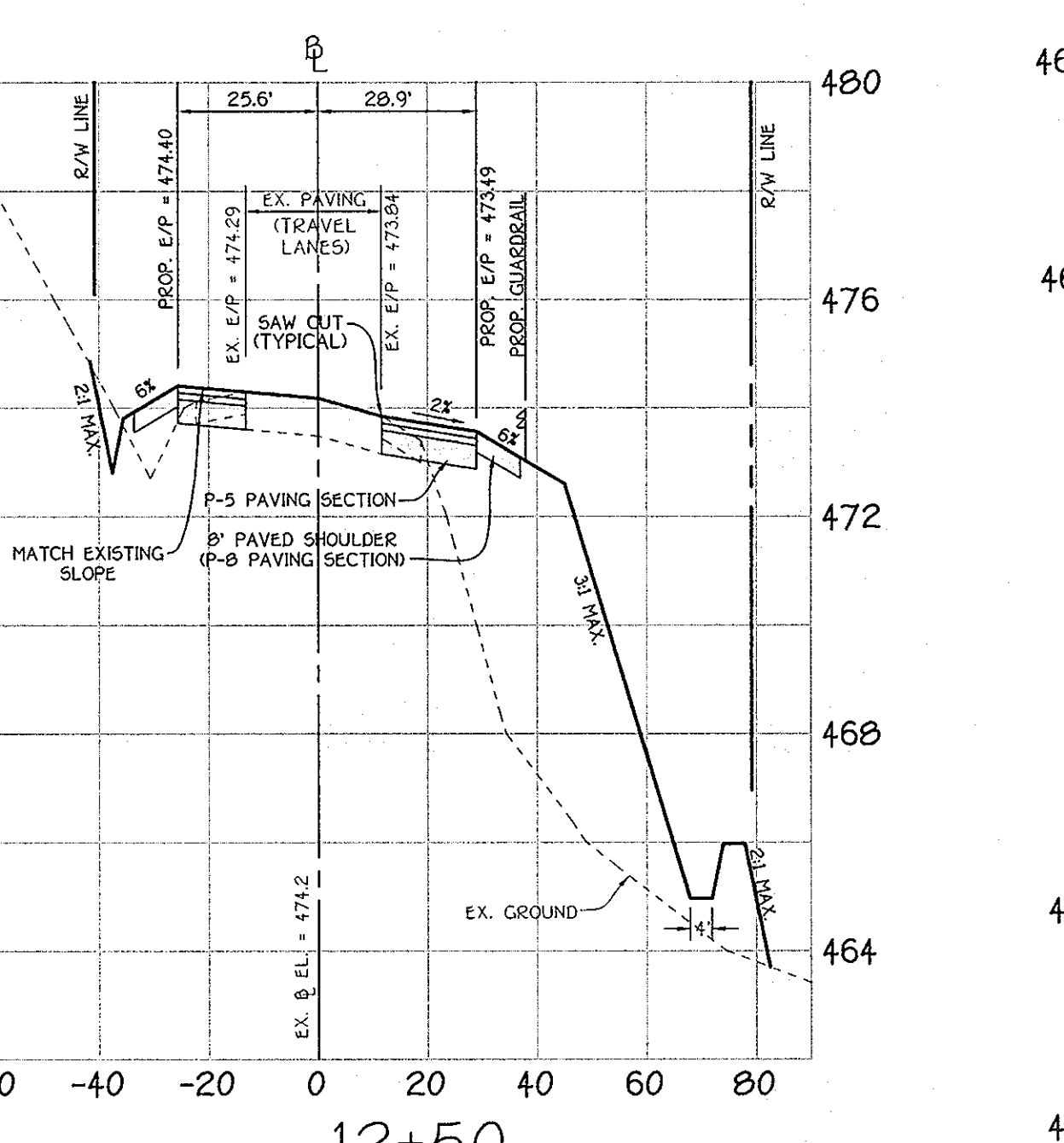
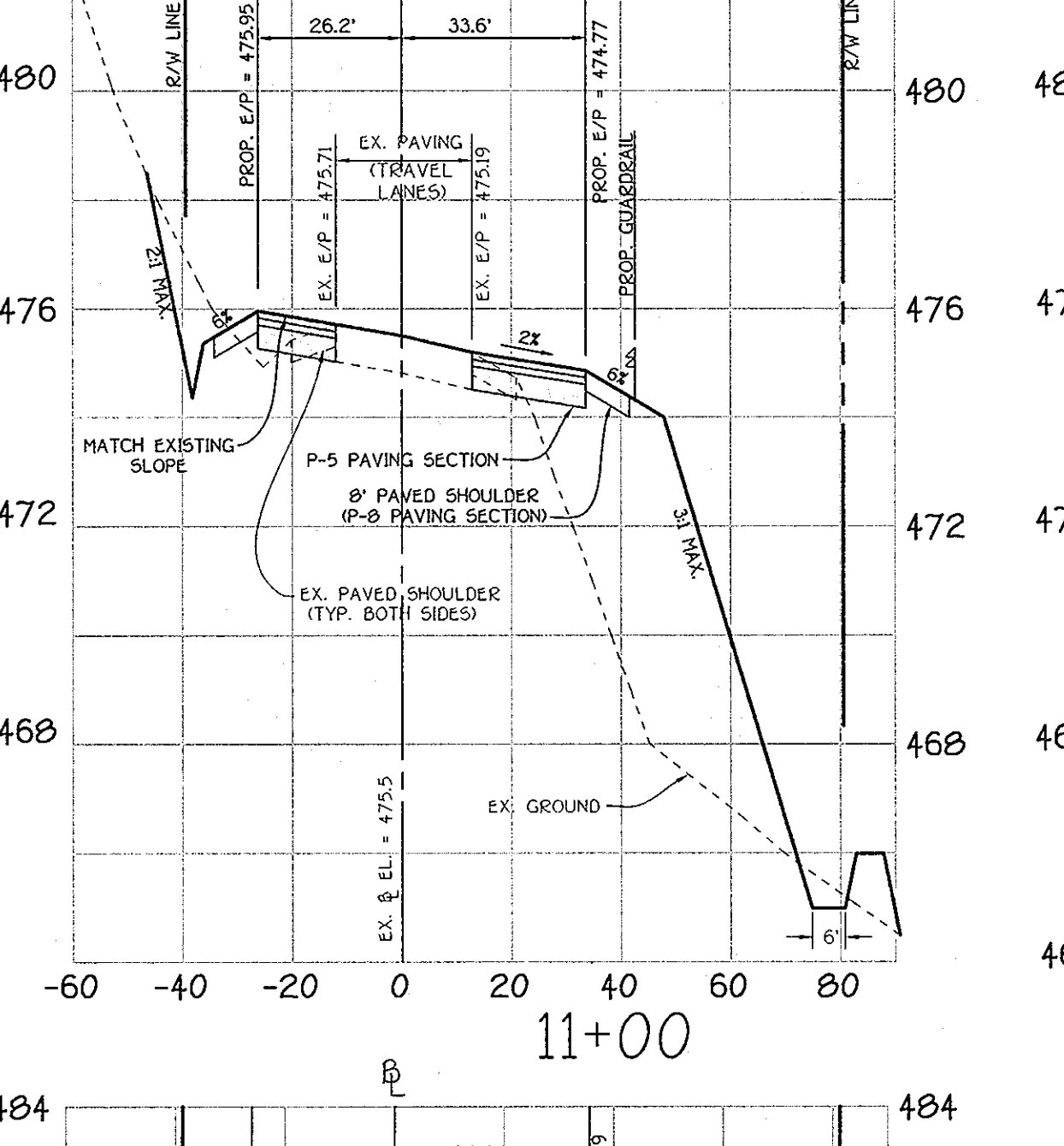
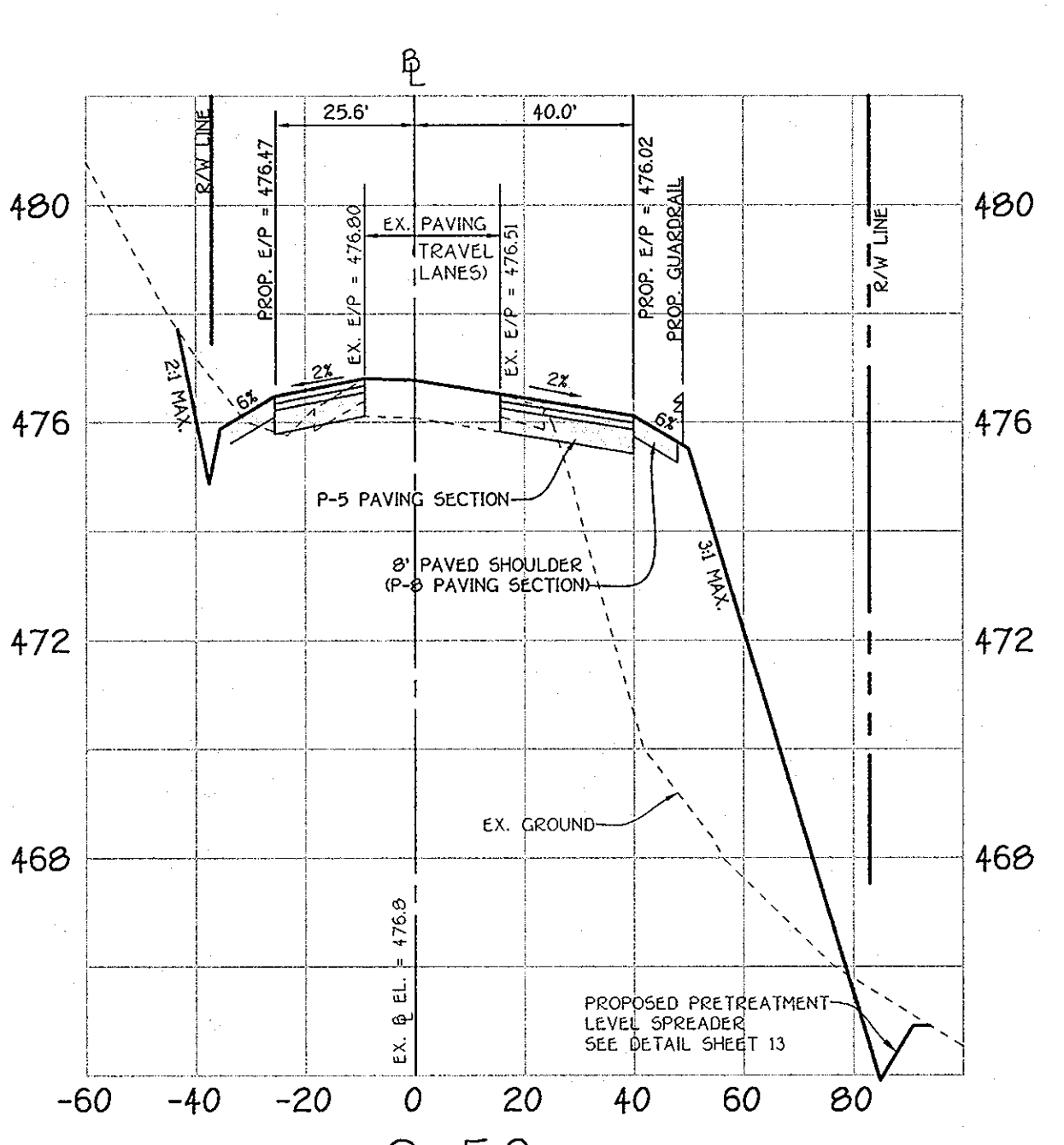
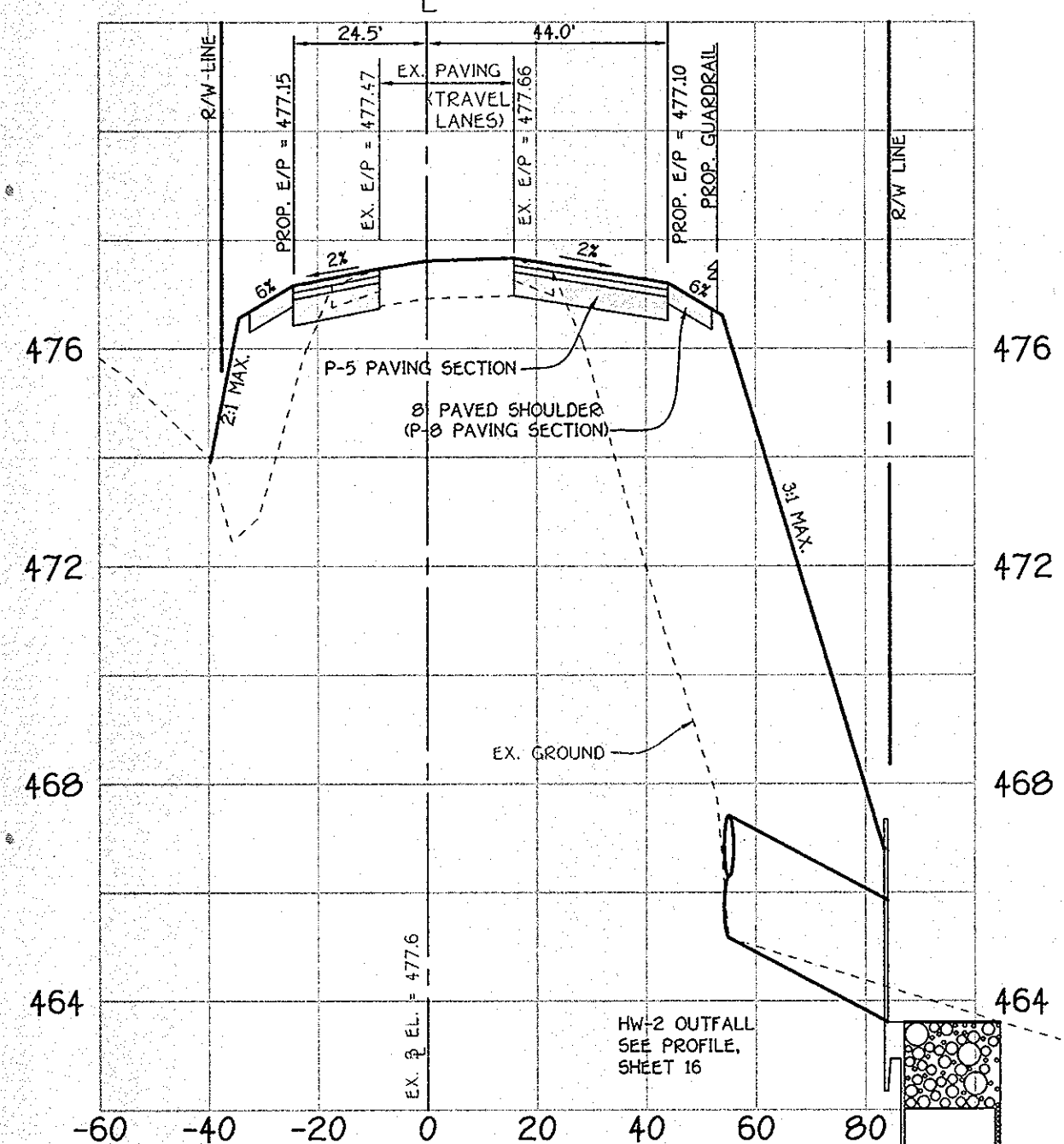
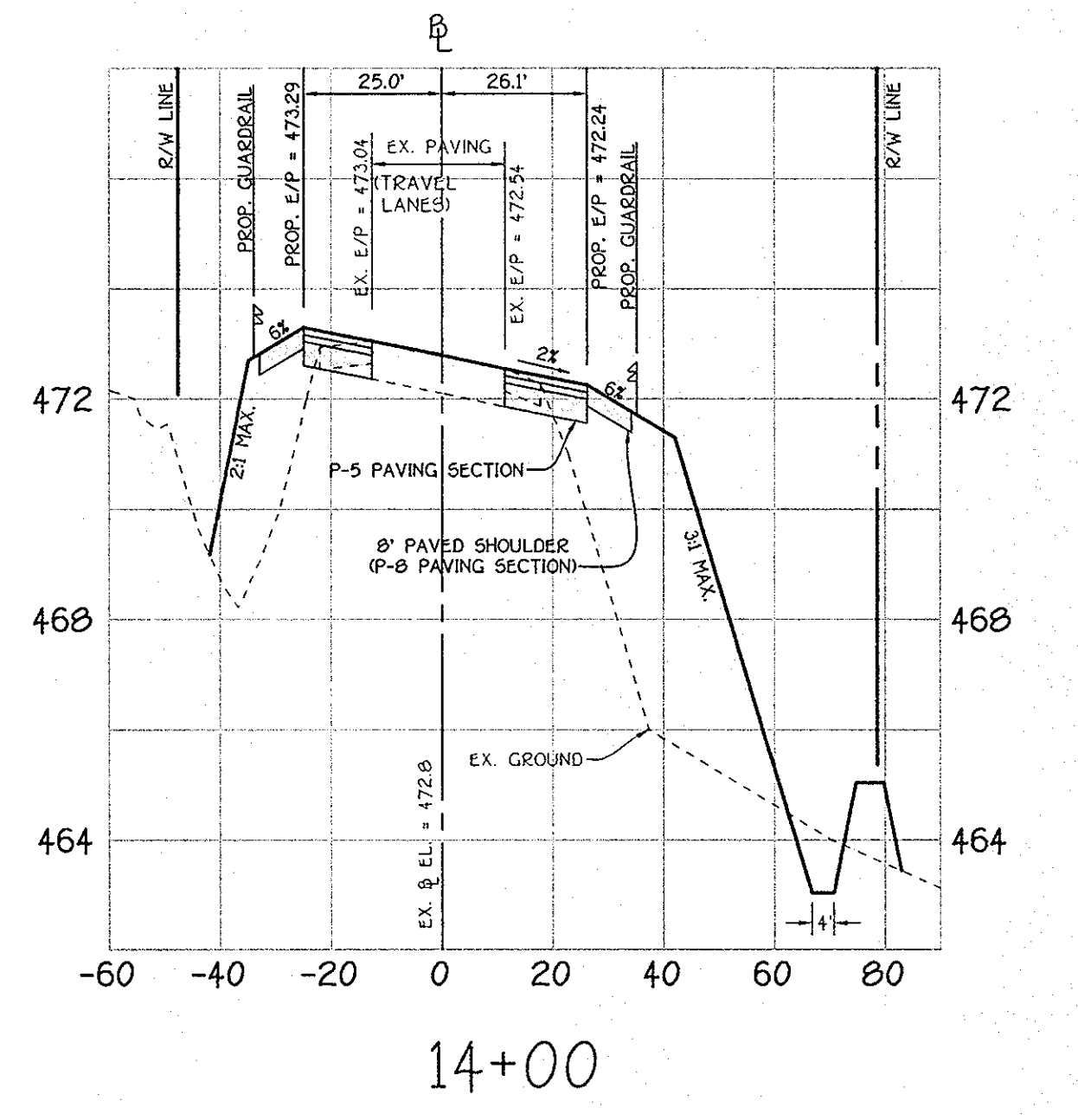
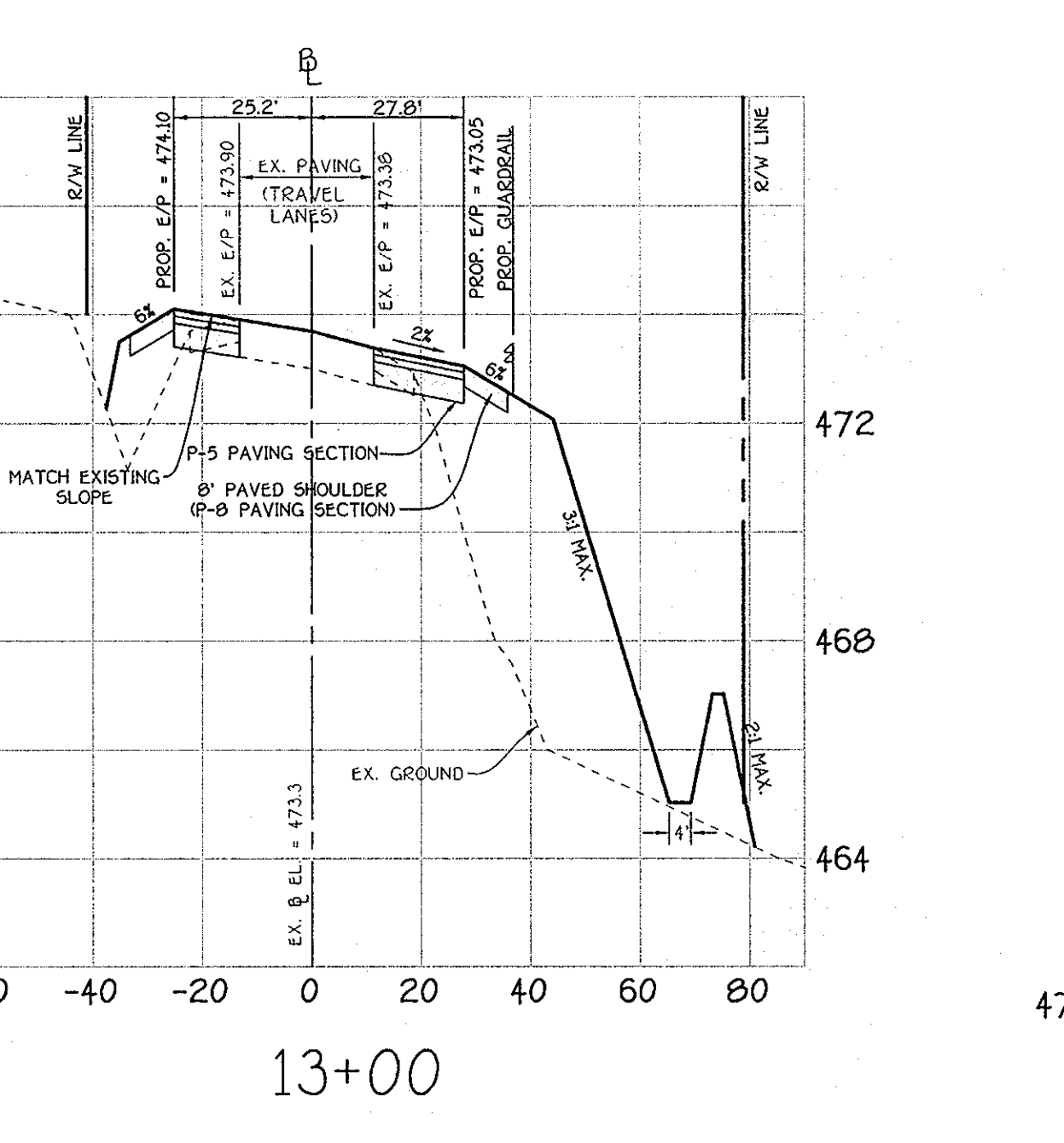
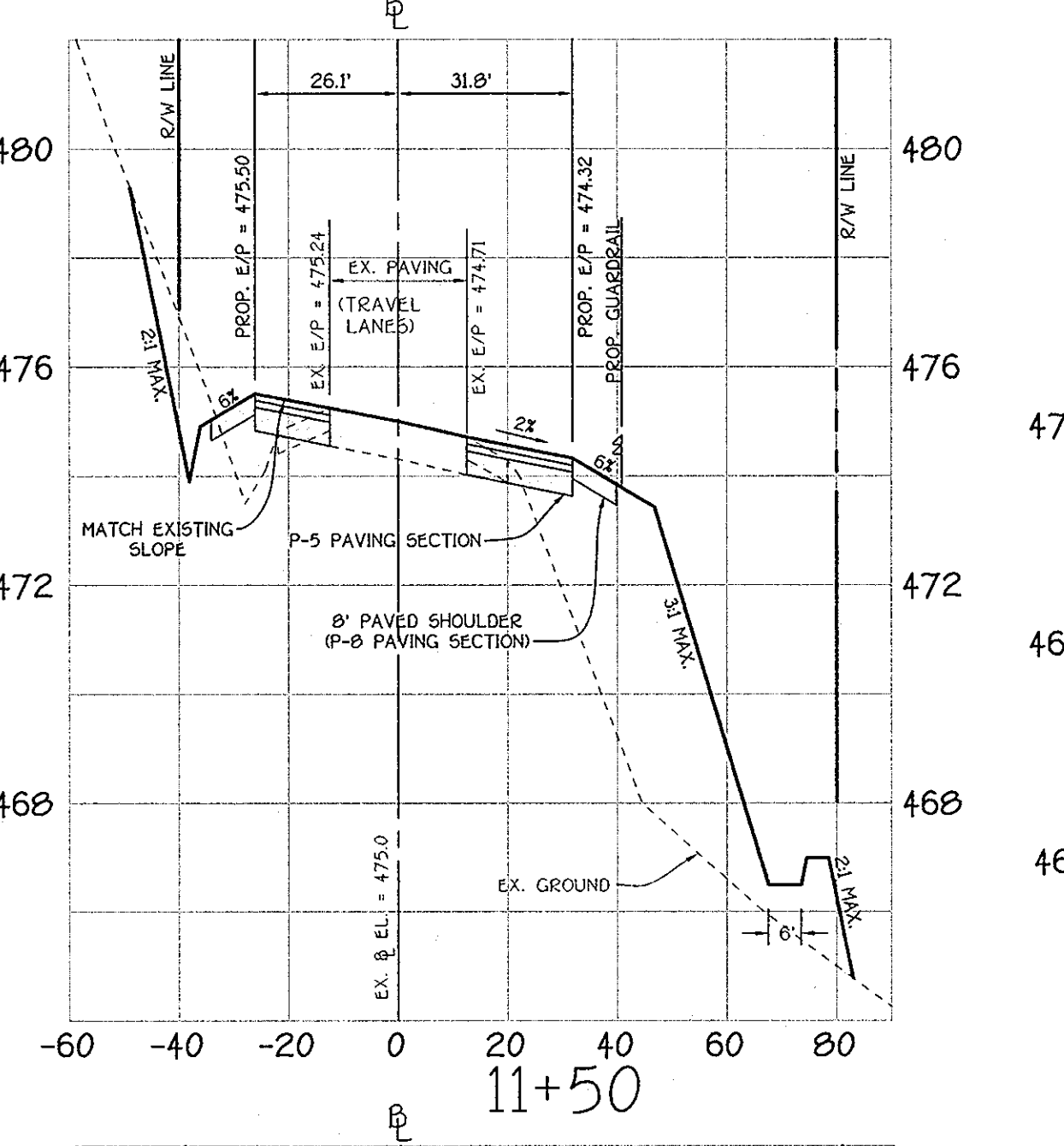
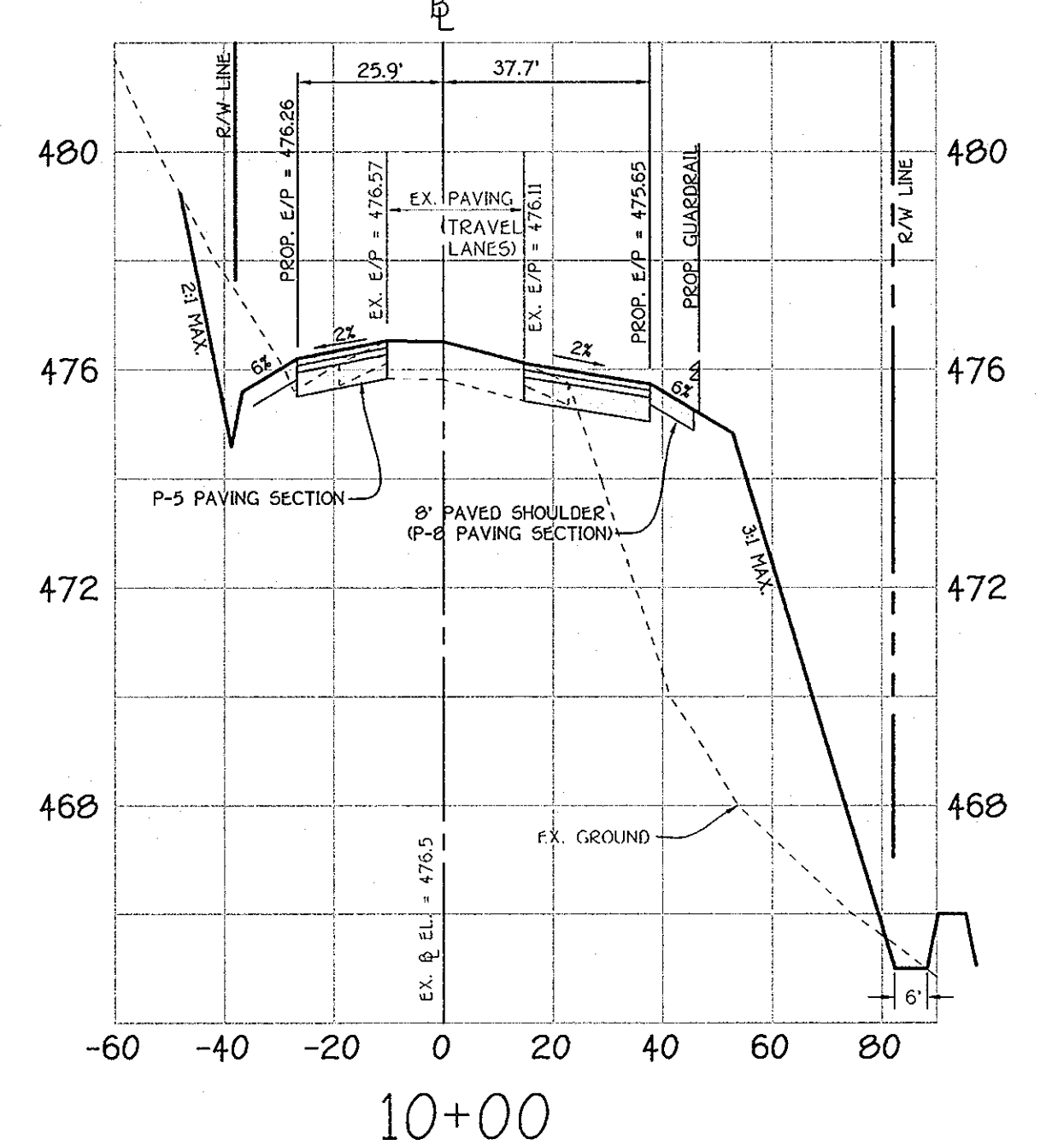
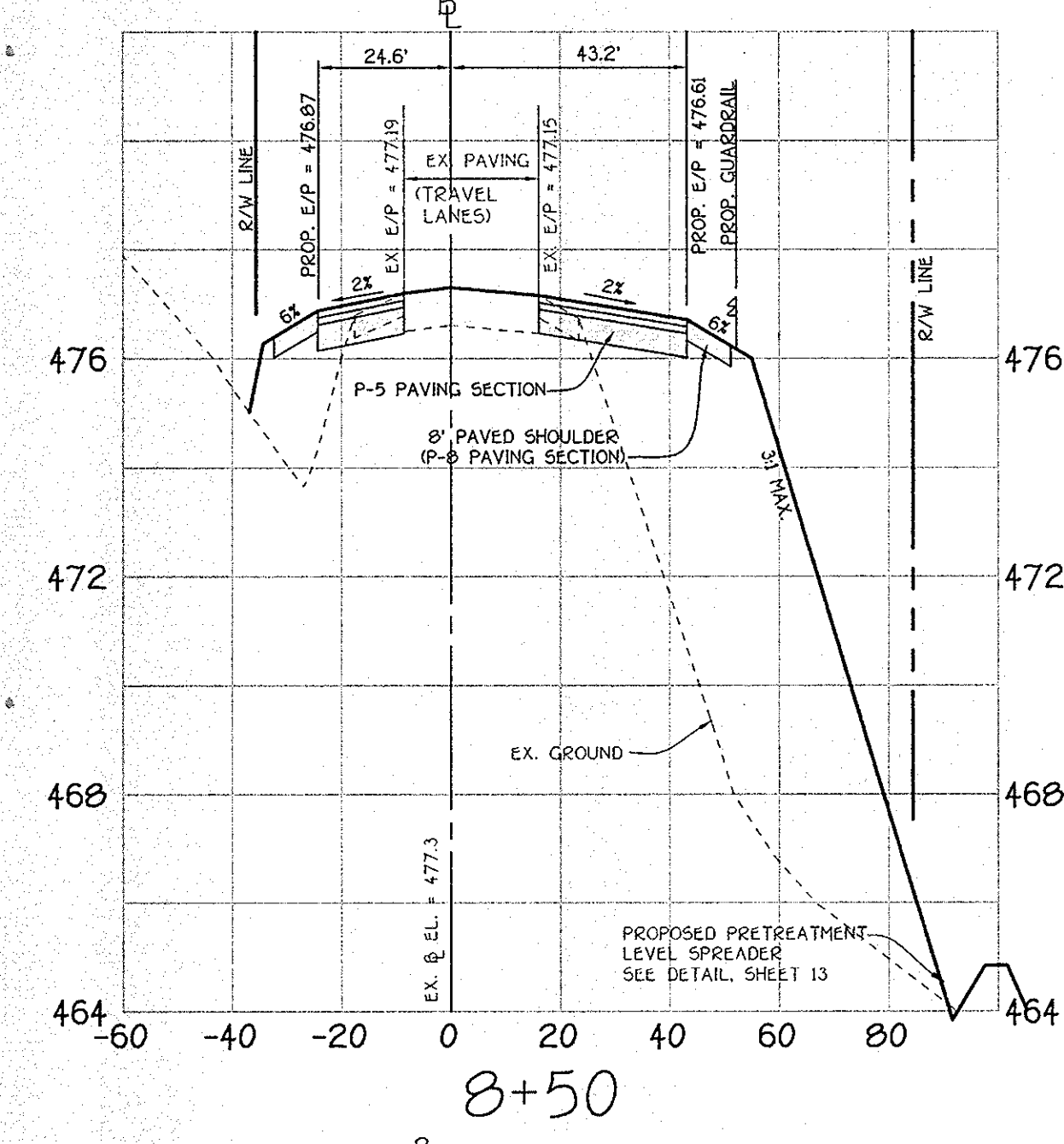
OWNER/DEVELOPER

WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 33 CENTENNIAL SQUARE OFFICE PARK • 10772 BALTIMORE NATIONAL PARK
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895

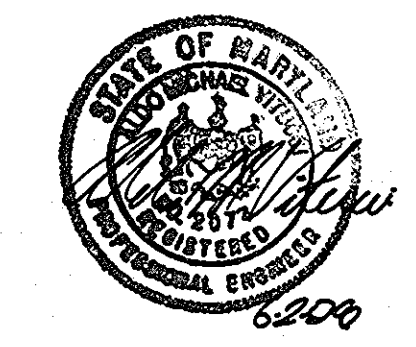


APPROVED: DEPARTMENT OF PUBLIC WORKS
William R. Smith 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Curtis Hamer 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
John P. ... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION & DATE



NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASTHO T-100 STANDARDS.

MARRIOTTVILLE ROAD CROSS-SECTIONS
 STA. 7+50 TO STA. 14+00
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 15
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 9 OF 41



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 MALTPORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

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 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

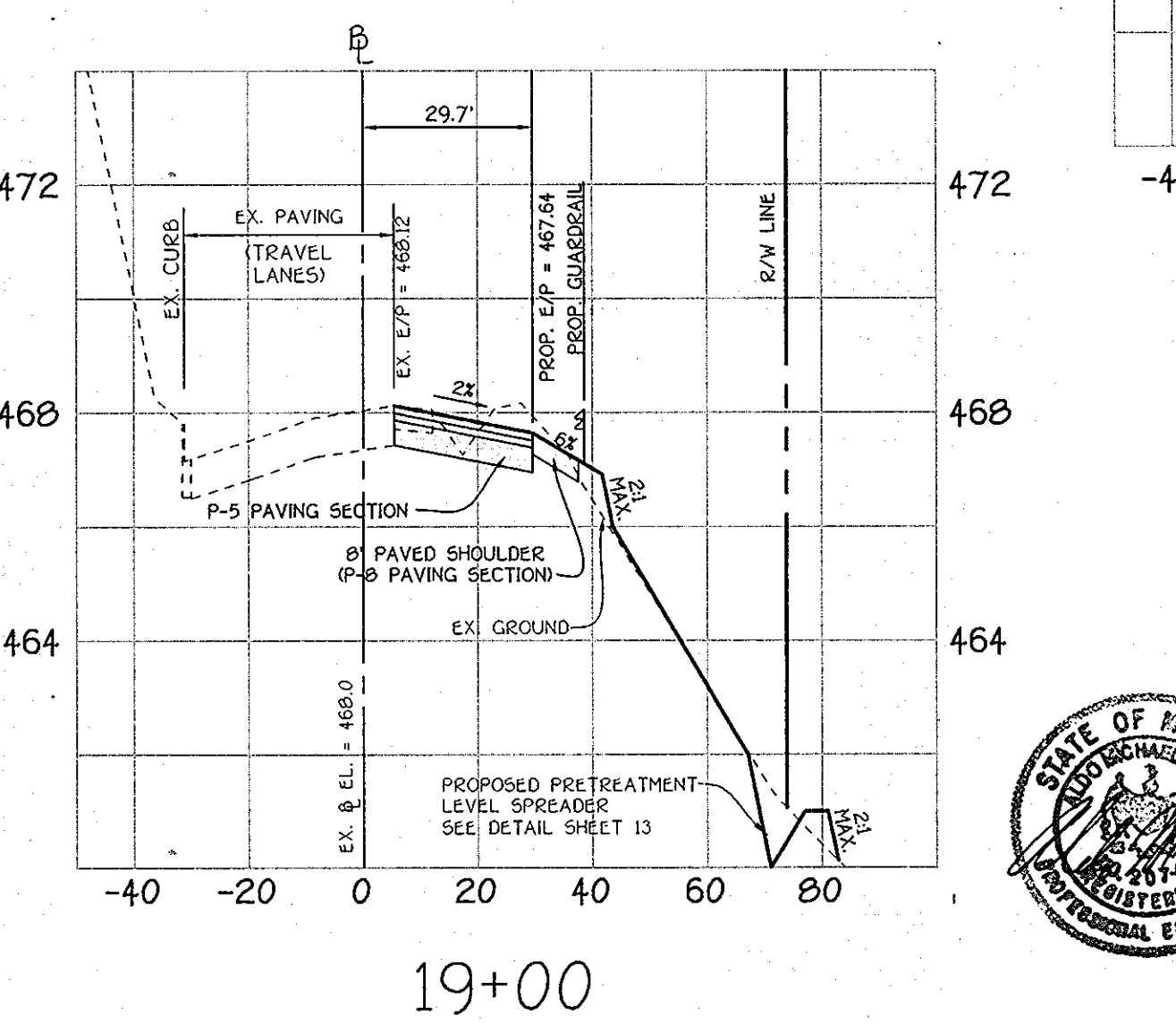
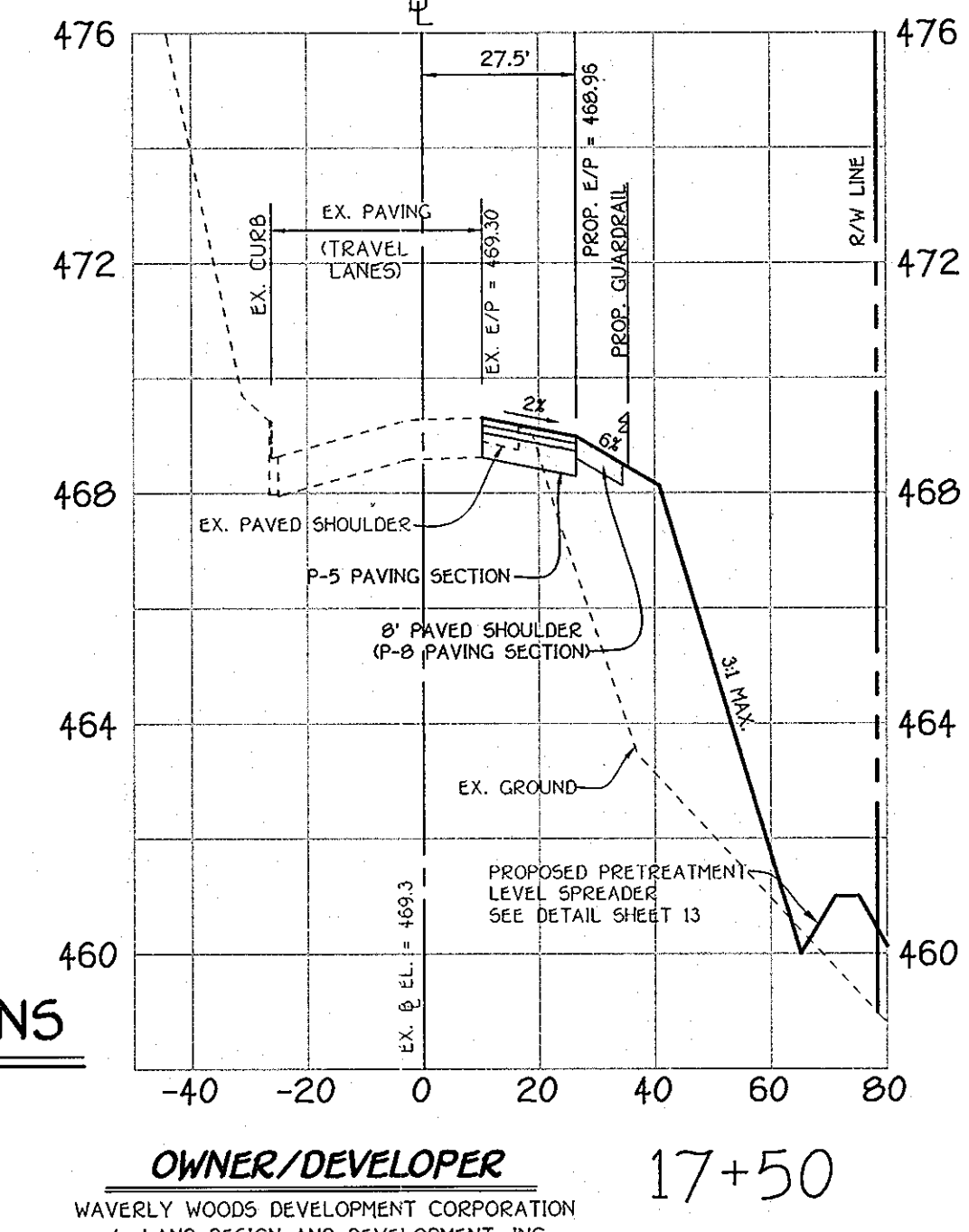
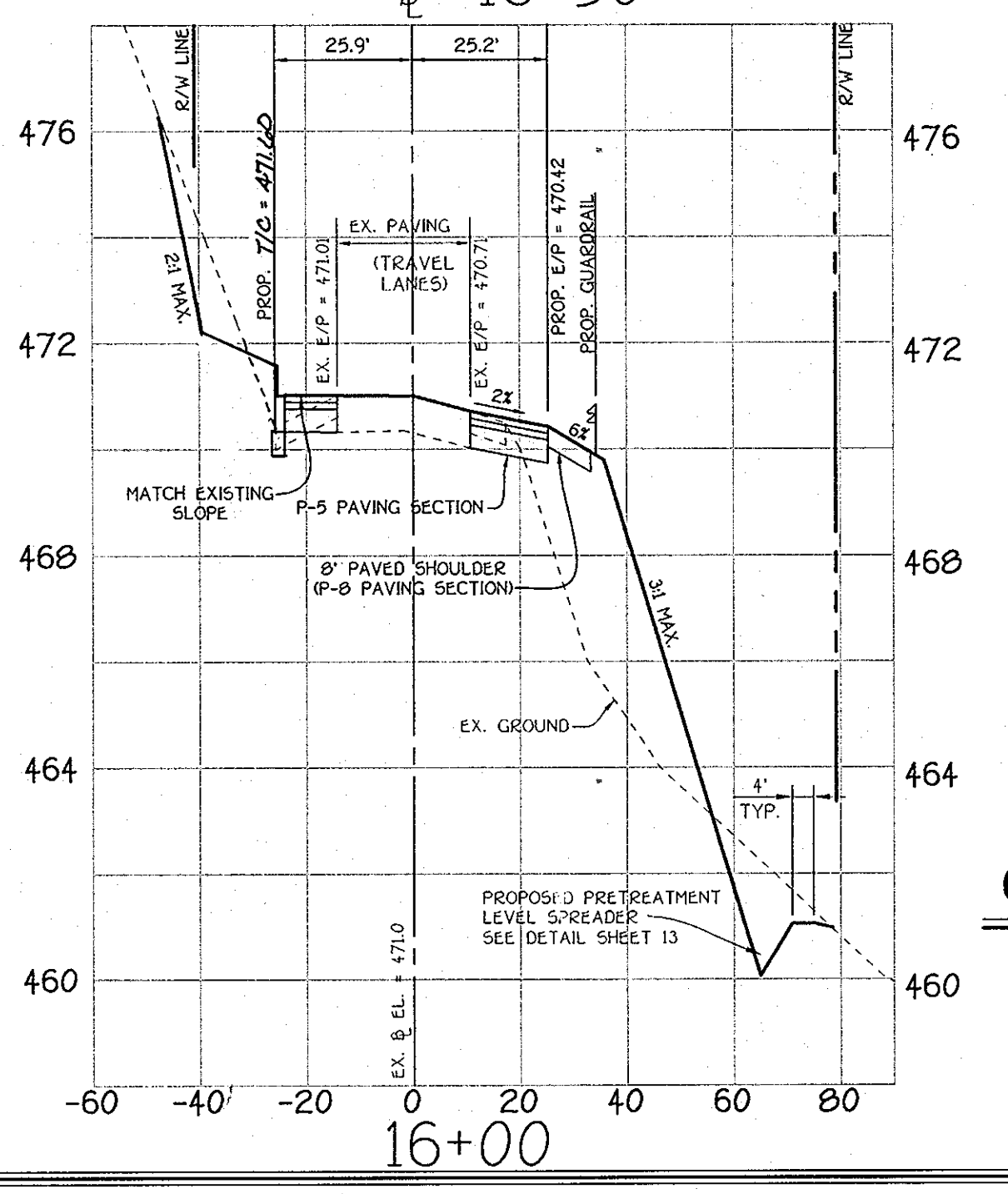
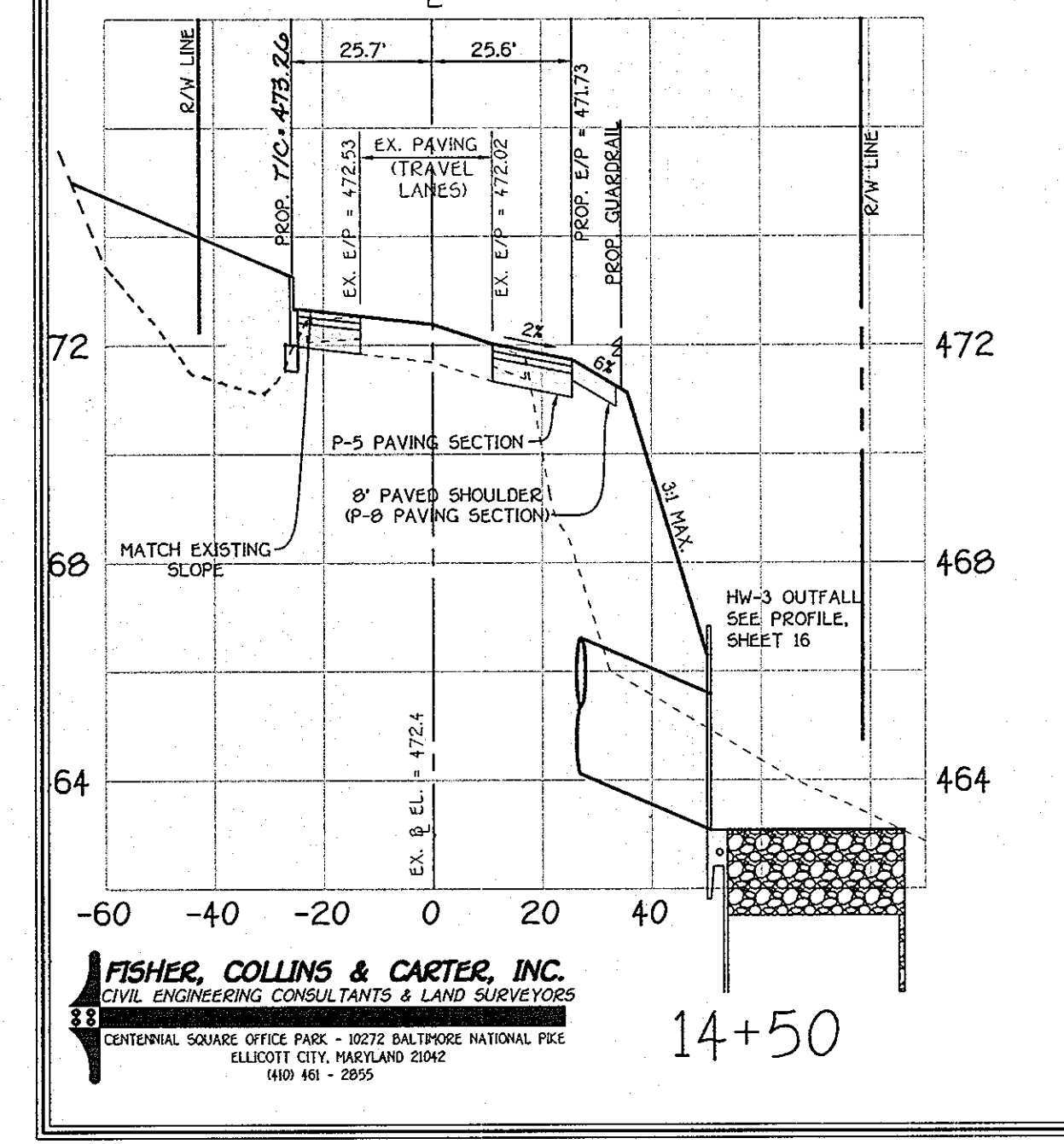
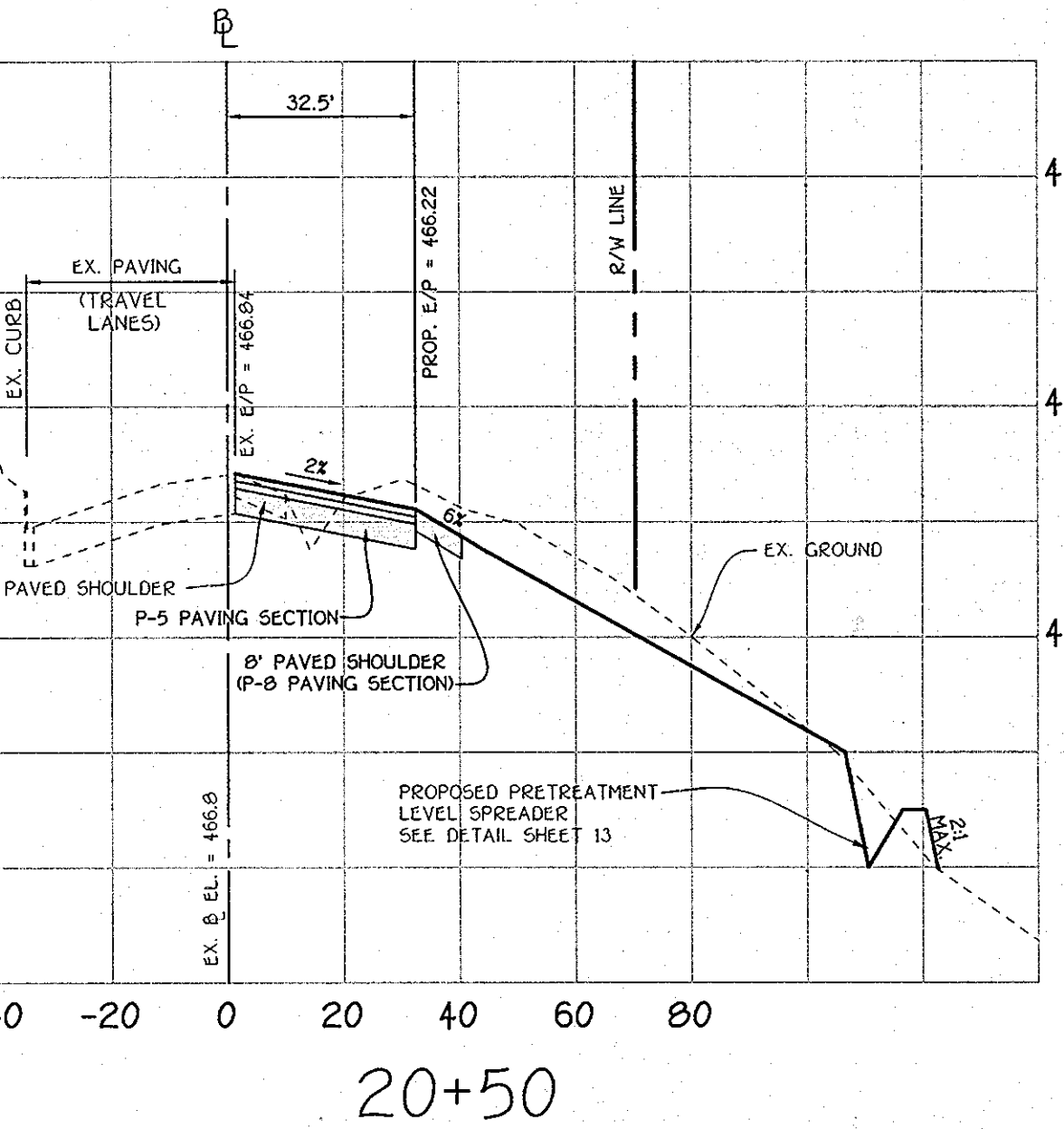
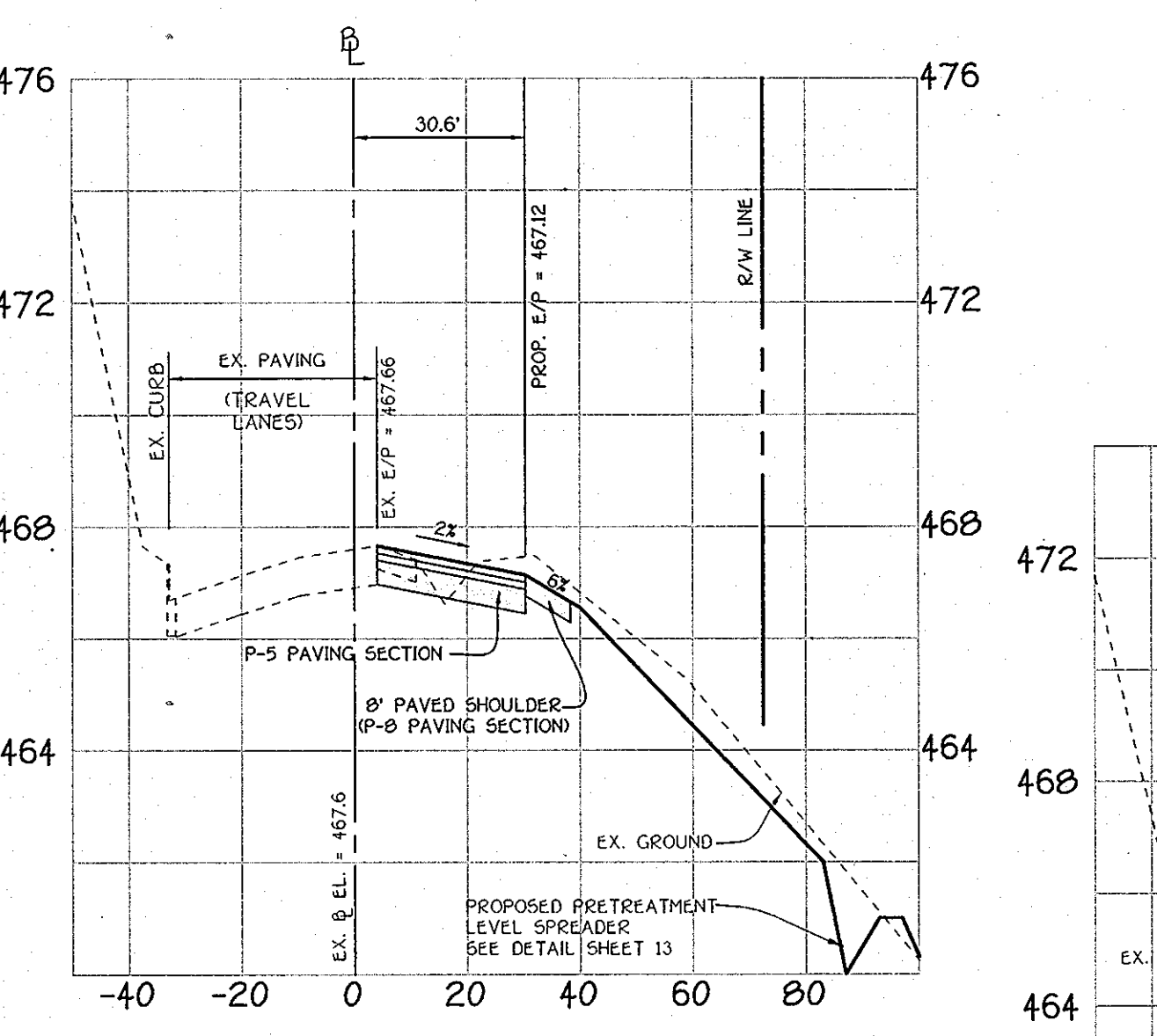
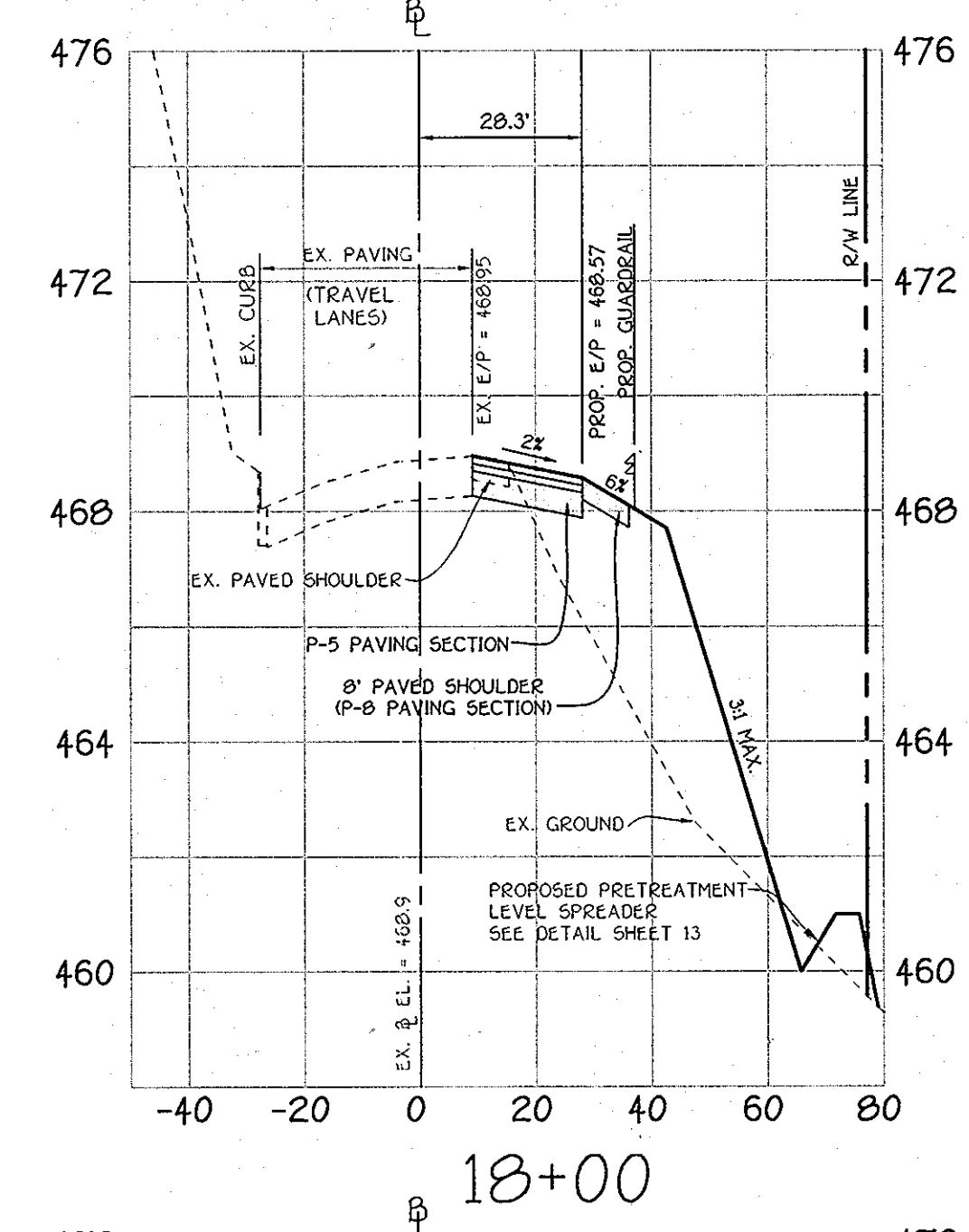
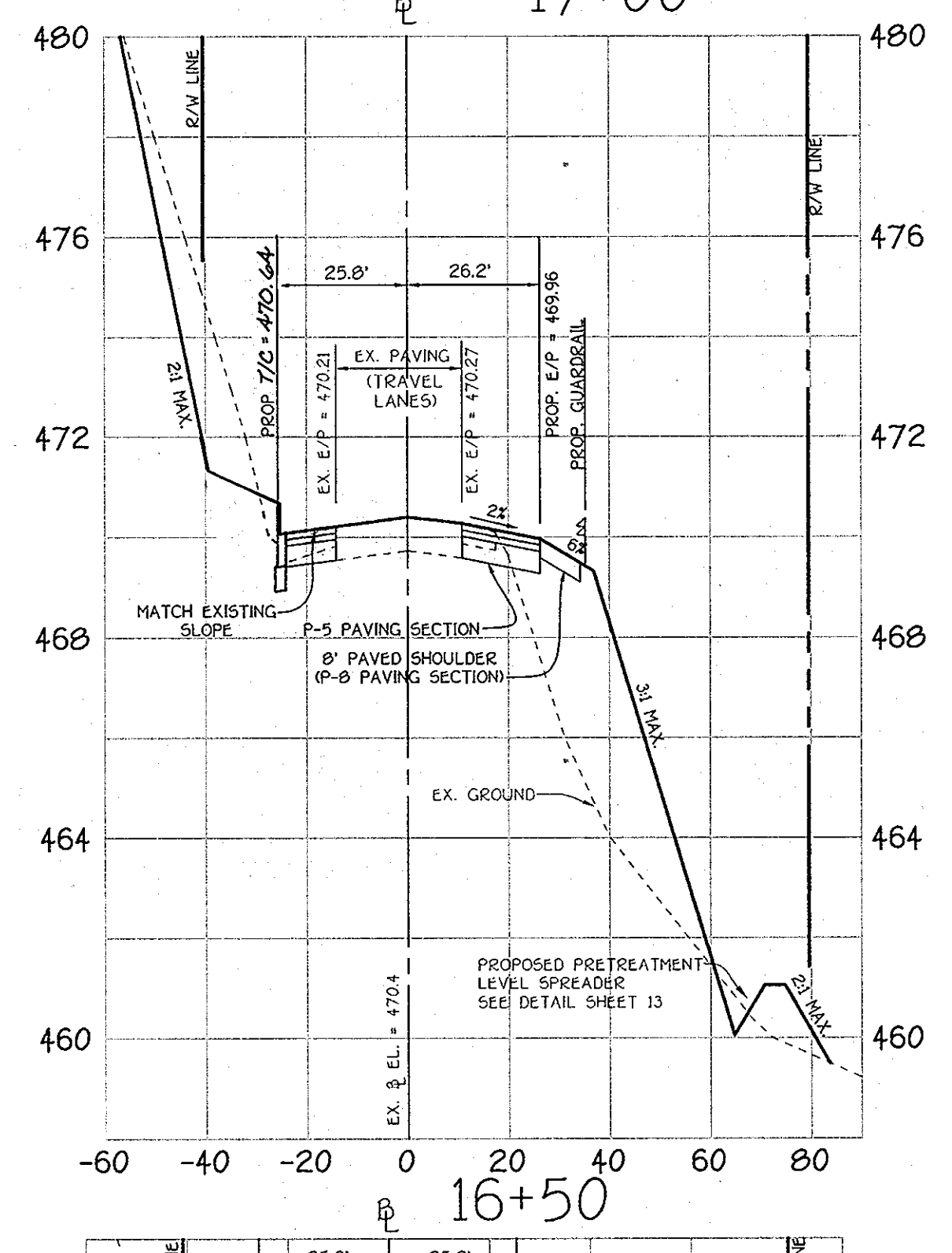
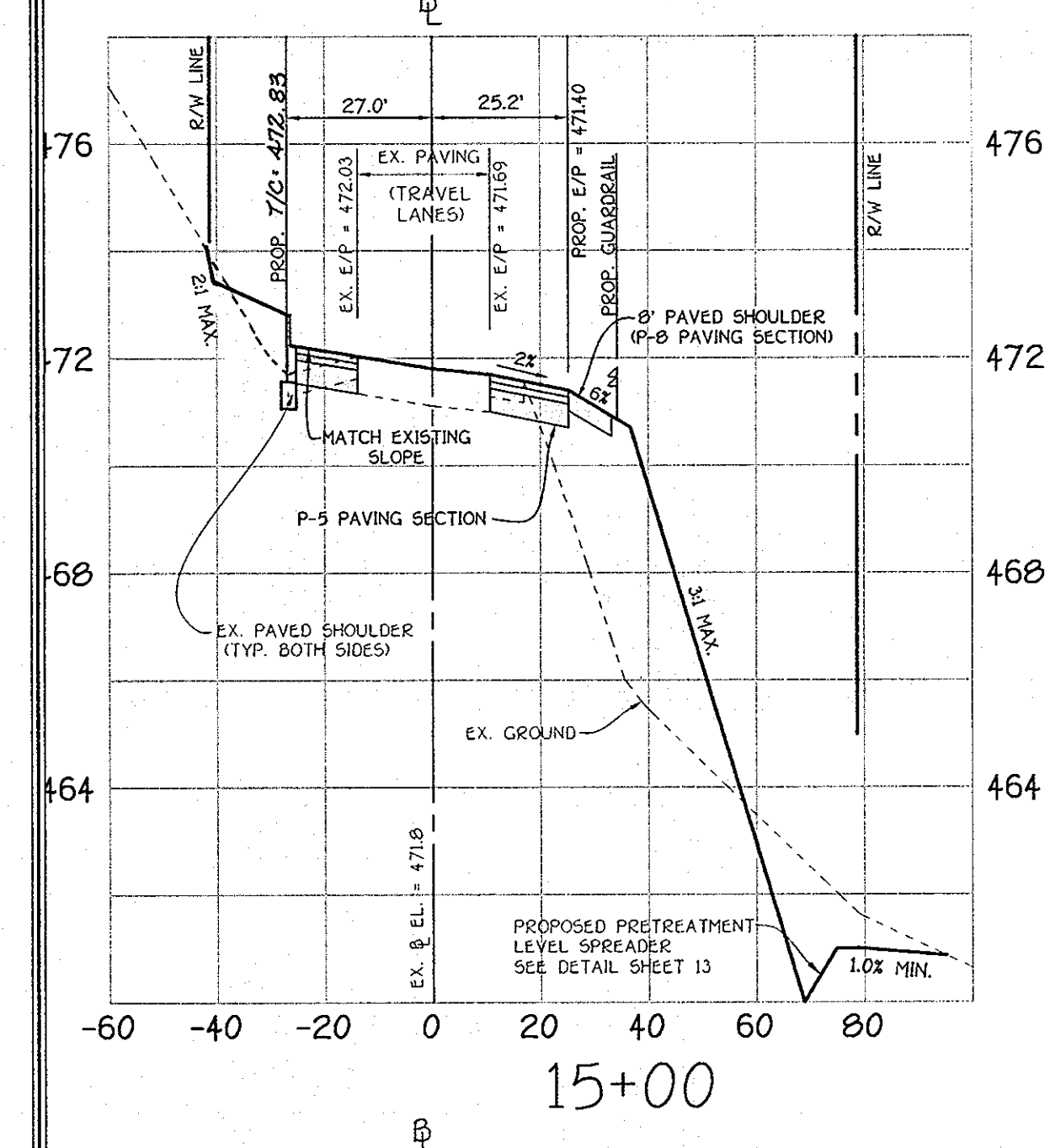
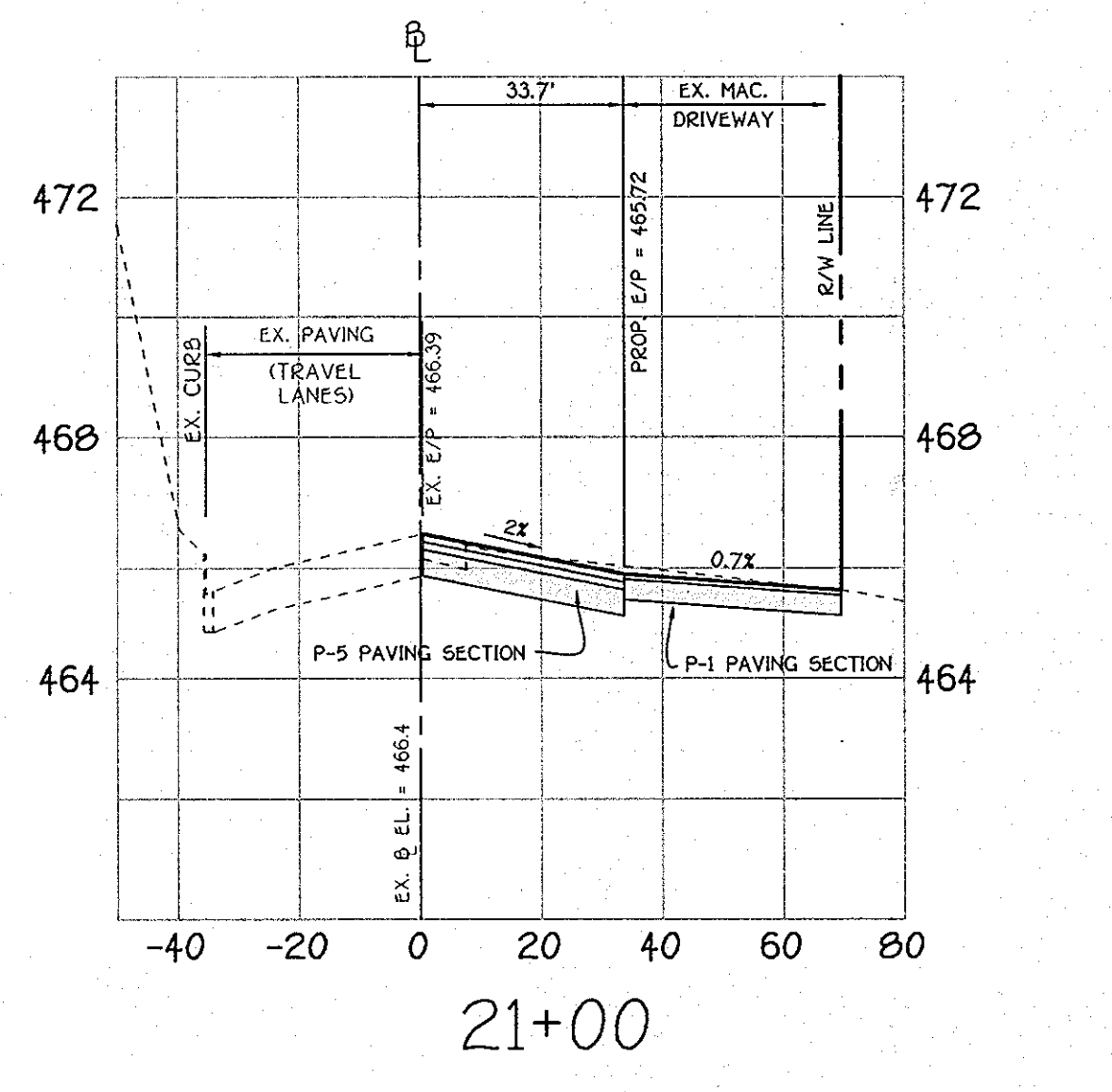
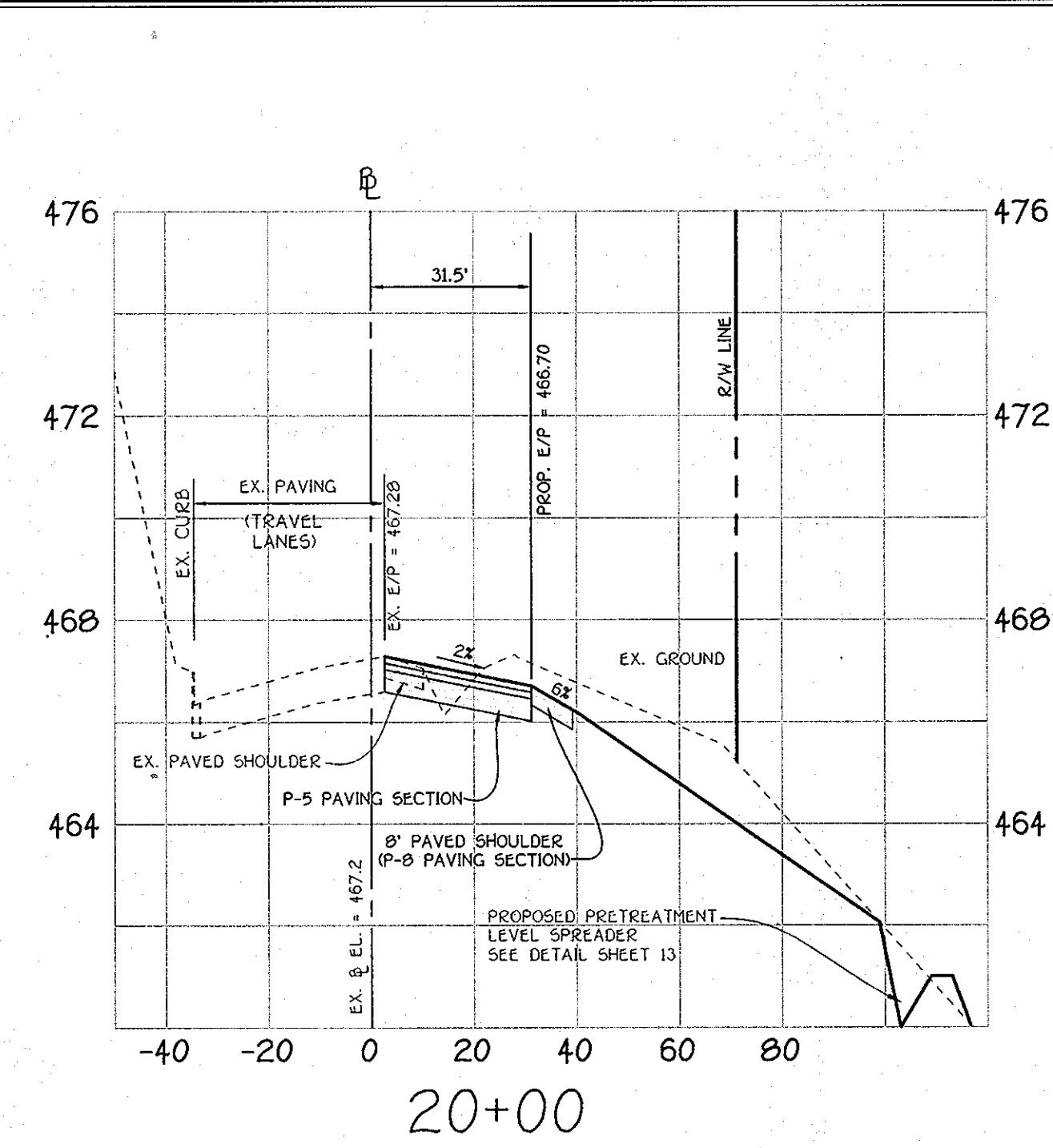
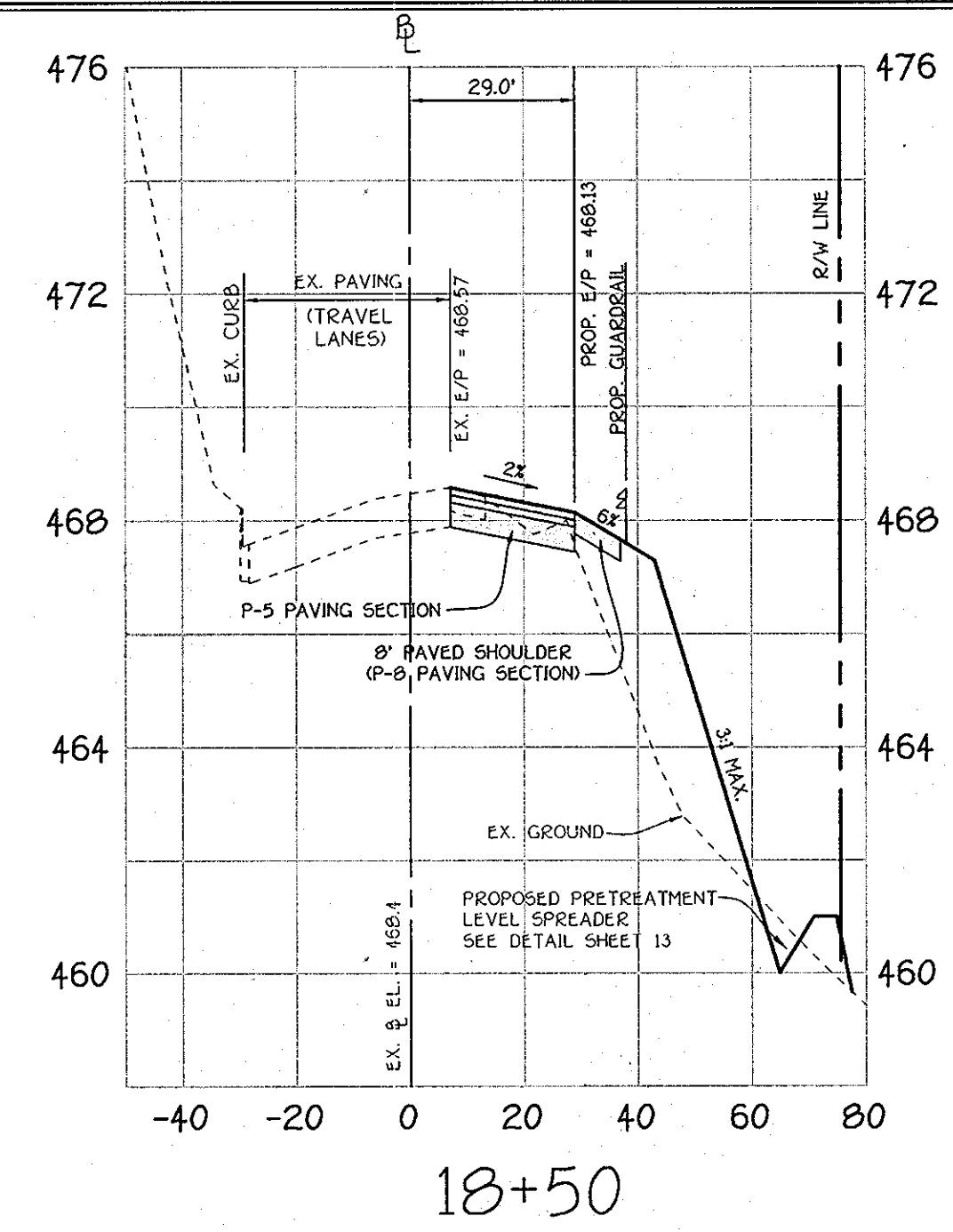
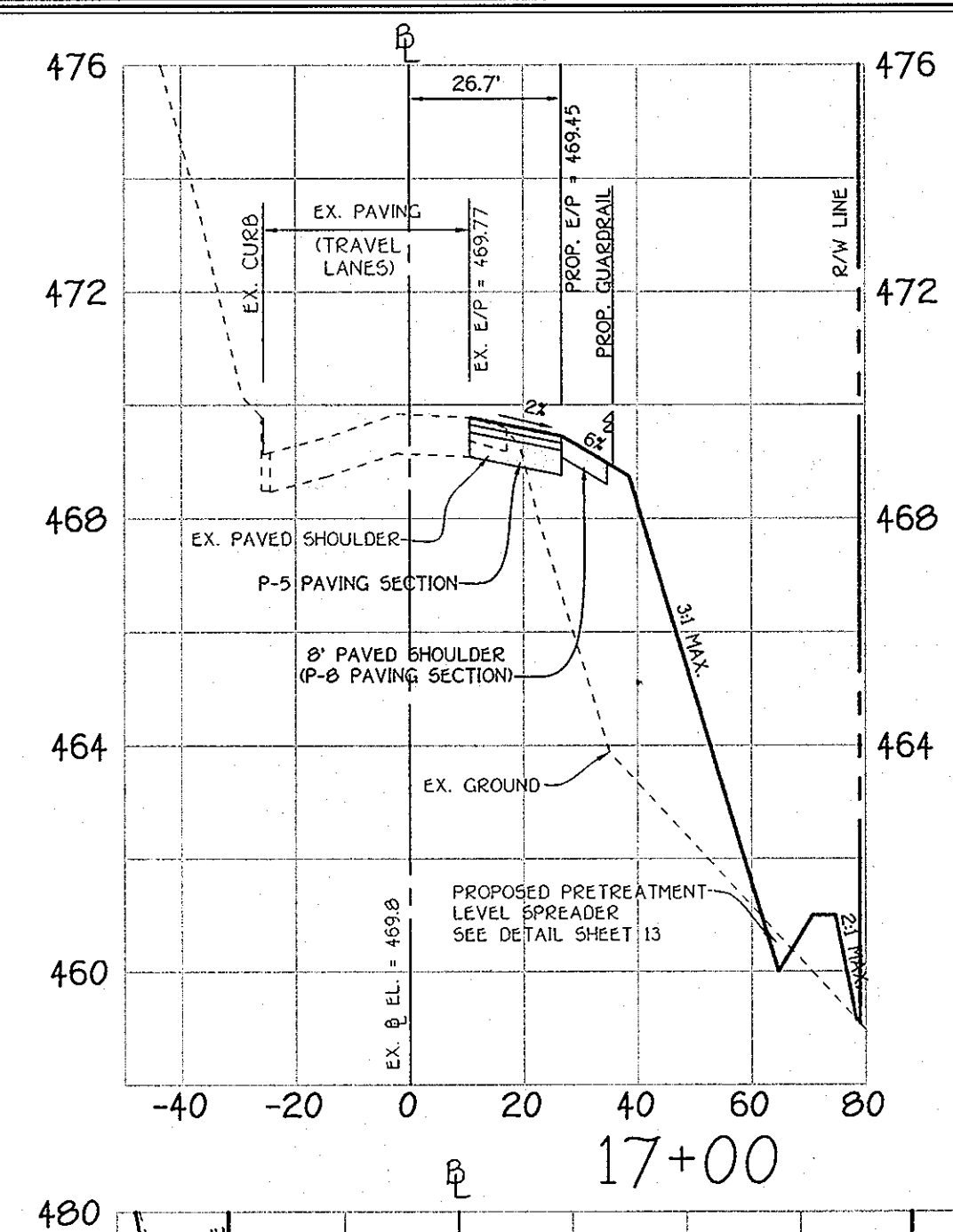
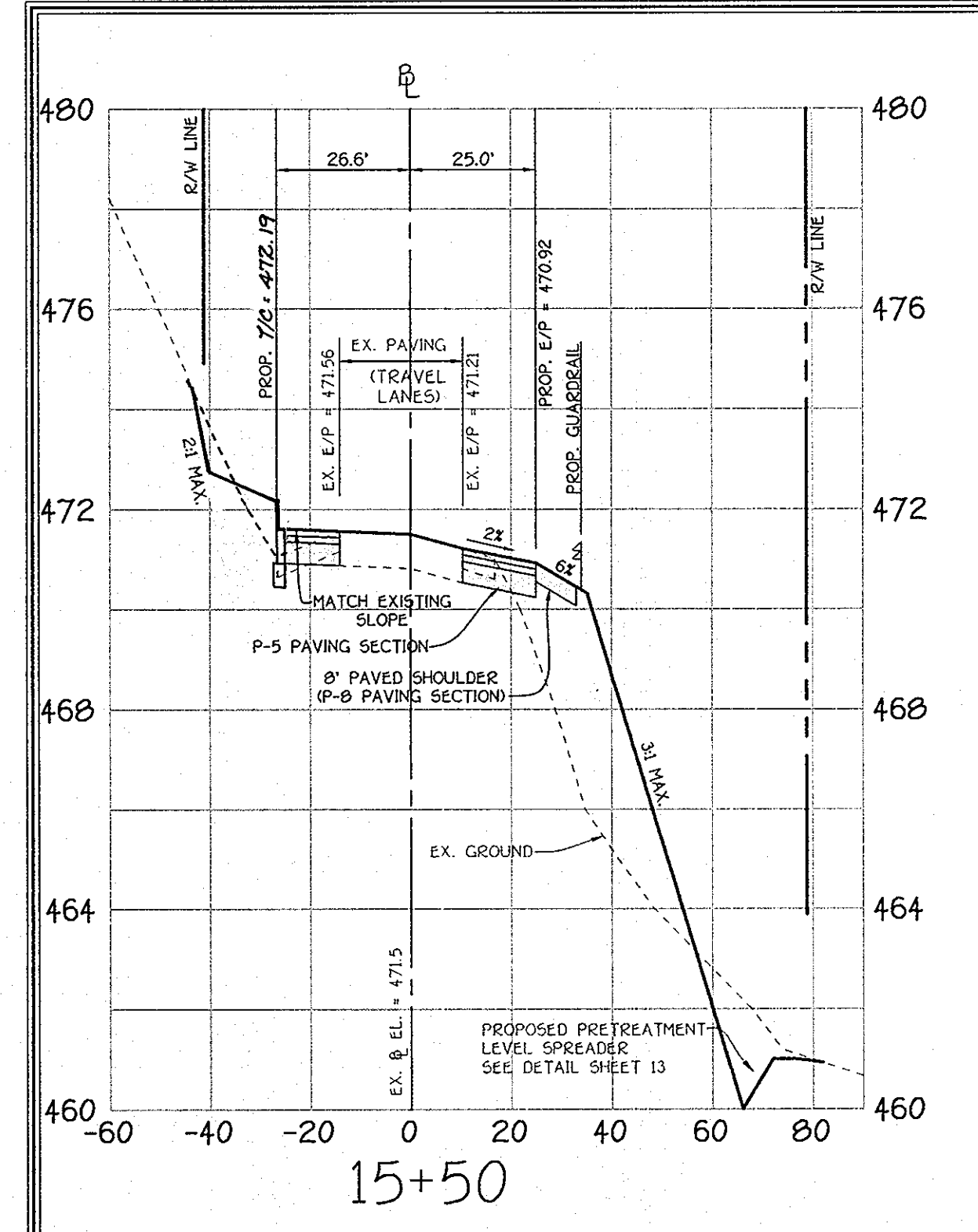
CROSS-SECTIONS
 SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter Z. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 6/14/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

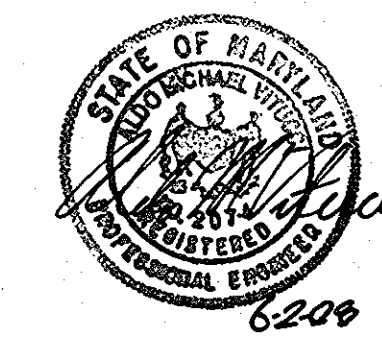
APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

No.	DESCRIPTION	DATE
ADDED SHEETS A2 & A3		
REVISIONS		
1	Added From Curb To Eastside of Mariottville Road (Sta. 14+20 To 14+94)	9/27/12



CROSS-SECTIONS
 SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422



MARIOTTVILLE ROAD CROSS-SECTIONS
 STA. 14+50 TO STA. 21+00

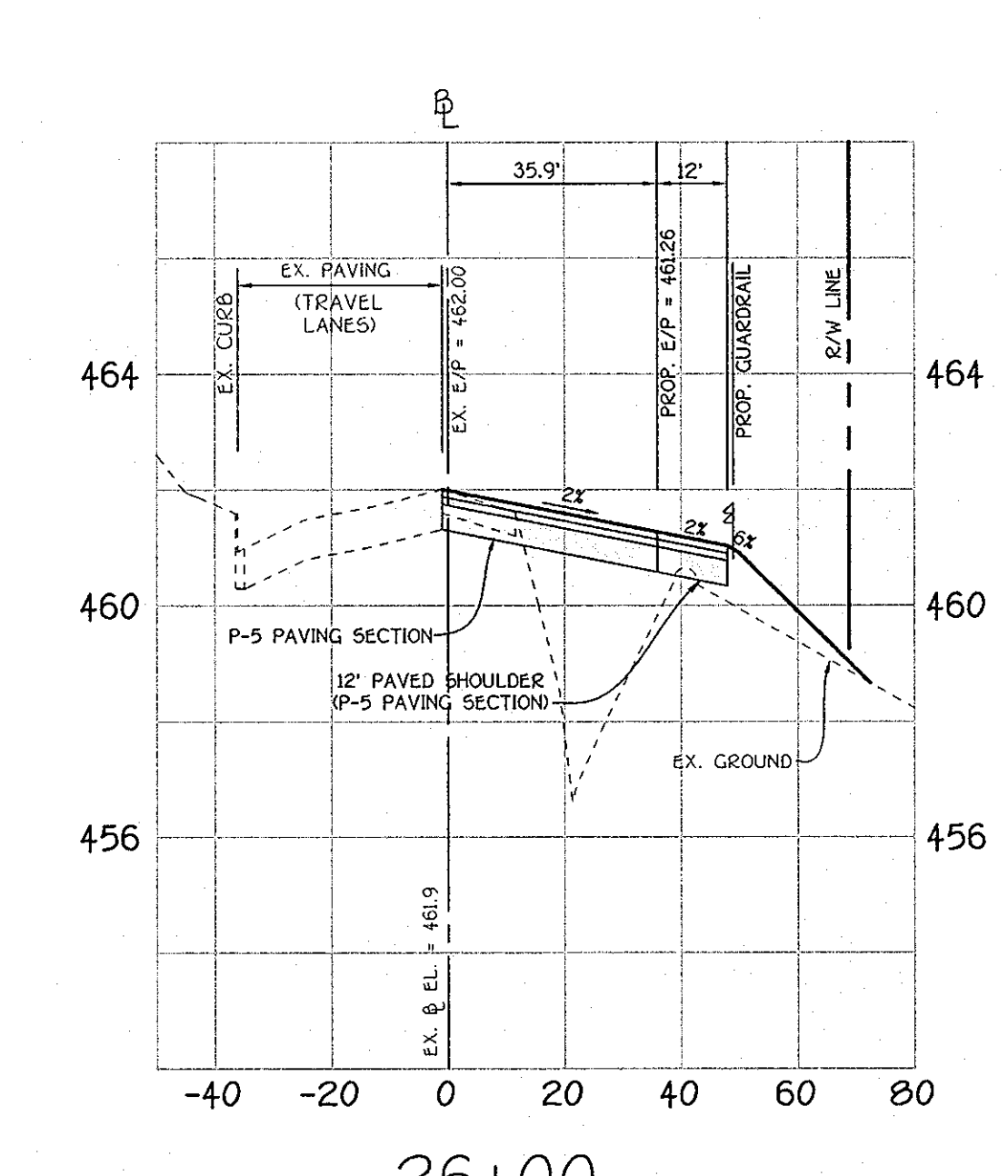
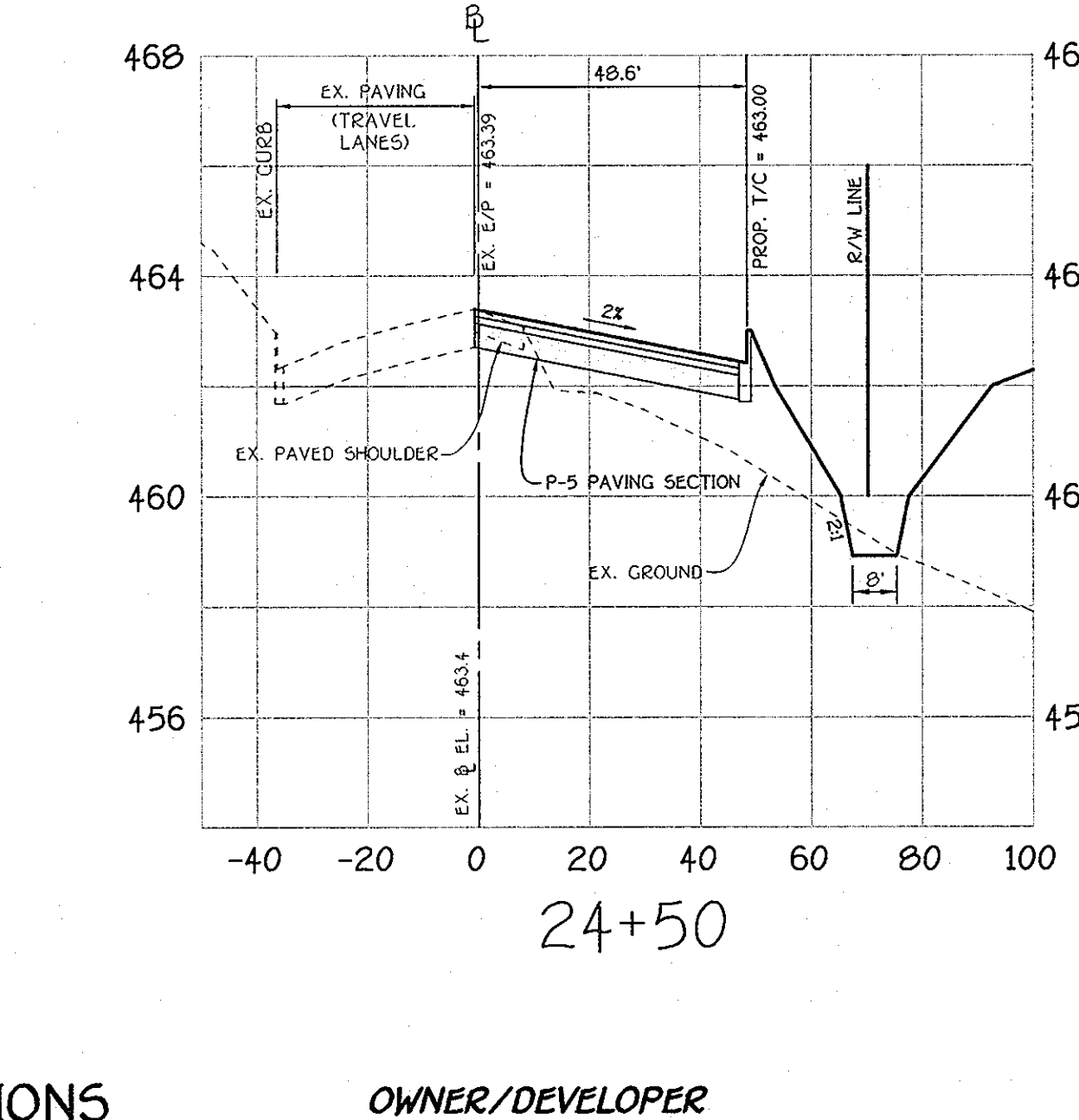
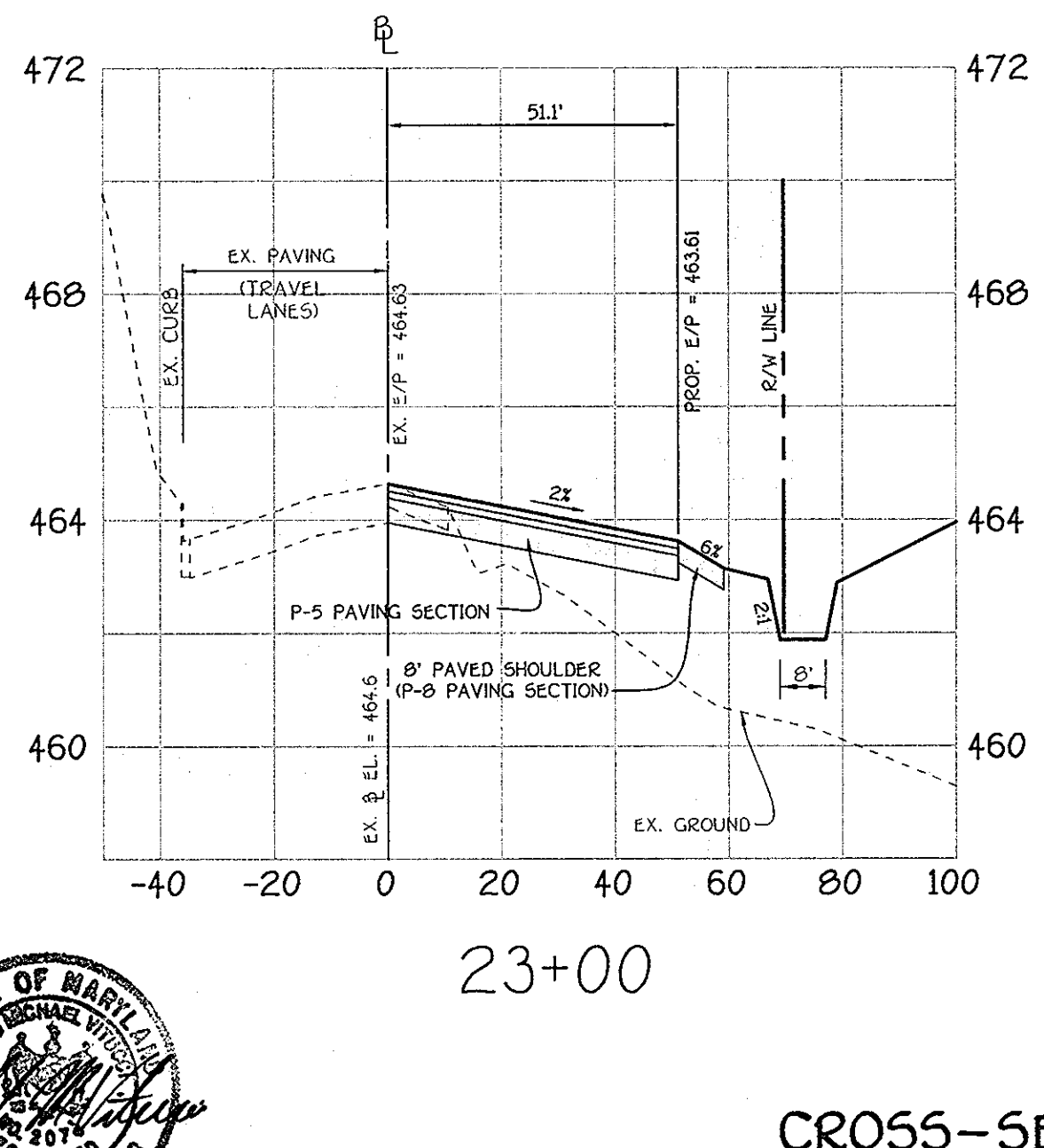
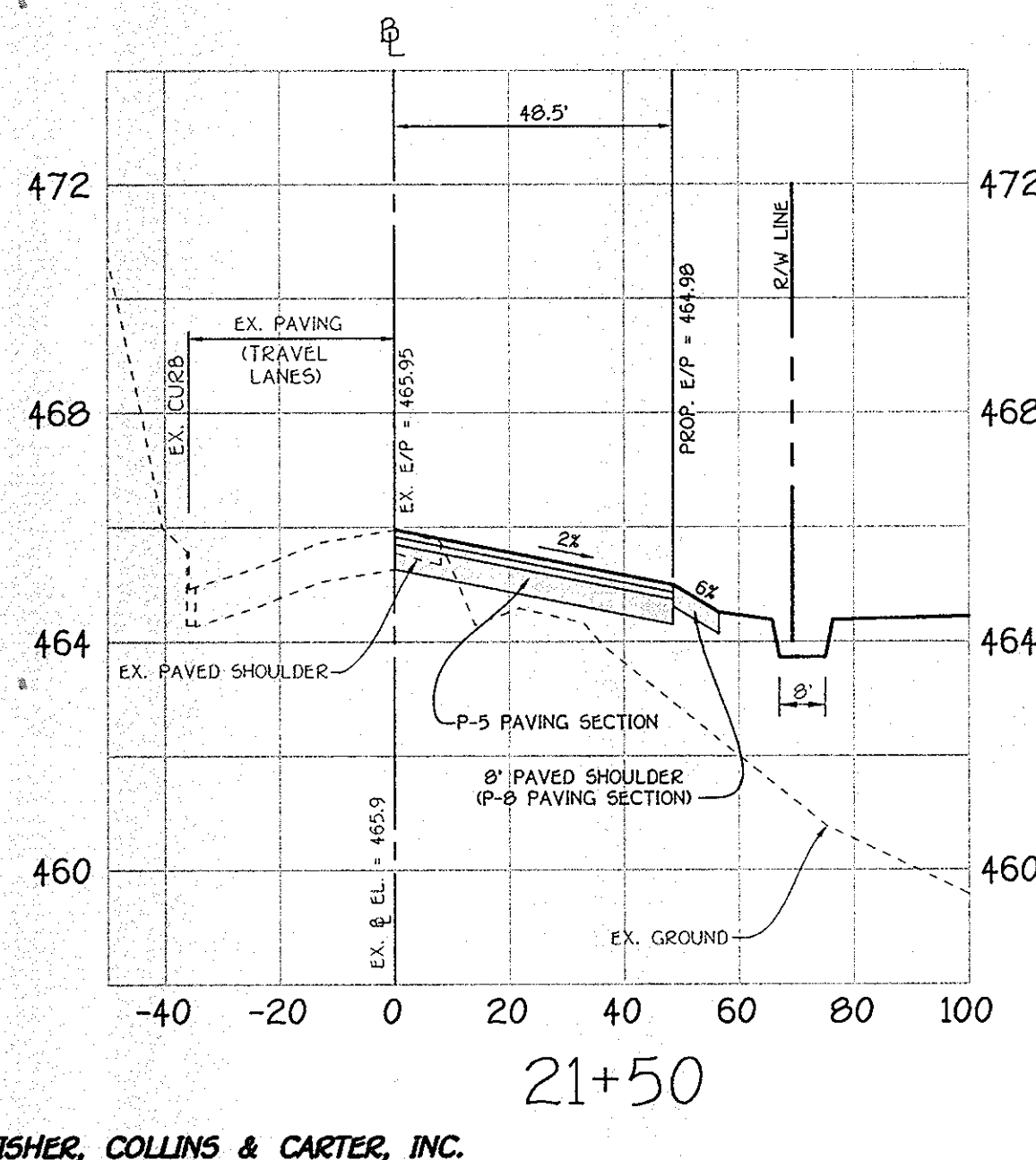
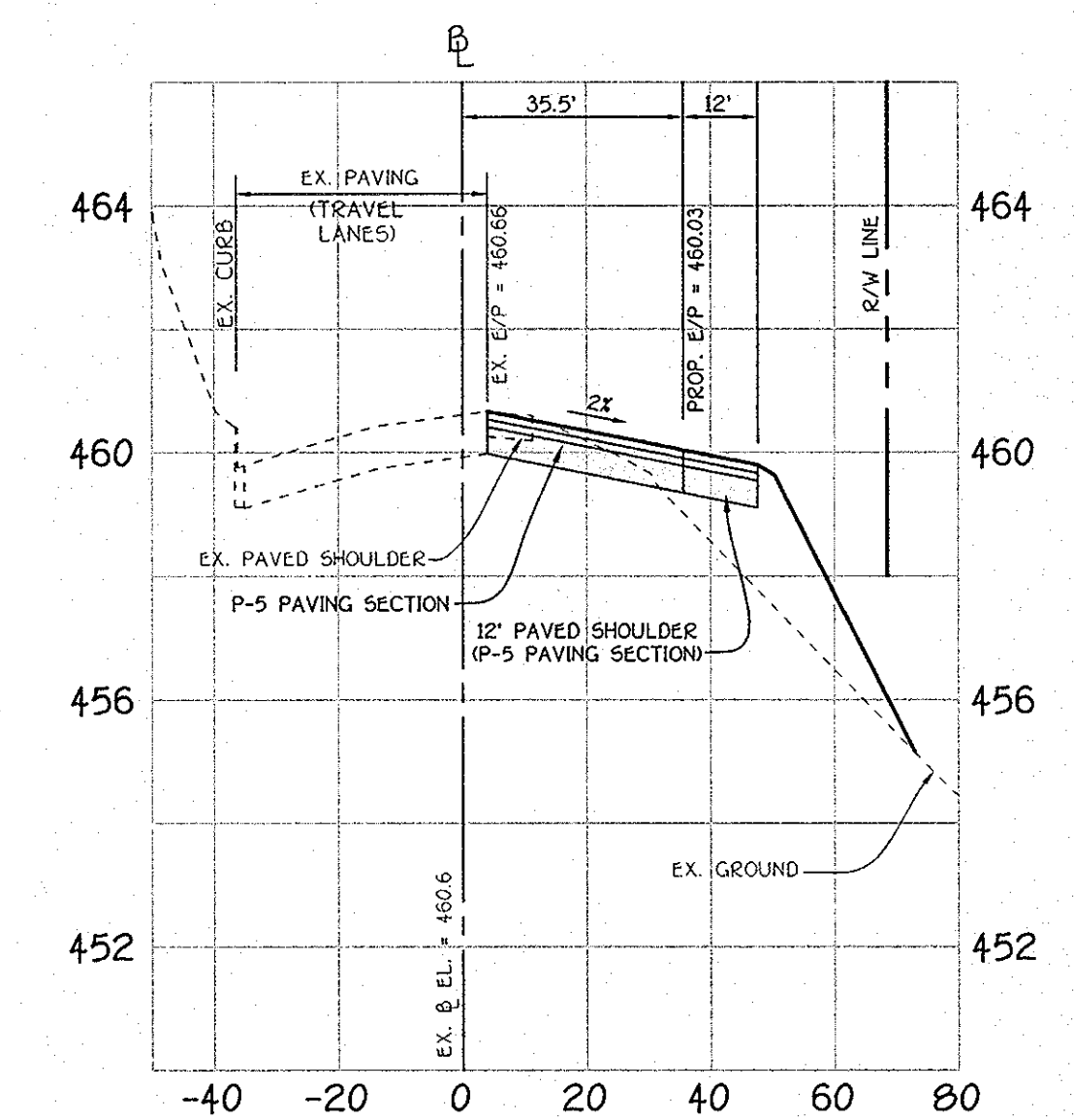
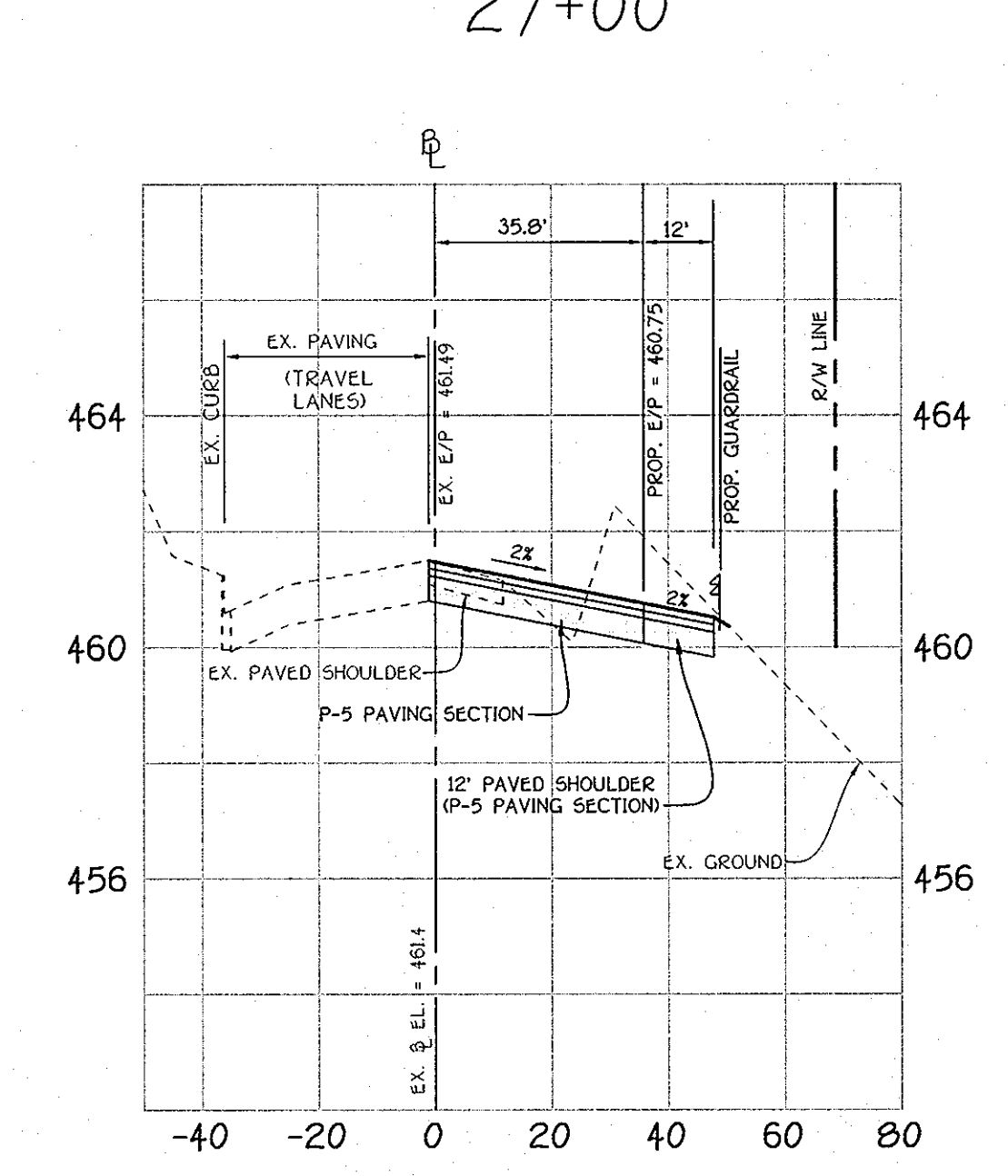
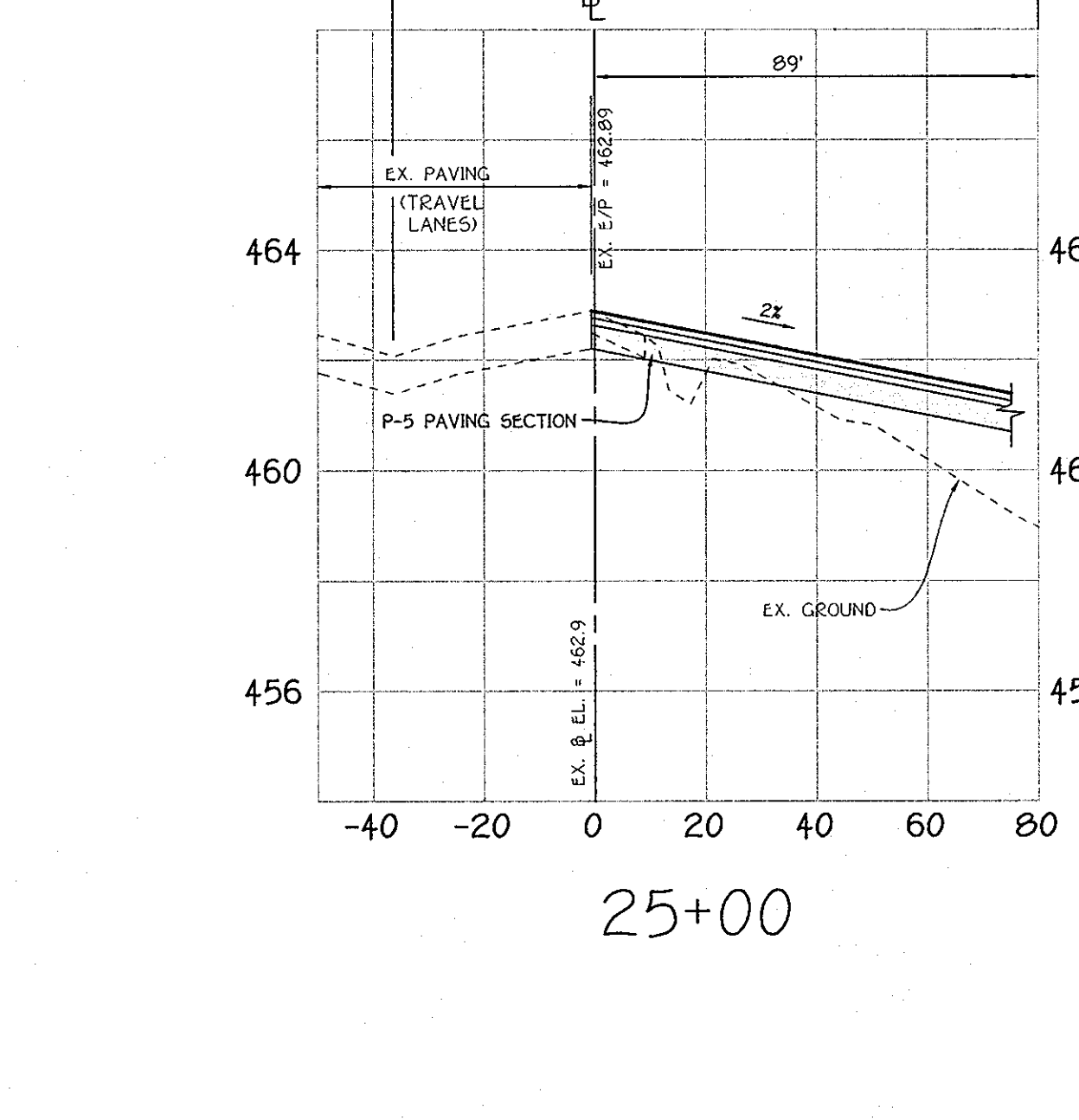
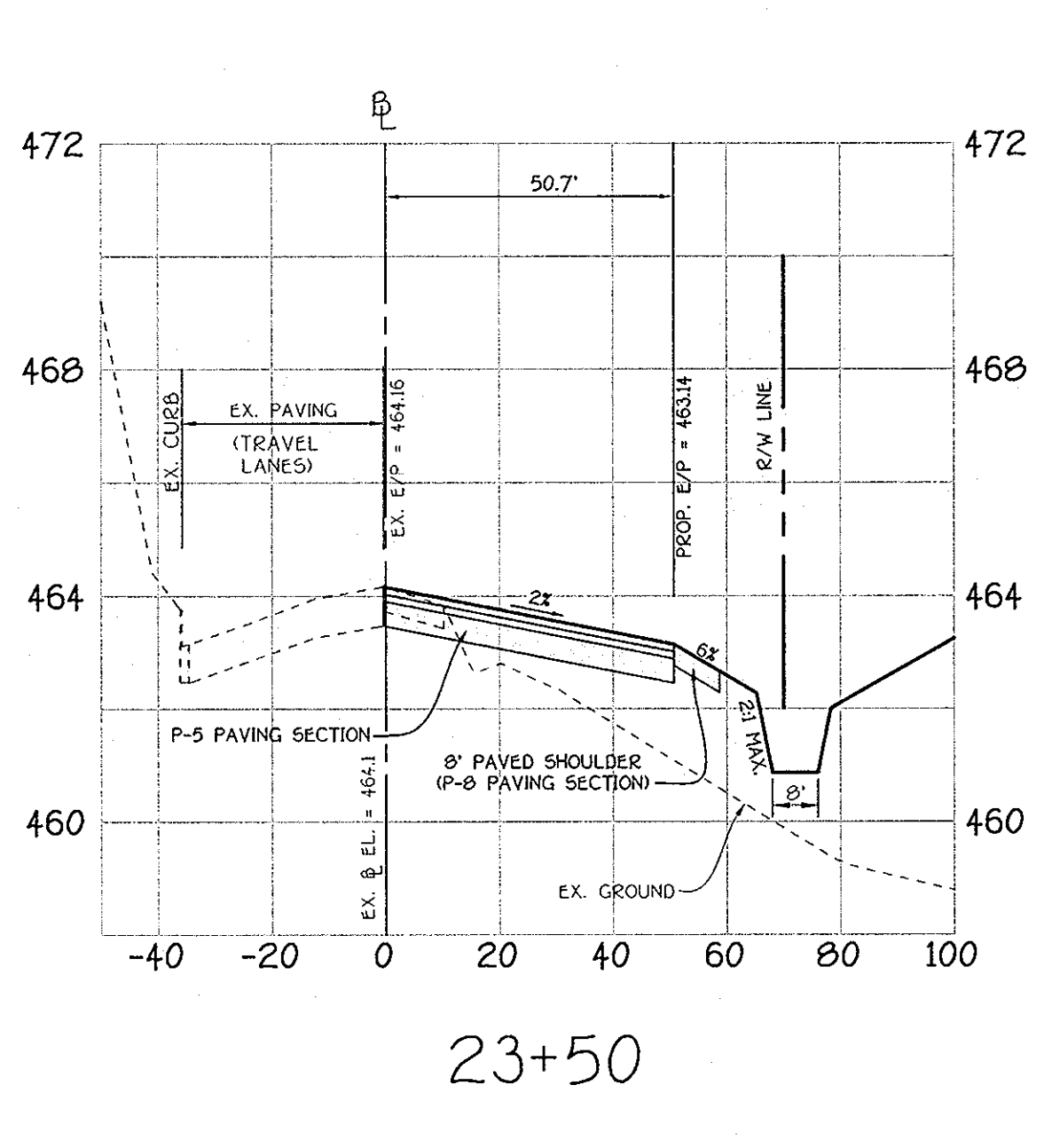
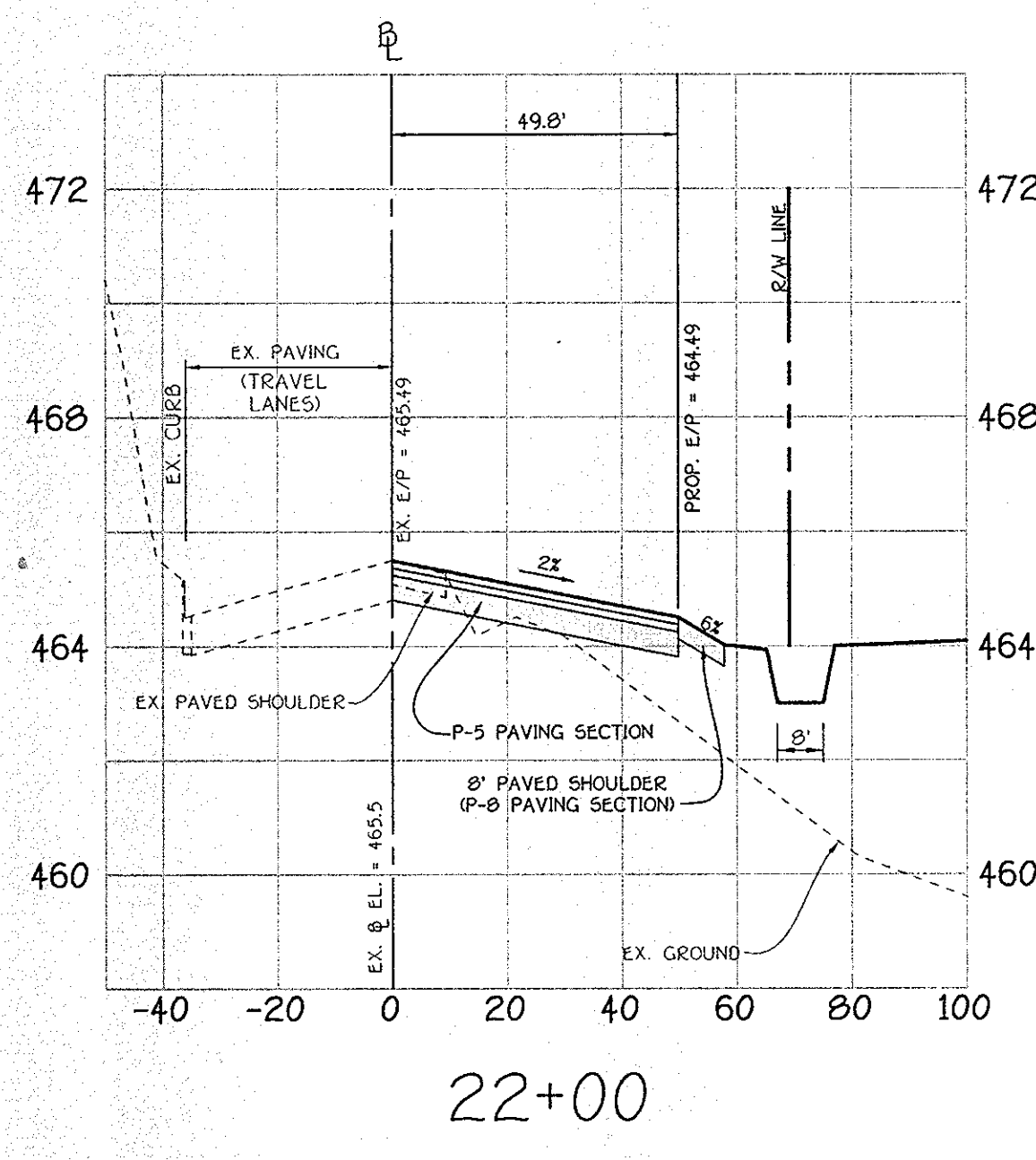
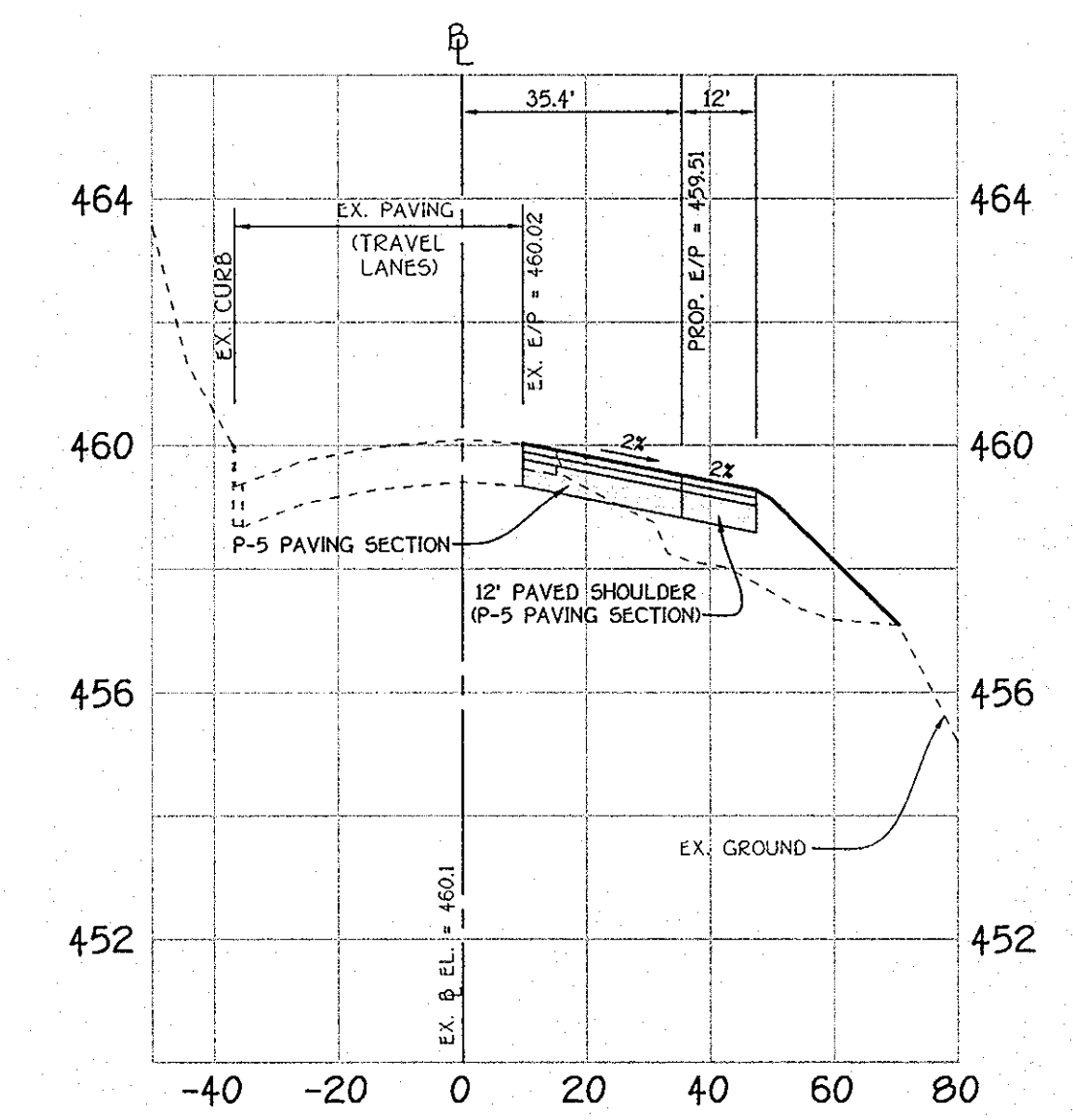
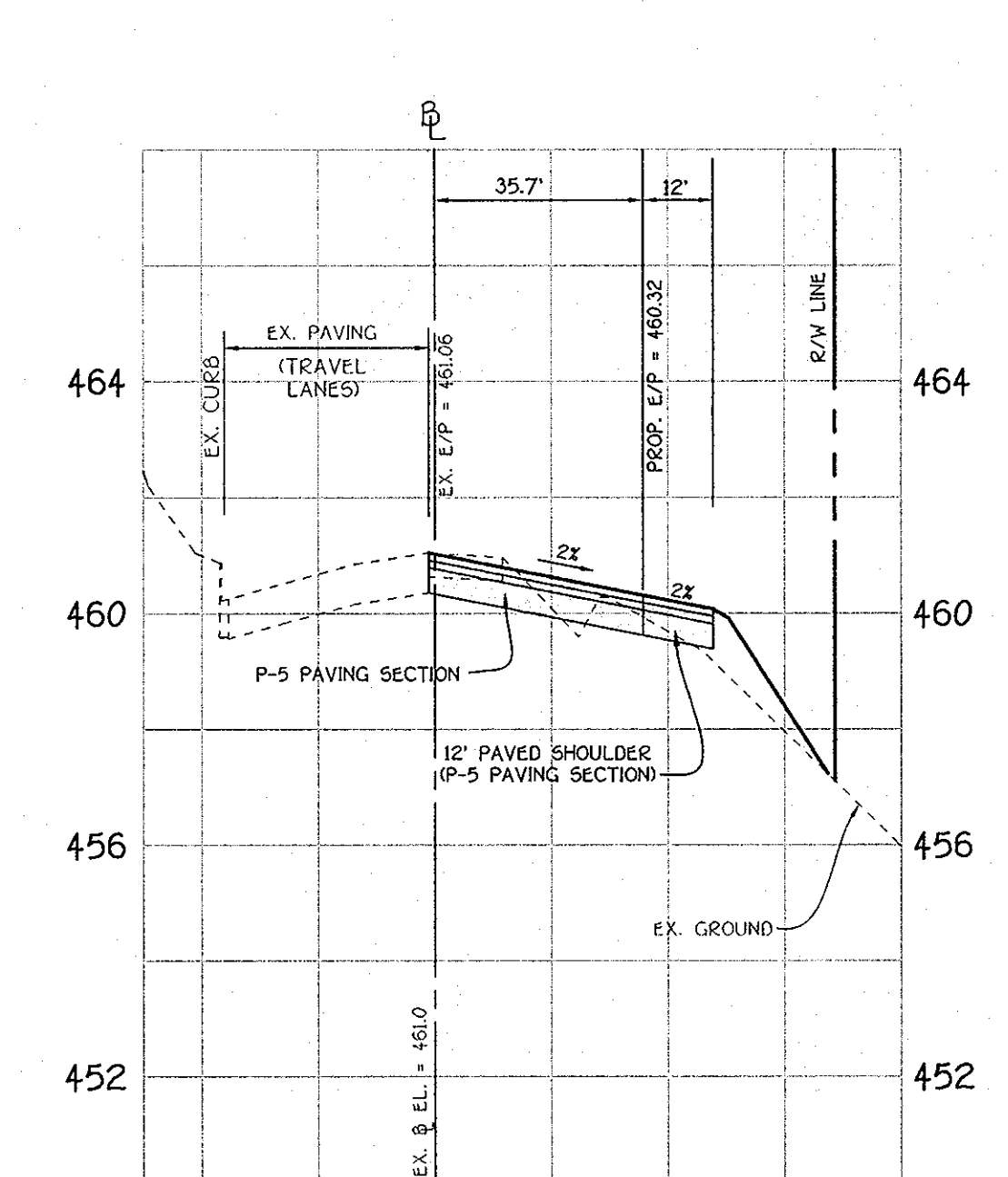
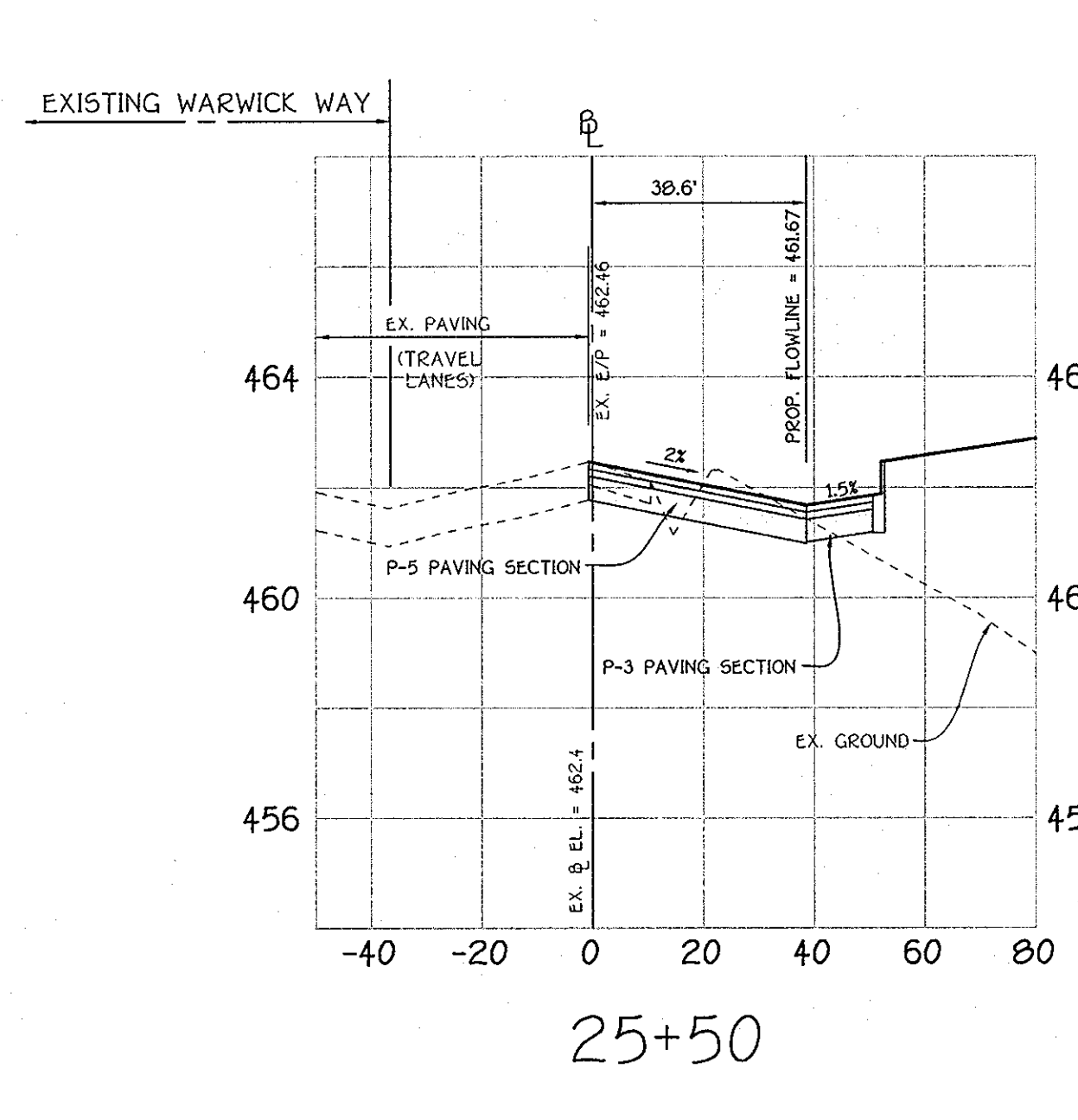
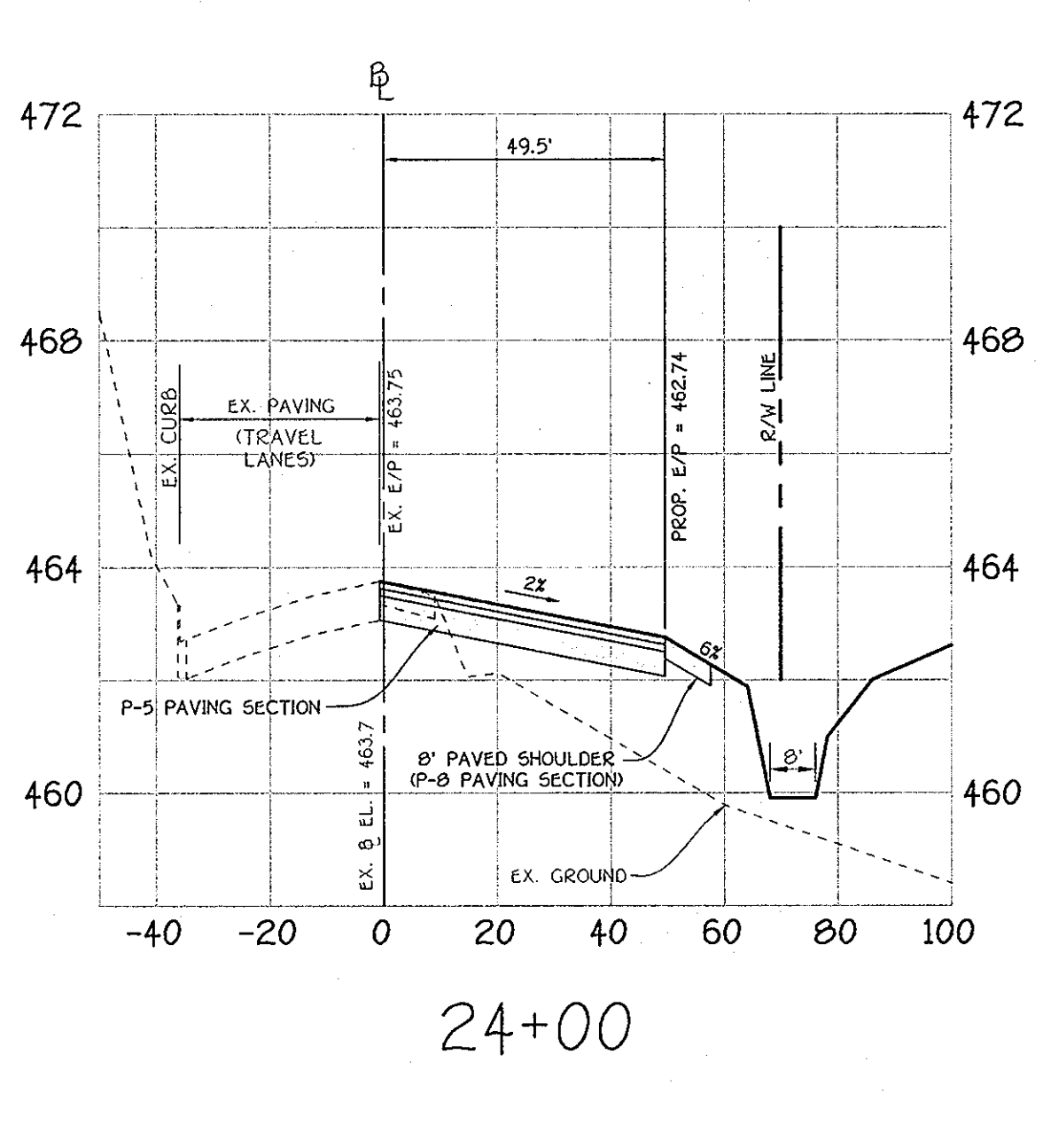
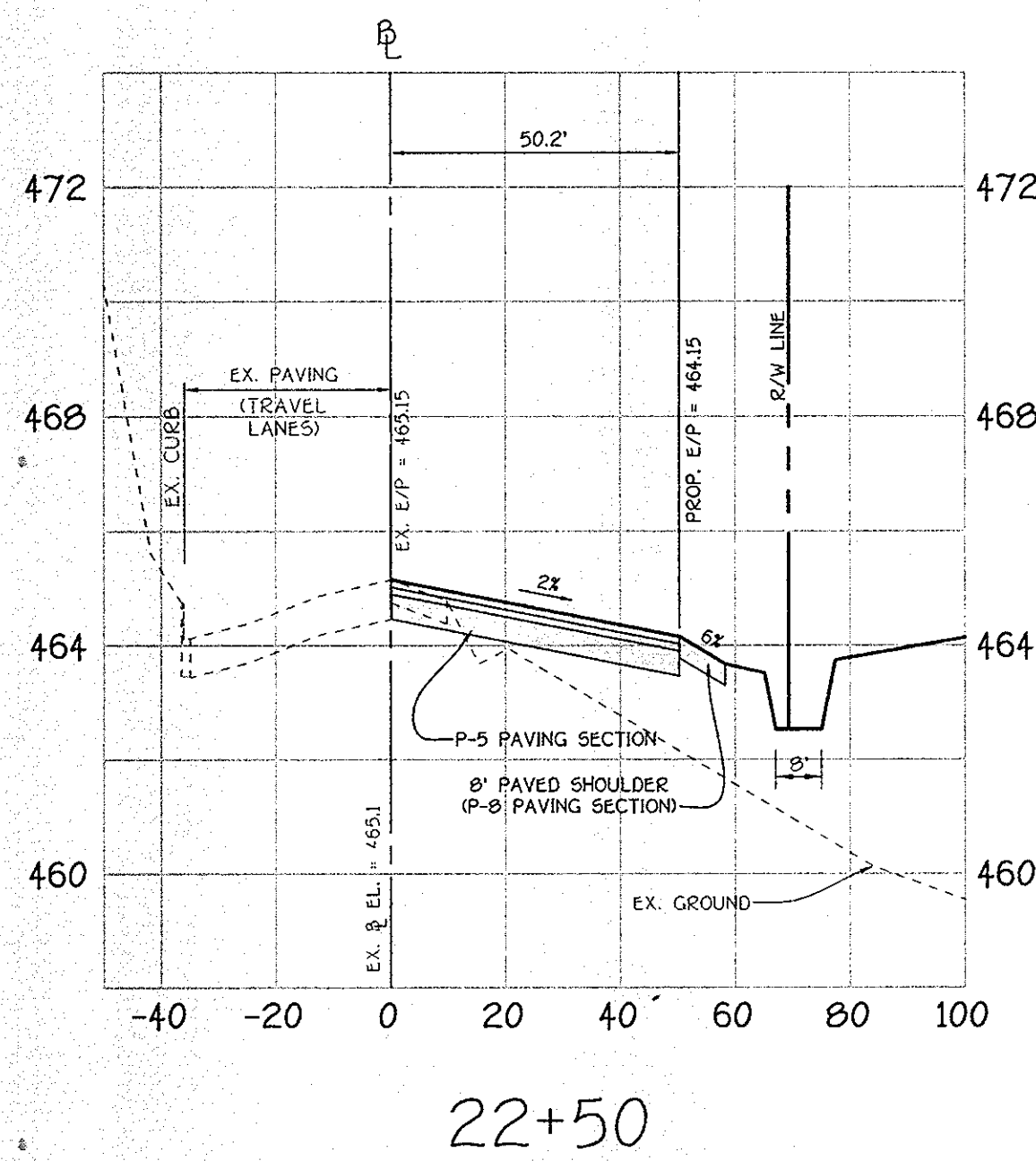
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN

TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 10 OF 43

1:2004(04017)GW/MARIOTTVILLE WIDENING(04017-3001) SHEET 6-13 MARIOTTVILLE CROSS-SECTIONS.dwg, 5/30/2008 9:34:48 AM

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10725 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21044
 (410) 461-2895

APPROVED: DEPARTMENT OF PUBLIC WORKS
with 2. m. d. / 6-16-08 DATE
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Andy Hamer 6/24/08 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT
John D. ... DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-180 STANDARDS.

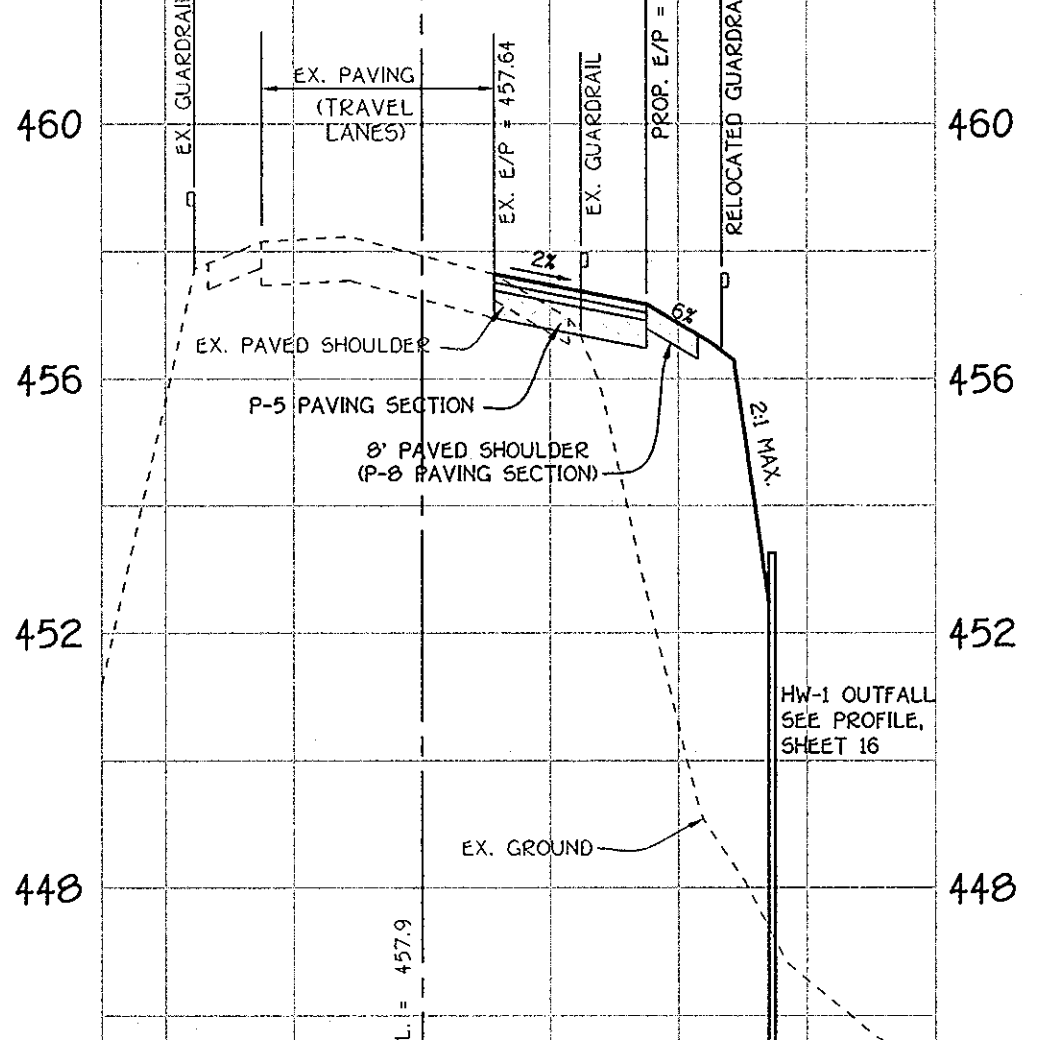
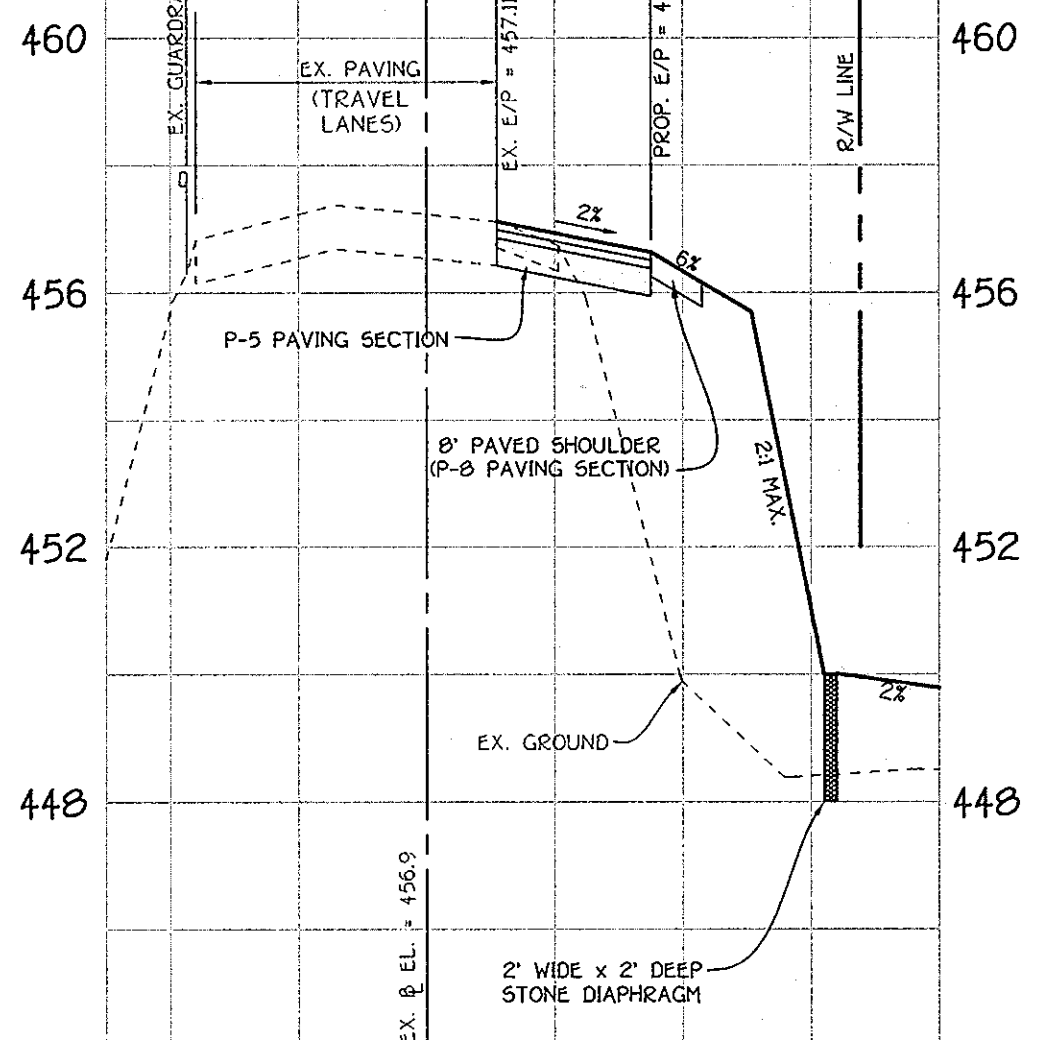
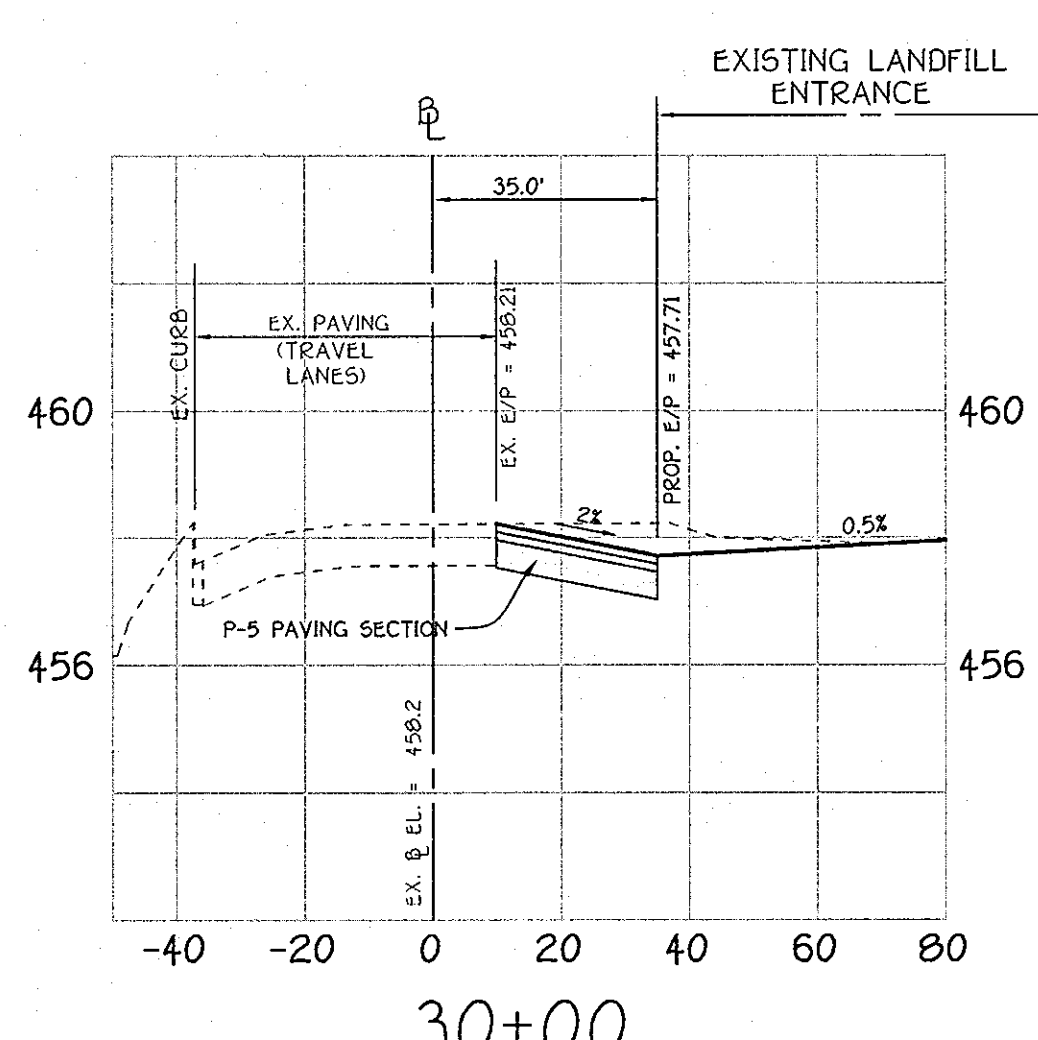
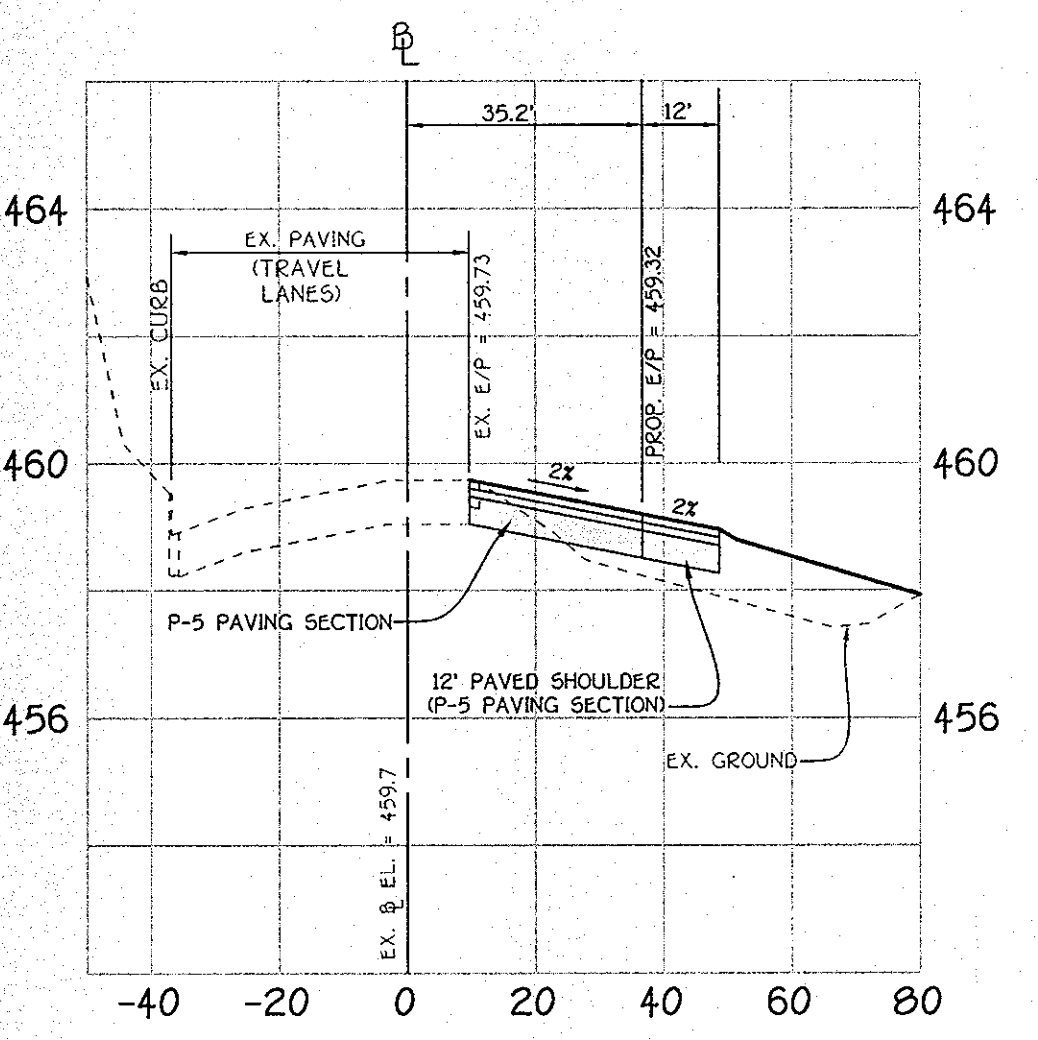
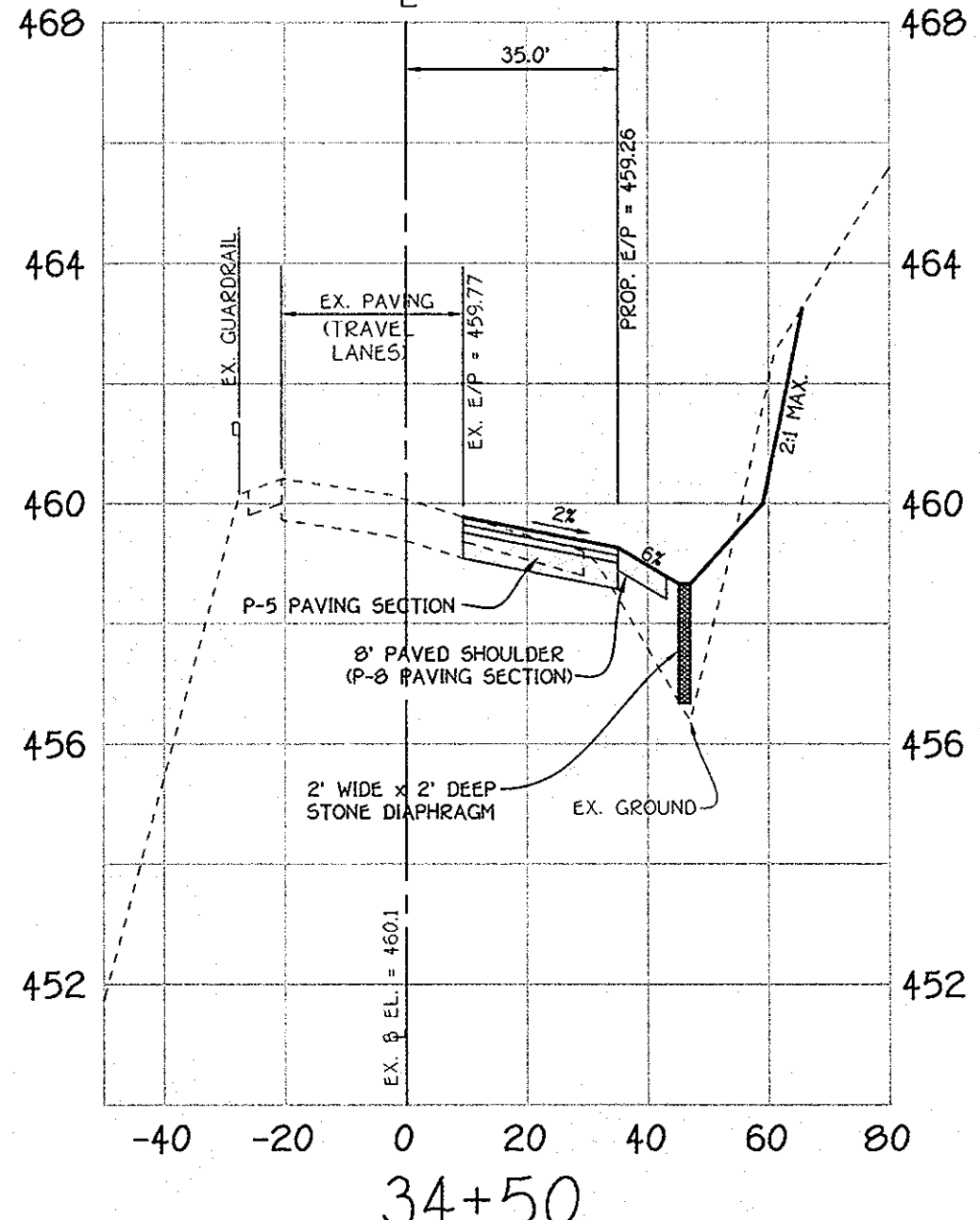
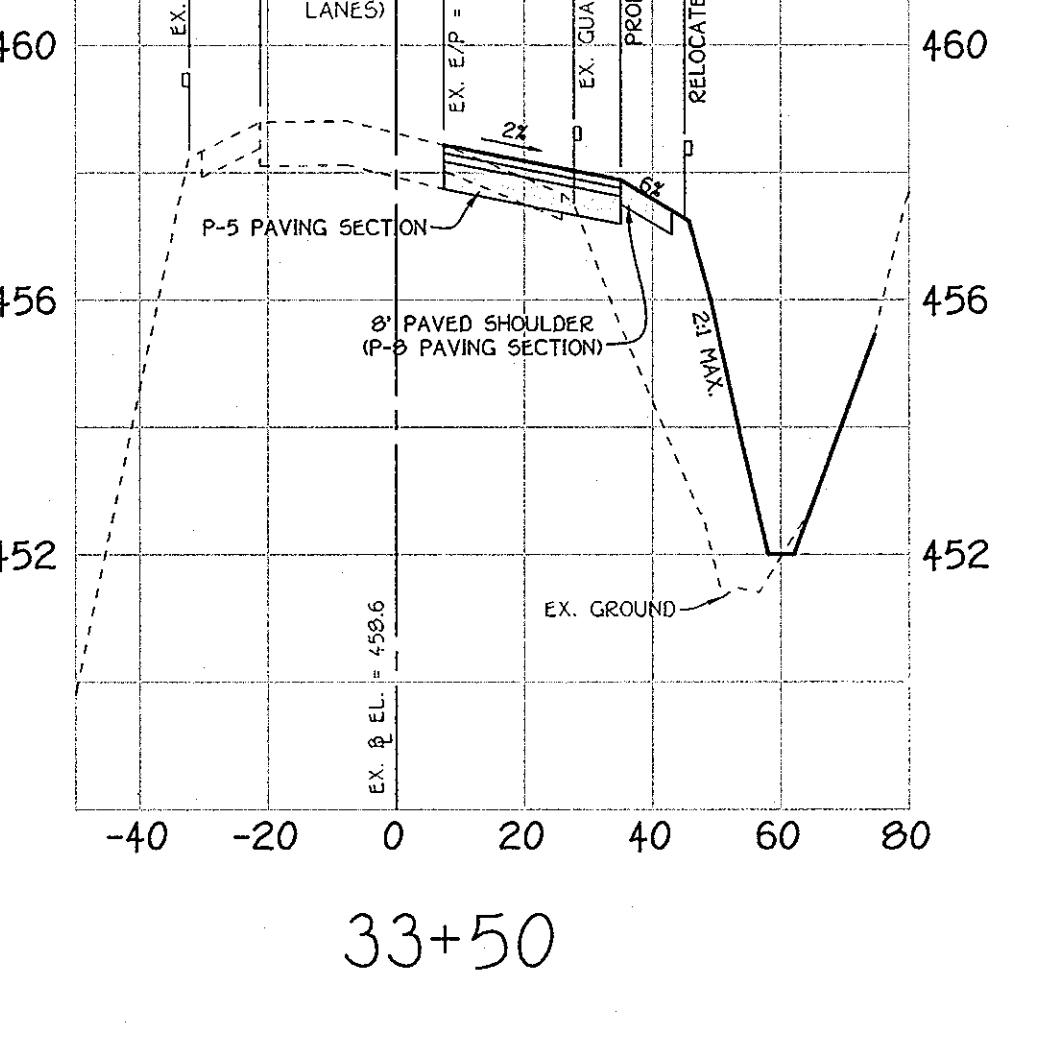
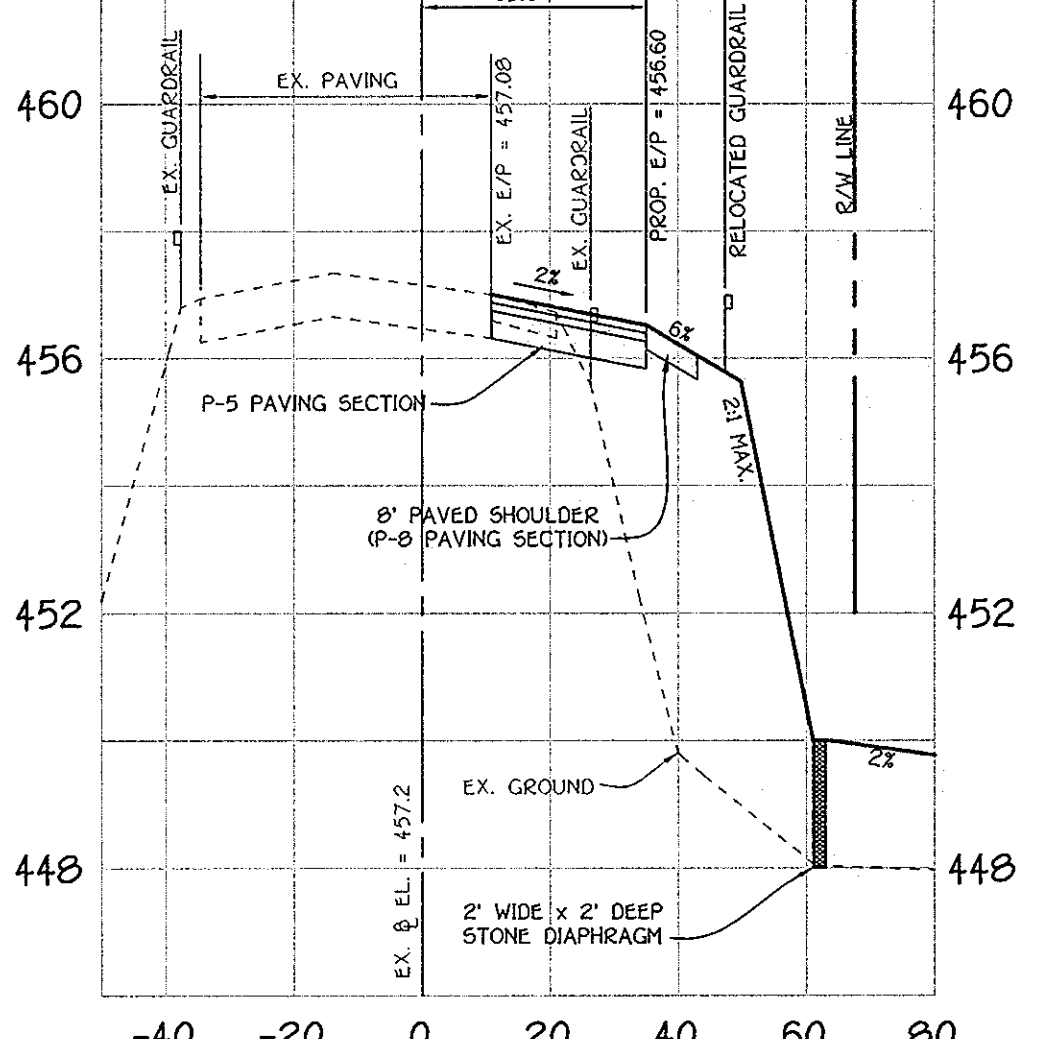
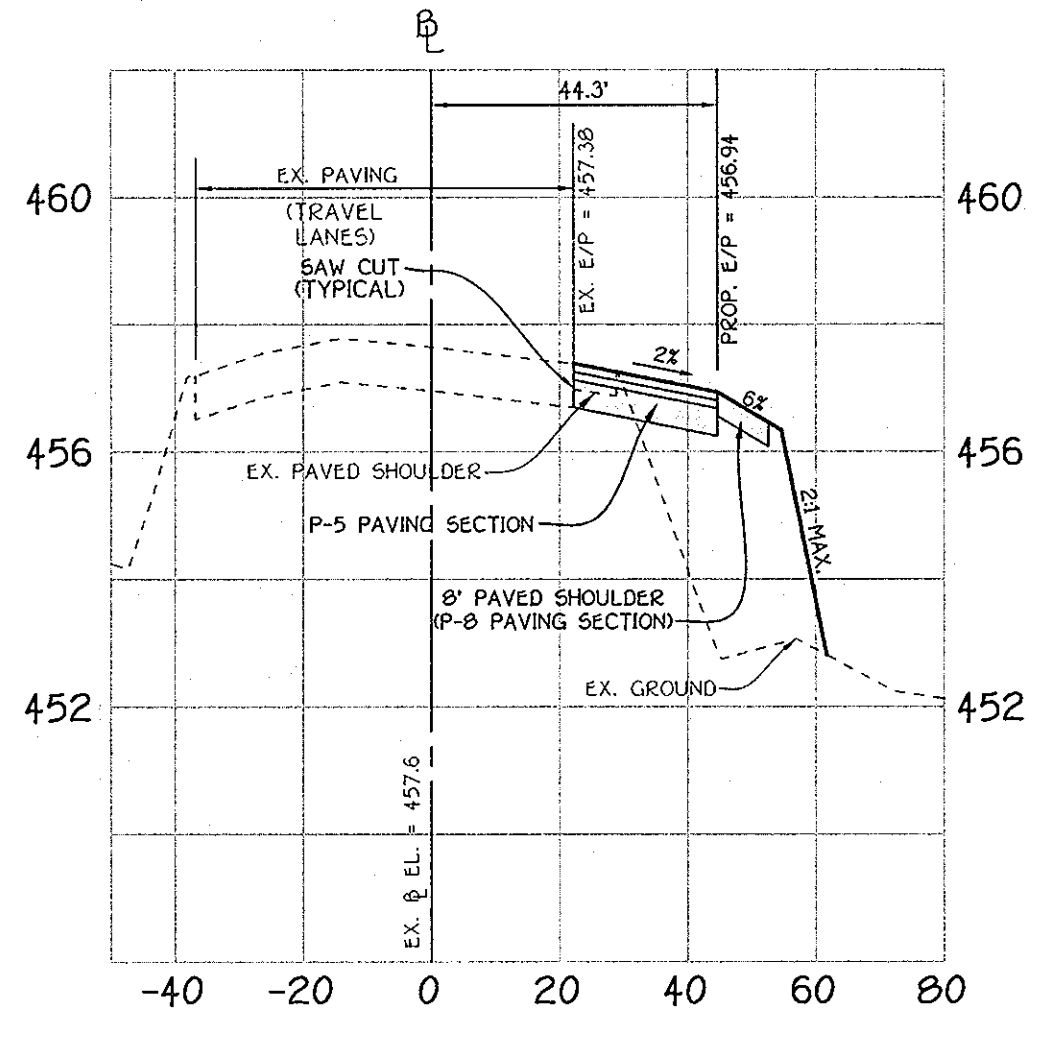
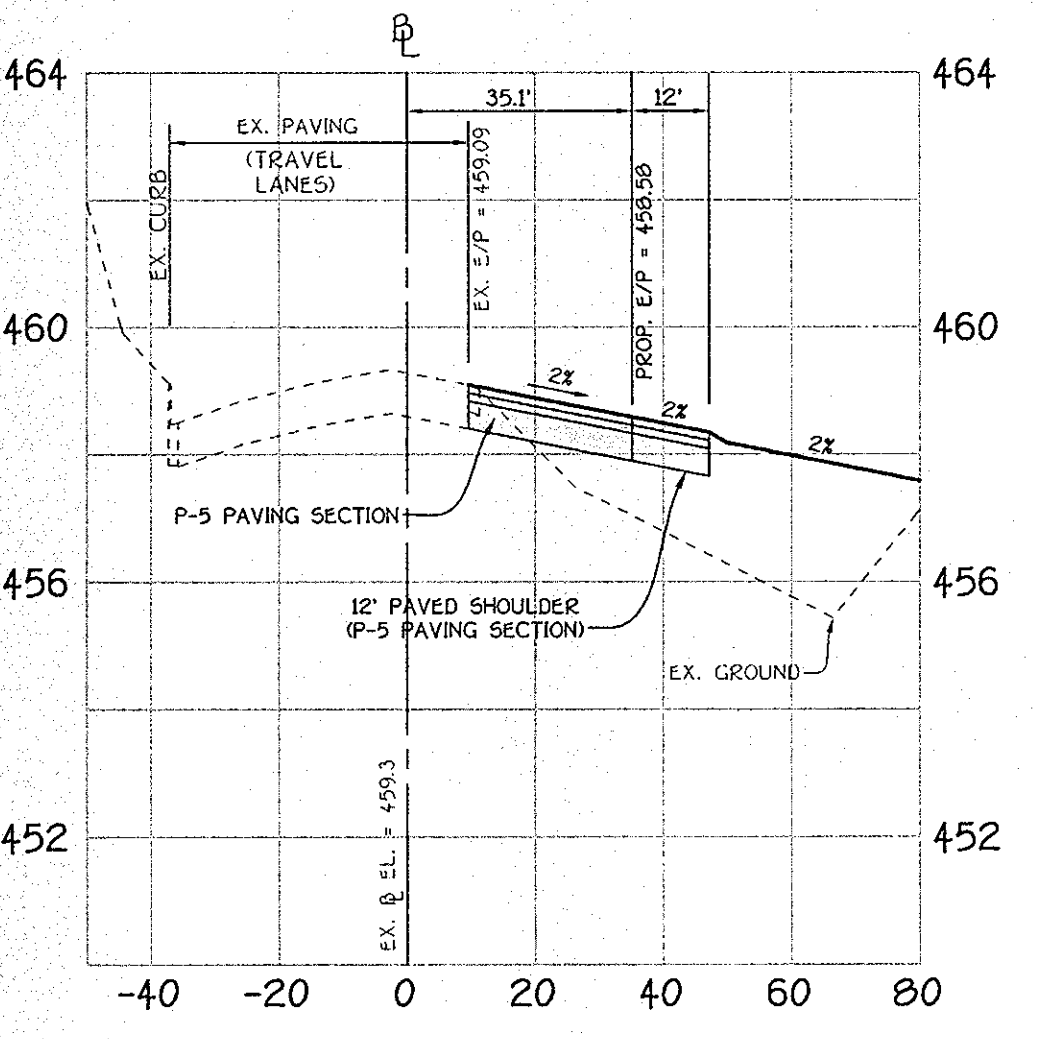
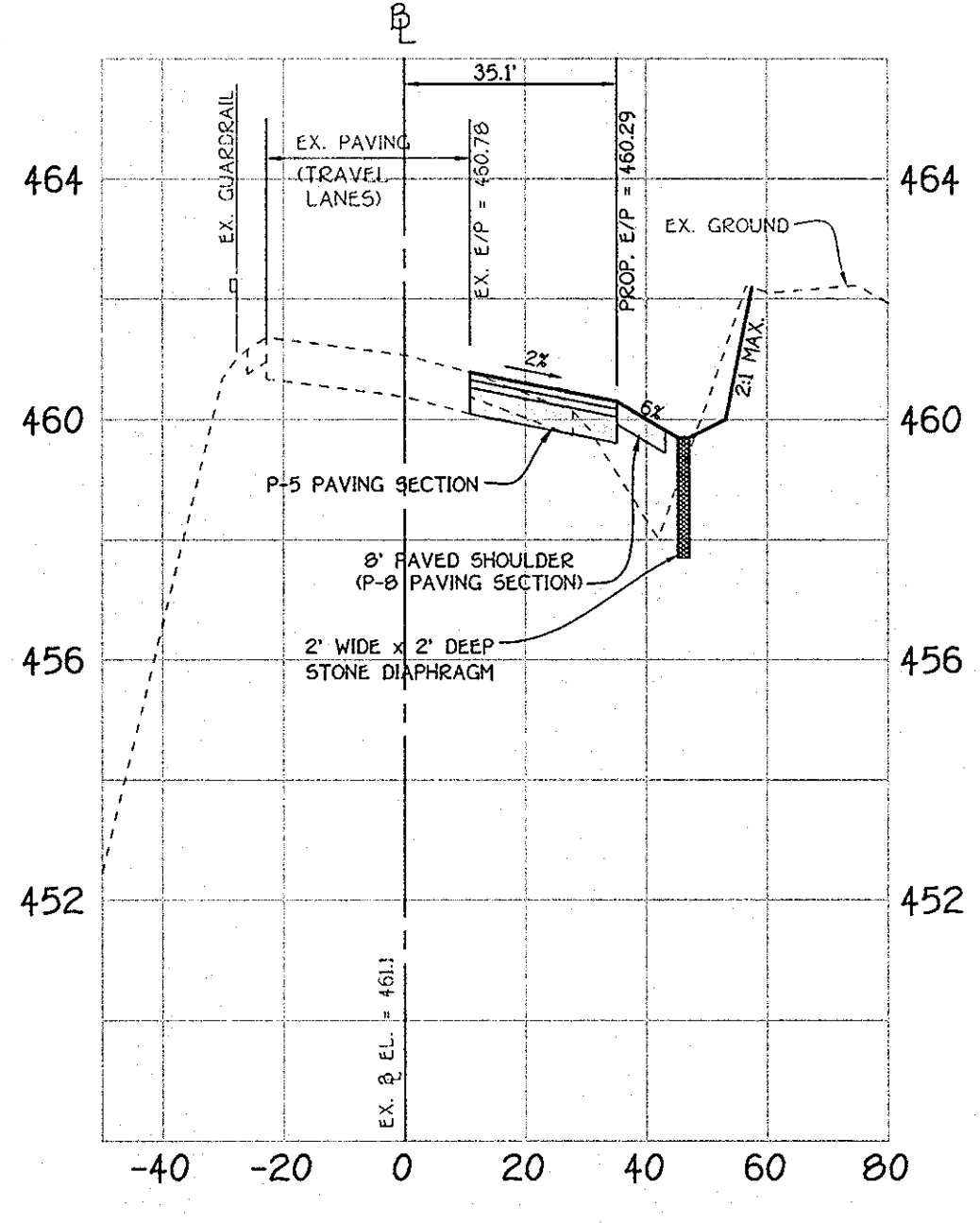
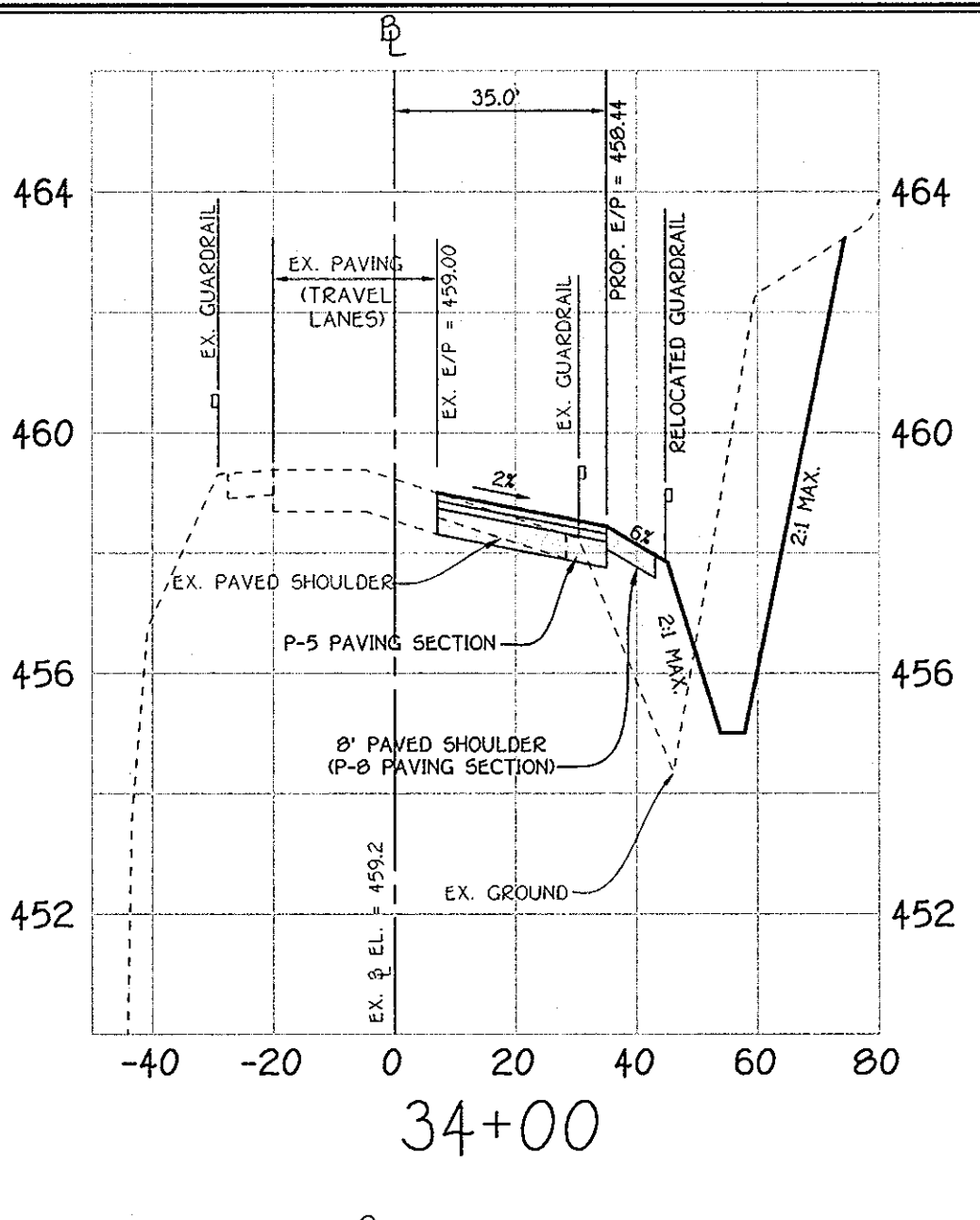
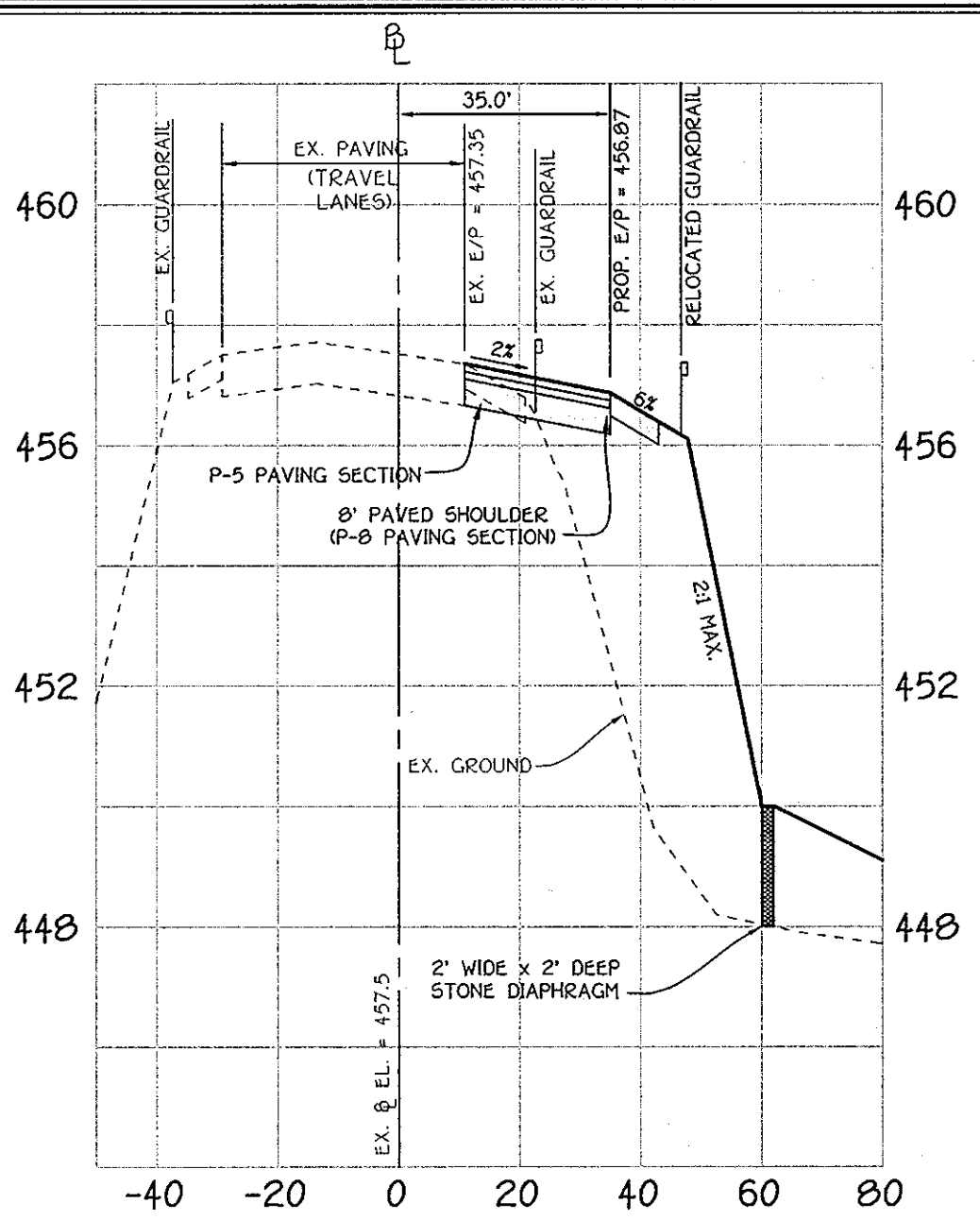
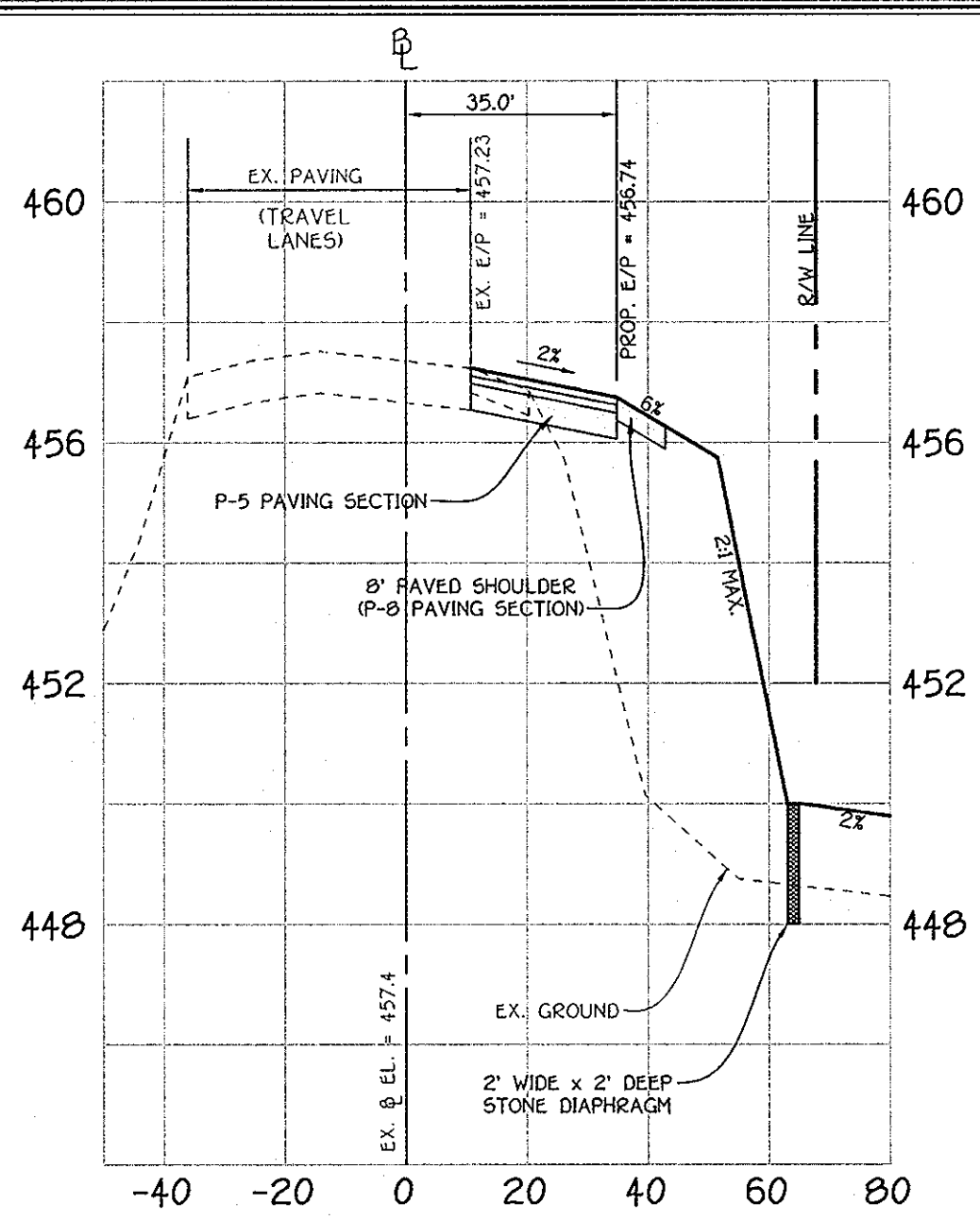
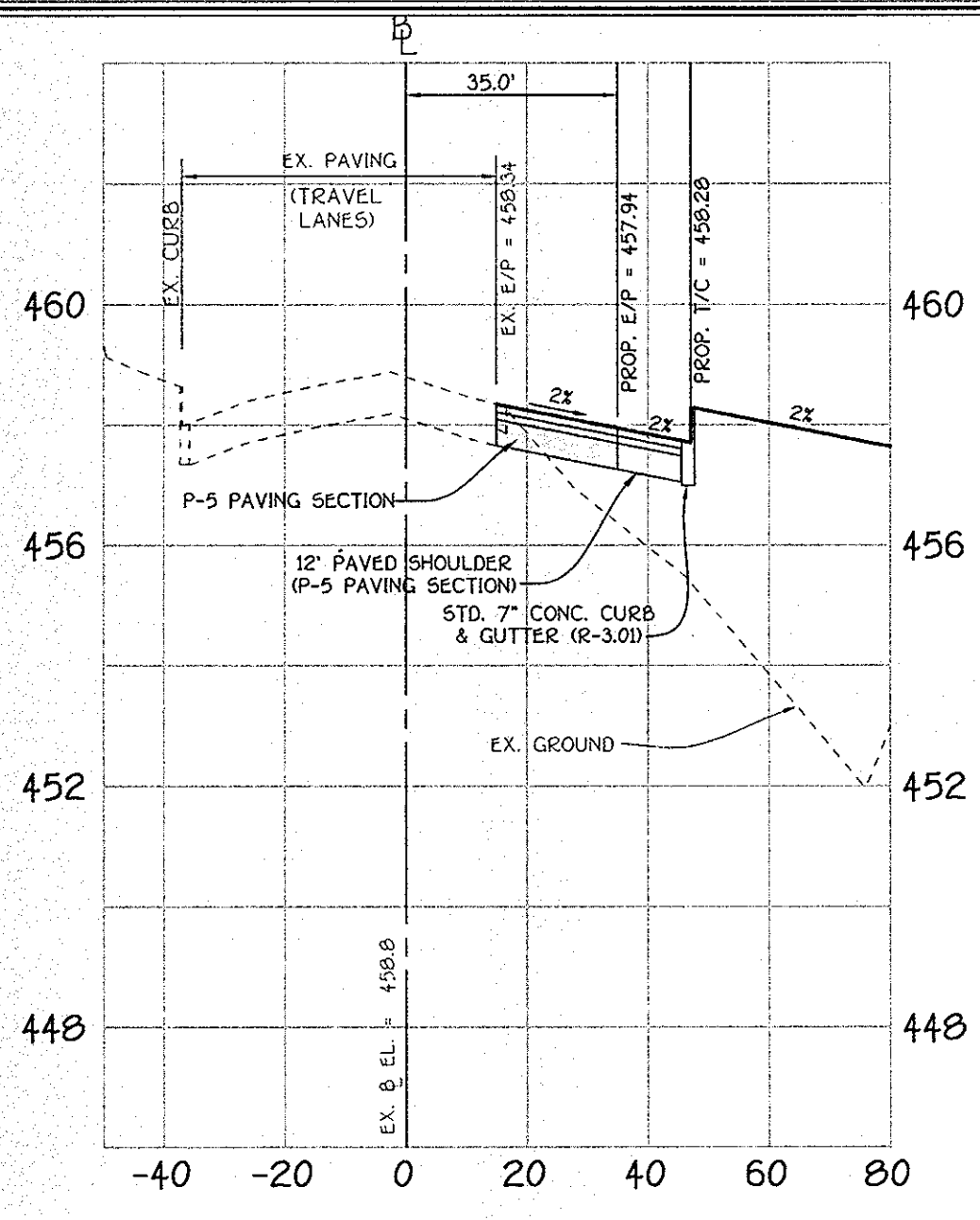
MARRIOTSVILLE ROAD CROSS-SECTIONS
 STA. 21+50 TO STA. 28+00
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 11 OF 41

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 3333 NATIONAL SQUARE OFFICE PARK - 10272 BALETHORSE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2255



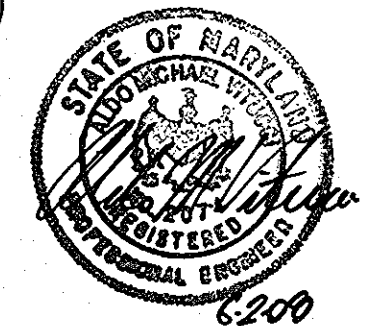
CROSS-SECTIONS
 SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (443) 367-0422



NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-100 STANDARDS.

MARRIOTTVILLE ROAD CROSS-SECTIONS
 STA. 28+50 TO STA. 35+00
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 12 OF 41



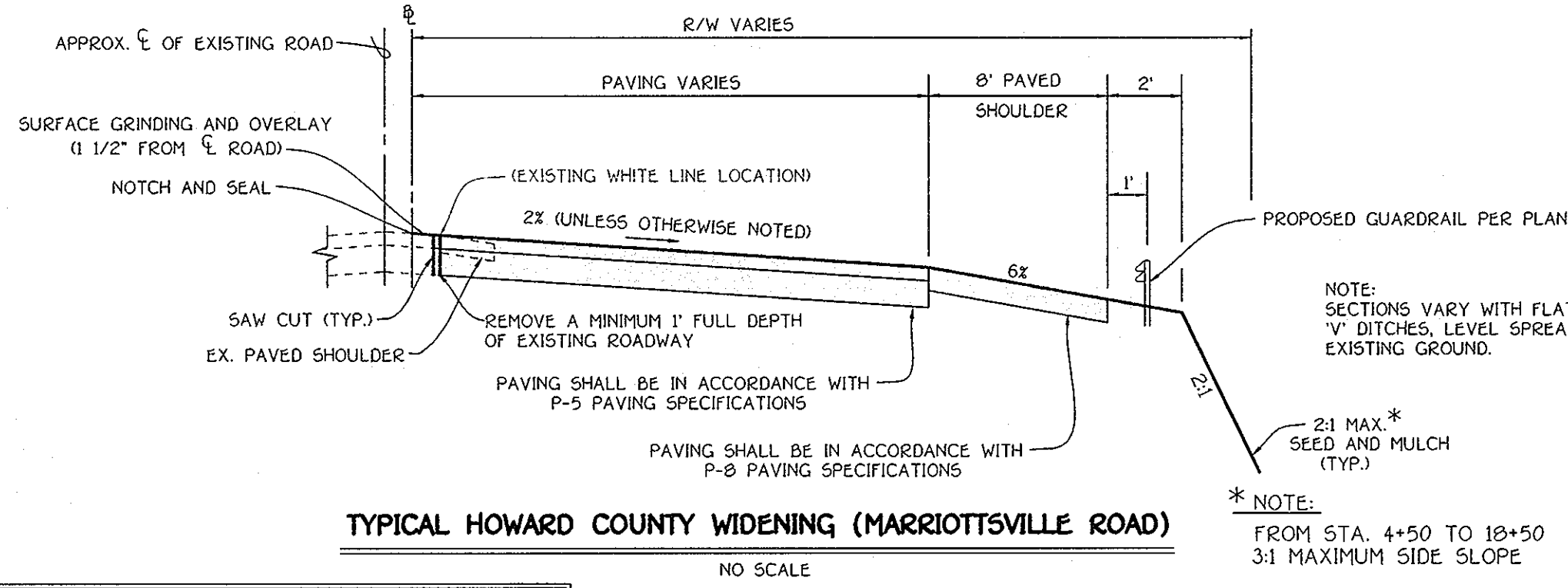
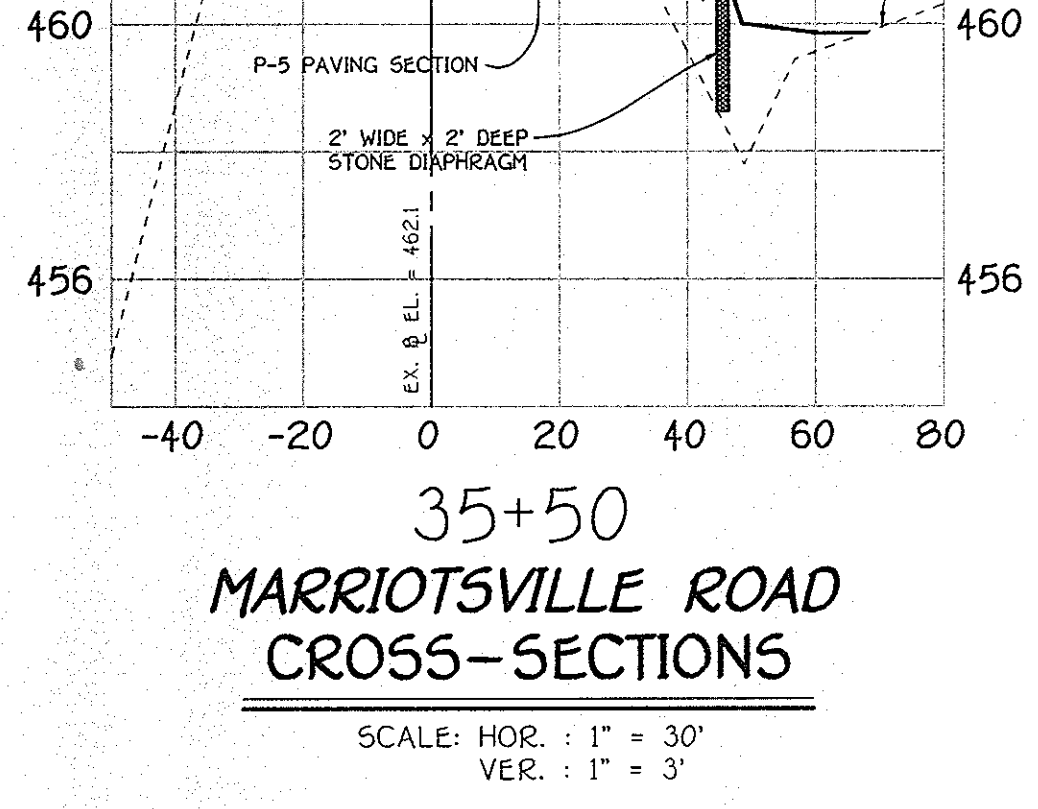
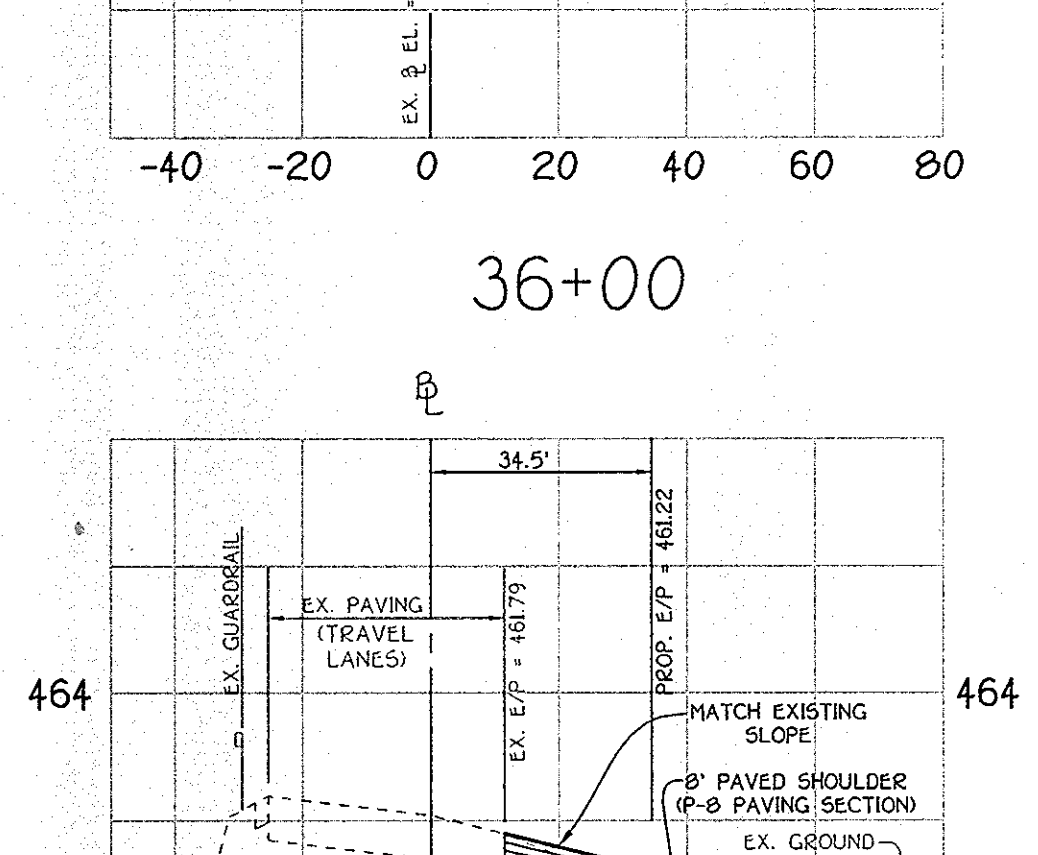
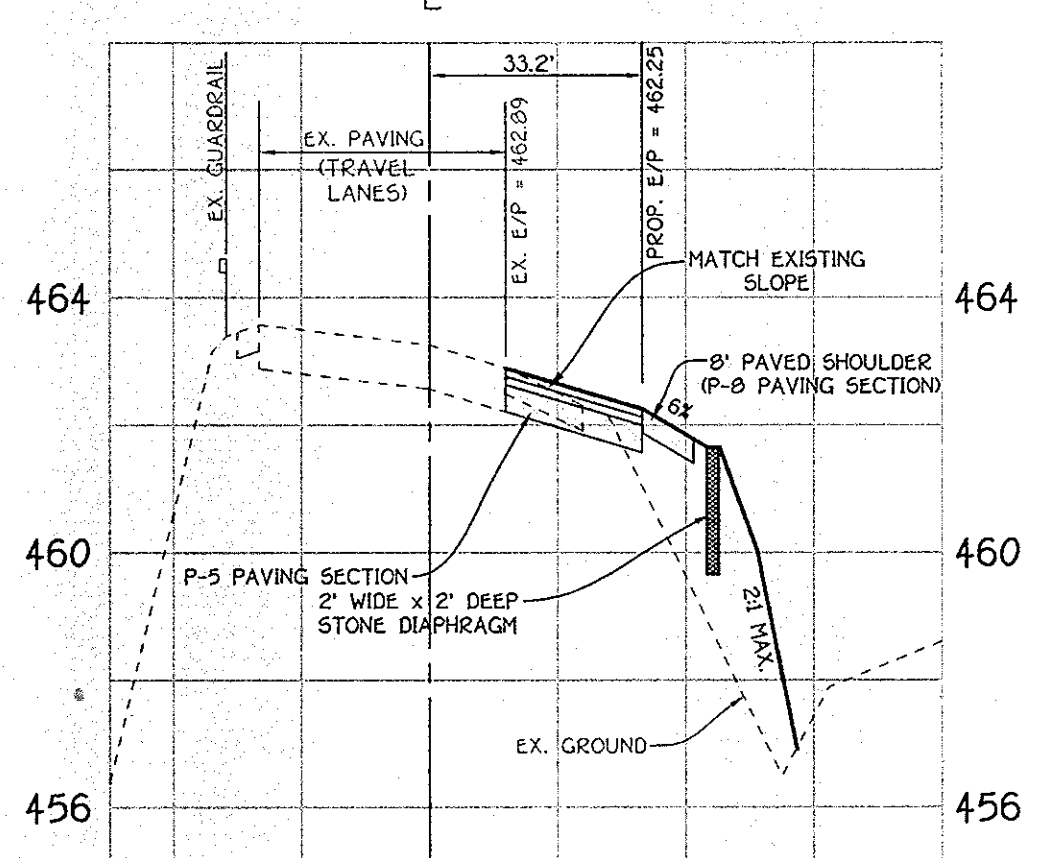
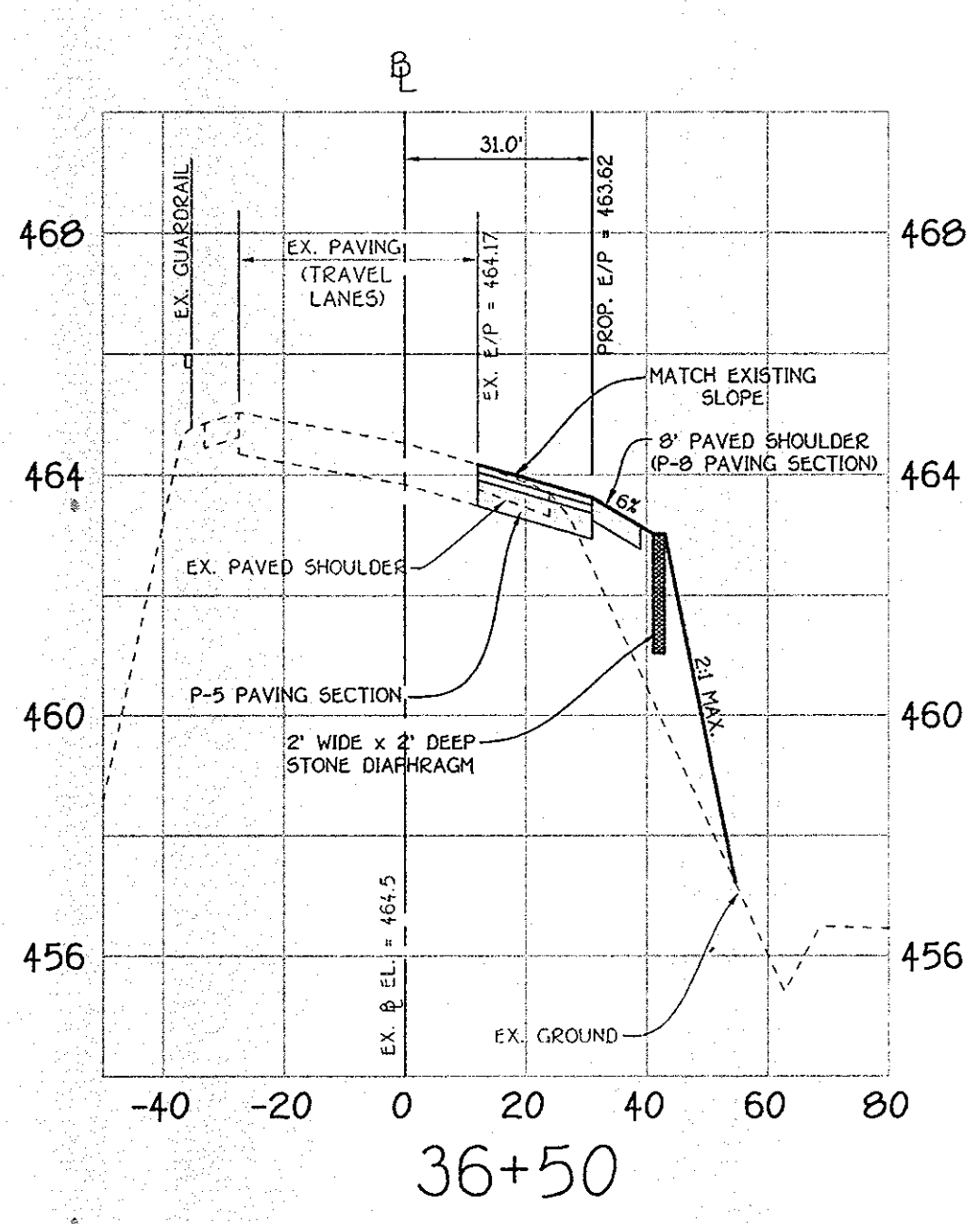
CROSS-SECTIONS

SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

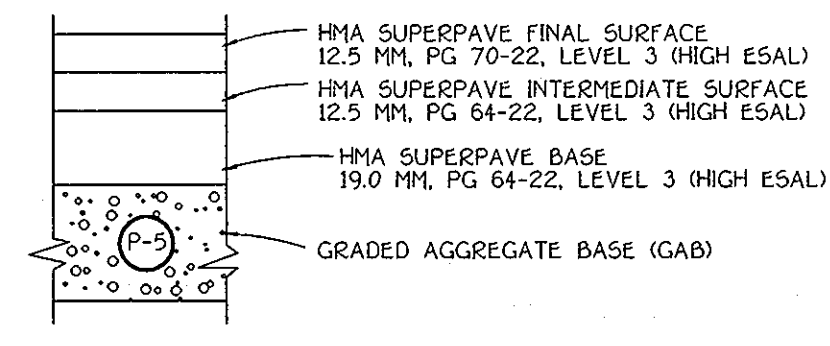
OWNER/DEVELOPER

WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
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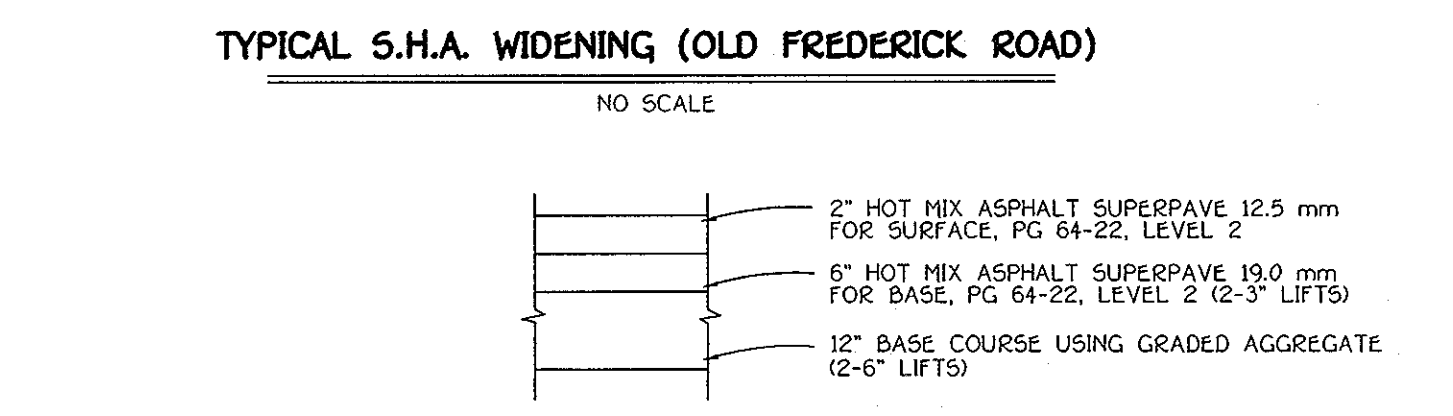
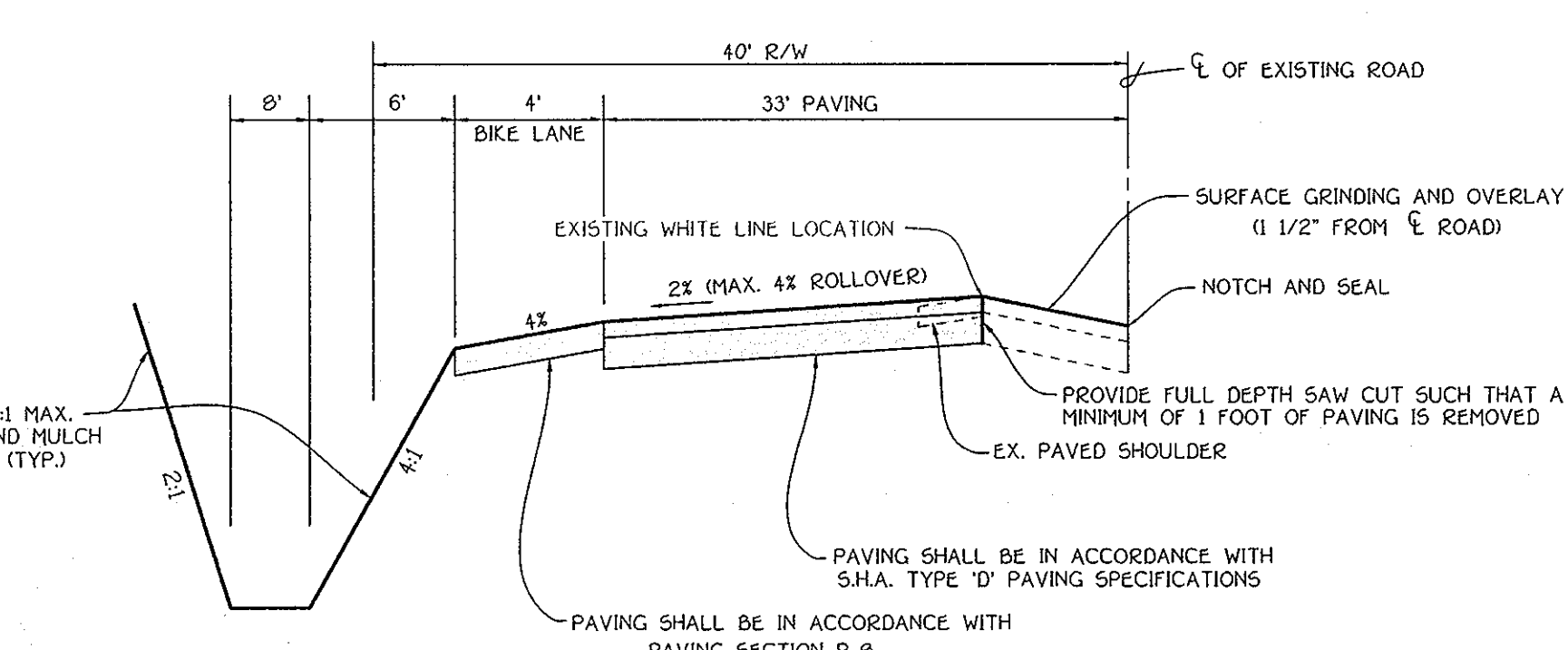
APPROVED: DEPARTMENT OF PUBLIC WORKS
William Z. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy ... 6/2/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
... 6/2/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



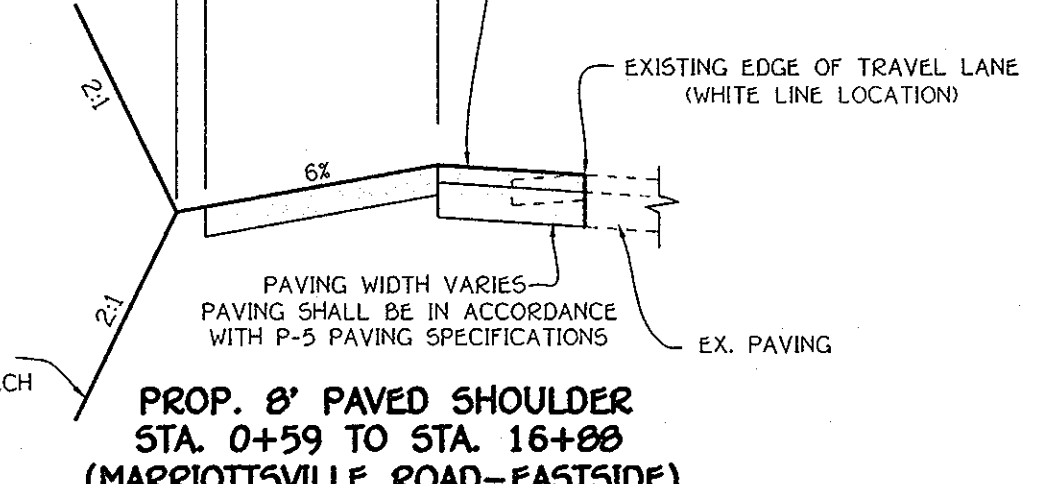
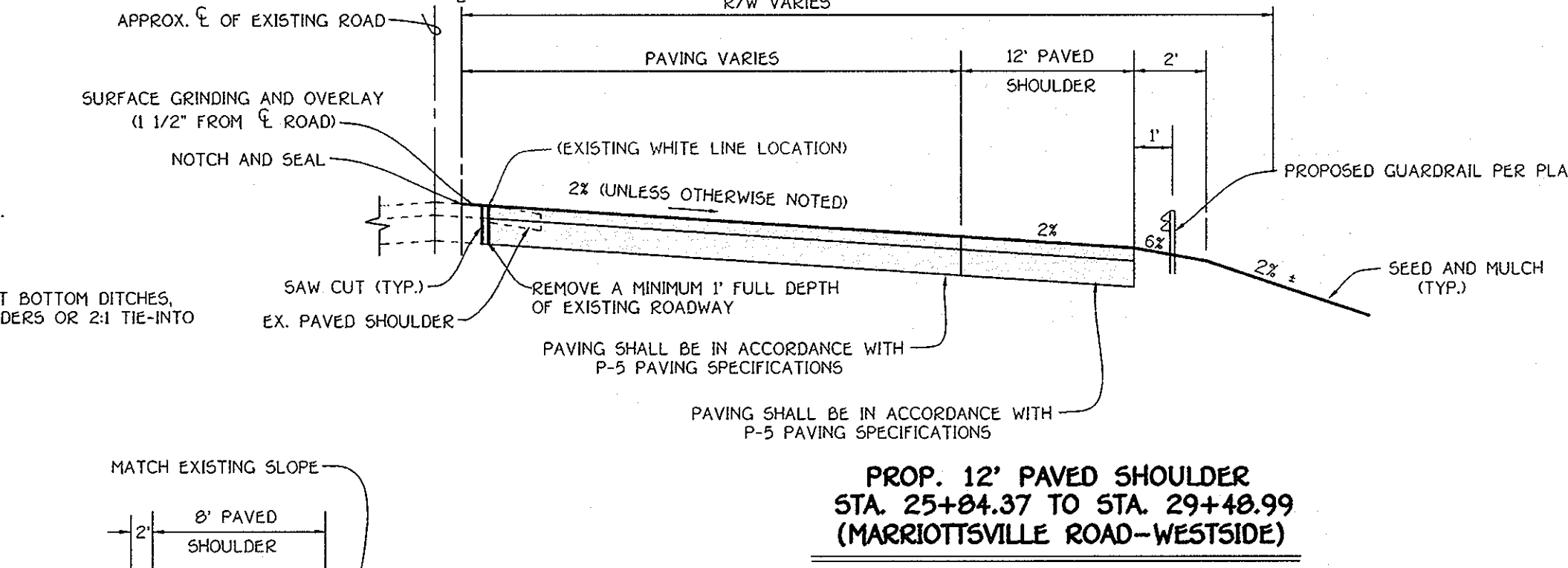
NOTE:
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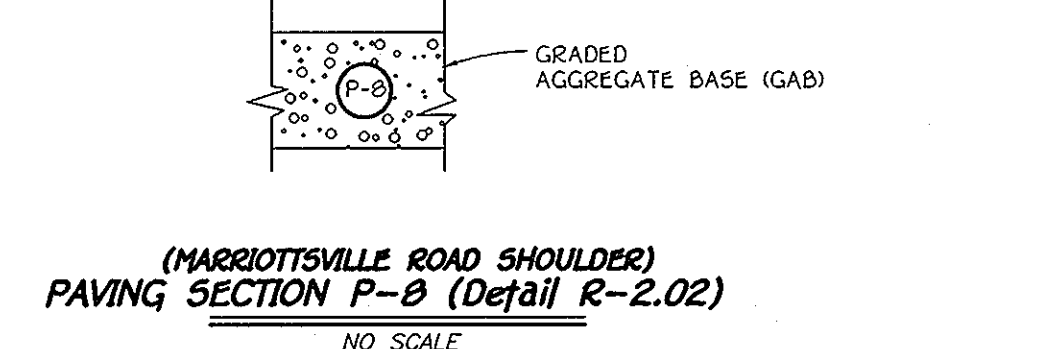
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 PAVING SECTION P-5 (Detail R-2.02)
 NO SCALE



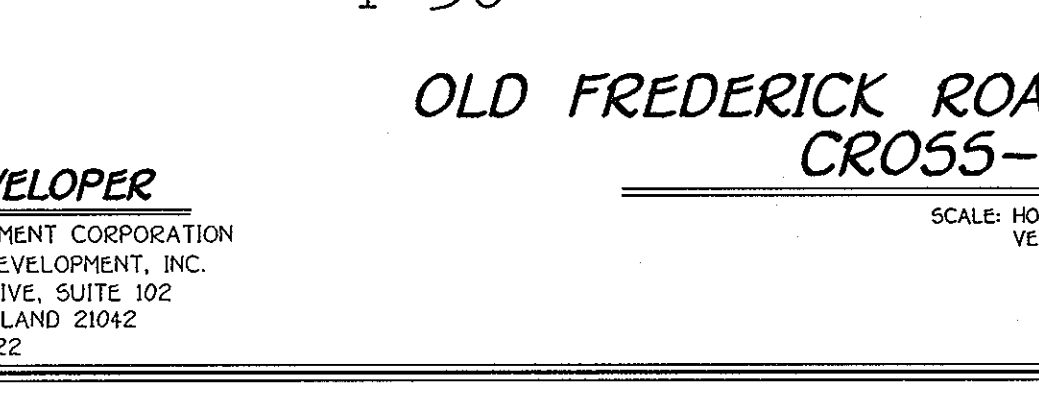
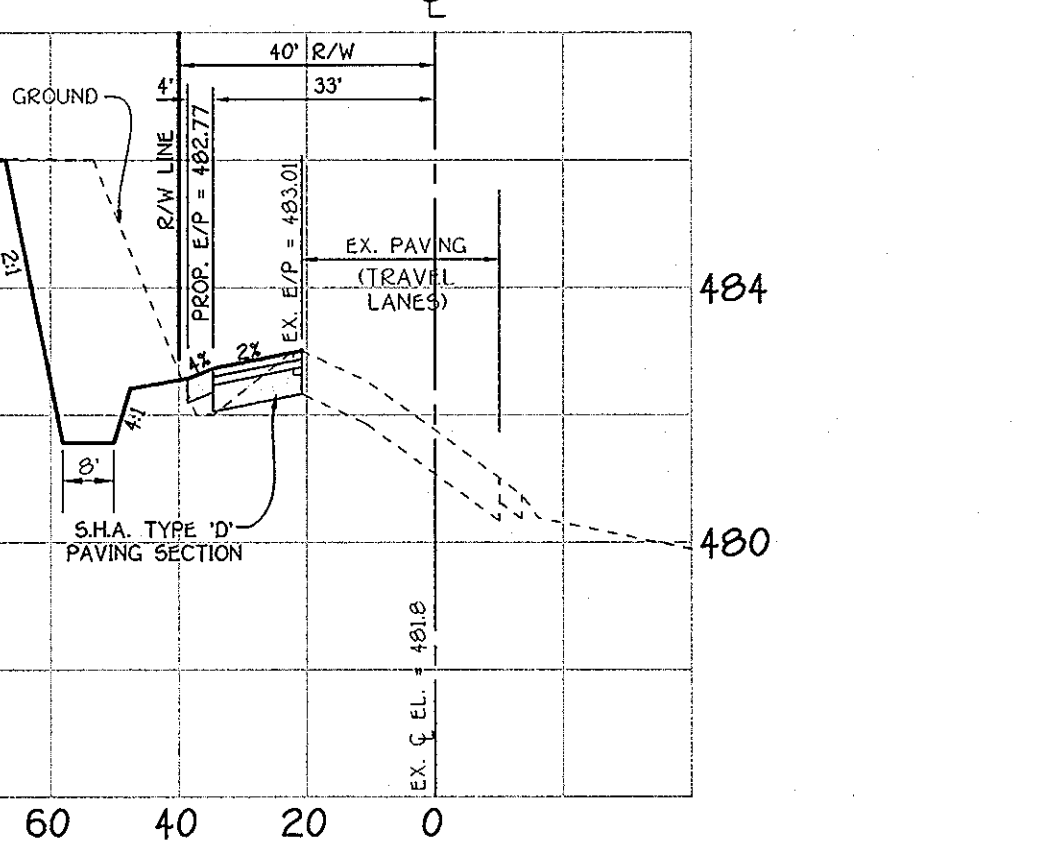
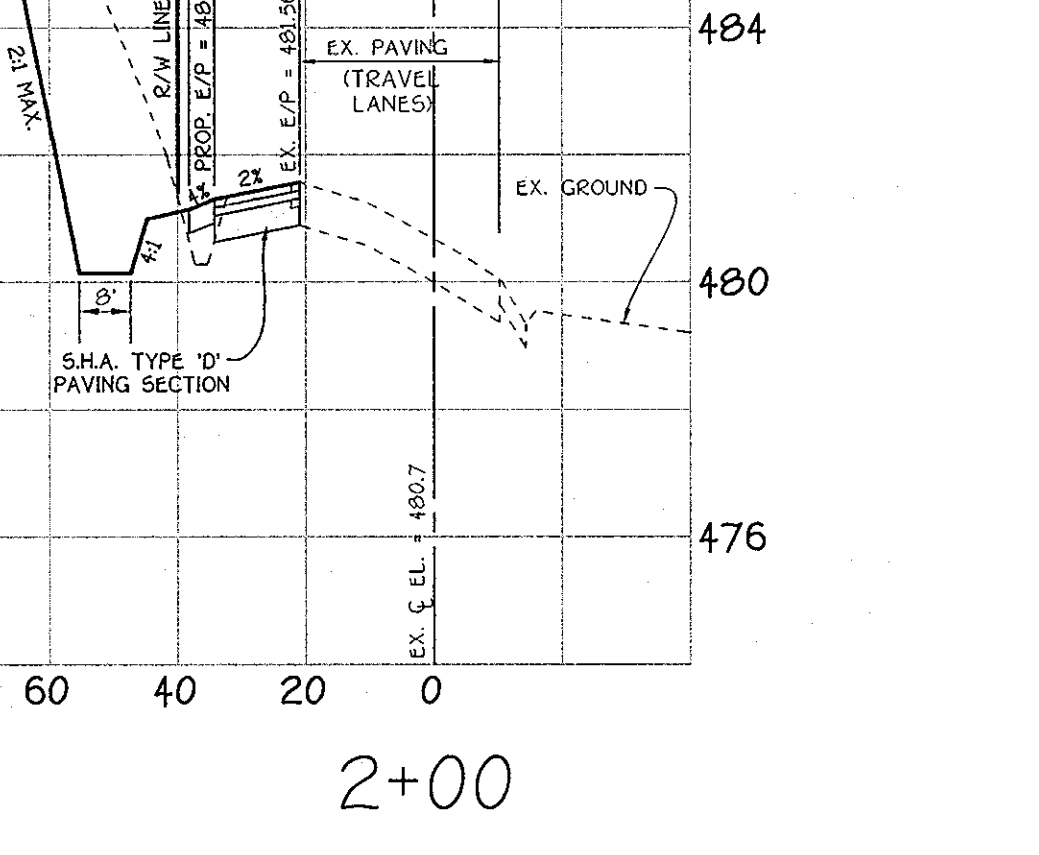
(OLD FREDERICK ROAD)
 S.H.A. TYPE 'D' PAVING SECTION
 NO SCALE



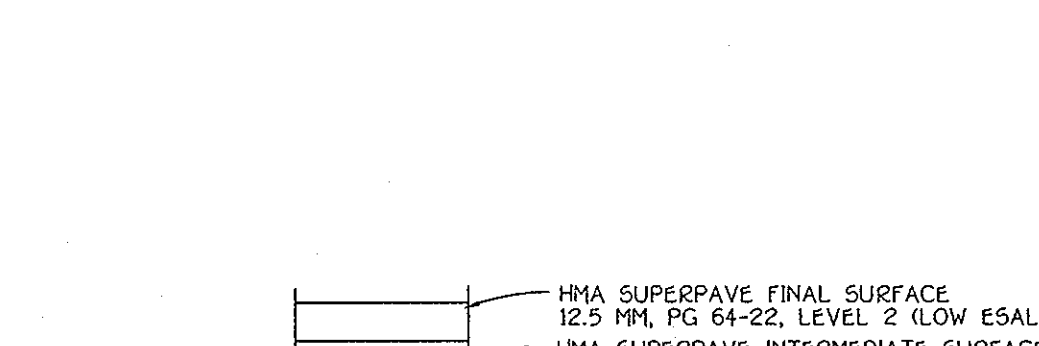
PROPOSED 8' PAVED SHOULDER
 STA. 0+59 TO STA. 16+00
 (MARIOTTVILLE ROAD-EASTSIDE)
 NO SCALE



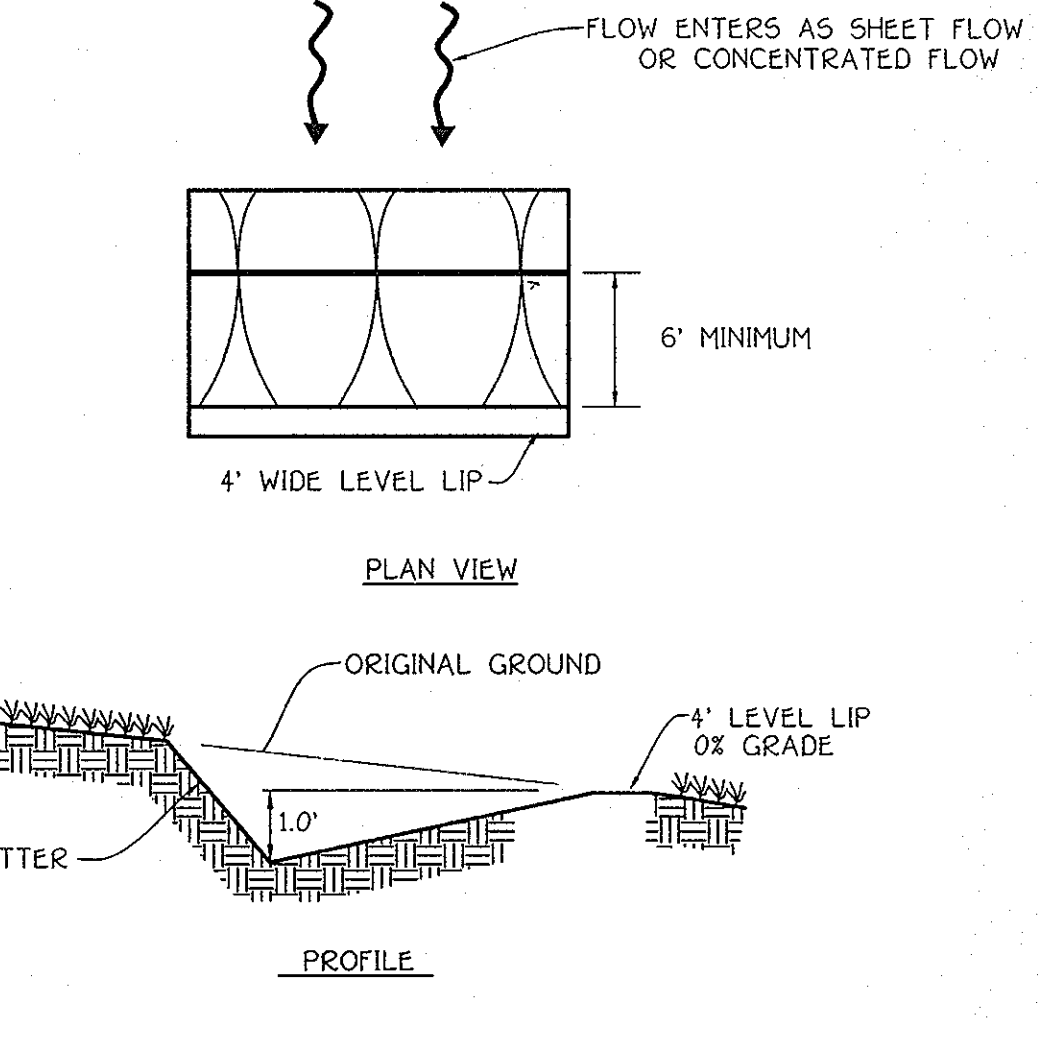
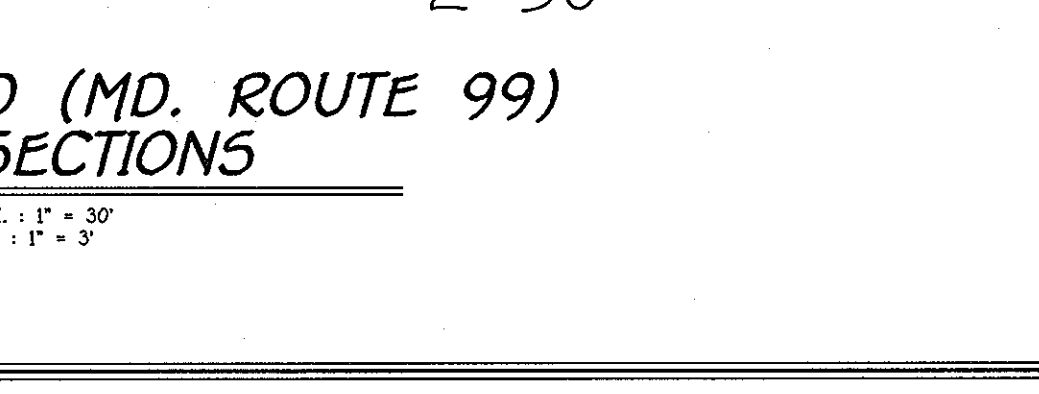
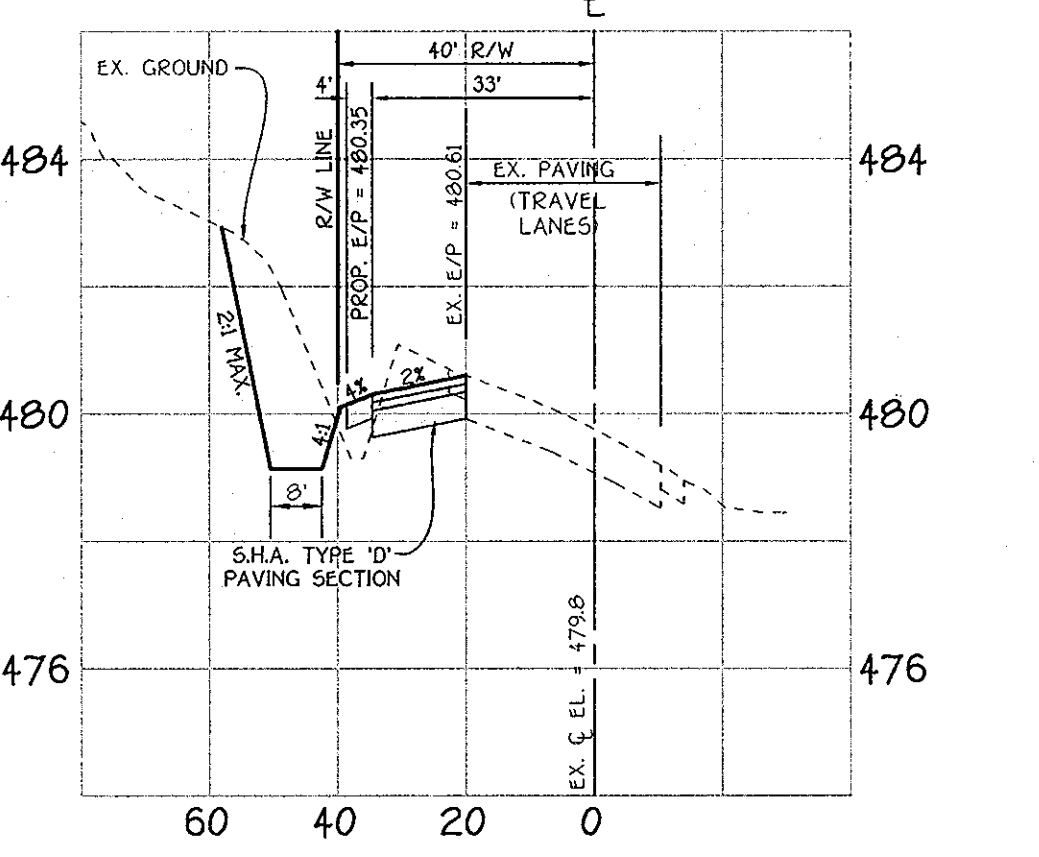
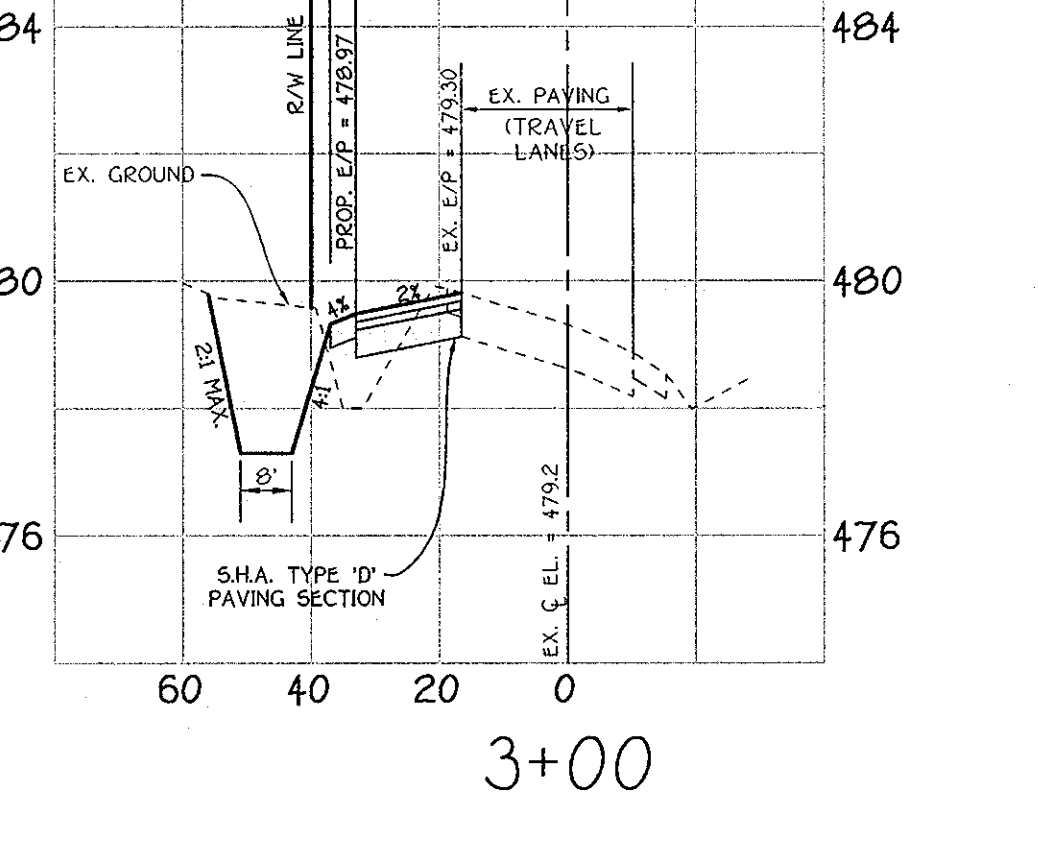
(MARIOTTVILLE ROAD SHOULDER)
 PAVING SECTION P-8 (Detail R-2.02)
 NO SCALE



PROPOSED 12' PAVED SHOULDER
 STA. 25+04.37 TO STA. 29+40.99
 (MARIOTTVILLE ROAD-WESTSIDE)
 NO SCALE



(BARNESLEY WAY)
 PAVING SECTION P-4 (Detail R-2.01)
 NO SCALE



LEVEL SPREADER
 NOT TO SCALE

LEVEL SPREADER CRITERIA
 For impervious surface runoff applications:
 The clarity for the level spreader is determined in the design of the filter strip to which it discharges.
 The spreader shall run linearly along the entire width of the filter strip to which it discharges. In most cases, the spreader will be the same width as the contributing impervious surface. The ends of the spreader shall be tied into higher ground to prevent flow around the spreader.
 The minimum depth shall be 6 inches and the minimum width shall be 6 feet for the lower side slope. Side slopes shall be 2:1 horizontal to vertical or flatter.
 The grade of the spreader shall be 0%.
 The outlet discharge area must be generally smooth and well vegetated with a maximum slope of 10%.
 For all applications:
 The spreader lip shall be constructed to a uniform height and zero grade over the length of the spreader. For design flows of 4 cfs or greater, a rigid lip of non-erodible material, such as pressure-treated timbers or concrete curbing, shall be used. For flows less than 4 cfs, a vegetated lip may be used. The spreader lip shall be constructed on undisturbed soil.
 When using a vegetated lip it shall be protected with an erosion control blanket to prevent erosion and allow the vegetation to become established. The blanket shall be a minimum of 4 feet wide extending a minimum of 1 foot downstream over the level lip. The blanket shall be secured with heavy-duty staples and the downstream and upstream edges shall be buried at least 6 inches deep in a vertical trench.
 When using a rigid lip it shall be entrenched at least 4 inches below existing ground and securely anchored to prevent displacement. An apron of Class I rip-rap shall be placed to the top of the rigid lip and extend down-slope at least 3 feet. A filter fabric shall be placed under the coarse aggregate.
 Immediately after level spreader construction, seed and mulch the entire disturbed area of the spreader in accordance with the Standards and Specifications for Vegetative Stabilization.
CONSIDERATIONS
 The level spreader is a relatively low-cost structure to:
 1. Disperse impervious surface runoff uniformly to a filter strip or
 2. Reduce small volumes of concentrated flow from diversions when conditions are suitable.
 To accomplish these purposes, particular care must be taken to construct the spreader lip completely level. Any depressions in the lip will concentrate the flow, resulting in a loss of pollutant filtering effectiveness and/or erosion. Evaluate the outlet system to be sure that flow does not concentrate below the outlet.
 For filter strip applications, the determination of whether a level spreader is needed should be based on how the runoff is entering the filter strip. If the runoff is concentrated by curb cuts, and particularly if a large area of impervious surface drains to one point, a level spreader is essential to achieve effective pollutant removal in the filter strip. A level spreader also is important if the filter strip is relatively steep in order to avoid erosion from concentrated runoff discharge. If the runoff is evenly distributed over the width of the impervious surface (e.g., a culvert, over-spread road or parking lot), a level spreader may not be necessary.
 When the level spreader is used as an outlet for temporary or permanent diversions and diversion dikes, runoff containing high sediment loads must be treated in an approved sediment trapping device.
OPERATION AND MAINTENANCE
 Inspect level spreaders after every rainfall until vegetation is established and promptly make needed repairs. After the area has been stabilized, make periodic inspections and maintain vegetation in a healthy, vigorous condition.
 Verify that the level spreader is distributing flow evenly. If problems are noted, make appropriate modifications to ensure even flow distribution.

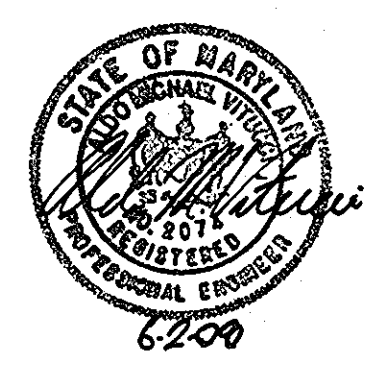
OLD FREDERICK ROAD CROSS-SECTIONS
 STA. 1+00 TO STA. 3+00
 MARIOTTVILLE ROAD CROSS-SECTIONS
 STA. 35+50 TO STA. 36+50

GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 13 OF 41

SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

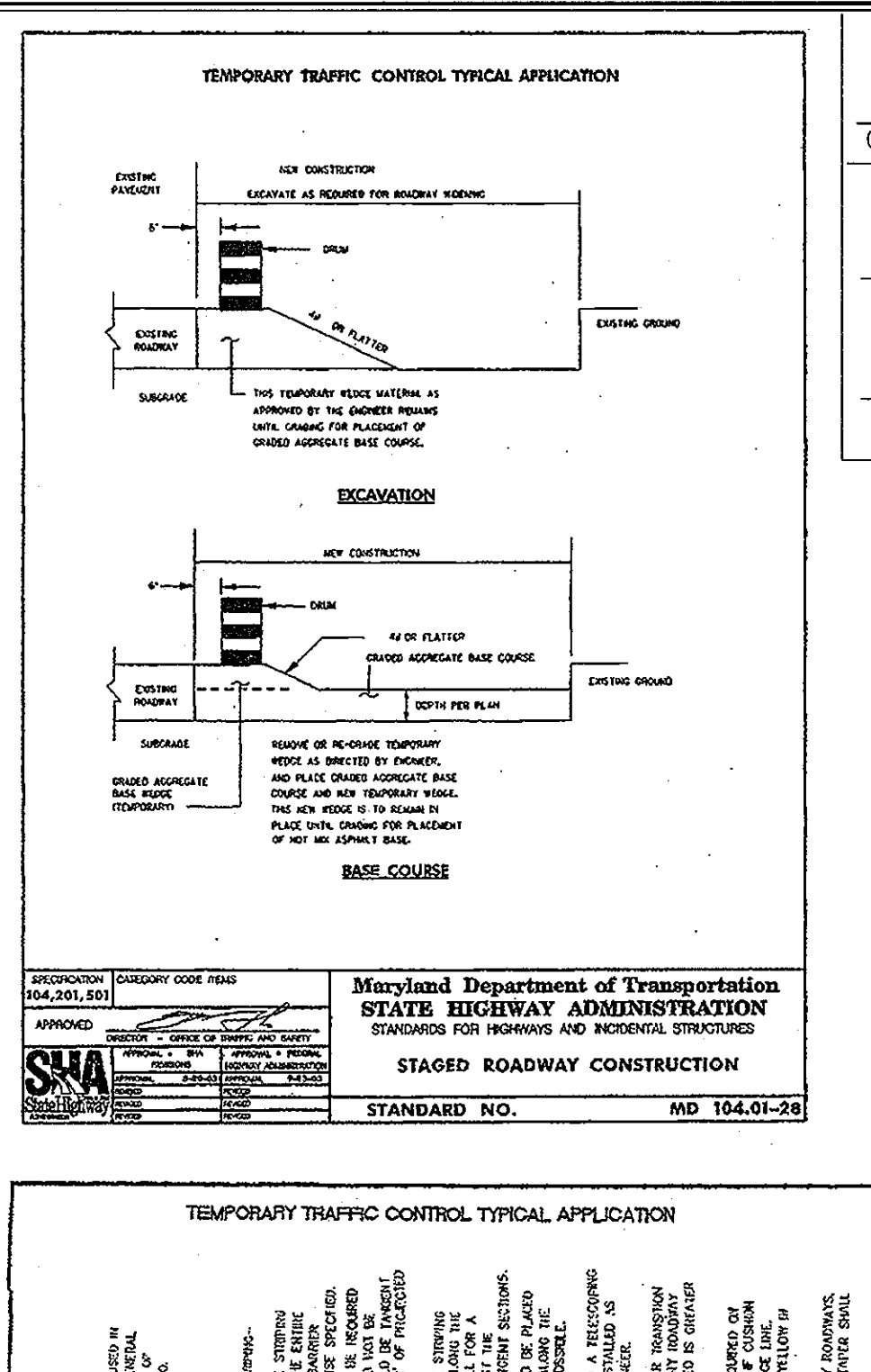
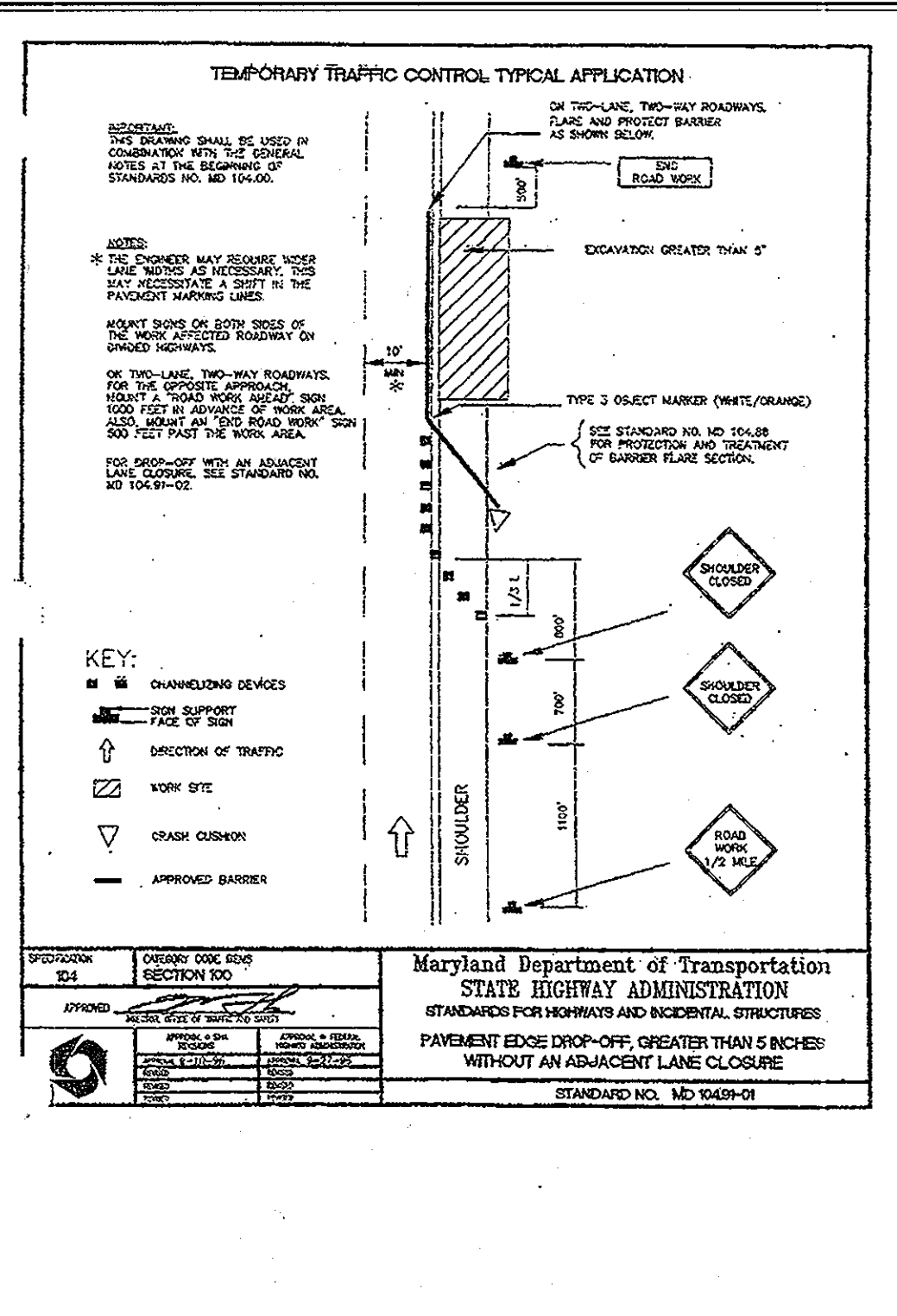
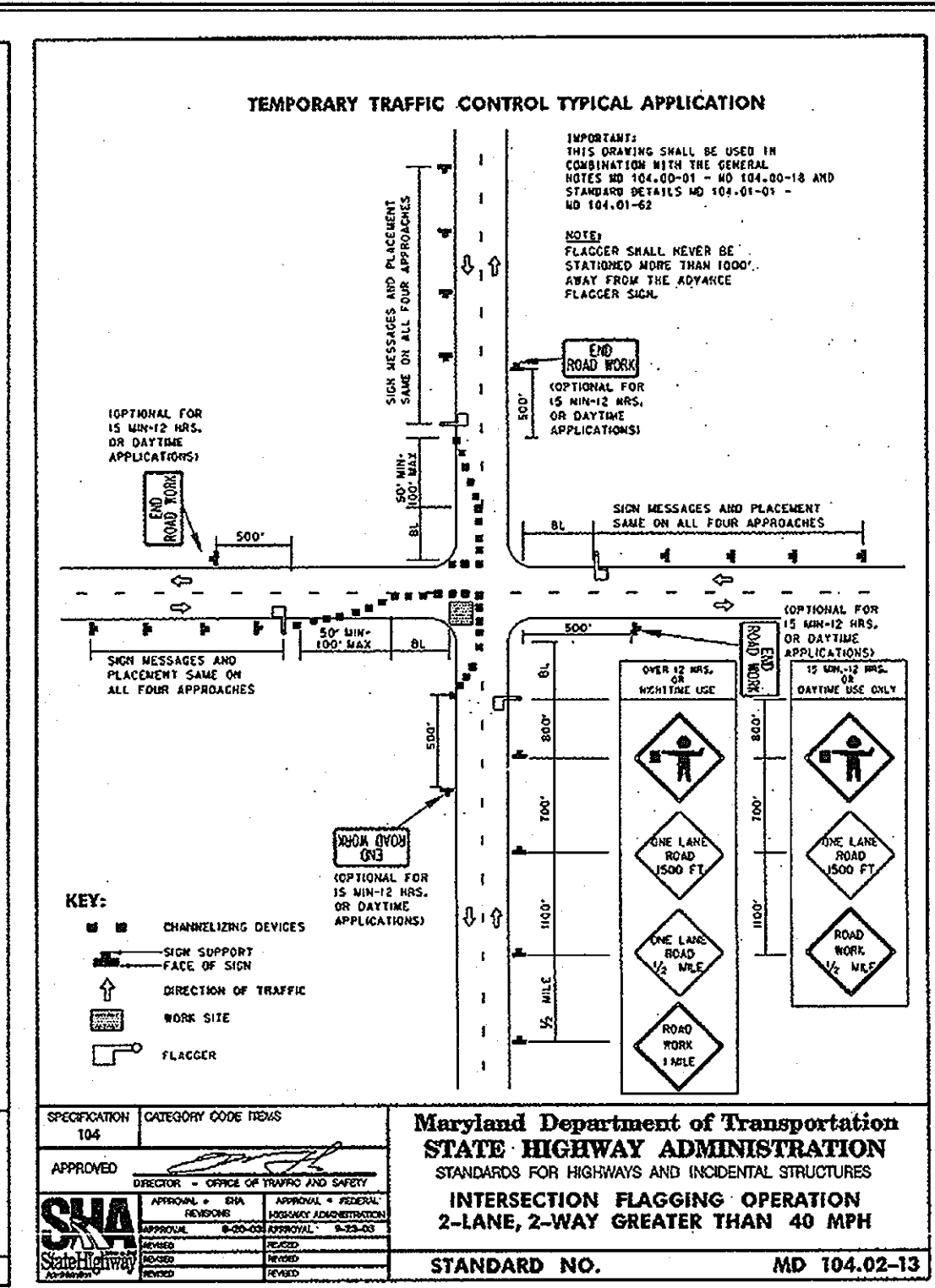
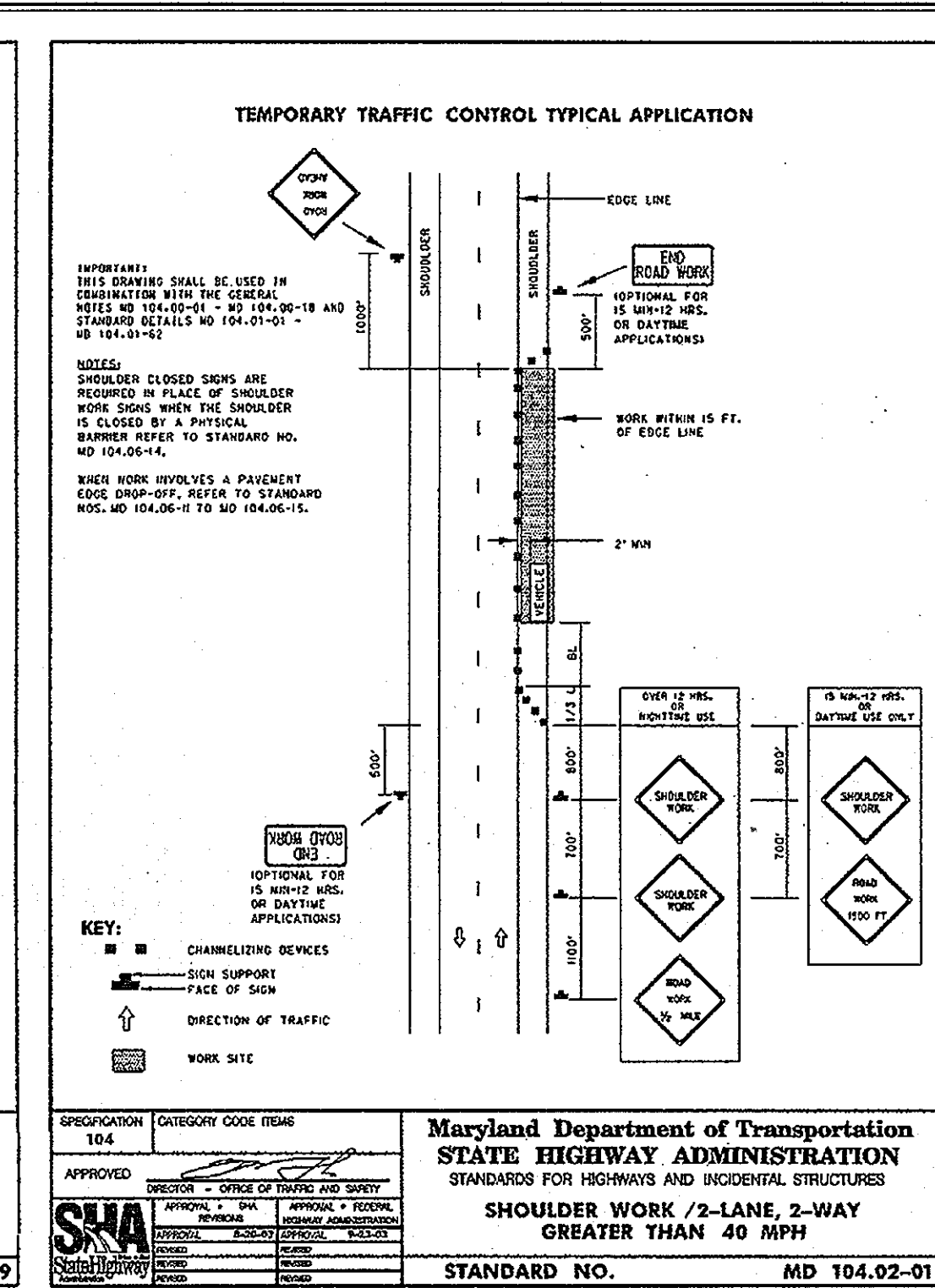
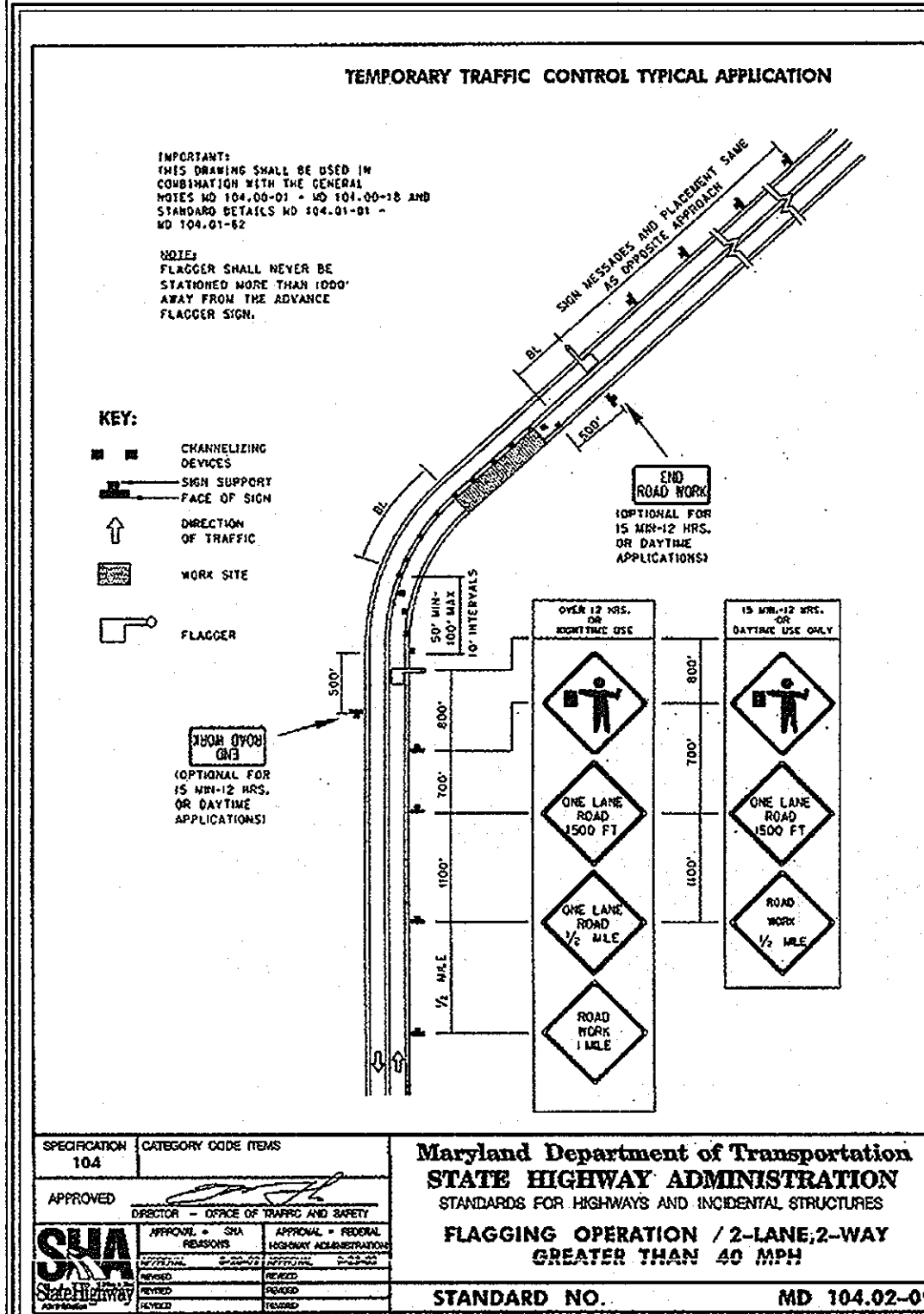
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 33 CENTRAL SOURCE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21114
 (410) 461-2855

NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-150 STANDARDS.



OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
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 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

SCALE: HORIZ. : 1" = 30'
 VERT. : 1" = 3'



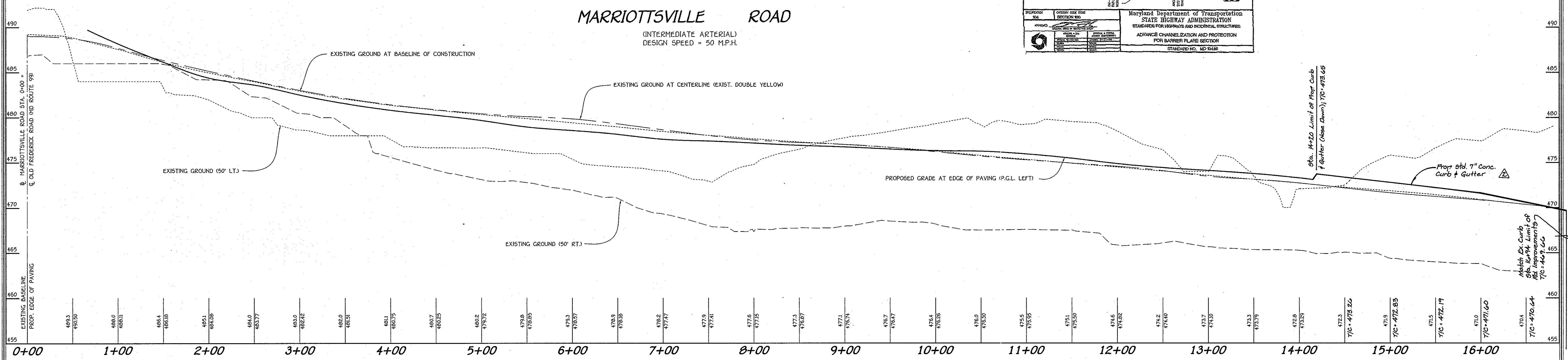
APPROVED: DEPARTMENT OF PUBLIC WORKS
W. J. Adair 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hanna 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Bill Dammann 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

- MAINTENANCE OF TRAFFIC SPECIAL PROVISIONS**
- GENERAL**
- THE PURPOSE OF THIS PORTION OF THE SPECIAL PROVISION IS TO SET FOR THE TRAFFIC CONTROL REQUIREMENTS NECESSARY FOR THE SAFE AND EFFICIENT MAINTENANCE TO TRAFFIC WITHIN WORK AREAS AND TO MINIMIZE ANY INCONVENIENCES TO THE TRAVELING PUBLIC AND THE CONTRACTOR AND/OR PERMITTEE.
 - PROPER TRAFFIC CONTROL THROUGHOUT WORK AREAS IS ESSENTIAL FOR INSURING THE SAFETY AND THAT OF HIGHWAY WORKERS HAS THE HIGHEST PRIORITY OF ALL TASKS WITHIN THIS PROJECT. THE PROPERTY APPLICATION OF THE APPROVED TRAFFIC CONTROL PLAN (TCP) WILL PROVIDE THE DESIRED LEVEL OF SAFETY.
 - THROUGHOUT THESE SPECIAL PROVISIONS, ANY MENTION OF THE TCP SHALL BE IMPLIED TO INCLUDE ANY COMBINATION OF TYPICAL TRAFFIC CONTROL STANDARDS WHICH FORM THE OVERALL TCP FOR THIS PROJECT WHICH HAS BEEN APPROVED BY THE APPROPRIATE SHA TRAFFIC ENGINEER.
 - THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2003 EDITION, ESPECIALLY PART VI, AND TO SECTION 814 OF THE MARYLAND DOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS (JANUARY, 2006), INCLUDING ALL REVISIONS AND SUPPLEMENTS TO EACH.
 - THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE REQUIREMENTS SET FORTH IN THE TCP AND THESE SPECIAL PROVISIONS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY REQUESTS TO MAKE MINOR CHANGES TO THE TCP OR THE SPECIAL PROVISIONS WITH REGARD TO THE TRAFFIC CONTROL ITEMS SHALL BE MADE IN WRITING TO THE ENGINEER A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE PROPOSED SCHEDULING CHANGE. THE CONTRACTOR AND/OR PERMITTEE SHALL HAVE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO THE IMPLEMENTATION OF ANY CHANGE.
 - NO WORK SHALL BEGIN ON ANY WORK ACTIVITY OR WORK PHASE UNTIL ALL REQUIRED TRAFFIC CONTROL PATTERNS AND DEVICES INDICATED ON THE TCP FOR THAT ACTIVITY OR PHASE ARE COMPLETELY AND CORRECTLY IN PLACE TO HAVE BEEN CHECKED FOR APPROVED USAGE.
 - GENERAL AND SPECIFIC WARNING SIGNS SHALL ONLY BE IN PLACE WHEN SPECIFIC WORK TASKS AND ACTIVITIES ARE ACTUALLY UNDERWAY OR CONDITIONS EXIST THAT POSE A POTENTIAL HAZARD TO THE PUBLIC, AND ANY ADDITIONAL SIGNING HAS BEEN APPROVED BY THE APPROPRIATE SHA TRAFFIC ENGINEER. NOTE: THE PRACTICE OF PLACING SIGNING AND OTHER TRAFFIC CONTROL DEVICES IN ADDITION TO THOSE INDICATED ON THE APPROVED TCP IS NOT PERMITTED.
 - THE CONTRACTOR AND/OR PERMITTEE SHALL PROVIDE, MAINTAIN IN NEW CONDITION, AND MOVE WHEN NECESSARY, OR AS DIRECTED BY THE ENGINEER, ALL TRAFFIC CONTROL DEVICES USED FOR THE GUIDANCE AND PROTECTION OF MOTORISTS, PEDESTRIANS, AND WORKERS.
 - ALL TRAFFIC CONTROL DEVICES REQUIRED BY THE TCP SHALL BE KEPT IN GOOD CONDITION, FULLY PERFORMING AS SET FORTH IN THE TCP. THE MUTCD, AND/OR SECTION 814 OF THE SPECIFICATIONS, FOR REFLECTIVE DEVICES, A PARTICULAR DEVICE IS ASSUMED TO HAVE FAILED TO MEET MINIMUM OPERATIONAL STANDARDS WHEN THE DEVICE NO LONGER HAS RETRO-REFLECTANCE CAPABILITY OF AT LEAST 60% OF THE SPECIFIED MINIMUM VALUE OVER AT LEAST SIX (6) INCHES OF THE VISIBLE REFLECTIVE SURFACE.
 - ALL TRAFFIC CONTROL DEVICES NOT REQUIRED FOR THE SAFE CONDUCT OF TRAFFIC SHALL BE PROMPTLY REMOVED, COMPLETELY COVERED, TURNED AWAY FROM TRAFFIC, OR OTHERWISE TAKEN OUT OF SERVICE. IT IS INTENDED THAT NO TRAFFIC CONTROL DEVICE IS TO BE IN SERVICE WHEN THERE IS NO CLEAR CUT REASON FOR THE DEVICE.
 - THROUGHOUT THE PERIODS OF WORK ACTIVITIES, TRAFFIC SHALL BE MAINTAINED BY IMPLEMENTING THE APPROVED TCP. IN LIEU OF THE TCP PREPARED FOR THIS PROJECT, AND/OR INDIVIDUAL TYPICAL TRAFFIC CONTROL STANDARDS, THE CONTRACTOR AND/OR PERMITTEE HAS THE OPTION OF PREPARING AND SUBMITTING A TCP, WHOLLY OR IN PART, OF HIS OWN DESIGN, FOLLOWING GUIDELINES SET FORTH IN THE MUTCD AND PRESCRIBED BY THE ADMINISTRATION. A TCP DEVELOPED BY THE CONTRACTOR AND/OR PERMITTEE SHALL NOT BE IMPLEMENTED UNTIL ADVANCE WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. TCP'S MAY BE IMPLEMENTED WITH A SINGLE PROJECT OR JOINTLY BETWEEN TWO OR MORE PROJECTS. IN SITUATIONS WHERE TCP'S JOINTLY IMPLEMENTED, CARE SHALL BE EXERCISED TO PRESENT CORRECT AND NON-CONFLICTING GUIDANCE TO THE TRAVELING PUBLIC.
 - THROUGHOUT THESE SPECIAL PROVISIONS, WHERE SPEED OF TRAFFIC IS NOTED, THIS MEANS THE POSTED SPEED OR PREVAILING TRAVEL SPEED, WHICHEVER IS HIGHER, UNLESS OTHERWISE NOTED.
 - TRAFFIC SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT, UNLESS OTHERWISE NOTED. NO TRAVEL LANE(S) OTHER THAN THOSE DESIGNATED FOR POSSIBLE CLOSURE IN THE TCP SHALL BE CLOSED WITHOUT OBTAINING PRIOR APPROVAL FROM THE ENGINEER. ALL INGRESS AND EGRESS TO THE WORK AREA BY THE CONTRACTOR AND/OR PERMITTEE SHALL BE PERFORMED WITH THE FLOW OF TRAFFIC.

NO.	DESCRIPTION	DATE
1	Added Prop Curb to Eastside of Marriottsville Road (Sta. 14+20 to 16+94)	9/27/12
2	ADD SHEET 42 & 43	10/9/09



MARRIOTTVILLE ROAD
 (INTERMEDIATE ARTERIAL)
 DESIGN SPEED = 50 M.P.H.

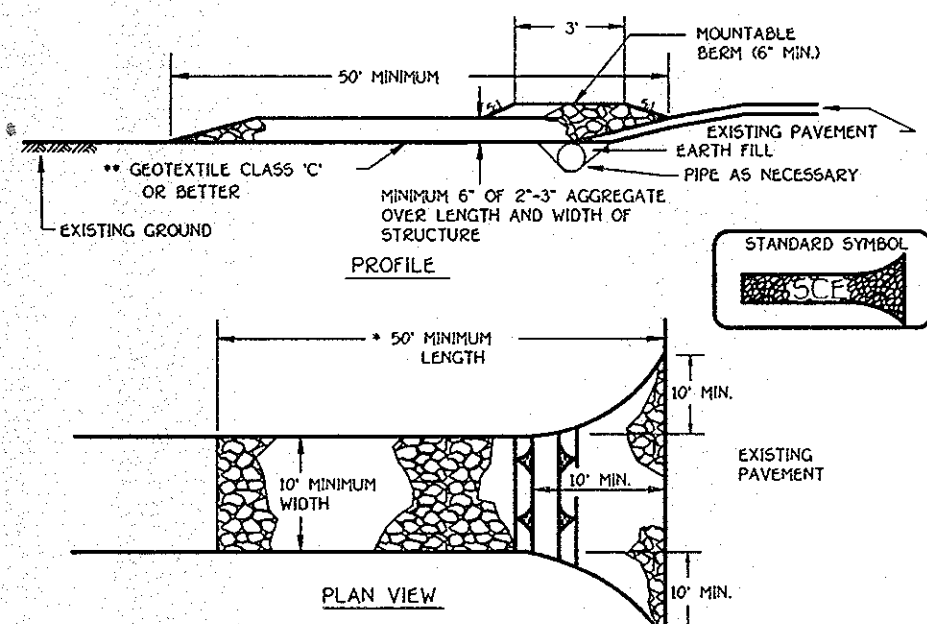
PROFILE
 SCALE: HORIZ. : 1" = 50'
 VERT. : 1" = 5'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 DALLHOUSE NATIONAL PARK
 ELLICOTT CITY, MARYLAND 21042
 410.461.2955



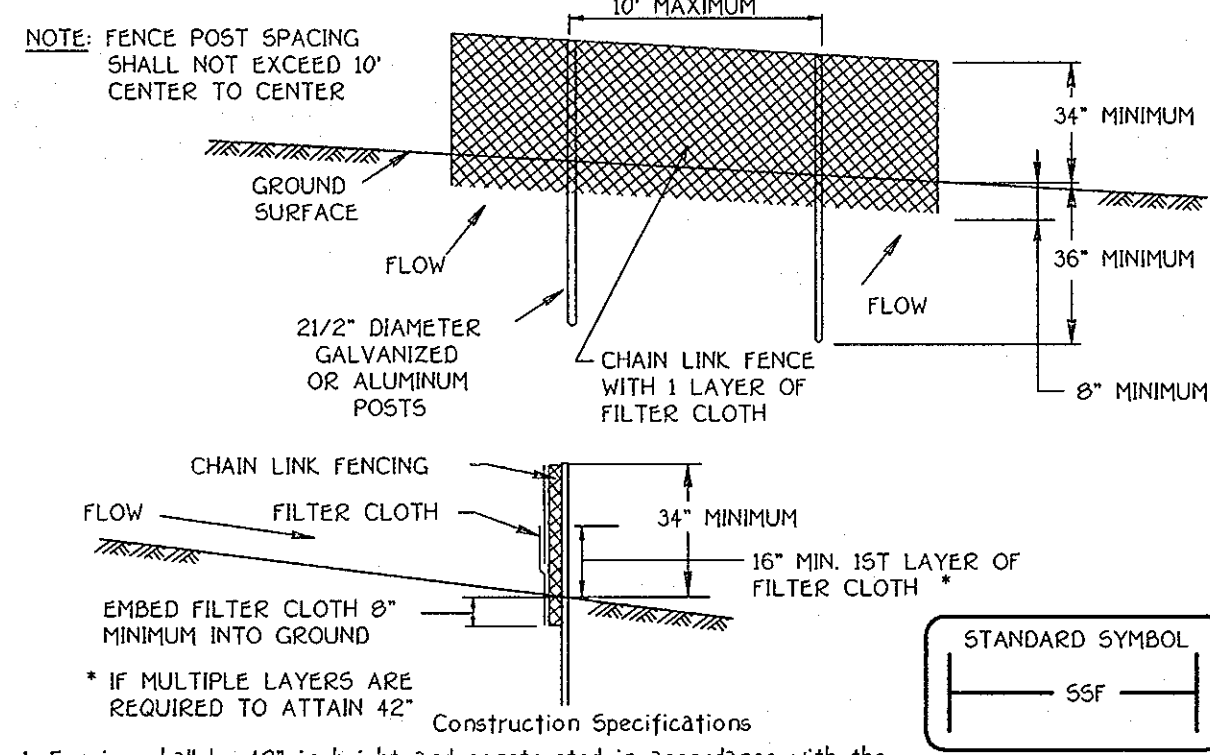
OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

MARRIOTTVILLE ROAD PROFILE (EASTSIDE)
 SOUTH OF MD. RTE. 99
 & TRAFFIC CONTROL PLANS
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 14 OF 43



- Construction Specifications**
- Length - minimum of 50' (100' for single residence lot)
 - Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 - Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. The fabric approval authority may not require single family residences to use geotextile.
 - Stone - crushed aggregate 1/2" to 3/4" or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 - Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5/8" slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the size is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
 - Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



- Construction Specifications**
- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
 - Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
 - Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
 - Filter cloth shall be embedded a minimum of 8" into the ground.
 - When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
 - Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
 - Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:
- | | | |
|----------------------|---------------------------------------|----------------|
| Tensile Strength | 50 lbs/in (min) | Test: MSMT 509 |
| Tensile Modulus | 20 lbs/in (min) | Test: MSMT 509 |
| Flow Rate | 0.3 gal/ft ² /minute (max) | Test: MSMT 322 |
| Filtering Efficiency | 75% (min) | Test: MSMT 322 |
- Design Criteria**
- | | | | |
|----------|-----------------|------------------------|-----------------------------|
| Slope | Slope Steepness | Slope Length (maximum) | Silt Fence Length (maximum) |
| 0 - 10% | 0 - 10% | Unlimited | Unlimited |
| 10 - 20% | 10:1 - 5:1 | 200 feet | 1,500 feet |
| 20 - 33% | 5:1 - 3:1 | 100 feet | 1,000 feet |
| 33 - 50% | 3:1 - 2:1 | 100 feet | 500 feet |
| 50% + | 2:1 + | 50 feet | 250 feet |

SUPER SILT FENCE
NOT TO SCALE

TOPSOIL SPECIFICATIONS

Definition
Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose
To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

- This practice is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - Topsoil shall be a loam, sandy loam, clay loam, silt loam, silty clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
 - Topsoil must be free of plants or plant parts such as bermud grass, quackgrass, Johnsongrass, nutgrass, poison ivy, thistle, or others as specified.
 - Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
- For sites having disturbed areas under 5 acres:
 - Place topsoil (if required) and apply soil amendments as specified in 2.0.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
- For sites having disturbed areas over 5 acres:
 - On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5; if the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content of topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No soil or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

- Place topsoil (if required) and apply soil amendments as specified in 2.0.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
- VI. Topsoil Application**
- When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
 - Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
 - Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seedine can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.
- Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:**
- Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
 - Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
 - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
 - Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

Sequence of Construction

- OBTAIN A GRADING PERMIT.
- NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION INSPECTION AT 410-313-1330 24-HOURS BEFORE STARTING WORK.
- CLEAR AND GRUB FOR SEDIMENT CONTROL MEASURES ONLY. INSTALL STABILIZED CONSTRUCTION ENTRANCE FOR THE STAGING AREA NEAR THE INTERSECTION OF WARWICK WAY AND HARRIOTTSVILLE ROAD. (2 weeks)
- INSTALL THE REMAINING SEDIMENT CONTROL MEASURES. THIS WOULD INCLUDE TREE PROTECTION FENCE AND SILT FENCE AS INDICATED ON THESE PLANS. (2 weeks)
- OBTAIN PERMISSION OF THE SEDIMENT CONTROL INSPECTOR PRIOR TO PROCEEDING.
- CLEAR AND GRUB FOR THE REMAINDER OF THE STAGING AREA SITE FOR THE RETAINING WALL CONSTRUCTION PRIOR TO GRADING ASSOCIATED WITH THE ROAD WIDENING. (4 weeks)
- GRADE SHOULDER AREA TO THE PROPOSED SUBGRADE FOR THE ROAD WIDENING AND INSTALL THE STORM DRAIN SYSTEM AND UTILITIES. STABILIZE ALL ROADWAY SLOPES IMMEDIATELY UPON COMPLETION OF GRADING AS SHOWN. (12 weeks)
- INSTALL BASE COURSE PAVING FOR THE PROPOSED ROAD WIDENING. (2 weeks)
- STABILIZE ALL AREAS AND OBTAIN PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR PRIOR TO PROCEEDING.
- APPLY TACK COAT TO BASE COURSE AND LAY SURFACE COURSE PAVING. (1 week)
- WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL MEASURES HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE TEMPORARY DEVICE MAY BE REMOVED, BACKFILLED OR REGRADED TO THE PROPOSED FINAL GRADES. STABILIZE ALL REMAINING AREAS WITH PERMANENT SEEDING NOTES. (4 weeks)
- NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR A FINAL INSPECTION OF THE COMPLETED PROJECT.

SEQUENCE NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON AFTER EACH RAINFALL EVENT AND ON A DAILY BASIS.

DUST CONTROL

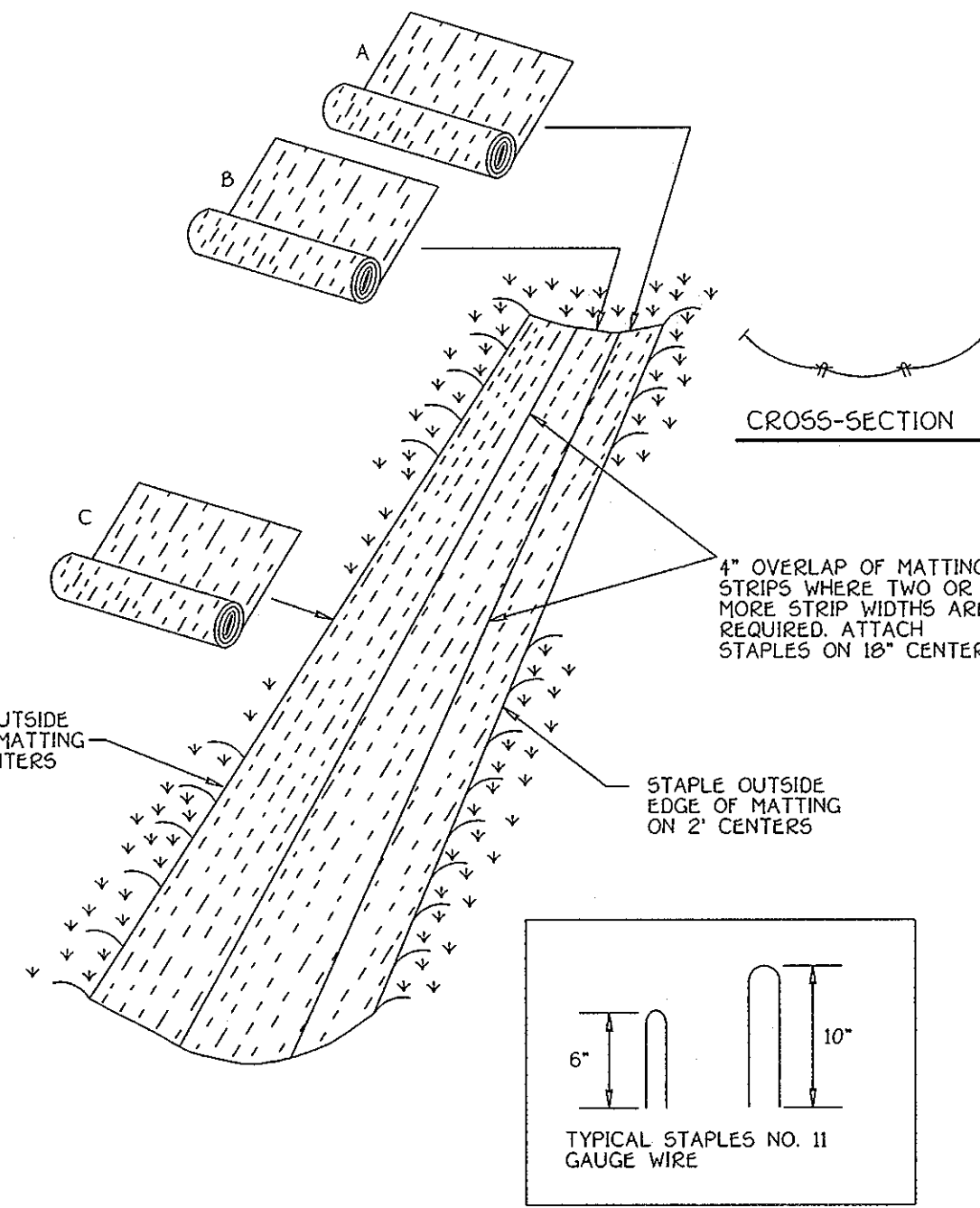
DEFINITION
CONTROLLING DUST BLOWING AND MOVEMENT ON CONSTRUCTION SITES AND ROADS.

PURPOSE
TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES, REDUCE ON AND OFF-SITE DAMAGE, HEALTH HAZARDS, AND IMPROVE TRAFFIC SAFETY.

CONDITIONS WHERE PRACTICE APPLIES
THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON AND OFF-SITE DAMAGE IS LIKELY WITHOUT TREATMENT.

SPECIFICATIONS

- TEMPORARY METHODS**
- MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY. MULCH SHOULD BE CRIMPED OR TACKED TO PREVENT BLOWING.
 - VEGETATIVE COVER - SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER.
 - TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS AN EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12" APART, SPRING-TOOTHED HARROWS, AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
 - IRRIGATION - THIS IS GENERALLY DONE AS AN EMERGENCY TREATMENT. SITE IS SPRINKLED WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED AT NO TIME SHOULD THE SITE BE IRRIGATED TO THE POINT THAT RUNOFF BEGINS TO FLOW.
 - BARRIERS - SOLID BOARD FENCES, SILT FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALE DIKES, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING. BARRIERS PLACED AT RIGHT ANGLES TO PREVAILING CURRENTS AT INTERVALS OF ABOUT 10 TIMES THEIR HEIGHT ARE EFFECTIVE IN CONTROLLING SOIL BLOWING.
 - CALCIUM CHLORIDE - APPLY AT RATES THAT WILL KEEP SURFACE MOIST. MAY NEED RETREATMENT.
- PERMANENT METHODS**
- PERMANENT VEGETATION - SEE STANDARDS FOR PERMANENT VEGETATIVE COVER, AND PERMANENT STABILIZATION WITH SOIL. EXISTING TREES OR LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE.
 - TOPSOILING - COVERING WITH LESS EROSION SOIL MATERIALS. SEE STANDARDS FOR TOPSOILING.
 - STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.



EROSION CONTROL MATTING
NOT TO SCALE

ENGINEER'S CERTIFICATE

This Plan For Erosion And Sediment Control in accordance with the Maryland Department of the Environment and that it was Prepared in Accordance with the Requirements of the Howard County Conservation District.

Signature: [Signature]
Date: 6/2/08

DEVELOPER'S CERTIFICATE

"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 Erosion And Sediment Before Beginning The Project. I also Authorize Periodic On-Site Inspection By The Howard County Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature of Developer: [Signature]
Date: 6/2/08

Reviewed For Howard County Soil Conservation District Technical Requirements: [Signature]
U.S.D.A. - Natural Resources Conservation Service Date: [Signature]

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard County Conservation District.
John R. Hamilton, District Howard Soil Conservation Dist. Date: 6/2/08

Approved: Department Of Planning And Zoning
Cynthia Hamant, Chief, Division Of Land Development Date: 6/24/08

Approved: Department Of Public Works
Chris Damann, Chief, Development Engineering Division Date: 6/24/08

Approved: Howard County Department Of Public Works
William F. Marshall, Chief, Bureau Of Highways Date: 6-16-08

- Construction Specifications**
- Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".
 - Staple the 4" overlap in the channel center using an 18" spacing between staples.
 - Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
 - Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
 - Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shingle fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.
 - The discharge end of the matting line should be similarly secured with 2 double rows of staples.
- Note: If flow will enter from the edge of the matting then the area effected by the flow must be key-in.

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (03-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, FOR PERMANENT SEEDING (SEC. 50), SOIL COUVERTURE (SEC. 51), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

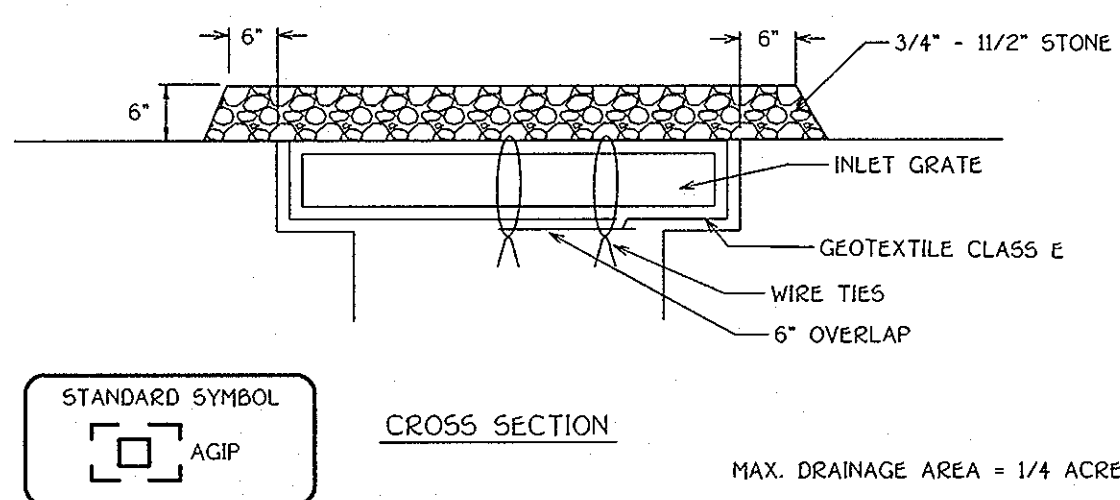
TOTAL AREA OF SITE	9.72 ACRES
AREA DISTURBED	3.72 ACRES
AREA TO BE ROOFED OR PAVED	1.60 ACRES
AREA TO BE VEGETATIVELY STABILIZED	2.12 ACRES
TOTAL CUT	15,897 CU.YDS.
TOTAL FILL	20,259 CU.YDS.
- OFF-SITE WASTE/BORROW AREA LOCATION 4.361 CUYDS. ON-SITE - SEE PLAN
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

SEDIMENT CONTROL DETAIL SHEET
GTW'S WAVERLY WOODS
APFO MITIGATION PLAN
TAX MAP No. 16
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE 2, 2008
SHEET 15 OF 41

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10275 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461-2855



AT GRADE INLET PROTECTION FOR 1-1



- Construction Specifications**
- Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
 - Place 3/4" to 1 1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

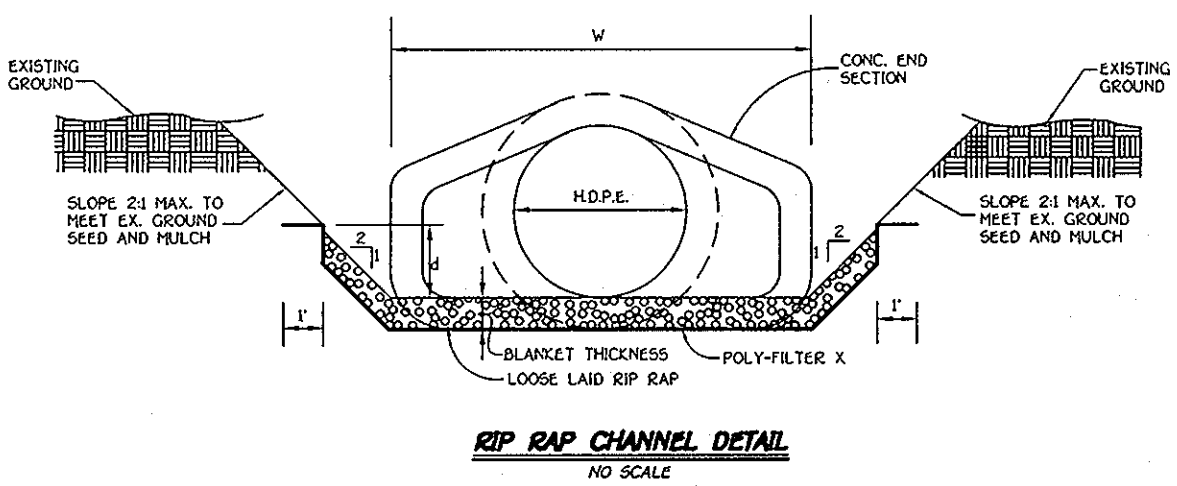
OWNER/DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION
c/o LAND DESIGN AND DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLICOTT CITY, MARYLAND 21042
(443) 367-0422

STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	W	REMARKS
I-1	* 475.50	----	470.22 (15')	NS39750.2 EB28482.0	---	---	D INLET	---	D-4.10
I-2	460.97	24' 454.52	24' 454.26	BARNESLEY WAY	STA. 0+89	36' L	A-10	3'-6"	D-4.03
I-3	461.09	24' 455.44	24' 455.19	BARNESLEY WAY	STA. 0+89	30' R	A-10	3'-6"	D-4.03
I-4	* 460.00	----	24' 455.62	MARRIOTTSVILLE ROAD	STA. 24+51	67' R	'D' INLET	---	D-4.10
I-5	* 451.70	----	18' 447.53	MARRIOTTSVILLE ROAD	STA. 33+45	63' R	'D' INLET	---	D-4.10
M-1	461.50	36' 456.49	36' 454.25	MARRIOTTSVILLE ROAD	STA. 25+98	18' R	5' STD. MANHOLE	---	G - 5.11
MW-2	467.21	27' 463.46	---	MARRIOTTSVILLE ROAD	STA. 0+00	64' R	TYPE 'A' HEADWALL	---	D-5.11
MW-3	467.17	30' 463.17	---	MARRIOTTSVILLE ROAD	STA. 14+44	45' E	TYPE 'A' HEADWALL	---	D-5.11
MW-4	458.44	38' 453.94	---	MARRIOTTSVILLE ROAD	STA. 26+12	68' R	TYPE 'A' HEADWALL	---	D-5.11
S-4	456.00	24' 454.00	---	MARRIOTTSVILLE ROAD	STA. 25+98	108' R	CONC. END SECTION	---	D-5.51
S-5	471.25	470.00 (15')	---	NS39728.0 EB28484.1	---	---	15' CONC. END SECT	---	D-5.51
MW-5	455.78	EX. 30' 451.78	---	MARRIOTTSVILLE ROAD	STA. 37+31	60' R	TYPE 'A' HEADWALL	---	D-5.11
MW-6	456.75	BOX CULVERT 144.71	---	MARRIOTTSVILLE ROAD	SEE SHEET 34	---	'RIP-RAP' TYPE 'A' HEADWALL	---	SEE DETAILS SHEETS 31-39
E-3	473.56	----	27' 470.56	MARRIOTTSVILLE ROAD	STA. 7+73	44.5' L	TYPE 'C' ENDWALL	---	D-5.21
E-4	471.24	----	30' 467.74	MARRIOTTSVILLE ROAD	STA. 13+93	41.5' L	TYPE 'C' ENDWALL	---	D-5.21

* DENOTES TOP OF GRATE ELEVATION

NOTE: SEE SHEET 30 FOR CULVERT PROFILES, PIPE SCHEDULE & STRUCTURE SCHEDULE FOR MARRIOTTSVILLE ROAD NORTH OF OLD FREDERICK ROAD.



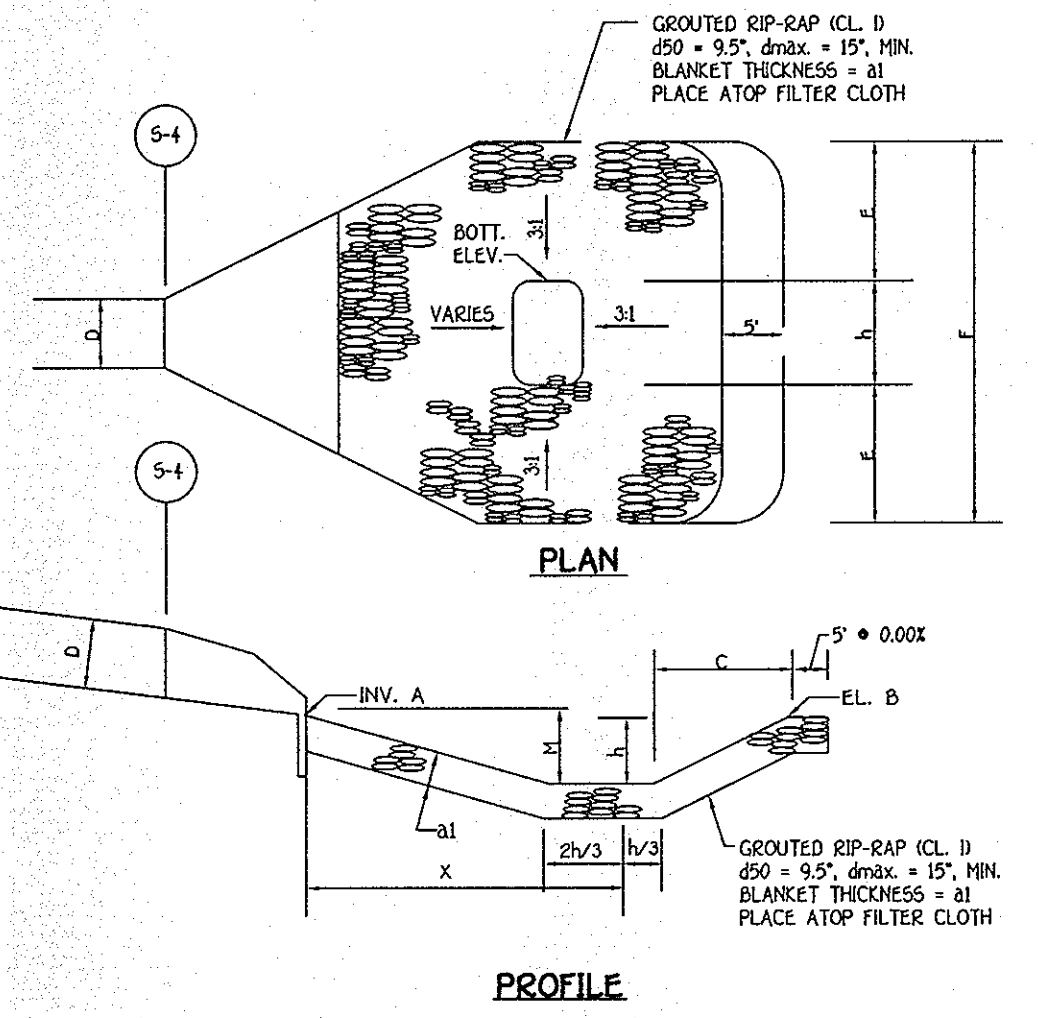
RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	AREA	WETTED PERIMETER	R	Q 2.0	S	5 1/2	W	d	M	V	(14.3)	Q	(14.3)	Q	(14.3)	Q	(14.3)	Q	(14.3)	Q	(14.3)	Q	(14.3)
MW-2	13.28	14.87	11.97	1.079	0.005	0.0707	10.0'	1.09'	0.04	2.44	31.97	9.5'	15'	19'									
MW-3	15.10	15.46	0.9019	0.9878	0.005	0.0707	10.0'	1.22'	0.04	2.60	39.23	9.5'	15'	19'									
MW-4	19.18	16.62	1.194	1.101	0.005	0.0707	10.0'	1.48'	0.04	2.89	55.42	9.5'	15'	19'									
S-4	5.02	12.06	0.463	0.5559	0.005	0.0707	10.0'	0.46'	0.04	1.47	7.31	9.5'	15'	19'									
S-5	1.99	8.85	0.1797	0.3366	0.005	0.0707	6.0'	0.19'	0.04	0.84	1.27	9.5'	15'	19'									

- CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS**
- The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
 - The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
 - Filter cloth shall be protected from raveling, cutting or tearing. Any damage other than an occasional hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. An overlap whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
 - Stone for the riprap or gabion outlets may be placed by equipment. Both shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and will fill the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development
 Chief, Development Engineering Division
 Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways

Wanda J. Hall 6-16-09
Wanda J. Hall 6/24/09
 Date

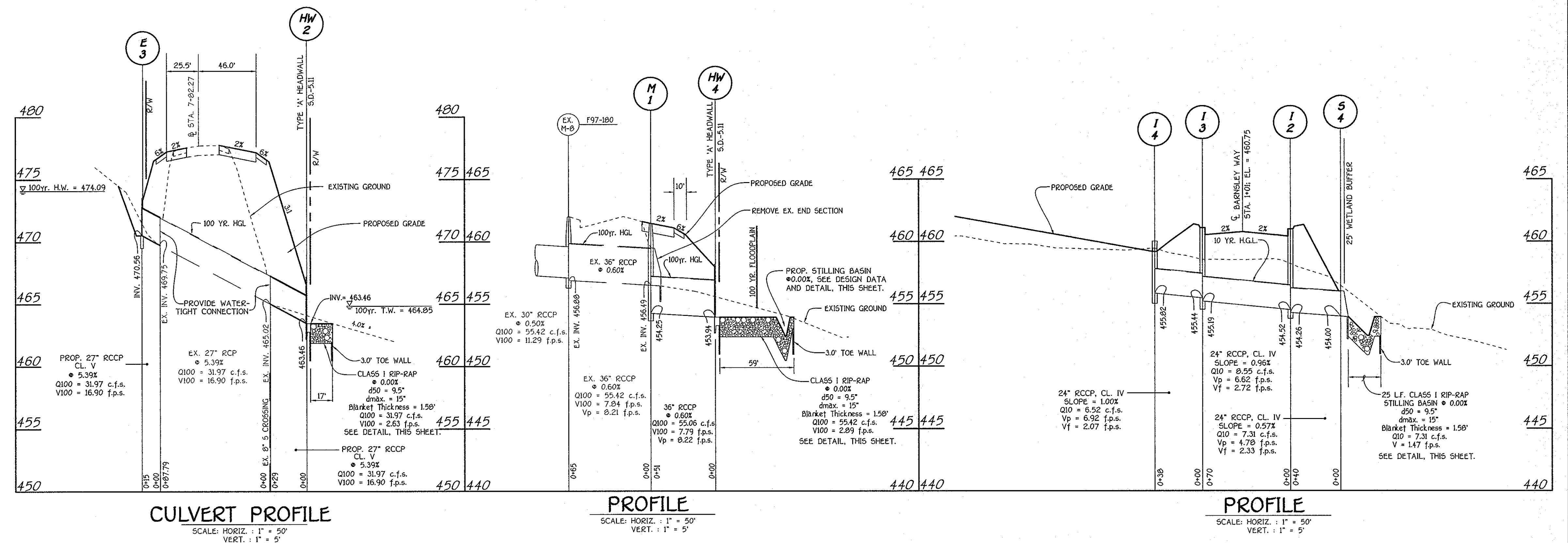
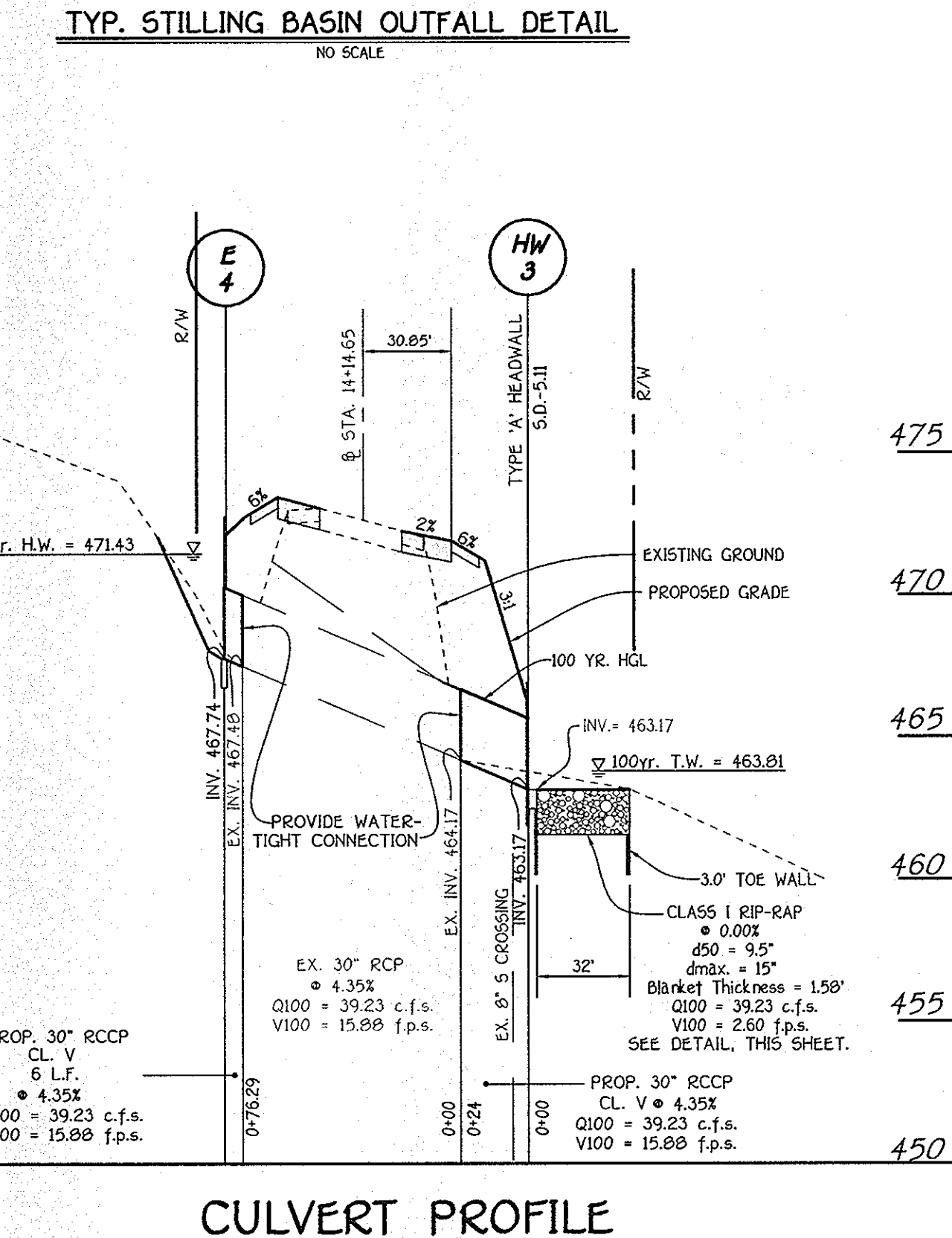


PIPE SCHEDULE

SIZE	CLASS	LENGTH
18"	RCCP, CL. IV	24'
24"	RCCP, CL. IV	148'
27"	RCCP, CL. V	44'
30"	RCCP, CL. V	30'
36"	RCCP, CL. IV	51'
BOX CULVERT	RCCP	18' EXTENSION
15"	RCCP, CL. IV	22'

STILLING BASIN DATA

STRUCTURE NO.	INV. A	EL. B	C	D	E	F	h	M	dl	X
S-4	454.00	454.00	4.5'	36"	4.5'	10.5'	1.5'	1.5'	19'	15'



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10722 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042

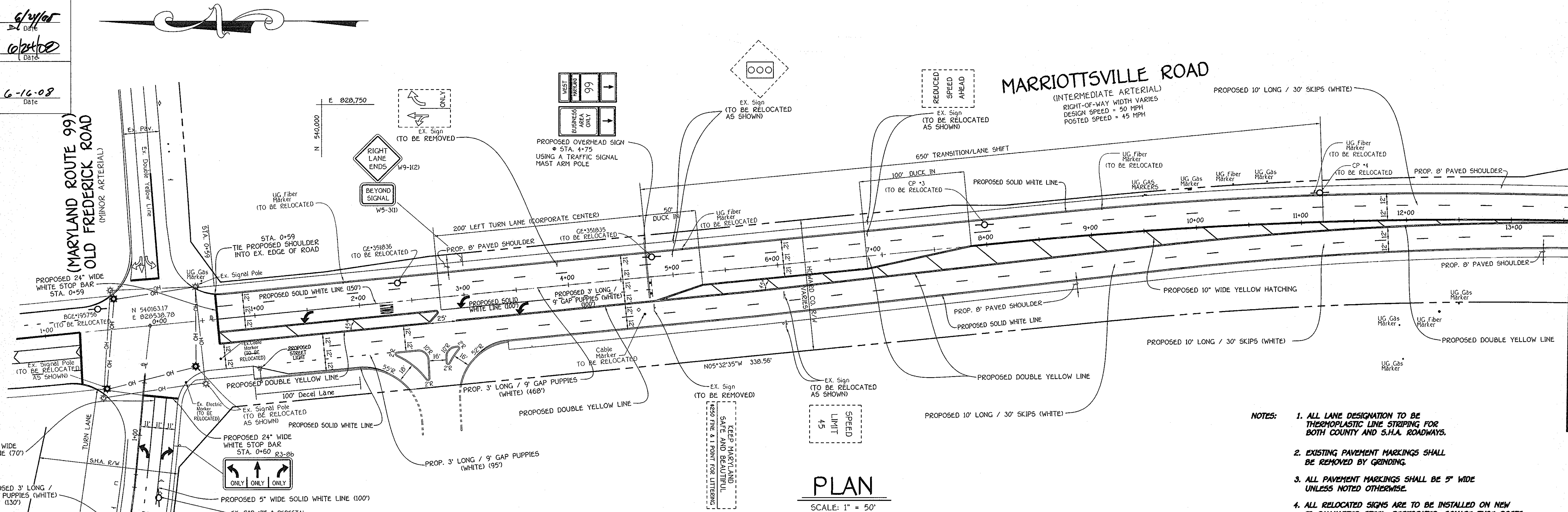


OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

NOTE: STORM DRAINS ARE DESIGNED FOR 10 YEAR STORM AND CULVERTS ARE DESIGNED FOR 100 YEAR STORM.

STORM DRAIN & CULVERT PROFILES
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP NO. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 16 OF 41

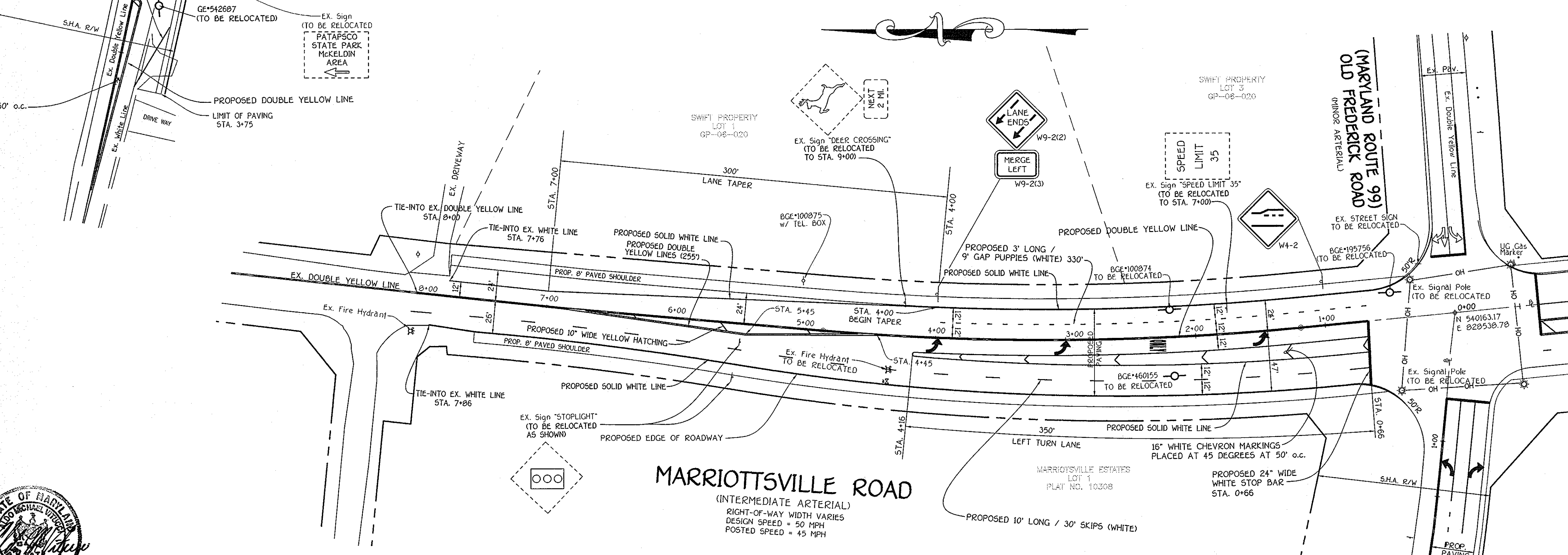
Approved: Department Of Planning And Zoning
 Chief, Division of Land Development
 Chief, Development Engineering Division
 Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways
 Date: 6/16/08



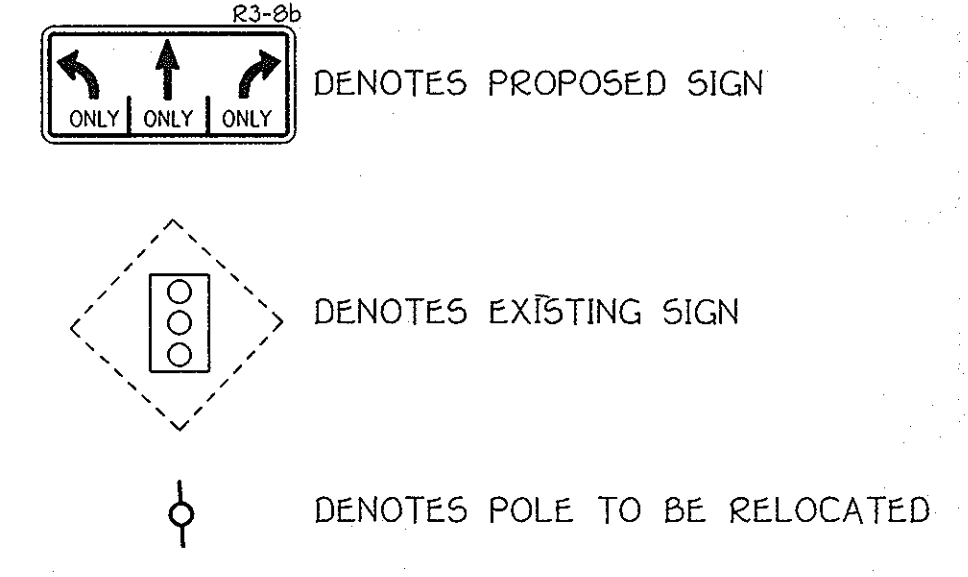
PLAN
 SCALE: 1" = 50'

- NOTES:**
1. ALL LANE DESIGNATION TO BE THERMOPLASTIC LINE STRIPING FOR BOTH COUNTY AND S.H.A. ROADWAYS.
 2. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING.
 3. ALL PAVEMENT MARKINGS SHALL BE 5" WIDE UNLESS NOTED OTHERWISE.
 4. ALL RELOCATED SIGNS ARE TO BE INSTALLED ON NEW 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POSTS (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVES (12 GAUGE) 3' LONG WITH A GALVANIZED STEEL CAP ON THE TOP OF POST.

NOTE: CONTRACTOR SHALL CONTACT PARRIS ZIRKENBACH AT (410) 313-2430 HOWARD COUNTY TRAFFIC PRIOR TO STARTING ANY PAVEMENT MARKINGS.



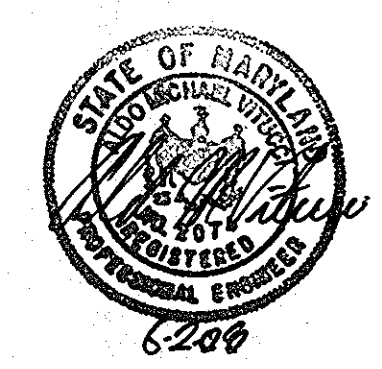
PLAN
 SCALE: 1" = 50'



NOTE: SEE PLAN ABOVE FOR CONTINUATION

**OLD FREDERICK ROAD (MARYLAND ROUTE 99) & MARIOTTVILLE ROAD STRIPING PLAN
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN**

TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 17 OF 41

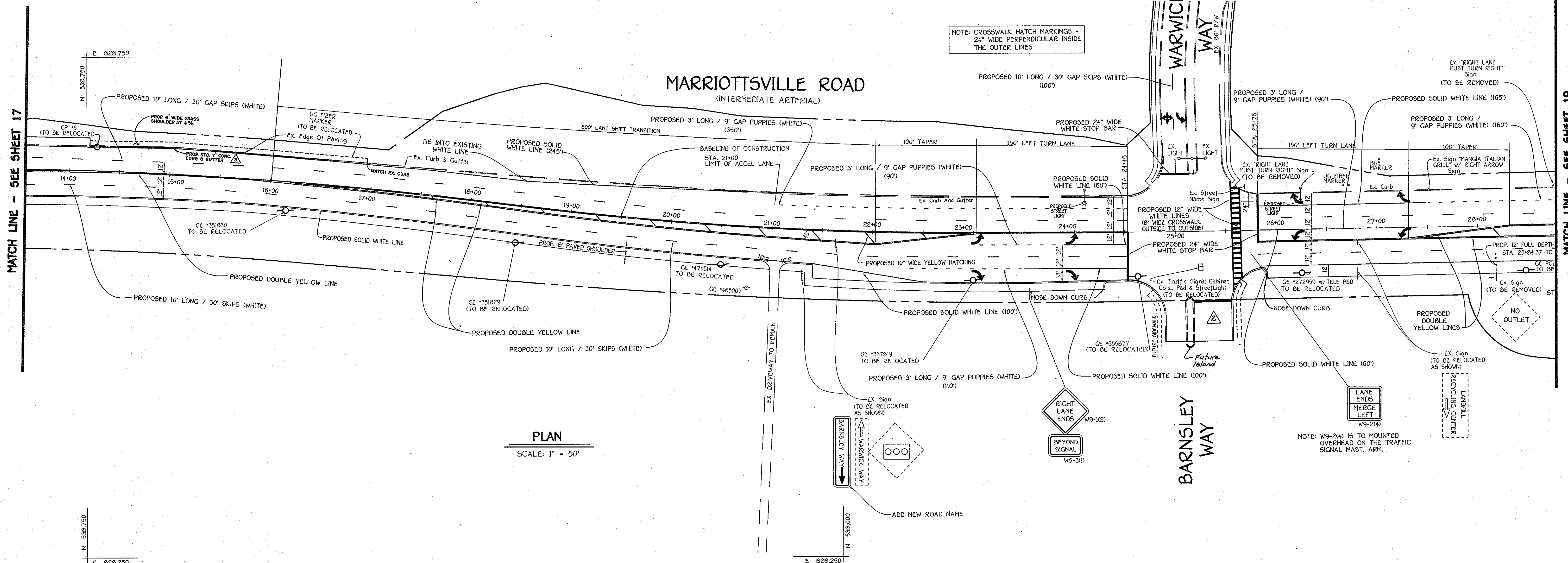
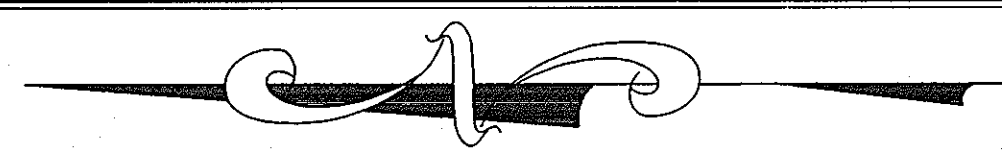


FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 12072 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
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 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

Approved: Department Of Planning And Zoning
 Cindy Hammett 6/24/08
 Chief, Division Of Land Development Date

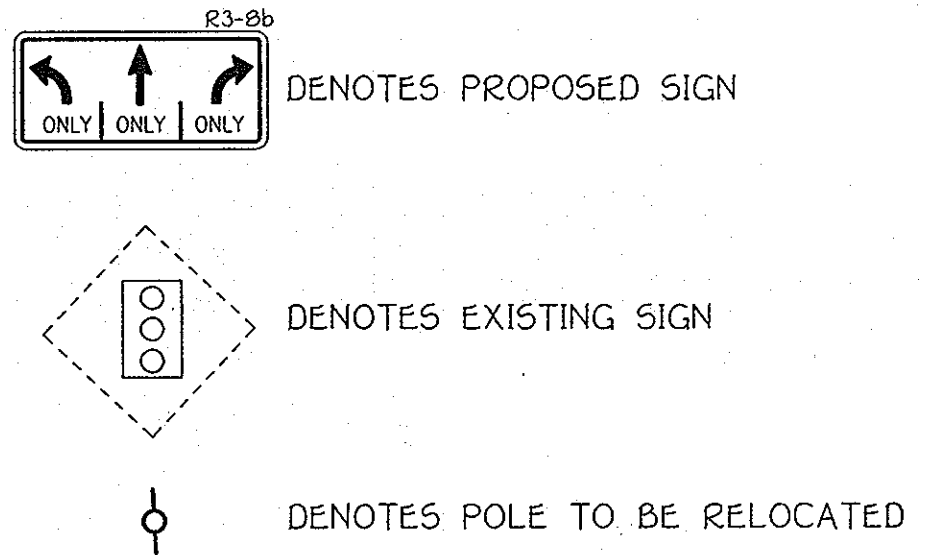
Approved: Howard County Department Of Public Works
 W. Z. Wald 6-16-08
 Chief, Bureau Of Highways Date



PLAN
 SCALE: 1" = 50'

- NOTES:**
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 2. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING.
 3. ALL PAVEMENT MARKINGS SHALL BE 3" WIDE UNLESS NOTED OTHERWISE.
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NOTE: CONTRACTOR SHALL CONTACT PARRIS ZIRKENBACH AT (410) 313-2430 HOWARD COUNTY TRAFFIC PRIOR TO STARTING ANY PAVEMENT MARKINGS.



No.	DESCRIPTION	DATE
1	Added Prop Curb To Eastside Of Marriottsville Road Sta. 14+20 To 16+94	9/27/12
2	REVISED CURB FILLET AT FUTURE BARNSELY WAY	8/5/10
3	ADDED SHEETS 42 & 43	10/9/09
REVISIONS		

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 481-2899



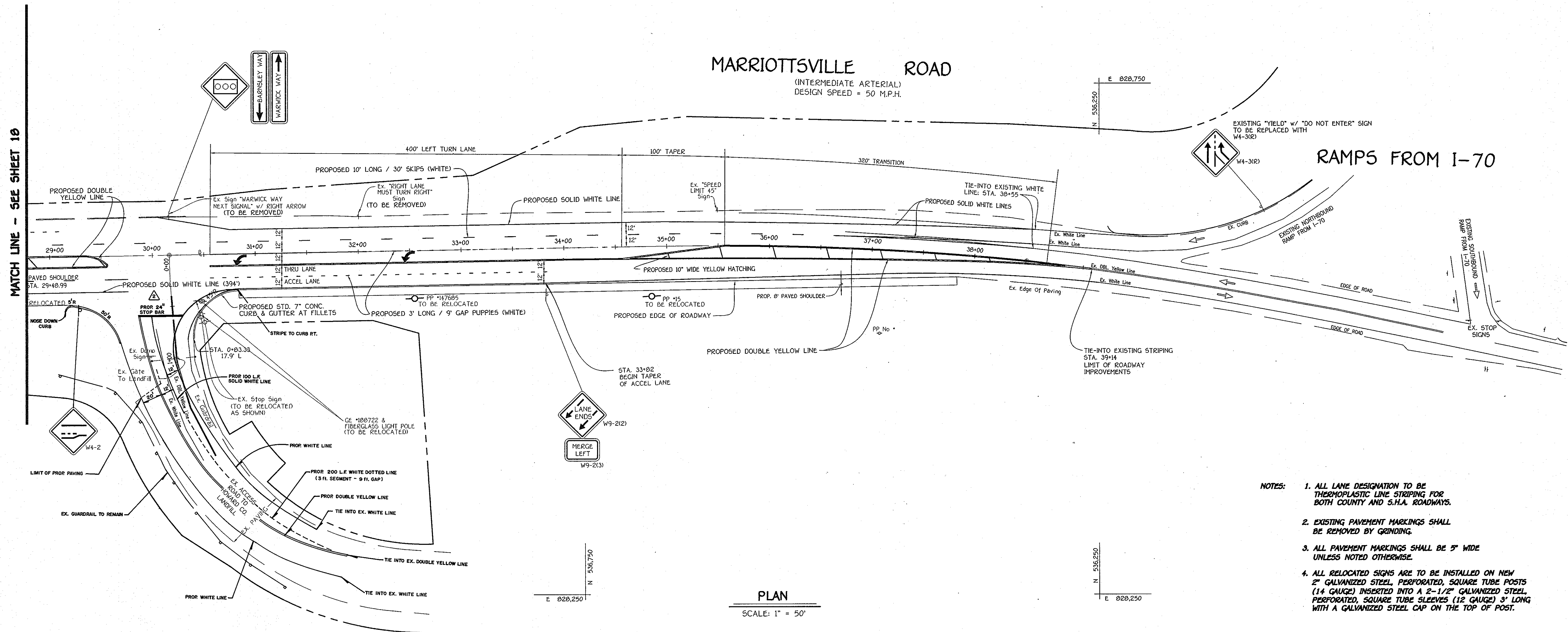
MARRIOTTVILLE ROAD STRIPING PLAN
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 18 OF 43

I:\2008\04017\GW\MARRIOTTVILLE WIDENING\04017-3001 SHEET 17-18 STRIPING PLANS.dwg, 5/30/2008 10:44:41 AM

Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development
 Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways

Candy Hamt 6/14/08
 Date
Walter Z. Mahaffey 6-16-08
 Date

MARRIOTTSVILLE ROAD
 (INTERMEDIATE ARTERIAL)
 DESIGN SPEED = 50 M.P.H.

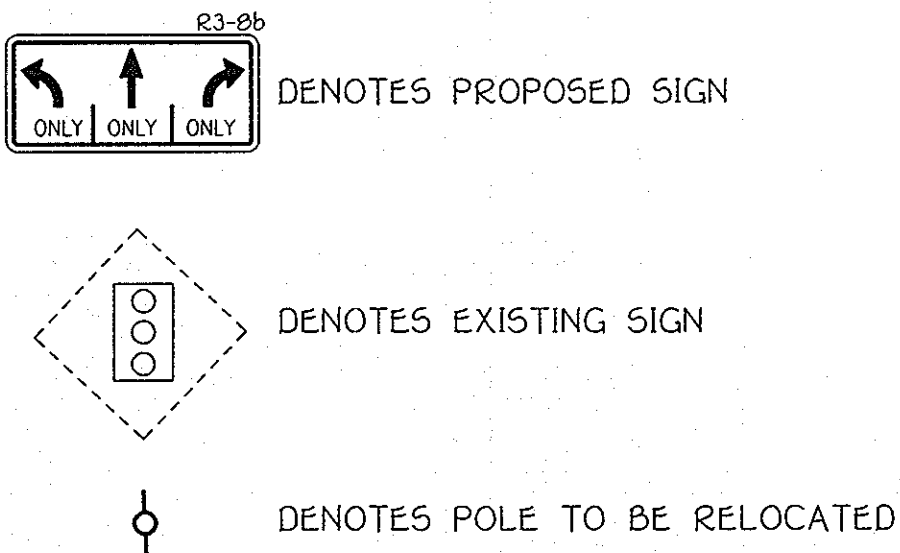


PLAN

SCALE: 1" = 50'

- NOTES:
1. ALL LANE DESIGNATION TO BE THERMOPLASTIC LINE STRIPING FOR BOTH COUNTY AND S.H.A. ROADWAYS.
 2. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING.
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 4. ALL RELOCATED SIGNS ARE TO BE INSTALLED ON NEW 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POSTS (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVES (12 GAUGE) 3' LONG WITH A GALVANIZED STEEL CAP ON THE TOP OF POST.

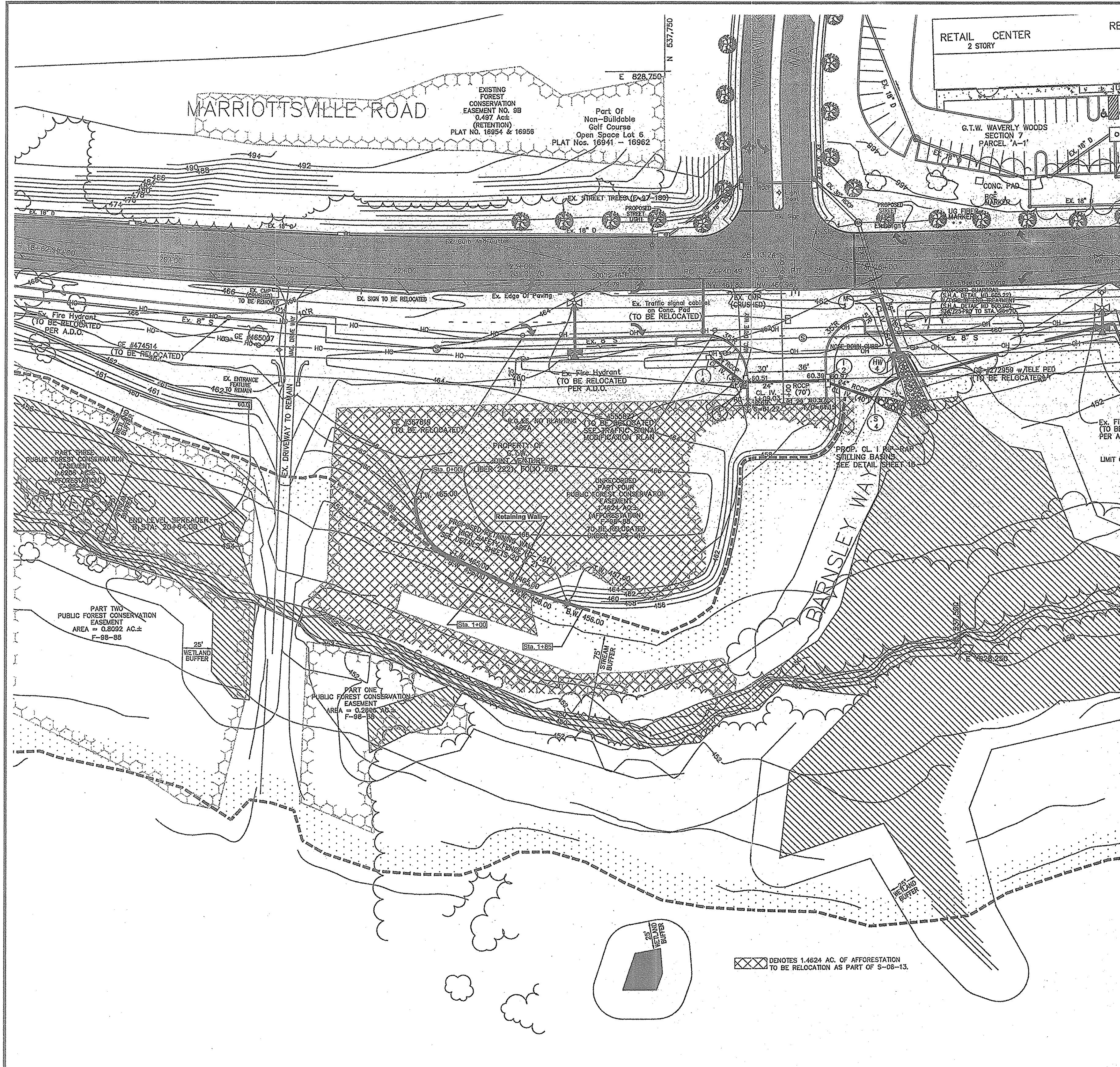
NOTE: CONTRACTOR SHALL CONTACT PARRIS ZIRKENBACH AT (410) 313-2430 HOWARD COUNTY TRAFFIC PRIOR TO STARTING ANY PAVEMENT MARKINGS.



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 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

No.	DESCRIPTION	DATE
1	Revised Dump Road Entrance and Striping	7/8/11
2	ADDED SHEETS 42 & 43	10/9/09
REVISIONS		

MARRIOTTSVILLE ROAD STRIPING PLAN
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 19 OF 43



WALL LOCATION PLAN
1" = 50'

SPECIFICATIONS
KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

- 1.01 Description**
A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

- 1.02 Delivery, Storage and Handling**
A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: PRODUCTS

- 2.01 Modular Concrete Retaining Wall Units**
A. Modular concrete units shall conform to the following architectural requirements:
face color - concrete gray - standard manufacturers' color may be specified by the Owner.
face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.
bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.
B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
compressive strength = 3000 psi minimum;
absorption = 8% maximum (6% in arid/northern states) for standard weight aggregates;
dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split face, ± 1/16" unit height - top and bottom planes;
unit size - 8" (H) x 18" (W) x 12" (D) minimum;
unit weight - 75 lbs/unit minimum for standard weight

- aggregates;
inter-unit shear strength - 1000 pif minimum at 2 psi normal pressure;
geogrid/unit peak connection strength - 1000 pif minimum at 2 psi normal force.
D. Modular concrete units shall conform to the following constructability requirements:
vertical setback = 1/8" per course (near vertical) or 1" per course per the design;
alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;
maximum horizontal gap between erected units shall be 1/2 inch.

- 2.02 Shear Connectors**
A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-impregnated fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.
Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.
B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2.03 Base Leveling Pad Material

- A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

2.04 Unit Drainage Fill

- A. Unit drainage fill shall consist of #57 crushed stone

2.05 Reinforced Backfill

- A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:
- | Size | Percent Passing |
|----------|-----------------|
| 2 inch | 100-75 |
| 3/4 inch | 100-75 |
| No. 40 | 0-60 |
| No. 200 | 0-45 |
- Plasticity Index (PI) < 15 and Liquid Limit < 40 per ASTM D-4318.
B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

2.06 Geogrid Soil Reinforcement

- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

2.07 Drainage Pipe

- A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3 EXECUTION

3.01 Excavation

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

3.02 Base Leveling Pad

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

3.03 Modular Unit Installation

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
C. Install shearconnecting devices per manufacturer's recommendations.
D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

3.04 Structural Geogrid Installation

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to

- backfill placement on the geogrid.
D. Geogrid reinforcement shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.05 Reinforced Backfill Placement

- A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slacking in the geogrid and installation damage.
B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.
D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.
E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 Cap Installation

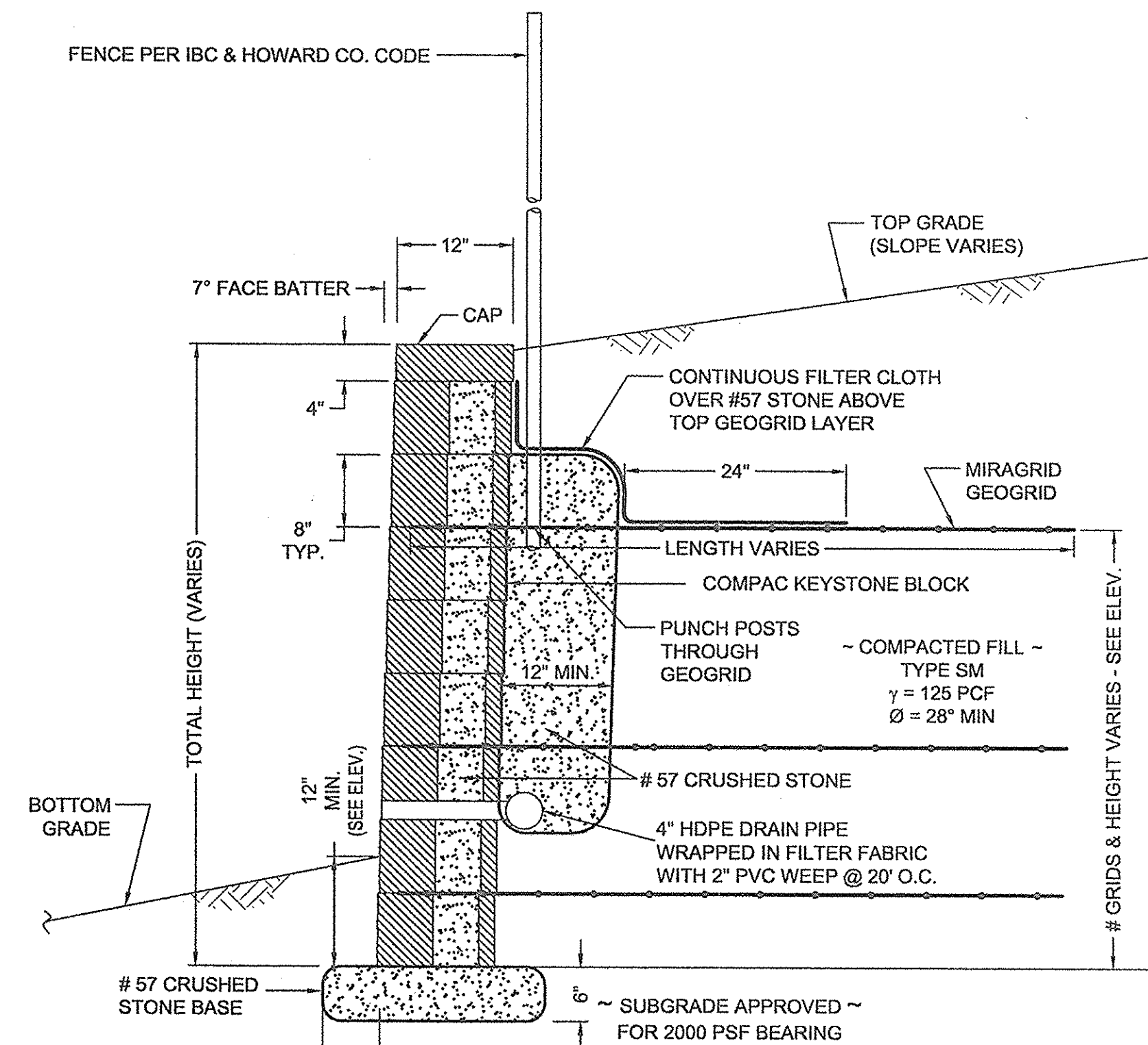
- A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3.07 Field Quality Control

- A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.
B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

NOTES:

- 1.) No trees shall be planted within 10 feet of the top of the retaining wall.
- 2.) Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
- 3.) The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.
- 4.) The suitability of fill material shall be confirmed by the on-site soils technician. Each 8' lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.



TYPICAL WALL SECTION
N.T.S.

APPROVED: DEPARTMENT OF PUBLIC WORKS			
<i>Matthew J. ...</i>		1-23-10	
CHIEF, BUREAU OF HIGHWAYS		DATE	
APPROVED: DEPARTMENT OF PLANNING AND ZONING			
<i>...</i>		1/22/10	
Chief, Division of Land Development		DATE	
<i>...</i>		1/22/10	
Chief, Development Engineering Division		DATE	
SUBDIVISION: GTW'S WAVERLY WOODS - PARCEL 20			
SECTION/AREA: N/A		LOT NO.:	
DEED REF.	BLOCK NO.	ZONE	TAX MAP
		PSC	16
WATER CODE: N/A		SEWER CODE: N/A	

HILLIS-CARNES
ENGINEERING ASSOCIATES
10575 Guilford Road, Suite A
(410) 880-4788
Annapolis Junction, MD
Fax: (410) 980-4098

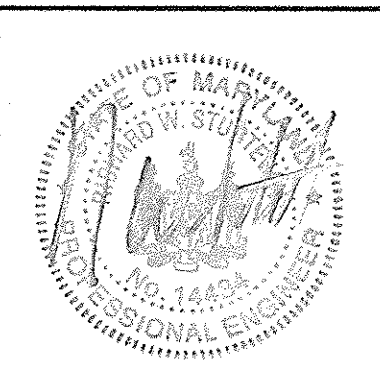
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10222 BALTIMORE NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042

OWNER / DEVELOPER
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5300 DORSEY HALL DRIVE, SUITE 102
ELICOTT CITY, MARYLAND 21042
(443) 367-0422

RETAINING WALL CONSTRUCTION DETAILS
GTW'S WAVERLY WOODS
HOWARD COUNTY, MD

REVISIONS: #1 - REVISED WALL LOCATION PLAN	10/15/09	JOB NUMBER: 04198-E	DESIGNED BY: AM
		SCALE: AS SHOWN	DRAWN BY: AM
		DATE: 8/31/06	APPROVED BY: RWS

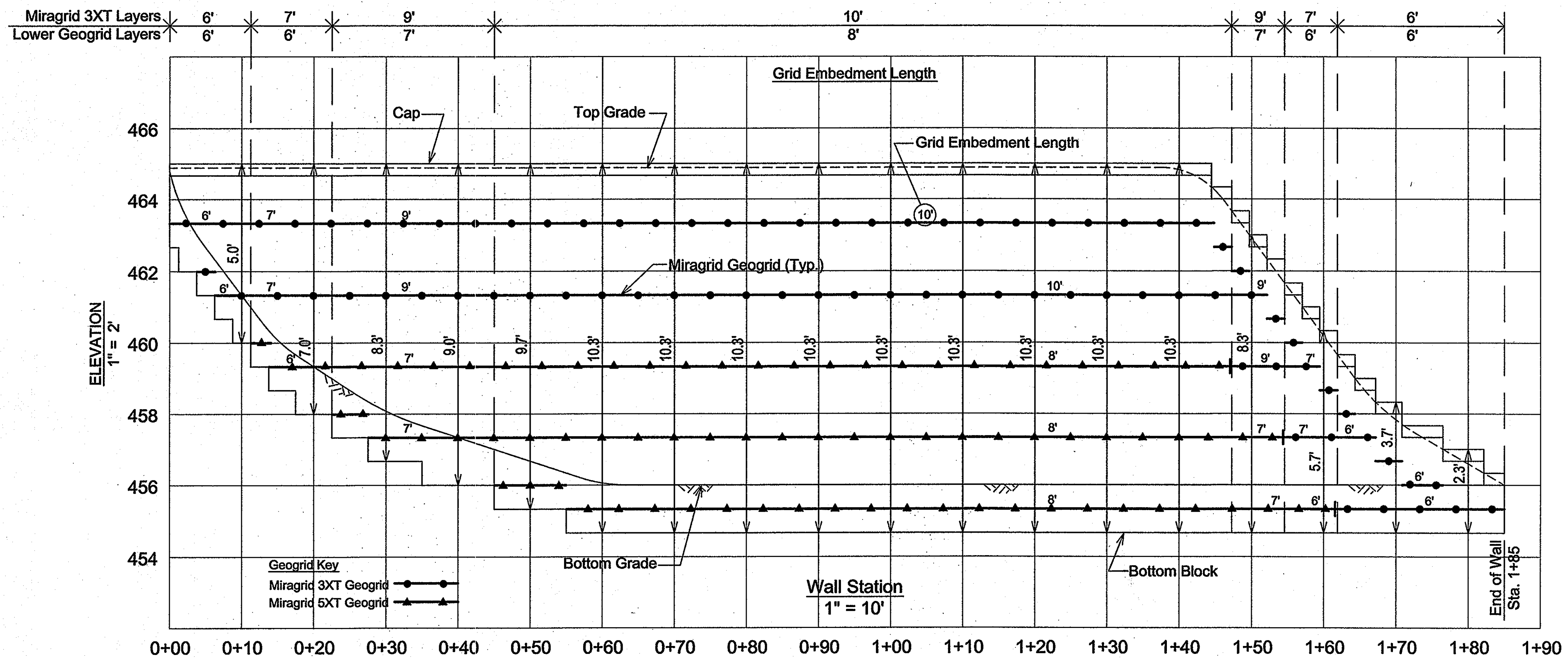
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16636, EXPIRATION DATE: 08/31/11.



20 OF 43
SHEET

F-07-032

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APPROVED: DEPARTMENT OF PUBLIC WORKS
William J. ... 1-20-10
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. ... 4/22/10
 Chief, Division of Land Development

APPROVED: DEPARTMENT OF ENGINEERING
... 12/10
 Chief, Development Engineering Division

SUBDIVISION	SECTION/AREA	LOT NO.
GTW'S WAVERLY WOODS - PARCEL 20	N/A	
DEED REF.	BLOCK NO.	ZONE
	16	PSC
TAX MAP	ELEC. DIST.	CENSUS TR.
	THIRD	
WATER CODE	SEWER CODE	
N/A	N/A	

GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP NO. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS
 WERE PREPARED OR APPROVED BY ME,
 AND THAT I AM A DULY LICENSED
 PROFESSIONAL ENGINEER UNDER THE
 LAWS OF THE STATE OF MARYLAND,
 LICENSE NO. 14436,
 EXPIRATION DATE: 05/31/11.



HILLIS-CARNES
 ENGINEERING ASSOCIATES
 10975 Guilford Road, Suite A Annapolis Junction, MD
 (410) 880-4788 Fax: (410) 880-4098

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE PARK - 10272 BALTIMORE NATIONAL PKE
 ELLICOTT CITY, MARYLAND 21042

OWNER / DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 387-0422

RETAINING WALL ELEVATION
GTW'S WAVERLY WOODS HOWARD COUNTY, MD

REVISIONS: #1 - REVISED WALL ELEVATION 10/15/09

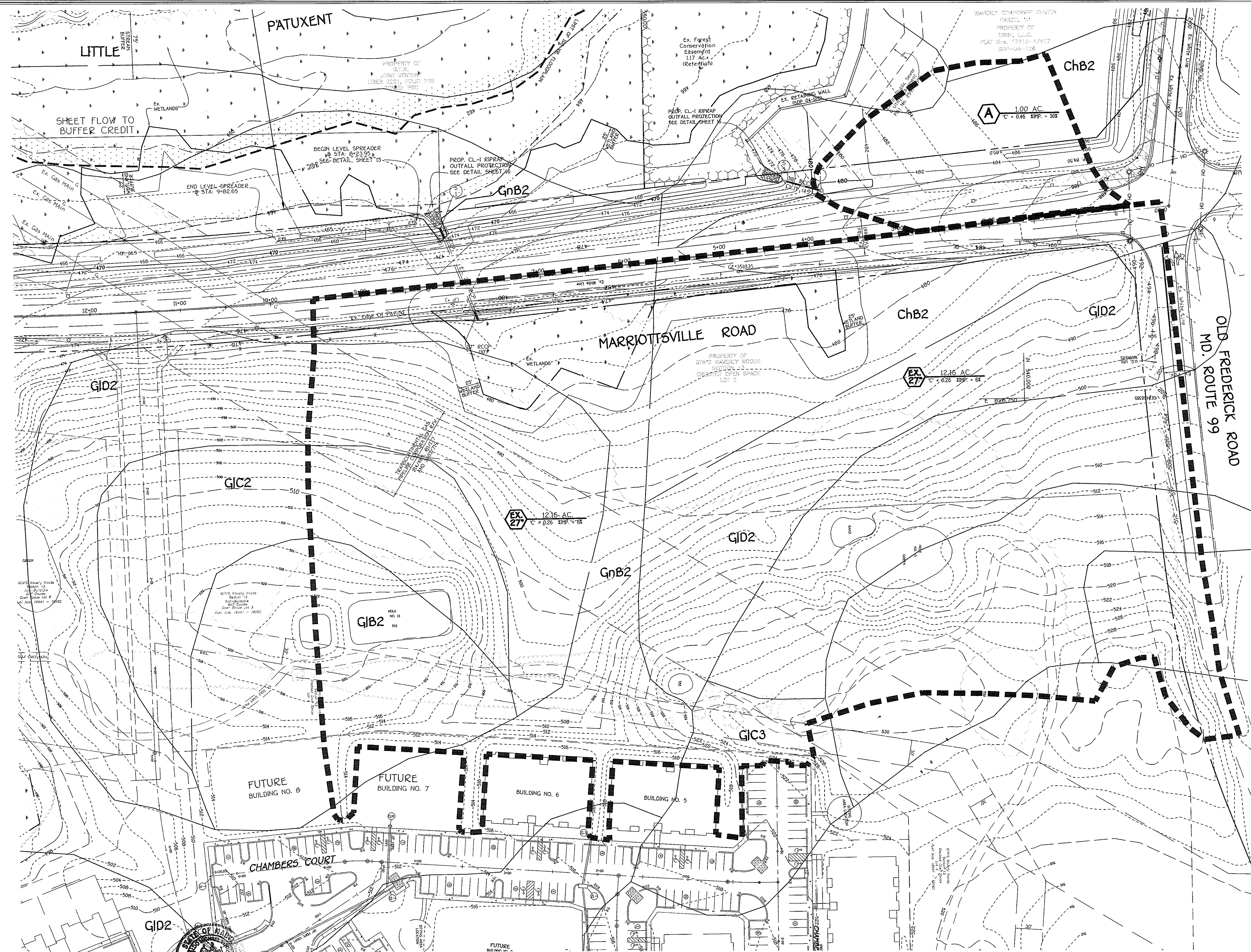
JOB NUMBER: 04198-E
 SCALE: AS SHOWN
 DATE: 8/31/06
 DESIGNED BY: AM
 DRAWN BY: AM
 APPROVED BY: RWS

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APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter R. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cathy ... 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



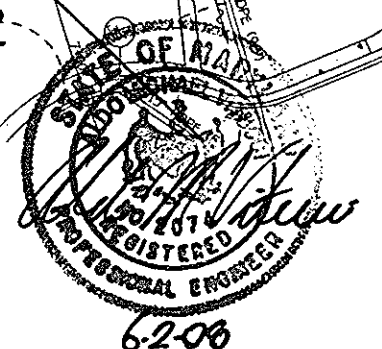
Soil Sym.	Name	HYDROLOGIC GROUP
* B1	Belle silt loam	D
BrB2	Beltsville silt loam	C
BrC2	Beltsville silt loam	C
BrC3	Beltsville silt loam	C
BrD2	Beltsville silt loam	C
BrF	Brandywine loam	C
ChA	Chester silt loam	B
ChB2	Chester silt loam	B
ChC2	Chester silt loam	B
ChC3	Chester silt loam	B
CqC2	Chester silt loam	B
** Co	Codorus silt loam	C
** CoB	Cornus silt loam	C
** DeA	Delanco silt loam	C
** DeB2	Delanco silt loam	C
EkB2	Elioak silt loam	B
ElC3	Elioak silty clay loam	B
ElD3	Elioak silty clay loam	B
EnB2	Elsinboro loam	B
EnC2	Elsinboro loam	B
G1A	Glenelg loam	B
G1B2	Glenelg loam	B
G1C2	Glenelg loam	B
G1C3	Glenelg loam	B
G1D2	Glenelg loam	B
G1D3	Glenelg loam	B
** G1A	Glenelg silt loam	C
** G1B2	Glenelg silt loam	C
* Ha	Hatboro silt loam	D
* Kn	Kirkora silt loam	D
MgB2	Manor gravelly loam	B
MgC2	Manor gravelly loam	B
M1A	Manor loam	B
M1B2	Manor loam	B
M1C2	Manor loam	B
M1C3	Manor loam	B
M1D2	Manor loam	B
M1D3	Manor loam	B
M1E	Manor loam	B

* HYDRIC SOILS
 ** SOILS SUBJECT TO HYDRIC CONDITIONS
 SOILS MAP - Pg 8 & Pg 9

**DRAINAGE AREA TO EXISTING 27" CULVERT
 AT MARIOTTSVILLE ROAD STA. 7+02
 G.T.W.'S WAVERLY WOODS**

PROPERTY OF G.T.W. JOINT VENTURE
 LIBER 2222, FOLIO 35 AND LIBER 2221, FOLIO 208
 ZONED P5C
 TAX MAP No. 15 GRID No. PARCEL No.
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 22 OF 41

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21117
 (410) 481-2955



PLAN

SCALE: 1" = 50'

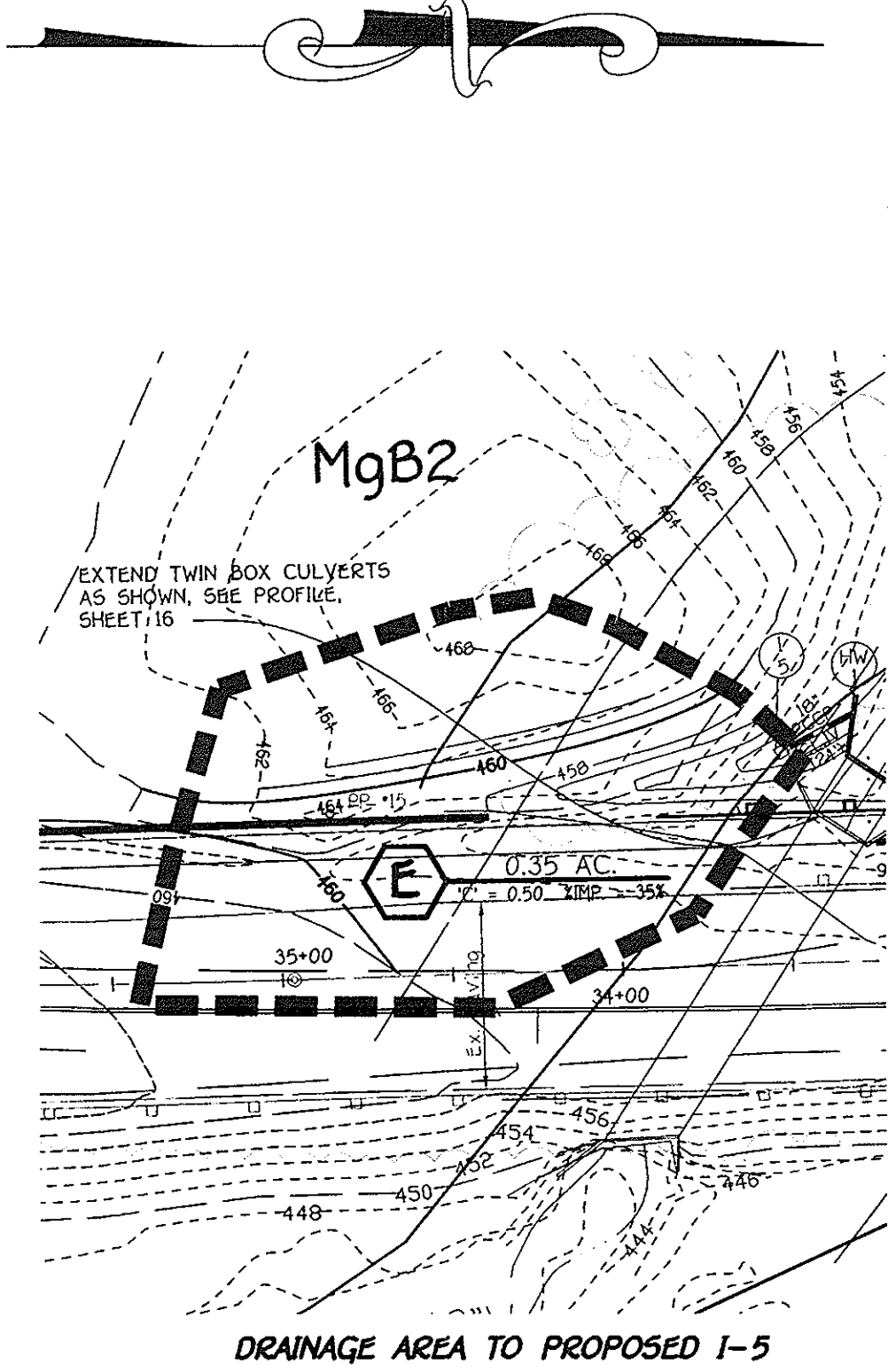
OWNER & DEVELOPER

WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21142
 (410) 367-0422



SOIL CLASSIFICATION		
Soil Sym.	Name	HYDROLOGIC GROUP
Ba	Baile silt loam	D
BrB2	Beltville silt loam	C
BrC2	Beltville silt loam	C
BrC3	Beltville silt loam	C
BrD2	Beltville silt loam	C
Brf	Brandywine loam	C
ChA	Chester silt loam	B
ChB2	Chester silt loam	B
ChC2	Chester silt loam	B
ChC3	Chester silt loam	B
CgC2	Chester silt loam	B
Co	Codorus silt loam	C
CoB	Comus silt loam	B
DeA	Delanco silt loam	C
DeB2	Delanco silt loam	C
ElB2	Eliak silt loam	B
ElC3	Eliak silty clay loam	B
ElD3	Eliak silty clay loam	B
EnB2	Elsinboro loam	B
EnC2	Elsinboro loam	B
G1A	Glenns loam	B
G1B2	Glenns loam	B
G1C2	Glenns loam	B
G1C3	Glenns loam	B
G1D2	Glenns loam	B
G1D3	Glenns loam	B
GnA	Glennville silt loam	C
GnB2	Glennville silt loam	C
Hb	Häbboro silt loam	D
Kn	Kirkora silt loam	D
MgB2	Manor gravelly loam	B
MgC2	Manor gravelly loam	B
M1A	Manor loam	B
M1B2	Manor loam	B
M1C2	Manor loam	B
M1C3	Manor loam	B
M1D2	Manor loam	B
M1D3	Manor loam	B
M1E	Manor loam	B

HYDRIC SOILS
 SOILS SUBJECT TO HYDRIC CONDITIONS
 SOILS MAP - Pg 8 & Pg 9



DRAINAGE AREA TO PROPOSED I-5

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. Inghel 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cinda Hunt 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chris Demaris 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DRAINAGE AREA TO EXISTING 30" CULVERT
 AT MARRIOTTVILLE ROAD STA. 11+30 &
 PROPOSED I-5; AREA 'E'
G.T.W.'S WAVERLY WOODS

PROPERTY OF G.T.W. JOINT VENTURES
 LIBER 2222, FOLIO 36 AND LIBER 2221, FOLIO 209
 ZONED P5C
 TAX MAP No. GRID No. PARCEL No.
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 23 OF 41

FISHER, COLLINS & CARTER, INC.
 CIVIL, ENGINEERING, CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK • 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21114
 (410) 461-2995



PLAN

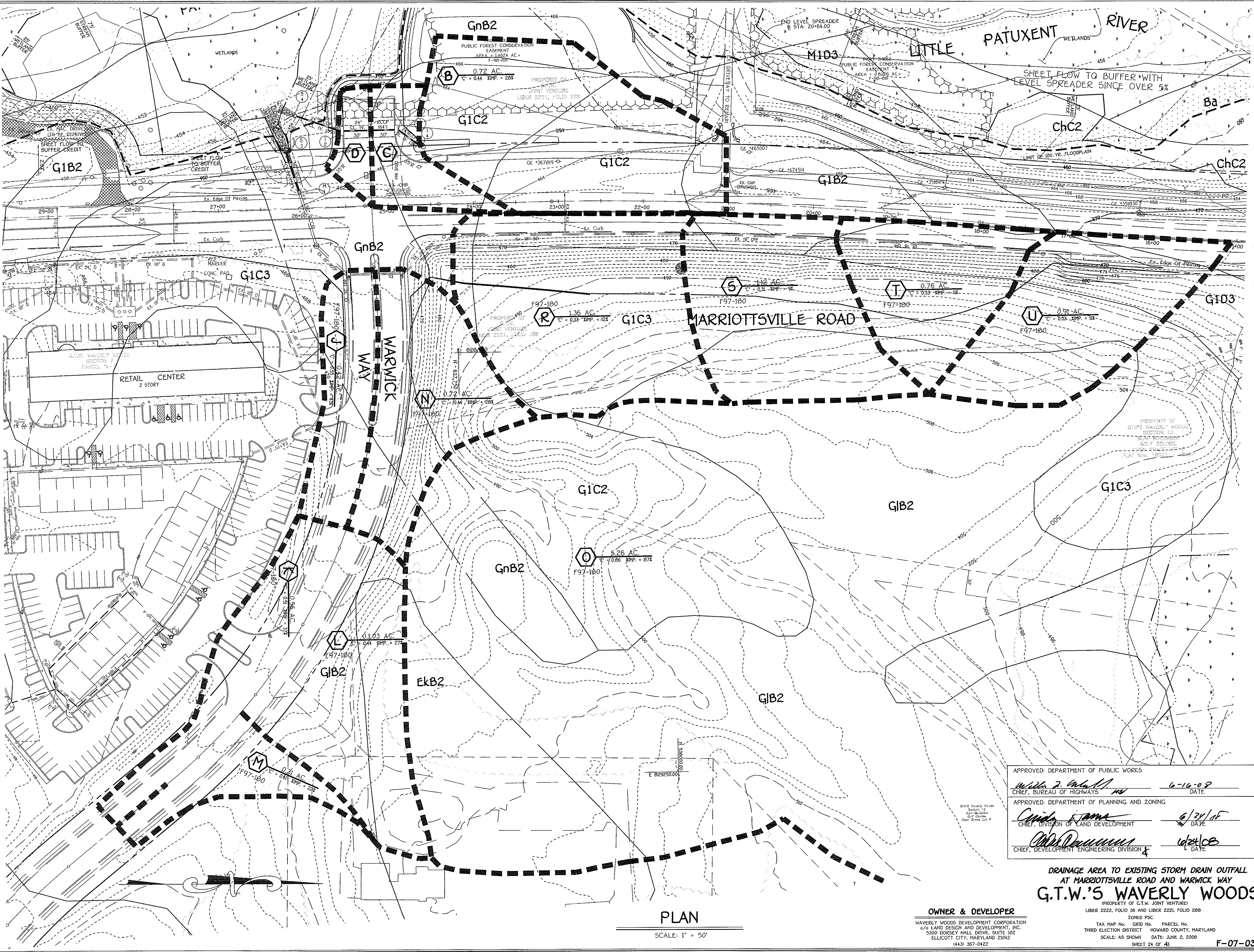
SCALE: 1" = 50'

OWNER & DEVELOPER

WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21114
 (443) 367-0422

Soil Sym.	Name	HYDROLOGIC GROUP
Br2	Bellefonte silt loam	B
BrB2	Bellefonte silt loam	C
BrC2	Bellefonte silt loam	C
BrD2	Bellefonte silt loam	C
BrE2	Bellefonte silt loam	C
ChA	Chester silt loam	B
ChB2	Chester silt loam	B
ChC2	Chester silt loam	B
ChD2	Chester silt loam	B
ChE2	Chester silt loam	B
Co	Codorus silt loam	C
CoB	Codorus silt loam	B
DaA	Delanco silt loam	C
DaB2	Delanco silt loam	C
EkB2	Elioak silt loam	B
EkC3	Elioak silty clay loam	B
EkD3	Elioak silty clay loam	B
EnB2	Elrborio loam	B
EnC2	Elrborio loam	B
GlA	Glenns loam	B
GlB2	Glenns loam	B
GlC2	Glenns loam	B
GlD2	Glenns loam	B
GlE2	Glenns loam	B
GlF3	Glenns silt loam	C
GnB2	Glenns silt loam	C
Ha	Hatboro silt loam	D
Kn	Kirkora silt loam	D
MgB2	Manor gravelly loam	B
MgC2	Manor gravelly loam	B
MIA	Manor loam	B
MIB2	Manor loam	B
MIC2	Manor loam	B
MID2	Manor loam	B
MID3	Manor loam	B
MIE	Manor loam	B

* HYDRIC SOILS
 ** SOILS SUBJECT TO HYDRIC CONDITIONS
 SOILS MAP - Pg 8 & Pg 9



ADDITIONAL DRAINAGE INFORMATION

- C 0.28 AC
C = 0.77 IMP. = 75%
- D 0.12 AC
D = 0.76 IMP. = 75%

APPROVED: DEPARTMENT OF PUBLIC WORKS
Wanda Z. Wall 6-10-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Carole K. Jones 6/31/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Wanda Z. Wall 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DRAINAGE AREA TO EXISTING STORM DRAIN OUTFALL AT MARIOTTVILLE ROAD AND WARWICK WAY
G.T.W.'S WAVERLY WOODS

(PROPERTY OF G.T.W. JOINT VENTURE)
 LIBER 2222, FOLIO 36 AND LIBER 2221, FOLIO 208
 ZONED P5C
 TAX MAP No. 050 No. PARCEL No.
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 24 OF 41

OWNER & DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 BOBBY HALL DRIVE, SUITE 302
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

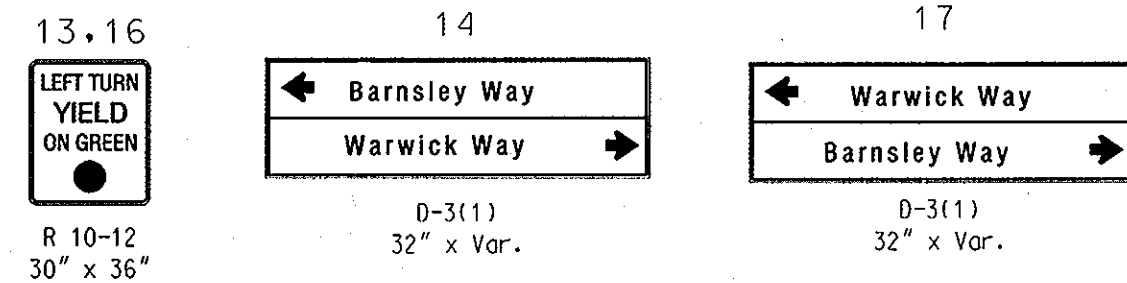
PLAN
 SCALE: 1" = 50'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

1:2024/06/07 10:47 AM; WASHINGTON, DC; SHEET 24 OF 41; 5/20/2008 1:08:54 PM

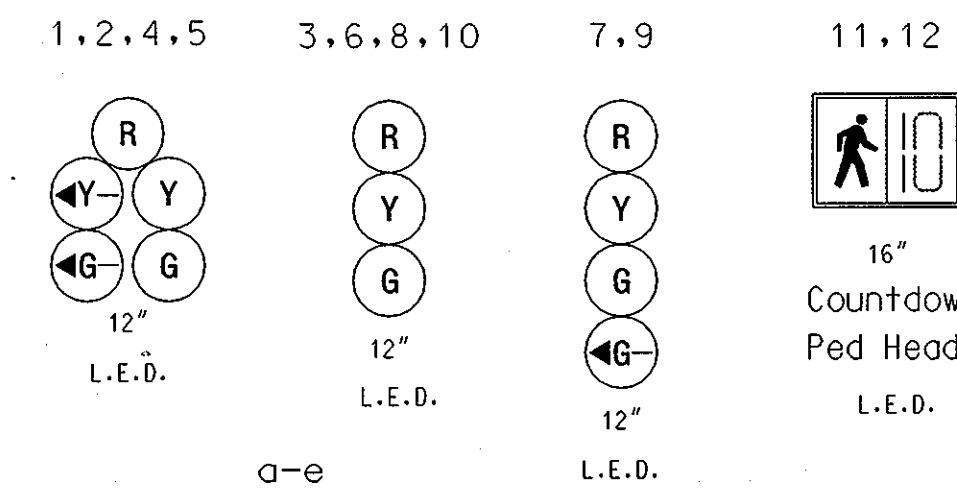
Marriottsville Rd. is considered to run in a North/South direction.

PROPOSED SIGNS

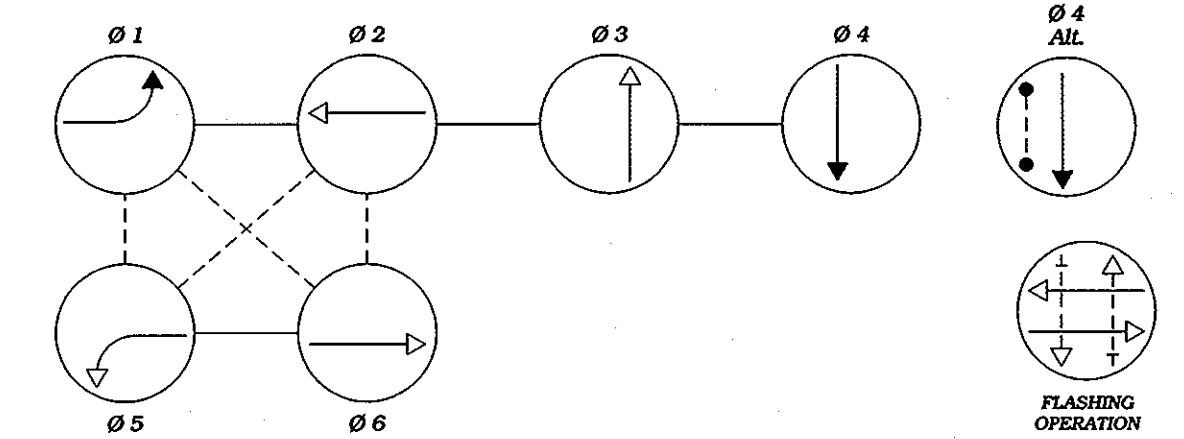


All overhead street signs are to use the Signfix mounting hardware

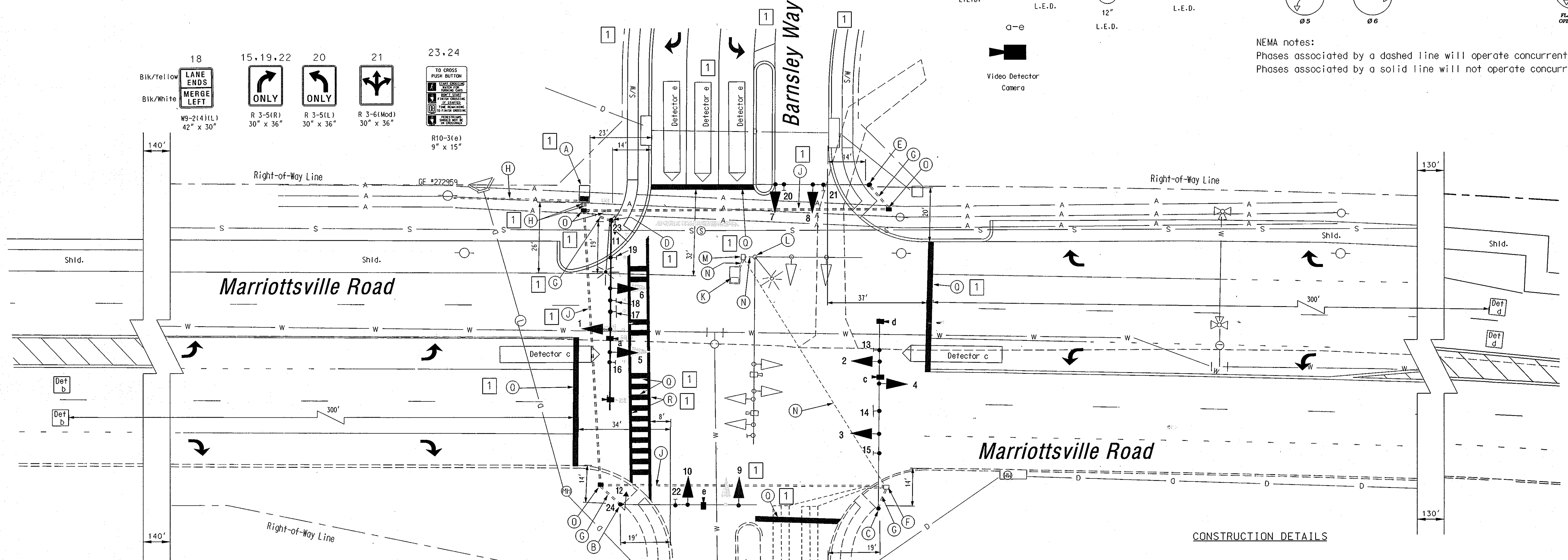
PROPOSED SIGNALS



PROPOSED NEMA PHASING



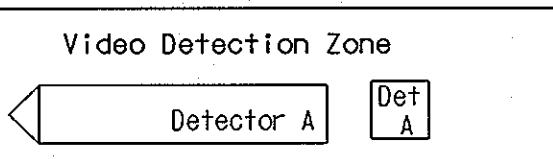
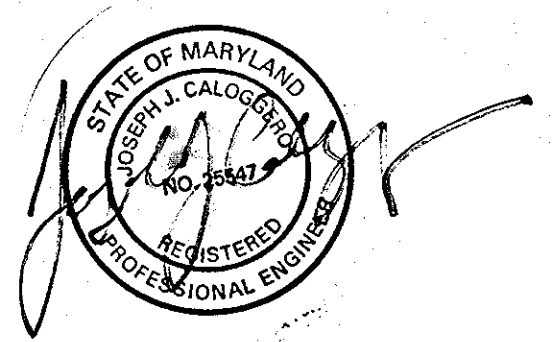
NEMA notes:
Phases associated by a dashed line will operate concurrently.
Phases associated by a solid line will not operate concurrently.



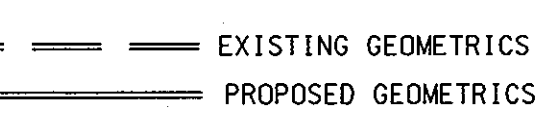
CONSTRUCTION DETAILS

- A. Install base mounted NEMA six cabinet/controller, and necessary equipment including a 36 in. x 36 in. x 4 in. concrete pad for battery back-up system.
- B. Install 27 ft. steel mast arm pole with 50 ft. mast arm, video detection camera, vehicle signal heads, signs, countdown pedestrian signal head, pedestrian pushbutton, and pedestrian pushbutton sign. (Note: one 3 in. PVC conduit bend).
- C. Install 27 ft. steel mast arm pole with 70 ft. mast arm, video detection cameras, vehicle signal heads, signs, (place near side camera on extension rod). (Note: one 3 in. PVC conduit bend).
- D. Install 27 ft. steel mast arm pole with 70 ft. mast arm, video detection cameras (place near side camera on extension rod) vehicle signal heads, signs, countdown pedestrian signal head, pedestrian pushbutton, pushbutton sign, 20 ft luminaire arm, and 250 watt HPS luminaire. (Note: one 3 in. PVC conduit bend).
- E. Install 27 ft steel mast arm pole with 50 ft mast arm, video detection camera, vehicle signal heads, sign (Note one 3 in PVC conduit bend).
- F. Use existing handhole. Splice existing loops to new 2-conductor aluminum shielded cable and re-route back to cabinet in new conduit.
- G. Install 3 in. polyvinyl chloride [Schedule 80] electrical conduit - trenched.
- H. Install 4 in. polyvinyl chloride [Schedule 80] electrical conduit - trenched.
- J. Install 4 in. polyvinyl chloride [Schedule 80] electrical conduit - bored.
- K. Remove existing cabinet and controller.
- L. Remove existing mast arm pole and all attached equipment.
- M. Remove existing handhole.
- N. Cap and abandon existing conduit.
- O. Install handhole.
- P. Save existing loop detector.
- Q. Install 24 in. wide white Thermoplastic Pavement Marking - for stop line and cross walk.
- R. Install 12 in. wide white Thermoplastic pavement marking - for crosswalk.

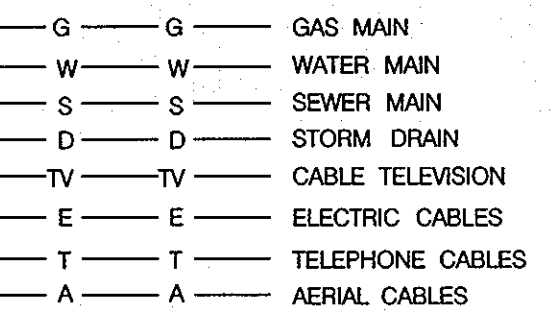
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 25547, Expiration Date: 9/25/10



GEOMETRIC LEGEND



UTILITY LEGEND



APPROVED: DEPARTMENT OF PUBLIC WORKS
Michael J. Mahall
 CHIEF, BUREAU OF HIGHWAYS DATE: 10-6-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. J. Sheehan
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 10/12/10

John Williams
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 10/2/10



DES: F. Hoeckel	F/JH	1	RED - LINE PLAN	852010
DRN: F. Hoeckel				
CHK: J. Dimdorfer				
DATE: 11/27/07	BY	NO.	REVISION	DATE

DEVELOPER PROJECT
F-07-032

TRAFFIC SIGNAL PLAN
REVISED
 Marriottsville Road at
 Warwick Way/Barnsley Way

SCALE:
 1" = 20'
 SHEET
 25 OF 43

EQUIPMENT LIST

Equipment to be furnished by the County, reimbursed by the Developer and installed by the Contractor.

Quantity	Units	Description
1	EA	Standard S.H.A. traffic signal controller, base mounted cabinet, video detection equipment, telemetry interface equipment, and one (1) four-channel loop detector amplifiers (Note: Controller and cabinet shall be purchased from Eonolite and delivered to the County signal shop for wiring and testing.)
4	EA	12 in., one-way, three section L.E.D. (R,Y,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnelvisors.
2	EA	12 in., one-way, four section L.E.D. (R,Y,G,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnelvisors.
4	EA	12 in., one-way, five section L.E.D. (R,Y,Y,G,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnelvisors.
2	EA	16 in., one-way, one section L.E.D. (Countdown indication) adjustable pedestrian signalhead with pole mounting hardware and cut-away visors.
5	EA	Video Detection Camera and cable. (1- 100 LF, 1- 200 LF, 1-300, 2- 400 LF)
2	EA	Pedestrian pushbutton assembly.

Equipment to be furnished and installed by the Contractor.
All equipment in this list shall have catalog cuts submitted for approval prior to installation.

Quantity	Units	Description
Lump Sum	LS	Mobilization.
Lump Sum	LS	Maintenance of traffic.
2	EA	27 ft. steel mast arm pole with a 70 ft. mast arm
2	EA	27 ft. steel mast arm pole with a 50 ft. mast arm.
2	EA	32 in. x Var. D-3(1) sign with mast arm signfix mounting hardware.
1	EA	30 in. x 36 in. R10-12 sign with mast arm mounting hardware.
1	EA	30 in. x 36 in. R 3-5(L) sign with mast arm mounting hardware.
3	EA	30 in. x 36 in. R 3-5(R) sign with mast arm mounting hardware.
1	EA	30 in. x 36 in. R 3-5 (Mod) sign with mast arm mounting hardware.
1	EA	9 in. x 15 in. R10-3(e) sign with mast pole mounting hardware.
1	EA	42 in. x 30 in. W-9-2(4)(R) sign with mast arm mounting hardware
1	EA	20 ft. luminaire arm.
1	EA	250 W H.P.S. lamp and luminaire.
5	CY	Test pit excavation.
3	EA	Handhole.
90	LF	1-conductor electrical cable (No. 4 A.W.G.).
115	LF	2-conductor electrical tray cable (No. 12 A.W.G.).
250	LF	2-conductor aluminum shielded cable (No. 14 A.W.G.).
375	LF	2-conductor electrical cable (No. 14 A.W.G.).
350	LF	5-conductor electrical cable (No. 14 A.W.G.).
1125	LF	7-conductor electrical cable (No. 14 A.W.G.).
175	LF	Green THWN copper ground wire (No. 6 A.W.G.).
50	LF	3 in. polyvinyl chloride [Schedule 80] electrical conduit - trenched.
50	LF	4 in. polyvinyl chloride [Schedule 80] electrical conduit - trenched.
330	LF	4 in. polyvinyl chloride [Schedule 80] electrical conduit - bored.
15.5	CY	Concrete foundation for traffic signal equipment.
5	EA	Ground rod - 3/4 in. diameter x 10 ft. length.
2	EA	Loop detector splice.
1	EA	Electrical utility service equipment (120/240 V, one phase, three wire system) for an underground electrical power service as per
1	EA	Remove and dispose of existing concrete foundation 12 inches below grade.
Lump Sum	LS	Remove and dispose of existing signal equipment.
375	EA	24 in. wide heat applied pavement marking - white for stop line
175	EA	12 in. wide heat applied pavement marking - white for crosswalk

PROJECT DESCRIPTION

I. GENERAL

This project involves the reconstruction of the existing traffic control signal at the intersection of Marriottsville Road and Warwick Way/Barnsley Way in Howard County, Maryland. Marriottsville Road is considered to run in a north/south direction.

II. INTERSECTION OPERATION

The intersection is to operate in a NEMA six (6) phase, full-traffic-actuated mode. There will be an exclusive/permissive left turn phases for both the north and southbound movements of Marriottsville Road. The Marriottsville Road through movements will operate concurrently. The Warwick Way/Barnsley Way movements will operate in a side street split phase mode with an actuated pedestrian movement across to south leg of the intersection.

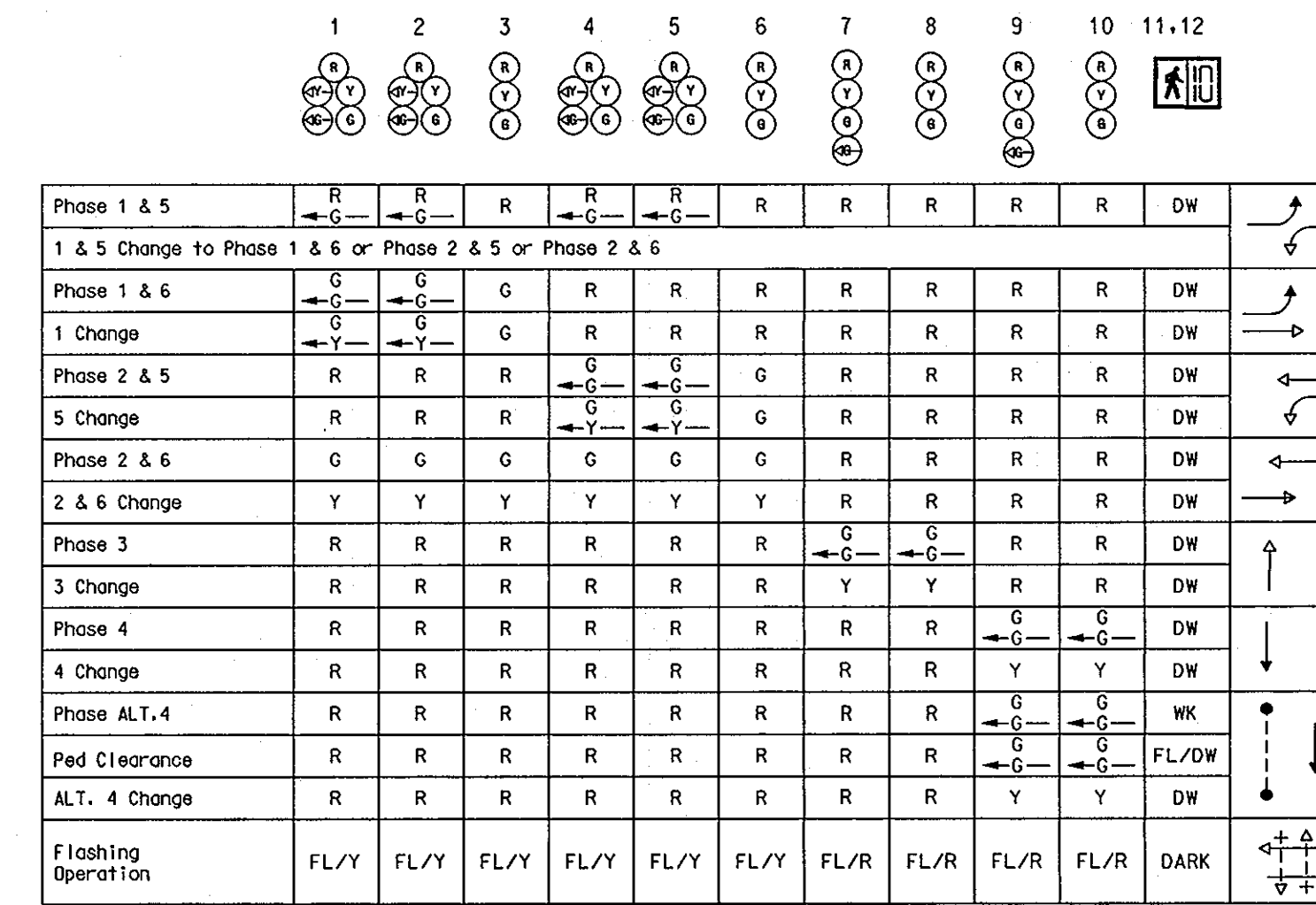
C.

Equipment to be furnished by the County, reimbursed by the developer and installed by the county.
UPS System

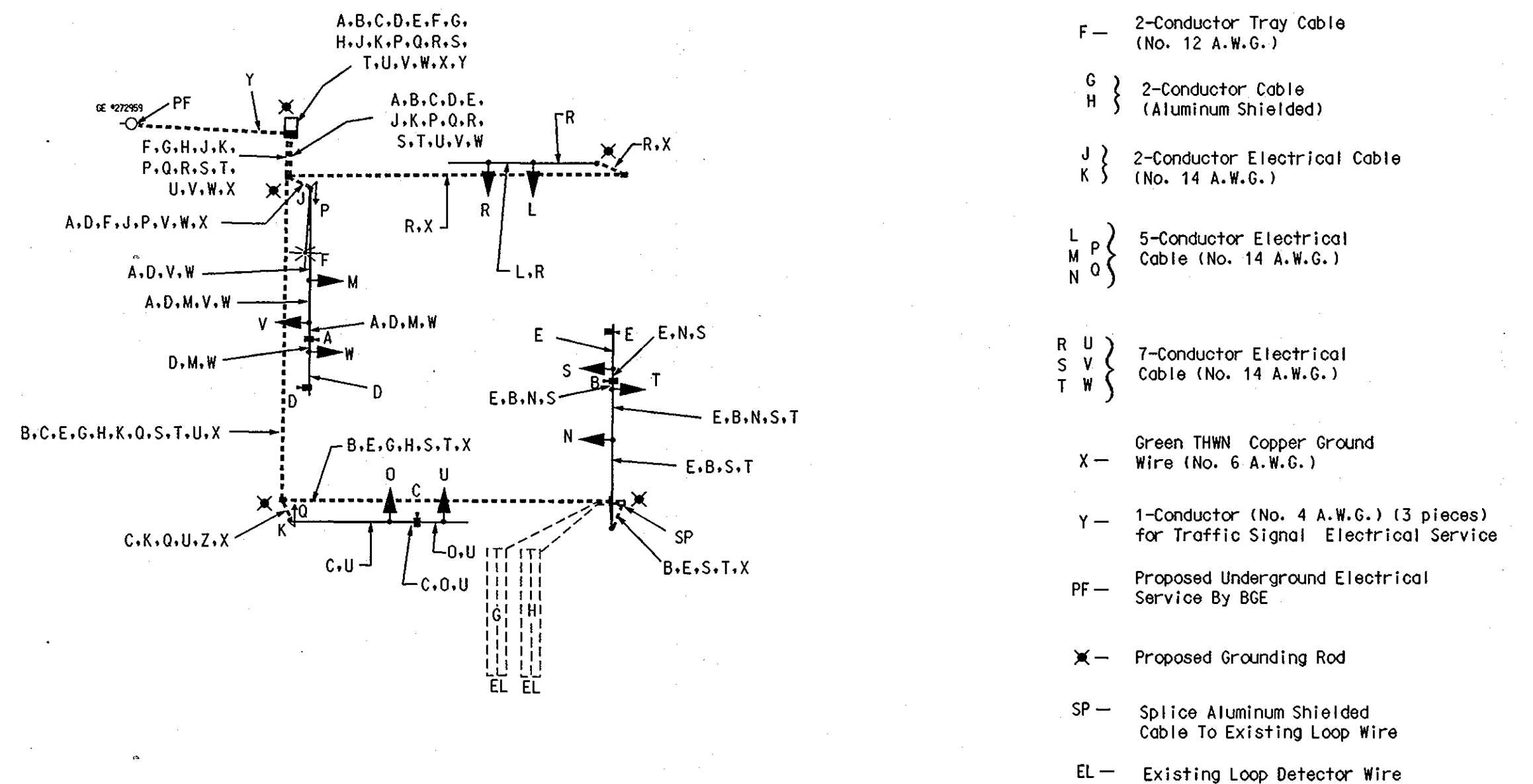
D. Equipment to be removed by the Contractor and returned to Howard County.

Quantity	Description
1	Mast arm pole and mast arm.
2	Video Detection camera
1	Cabinet and all attached equipment.

Phase Chart



Wiring Diagram



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 17243, Expiration Date: 2/7/09

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Chief Development Engineering Date: 6/24/09 Chief Bureau of Highways Date: 6-16-09	The Traffic Group Suite H 6000 Francis Square Dr. Baltimore, Maryland 410-931-6600 1-800-983-8411 Fax: 410-681-6601	STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER License No. 17243	DES: F. Hoekel	DEVELOPER PROJECT NO. F-07-032	GENERAL INFORMATION SHEET Marriottsville Road at Warwick Way/Barnsley Way	SCALE: NA
			DRN: F. Hoekel CHK: J. Dimdorfer DATE: 11/27/07			8/5/10 10/9/09

1:2004-2004-0510-Den Traffic Signal/Intersections - Warwick Way/Sp

SHEET REV. DATE: June 11, 2004

DRILL HOLES

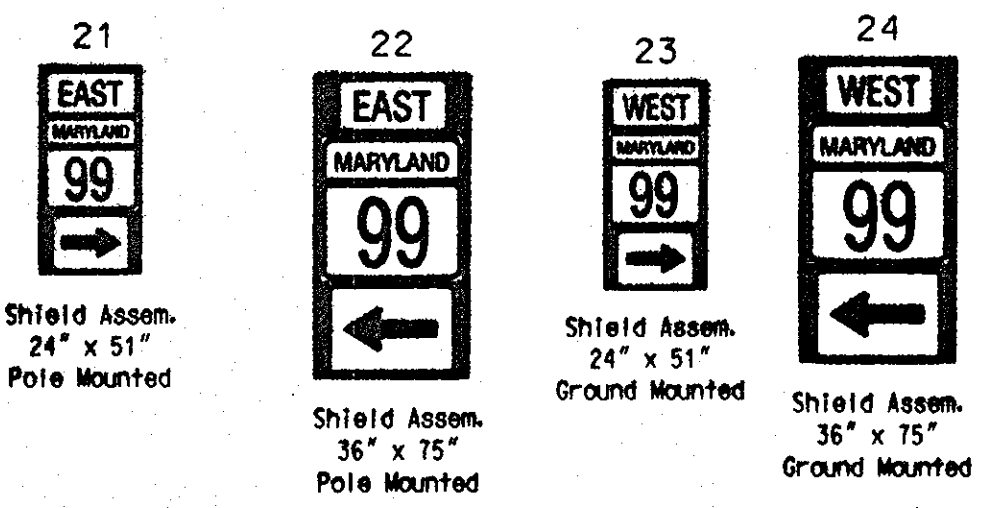
DRILL HOLES

DRILL HOLES

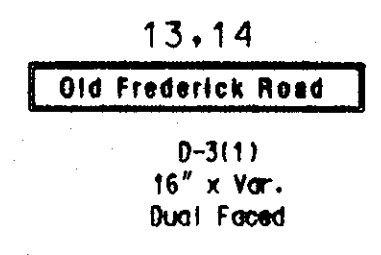
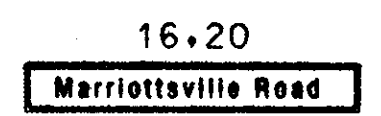
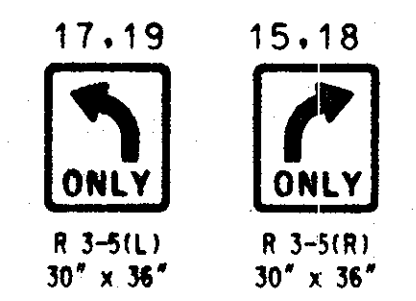


Marriottsville Road is considered to run in a North/South direction.

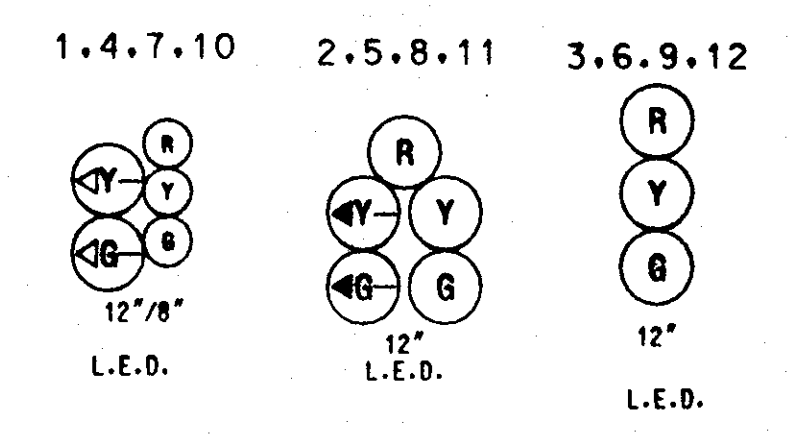
RELOCATE SIGNS



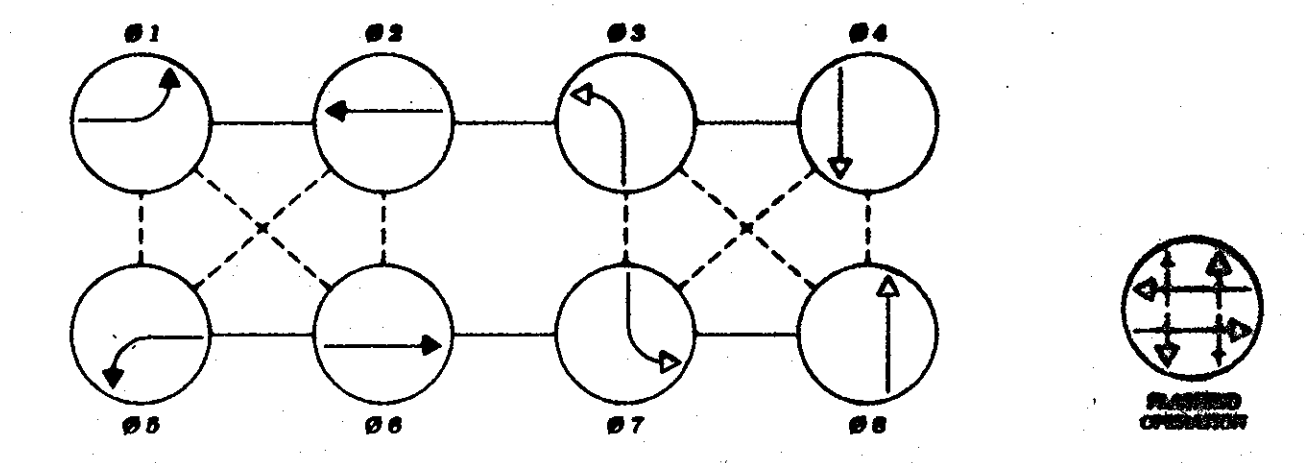
PROPOSED SIGNS



PROPOSED SIGNALS

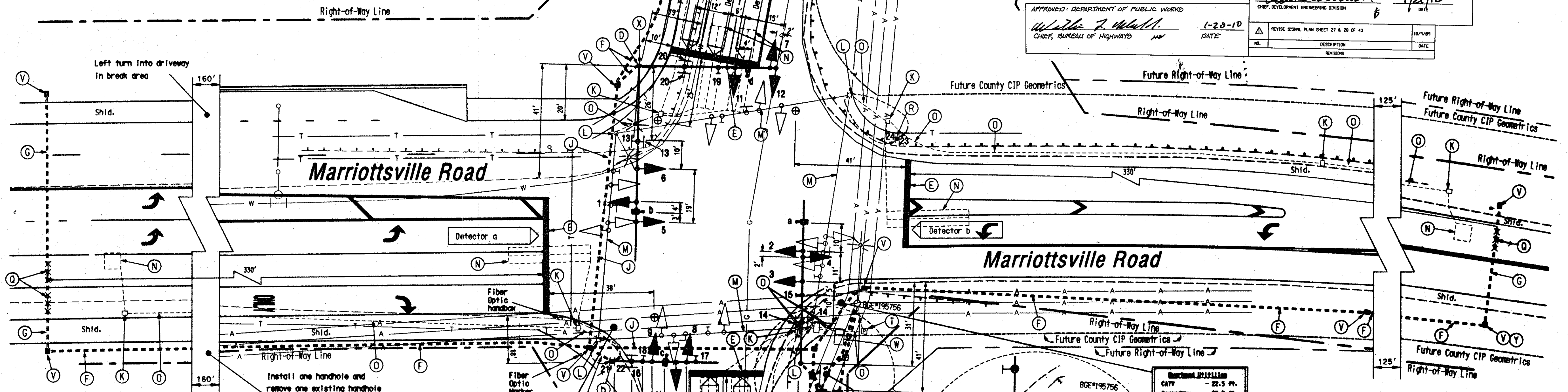


PROPOSED NEMA PHASING



NEMA notes:
Phases associated by a dashed line will operate concurrently.
Phases associated by a solid line will not operate concurrently.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: DEPARTMENT OF TRANSPORTATION
CHIEF, BUREAU OF HIGHWAYS
DATE: 1-29-10



CONSTRUCTION DETAILS

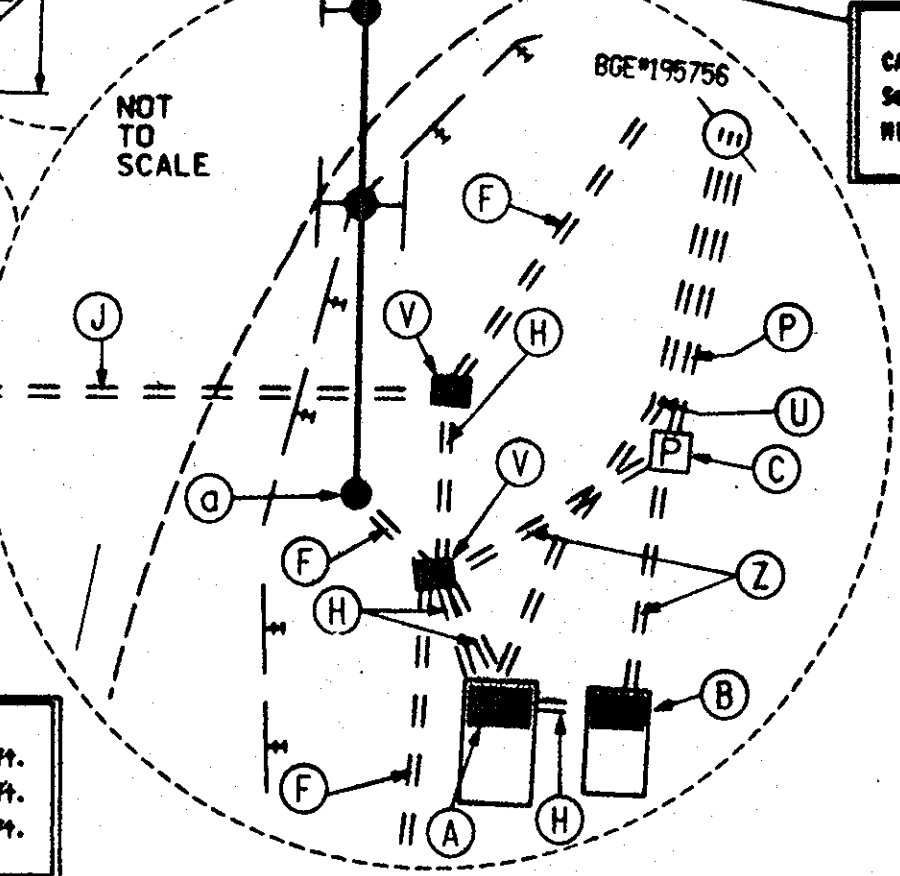
- A. Install base mounted NEMA six cabinet/controller and necessary equipment.
- B. Install base mounted NEMA five cabinet and relocate UPS equipment.
- C. Install metered service pedestal for underground electrical service per MD-SHA Typical 807.05-01.
- D. Install a 27 ft. steel twin mast arm pole with a 70 ft. and a 50 ft. mast arm, video camera detection vehicle signal heads, signs, 20 ft. luminaire arm, and 250 watt HPS luminaire (Note: one 3 in. PVC conduit bend).
- E. Install 24 in. wide Thermoplastic pavement marking - white for stop line.
- F. Install 3 in. polyvinyl chloride [Schedule 80] electrical conduit - trench.
- G. Install 3 in. polyvinyl chloride [Schedule 80] electrical conduit - bored.
- H. Install 4 in. polyvinyl chloride [Schedule 80] electrical conduit - trench.
- I. Install 4 in. polyvinyl chloride [Schedule 80] electrical conduit - bored.
- J. Remove existing handhole.
- K. Remove existing strain pole and all attached equipment and relocate signs as shown.
- L. Remove existing span wire.
- M. Abandon existing loop detectors.
- N. Cap and abandon existing conduit.
- O. Install 4 in. conduit with pull string for an underground electrical service by BGE.
- P. Install (non-invasive) micro-loop probe (set of 3).
- R. Install ground mounted sign.
- S. Install 3 in. polyvinyl chloride [Schedule 80] electrical conduit - slotted in roadway.
- T. Remove existing electrical service pedestal.
- U. Install 2 in. polyvinyl chloride [Schedule 80] electrical conduit for phone line.
- V. Install handhole.
- W. Remove existing cabinet. Relocate existing UPS equipment to new cabinet.
- X. Leave additional slack in cable for future adjustment of traffic signal heads.
- Y. Leave additional slack in cable for future adjustment to probe. (Approx. 25 ft. per cable)
- Z. Install 2 in. polyvinyl chloride [Schedule 80] electrical conduit - trench.
- a. Install 21 ft. (cut from a 27 ft.) steel mast arm pole with a 60 ft. mast arm, video camera detection, vehicle signal heads, and signs (Note: one 3 in. PVC conduit bend).
- b. Install 21 ft. (cut from a 27 ft.) steel mast arm pole with a 38 ft. mast arm, video camera detection, vehicle signal heads, and signs (Note: one 3 in. PVC conduit bend). Contractor to insure a minimum 10 ft. pole base in ground. Pole base may require small extension due to grade difference.

GEOMETRIC LEGEND
--- EXISTING GEOMETRICS
--- PROPOSED GEOMETRICS

UTILITY LEGEND
--- GAS MAIN
--- WATER MAIN
--- SEWER MAIN
--- ELECTRIC CABLES
--- STORM DRAIN
--- AERIAL CABLES
--- TELEPHONE CABLES

Overhead Utilities
Secondary - 20.0 ft.
High Voltage - 27.5 ft.

Overhead Utilities
CATV - 20.5 ft.
Secondary - 26.0 ft.
High Voltage - 29.5 ft.



GENERAL NOTES

- 1. Video camera location/aligning shall be coordinated with the SHA Engineer.
- 2. The contractor shall verify proposed pole and cabinet locations prior to installation. Pavement markings shall be proposed and are to be installed by the Contractor in accordance with the standards. All other pavement markings are to be considered as existing.
- 3. Geometrics shall be confirmed prior to the installation of signal equipment. All traffic signal foundations shall be installed at final sidewalk or curb grade for closed sections, highest roadway profile grade for open sections, to meet clearances as specified in MD 816.03, MD 816.01, MD 816.02, MD 816.04. The contractor shall verify ultimate grade prior to the installation of all signal equipment.
- 5. All underground and overhead utilities shown on these plans are schematic and are not to be considered complete. The Contractor shall be responsible for notifying all utility companies prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal equipment will occur, the Contractor shall notify the appropriate Project Engineer immediately.
- 6. All luminaires shall be applied with a protocol.
- 7. All unused cable shall be removed.

NOTE
These plans are approved for construction for a period of one (1) year from the date of approval. Should construction not begin within this time frame these plans shall be null and void without a re-review from the Traffic Engineering Design Division.

OWNER/DEVELOPER
UNIVERSITY MOORS DEVELOPMENT CORP.
% LAND DESIGN AND DEVELOPMENT, INC.
6300 DORSET HALL DRIVE, SUITE 102
ELLICOTT CITY, MARYLAND 21042
(443) 367-0422

The Traffic Group, Inc.
Suite F1
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-583-8411
Fax 410-931-6601

APPROVALS	REVISIONS
TEAM LEADER	1. Reconstruct signal due to road widening S.H.A. No. 18992882
ASST. DIV. CHIEF	2. Add UPS
DIVISION CHIEF	3. Add E/P phasing for E/W/W/S S.H.A. No. 18735185
OFFICE DIRECTOR	

SHA STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 99 (Old Frederick Road) at Marriottsville Road

TRAFFIC SIGNAL PLAN			
SCALE: 1" = 20'	DATE: 1/17/1983	CONTRACT NO. MW-623-0507-789	
DESIGNED BY: T. Zoydell	COUNTY: Howard		
DRAWN BY: T. Zoydell	LOOMLE: 1300902.87		
CHECKED BY: T. Zoydell	T.I.M.S. NO.: 1-770		
F.A.P. NO.: N/A	TOD NO.:		
DRAWING NO.: TS 1891F	SHEET NO.: 27 OF 43		

F-07-032

PROJECT DESCRIPTION

I. GENERAL

This project involves the reconstruction of the existing traffic control signal at the intersection of Marriottsville Road and MD 99 (Old Frederick Road) in Howard County, Maryland. Marriottsville Road is considered to run in a north/south direction.

II. INTERSECTION OPERATION

The intersection is to operate in a NEMA eight (8) phase, full-traffic-actuated mode. There will be exclusive/permissive left turn phases for both the north and southbound movements of Marriottsville Road. The Marriottsville Road through movements will operate concurrently. There will be an exclusive/permissive left turn phase for both the east and westbound movements of MD 99 (Old Frederick Road). The MD 99 (Old Frederick Road) through movements will operate concurrently.

An eight phase, full-traffic-actuated, solid state digital controller with intersection monitor and harness, battery back-up, video detection equipment, and (2) four-channel loop mounted time delay output loop detector amplifiers housed in a base mounted cabinet are to be installed at this location.

III. SPECIAL NOTES:

The Contractor shall notify Mr. Robert Snyder of SHA at 410-787-7635 to arrange for the phone drop installation.

The Contractor is to provide Mr. Snyder with the nearest street number, zip code, and telephone number.

CONTACT LIST

The contact persons for District #7 are as follows:

Mr. John Concannon
District Engineer - Traffic
301-624-8140

Mr. Andrea Abend
District Utility Engineer
301-624-8115

Mr. Raymond F. Johnson
Assistant District Engineer - Maintenance
301-624-8105

Mr. Richard L. Daff
Chief, Traffic Operations Division
410-787-7630

Mr. Edward Rodenizer
Supervisor, Signal Operations
410-787-7652

The Power Company Representative is:
Baltimore Gas and Electric Company
7317 Parkway Drive South
Hanover, Maryland 21076
410-859-9070

WMS # 000186969

EQUIPMENT LIST

A. S.H.A. furnished equipment material.

None.

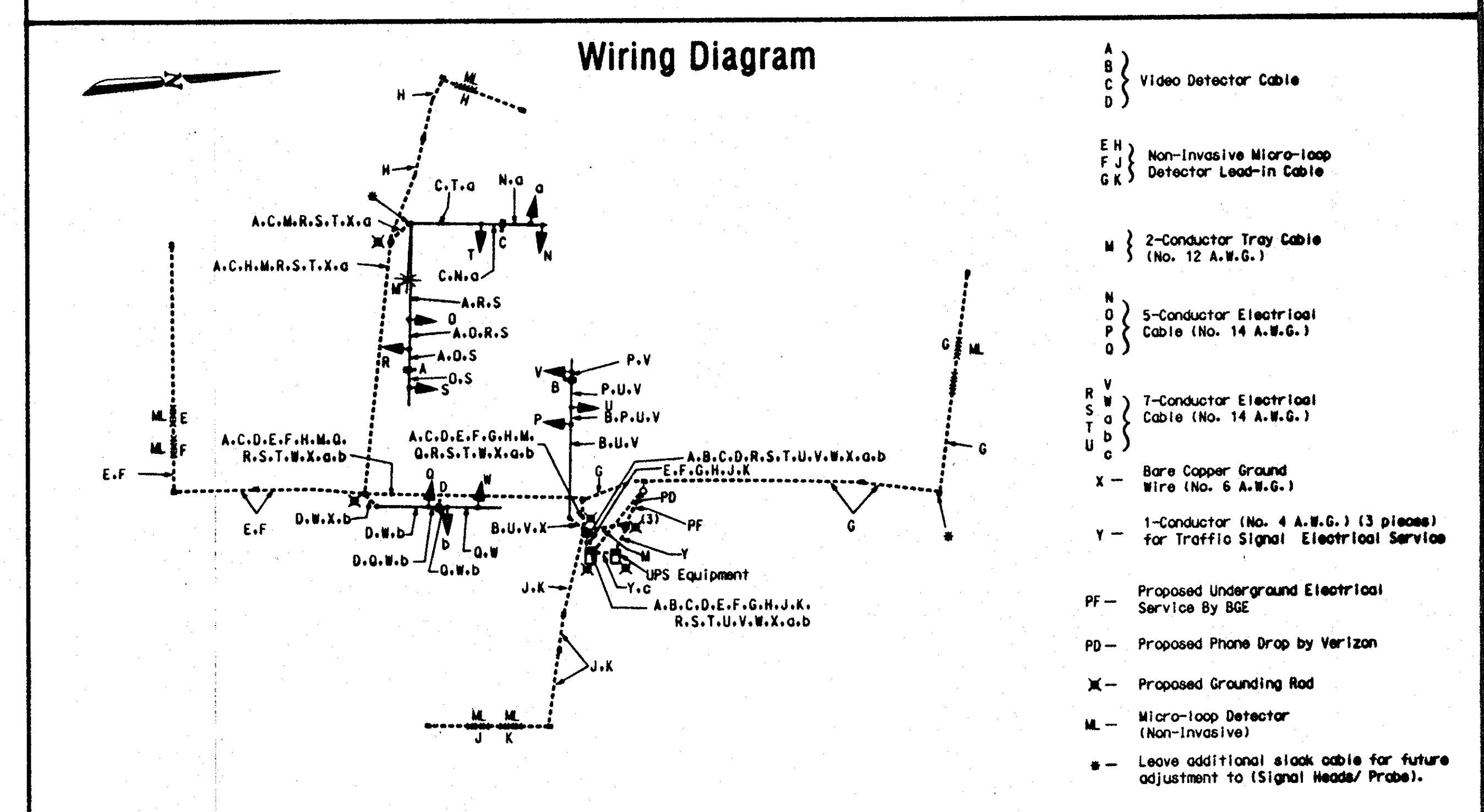
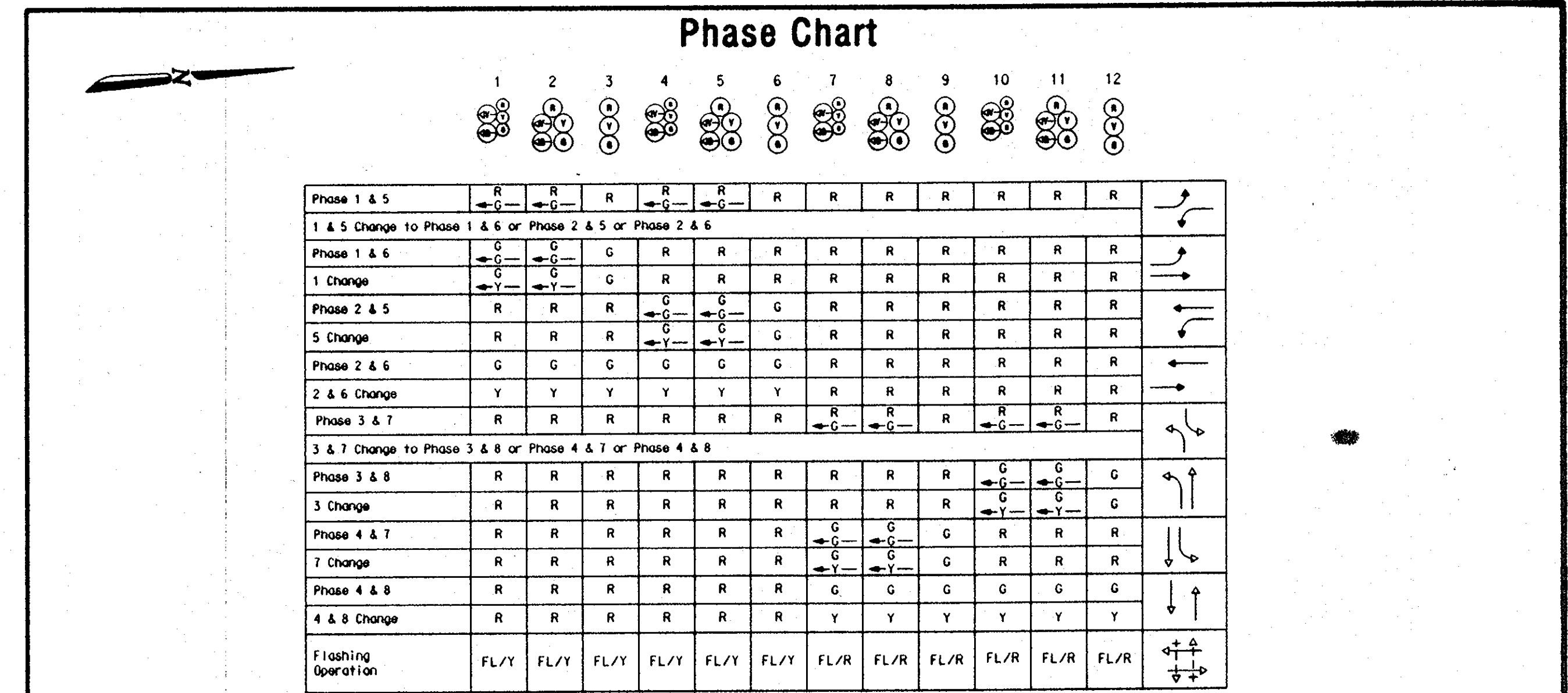
B. Equipment to be furnished and installed by the Contractor.

All equipment in this list shall have catalog cuts submitted for approval prior to installation.

Quantity	Units	Description	Quantity	Units	Description
Lump Sum	LS	Mobilization.	4	CY	Test pit excavation.
Lump Sum	LS	Maintenance of traffic.	18	EA	Handhole.
2	EA	27 ft. steel main mast arm pole with a 70 ft. and 50 ft. mast arms	75	LF	1-conductor electrical cable (3 wire) (No. 4 A.W.G.).
1	EA	27 ft. steel mast arm pole with a 60 ft. mast arm	375	LF	2-conductor electrical tray cable (No. 12 A.W.G.).
1	EA	27 ft. steel mast arm pole with a 36 ft. mast arm.	100	LF	5-conductor electrical cable (No. 14 A.W.G.).
1	EA	Standard S.H.A. traffic signal controller, base mounted cabinet, video detection equipment, and two (2) four-channel loop detector amplifiers (Note: Controller and cabinet shall be purchased from Econote and delivered to the S.H.A. signal shop for wiring and testing. Contact Mr. Ed Rodenizer (410) 787-7650).	1500	LF	7-conductor electrical cable (No. 14 A.W.G.).
1	EA	SHA NEMA 5 traffic signal cabinet for UPS equipment.	125	LF	Bare copper stranded ground wire (No. 6 A.W.G.).
4	EA	12 in., one-way, three section L.E.D. (R,Y,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnel visors.	75	LF	2 in. polyvinyl chloride (Schedule 80) electrical conduit - trenched.
4	EA	12 in., one-way, five section L.E.D. (R,Y,G,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnel visors.	1840	LF	3 in. polyvinyl chloride (Schedule 80) electrical conduit - trenched.
4	EA	12 in., one-way, five section L.E.D. (12 in. YA, GA/ 8 in. R,Y,G) adjustable black faced traffic signalhead with mast arm mounting hardware and tunnel visors.	135	LF	3 in. polyvinyl chloride (Schedule 80) electrical conduit - bored.
4	EA	Terra Video Detection Camera.	75	LF	3 in. polyvinyl chloride (Schedule 80) electrical conduit slotted in roadway.
1800	LF	Terra Video Detection Camera Cable (No. 18 A.W.G.).	60	LF	4 in. polyvinyl chloride (Schedule 80) electrical conduit - trenched.
4	EA	16 in. x Var. D-3(1) (Dual Faced) sign with mast arm mounting hardware.	245	LF	4 in. polyvinyl chloride (Schedule 80) electrical conduit - bored.
2	EA	30 in. x 36 in. R 3-5(L) sign with mast arm mounting hardware.	18.5	CY	Concrete foundation for traffic signal equipment.
2	EA	30 in. x 36 in. R 3-5(R) sign with mast arm mounting hardware.	8	EA	Ground rod - 3/4 in. diameter x 10 ft. length.
6	EA	Non-invasive probe (set of 3) with 1000 ft. lead-in cable.	1	EA	Electrical utility service equipment (120/240 V. one phase, three wire system) for an underground electrical power service as per MD-SHA Typical No. 807.05-01 (200 amp. electrical pedestal).
1	EA	20 ft. luminaire arm.	24	EA	24 in. wide HAPPTM - white for stop line.
1	EA	250 W H.P.S. lamp and luminaire.	2	EA	Cut, clean, and cap mast arm pole.
			5	EA	Remove and dispose of existing concrete foundation 12 inches below grade.
			2	EA	Relocate existing ground mounted sign.
			2	EA	Relocate existing pole mounted signs.
			15	LF	4 in. x 6 in. wood sign supports.
Lump Sum	LS	Remove and dispose of existing signal equipment.			

C. SHA forces shall remove the controller and all auxiliary equipment from the controller cabinet. The cabinet and all other materials to be removed by the contractor shall become the property of the contractor.

Quantity	Units	Description
1	EA	base mounted cabinet and controller.



APPROVED: DEPARTMENT OF PUBLIC WORKS
W. J. McMill
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 1-20-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
V. J. Johnson
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1/20/10

REVISION ENGINEERING DIVISION
John Johnson
 DATE: 1/20/10

REVISION SIGNAL PLAN SHEET 27 & 28 OF 43
 NO. DESCRIPTION DATE

SHA STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 OFFICE OF TRAFFIC & SAFETY
 TRAFFIC ENGINEERING DESIGN DIVISION

MD 99 (Old Frederick Road) at Marriottsville Road

GENERAL INFORMATION PLAN

SCALE: N/A DATE: Oct. 4, 2009 CONTRACT NO.: BW990462

DESIGNED BY: Frank Hoeckel COUNTY: Howard
 DRAWN BY: Frank Hoeckel LOGMILE: 1300902.87
 CHECKED BY: T. J. M. S. NO.: 1-770
 F.A.P. NO.: N/A TOD NO.:

TS NO. TS GI-1891F SHEET NO. 28 OF 43

The Traffic Group, Inc.
 Suite H
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-931-6600
 1-800-583-8411
 Fax 410-931-6601

NOTE

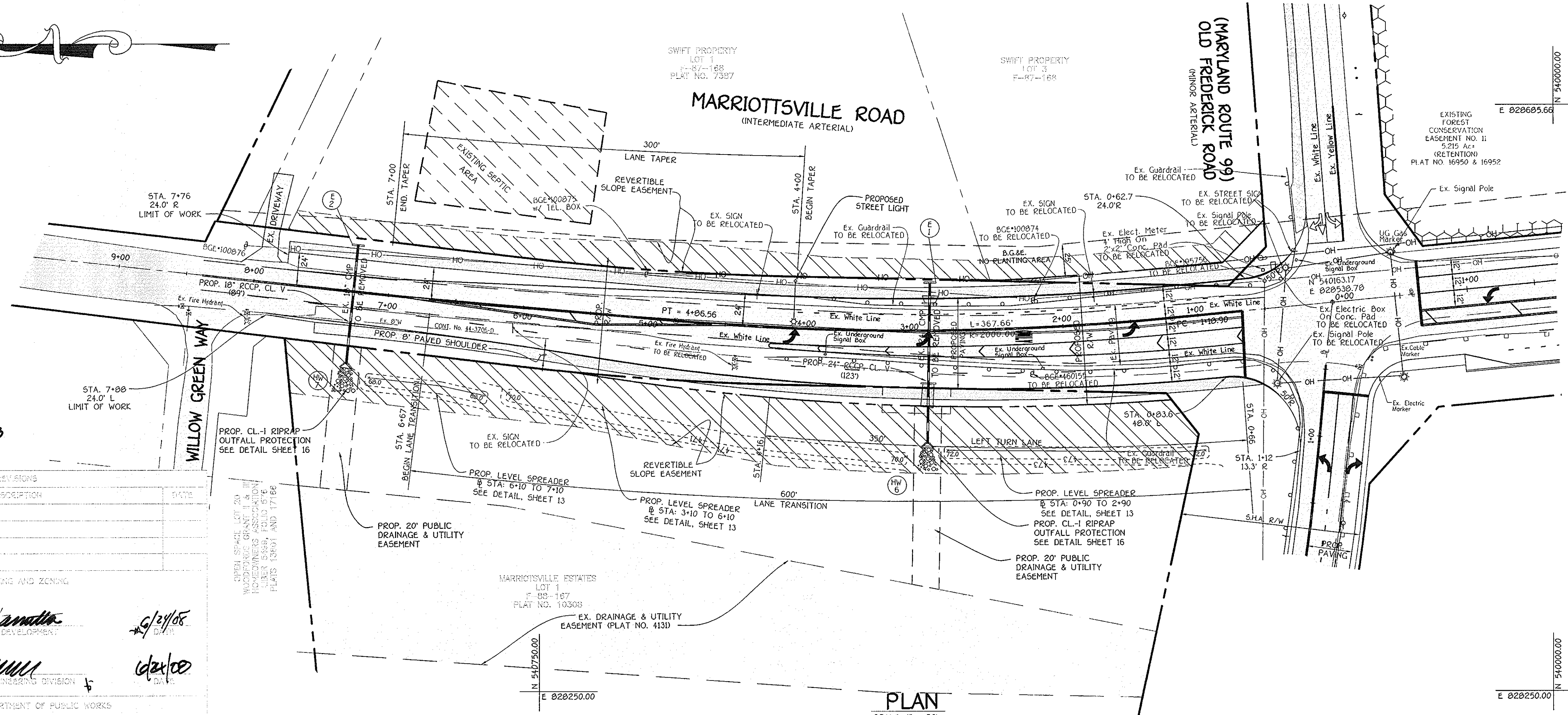
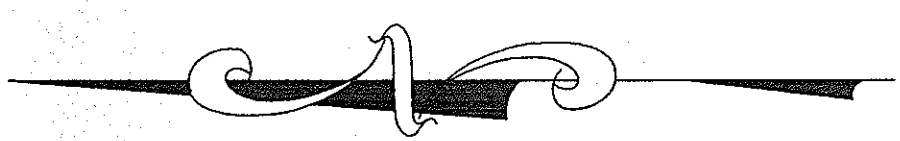
These plans are approved for construction for a period of one (1) year from the date of approval. Should construction not begin within this time frame these plans shall be null and void without a re-review from the Traffic Engineering design Division.

OWNER / DEVELOPER
 WALTERLY WOODS DEVELOPMENT CORP.
 616 LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

DRILL HOLES

DRILL HOLES

DRILL HOLES



NOTES: 1. FOR CONTINUATION OF MARRIOTTVILLE ROAD, SOUTH OF OLD FREDERICK ROAD & OLD FREDERICK ROAD IMPROVEMENTS, SEE SHEET 2
2. SEE SHEET 17 FOR STRIPING PLAN AND PROPOSED SIGNAGE.

NO.	REVISIONS	DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hamilton 6/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter Z. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS

GTW'S WAVERLY WOODS APFO MITIGATION PLAN
 ZONED: P5C
 TAX MAP No. 16 PART OF PARCEL No. 20
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

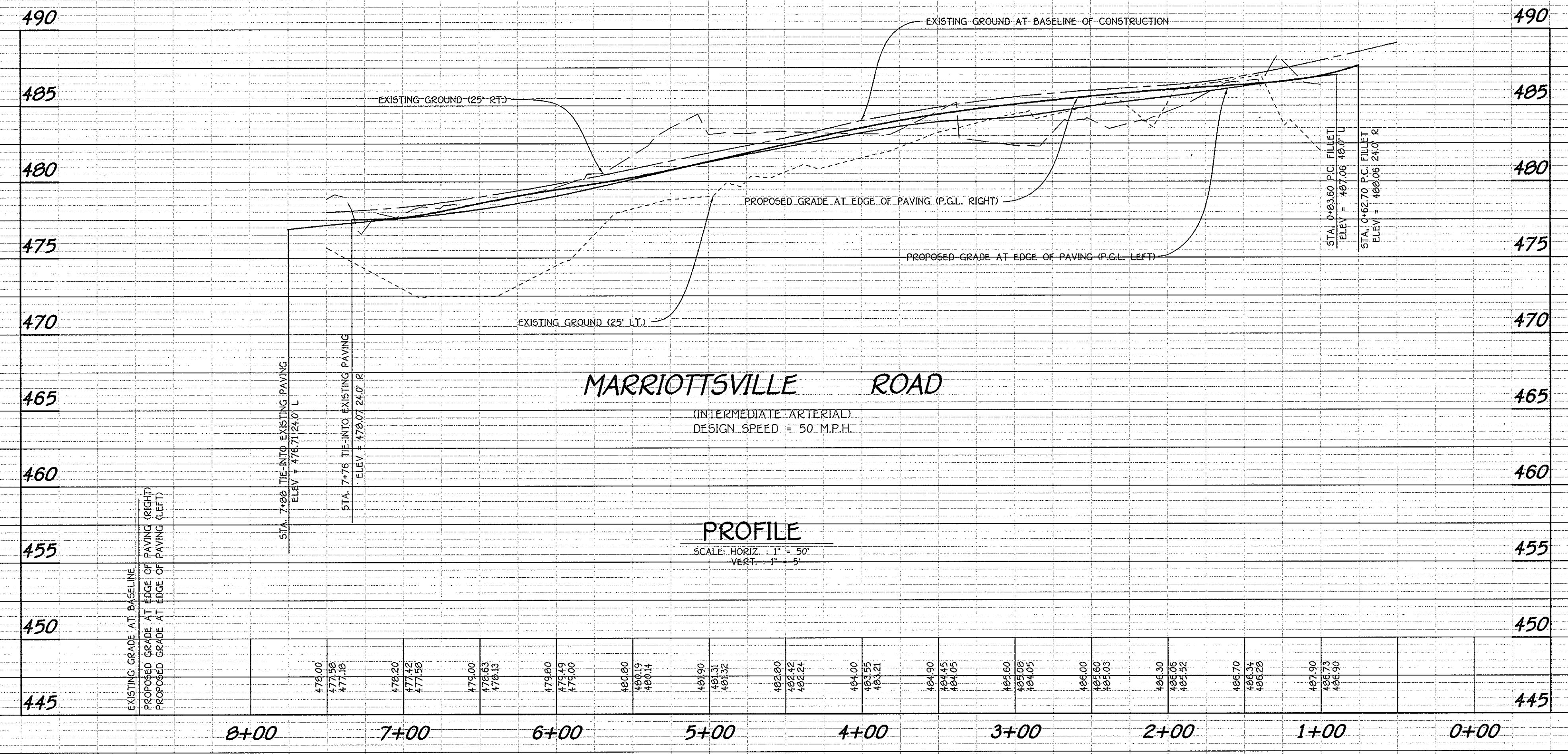
MARRIOTTVILLE ROAD WIDENING (NORTH OF OLD FREDERICK ROAD)
 PLAN AND PROFILE
OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 C/O LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSET HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (410) 367-0422

SCALE: AS SHOWN DATE: JUNE 2, 2008 DRAWING NO. 29 OF 41
 AMV. J.C.L. AMV.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 10000 WOODBINE DRIVE, SUITE 1000, GREENBELT, MARYLAND 21740
 (301) 441-1000

MARRIOTTVILLE ROAD
 @ CURVE DATA
 STA. 1+83.90 TO STA. 1+86.56
 RADIUS = 2000.00' R
 ARC LENGTH = 367.66'
 TAN = 184.35'
 DELTA = 10°31'57"
 CHORD = 640.16' @ 367.14'

PLAN
 SCALE: 1" = 50'



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

ENGINEER'S CERTIFICATE
 I hereby certify that this Plan For Erosion And Sediment Control
 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.

Signature: *[Signature]* Date: 6-2-08

DEVELOPER'S CERTIFICATE
 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.

Signature Of Developer: *[Signature]* Date: 6/2/08

Reviewed For Howard County Soil Conservation District And
 Technical Requirements: *[Signature]* Date: *[Signature]*

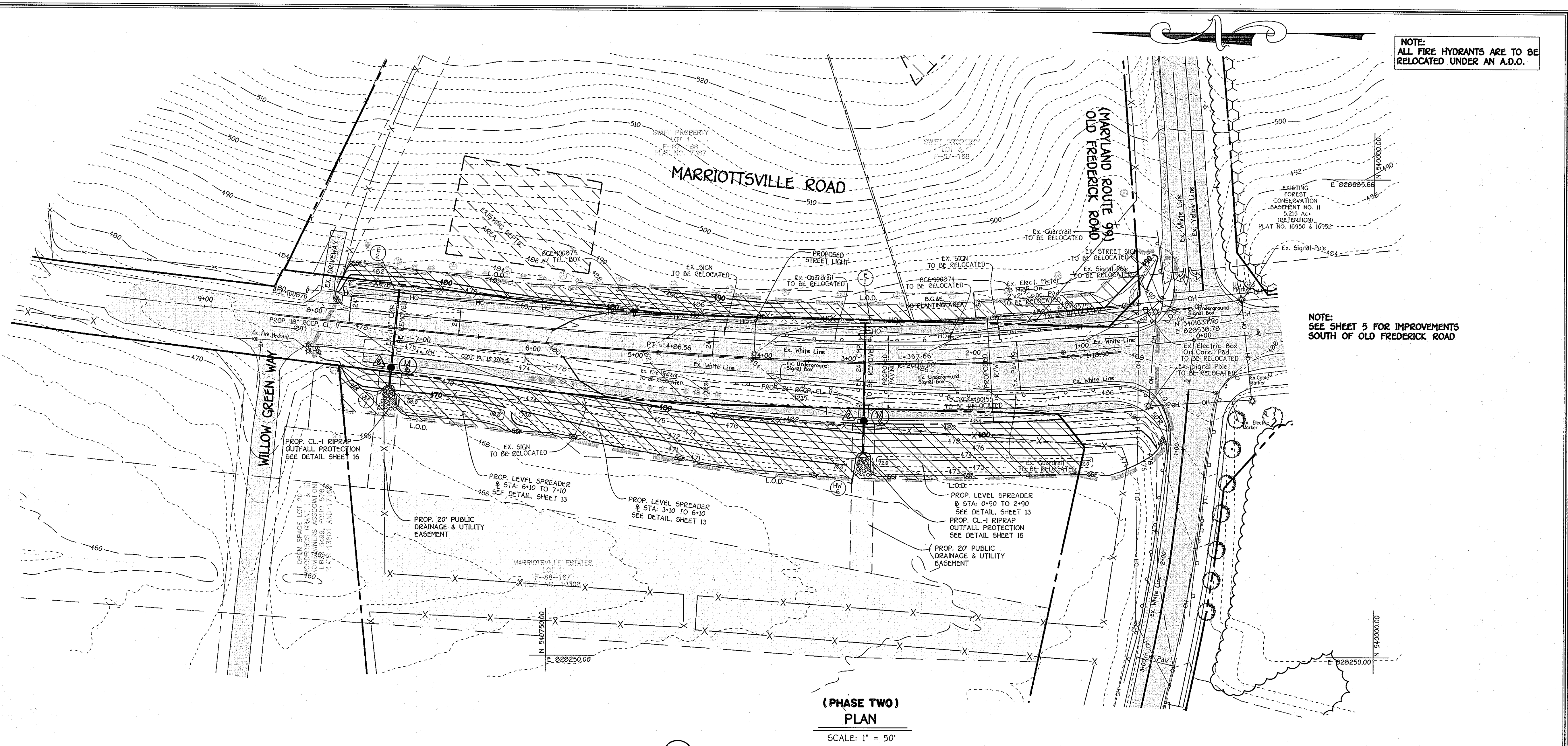
U.S.D.A. - Natural Resources Conservation Service Date: *[Signature]*

Approved: This Development Is Approved For Erosion And Sediment Control By
 The Howard Soil Conservation District.
 District Howard Soil Conservation Dist. Date: *[Signature]*

Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development Date: *[Signature]*

Chief, Development Engineering Division Date: *[Signature]*

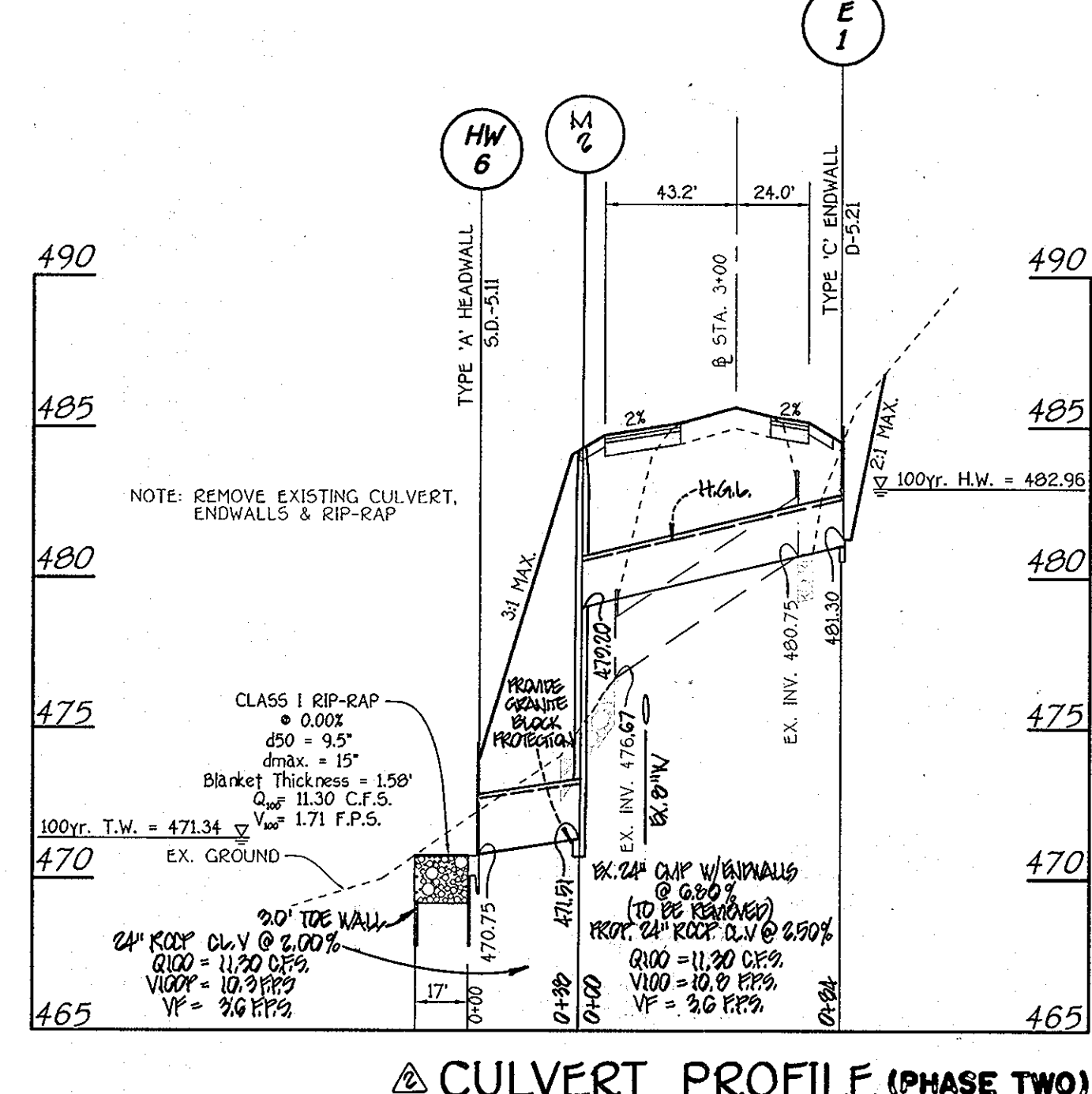
Approved: Howard County Department Of Public Works
 Chief, Bureau Of Highways Date: 6-16-08



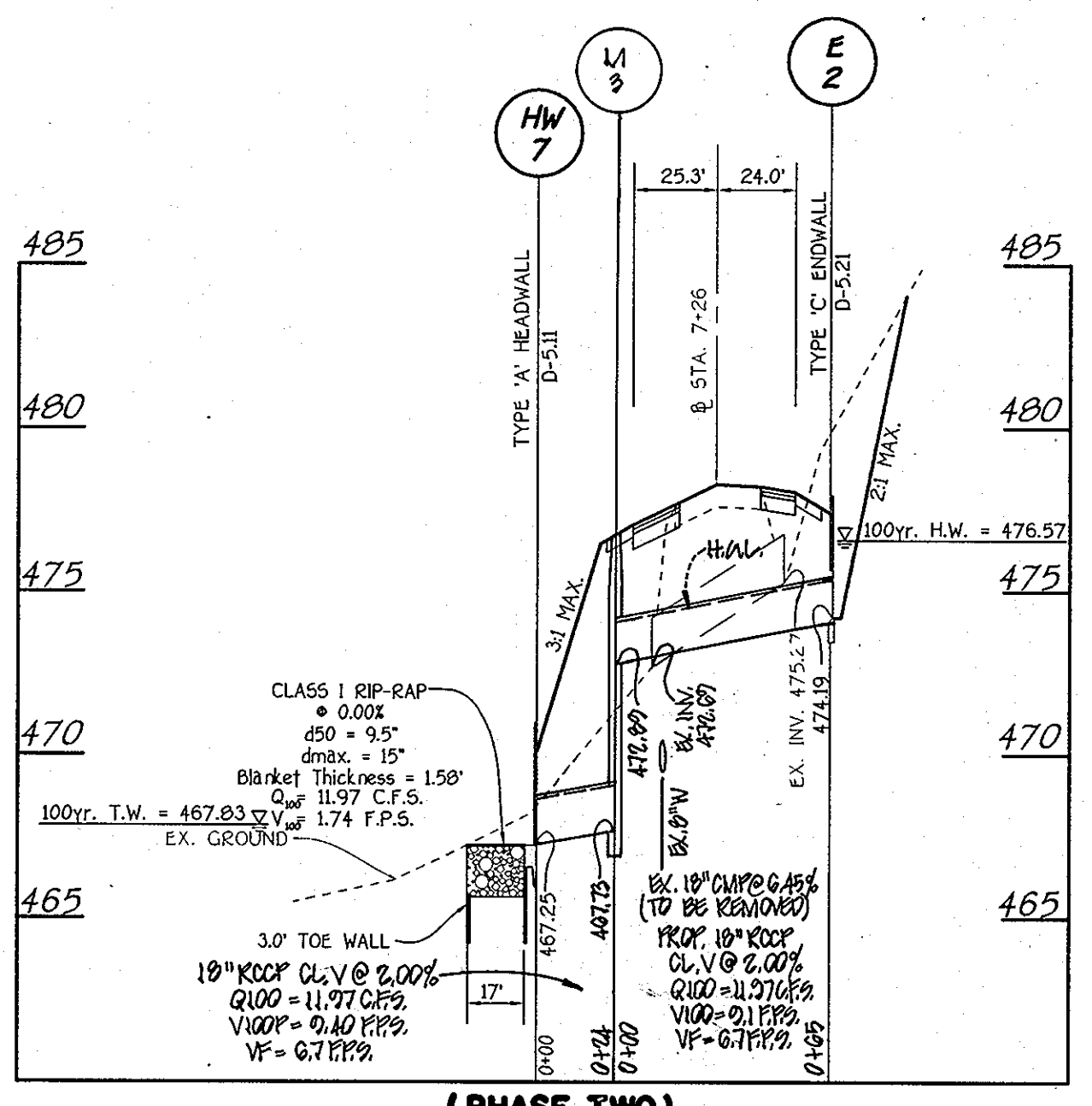
(PHASE TWO)
 PLAN
 SCALE: 1" = 50'

STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	± ROAD STA.	OFFSET	TYPE	REMARKS
E-1	484.05	---	481.30	MARIOTTVILLE ROAD	STA. 3+00	35' R	TYPE 'C' ENDWALL	D-5.21
HW-6	474.25	470.75	---	MARIOTTVILLE ROAD	STA. 3+00	84' L	TYPE 'A' HEADWALL	D-5.11
E-2	476.44	---	474.19	MARIOTTVILLE ROAD	STA. 7+26	35' R	TYPE 'C' ENDWALL	D-5.21
HW-7	470.25	467.25	---	MARIOTTVILLE ROAD	STA. 7+26	54' L	TYPE 'A' HEADWALL	D-5.11

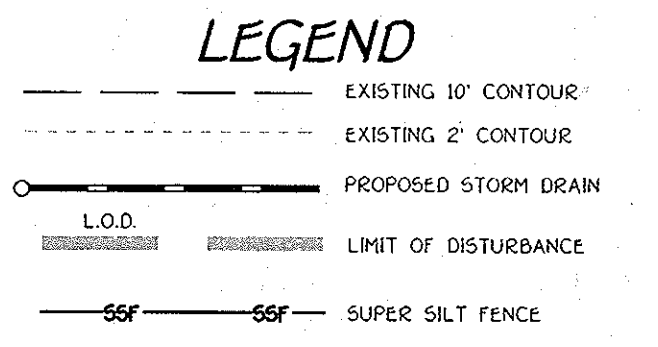
SIZE	CLASS	LENGTH
18"	RCCP, CL. V	99'
24"	RCCP, CL. V	102'



(PHASE TWO)
 CULVERT PROFILE
 SCALE: HORIZ. : 1" = 50'
 VERT. : 1" = 5'



(PHASE TWO)
 CULVERT PROFILE
 SCALE: HORIZ. : 1" = 50'
 VERT. : 1" = 5'



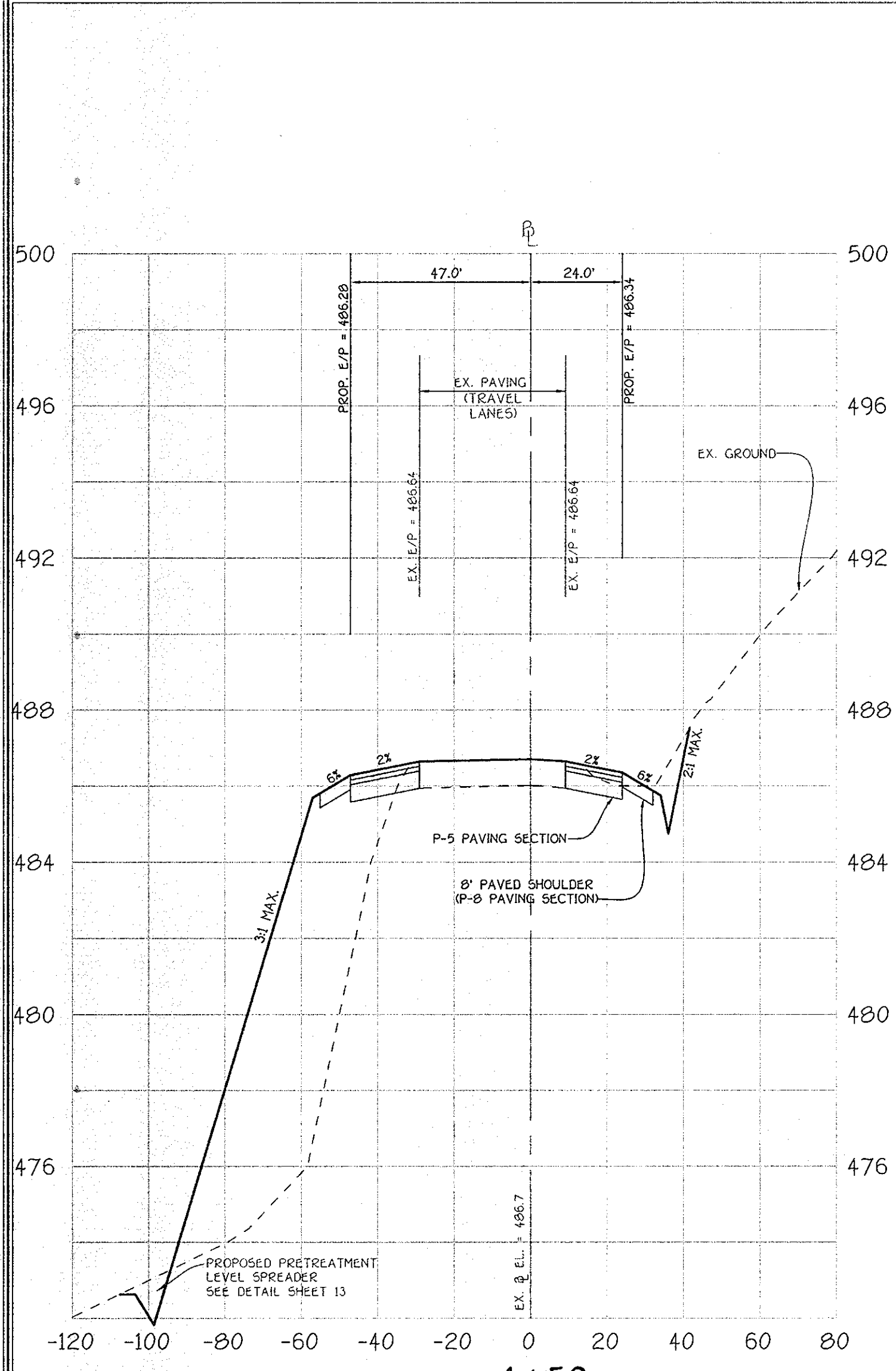
(PHASE TWO)
 MARIOTTVILLE ROAD
 WIDENING-GRADING & SEDIMENT CONTROL PLAN
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 30 OF 43

No.	DESCRIPTION	DATE
1	REMOVE STORM DRAIN PROFILES TO AVOID CONFLICT WITH THE EXISTING WATER LINE. REMOVE 24" PIPE LENGTH	11/21/10
2	ADDED PHASE ONE STRIPING ALONG MARIOTTVILLE ROAD AND ADDED SHEETS 42 & 43	10/9/09

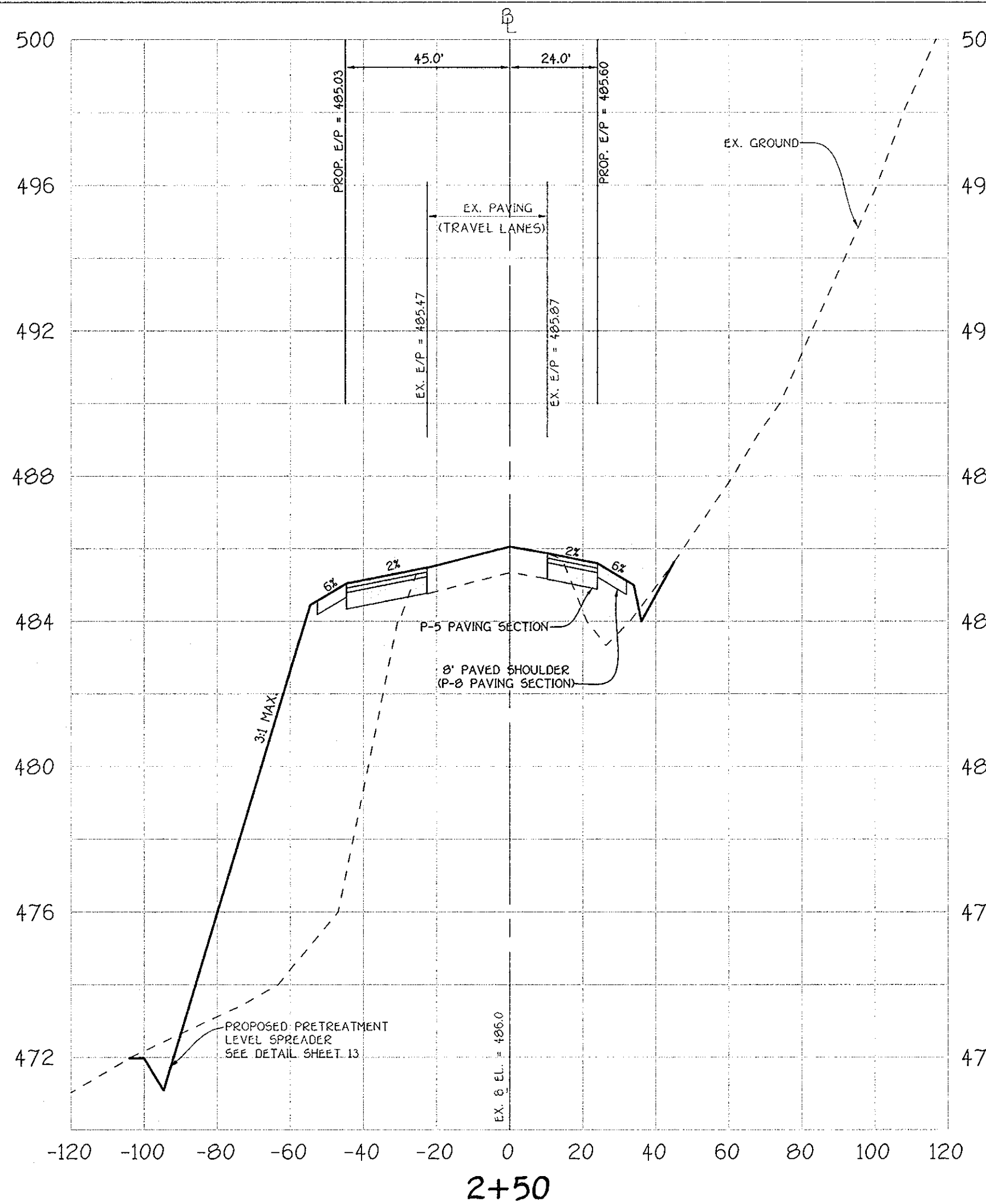
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10225 DALLIHOPE NATIONAL PARK
 BELLESCOTT CITY, MARYLAND 21042
 4101 461 - 2895



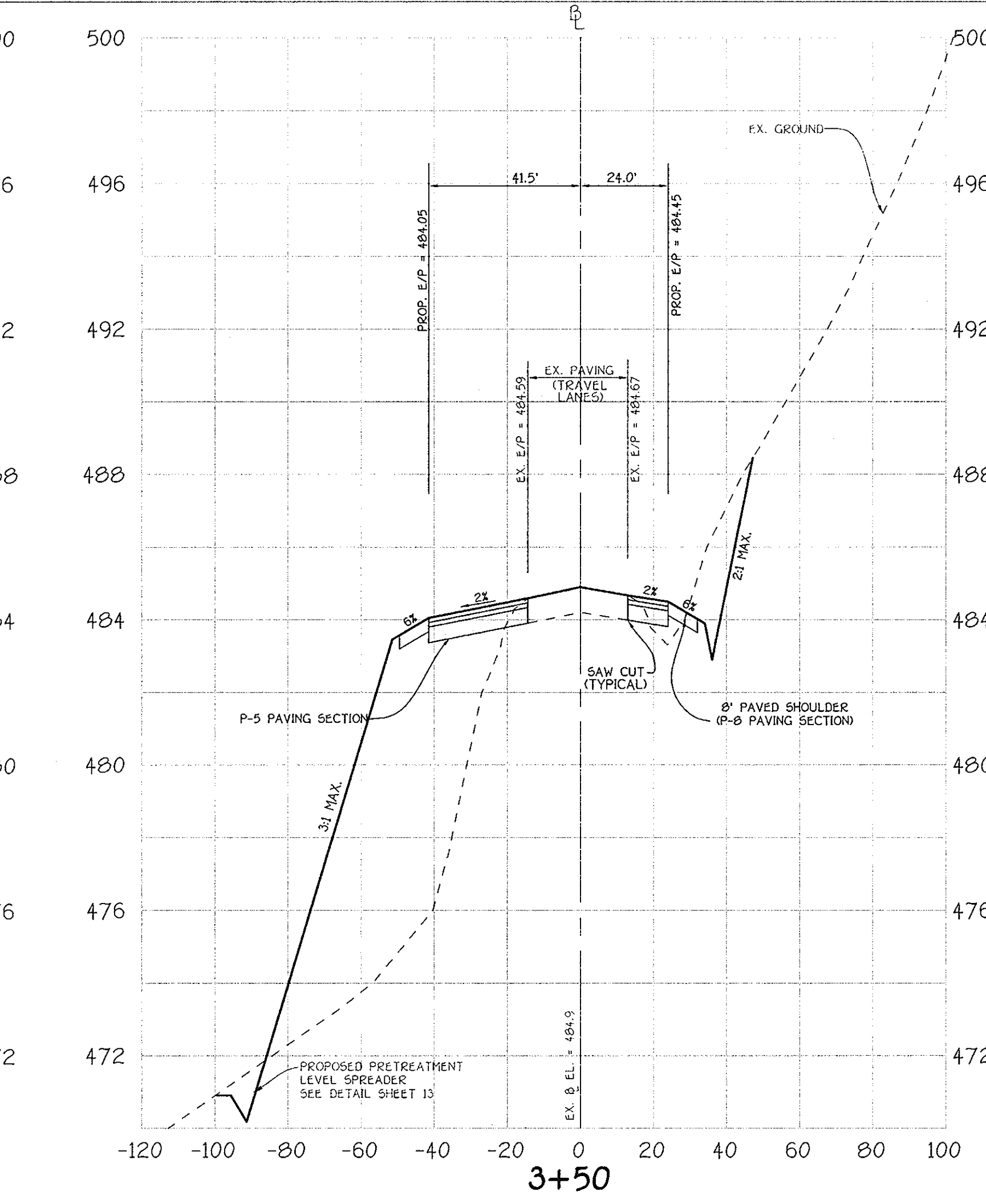
APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter T. Gault 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Clayton L. Davis 6/22/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 APPROVED: *[Signature]* 6/22/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



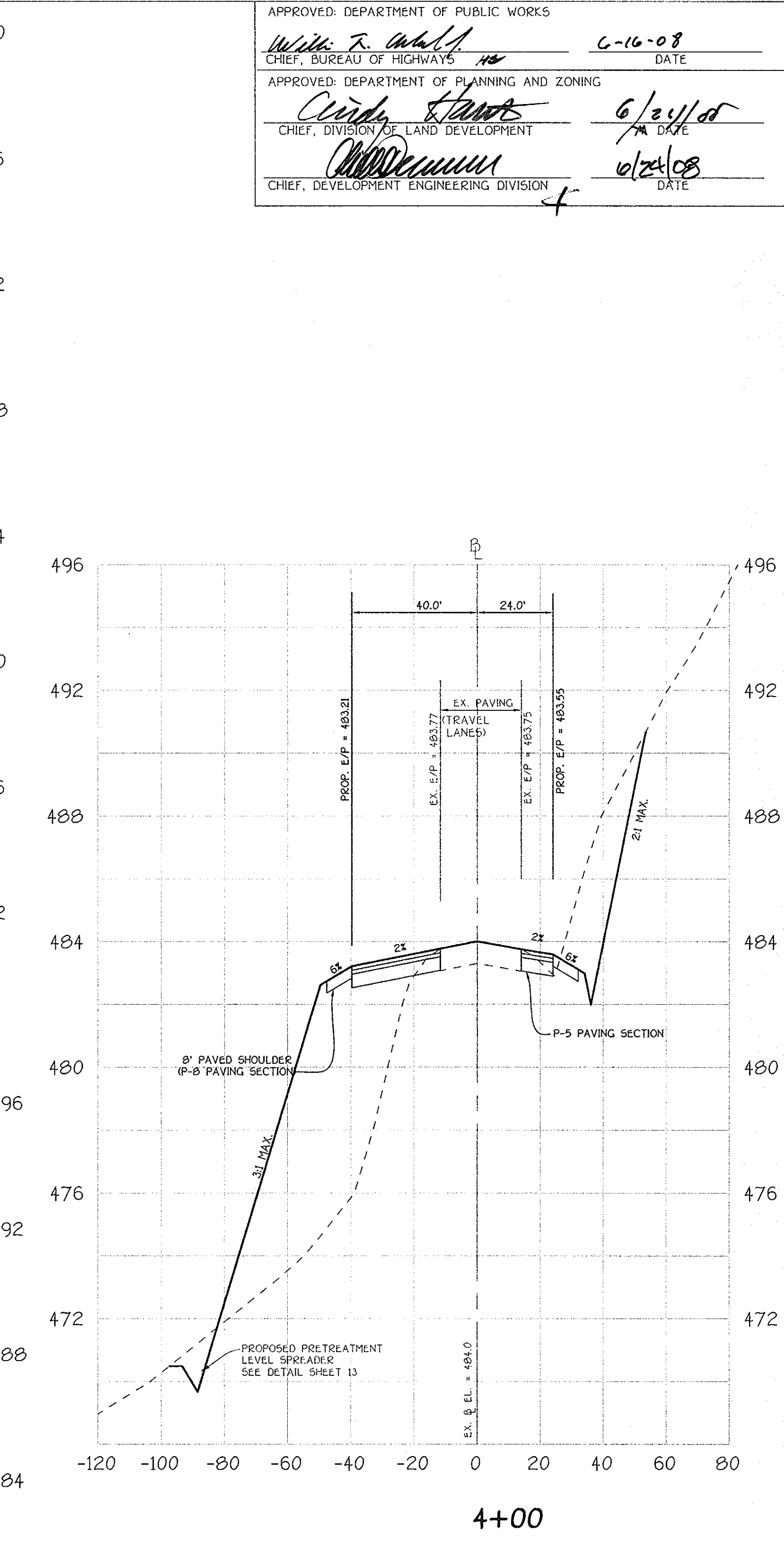
1+50



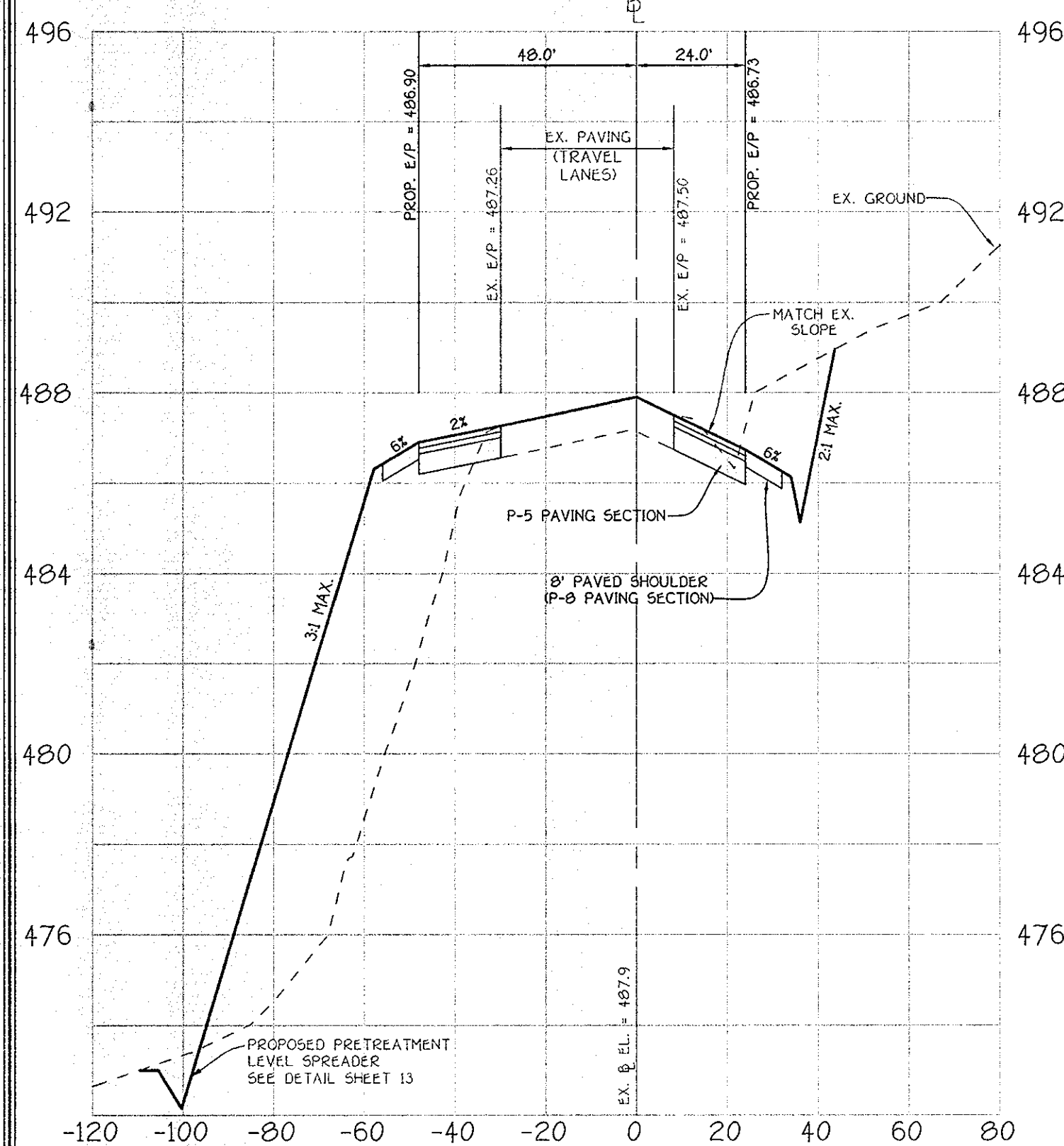
2+50



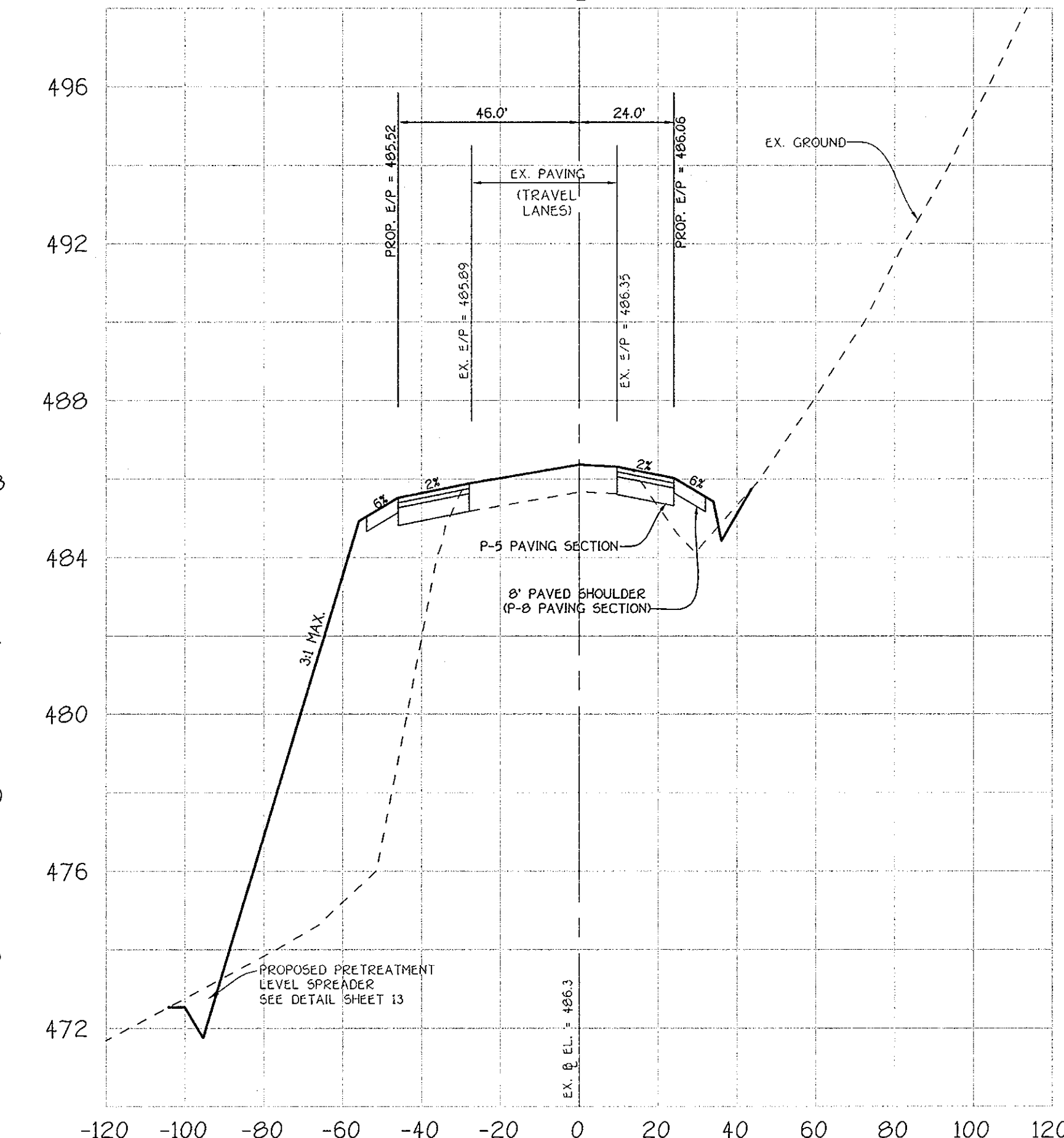
3+50



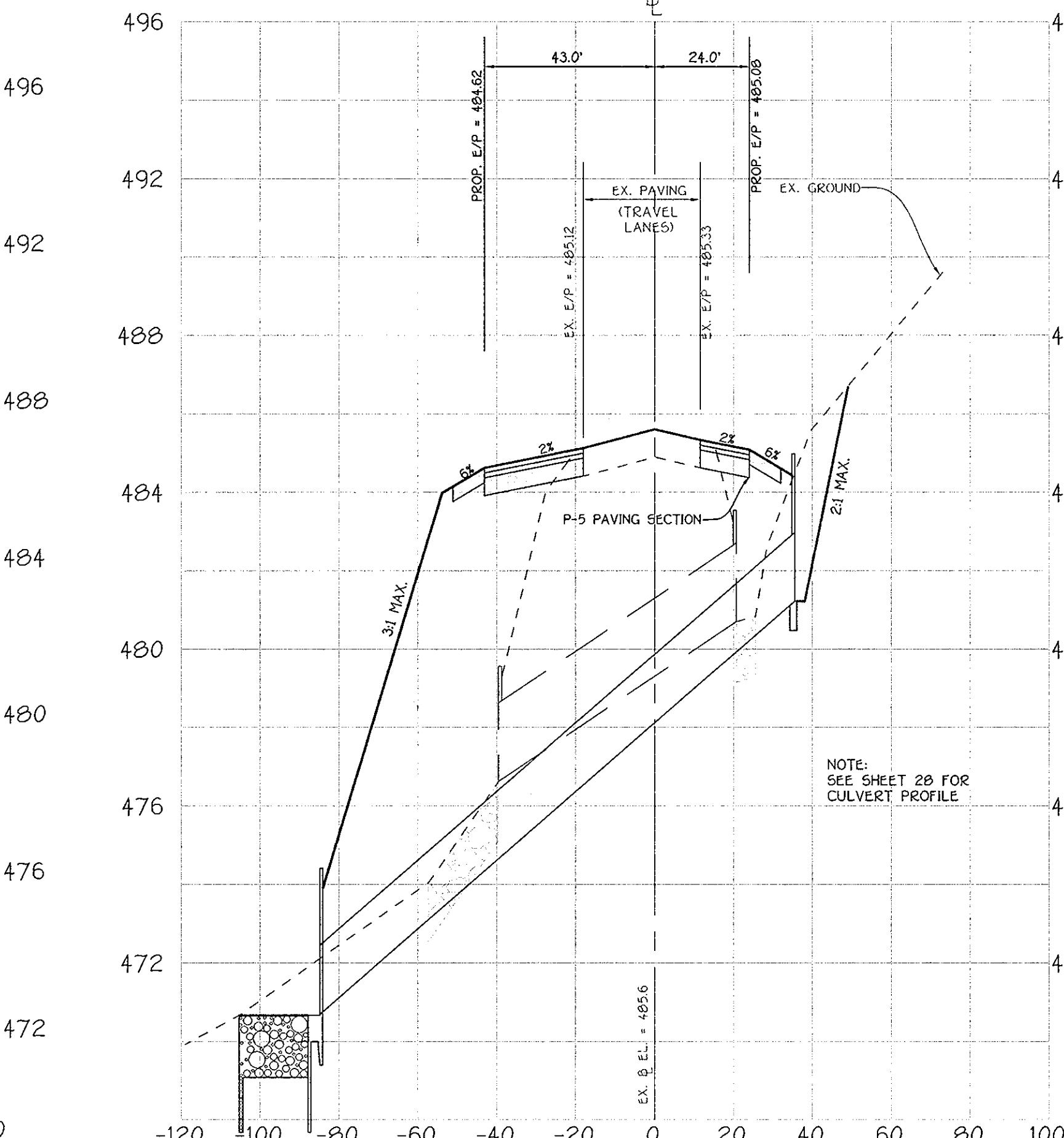
4+00



1+00



2+00



3+00

NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASTHO T-180 STANDARDS.

NOTE:
 SEE SHEET 28 FOR CULVERT PROFILE.

NOTE: SHEET 13 FOR PAVING SECTIONS AND WIDENING DETAILS.



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK • 1872 BALDORNE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2255

CROSS-SECTIONS

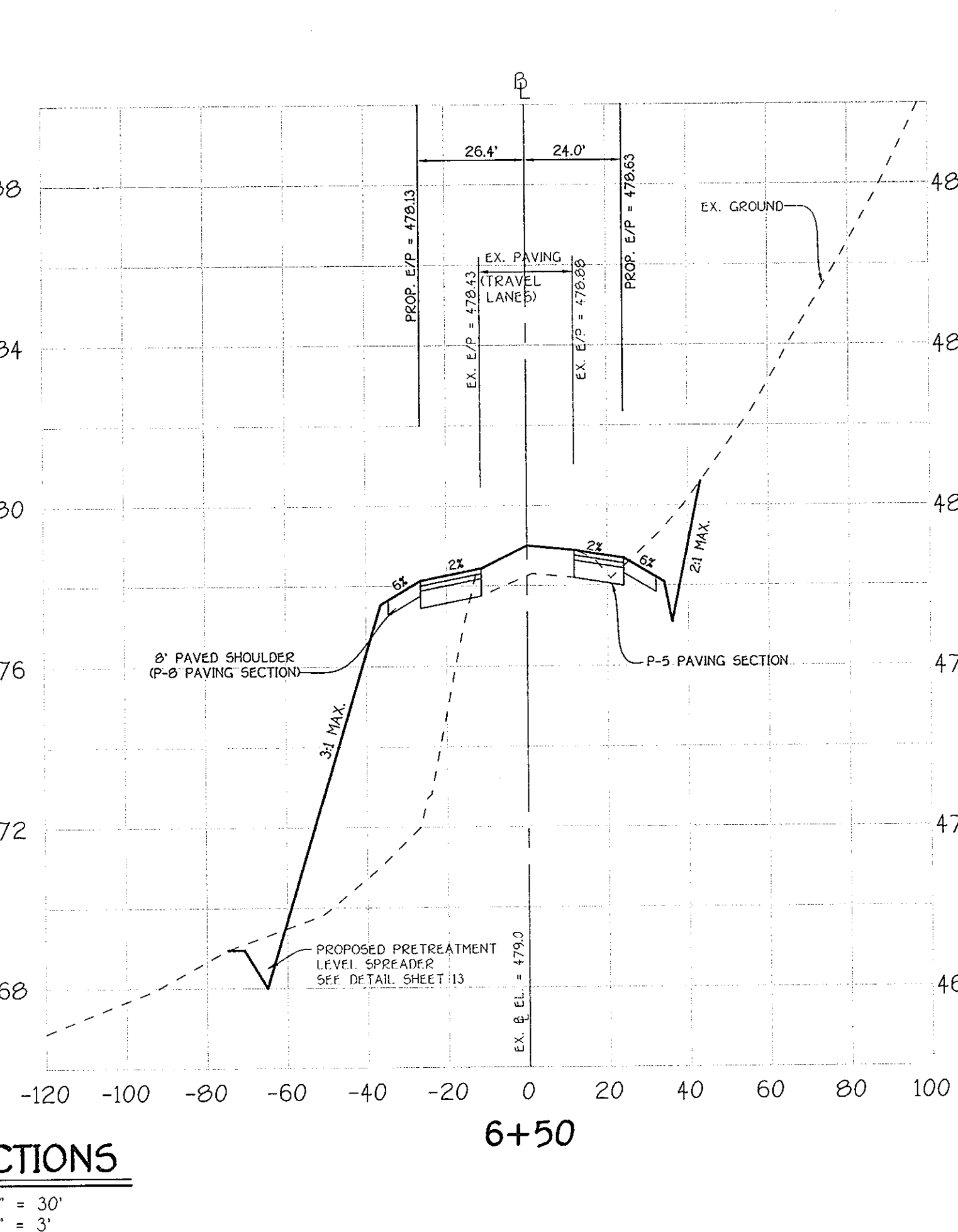
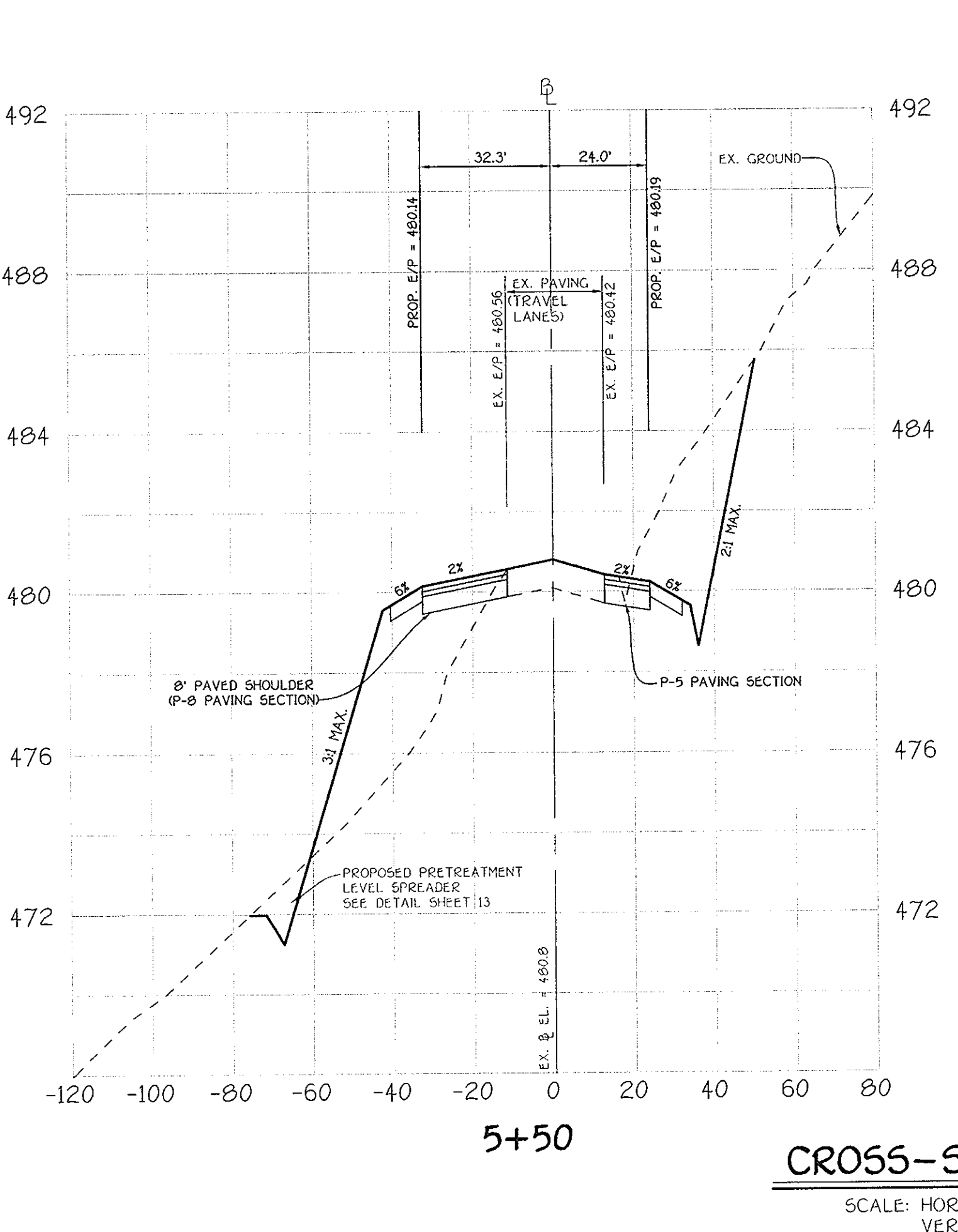
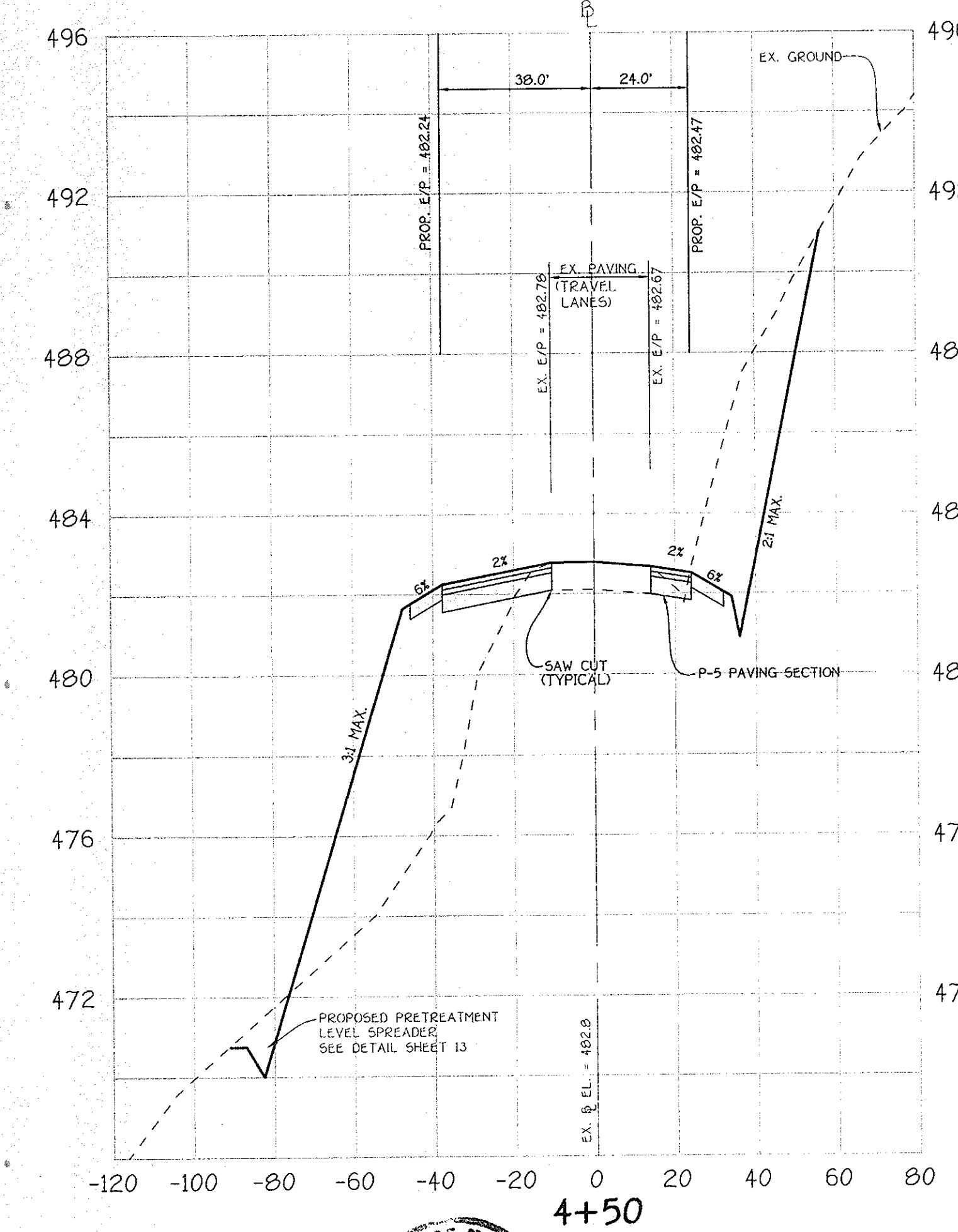
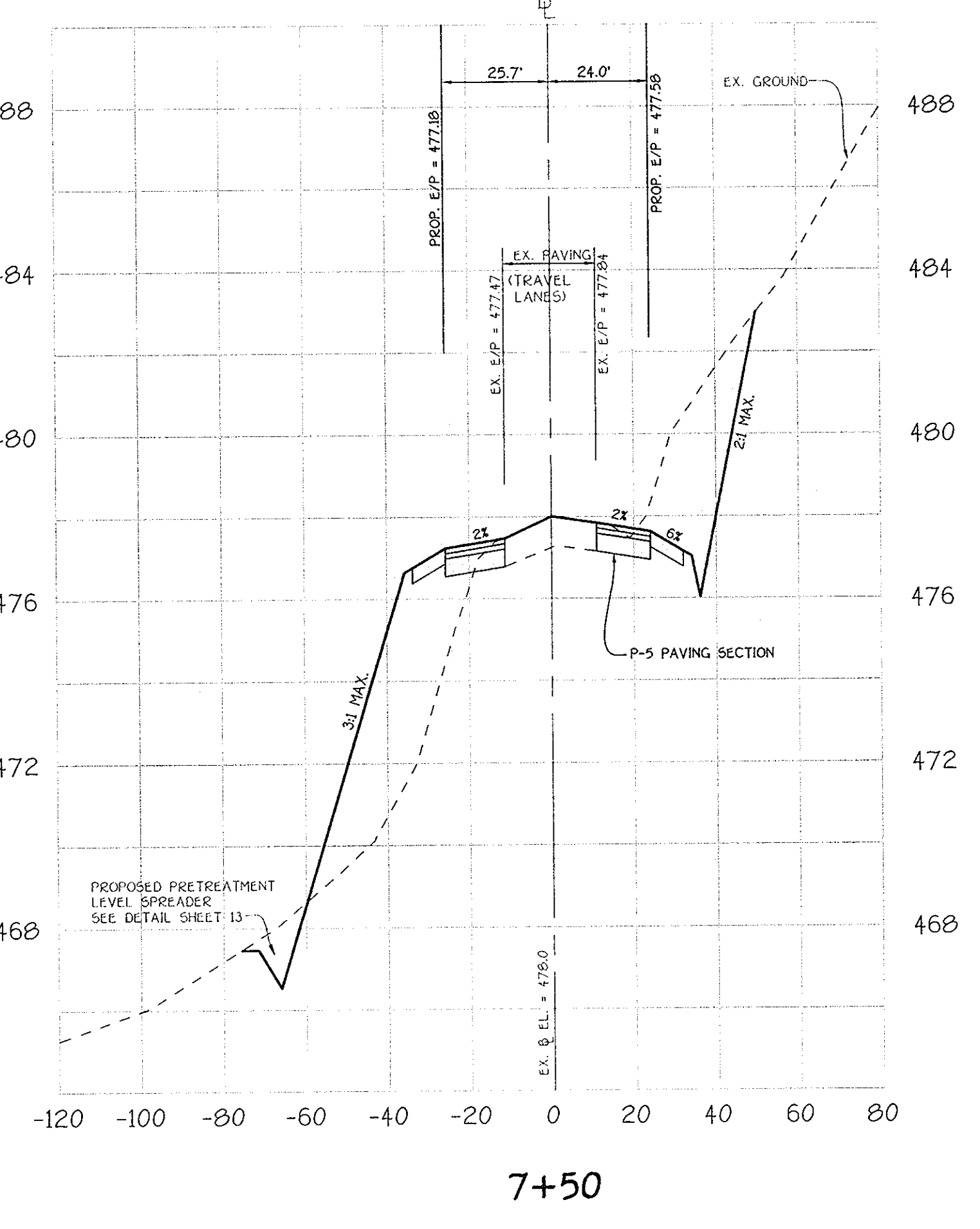
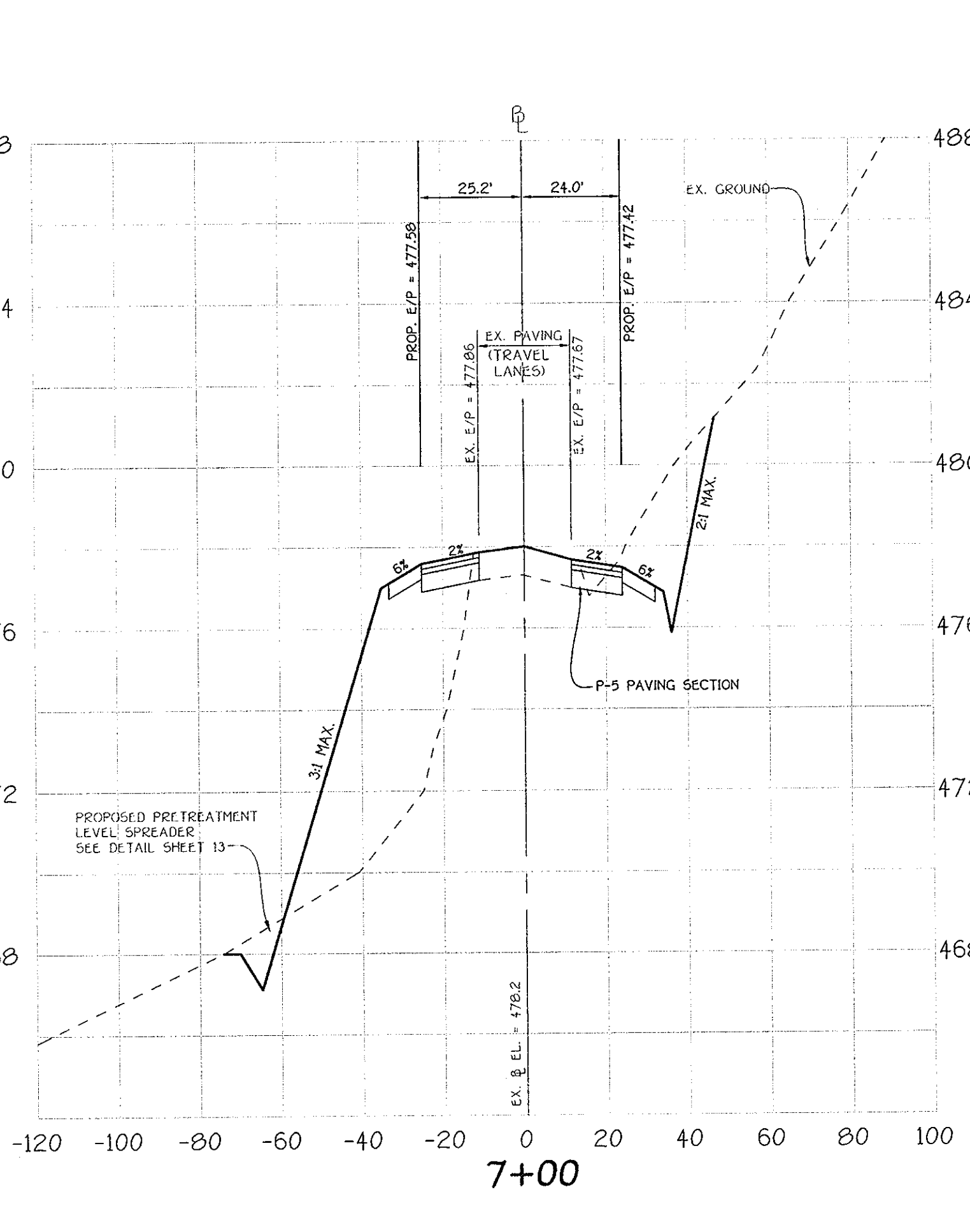
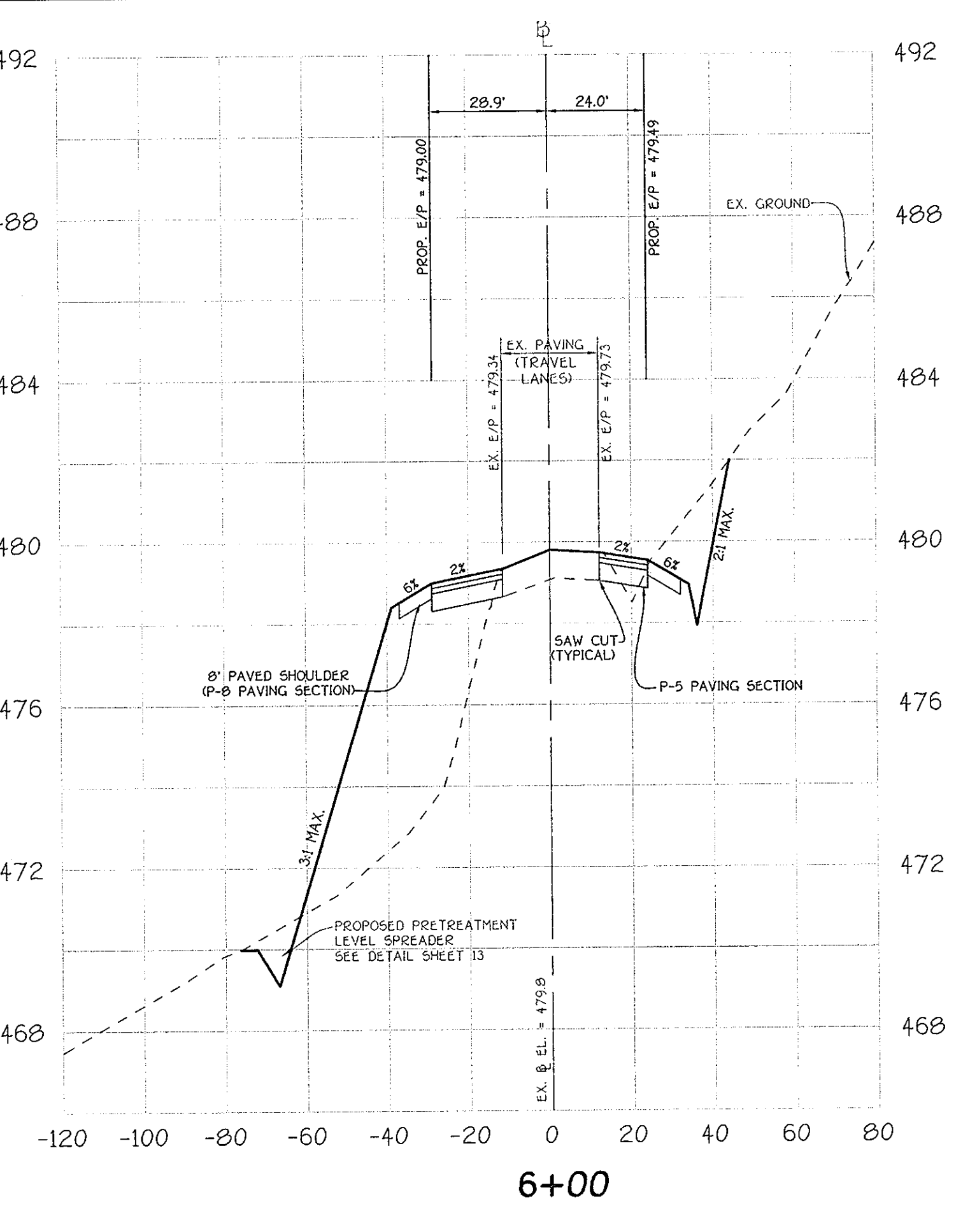
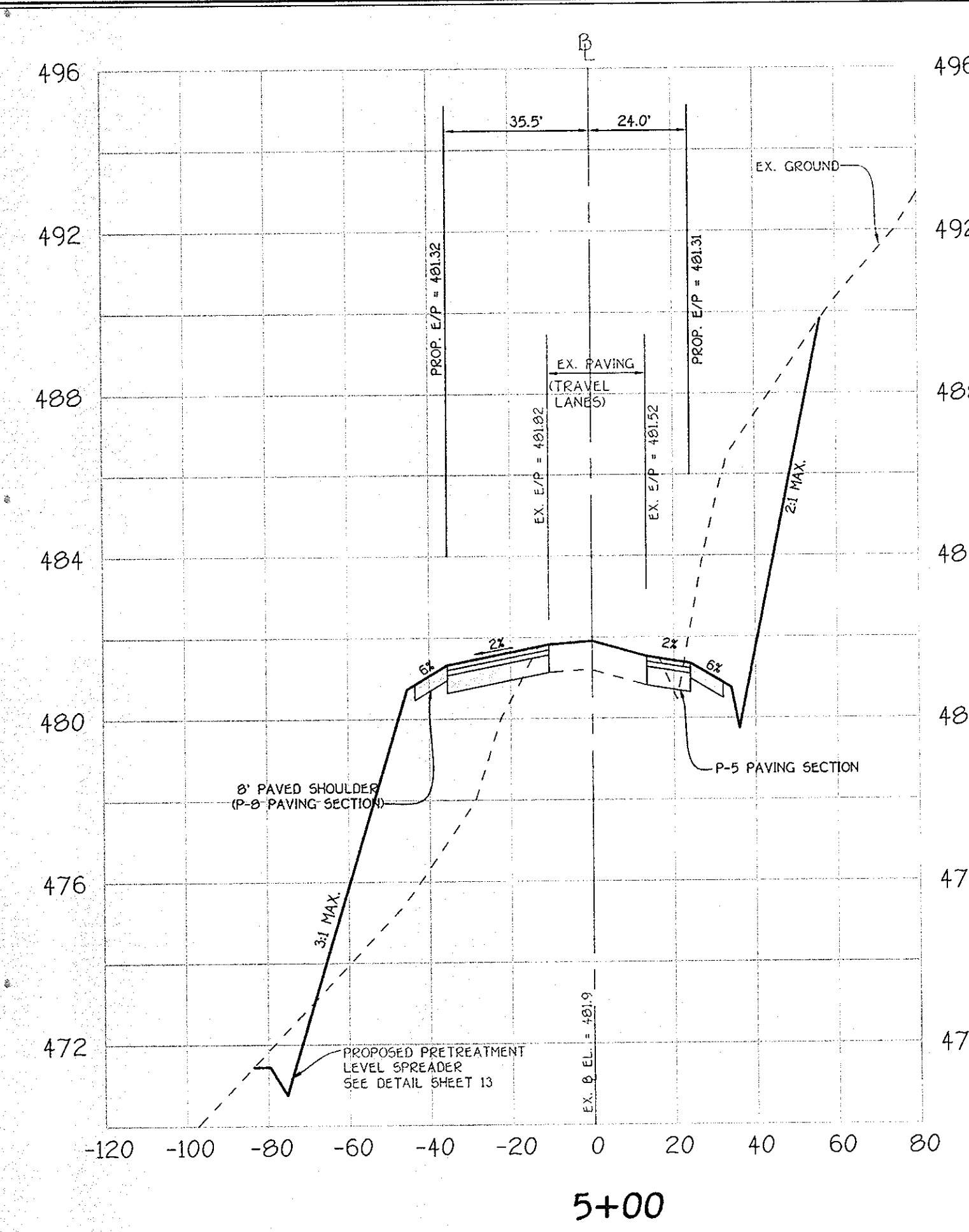
SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

MARRIOTTVILLE ROAD CROSS-SECTIONS
 (NORTH OF OLD FREDERICK ROAD)
 STA. 1+00 TO STA. 4+00
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN

TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 31 OF 41

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter Z. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chris ... 6/14/08
 CHIEF, DIVISION OF LAND DEVELOPMENT
Bill ... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



CROSS-SECTIONS

SCALE: HOR. : 1" = 30'
 VER. : 1" = 3'

NOTE:
 95% COMPACTION IN ALL FILL AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-180 STANDARDS.

MARRIOTTVILLE ROAD CROSS-SECTIONS
 (NORTH OF OLD FREDERICK ROAD)
 STA. 4+50 TO STA. 7+50
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 32 OF 41



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2855

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 357-0422

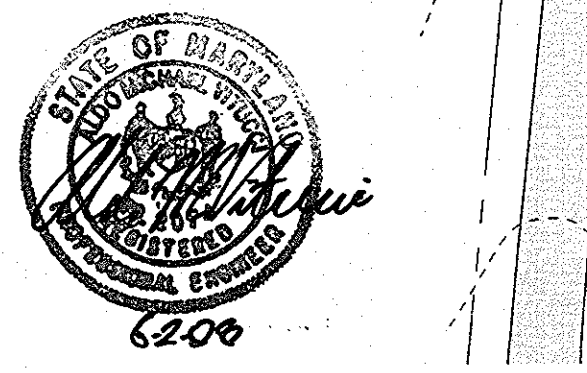
APPROVED: DEPARTMENT OF PUBLIC WORKS
W. Z. Hall 6-16-08 DATE
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
C. Schwab 6/21/08 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT

Chad Dummer 6/21/08 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



Tc PATH DATA				
AREA	SEG. ID	LENGTH	FLOW TYPE	SLOPE
AREA R 3.65 Ac.±	A - B	100'	OVERLAND FLOW	4.5%
	B - C	536'	DITCH FLOW	12.3%
AREA S 3.78 Ac.±	A - B	100'	OVERLAND FLOW	6.7%
	B - C	714'	DITCH FLOW	7.9%



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

PLAN
 SCALE: 1" = 50'

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

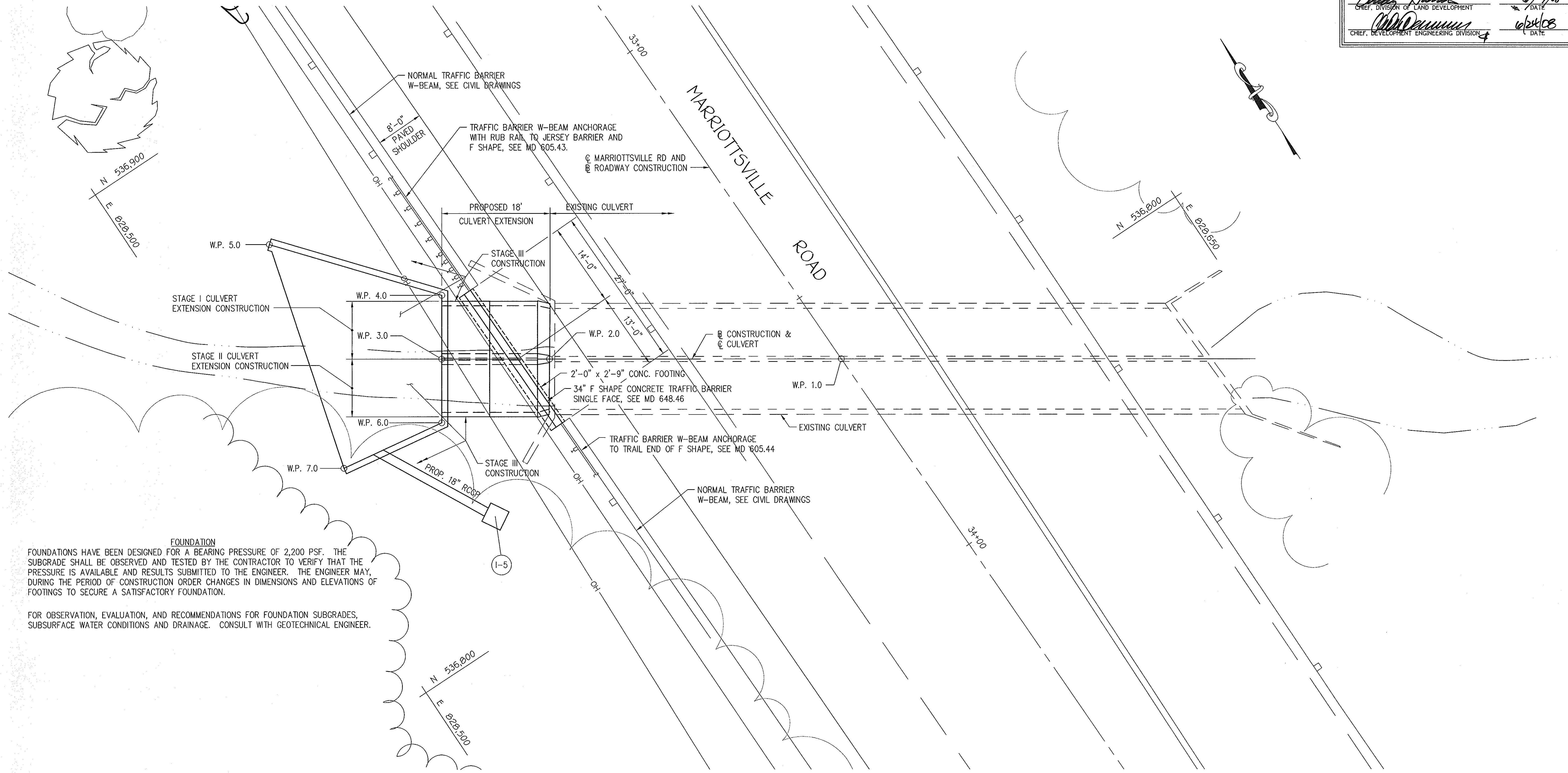
No.	DESCRIPTION	DATE
1	SHOW THE ADDITIONAL MANHOLES REQUIRED TO BYPASS THE BURSTING WATER LINE LOCATED ON MARRIOTTVILLE ROAD	11/21/10
2	ADDED PHASE ONE STRIPING ALONG MARRIOTTVILLE ROAD AND ADDED SHEETS 42 & 43	10/9/09

(PHASE TWO)
 STORM DRAIN DRAINAGE AREA MAP
 CULVERTS NORTH OF RT. 99
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 2, 2008
 SHEET 33 OF 43

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



FOUNDATION
 FOUNDATIONS HAVE BEEN DESIGNED FOR A BEARING PRESSURE OF 2,200 PSF. THE SUBGRADE SHALL BE OBSERVED AND TESTED BY THE CONTRACTOR TO VERIFY THAT THE PRESSURE IS AVAILABLE AND RESULTS SUBMITTED TO THE ENGINEER. THE ENGINEER MAY, DURING THE PERIOD OF CONSTRUCTION ORDER CHANGES IN DIMENSIONS AND ELEVATIONS OF FOOTINGS TO SECURE A SATISFACTORY FOUNDATION.

FOR OBSERVATION, EVALUATION, AND RECOMMENDATIONS FOR FOUNDATION SUBGRADES, SUBSURFACE WATER CONDITIONS AND DRAINAGE. CONSULT WITH GEOTECHNICAL ENGINEER.

WORKING POINT COORDINATES		
POINT	NORTHING	EASTING
W.P. 1.0	536,808.2426	828,588.6221
W.P. 2.0	536,835.1755	828,547.9925
W.P. 3.0	536,845.1084	828,533.0083
W.P. 4.0	536,853.9990	828,538.9018
W.P. 5.0	536,876.9938	828,519.6342
W.P. 6.0	536,836.2177	828,527.1147
W.P. 7.0	536,838.8907	828,509.3143

GENERAL PLAN
 SCALE: 1/8" = 1'-0"

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspection
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 996-3621 Fax: (410) 996-1383

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

John S. Nolan
 JOHN S. NOLAN DATE: 6-2-2008

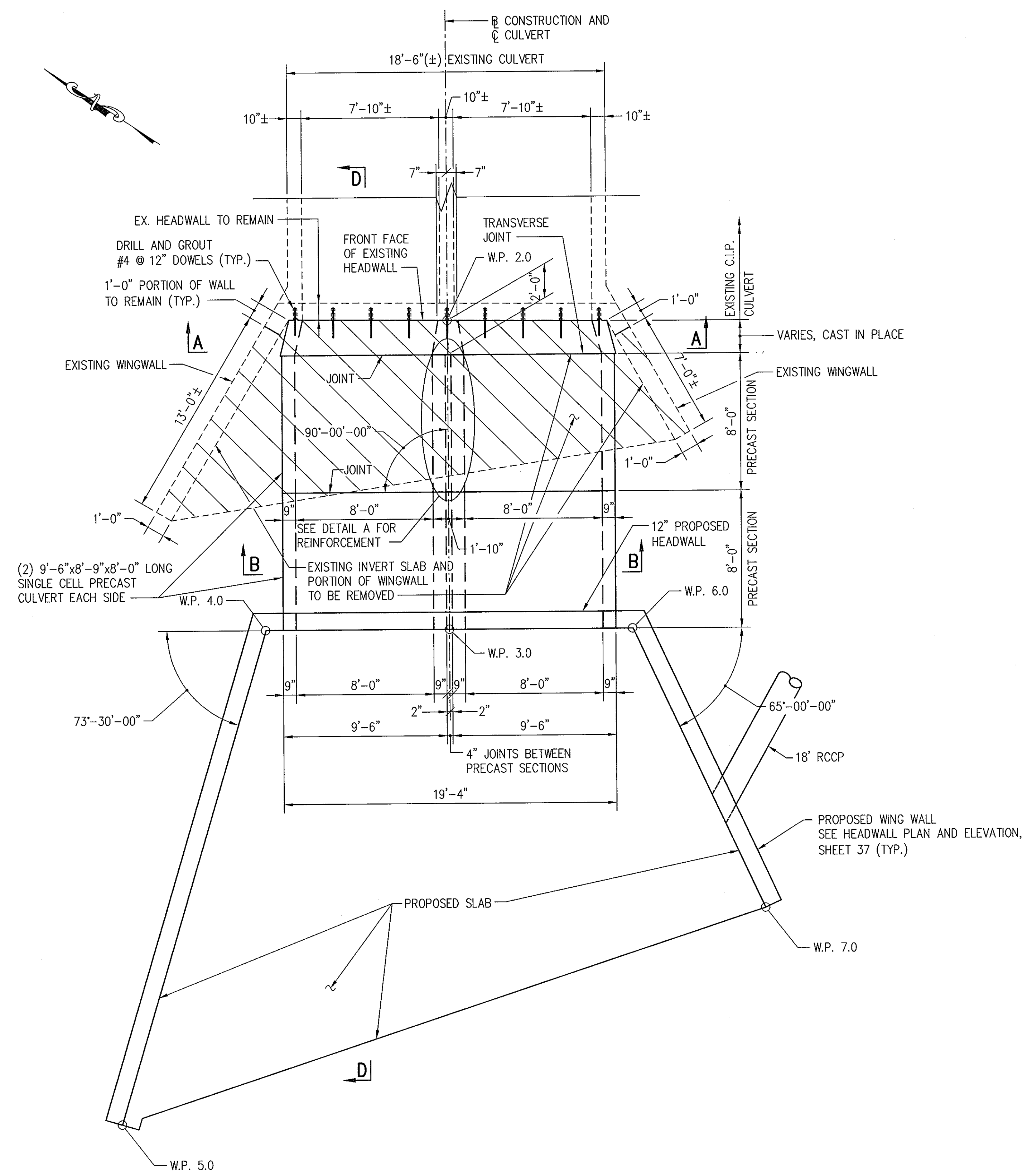


GENERAL PLAN
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 34 OF 41.

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter R. Cabell 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Howard 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W.D. Dummer 10/21/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



CULVERT EXTENSION PLAN
 SCALE: 1/4" = 1'-0"

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE



OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."

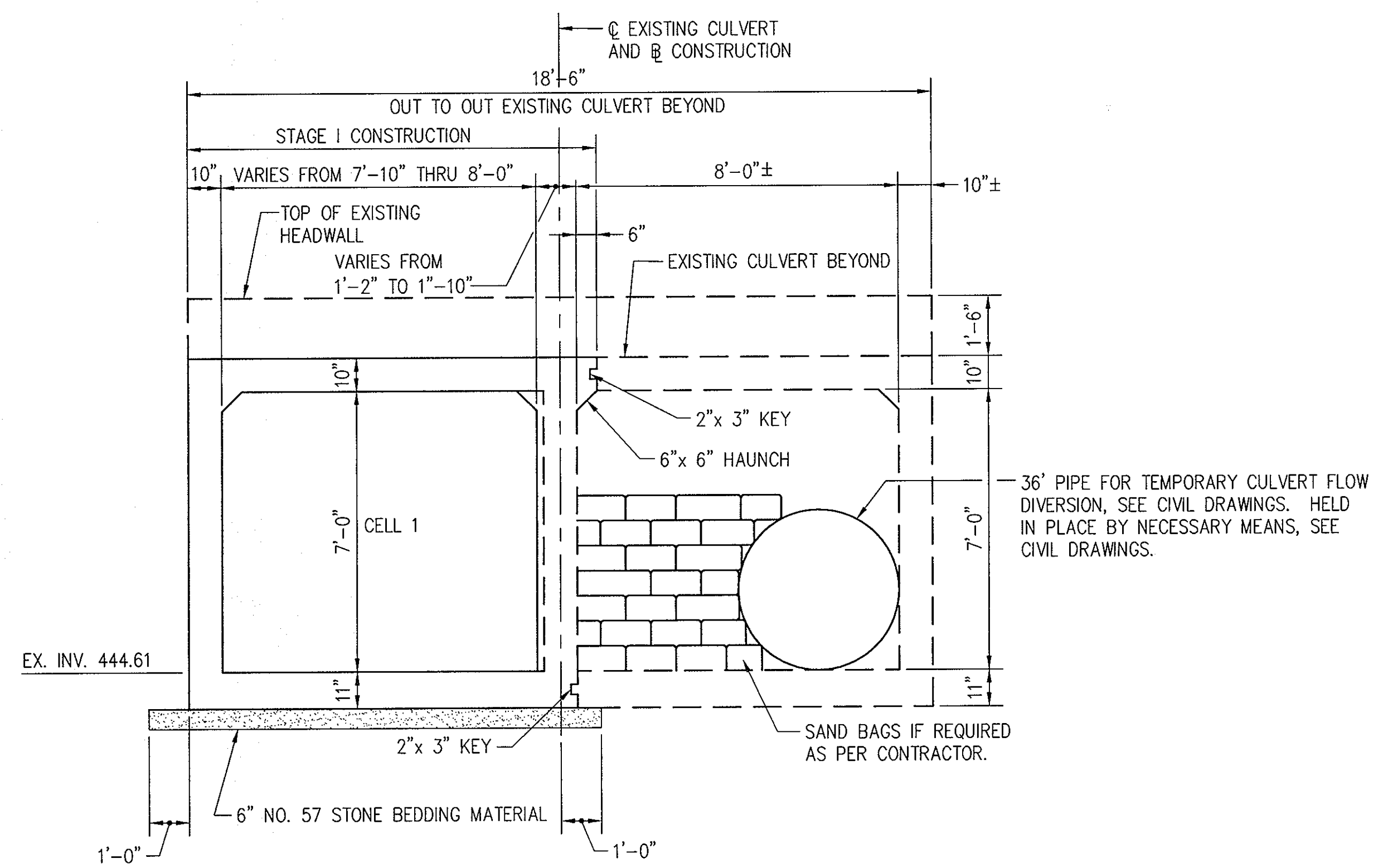
CULVERT EXTENSION PLAN
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 35 OF 41

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspections
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 995-9695 Fax: (410) 995-1563

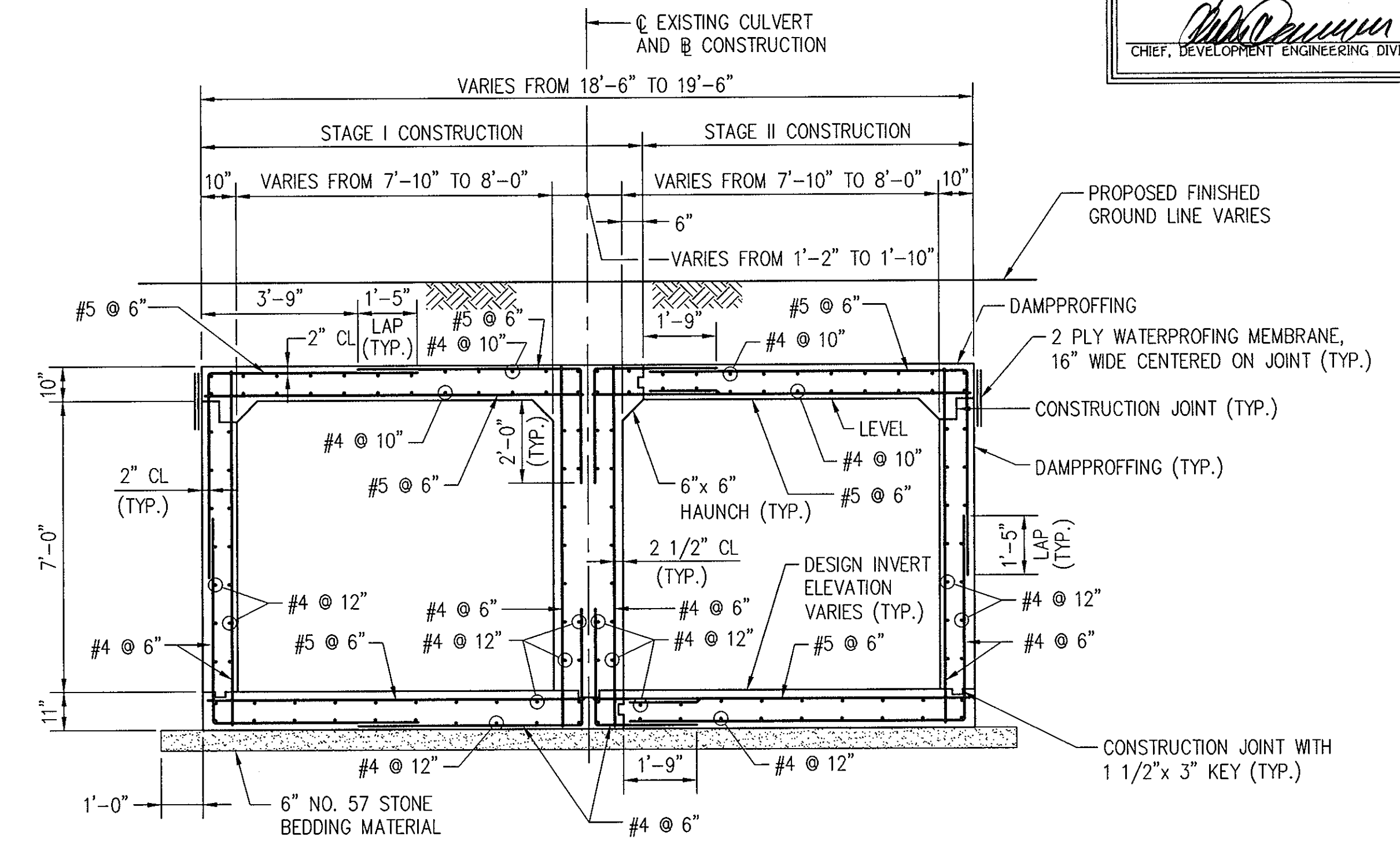
APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter R. ... 6-16-09
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cathy ... 6/28/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

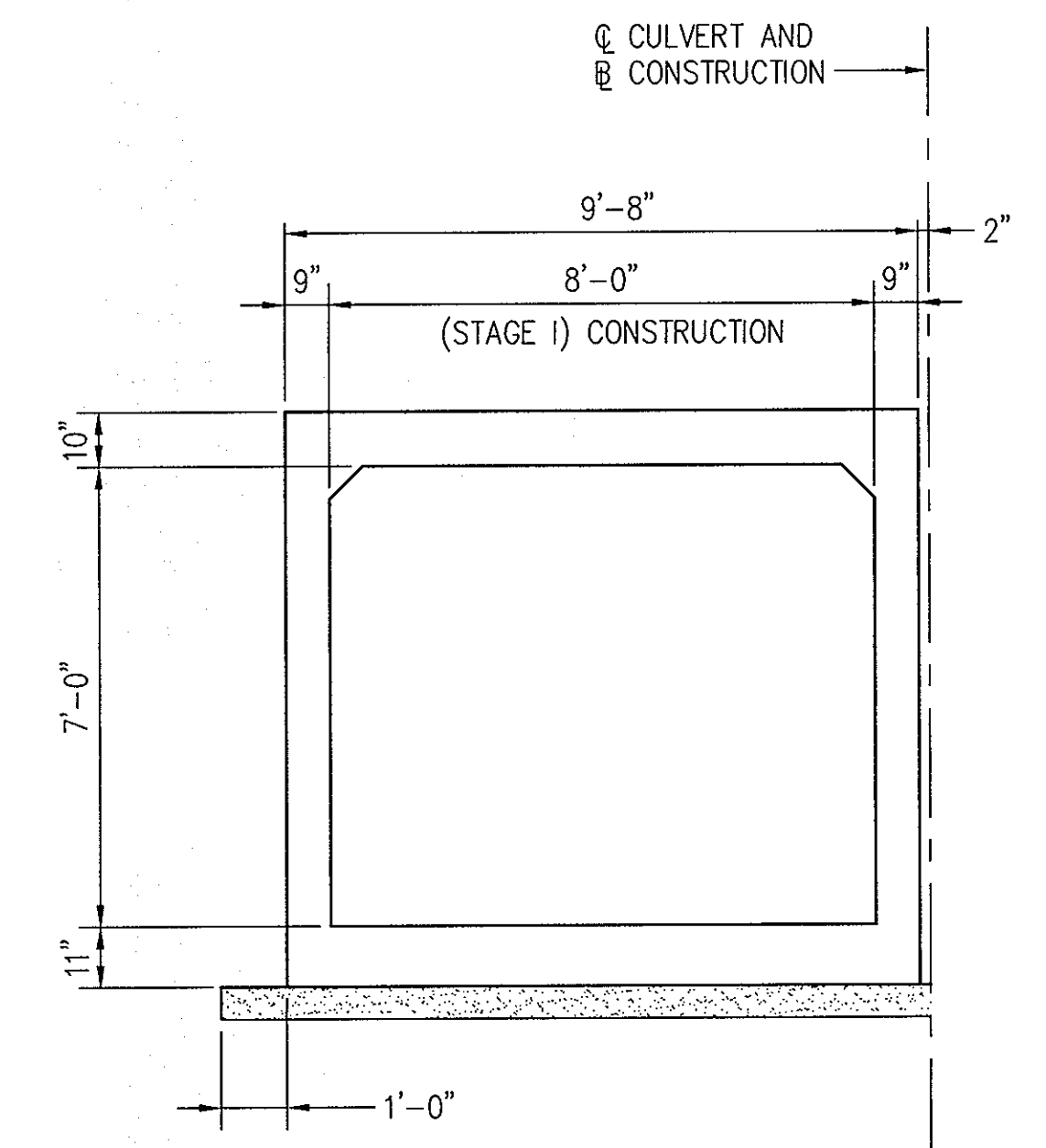
... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



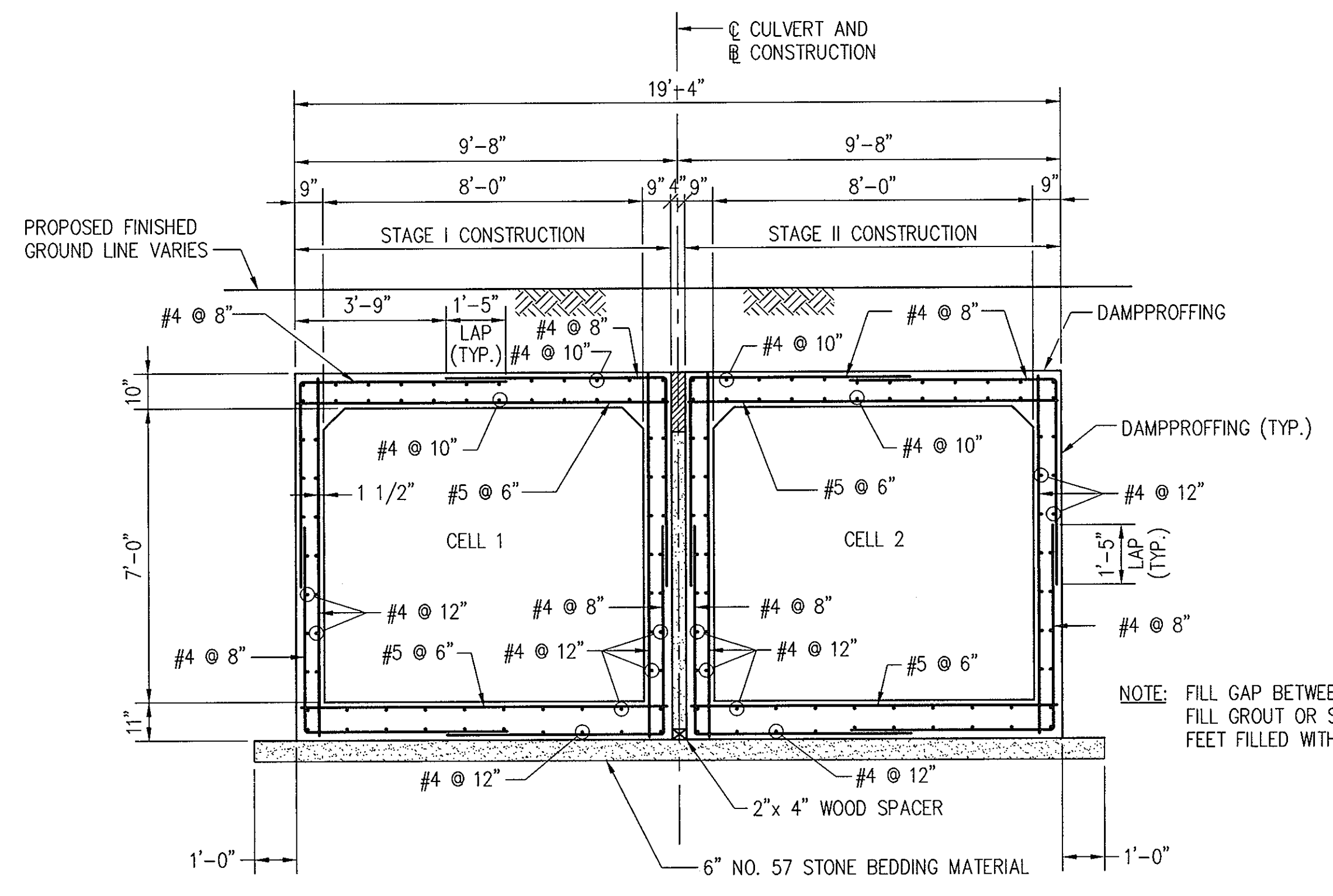
SECTION A-A (CAST IN PLACE CONNECTION)
 (STAGE I)
 SCALE: 3/8"=1'-0"



SECTION A-A REINFORCEMENT
 (CAST IN PLACE CONNECTION)
 (STAGES I AND II)
 SCALE: 3/8"=1'-0"



SECTION B-B (PRECAST)
 (STAGE I)
 SCALE: 3/8"=1'-0"

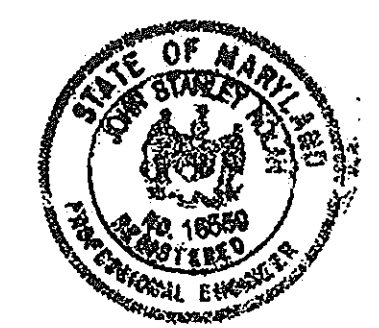


SECTION B-B REINFORCEMENT
 (PRECAST STAGES I AND II)
 SCALE: 3/8"=1'-0"

NOTE: SUBGRADE TREATMENT AS PER GEOTECHNICAL ENGINEER FOR CAST IN PLACE AND PRECAST CULVERT.

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."



TYPICAL CULVERT SECTIONS
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 36 OF 41

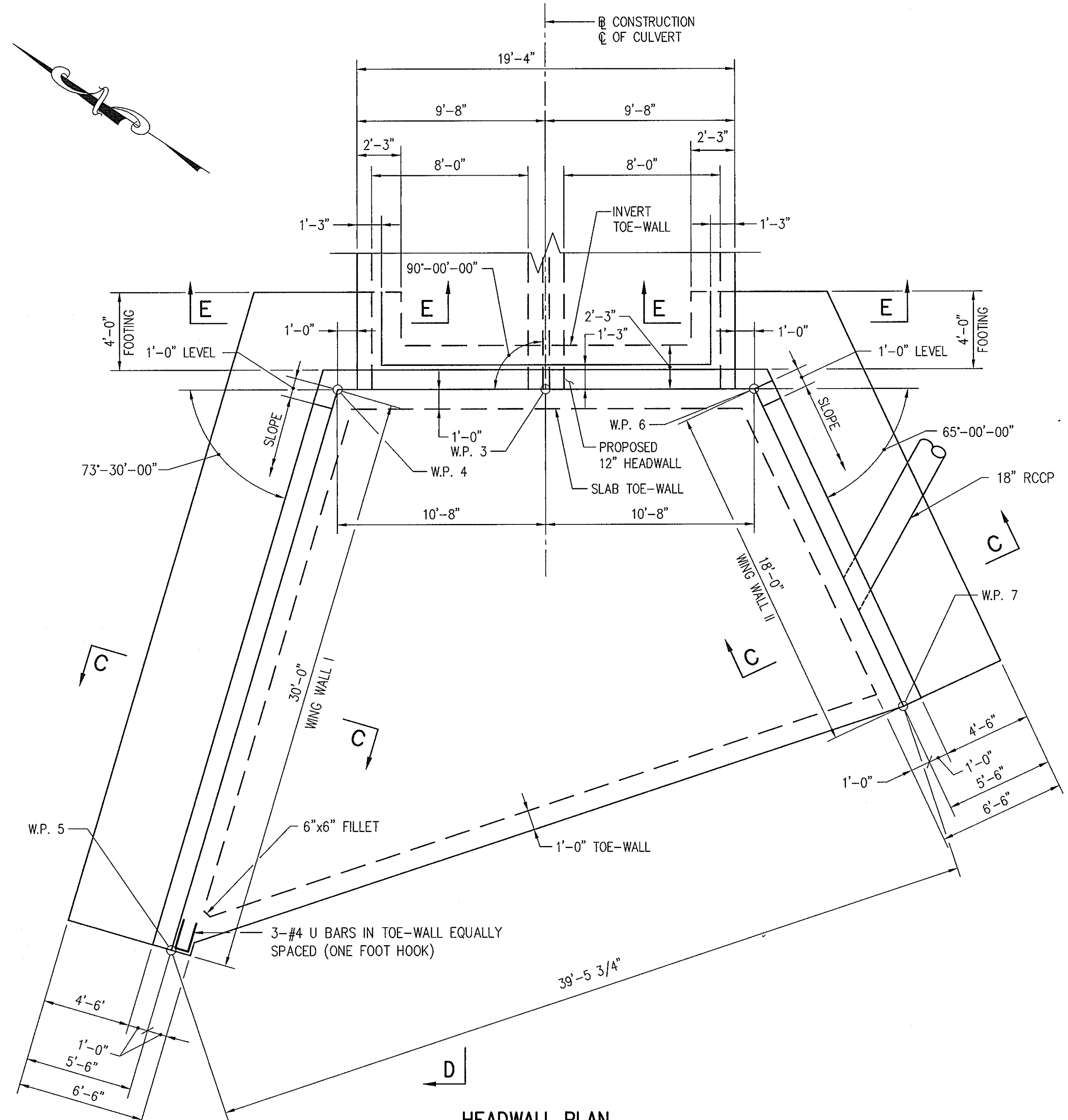
NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspection
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 992-9000 Fax: (410) 992-1853

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (410) 367-0422

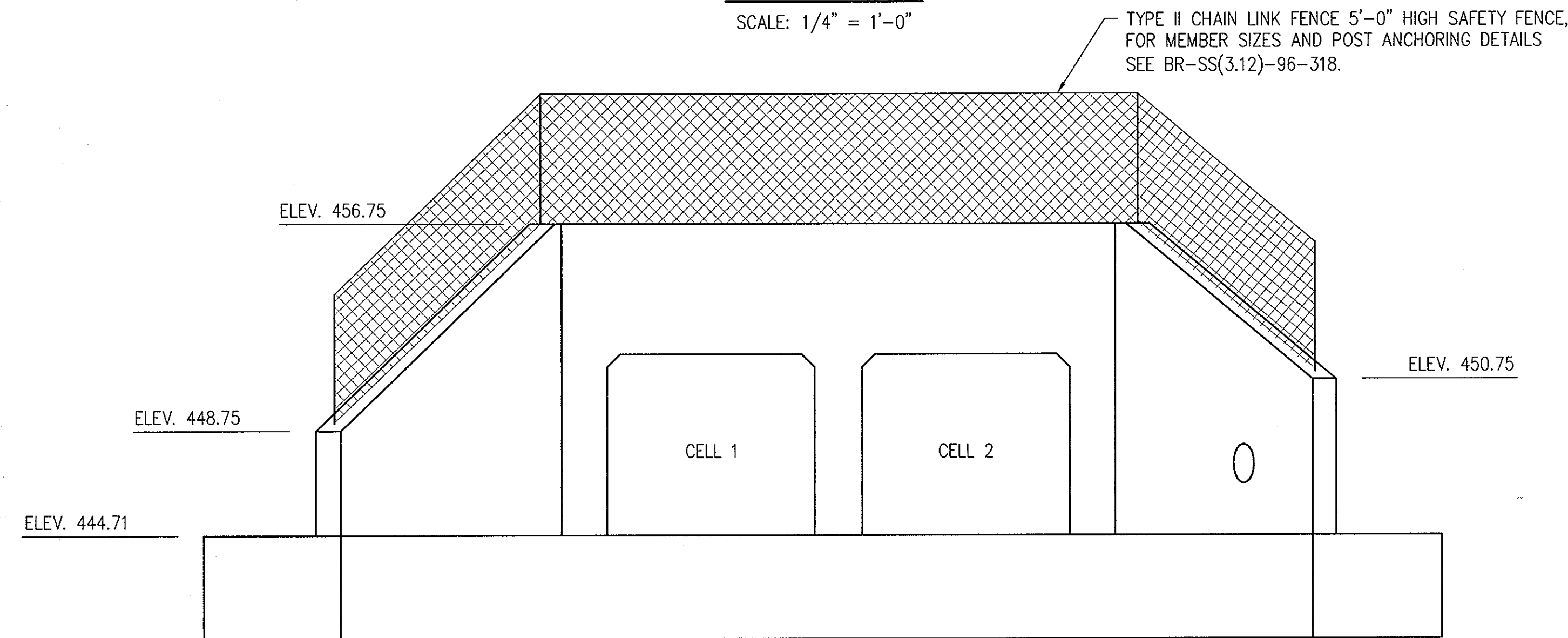
APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter Z. ... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 6/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 6/21/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



HEADWALL PLAN
 SCALE: 1/4" = 1'-0"



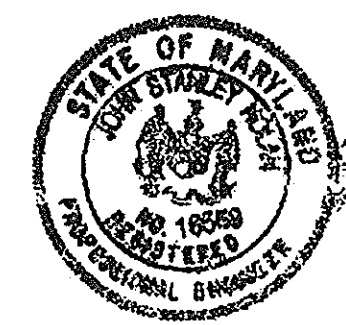
ELEVATION
 SCALE: 1/4" = 1'-0"

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

GENERAL NOTES

- SPECIFICATIONS:** SHA SPECIFICATIONS DATED JANUARY, 2001, REVISIONS THEREOF AND ADDITION THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
- HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (VOLUME IV DESIGN MANUAL).
- AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 2002. FOR DESIGN, DIVISION I, SECTION 17.
- LOADING:** HS-27 OR MD TYPE 3 TRUCK (CULVERT EXTENSION ONLY).
- CONCRETE:** ALL PRECAST CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS. ALL CAST-IN-PLACE CONCRETE SHALL BE MIX NO. (3,500 PSI).
- REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. ALL SPLICES NOT SHOWN SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2", UNLESS OTHERWISE NOTED. THE BOTTOM AND SIDES OF ALL FOOTINGS SHALL HAVE 3" MINIMUM COVER.
- FOR TIES AND STIRRUPS; STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCES.
- ONLY GRADE 60 CAN BE USED ON THIS PROJECT.
- KEYS:** ALL KEYS NOMINAL SIZE.
- PRECAST CULVERT DESIGN:** THE DESIGN AND DETAILS OF THE PRECAST CULVERT NOT CONFORMING WITH THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND IS SUBJECT TO REVIEW, COMMENTS AND APPROVAL. SUBMIT TWO SETS OF DETAILED PLANS FOR REVIEW. INCLUDE ALL DETAILS IN THE PLANS, INCLUDING THE SIZE AND SPACING OF THE REQUIRED REINFORCEMENT NECESSARY TO BUILD THE PRECAST BOX CULVERT. INCLUDE CHECKED DESIGN CALCULATIONS FOR THE PRECAST MEMBERS COMPLYING WITH THE LATEST AASHTO STANDARD SPECIFICATIONS AND REQUIREMENTS DETAILED HEREIN. HAVE A MARYLAND REGISTERED PROFESSIONAL ENGINEER CHECK AND SEAL THE PLANS AND DESIGN CALCULATIONS. AFTER THE PLANS ARE REVIEWED AND, IF NECESSARY, THE CORRECTIONS MADE, SUBMIT ONE SET OF REPRODUCIBLE TRACINGS ON 22" x 34" SHEETS TO BECOME THE REVISED CONTRACT PLANS.
- JOINTS BETWEEN PRECAST UNITS:** PRODUCE THE PRECAST REINFORCED CONCRETE BOX SECTION WITH MALE AND FEMALE ENDS. DESIGN AND FORM THESE ENDS OF THE BOX SECTION SO, WHEN THE SECTIONS ARE LAID TOGETHER, THEY MAKE A CONTINUOUS LINE OF BOX SECTIONS WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES IN THE FLOWLINE. THE INTERNAL JOINT FORMED AT THE MALE AND FEMALE ENDS OF THE PRECAST UNITS SHALL BE SEALED WITH EITHER BITUMEN/BUTYL SEALANT OR CLOSED-CELL NEOPRENE MATERIAL. THE INTERNAL JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS THE MATERIAL SHALL BE SHOWN ON THE SHOP DRAWINGS WHEN THEY ARE SUBMITTED FOR REVIEW.
- SEAL THE EXTERNAL JOINT WITH AN OUTSIDE SEALER WRAP THAT IS AT LEAST 12 INCHES (300 MM) WIDE AND COVERS THE JOINT ON BOTH SIDES AND THE TOP OF THE BOX SECTION. USE CONWRAP CS-212 FROM CONCRETE SEALANTS, INC., EZ-WRAP FROM PRESS-SEAL GASKET CORPORATION, SEAL WRAP FROM MAR-MAC MANUFACTURING CO., INC., CADILLOC EXTERNAL PIPE JOINT FROM CADILLOC, OR AN APPROVED EQUAL FOR THE OUTSIDE SEALER WRAP. PLACE SEALER WRAP ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- EXISTING STRUCTURE:** EXISTING STRUCTURE SHOWN IN LONG DASHED LINES.
- HYDROLOGIC AND HYDRAULIC DATA:** FOR HYDROLOGIC AND HYDRAULIC DATA, SEE CIVIL DRAWINGS.

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE



"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."

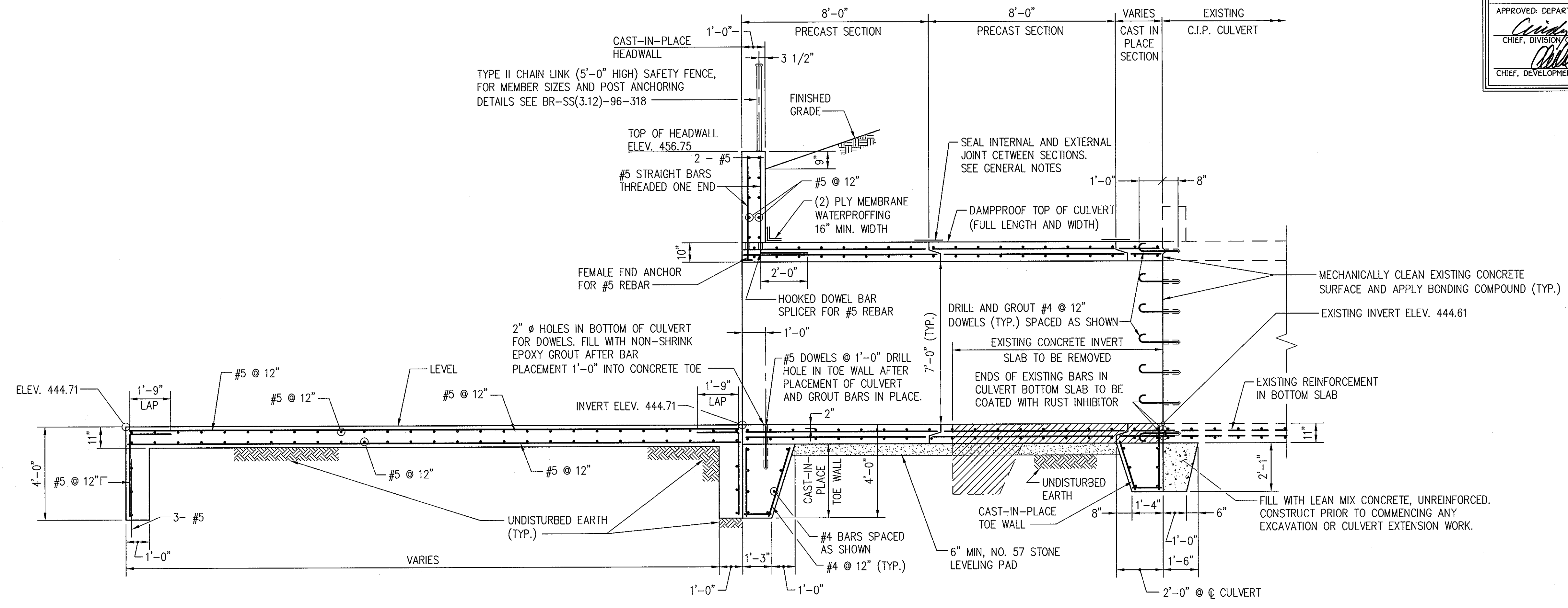
HEADWALL PLAN AND ELEVATION
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 37 OF 41

NOLAN
 Associates, Inc.
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 Ellicott City, Maryland 21042
 Phone: (410) 895-3621 Fax: (410) 895-1383

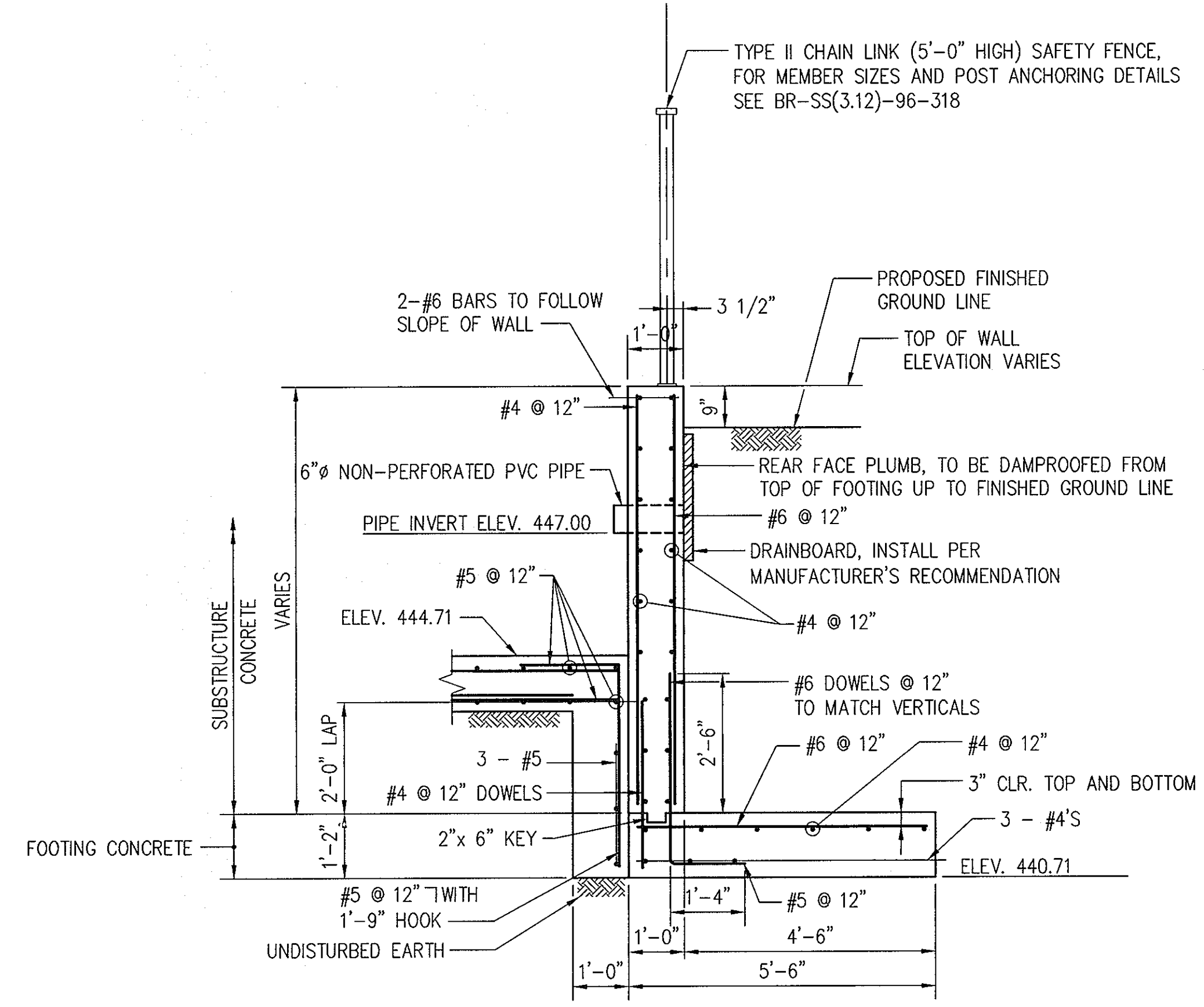
APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter P. M... 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chris... 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W... 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



SECTION D-D
 SCALE: 3/8" = 1'-0"

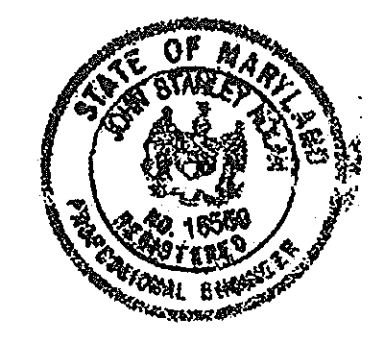


TYPICAL WING WALL SECTION
SECTION C-C
 SCALE: 1/2" = 1'-0"

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."



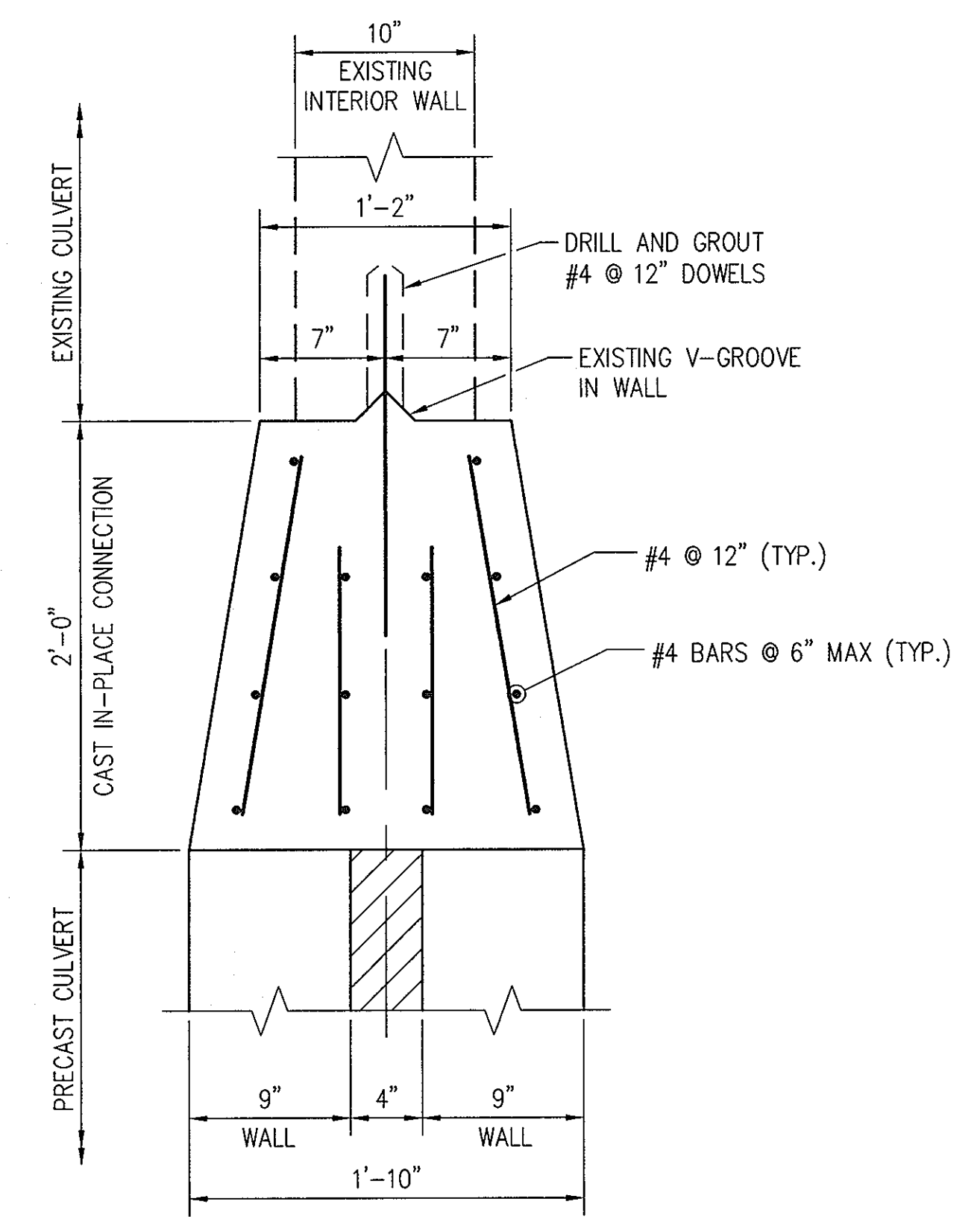
CULVERT AND WING WALL SECTIONS
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 15
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 38 OF 41

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspections
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 995-3000 Fax: (410) 995-1980

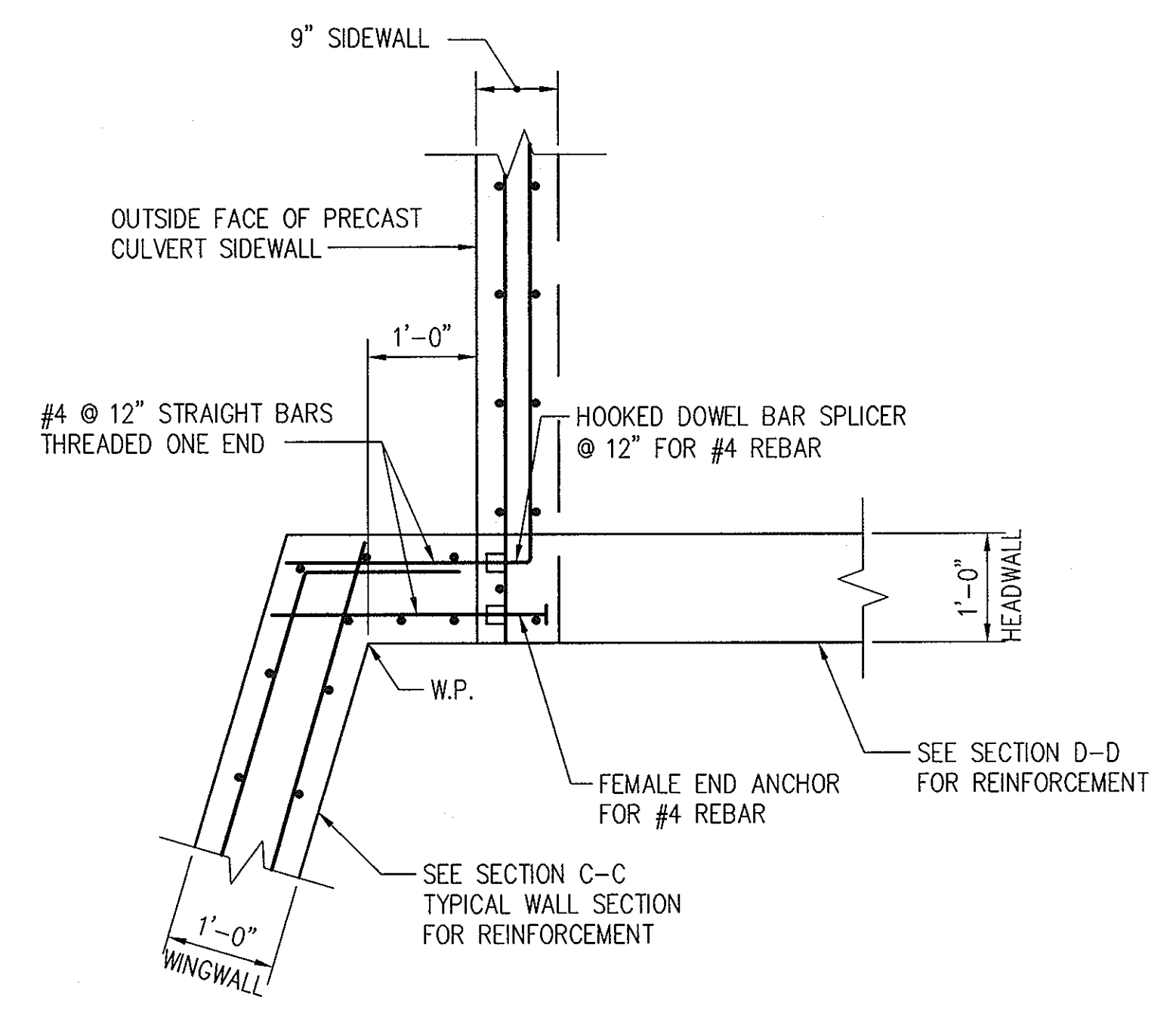
APPROVED: DEPARTMENT OF PUBLIC WORKS
Willis Z. Mulla 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hammit 6/27/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

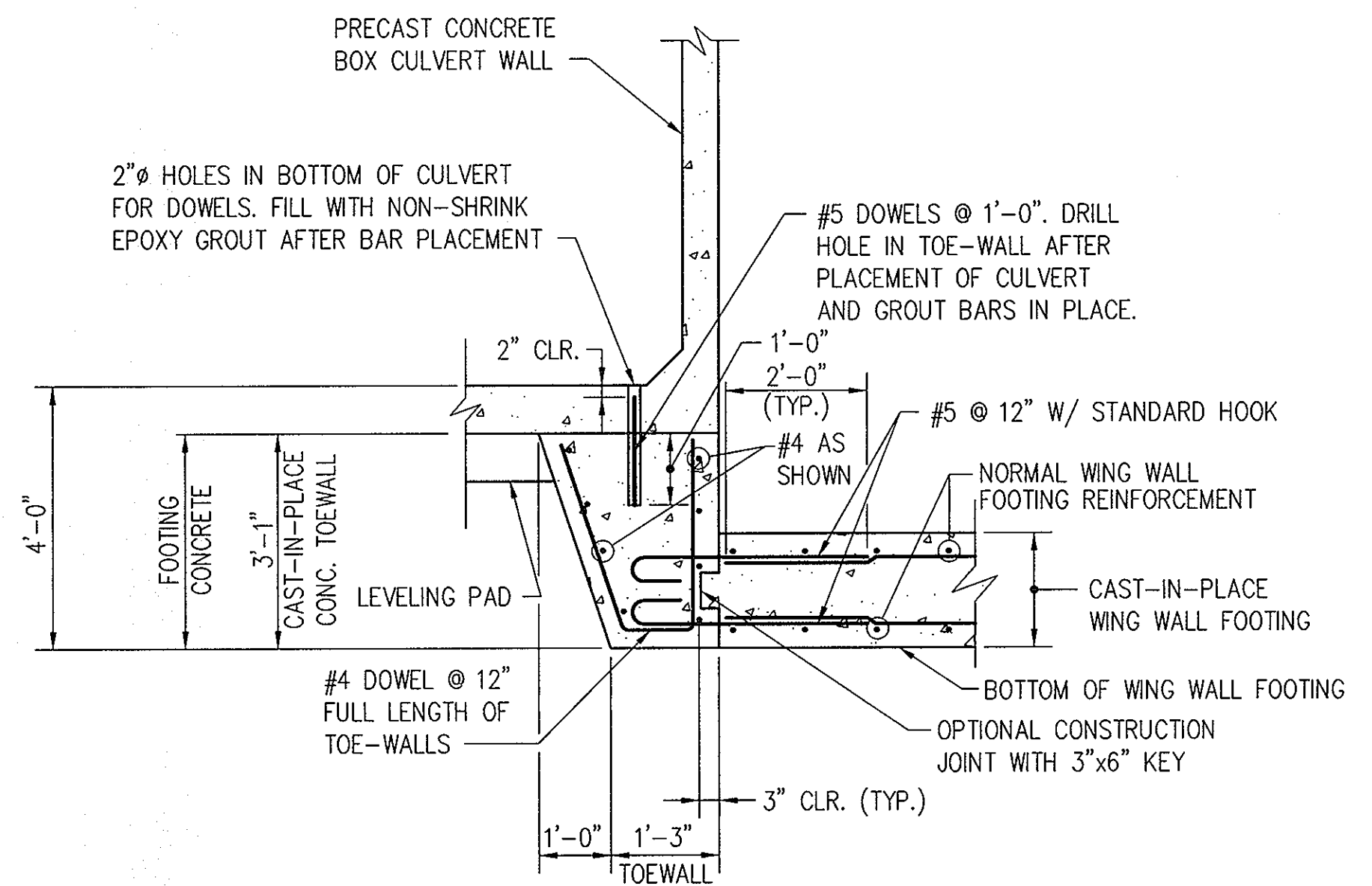
Chris Deinum 6/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



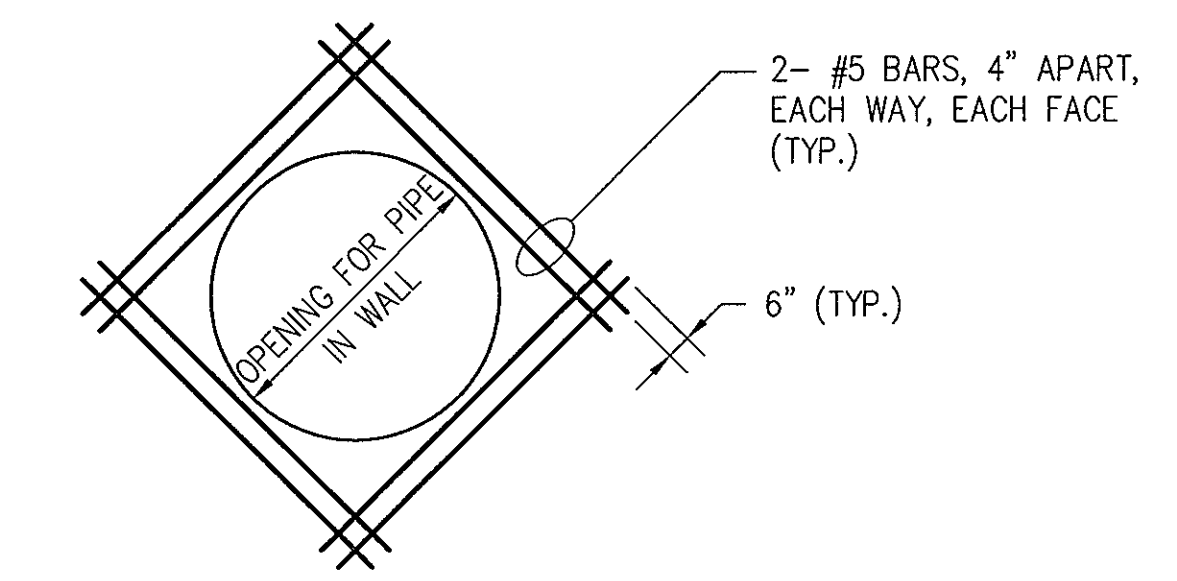
DETAIL A - CULVERT INTERIOR WALL CONNECTION
(CAST IN PLACE)
 SCALE: 1 1/2" = 1'-0"



DETAIL B - WING WALL TO CULVERT SIDEWALL CONNECTION
 SCALE: 3/4" = 1'-0"



TYPICAL WINGWALL/CULVERT FOOTING CONNECTION
 NOT TO SCALE



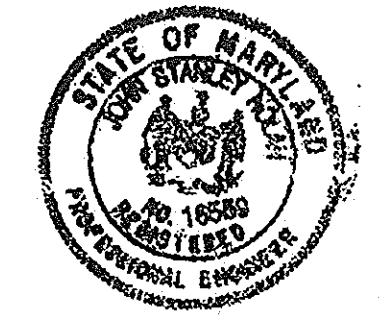
**ADDITIONAL REINFORCING AT OPENING FOR 18\"/>
 NOT TO SCALE**

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspections
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 896-3622 Fax: (410) 896-1383

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5309 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 (443) 367-0422

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."



SECTIONS AND TIE-IN DETAILS
GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 39 OF 41

APPROVED: DEPARTMENT OF PUBLIC WORKS
John S. Nolan 4-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John S. Nolan 6/24/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John S. Nolan 10/26/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

GENERAL NOTES

Specifications: Latest SHA Specifications and Special Provisions for materials and construction. Latest AASHTO Standard Specifications for Highway Bridges for design.

Materials: Posts and rails shall conform to ASTM F-1083, Schedule 80. Fabric shall be 6 gauge, 2" PVC coated mesh conforming to S14.01.

All posts, braces, fittings and hardware shall be PVC coated. Coating shall conform to 914.03 except that nuts, bolts and washers shall also be PVC coated and touched up after installation.

All plates shall be steel conforming to ASTM A 709 Grade 36.

Anchor studs or anchor bolts shall conform to ASTM A 276, Type 304 or Type 304 stainless steel, annealed, hot-finished, ultimate strength 70,000 psi min., 20% min. elongation. Threads may be rolled or cut.

Epoxy grout for anchor studs in bored holes shall conform to S211.04.

PVC color for all elements of fence shall be black unless otherwise noted.

Construction: All longitudinal rails shall be parallel to top of parapet.

All posts shall be set normal to top of parapet for roadway grades 6% or less. For grades over 6% posts shall be set plumb.

The chain link fence shall be true to line, taut, tight fit to top of parapet, with 1/2" min. to 1" max. gap, and shall comply with the best practice for fence construction of this type.

Post and rails shall be permanently positioned before fabric is placed.

For post spacing see pertinent structure sheets.

Precoated longitudinal rails, if cut, shall have the cut end coated with PVC touch up material supplied by the manufacturer prior to erection.

If Contractor elects to place anchor studs after placing concrete parapet, newly placed rebar shall be located so that coring does not damage same, all holes shall be cored that drilling the diameter of the cored holes for the anchor studs shall be 1/8".

Measurement and Payment: The furnishing, fabricating, erecting, etc., of all new chain link fence on the bridge, complete in place, will not be measured for payment but all costs thereof shall be included in the contract lump sum prices for the pertinent Chain Link Safety Fence For Bridge Items.

The furnishing, fabricating, erecting, etc., of all new chain link fence anti-climb shields, complete in place, will be measured and paid for at the contract unit prices per each for the pertinent Chain Link Safety Fence Anti-Climb Shield Items.

Any defects uncovered by the Inspection of welds on base plates and poles shall be repaired or replaced by new members at no additional cost to the Administration.

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 6/17/08	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
2-21-14	11-17-07
3-5-12	11-23-07
3-5-12	11-23-07
FINAL APPROVAL	DATE: 11-3-08
	STANDARD NO. BR-SS(3.01)-75-21 SHEET 1 OF 1

*** LOCATION CATEGORY**

BAR SIZE	LOCATION CATEGORY		
	A	B	C
#4	2'-11"	2'-0"	1'-8"
#5	3'-7"	2'-6"	2'-1"
#6	4'-4"	3'-0"	2'-6"
#7	5'-1"		2'-11"
#8	6'-8"	Does Not Exist	3'-10"
#9	8'-5"		4'-10"
#10	10'-9"		6'-2"
#11	13'-2"		7'-7"

*** LOCATION CATEGORY**

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
 B - All bars not in Category A spaced less than 6" apart.
 C - All bars not in Category A spaced 6" or more apart.

Notes:
 1. When bar lap is not specified on the Plans, CASE NO.2 - For bars coated with epoxy not in Case No.1, the above dimensions shall be used.
 2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
 3. These bar laps only apply where the General Notes indicate Reinforcing Steel Design, fs = 24,000 p.s.i.

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 8/2/08	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
2-10-12	11-23-07
11-23-07	11-23-07
11-23-07	11-23-07
FINAL APPROVAL	DATE: 8-8-90
	STANDARD NO. M16.051-80-122 SHEET 3 OF 3

*** LOCATION CATEGORY**

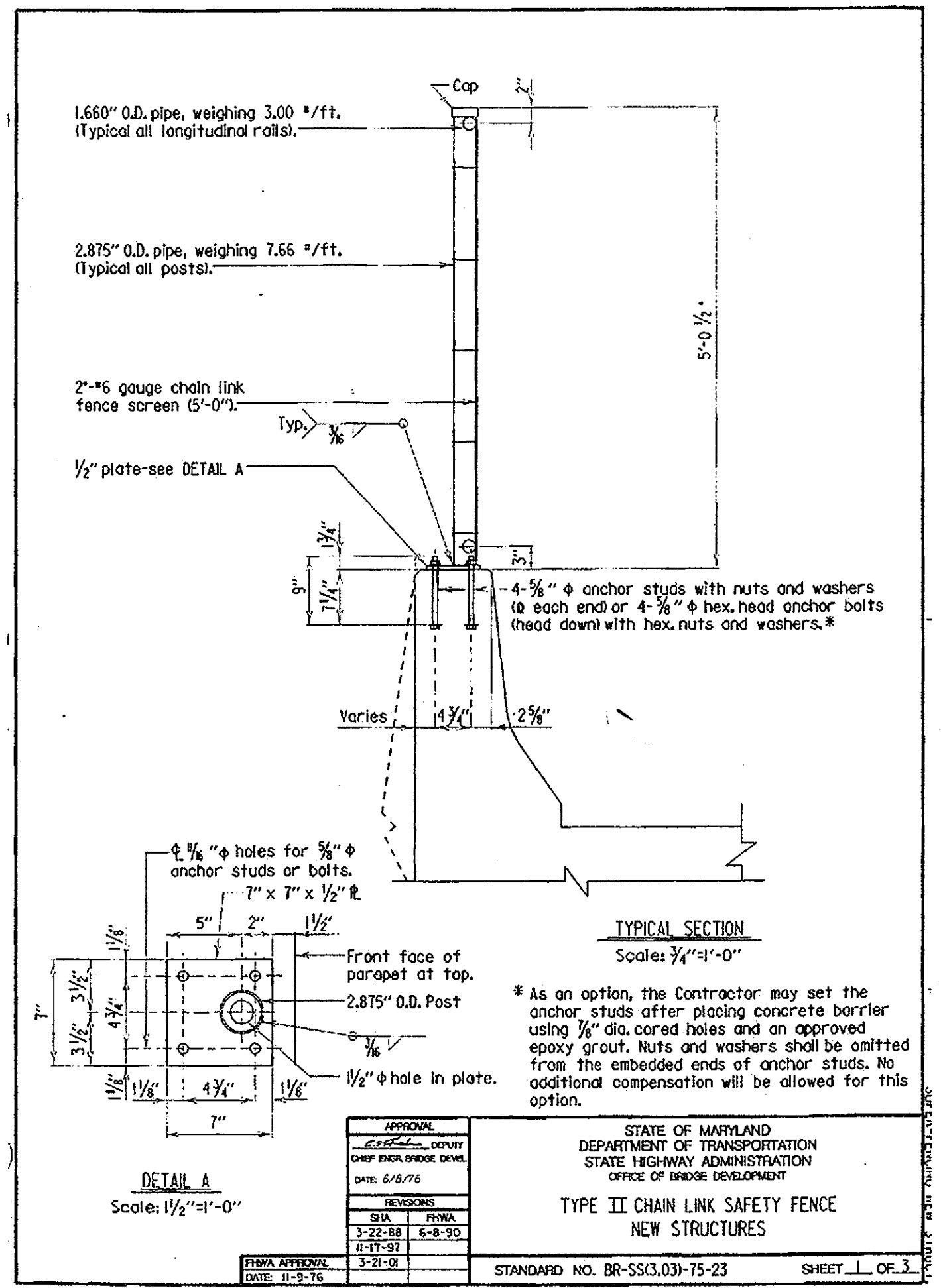
BAR SIZE	LOCATION CATEGORY		
	A	B	C
#4	2'-5"	1'-9"	1'-5"
#5	3'-0"	2'-2"	1'-9"
#6	3'-7"	2'-7"	2'-1"
#7	4'-10"	3'-6"	2'-10"
#8	6'-5"	4'-7"	3'-8"
#9	8'-1"	5'-9"	4'-8"
#10	10'-3"	7'-4"	5'-11"
#11	12'-7"	9'-0"	7'-3"

*** LOCATION CATEGORY**

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
 B - All bars not in Category A spaced less than 6" apart.
 C - All bars not in Category A spaced 6" or more apart.

Notes:
 1. When bar lap is not specified on the Plans, the above dimensions shall be used.
 2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
 3. These bar laps only apply where the General Notes indicate Reinforcing Steel Design, fs = 24,000 p.s.i.

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 6-8-90	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
2-3-92	11-23-07
11-23-07	11-23-07
FINAL APPROVAL	DATE: 6-8-90
	STANDARD NO. M16.071-81-127 SHEET 1 OF 3



HOOKS
TABLE I
REFERENCES

1. ACI Types I thru 26
 2. SIA Standard Pin Bending
 3. SIA Radius Bending

RECOMMENDED END HOOKS, ALL GRADES

BAR SIZE	Finished bend diameter D, in.	180 - deg hook			90 - deg hook		
		A or G in.	J, in.	K, in.	A or G in.	J, in.	K, in.
#3	2 1/4	5	3	4	3	4	
#4	3	6	4	5	4	5	
#5	3 1/2	7	5	6	5	6	
#6	4 1/2	8	6	7	6	7	
#7	5 1/4	10	7	8	7	8	
#8	6	10	7	8	7	8	
#9	3 1/2	1-3	1 1/2	1 1/4	1-1	1-0	
#10	10 1/2	1-5	1 1/2	1 1/2	1-1	1-0	
#11	12	1-7	1-2 1/2	1-2	1-2	1-0	
#14	18 1/4	2-3	1-3 1/4	1-3	2-7	2-7	
#18	24	3-0	2-4 1/2	2-4	3-5	3-5	

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 10/2/07	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
3-22-03	6-8-90
11-27-97	11-23-07
FINAL APPROVAL	DATE: 11-3-08
	STANDARD NO. REBAR-80(9.05)-97-320 SHEET 1 OF 2

HOOKS
TABLE II
REFERENCES

1. ACI Types SI thru SII
 2. ACI Types TI thru T8
 3. SIA Ties and Stirrups

Notes: Tie and stirrup types supplied in sizes #3-#8

STIRRUP AND TIE HOOKS

RECOMMENDED END HOOKS, ALL GRADES

BAR SIZE	Finished bend diameter D, in.	180 - deg hook		
		A or G in.	J, in.	K, approx
#3	2 1/4	4	4	2 1/2
#4	3	4 1/2	4 1/2	3 1/2
#5	3 1/2	6	5 1/2	3 3/4
#6	4 1/2	8	7 1/4	4 1/2
#7	5 1/4	1-2	9	5 1/2
#8	6	1-4	10 1/4	6

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 10/2/07	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
3-22-03	6-8-90
11-27-97	11-23-07
FINAL APPROVAL	DATE: 11-3-08
	STANDARD NO. REBAR-80(9.05)-97-320 SHEET 2 OF 2

TYPICAL SECTION
 Scale: 3/4" = 1'-0"

DETAIL A
 Scale: 1 1/2" = 1'-0"

Notes:
 * As an option, the Contractor may set the anchor studs after placing concrete barrier using 1/8" dia. cored holes and an approved epoxy grout. Nuts and washers shall be omitted from the embedded ends of anchor studs. No additional compensation will be allowed for this option.

APPROVAL	STATE OF MARYLAND
<i>John S. Nolan</i>	DEPARTMENT OF TRANSPORTATION
DATE: 6/8/06	STATE HIGHWAY ADMINISTRATION
	OFFICE OF BRIDGE DEVELOPMENT
REVISIONS	
SHA	PRIMA
3-22-03	6-8-90
11-27-97	11-23-07
FINAL APPROVAL	DATE: 11-3-08
	STANDARD NO. BR-SS(3.03)-75-23 SHEET 1 OF 3

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspection
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 992-9662 Fax: (410) 992-1043

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

John S. Nolan 6-2-2008
 JOHN S. NOLAN DATE

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 LICENSE NO. 16559, EXPIRATION DATE: 7/14/09.

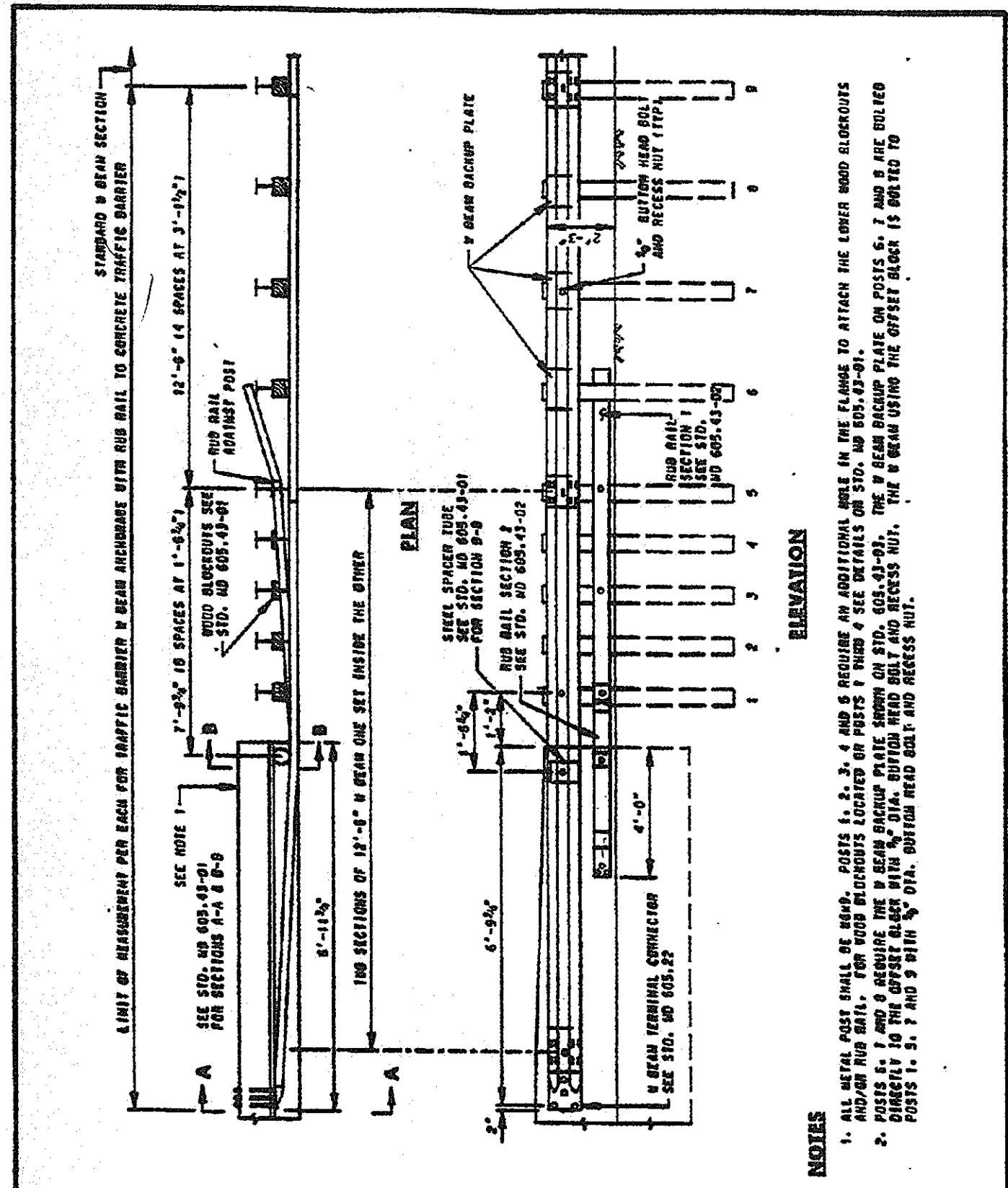
"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."

STANDARD DETAILS
GTW'S WAVERLY WOODS
APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 40 OF 41

APPROVED: DEPARTMENT OF PUBLIC WORKS
with 2 mod. 6-16-08
 CHIEF, BUREAU OF HIGHWAYS DATE

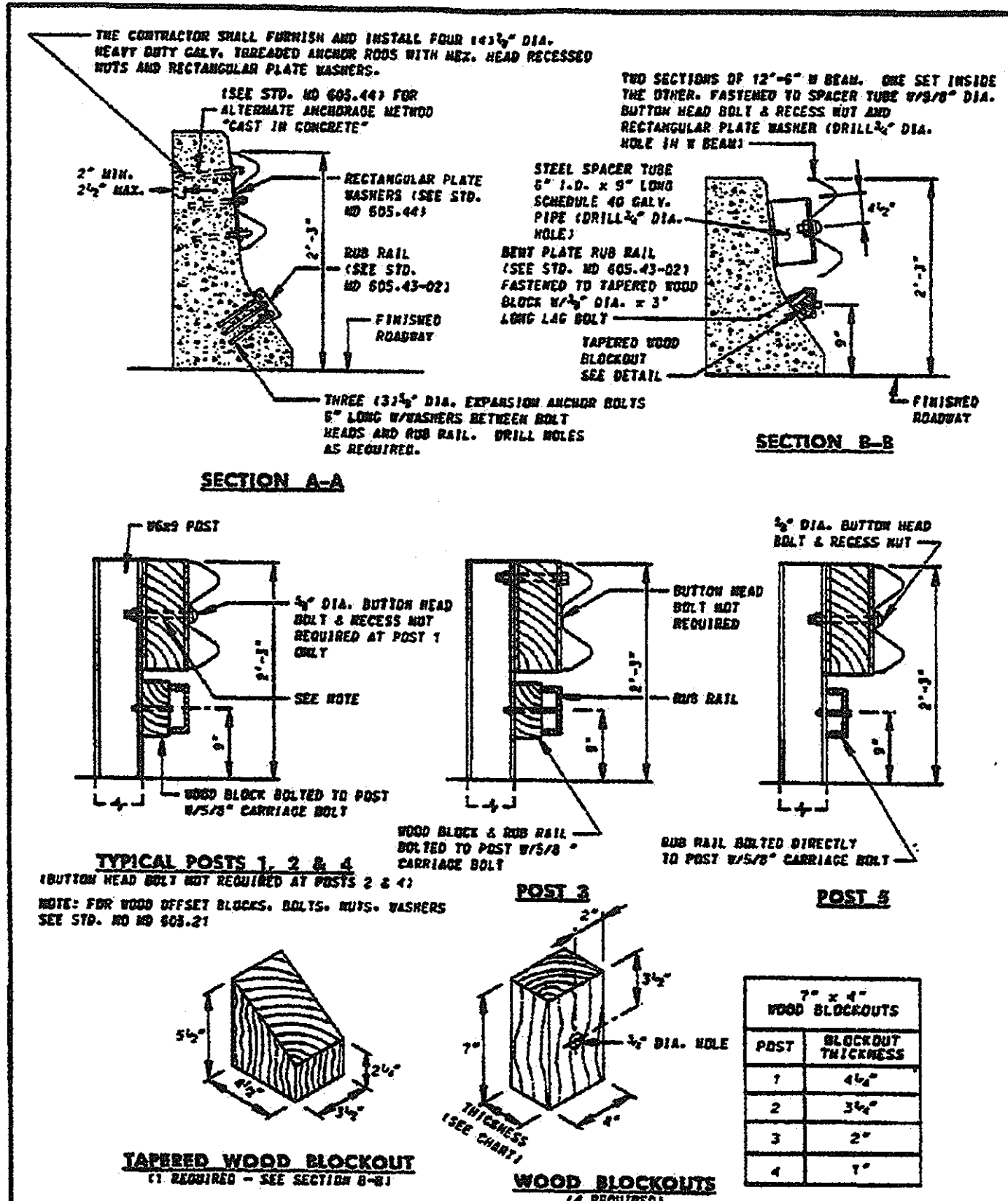
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chris Lane 9/29/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Michael J. ... 10/24/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



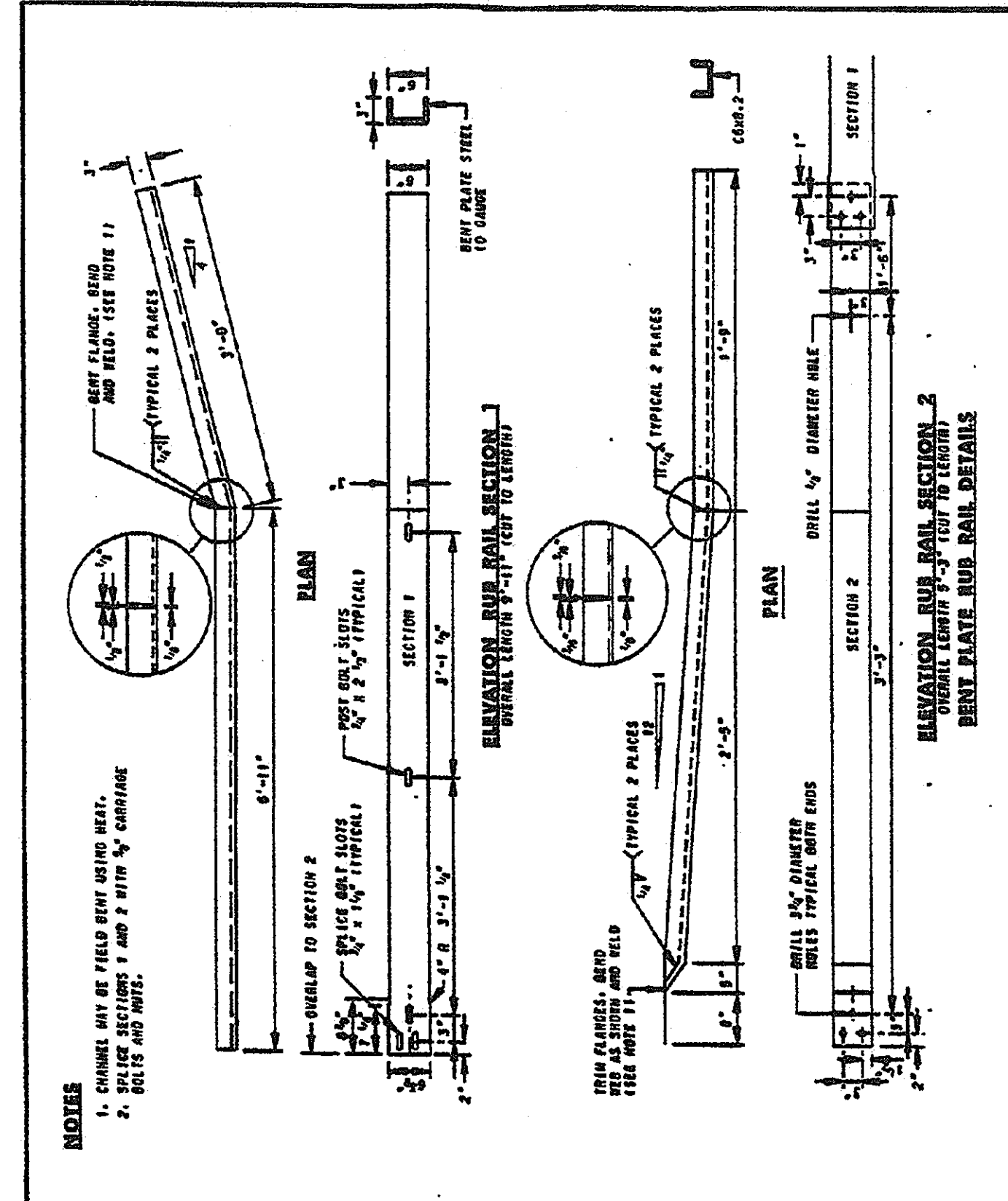
STANDARD NO. MD 605.43

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TRAFFIC BARRIER W BEAM ANCHORAGE
 WITH RUB RAIL TO JERSEY
 SHAPE AND F SHAPE



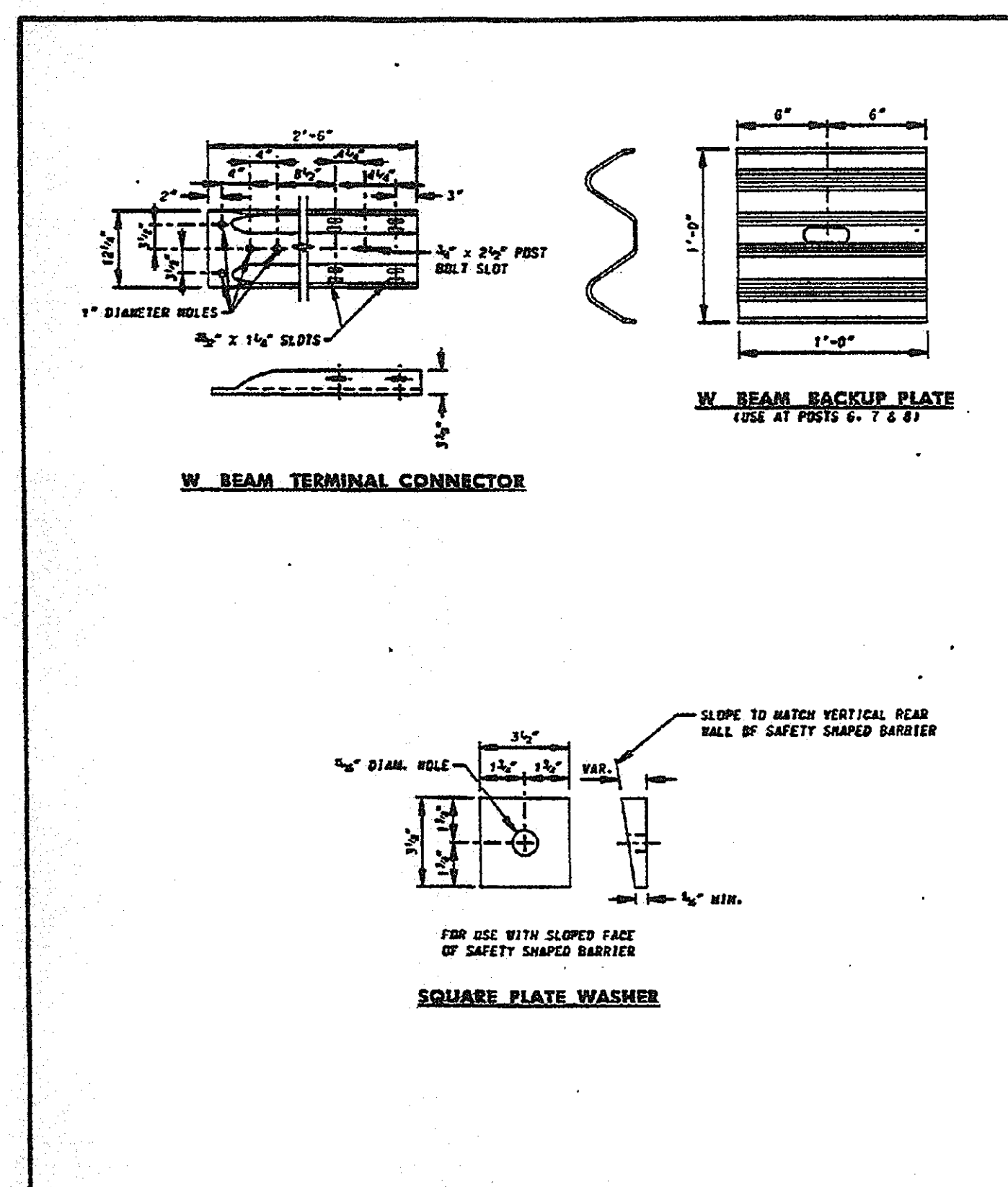
STANDARD NO. MD 605.43-01

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TRAFFIC BARRIER W BEAM ANCHORAGE
 WITH RUB RAIL TO JERSEY
 SHAPE AND F SHAPE



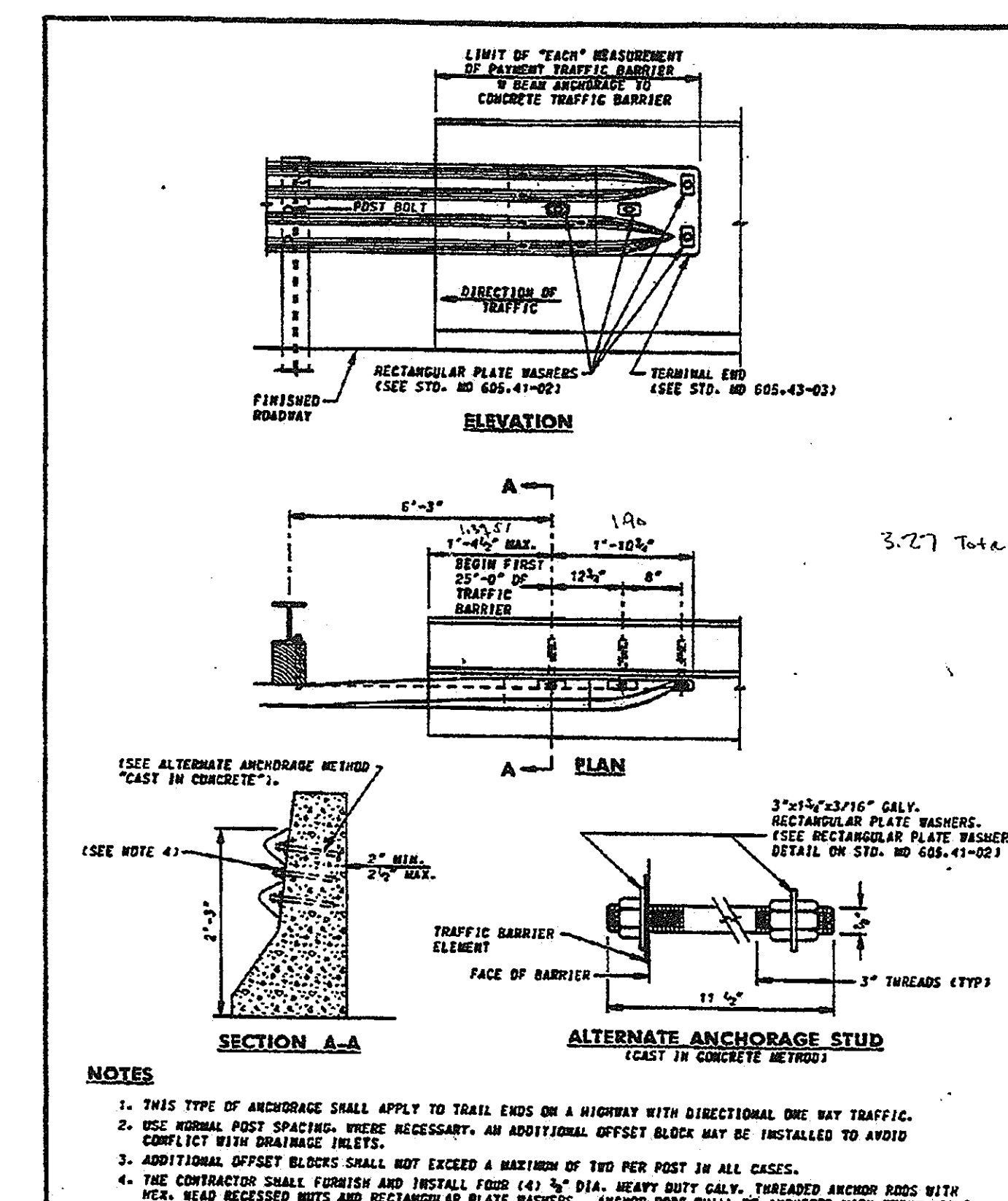
STANDARD NO. MD 605.43-02

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TRAFFIC BARRIER W BEAM ANCHORAGE
 WITH RUB RAIL TO JERSEY
 SHAPE OR F SHAPE



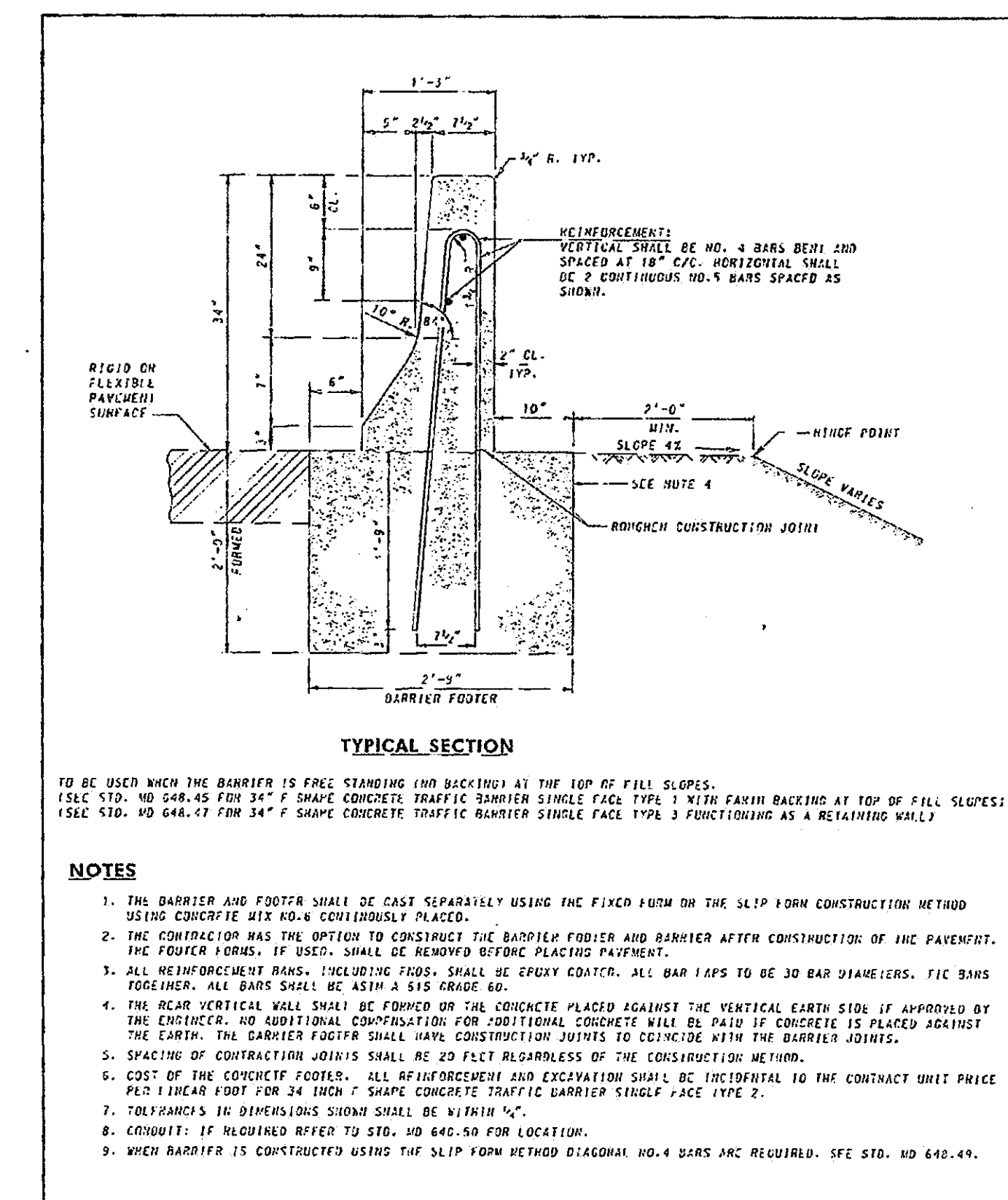
STANDARD NO. MD 605.43-03

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TRAFFIC BARRIER W BEAM ANCHORAGE
 WITH RUB RAIL TO JERSEY
 SHAPE OR F SHAPE



STANDARD NO. MD 605.44

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TRAFFIC BARRIER W BEAM ANCHORAGE
 TO TRAIL END OF JERSEY SHAPE
 OR F SHAPE



STANDARD NO. MD 648.46

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 34 INCH F SHAPE
 CONCRETE TRAFFIC BARRIER SINGLE FACE
 TYPE 2 (FREE STANDING IN FILL)

NOLAN
 Associates, Inc.
 Engineers - Civil/Structural/Inspection
 4785 Dorsey Hall Drive
 Suite 124
 Ellicott City, Maryland 21042
 Phone: (410) 992-9621 Fax: (410) 992-1903

OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 JOHN S. NOLAN
 6-2-2008
 DATE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16559, EXPIRATION DATE: 7/14/09."

STANDARD DETAILS
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MAY 19, 2008
 SHEET 41 OF 41

ENGINEER'S CERTIFICATE
I Hereby 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 of Engineer: *[Signature]* Date: 12/15/07

DEVELOPER'S CERTIFICATE
"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."

Signature of Developer: *[Signature]* Date: 12/15/07

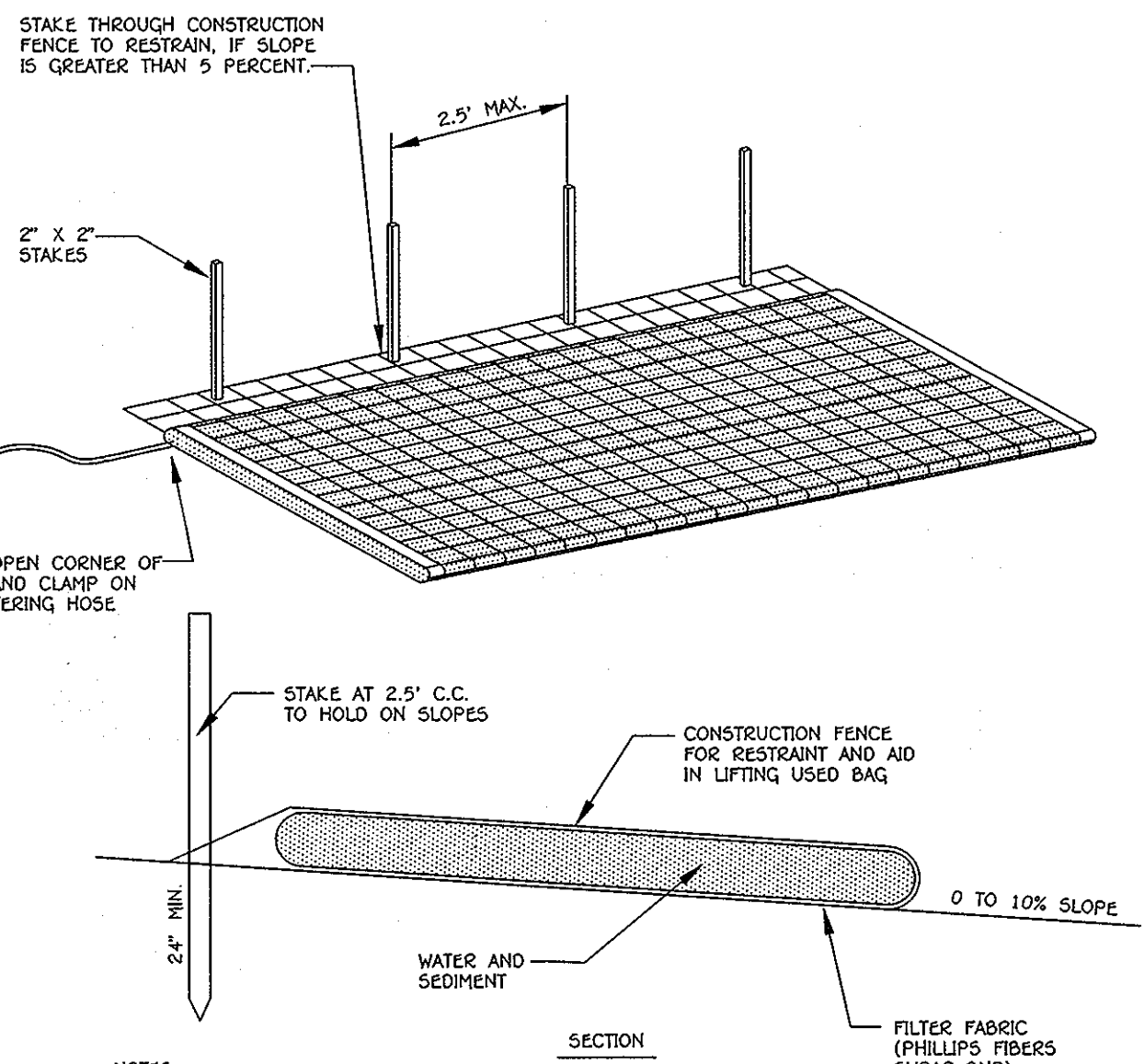
Approved For Howard County Soil Conservation District And Meets Technical Requirements

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.
Signature: *[Signature]* Date: 1/11/10
District: Howard Soil Conservation Dist.

Approved: Department Of Planning And Zoning
Signature: *[Signature]* Date: 1/22/10
Chief, Division Of Land Development

Approved: Howard County Department Of Public Works
Signature: *[Signature]* Date: 1/21/10
Chief, Development Engineering Division

Approved: Howard County Department Of Public Works
Signature: *[Signature]* Date: 1-29-10
Chief, Bureau Of Highways



- NOTES**
1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
 2. WIDTH AND LENGTH SHALL BE AS SHOWN IN THE TABLE.
 3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
 4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
 5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT.
 6. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.

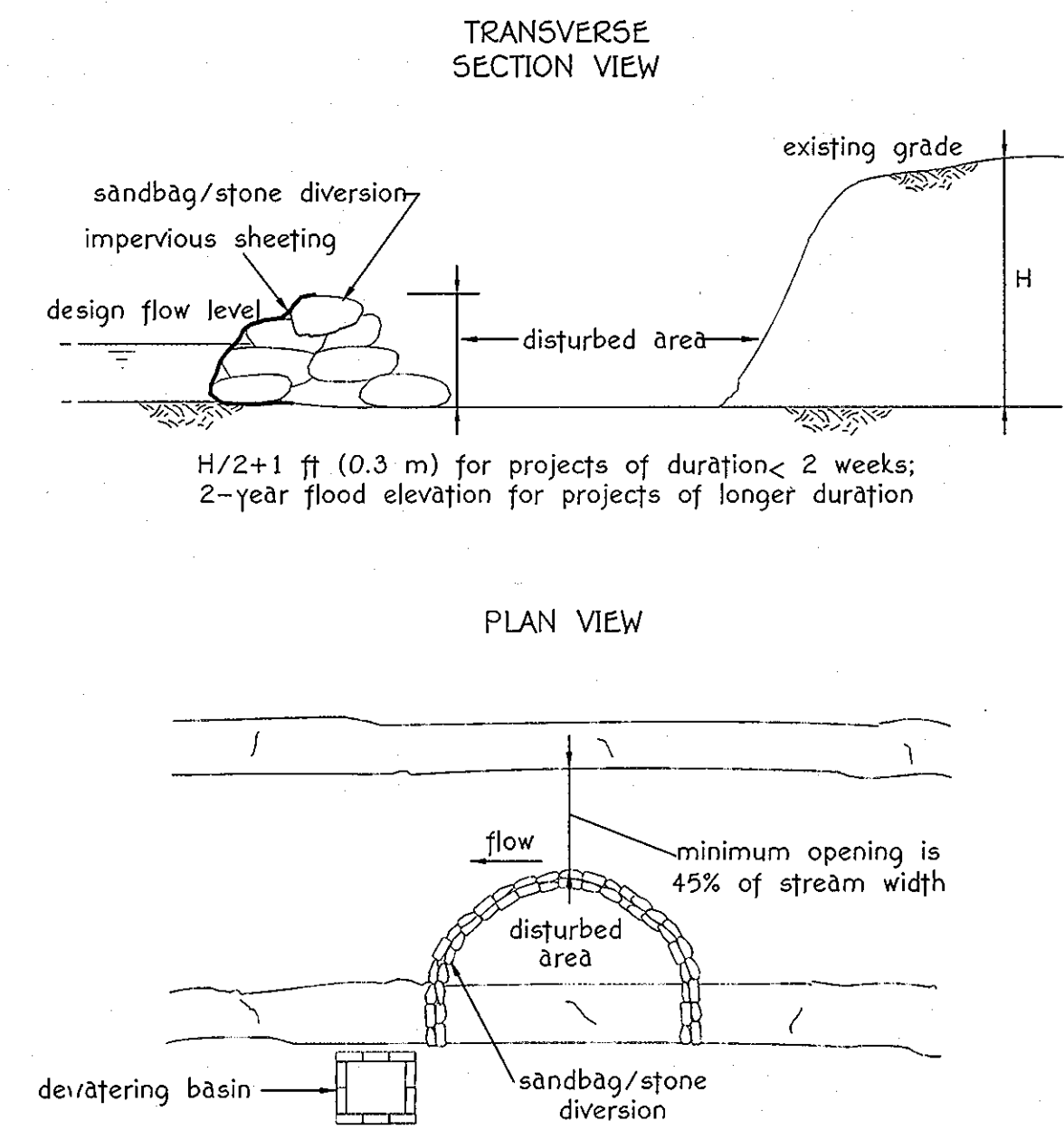
AVAILABLE FROM:
INDIAN VALLEY INDUSTRIES, INC. P.O. BOX 810 JOHNSON CITY, NEW YORK 13790 (800) 699-5111
OR
A.C.F. ENVIRONMENTAL 1801-A WILLES ROAD RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-440-3636
OR
PRICE AND COMPANY, INC. 425 36TH STREET WYOMING, WY 83948 (316) 530-9230

FILTER BAG DETAIL
NOT TO SCALE

BEST MANAGEMENT PRACTICES

- FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS
1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR 100 YEAR FLOODPLAIN.
 2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
 3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
 4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
 5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
 6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
 7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES:
ANNUAL RYE GRASS (*Lolium multiflorum*)
MILLET (*Setaria italica*)
BARLEY (*Hordeum sp.*)
OATS (*Avena sp.*)
RYE (*Scaevola cereale*)
THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
 8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
 9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM.
USE 1 WATERS: IN STREAM WORK SHALL BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
 10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
 11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

DETAIL 1.5: SANDBAG/STONE DIVERSION

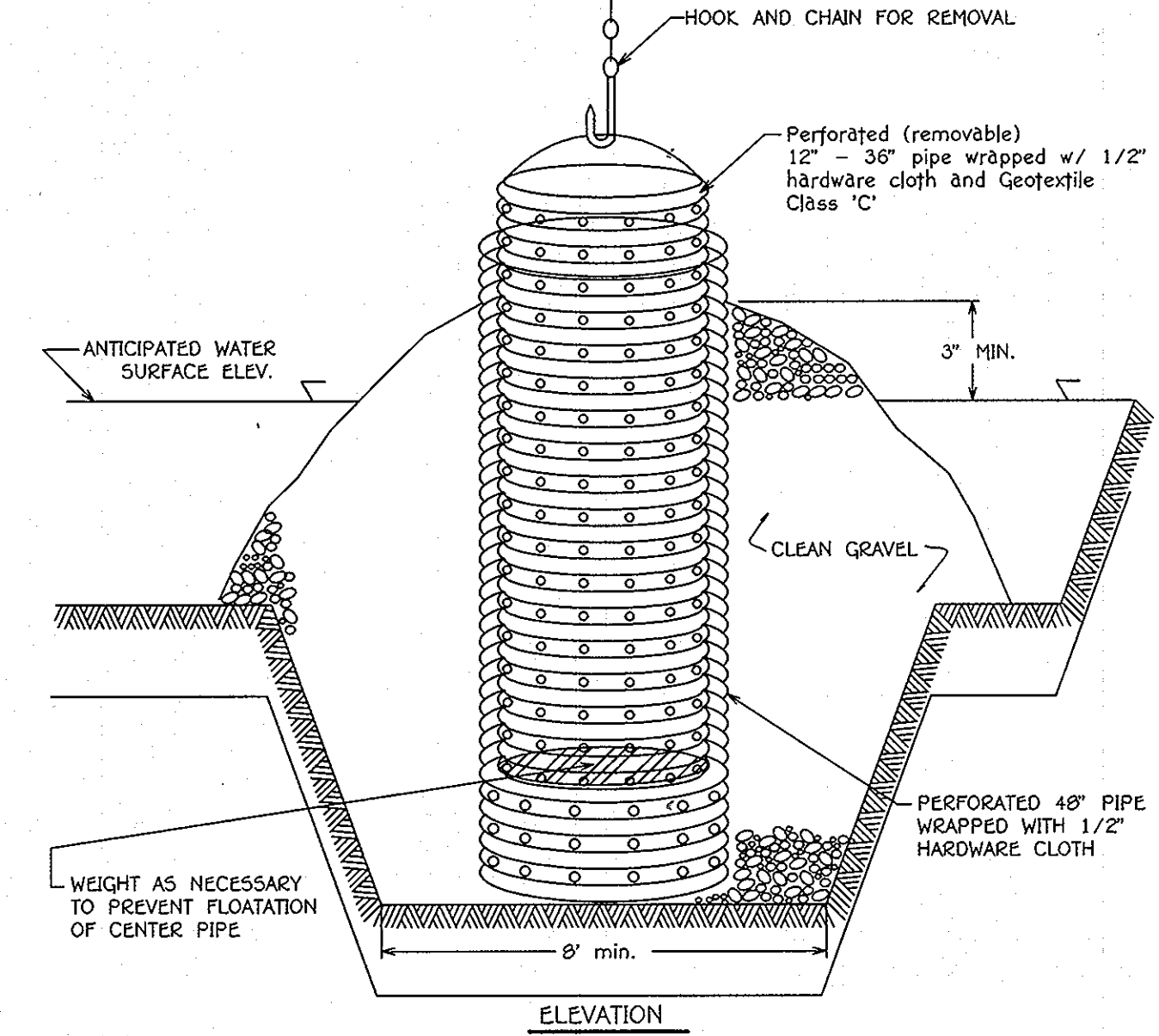


DESCRIPTION
The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS
Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS
Materials for sandbag and stone stream diversions should meet the following requirements:
• Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
• Sandbags: Sandbags should consist of materials which are resistant to ultraviolet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
• Sheeting: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):
1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.
5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.



SEQUENCE OF CONSTRUCTION FOR TWIN BOX CULVERT INSTALLATION



CONSTRUCTION SEQUENCE FOR TWIN CULVERT INSTALLATION

1. A diversion pipe as shown in MGWC 1.4: The Temp. 36" dia. Diversion Pipe should be installed and a sandbag or stone barrier as shown in MGWC 1.5: Sandbag/Stone Diversion should be constructed according to specifications to divert the streamflow into the diversion. (1 DAY)
2. A sandbag or stone barrier should be placed at the downstream Headwall to prevent the flow from backwashing into the construction area. (1 DAY)
3. The Concrete Box Culverts should be installed in Two (2) Phases as Shown. (4 WEEKS)
4. The disturbed sections of the channel, including the slopes and streambed, should be stabilized with methods approved by the WMA. (1 DAY)
5. The construction area should be dewatered, and the temporary stream diversion removed starting at the downstream section and moving upstream. (1 DAY)
6. Finally, the dewatering basin(s) should be restored to the original grade, the silt fence removed, and all disturbed areas seeded and mulched. (1 DAY)

- Construction Specifications**
1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
 2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
 3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
 4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

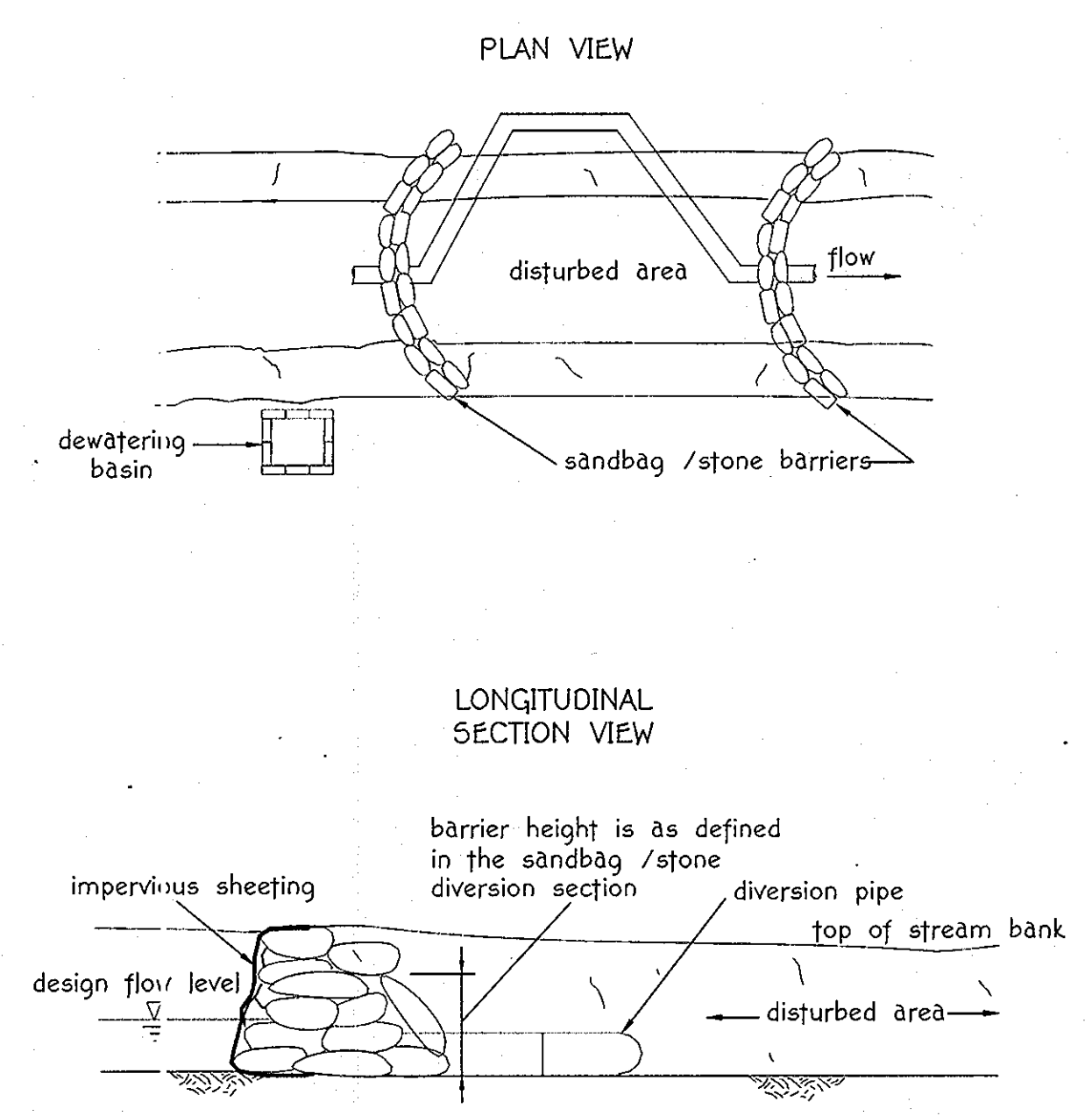
REMOVABLE PUMPING STATION
NOT TO SCALE

△	ADDED SHEET 42 & 43	10/9/09
NO.	DESCRIPTION	DATE
	REVISIONS	



OWNER/DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION
c/o LAND DESIGN AND DEVELOPMENT, INC.
530 DORSEY HALL DRIVE, SUITE 102
ELLCOTT CITY, MARYLAND 21042
(443) 367-0422

DETAIL 1.4: DIVERSION PIPE



DESCRIPTION
The work should consist of installing flow diversion pipes in combination with sandbag or stone diversions when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS
Diversion pipes with an insufficient flow capacity can cause the channel diversion to fail thereby resulting in severe erosion of the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low flow.

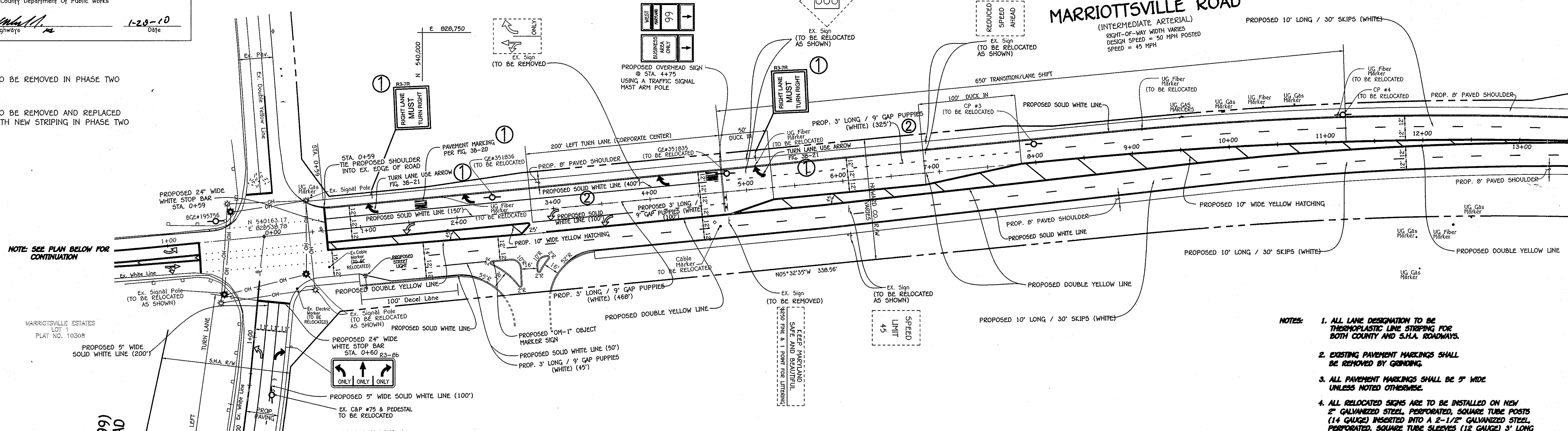
MATERIAL SPECIFICATIONS
Materials for stream diversions should meet the following requirements:
• Riprap: Stone should be washed and have a minimum diameter of 6 inches (15 centimeters).
• Sandbags: Sandbags should consist of materials which are resistant to ultraviolet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.). Sheeting:
• Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES
All erosion and sediment control devices including mandatory dewatering basins should be installed as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during low flow conditions. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
Diversion pipes with sandbag or stone barriers should be completed as follows (refer to Detail 1.4):
1. Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
2. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
3. Sediment-laden water from the construction area should be pumped to a dewatering basin.
4. The diversion pipe should have a minimum capacity sufficient to convey the 2-year flow for projects with a duration of two weeks or greater. For projects of shorter duration, the capacity of the pipe can be reduced accordingly.
5. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
6. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

CULVERT CONSTRUCTION NOTES & DETAILS
GTW'S WAVERLY WOODS
APFO MITIGATION PLAN
TAX MAP No. 16
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: SEPTEMBER 8, 2009
SHEET 42 OF 43

Approved: Department Of Planning And Zoning
 Chief, Division of Land Development
 Chief, Development Engineering Division
 Approved: Howard County Department of Public Works
 Chief, Bureau of Highways

- ① - TO BE REMOVED IN PHASE TWO
- ② - TO BE REMOVED AND REPLACED WITH NEW STRIPING IN PHASE TWO

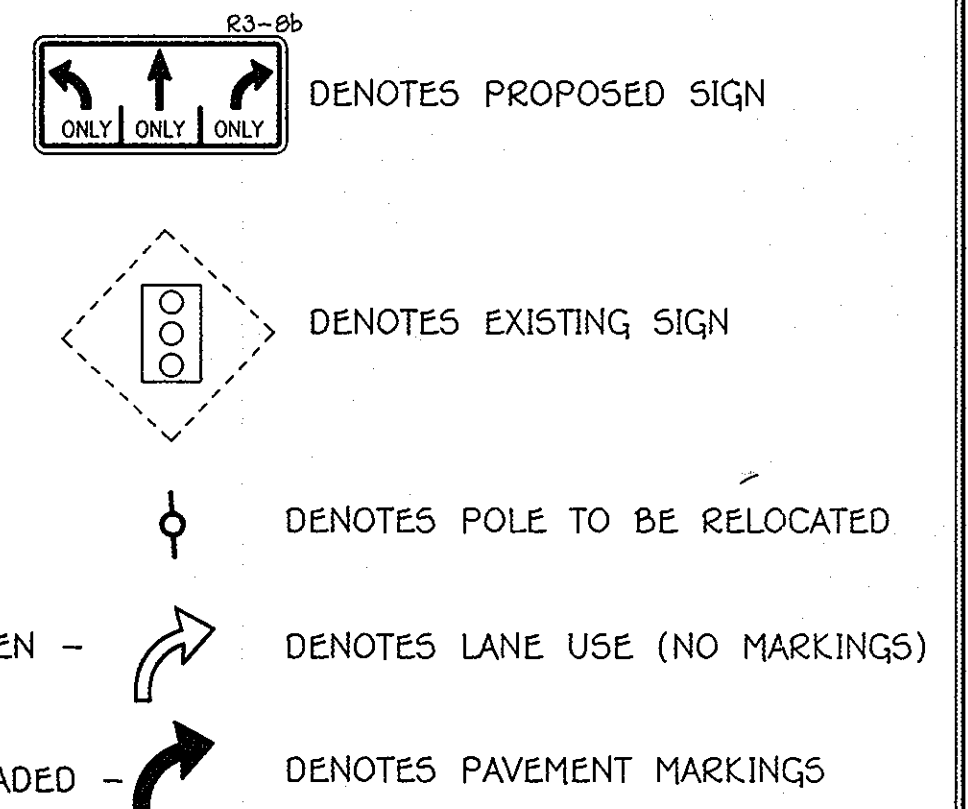


PHASE ONE PLAN

SCALE: 1" = 50'

- NOTES:**
1. ALL LANE DESIGNATION TO BE THERMOPLASTIC LINE STRIPING FOR BOTH COUNTY AND S.H.A. ROADWAYS.
 2. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING.
 3. ALL PAVEMENT MARKINGS SHALL BE 5" WIDE UNLESS NOTED OTHERWISE.
 4. ALL RELOCATED SIGNS ARE TO BE INSTALLED ON NEW 2" GALVANIZED STEEL, PERFORATED SQUARE TUBE POSTS (1 1/2 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED SQUARE TUBE SLEEVES (12 GAUGE) 3' LONG WITH A GALVANIZED STEEL CAP ON THE TOP OF POST.

NOTE: CONTRACTOR SHALL CONTACT PAGES ZIKLENBACH AT (410) 313-2430 HOWARD COUNTY TRAFFIC PRIOR TO STARTING ANY PAVEMENT MARKINGS.



NO.	DESCRIPTION	DATE
1	ADD PHASE ONE STRIPING ALONG MARIOTTSSVILLE ROAD. ADD SHEET 42 & 43	10/9/09
REVISIONS		

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10223 BALTIMORE NATIONAL PARK
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895



OWNER/DEVELOPER
 WAVERLY WOODS DEVELOPMENT CORPORATION
 c/o LAND DESIGN AND DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

PHASE ONE PLAN

SCALE: 1" = 50'

**PHASE ONE
 OLD FREDERICK ROAD (MARYLAND ROUTE 99) &
 MARIOTTSSVILLE ROAD STRIPING PLAN
 GTW'S WAVERLY WOODS
 APFO MITIGATION PLAN**
 TAX MAP No. 16
 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 8, 2009
 SHEET 43 OF 43

MATCH LINE - SEE SHEET 10