FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLAN

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" AND NON-PRESERVATION PARCELS "B" THRU "D"

ZONING: RC-DEO

TAX MAP No. 3 GRID No. 19 PARCEL No. 29

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-9-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

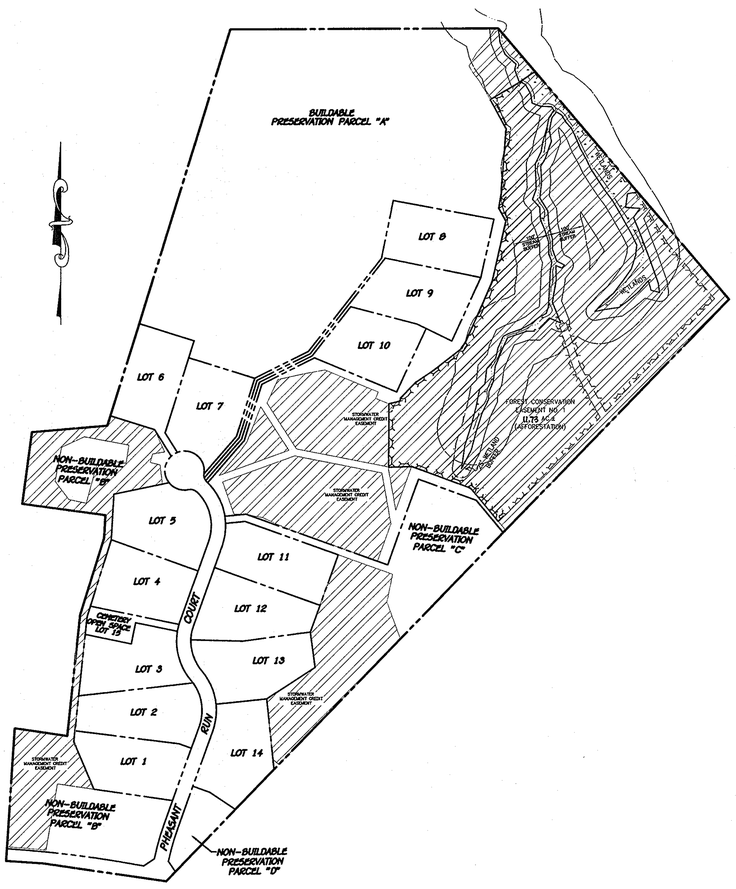
SHEET INDEX

TRAFFIC CONTROL SIGNS

ROAD NAME	C.L. STA.	OFFSET	POSTED SIGN	SIGN CODE
PHEASANT RUN COURT	0+39	26' L	STOP	R1-1
PHEASANT RUN COURT	1+00	13' R	SPEED LIMIT 25	R2-1
PHEASANT RUN COURT	2+50	13' L	STOP AHEAD	W3-1a
OLD FREDERICK ROAD	19+00	28' L	SEE SHEET 2	W2-1
OLD FREDERICK ROAD	17+50	28' L	RIGHT LANE MUST TURN RIGHT	R3-7R

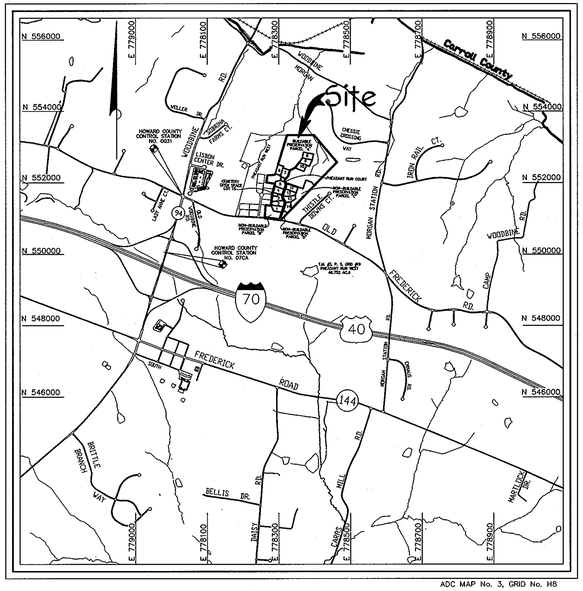
ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	R/W WIDTH
PHEASANT RUN COURT	PUBLIC ACCESS PLACE	25 M.P.H.	40'



PLAN VIEW

SCALE: 1" = 200'



ADC MAP No. 3, GRID No. H8

VICINITY MAP

SCALE: 1" = 2000'

FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
5. COORDINATES BASED ON NAD'83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 0031 AND NO. 07CA.
   STATION NO. 0031 NORTH 612408.14 FEET EAST 1292800.70 FEET
   STATION NO. 07CA NORTH 610731.30 FEET EAST 1292224.32 FEET
6. THE TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP DATED MAY, 2001 AND WAS APPROVED ON 11/02/01 UNDER S-01-34.
7. BACKGROUND INFORMATION:
   A. SUBDIVISION NAME: PHEASANT RUN EAST
   B. TAX MAP No.: 3
   C. PARCEL No.: 29
   D. ZONING: RC-DEO
   E. ELECTION DISTRICT: FOURTH
   F. TOTAL TRACT AREA: 60.051 AC.±
   G. NO. OF BUILDABLE LOTS: 15, 14 PROPOSED LOTS & 1 BUILDABLE PRES. PARCEL
   H. NO. OF OPEN SPACE LOTS: 1 (CEMETERY)
   I. NO. OF NON-BUILDABLE PRESERVATION PARCELS: 3
   J. NO. OF BUILDABLE PRESERVATION PARCELS: 1
   K. AREA OF BUILDABLE LOTS: 15.319 AC.±
   L. AREA OF OPEN SPACE LOTS: 13,187 SQ.FT.± or 0.303 AC.± (CEMETERY)
   M. AREA OF NON-BUILDABLE PRESERVATION PARCELS: 9.592 AC.±
   N. AREA OF BUILDABLE PRESERVATION PARCEL 'A': 33.185 AC.±
   O. TOTAL AREA OF ROADWAY TO BE DEDICATED: 1.652 AC.±
   P. AREA OF FLOODPLAIN: 1.46 AC.±
   Q. AREA OF 25% OR GREATER SLOPES: 0.00 AC.±
   R. PREVIOUS FILE NOS.: S-01-034 APPROVAL DATE: 3-19-02, P-06-014 APPROVAL DATE: 4-09-07
   S. DEED REFERENCE: 4439 / 585
8. THERE IS AN EXISTING CEMETERY LOCATED ON LOT 15 (AREA = 0.3017 AC.). THE PLANNING BOARD APPROVED THE ACCESS AND ACCOMODATION PLAN FOR THE EXISTING CEMETERY ON JANUARY 10, 2002. THE LAYOUT AS SHOWN HAS BEEN DETERMINED BY THE DIRECTOR OF DPZ TO BE IN COMPLIANCE WITH THE LAYOUT APPROVED BY THE PLANNING BOARD.
9. ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95 % COMPACTION OF AASHTO T-180.
10. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY PROVIDING 11.75 AC. OF ON-SITE AFFORESTATION. THE TOTAL FOREST CONSERVATION AREA IS 11.75 ACRES. THE FOREST CONSERVATION SURETY AMOUNT TO FULFILL THE FOREST CONSERVATION OBLIGATION IS $423,429.40 BASED ON 11.75 AC. X 43,560 SQ.FT. X $0.50 PER SQ.FT.) SHALL BE POSTED WITH THE DEVELOPERS AGREEMENT FOR THIS FINAL PLAN, F-08-011.
11. STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY AND MARYLAND 378 SPECIFICATIONS. WATER QUALITY WILL BE PROVIDED BY TWO MICRO-POOL FACILITIES, LEVEL SPREADERS & DRIVEWAY DISCONNECTION (PARCEL 'A'). CPv IS BEING PROVIDED WITHIN THE MICRO-POOL FACILITIES (BMP NO. 1 & 2). BOTH STORMWATER MANAGEMENT PONDS ARE PRIVATELY OWNED BY THE H.O.A. AND JOINTLY MAINTAINED BY THE H.O.A. AND HOWARD COUNTY, MARYLAND.
12. THE NON-CRITICAL FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY FISHER, COLLINS & CARTER, INC. AND APPROVED ON NOVEMBER 6, 2006.
13. THE PROPOSED WATER AND SEWER SYSTEMS SHALL BE PRIVATE.
    The State Water Appropriation Permit Numbers for this project is:
    Pheasant Run East – #H02006G007 (01)
14. THE SUBJECT PROPERTY IS LOCATED OUTSIDE OF THE METROPOLITAN DISTRICT.
15. TOPOGRAPHIC INFORMATION ESTABLISHED AT TWO FOOT INTERVALS AND IS BASED ON FLOWN AERIAL SURVEY BY HARFORD AERIAL SURVEYS ON 2/18/06.
16. FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE IS TO BE PROVIDED AT THE JUNCTION OF THE FLAG OR PIPESTEM AND THE ROAD RIGHT-OF-WAY AND NOT ONTO THE FLAG OR PIPESTEM DRIVEWAY.
17. THE WETLANDS DELINEATION STUDY AND FOREST STAND DELINEATION STUDY WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED MAY, 2001 AND WAS APPROVED ON 11/02/01 UNDER S-01-34.
18. SOILS INFORMATION TAKEN FROM SOIL MAP NO. 2, SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1968 ISSUE.
19. THIS SUBDIVISION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003, DEVELOPMENT OR CONSTRUCTION ON THESE LOTS OR PARCELS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF A BUILDING OR GRADING PERMIT APPLICATION.
20. SUBJECT PROPERTY ZONED RC-DEO Per 02/02/04 COMPREHENSIVE ZONING PLAN AND THE COMP LITE ZONING AMENDMENTS EFFECTIVE 07/28/06.
21. THERE ARE NO STEEP SLOPES (25% OR GREATER) LOCATED ON THIS PROPERTY AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.116.a.
22. AS PER SECTION 104.F.4.b OF THE ZONING REGULATIONS, ONLY ONE EASEMENT HOLDER IS REQUIRED FOR PRESERVATION PARCELS DESIGNED SOLELY FOR SWM FACILITIES OR COMMUNITY SEWERAGE DISPOSAL SYSTEMS.
    A. BUILDABLE PRESERVATION PARCEL 'A'
       OWNED: PRIVATELY
       EASEMENT HOLDERS: H.O.A. AND HOWARD COUNTY, MARYLAND
       USE: ENVIRONMENTAL PROTECTION
    B. NON-BUILDABLE PRESERVATION PARCEL 'B'
       OWNED: HOMEOWNER'S ASSOCIATION
       EASEMENT HOLDERS: HOWARD COUNTY, MARYLAND
       USE: S.W.M.
    C. NON-BUILDABLE PRESERVATION PARCEL 'C'
       OWNED: HOMEOWNER'S ASSOCIATION
       EASEMENT HOLDERS: HOWARD COUNTY, MARYLAND
       USE: S.W.M.
    D. NON-BUILDABLE PRESERVATION PARCEL 'D'
       OWNED: HOMEOWNER'S ASSOCIATION
       EASEMENT HOLDERS: HOWARD COUNTY, MARYLAND & HOWARD COUNTY CONSERVANCY
       USE: RECREATIONAL SPACE AND ENVIRONMENTAL PROTECTION
23. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS OR STREAMS OR THEIR REQUIRED BUFFERS, FLOODPLAIN OR FOREST CONSERVATION EASEMENT AREAS.
24. PERIMETER AND STORM WATER MANAGEMENT LANDSCAPING IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL SHALL BE PROVIDED AS SHOWN ON THE LANDSCAPE PLAN SHEET OF THE ROAD CONSTRUCTION DRAWINGS FOR THIS FINAL PLAN. A LANDSCAPE SURETY FOR 133 SHADE TREES & 50 EVERGREEN TREES IN THE AMOUNT OF $47,400.00 WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT, UNDER THIS PLAT, F-08-011.
25. ALL WELLS TO BE DRILLED PRIOR TO FINAL PLAT APPROVAL. IT IS THE DEVELOPER'S RESPONSIBILITY TO SCHEDULE THE WELL DRILLING PRIOR TO FINAL PLAT SUBMISSION. IT WILL NOT BE CONSIDERED "GOVERNMENT DELAY" IF THE WELL DRILLING HOLDS UP THE HEALTH DEPARTMENT SIGNATURE OF THE RECORD PLAT.
26. ALL EXISTING STRUCTURES TO BE RAZED MUST BE REMOVED PRIOR TO FINAL PLAT SIGNATURE.
27. ALL WELLS AND SEPTIC FIELDS WITHIN 100 FEET OF PROPERTY LINE HAVE BEEN SHOWN.
28. ALL MOWING OPERATIONS THAT INVOLVE CROSSING THE WETLANDS AND FLOODPLAIN AREA ON BUILDABLE PARCEL 'A' WILL BE DONE SO WITH A RUBBER TIRE TRACTOR TO MINIMAZE DISTURBANCE OF THE WETLAND AREA.
29. SIGN POSTS: ALL SIGN POST 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 TUBE SLEEVE (12 GAUGE) – 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST."
30. DRIVEWAY (S) SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
    A) WIDTH – 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE)
    B) SURFACE – SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
    C) GEOMETRY – MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 FOOT TURNING RADIUS
    D) STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
    E) DRAINAGE ELEMENTS – CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
    F) STRUCTURE CLEARANCES – MINIMUM 12 FEET
    G) MAINTENANCE – SUFFICIENT TO INSURE ALL WEATHER USE
31. A TREE MAINTENANCE EASEMENT RUNNING ALONG THE EDGE OF THE PUBLIC ROAD RIGHT OF WAY AS SHOWN ON THESE PLANS IS RESERVED UPON ALL LOTS FRONTING ON THE SAID PUBLIC ROAD RIGHT OF WAY. THIS EASEMENT ALLOWS HOWARD COUNTY THE RIGHT TO ACCESS THE PROPERTY, WHEN NECESSARY, FOR THE SPECIFIC PURPOSE OF THE INSTALLATION, REPAIR AND MAINTENANCE OF COUNTY OWNED TREES LOCATED WITHIN THE BOUNDARIES OF THE PRIVATE LOTS. NO BUILDING OR STRUCTURE OF ANY KIND SHALL BE LOCATED ON OR OVER THE SAID EASEMENT AREA.
32. NO HISTORIC STRUCTURES EXIST ON THIS SITE.
33. THE GROUNDWATER APPROPRIATIONS PERMIT NUMBER IS HO2006G007 (01).

STATE OF MARYLAND — ALDO MICHAEL MANNARELLI — No. 20748 — REGISTERED PROFESSIONAL ENGINEER

9-23-08
ALDO M. MANNARELLI — DATE

"Professional Engineer's Certificate: 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. 20748, Expiration Date 2-22-09."

OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI,
RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

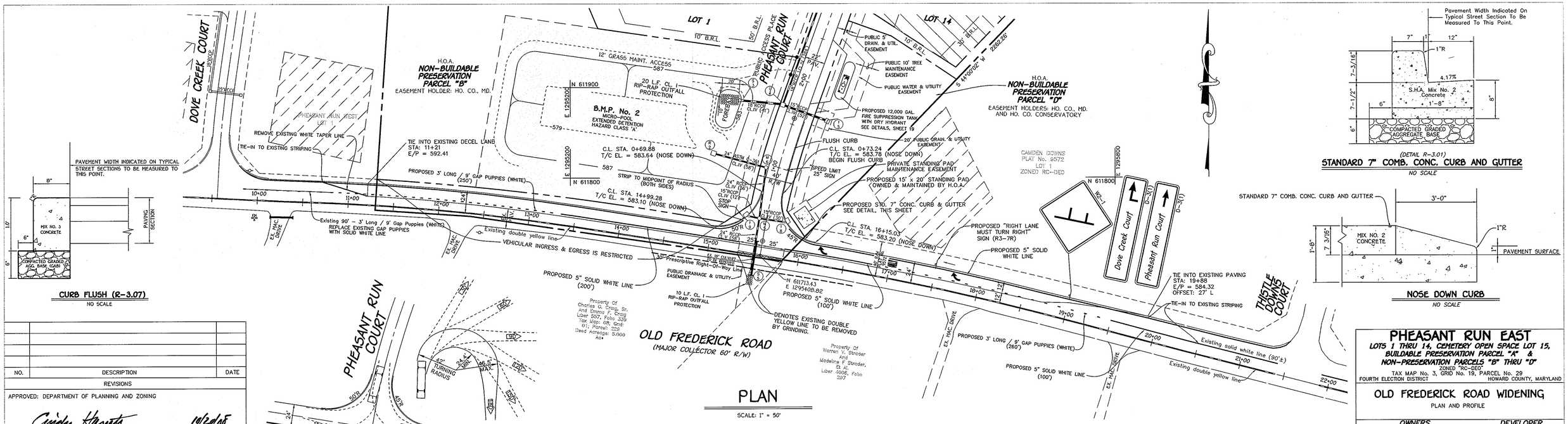
DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

PHEASANT RUN EAST
LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15,
BUILDABLE PRESERVATION PARCEL "A" &
NON-PRESERVATION PARCELS "B" THRU "D"
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 1 OF 19

F-08-011

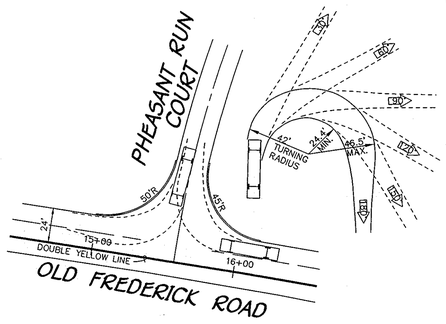
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

K:\Drawings 3\30651 Spielkerman\FINALS-EAST 22PAV\30651 SHEET 1 TITLE SHEET.dwg, 9/22/2008 2:20:00 PM, jamesl, 1:1



PLAN

SCALE: 1" = 50'



BUS TURNING MOVEMENT

SCALE: 1" = 50'

NOTE:
CONTRACTOR SHALL CONTACT PARRIS ZIRKENBACH AT HOWARD COUNTY TRAFFIC PRIOR TO STARTING ANY PAVEMENT MARKINGS.

NOTES:
1. ALL LANE DESIGNATION TO BE PAINT LINE STRIPING.
2. THE RIGHT TURN LANE MARKINGS (ARROWS AND ONLY) TO BE PREFORMED HEAT APPLIED TAPE.
3. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING.
4. ALL PAVEMENT MARKINGS (PAINT LINES) SHALL BE 5" WIDE UNLESS NOTED OTHERWISE.
5. SEE SHEET 19 FOR "MAINTENANCE OF TRAFFIC" PLANS.

NO.	DESCRIPTION	DATE
	REVISIONS	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-9-08

STATE OF MARYLAND — ALDO H. [illegible] — No. 20748 — PROFESSIONAL ENGINEER

9.23.08
DATE

"Professional Certification. I 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. 20748, Expiration Date 2-22-09."

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"

TAX MAP No. 3, GRID No. 19, PARCEL No. 29

FOURTH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

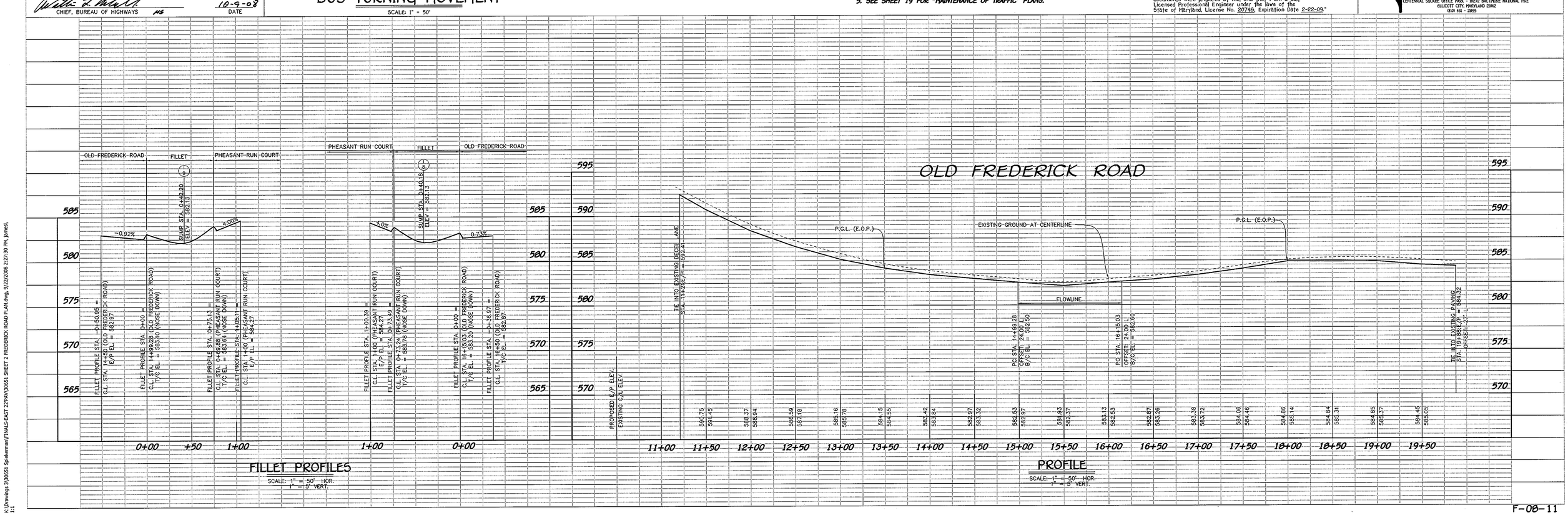
OLD FREDERICK ROAD WIDENING

PLAN AND PROFILE

OWNERS	DEVELOPER
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI, RAYMOND MANNARELLI & MARIO MANNARELLI, JR. 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278	HERITAGE LAND DEVELOPMENT, INC. 15850 NORTH AVENUE P.O. BOX 482 LISBON, MD. 21765 (410) 489-7900

SCALE: AS SHOWN	DATE: SEPTEMBER, 2008	DWG. NO. 2 OF 19
DES. R.A.I.	DRN. J.C.L.	CHK. A.M.V.

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



K:\Drawings\3\30651 Spokerman\FINALS-EAST 2\PAV\30651 SHEET 2 FREDERICK ROAD PLAN.dwg, 9/22/2008 2:27:30 PM, jamesL, 1:1

F-08-11

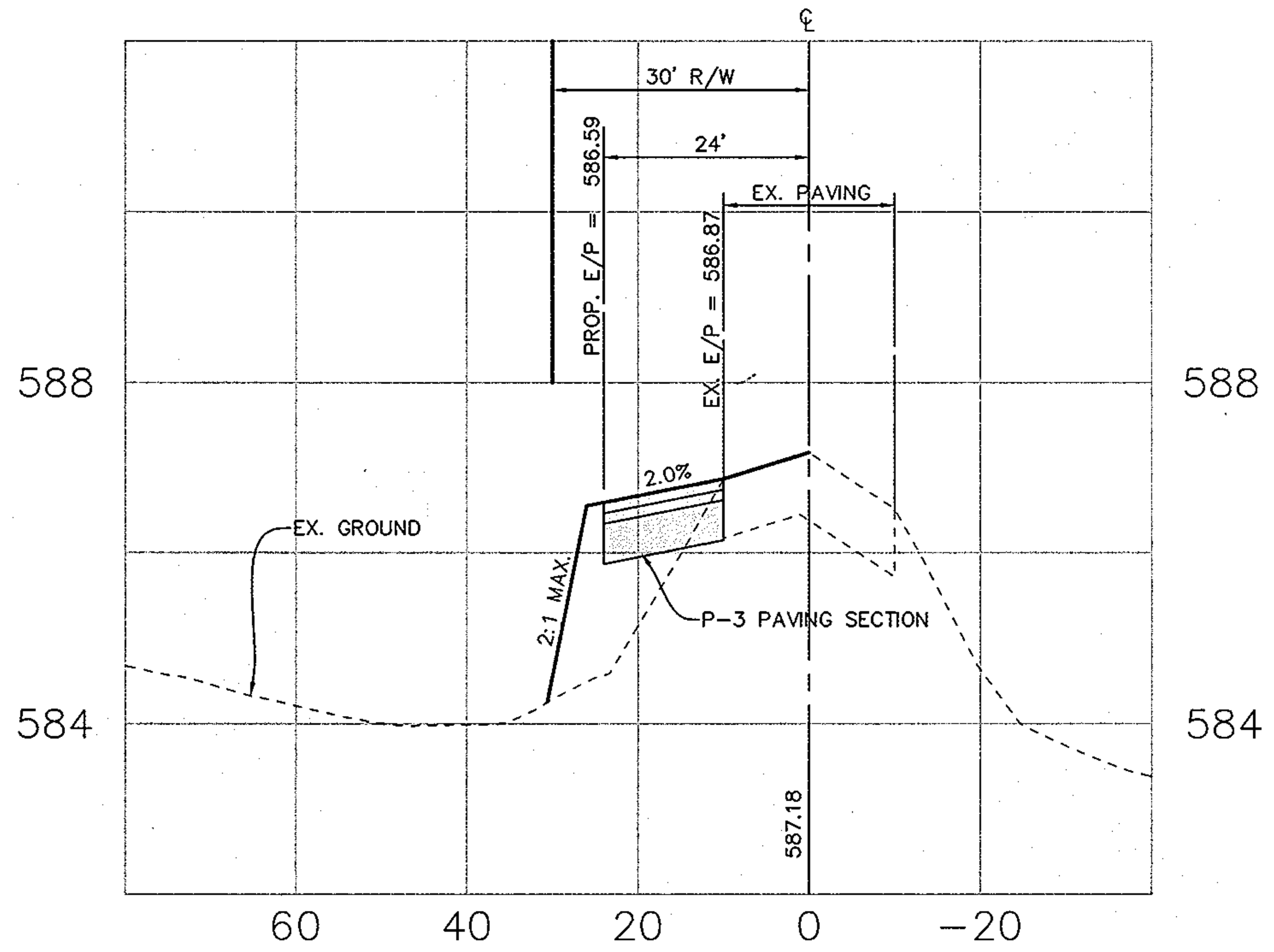
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 10-9-08 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — 10/20/08 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10/16/08 DATE



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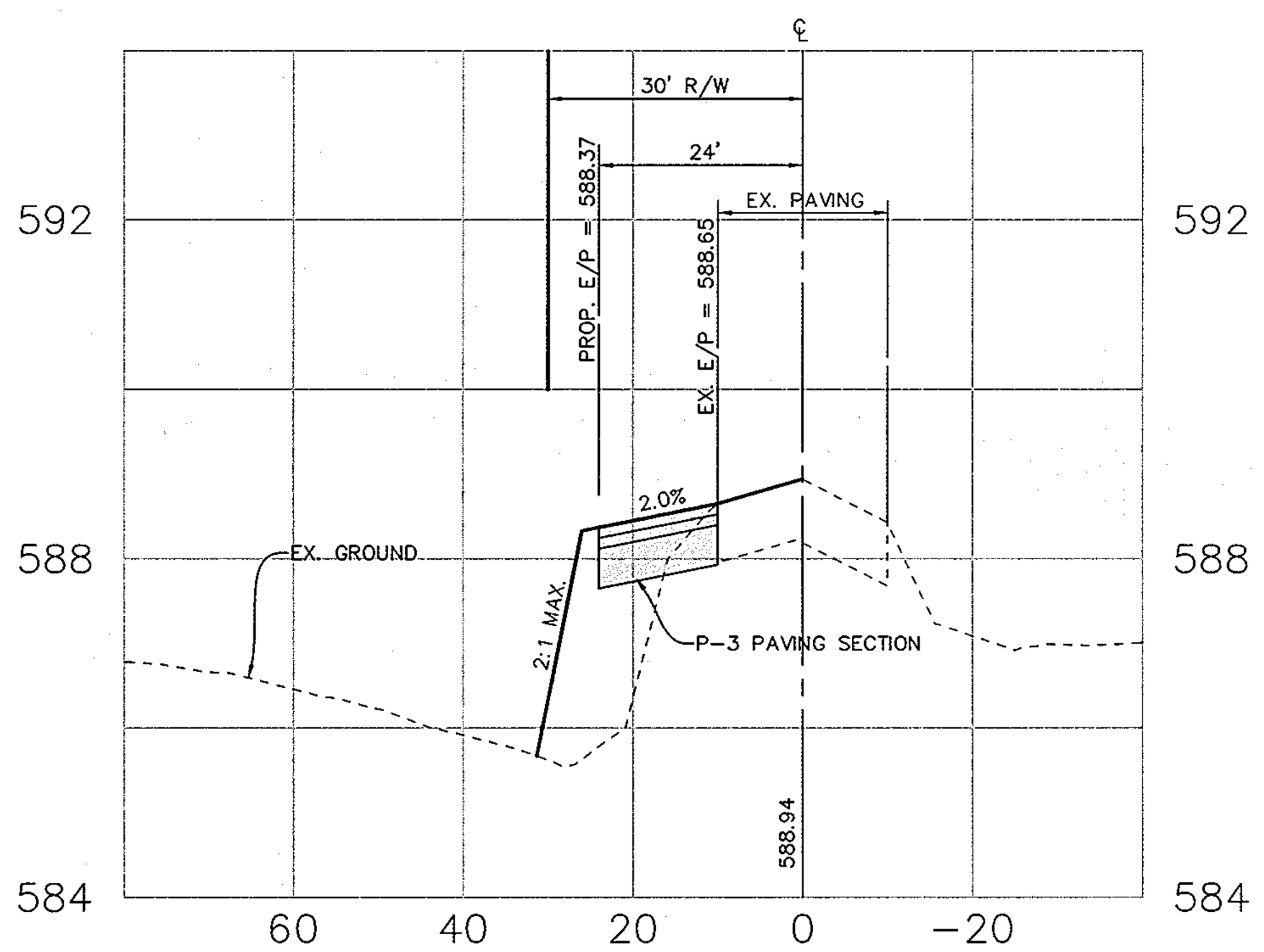

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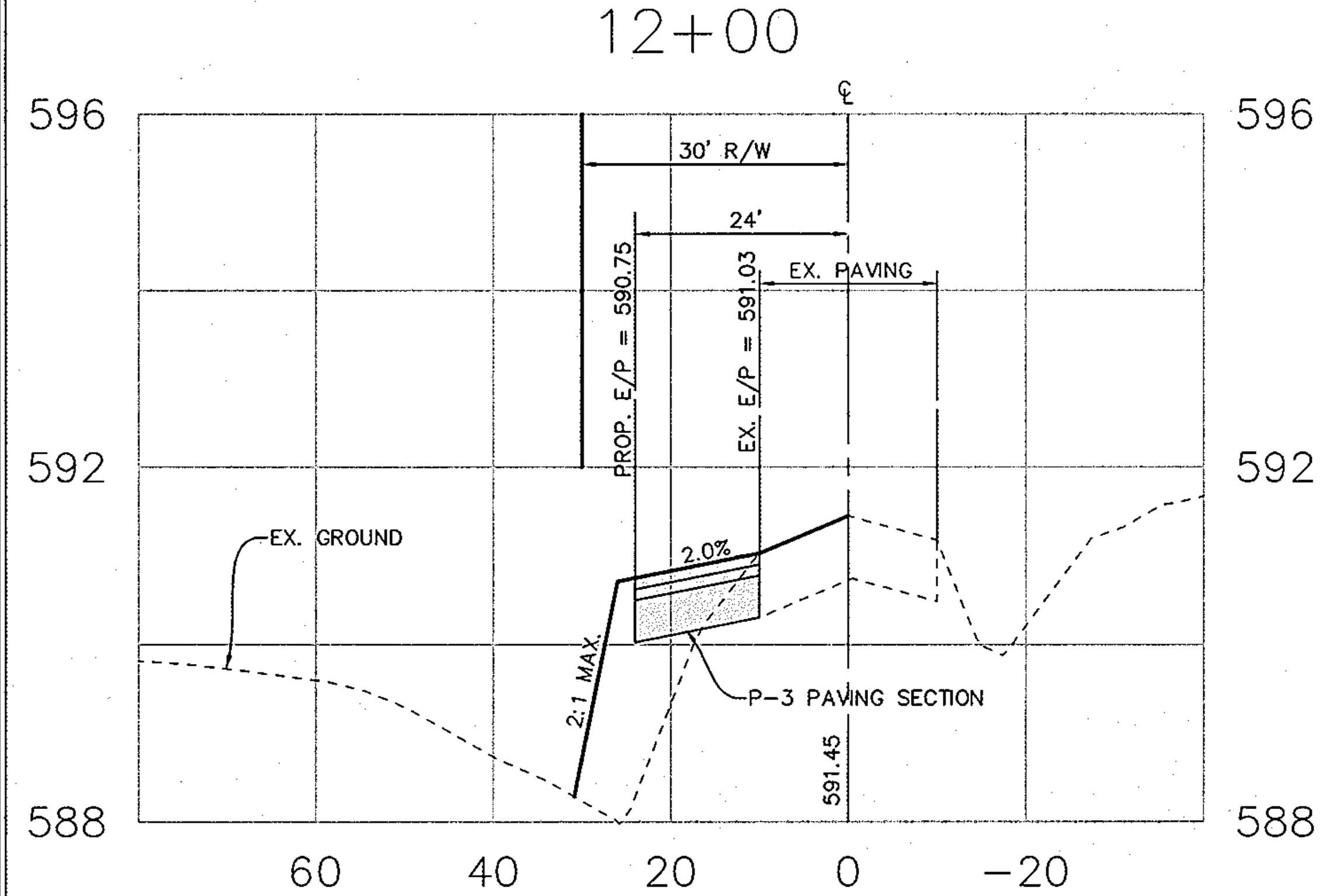

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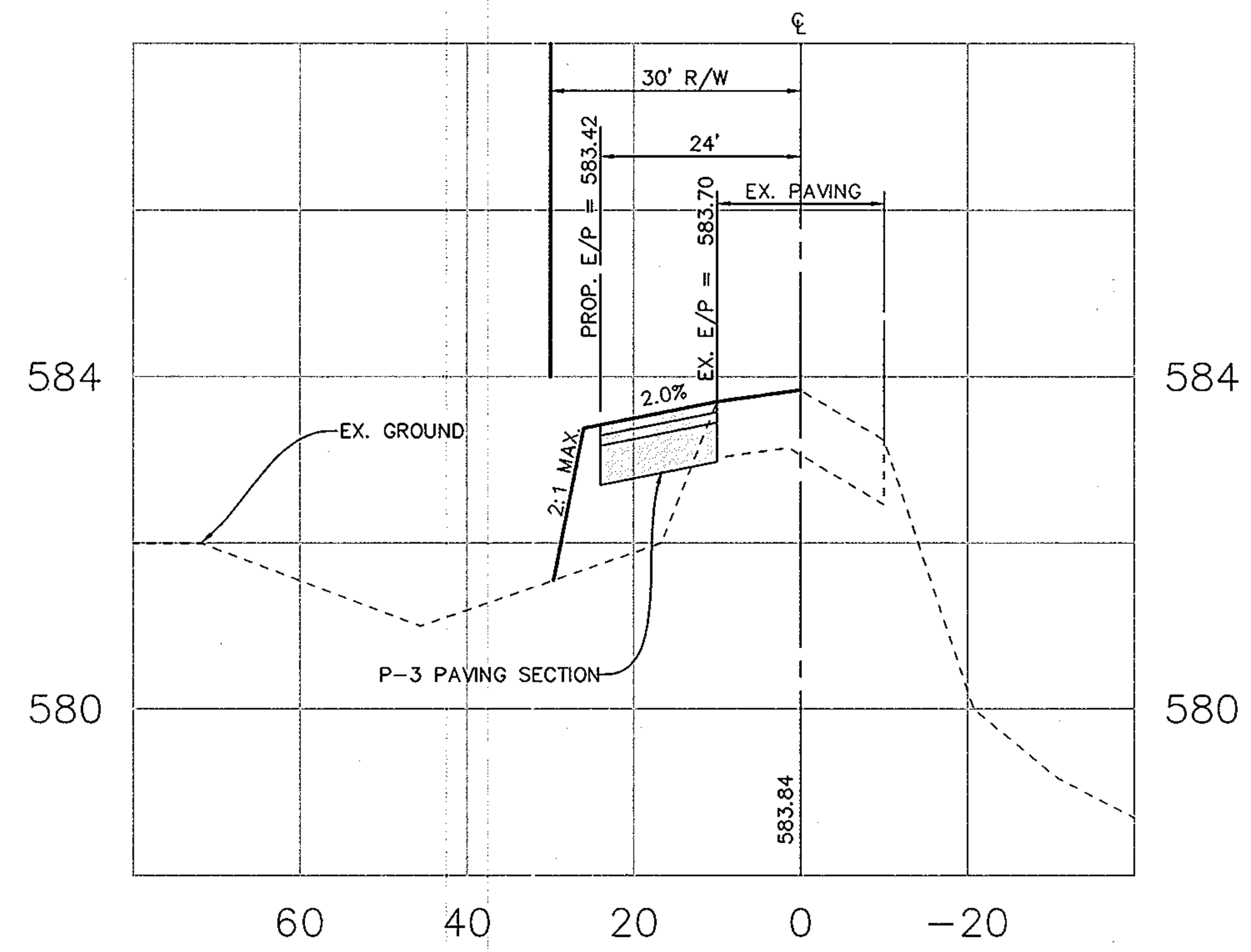

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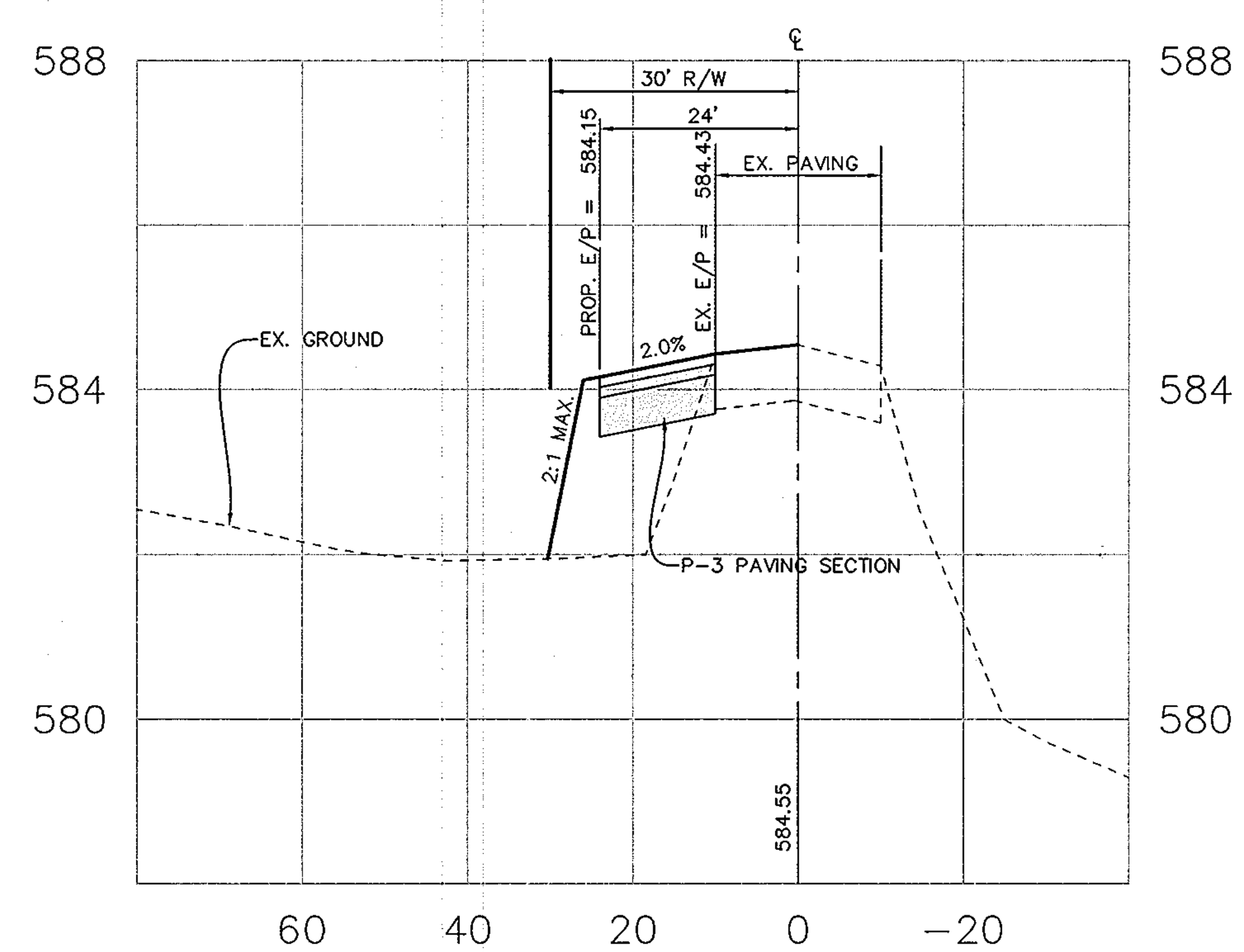

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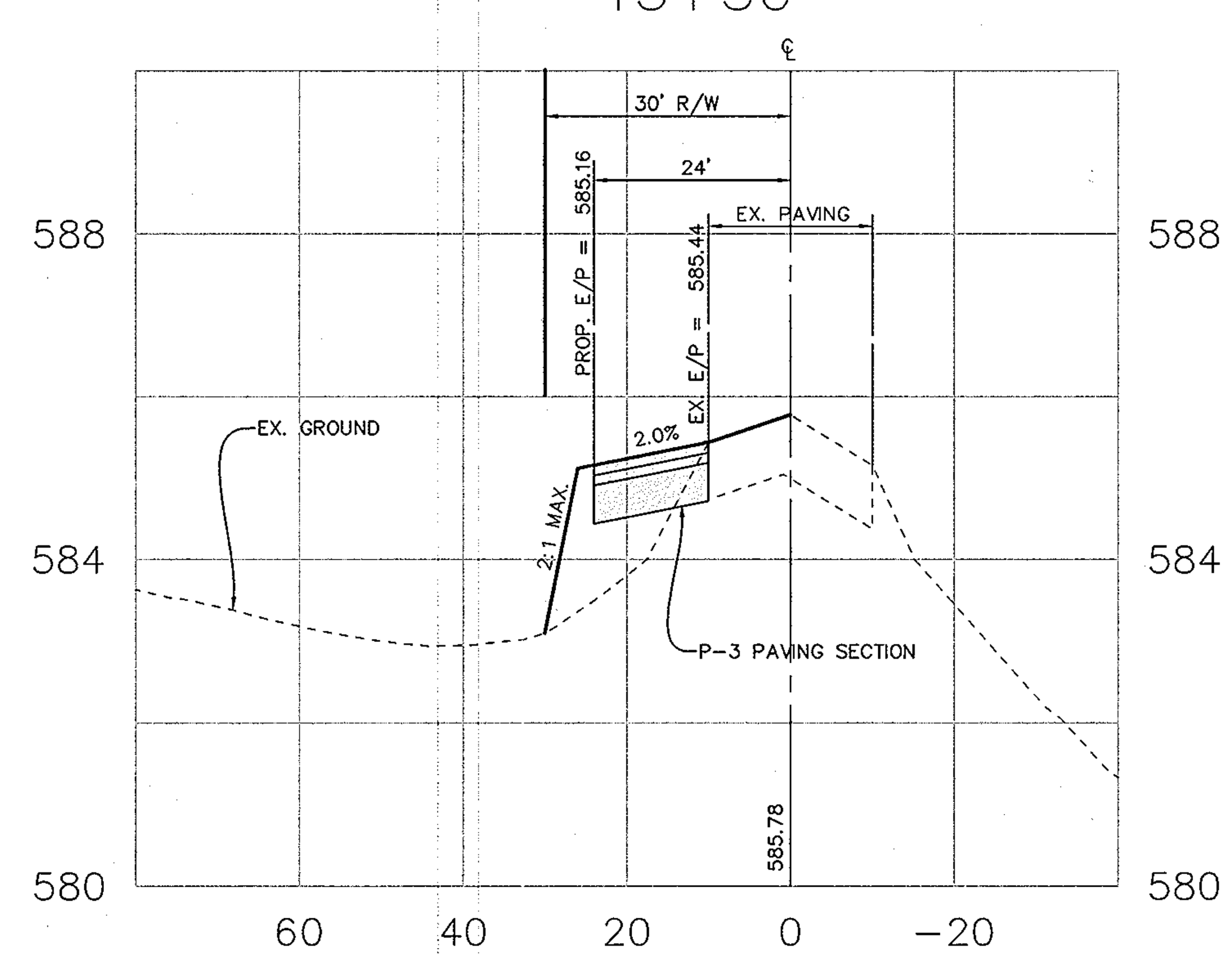

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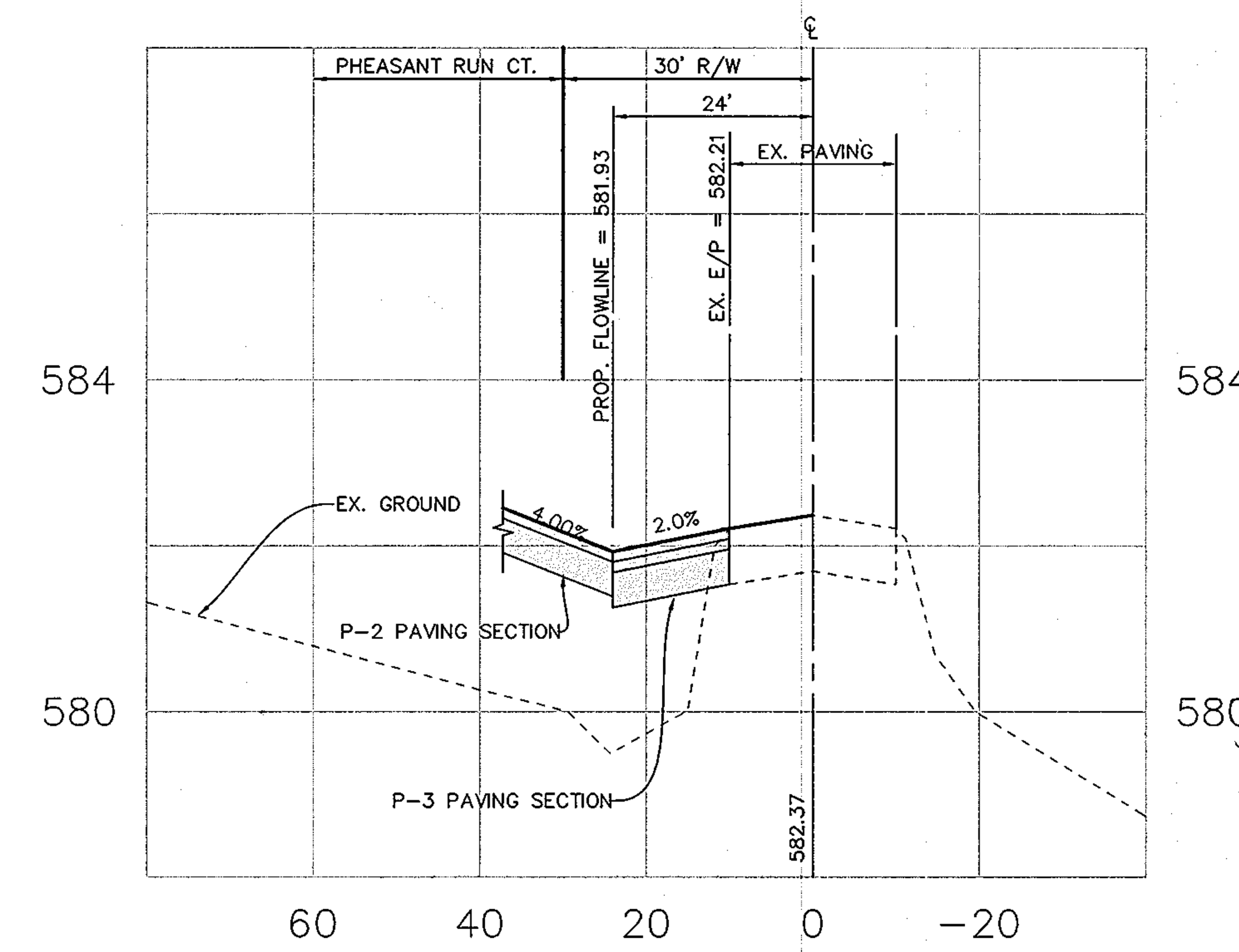

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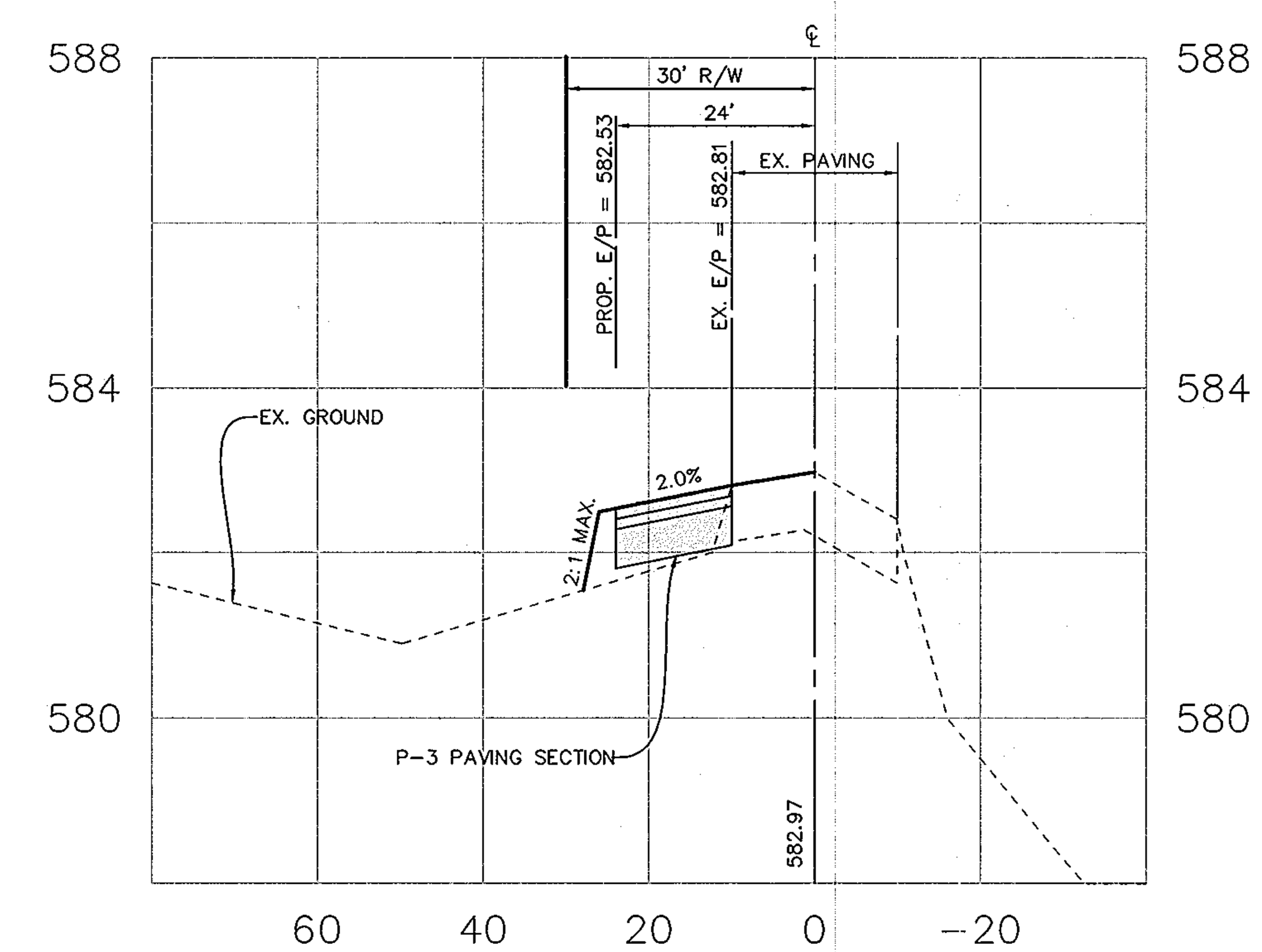

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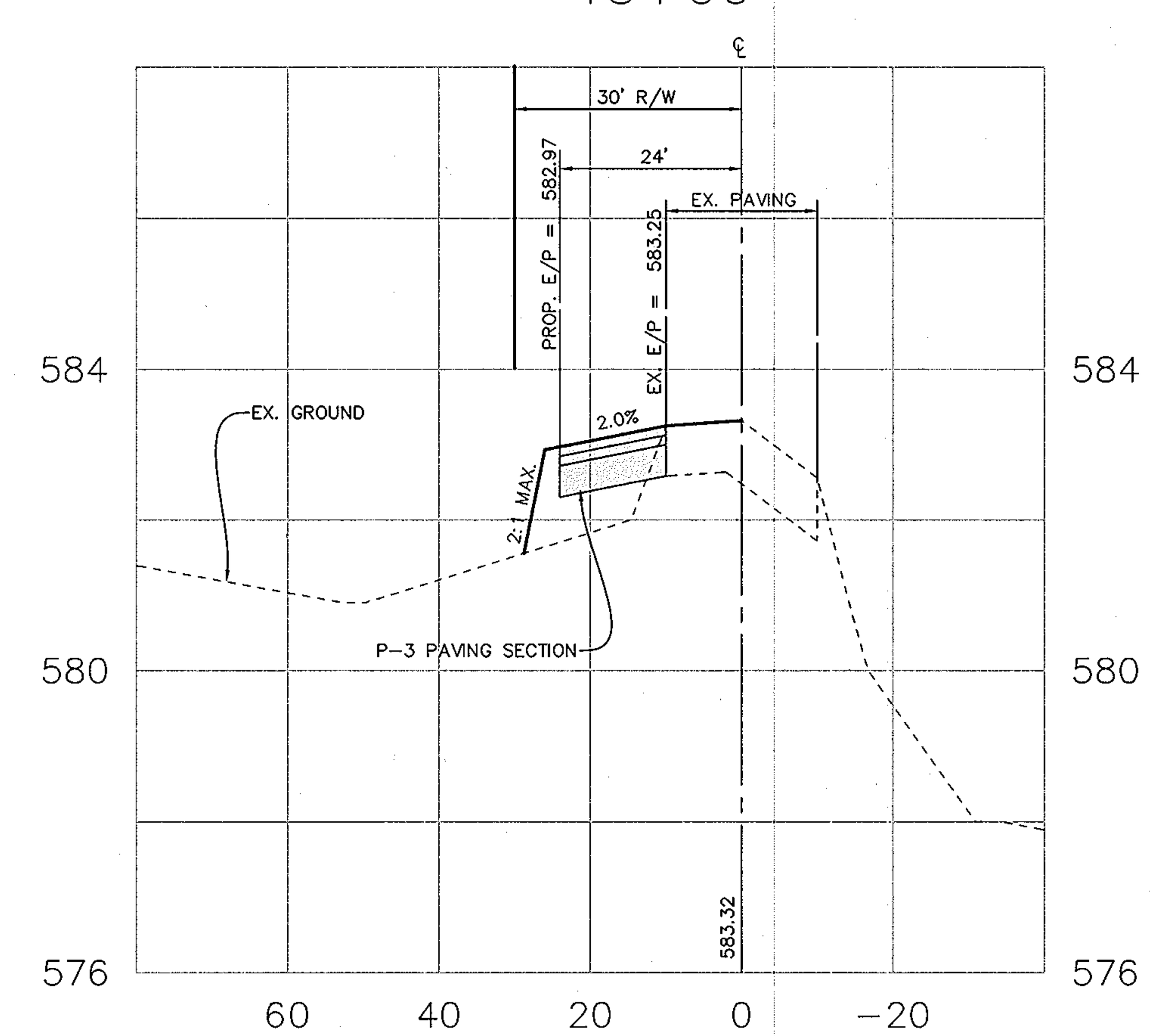

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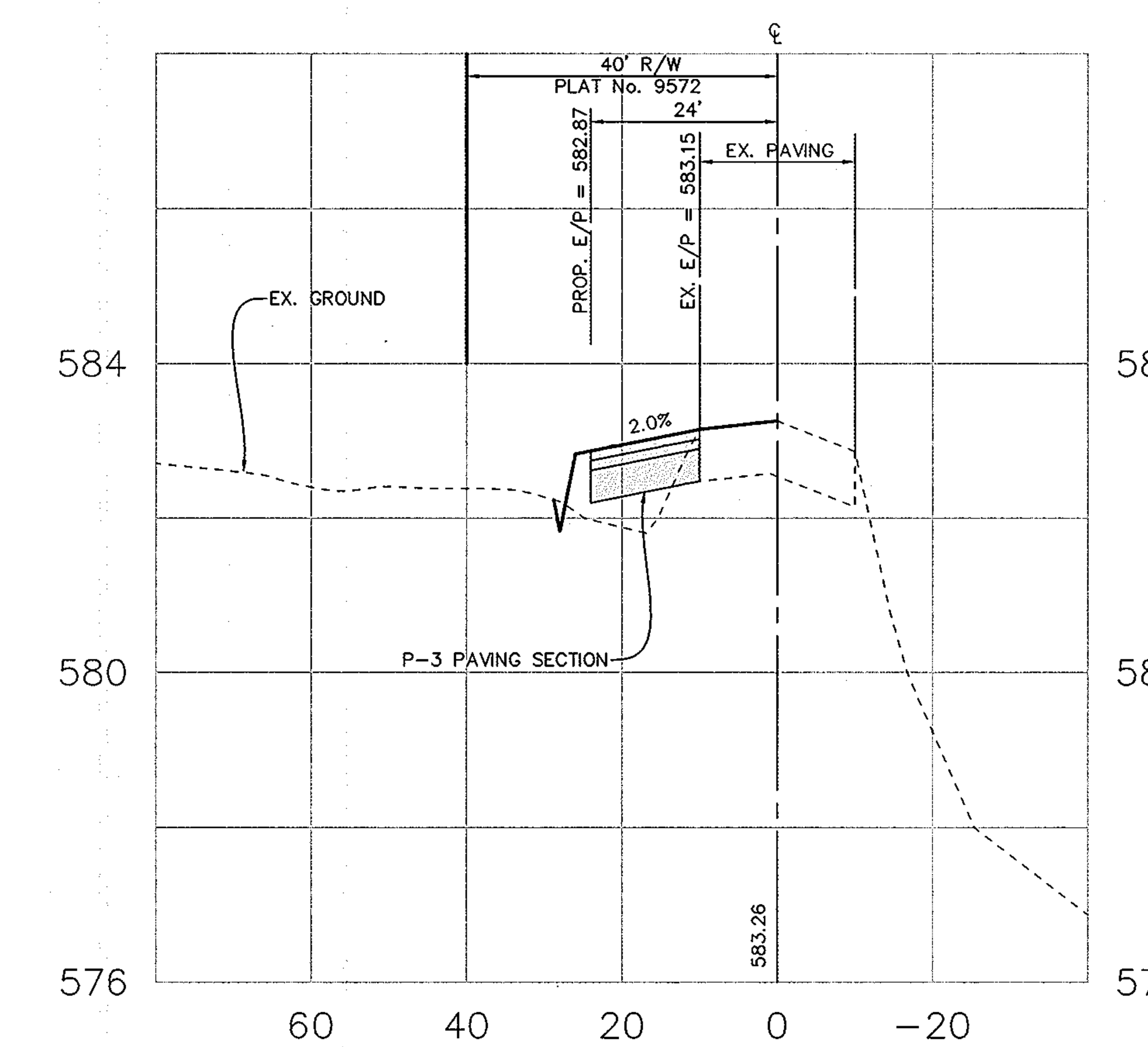

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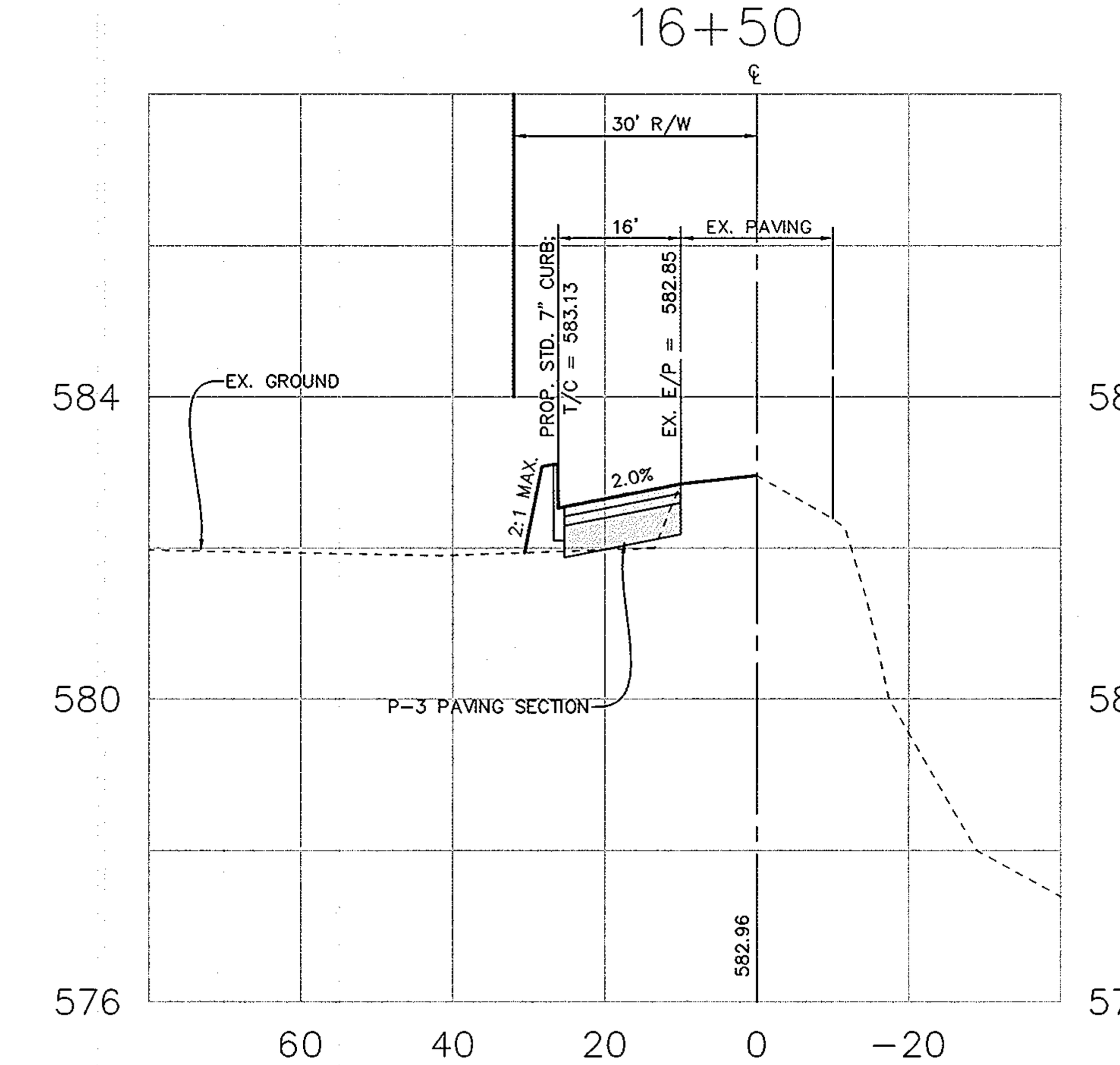

16+00

MAJOR COLLECTOR
DESIGN SPEED = 40 M.P.H.

OLD FREDERICK ROAD CROSS-SECTIONS

SCALE: 1" = 20' HOR.
1" = 2' VERT.

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

ALDO ... 9-23-08 DATE
"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. 20748, Expiration Date 2-22-09."

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OLD FREDERICK ROAD CROSS-SECTIONS
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LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"
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TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 3 OF 19

F-08-011

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APPROVED: DEPARTMENT OF PUBLIC WORKS

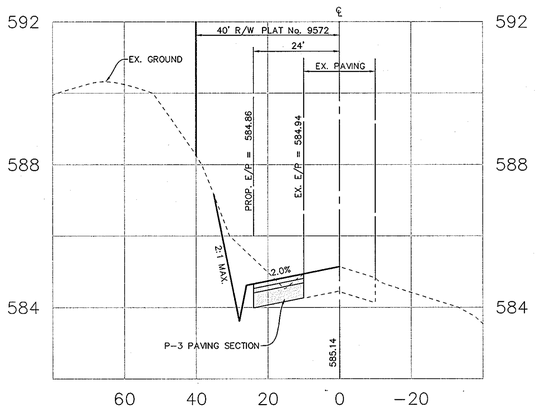
CHIEF, BUREAU OF HIGHWAYS — DATE 10-6-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

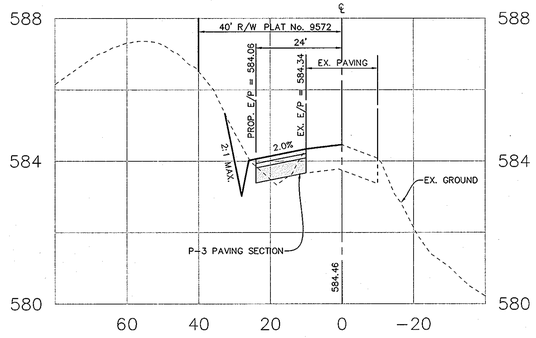
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

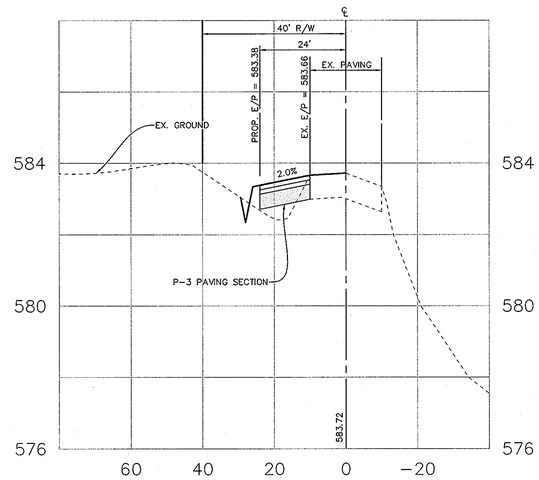
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0
P-3	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL MINOR COLLECTORS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	3.0	3.0	3.0	4.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	10.0	6.0	3.0	6.0	6.0	6.0



18+00



17+50

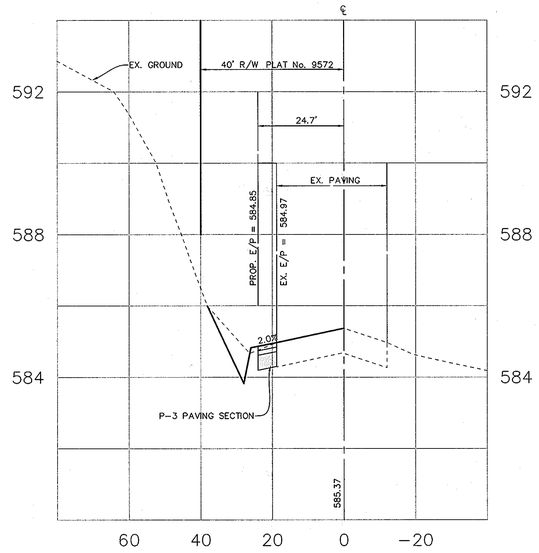


17+00

MAJOR COLLECTOR
DESIGN SPEED = 40 M.P.H.

OLD FREDERICK ROAD CROSS-SECTIONS

SCALE: 1" = 20' HOR.
1" = 2' VERT.



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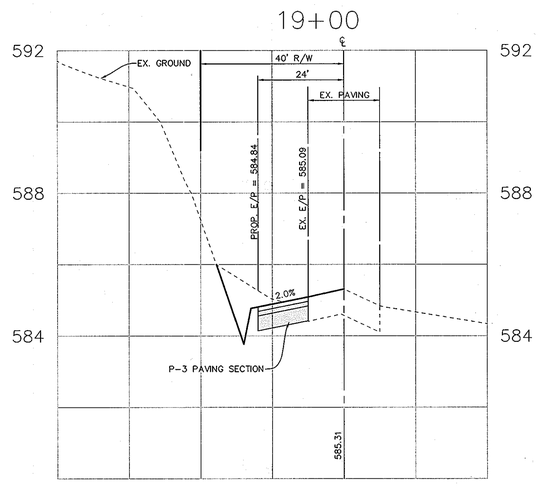
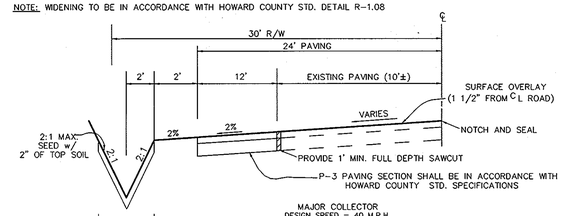


18+50

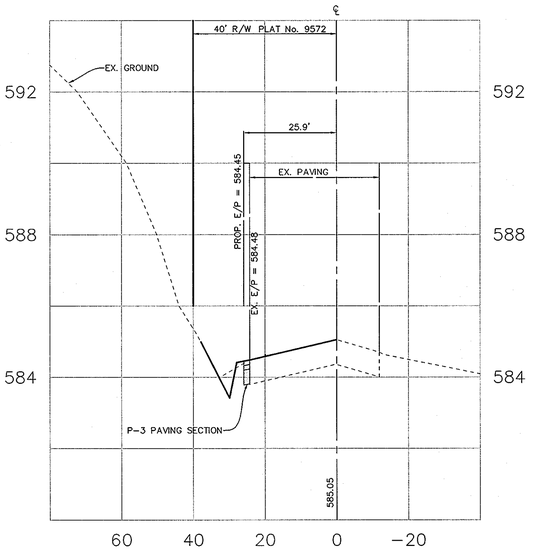
NOTE: WIDENING TO BE IN ACCORDANCE WITH HOWARD COUNTY STD. DETAIL R-1.08



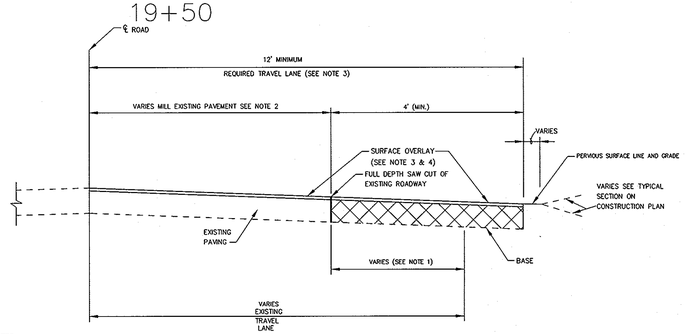
MAJOR COLLECTOR
DESIGN SPEED = 40 M.P.H.

TYPICAL WIDENING (OLD FREDERICK ROAD)

NO SCALE



19+50



NOTES:

1. WHEN EXISTING TRAVEL LANE IS, LESS THAN THE REQUIRED 12' LANE CONTRACTOR SHALL REMOVE A MINIMUM OF 1' FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4' OF WIDENING FROM FACE OF GUTTER PAN.
2. THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT DEPTH OF 1 1/2" (MINIMUM).
3. THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF THE ROADWAY.
4. RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.

EXISTING ROADWAY WIDENING STRIP (R-1.08)

NO SCALE

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

ALDO M. — 9.23.09 DATE

"Professional Engineer" 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. 20748, Expiration Date 2-22-09."

OWNERS

MARIO MANNARELLI, SR. & SERAFINA MANNARELLI,
RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER

HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

OLD FREDERICK ROAD CROSS-SECTIONS

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15,
BUILDABLE PRESERVATION PARCEL "A" &
NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 4 OF 19

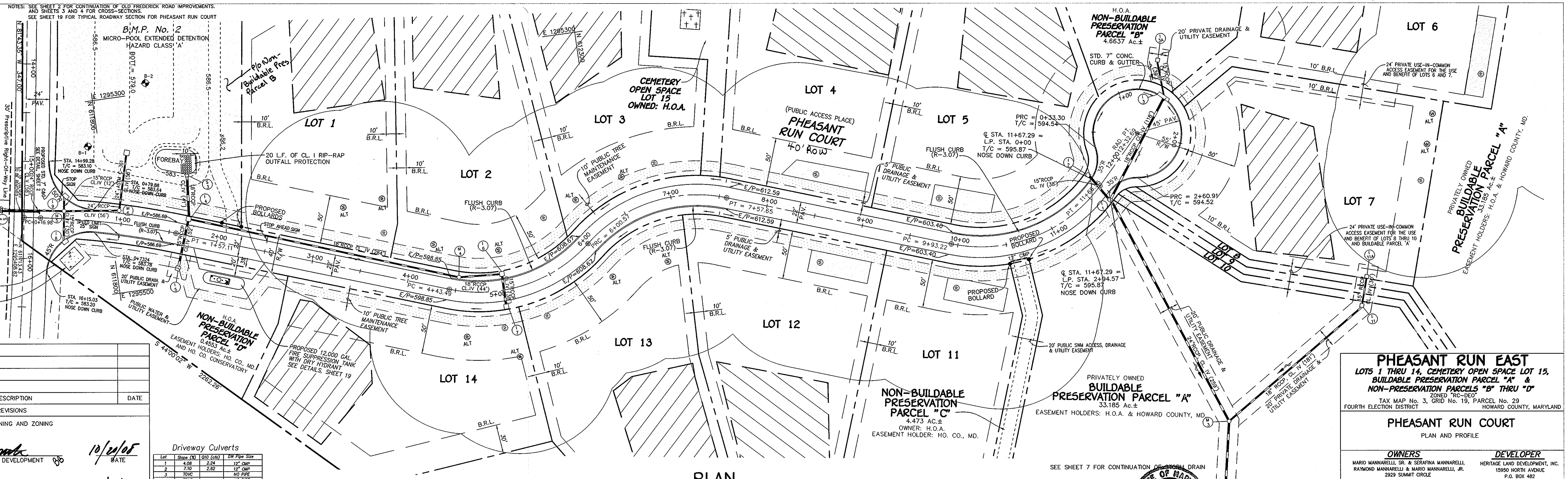
F-08-011

K:\Drawings 3\30651 Spikerman\FINALS-EAST 23\PAV\30651 SHEET 3-4 CROSS-SECTIONS.dwg, 9/22/2008 2:35:51 PM, jamesl,
1:1

PHEASANT RUN COURT
STA. 0+00 TO STA. 12+32.69
PUBLIC ACCESS PLACE
DESIGN SPEED = 25 M.P.H.
P-2 PAVING SECTION

OLD FREDERICK ROAD
STA. 11+21 TO STA. 19+88
MAJOR COLLECTOR
DESIGN SPEED = 40 M.P.H.
P-3 PAVING SECTION

NOTES: SEE SHEET 2 FOR CONTINUATION OF OLD FREDERICK ROAD IMPROVEMENTS. AND SHEETS 3 AND 4 FOR CROSS-SECTIONS.
SEE SHEET 19 FOR TYPICAL ROADWAY SECTION FOR PHEASANT RUN COURT



NO.	DESCRIPTION	DATE
	REVISIONS	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/21/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-9-08

Driveway Culverts

Lot	Slope (%)	Q10 (cfs)	DW Pipe Size
1	4.08	2.24	12" CMP
2	7.10	2.82	12" CMP
3	TOVC		NO PIPE
4	TOVC		NO PIPE
5	5.26	2.53	12" CMP
6	SUMP	INLET	NO PIPE
7	SUMP	INLET	NO PIPE
8	INLET		NO PIPE
9	INLET		NO PIPE
10	INLET		NO PIPE
11	6.25	2.72	12" CMP
12	TOVC		NO PIPE
13	5.71	2.61	12" CMP
14	5.26	2.48	12" CMP

TOVC = LOCATED NEAR THE TOP OF A VERTICAL CURVE

℄ CURVE DATA
PHEASANT RUN COURT
STA. 0+16.98 TO STA. 1+57.11
RAD. = 777.00'
ARC LENGTH = 140.13'
TAN. = 70.25'
Δ = 10°19'59"
CHORD. = N 14°36'22" E, 139.94'

℄ CURVE DATA
PHEASANT RUN COURT
STA. 4+43.49 TO STA. 6+00.57
RAD. = 150.00'
ARC LENGTH = 157.08'
TAN. = 86.60'
Δ = 60°00'00"
CHORD. = N 10°13'39" W, 150.00'

℄ CURVE DATA
PHEASANT RUN COURT
STA. 6+00.57 TO STA. 7+57.65
RAD. = 150.00'
ARC LENGTH = 157.08'
TAN. = 86.60'
Δ = 60°00'00"
CHORD. = N 10°13'39" W, 150.00'

PLAN
SCALE: 1" = 50'

℄ CURVE DATA
PHEASANT RUN COURT
STA. 9+93.22 TO STA. 11+66.55
RAD. = 150.00'
ARC LENGTH = 173.32'
TAN. = 97.79'
Δ = 66°12'17"
CHORD. = N 13°19'47" W, 163.84'

DATE 9-23-08

"Professional Certification. I 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. 20748, Expiration Date 2-22-09."

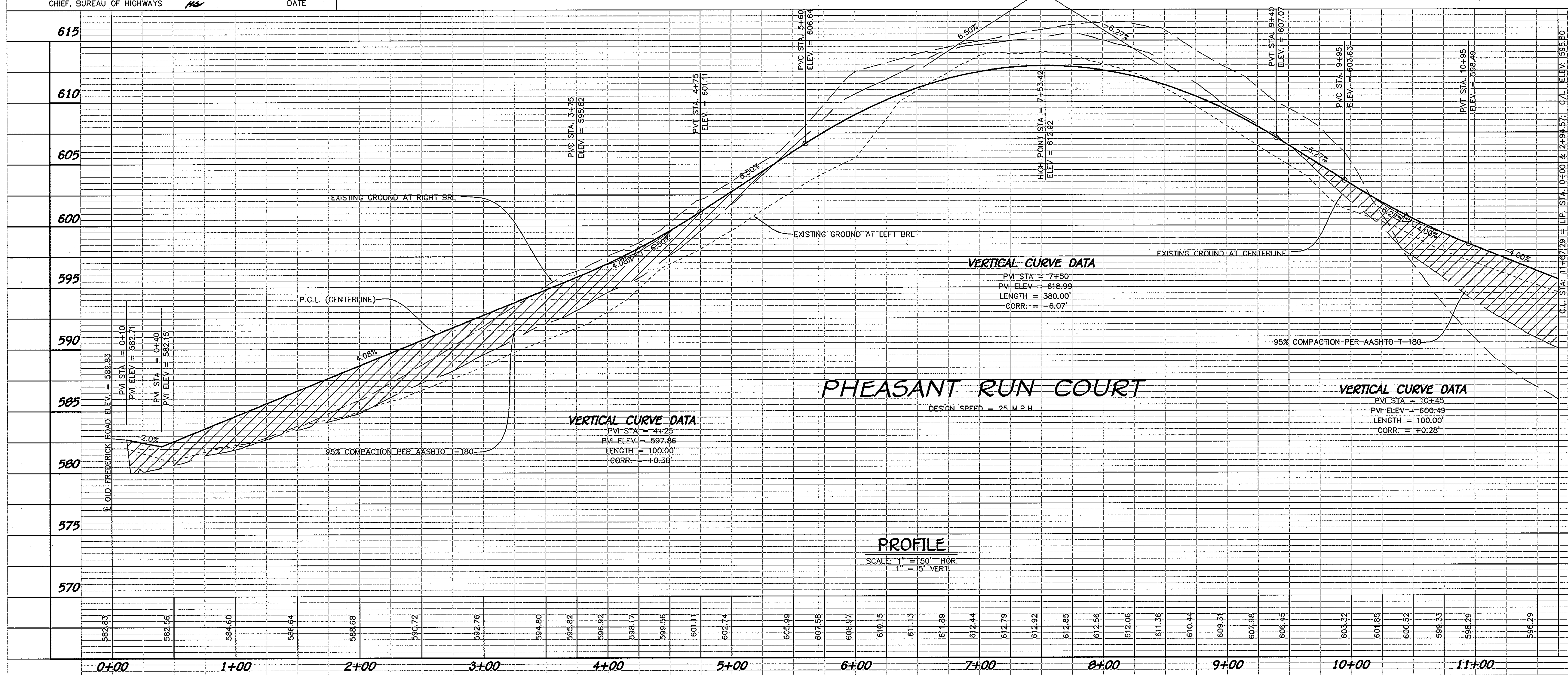
PHEASANT RUN EAST
LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

PHEASANT RUN COURT
PLAN AND PROFILE

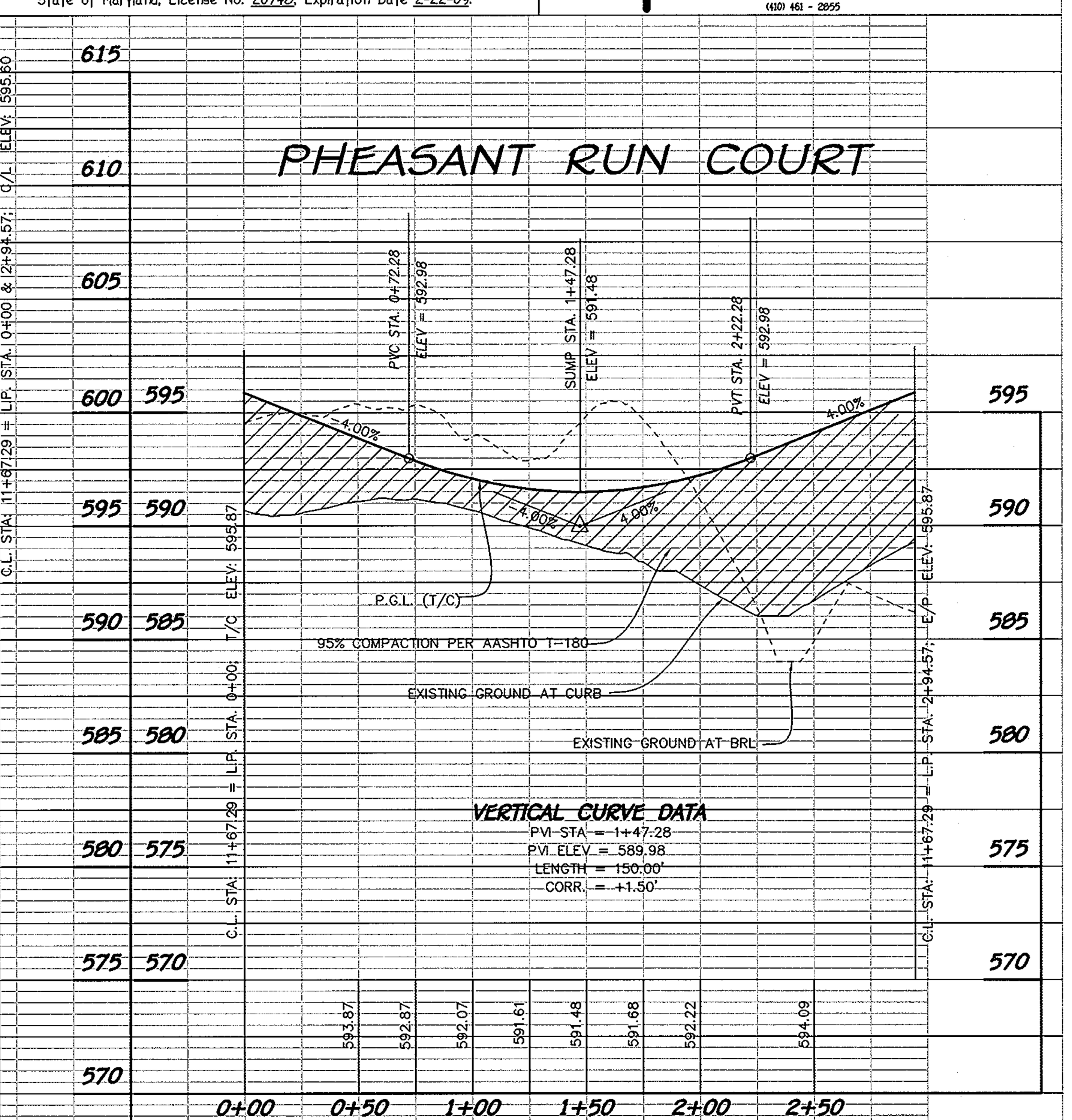
OWNERS	DEVELOPER
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI, RAYMOND MANNARELLI & MARIO MANNARELLI, JR. 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278	HERITAGE LAND DEVELOPMENT, INC. 15950 NORTH AVENUE P.O. BOX 482 LISBON, MD. 21765 (410) 489-7900

SCALE: AS SHOWN	DATE: SEPTEMBER, 2008	DWG. NO. 5 OF 19
DES. R.A.I.	DRN. J.C.L.	CHK. A.M.V.

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



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



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

F-08-11

TEMPORARY SEDIMENT BASIN No. 2

INITIAL D.A. = 5.60 Ac.±
FINAL D.A. = 11.20 Ac.±
STORAGE REQUIRED
WET = 1800 x 11.20 = 20,160 CuFt.
DRY = 1800 x 11.20 = 20,160 CuFt.
STORAGE PROVIDED
WET = 20,160 CuFt. @ ELEV. = 581.23
DRY = 20,160 CuFt. @ ELEV. = 582.55
BOTTOM ELEV. = 579.00
STORAGE DEPTH = 7.50'
TOP OF EMBANKMENT = 587.00
CLEAN OUT ELEV. = 580.26
RISER CREST ELEV. = 585.10
1 YR. ORIFICE INV. = 579.00
Q1 exist. = 1.03 c.f.s.
Q1 prop. = 0.28 c.f.s.
WEIR CREST ELEV. = 583.30
BOTTOM L x W = 153' x 45'

NOTE: CONTRACTOR TO ONLY DISTURB THE LENGTH OF WIDENING AND DITCH ALONG OLD FREDERICK ROAD THAT CAN AND SHALL BE STABILIZED BY THE END OF EACH DAY.

NOTE: CONTRACTOR TO ONLY DISTURB THE LENGTH OF WIDENING AND DITCH ALONG OLD FREDERICK ROAD THAT CAN AND SHALL BE STABILIZED BY THE END OF EACH DAY.

PLAN

SCALE: 1" = 50'

STREET TREE SCHEDULE

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	1232.69 x 2 / 40 = 61.63 62 TREES	PRUNUS SARGENTII SARGENT CHERRY	2 1/2–3" CAL.	40' APART ON PUBLIC R/W

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 62 REQUIRED STREET TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $18,600.00

BAFFLE DESIGN

D=45'
A=26,492 SQ. FT.
We=A/D=26,492/45=588.71'
Le=1,286'
Le/We=1286/588.71=2.18
>2 IS OK
L1=200' L5=150'
L2=202' L6=148'
L3=180' L7=118'
L4=178' L8=110'
TOTAL Le=1286'

NOTE: SEE SHEET 18 FOR BAFFLE DETAIL

LEGEND

Symbol	Description
—SSF—SSF—SSF—	SUPER-SILT FENCE
—SF—SF—SF—	SILT FENCE
—TP—TP—TP—	TREE PROTECTION FENCE
S.C.E.	STABILIZED CONSTRUCTION ENTRANCE
→ →	EARTH DIKE
L.O.D.	DENOTES LIMITS OF DISTURBANCE
E.C.M.	DENOTES EROSION CONTROL MATTING
	DENOTES PUBLIC STORMWATER MANAGEMENT CREDIT EASEMENT
	DENOTES SLOPES 25% OR GREATER
	DENOTES SLOPES 15% TO 24.99%

NOTE:
CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, BUFFERS AND PRESERVATION PARCELS.

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — Date 9/24/08
Printed Name Of Developer: Timothy W Feaga

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature Of Engineer — Date 9-23-08
Printed Name Of Engineer: Aldo M. Vitucci

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — Date 10/7/08

Approved: Department Of Public Works
Chief Bureau Of Highways — Date 10-9-08

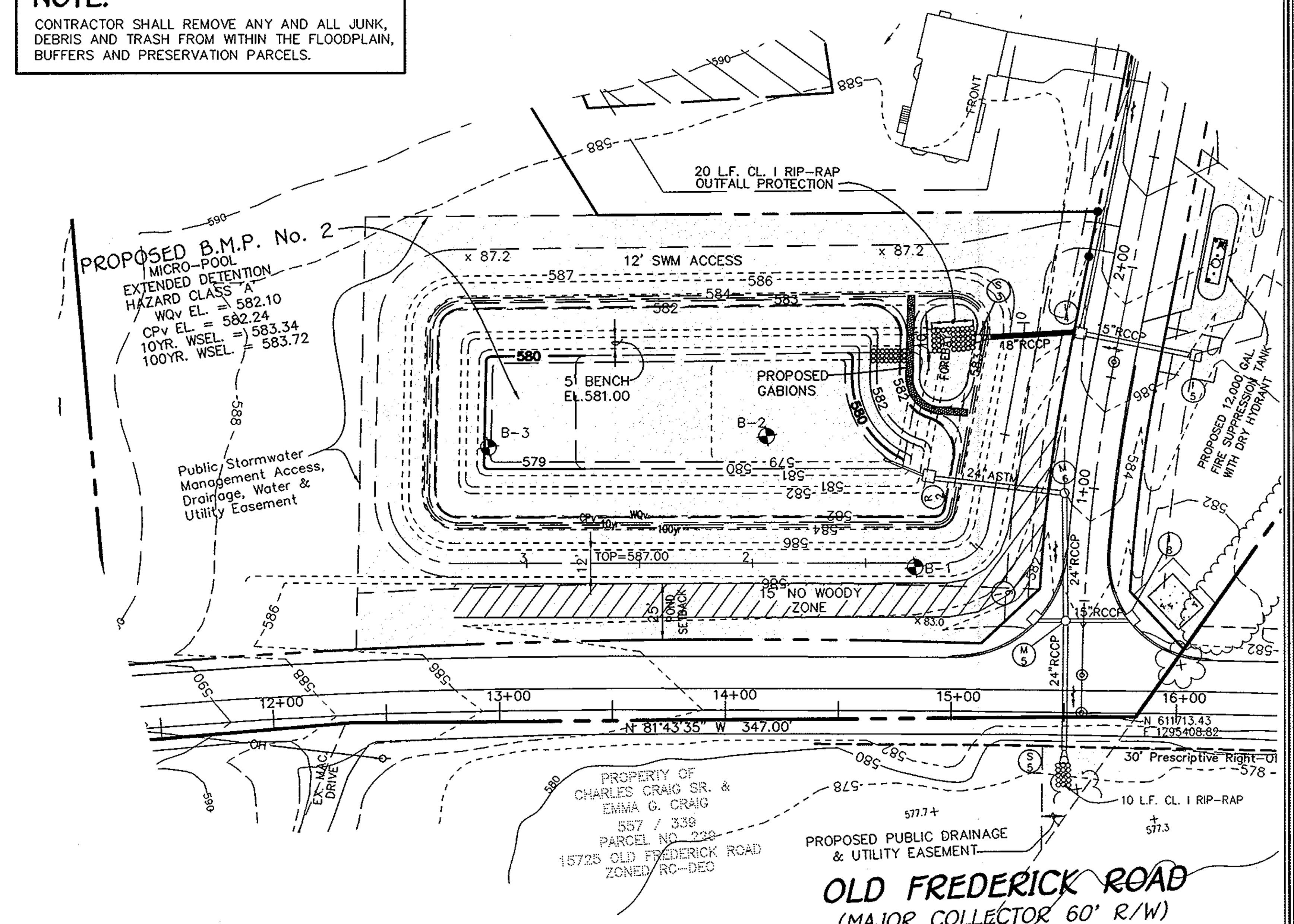
Approved: Department Of Planning And Zoning
Chief, Division Of Land Development — Date 10/20/08
Chief, Development Engineering Division — Date 10/16/08

AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No. — Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.



FINAL GRADING PLAN – BMP No. 2

SCALE: 1" = 50'

NOTE: SEE SHEET 8 FOR STORMWATER MANAGEMENT SUMMARY TABLES

ALDO M. VITUCCI — DATE 9-23-08

"Professional certification. I 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. 20748, Expiration Date 2-22-09."

FISHER, COLLINS & CARTER, INC.
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DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
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P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

STREET TREE, GRADING & SEDIMENT CONTROL PLAN

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008

F-08-011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 6-8 GRADING PLANS.dwg, 9/22/2008 4:46:20 PM, james, 1:1

MATCH LINE SEE SHEET 8

MATCH LINE SEE SHEET 6

MATCH LINE SEE SHEET 6

PLAN
SCALE: 1" = 50'

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — 9/24/08 Date

Timothy W Feaga
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Explained To The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature — 9.23.08 Date

ALDO MANNARELLI
Printed Name Of Engineer

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — 10/7/08 Date

Approved: Department Of Public Works

Chief Bureau Of Highways — 10-9-08 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 10/29/08 Date

Chief, Development Engineering Division — 10/16/08 Date

AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No.

Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

LEGEND

- SSF SSF SSF — SUPER-SILT FENCE
- SF SF SF — SILT FENCE
- TP TP TP — TREE PROTECTION FENCE
- S.C.E. — STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE
- L.O.D. — DENOTES LIMITS OF DISTURBANCE
- E.C.M. — DENOTES EROSION CONTROL MATTING
- DENOTES PUBLIC STORMWATER MANAGEMENT CREDIT EASEMENT
- DENOTES SLOPES 25% OR GREATER
- DENOTES SLOPES 15% TO 24.99%

NOTE:
CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, BUFFERS AND PRESERVATION PARCELS.

TEMPORARY SEDIMENT BASIN No. 1

INITIAL D.A. = 11.32 Ac.±
FINAL D.A. = 15.57 Ac.±
STORAGE REQUIRED
WET = 1800 x 15.57 = 28,026 CuFt.
DRY = 1800 x 15.57 = 28,026 CuFt.
STORAGE PROVIDED
WET = 28,026 CuFt. @ ELEV. = 565.10
DRY = 28,026 CuFt. @ ELEV. = 566.63
BOTTOM ELEV. = 561.00
STORAGE DEPTH = 8.0'
TOP OF EMBANKMENT = 569.00
CLEAN OUT ELEV. = 563.50
RISER CREST ELEV. = 568.20
1 YR. ORIFICE INV. = 561.00
Q1 exist. = 1.1 c.f.s.
Q1 prop. = 0.8 c.f.s.
WEIR CREST ELEV. = 565.75
BOTTOM L x W = 180' x 130'

NOTE: SEE SHEET 8 FOR STORMWATER MANAGEMENT SUMMARY TABLES

ALDO MANNARELLI — 9.23.08 DATE

"Professional Engineer 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. 20748, Expiration Date 2-22-09."

BAFFLE DESIGN

D=66' — L1=70'
A=8,831 SQ. FT. — L2=82'
We=A/D=8831/66=133.80 — L3=70'
Le=272' — L4=50'
Le/We=272/133.80=2.03 — TOTAL Le=272'
>2 IS OK
NOTE: SEE SHEET 18 FOR BAFFLE DETAIL

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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(410) 489-7900

STREET TREE, GRADING & SEDIMENT CONTROL PLAN
PHEASANT RUN EAST
LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 7 OF 19

F-08-011

K:\Drawings 3\30651 Spotsman\FINALS-EAST 22PAV\30651 SHEET 6-8 GRADING PLANS.dwg, 9/22/2008 4:10:22 PM, jamesl, 1:1

PHEASANT RUN EAST

SUMMARY TABLE #1

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

Existing Condition		
Study Point	One-Year Storm (cfs)	Ten-Year Storm (cfs)
1 to BMP#2	2.23	25.84
2 to BMP#1	11.75	123.55
3	0.05	9.75
5	0.25	4.56

Proposed Condition – with & without credit areas		
Study Point	One-Year Storm (cfs)	Ten-Year Storm (cfs)
1 (to BMP #2)	In:4.94; Credit:2.16 Out: 0.02	In: 29.87; Credit: 14.82 Out: 0.40
1B – Bypass Area	In:1.98; Credit:1.98	In: 8.20 Credit: 7.38
Total #1	In:6.92; Credit: 4.14 Out: 2.27	Management not required
2A (to BMP #1)	In: 3.76 Credit: 3.18 Out:0.06	In: 28.87 Credit: 27.44
2B – Bypass Area	In:19.18; Credit:5.31	In: 46.11; Credit: 51.25
Total #2	Out: 5.33	Management not required
3	In: 0.25; No Credit	In: 11.01; No Credit
5	In: 0.50; No Credit	In: 5.02; No Credit

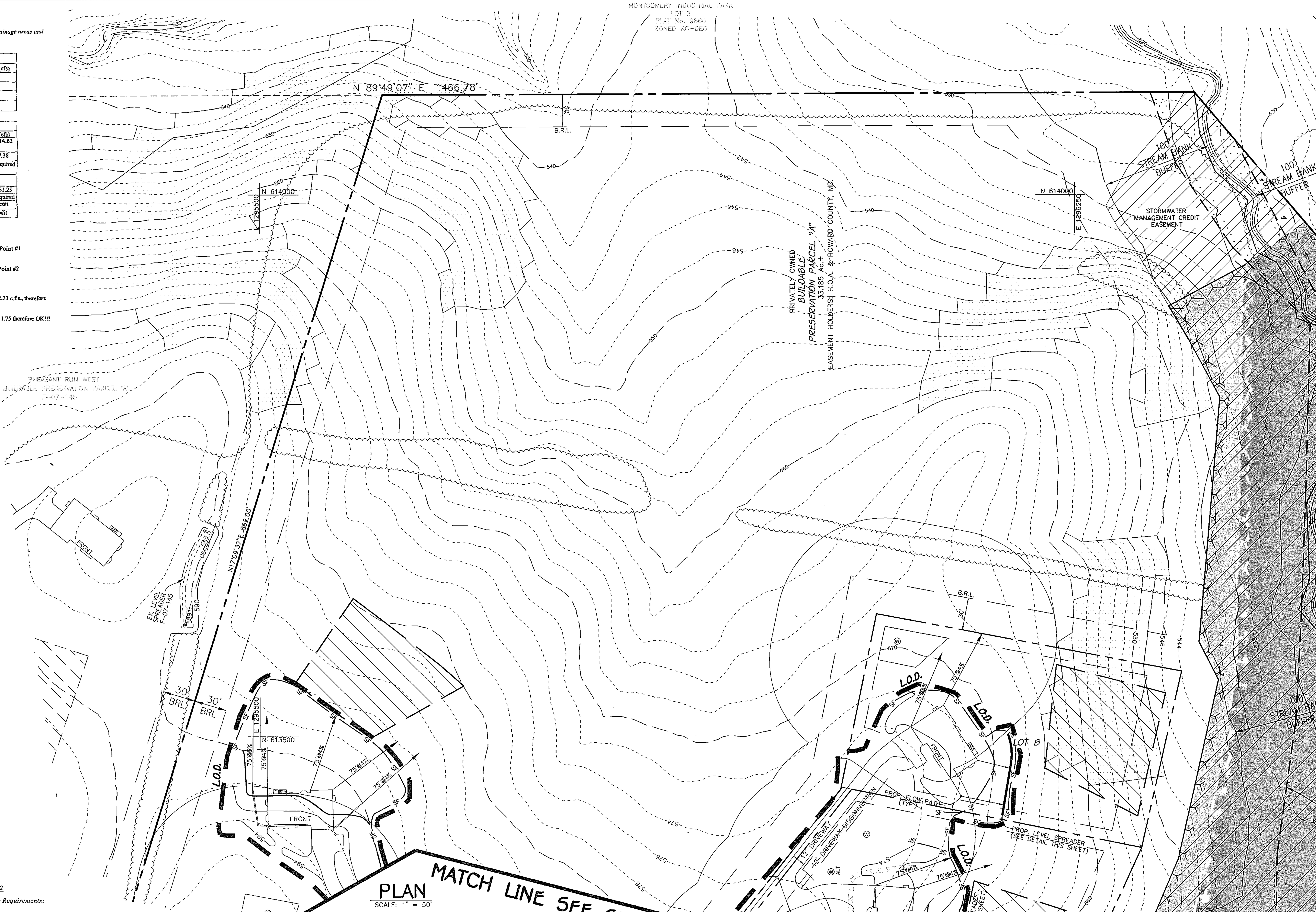
U – Unmanaged Q.
M – Managed Q.

Allowable Release Rates:
@ BMP Facility #2: 2.23 cfs for the CPv or 1-year storm to Study Point #1

@ BMP Facility #1: 11.75 cfs for the CPv or 1-year storm to Study Point #2

Proposed Release Rates:
@ BMP Facility #2: Q1 = 0.02 c.f.s. + Bypass Area of 1.98 = 2.00 c.f.s. > 2.23 c.f.s., therefore OK!! To Design Point #1.

@ BMP Facility #1: Q1 = 0.06 c.f.s. + Bypass Area of 5.31 = 5.33 c.f.s.,> 11.75 therefore OK!!! To Design Point #2.



SUMMARY TABLE #2

The following is a summary of the Re_{vol}, WQ_{vol}, and CP_{vol} Requirements:

Type of Requirement	Volume Required	Volume Provided & Notes
Re_{vol} (Recharge Vol. for Site)	1.04 acres % Area or 0.14 acre-feet % Volume	2.3 acres w/ % Area Method
WQ_{vol}		
Study Point #1 – BMP#2	0.11 Ac. Ft.; Credit = 0.09 Ac. Ft.	0.09 Ac. Ft. @ BMP Facility #2
Study Point #2 – BMP#1	0.24 Ac. Ft.; Credit = 0.18 Ac. Ft.	0.18 Ac. Ft. @ BMP Facility #1
Study Point #3	0.17 Ac. Ft.; No Credit	0.05 Ac. Ft. @ Rooftop Disconnect
Study Point #5	N/A - no planned disturbance located within this area.	N/A - no planned disturbance located within this area.
CP_{vol}		
Study Point #1 – BMP#2	0.2116 Ac. Ft.; Credit = 0.12 Ac. Ft.	0.12 Ac. Ft. @ BMP Facility #2
Study Point #2 – BMP#1	0.25 Ac. Ft.; Credit = 0.21 Ac. Ft.	0.21 Ac. Ft. @ BMP Facility #1
Study Point #3	N/A; Q < 2.0 c.f.s. @ 0.25 c.f.s.	N/A; Q < 2.0 c.f.s. @ 0.25 c.f.s.
Study Point #5	N/A; Q < 2.0 c.f.s. @ 0.50 c.f.s.	N/A; Q < 2.0 c.f.s. @ 0.50 c.f.s.

Note: Both Q_p (Overbank Flood Protection or 10 year storm) and Qf (Extreme Flood Volume or 100-year storm) are not required for this site since this watershed area is not classified as one of the sensitive watershed areas for Howard County.

Note: While study points #3 & #5 indicate a slight increase in runoff, the amount of increase is minimal (0.20 c.f.s. increase in Area #3; 0.25 c.f.s. increase in Area #5) and is not harmful to the land downstream from these 2 study points. Located below these 2 study points is a 100-year floodplain, drainage and utility easement where these 2 study points drain into. Area #5 does not have disturbance located in it. Area #3 is providing WQv by the rooftop disconnection credit for the 1-house located in buildable preservation parcel 'A'. It should also be noted that these 2 sub areas do not need to provide any CPv as the Q is less that 2.00 c.f.s.

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LEVEL SPEADER CRITERIA

For impervious surface runoff applications:
The capacity 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 downslope 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. Release 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 curbless, even-sloped road or parking lot), a level spreader may not be necessary.

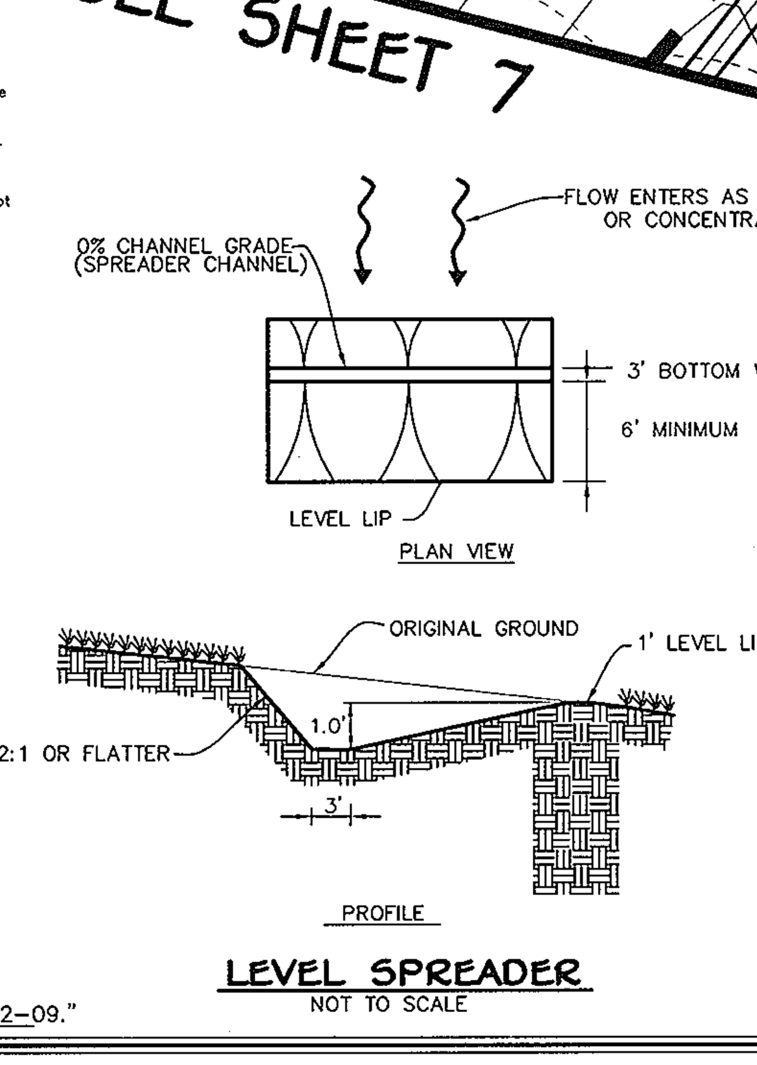
When the level spreader is used as an outlet for temporary or permanent diversions and diversion dikes, runoff containing high sediment loads must be treated in an approved sediment trapping device.

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.

ALDO M. [illegible] 9-23-08
DATE

"Professional certification. I 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. 20748, Expiration Date 2-22-09."



LEVEL SPREADER
NOT TO SCALE

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — Date 9/24/08

Timothy W. Feaga
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature Of Engineer — Date 9-23-08

[illegible]
Printed Name Of Engineer

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — Date 10/7/08

Approved: Department Of Public Works

Chief Bureau Of Highways — Date 10-9-08

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date 10/20/08

Chief, Development Engineering Division — Date 10/16/08

AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No.

Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

LEGEND

- SSF — SUPER-SILT FENCE
- SF — SILT FENCE
- TP — TREE PROTECTION FENCE
- S.C.E. — STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE
- L.O.D. — DENOTES LIMITS OF DISTURBANCE
- E.C.M. — DENOTES EROSION CONTROL MATTING
- DENOTES PUBLIC STORMWATER MANAGEMENT CREDIT EASEMENT
- DENOTES SLOPES 25% OR GREATER
- DENOTES SLOPES 15% TO 24.99%

NOTE:
CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, BUFFERS AND PRESERVATION PARCELS.

OWNERS
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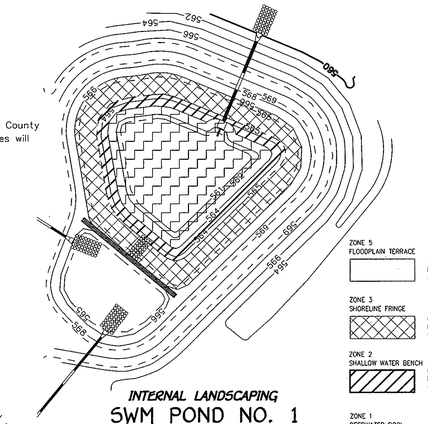
GRADING & SEDIMENT CONTROL PLAN

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008



SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	D–1: 782.0'	D–2: 741.0'
NUMBER OF TREES REQUIRED & PROVIDED: SHADE TREES EVERGREEN TREES	 16 20	 15 18
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	NO	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO	NO

LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a certification of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name 9/24/08
Date

This plan has been prepared in accordance with the provision of Section 16.124 of the Howard County Code and Landscape Manual. Financial surety for the required 124 shade and 38 evergreen trees will be posted as part of the Developer's Agreement in the amount of $42,900.00

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS 10-9-08 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hamilton
CHIEF, DIVISION OF LAND DEVELOPMENT BB 10/20/08 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION 10/16/08 DATE

PLANT LIST

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
✲	31	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2–3" CAL.
○	46	PLATANUS OCCIDENTALIS 'BLOODGOOD' LONDON PLANETREE	2 1/2–3" CAL.
✲	47	QUERCUS ACUTISSIMA SAWTOOTH OAK	2 1/2–3" CAL.
✲	18	ILEX OPACA AMERICAN HOLLY	5' – 6' HT.
✳	20	PINUS STROBUS EASTERN WHITE PINE	6' – 8' HT.

INTERNAL LANDSCAPING
SWM POND NO. 1
SCALE: 1" = 50'

ZONE 5
FLOODPLAIN TERRACE
▭ 1' – 4' ELEVATION ABOVE NORMAL POOL ELEVATION – PLANT AREA w/ SWITCH GRASS
QUANTITY – N/A SPACING – N/A

ZONE 3
SHORELINE FRINGE
▩ 0" – 12" ELEVATION ABOVE NORMAL POOL ELEVATION – PLANT BENCH AREA w/ THE FOLLWING: INKBERRY, WITCHHAZEL & WINTERBERRY
QUANTITY – 16 EACH SPACING – 12' MAX.

ZONE 2
SHALLOW WATER BENCH
▨ 0" – 12" ELEVATION BELOW NORMAL POOL ELEVATION – PLANT AREA w/ BULRUSH, RIVER
QUANTITY – N/A SPACING – N/A

ZONE 1
DEEPWATER POOL
▤ 1' – 3' ELEVATION BELOW NORMAL POOL ELEVATION – PLANT AREA w/ WIDGEON-GRASS
QUANTITY – N/A SPACING – N/A

ZONE 5
FLOODPLAIN TERRACE
▭ 1' – 4' ELEVATION ABOVE NORMAL POOL ELEVATION – PLANT AREA w/ SWITCH GRASS
QUANTITY – N/A SPACING – N/A

ZONE 3
SHORELINE FRINGE
▩ 0" – 12" ELEVATION ABOVE NORMAL POOL ELEVATION – PLANT BENCH AREA w/ THE FOLLWING: INKBERRY, WITCHHAZEL & WINTERBERRY
QUANTITY – 16 EACH SPACING – 12' MAX.

ZONE 2
SHALLOW WATER BENCH
▨ 0" – 12" ELEVATION BELOW NORMAL POOL ELEVATION – PLANT AREA w/ BULRUSH, RIVER
QUANTITY – N/A SPACING – N/A

ZONE 1
DEEPWATER POOL
▤ 1' – 3' ELEVATION BELOW NORMAL POOL ELEVATION – PLANT AREA w/ WIDGEON-GRASS
QUANTITY – N/A SPACING – N/A

INTERNAL LANDSCAPING
SWM POND NO. 2
SCALE: 1" = 50'

PLAN
SCALE: 1" = 100'

NOTE: CONTRACTOR TO REGRADE, SOD OR HYDROSEED AND STRAW MULCH ALL AREAS DISTURBED AS A RESULT OF THEIR WORK.

SPRAY WITH WILT-PROOF ACCORDING TO MANUFACTURERS STANDARDS

TREE PLANTING DETAIL

EVERGREEN PLANTING DETAIL

SCHEDULE A – PERIMETER LANDSCAPING

PERIMETER	CATEGORY (PROPERTIES/ ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED AND PROVIDED: SHADE TREES	EVERGREEN TREES	SHRUBS
P–1	ADJACENT TO PERIMETER	A	490.41'	NO	NO	8	–	–
P–2	ADJACENT TO PERIMETER	A	821.12'	NO	NO	14	–	–
P–3	ADJACENT TO PERIMETER	A	2320.10'	NO	NO	39	–	–
P–4	ADJACENT TO PERIMETER	A	403.00'	NO	NO	7	–	–
P–5	ADJACENT TO PERIMETER	A	487.01'	NO	NO	8	–	–
P–6	ADJACENT TO PERIMETER	A	1007.44'	NO	NO	17	–	–
TOTAL NUMBER OF TREES PROVIDED						93	–	–

"At the time of plant installation, all trees listed and approved on the landscape Plan, shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no subtitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviations from the approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to the road drawing plans".

"The Owner, tenants and/or their agents shall be responsible for maintenace of the required perimeter landscaping. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced".

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(410) 461 - 2855

ALDO M [illegible] 9-23-08
DATE
"Professional certification. I 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. 20748, Expiration Date 2–22–09."

OWNERS
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LANDSCAPE PLAN
PHEASANT RUN EAST
LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON–PRESERVATION PARCELS "B" THRU "D"
ZONED "RC–DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 9 OF 19

F–08–011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 9 LANDSCAPE PLAN.dwg, 9/22/2008 4:22:05 PM, jamesl, 1:1

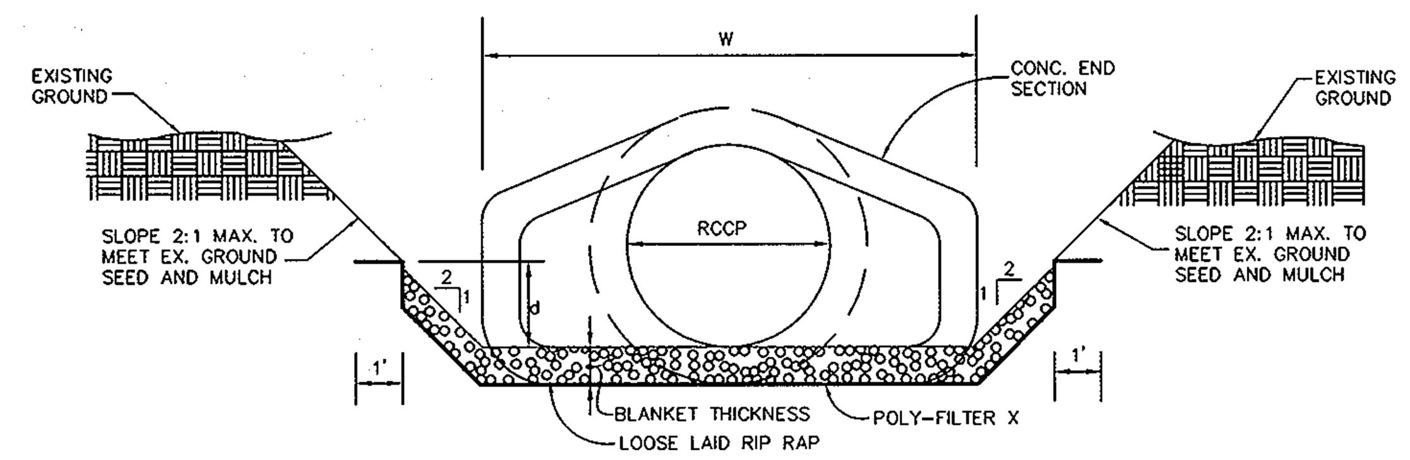
STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV.IN	INV.OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE & NO. OF OPEN SIDES	REMARKS
I-1	* 593.95	586.47 (15"), 586.72 (18")	585.97 (24")	PHEASANT RUN COURT	11+61	19' R	D INLET (1)	D - 4.10
I-2	* 593.50	-----	587.48 (15")	PHEASANT RUN COURT	11+69	19' L	D INLET (1)	D - 4.10
I-3	591.48	-----	588.55 (18")	PHEASANT RUN COURT	L.P. 1+47.28	---	A-10	D - 4.03
I-4	* 585.43	582.72 (15"), 582.72 (18")	582.47 (18")	PHEASANT RUN COURT	1+67	19' L	D INLET (1)	D - 4.10
I-5	* 585.94	-----	583.26 (15")	PHEASANT RUN COURT	1+67	35' R	D INLET (1)	D - 4.10
I-6	* 600.84	597.76 (15")	597.51 (18")	PHEASANT RUN COURT	5+00	19' L	D INLET (1)	D - 4.10
I-7	* 600.84	-----	598.14 (15")	PHEASANT RUN COURT	5+00	19' R	D INLET (1)	D - 4.10
I-8	582.11	-----	578.76 (15")	PHEASANT RUN COURT	0+42.01	** 20.24'R	A-5	D - 4.01
I-9	582.11	-----	578.76 (15")	PHEASANT RUN COURT	0+40.24	** 20.11'L	A-5	D - 4.01
I-10	* 568.50	-----	565.91 (18")	N 612474.26 E 1296064.17	----	---	D INLET (3)	# D - 4.10
I-11	* 581.01	575.16 (15")	574.41 (24")	N 613060.05 E 1295692.32	----	---	D INLET (4)	# D - 4.10
I-11A	* 581.01	-----	575.76 (15")	N 613069.18 E 1295663.76	----	---	D INLET (4)	# D - 4.10
I-3A	* 591.80	-----	588.55 (15")	PHEASANT RUN COURT	1+72.94	33' L	D INLET (3)	# D - 4.10
M-1	572.00	565.67 (30")	565.42 (30")	N 612652.64 E 1296079.80	----	---	4' STD. MANHOLE	G - 5.12
M-2	574.50	568.67 (30")	568.42 (30")	N 612858.39 E 1296044.06	----	---	4' STD. MANHOLE	G - 5.12
M-3	576.00	572.00 (2-24")	571.25 (30")	N 612908.44 E 1295791.22	----	---	4' STD. MANHOLE	G - 5.12
M-4	599.17	595.50 (18")	591.80 (18")	PHEASANT RUN COURT	4+52	14' L	4' STD. MANHOLE	G - 5.12
M-5	582.30	578.70 (15"), 578.61 (15"), 578.48 (30")	578.38 (30")	PHEASANT RUN COURT	0+41	13' L	5' STD. MANHOLE	G - 5.13
M-6	584.09	578.65 (30")	578.55 (30")	PHEASANT RUN COURT	0+97	13' L	5' STD. MANHOLE	G - 5.13
S-1	567.06	565.06	-----	N 612629.41 E 1296115.82	----	---	CONC. END SECTION	D - 5.51
S-2	566.56	565.06	-----	N 612559.40 E 1296142.00	----	---	CONC. END SECTION	# D - 5.51
S-3	583.56	582.06	-----	PHEASANT RUN COURT	1+57	59' L	CONC. END SECTION	D - 5.51
S-4	562.10	559.10	-----	N 612769.10 E 1296246.05	----	---	CONC. END SECTION	D - 5.51
S-5	580.30	578.30	-----	OLD FREDERICK ROAD	15+50	17' R	CONC. END SECTION	D - 5.51
R-1	568.20	561.00 (6")	560.40 (36")	N 612709.78 E 1296221.95	----	---	CONCRETE RISER	
R-2	585.50	578.90 (6")	578.80 (30")	N 611827.63 E 1295357.76	----	---	CONCRETE RISER	

* – DENOTES THROAT OPENING ELEVATION
** – DENOTES DISTANCE FROM CENTERLINE OF ROAD TO FACE OF INLET
# – DENOTES PRIVATELY OWNED AND MAINTAINED BY H.O.A.

PIPE SCHEDULE

SIZE	CLASS	LENGTH
15"	RCCP, CL. IV	172 L.F.
18"	RCCP, CL. IV	487 L.F.
24"	RCCP, CL. IV	315 L.F.
24"	RCCP, CL. V	58 L.F.
30"	RCCP, CL. IV	506 L.F.
24"	ASTM C-361, B-25	58 L.F.
36"	ASTM C-361, B-25	58 L.F.



RIP-RAP CHANNEL DETAIL
NO SCALE

RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	AREA	WETTED PERIMETER	R	R 2/3	S	S 1/2	W	d	N	V (f.p.s.)	Q (c.f.s.)	RIP-RAP SIZE D_{50}	RIP-RAP SIZE D_{MAX}	BLANKET THICKNESS
S-1	11.40'	10.90'	0.9580	0.9717	0.0050	0.0707	6.00'	1.32'	0.04	2.55	29.11	9.5"	15"	19"
S-2	3.99'	8.50'	0.4694	0.5986	0.0050	0.0707	6.00'	0.56'	0.04	1.59	6.21	9.5"	15"	19"
S-3	7.44'	7.61'	0.9777	0.9850	0.0050	0.0707	6.00'	0.36'	0.04	1.22	2.93	9.5"	15"	19"
S-4	13.62'	12.75'	1.0682	1.045	0.0050	0.0707	6.00'	1.51'	0.04	2.74	37.04*	9.5"	15"	19"
S-5	5.99'	9.53'	0.6285	0.7326	0.0050	0.0707	6.00'	0.79'	0.04	1.93	11.46	9.5"	15"	19"

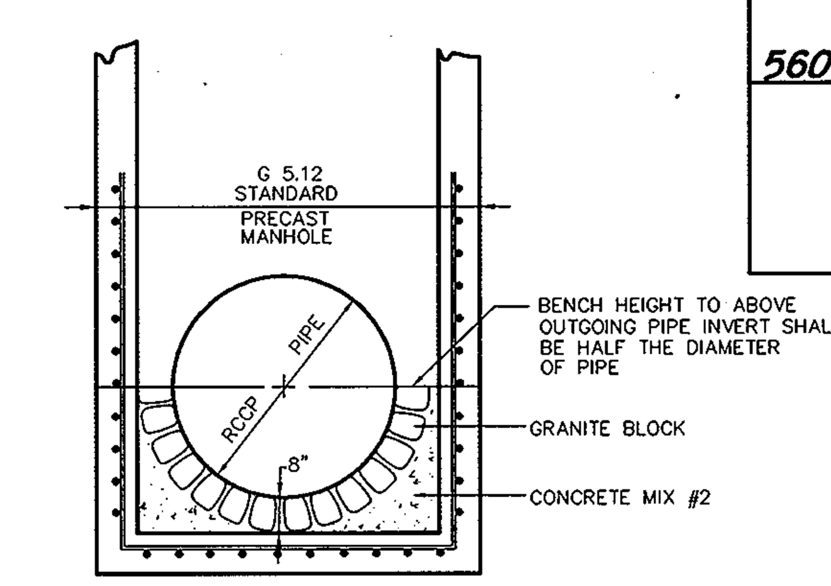
* – DENOTES 100-YEAR DESIGN Q.

CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

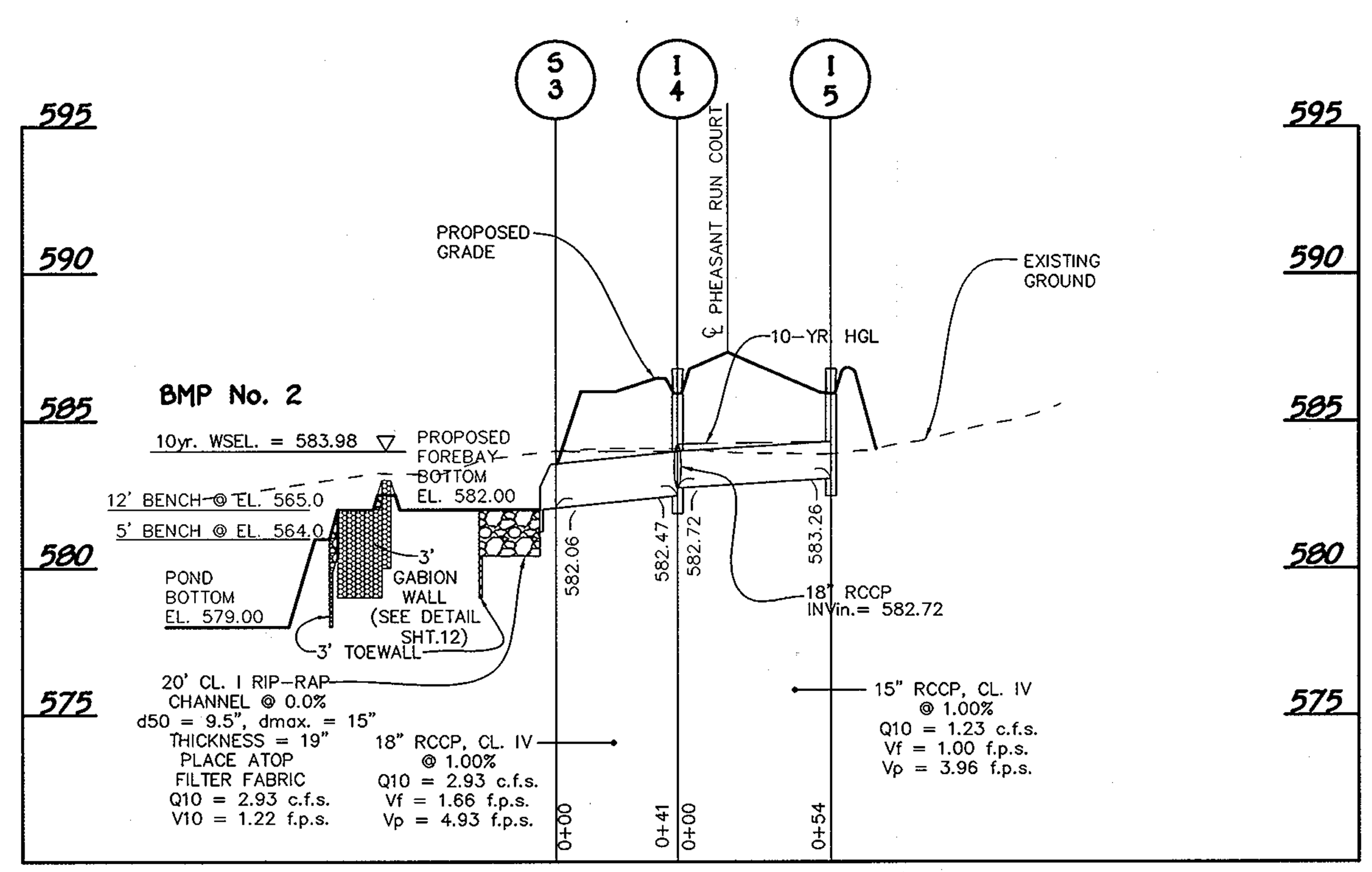
1. The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional shall hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each 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 insure that it is reasonably homogenous with the smaller stones and spalls filling 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.

PRIVATE PIPE SCHEDULE

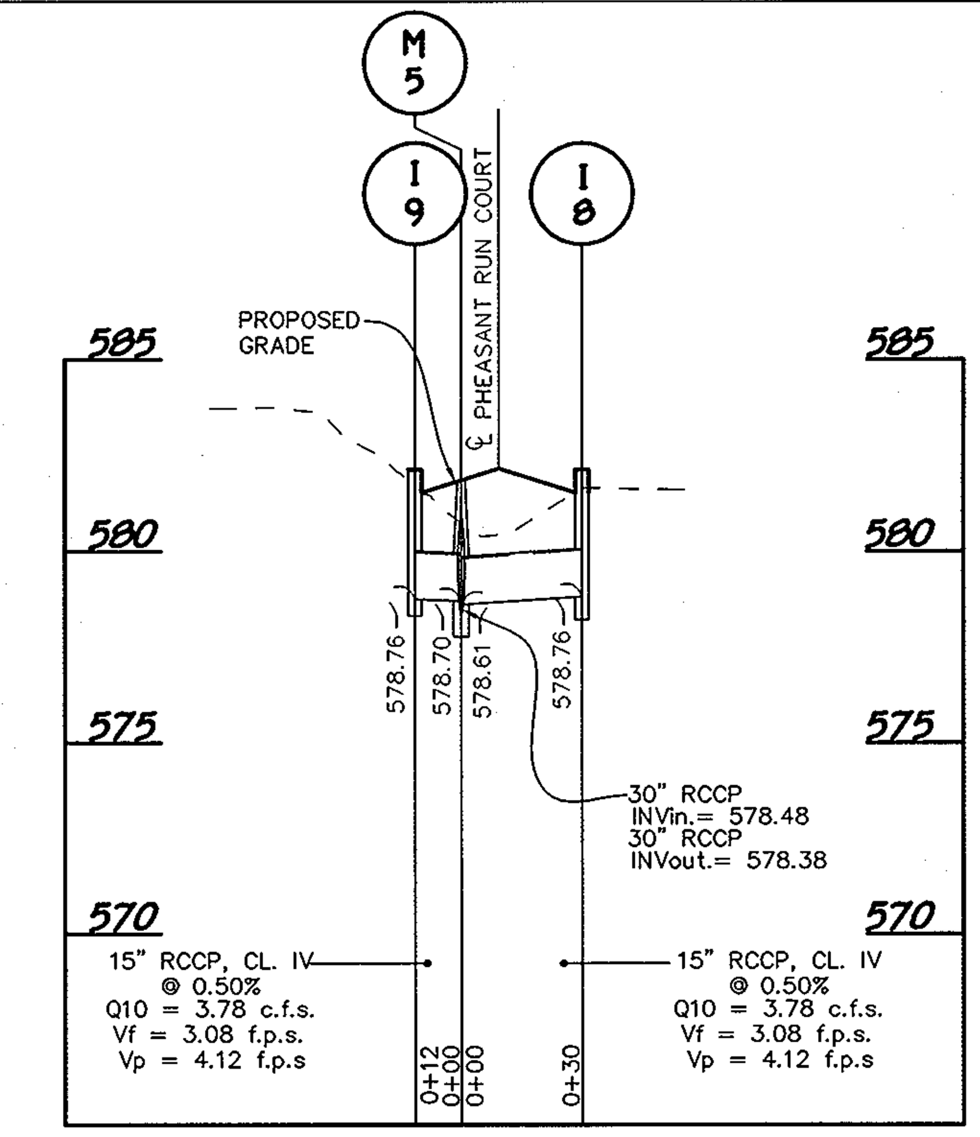
SIZE	CLASS	LENGTH
15"	RCCP, CL. IV	69 L.F.
18"	RCCP, CL. IV	113 L.F.
24"	RCCP, CL. IV	181 L.F.



GRANITE BLOCK DETAIL
NOT TO SCALE

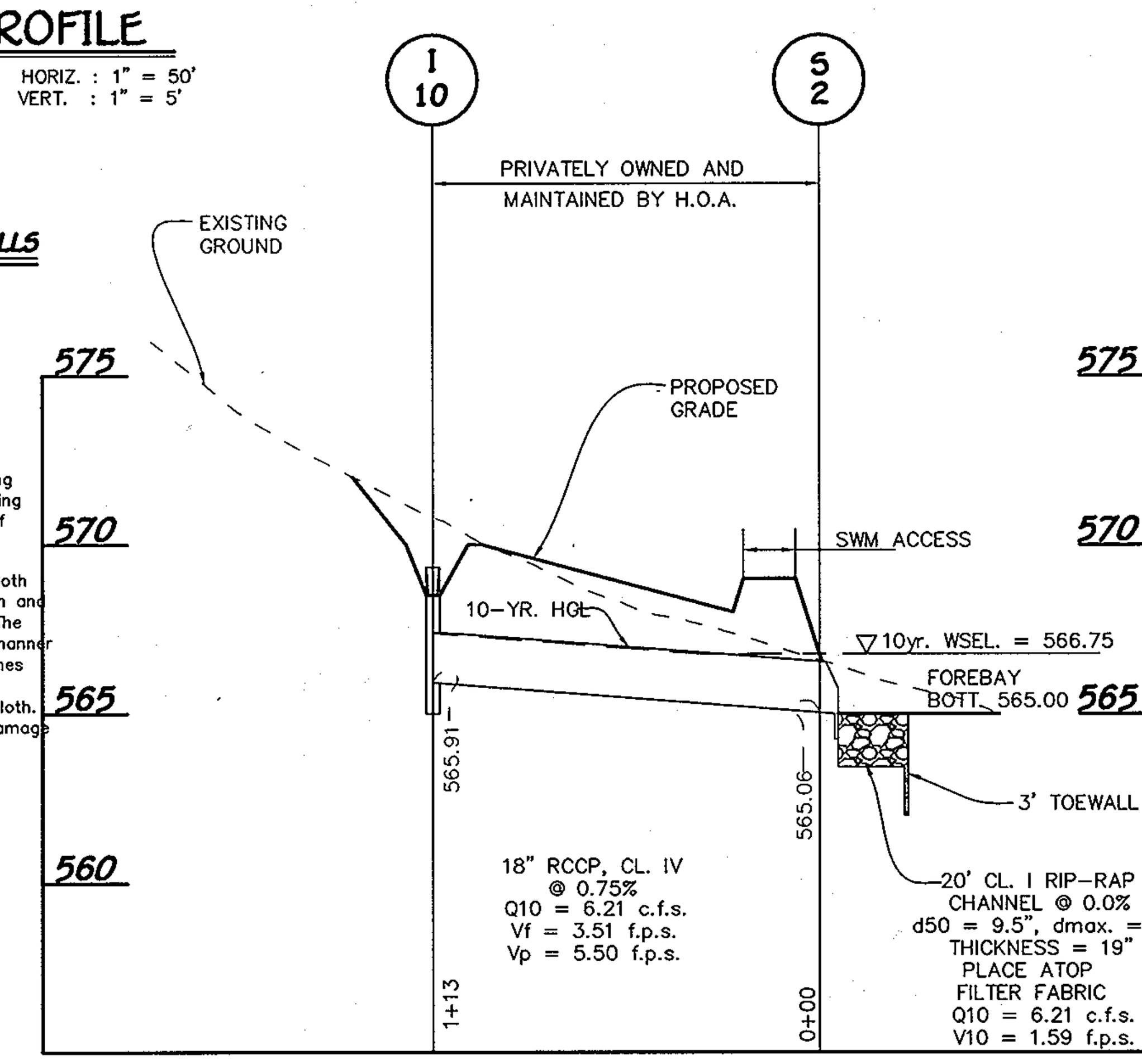


PROFILE
SCALE: HORIZ. : 1" = 50' VERT. : 1" = 5'

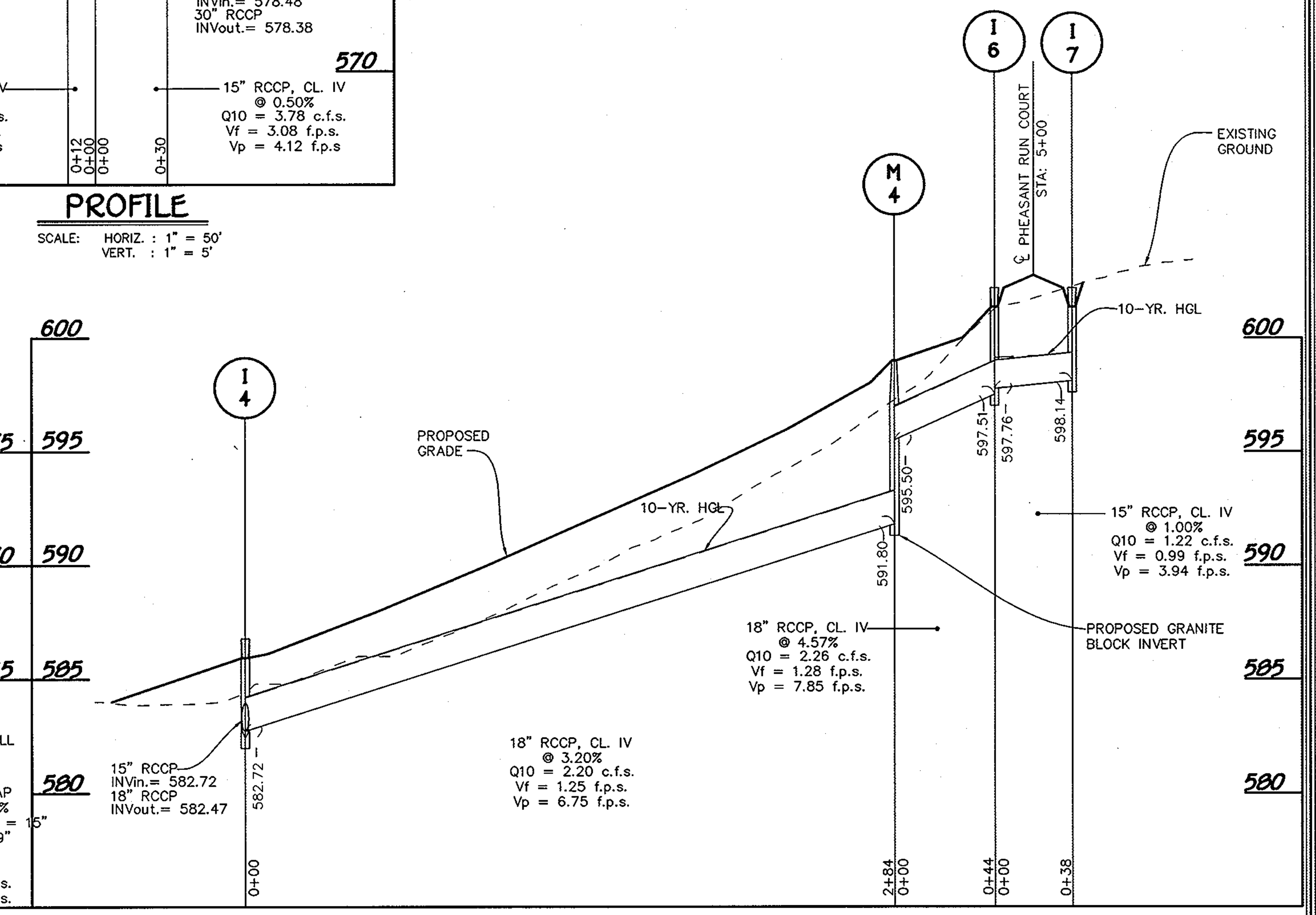


PROFILE
SCALE: HORIZ. : 1" = 50' VERT. : 1" = 5'

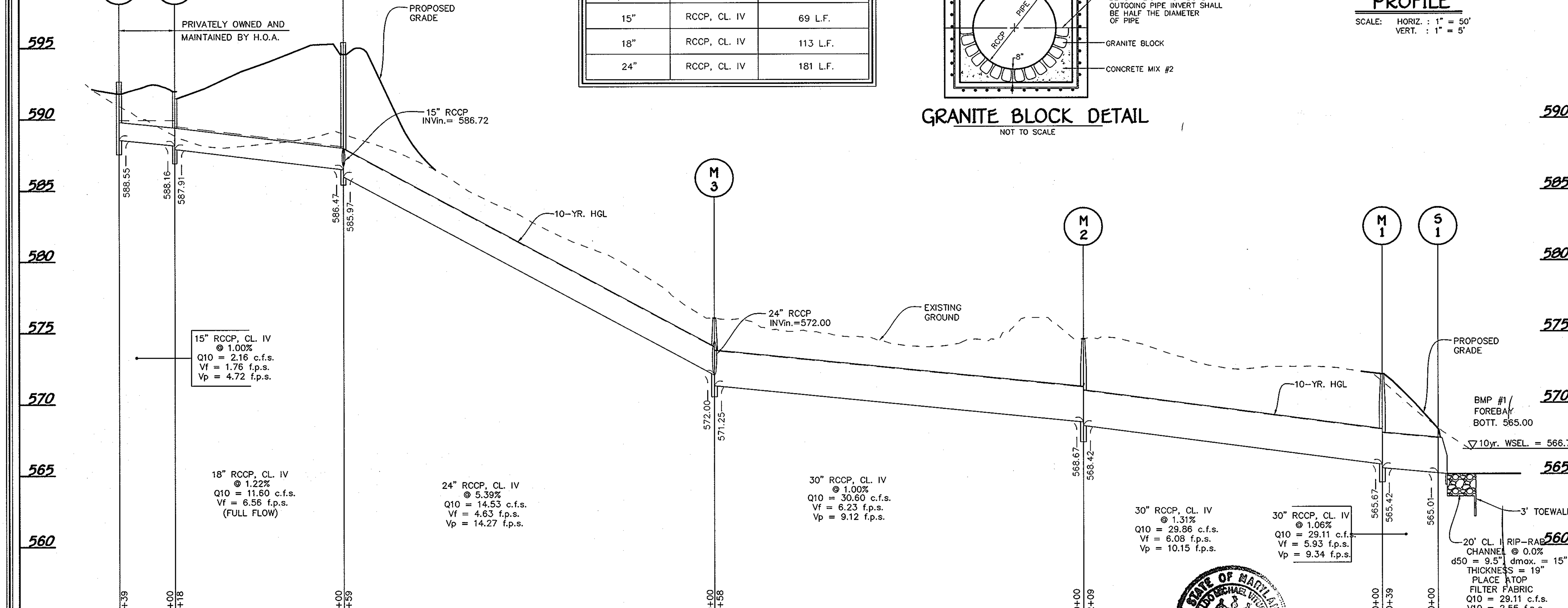
APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10-9-08
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08



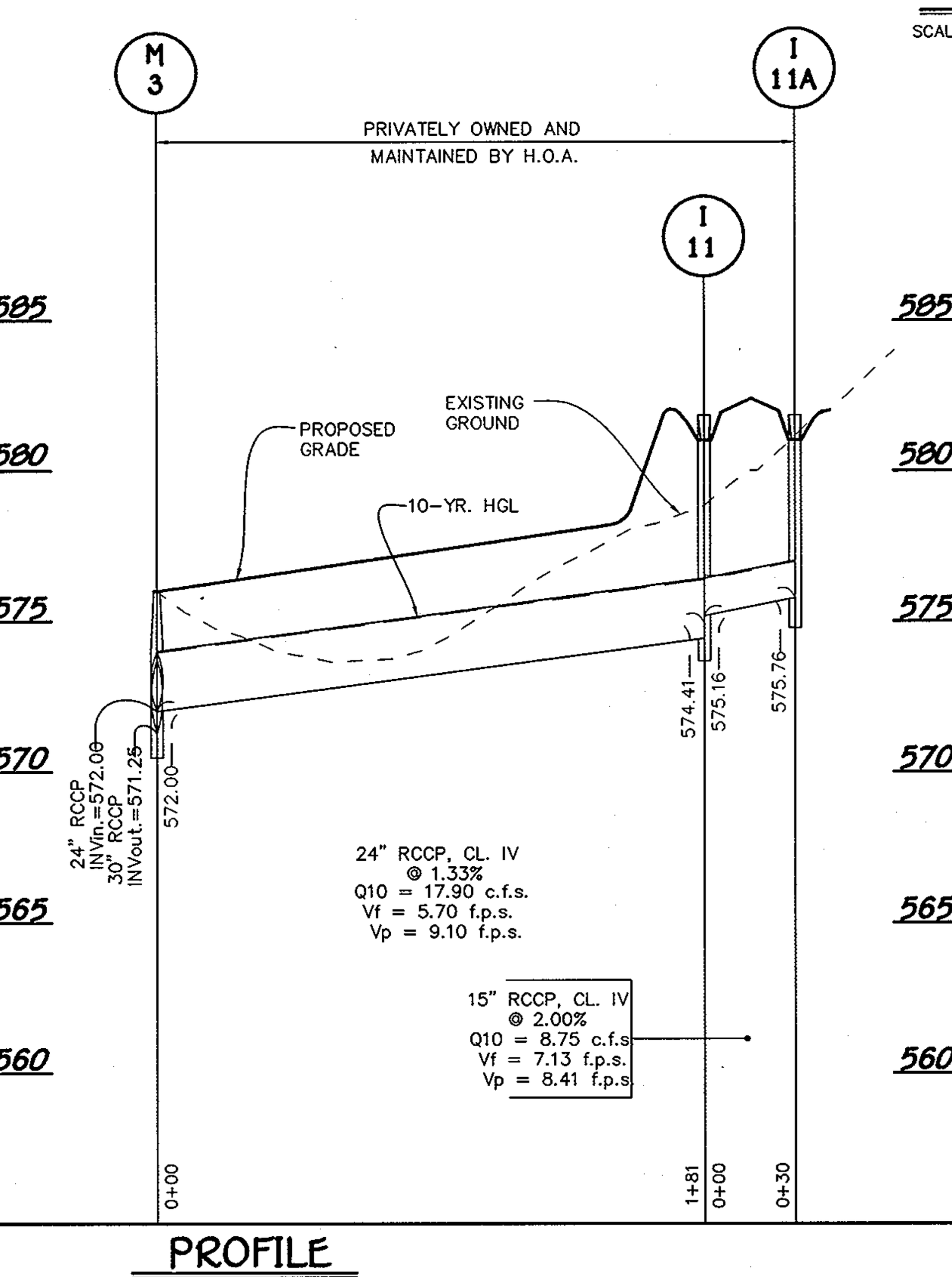
PROFILE
SCALE: HORIZ. : 1" = 50' VERT. : 1" = 5'



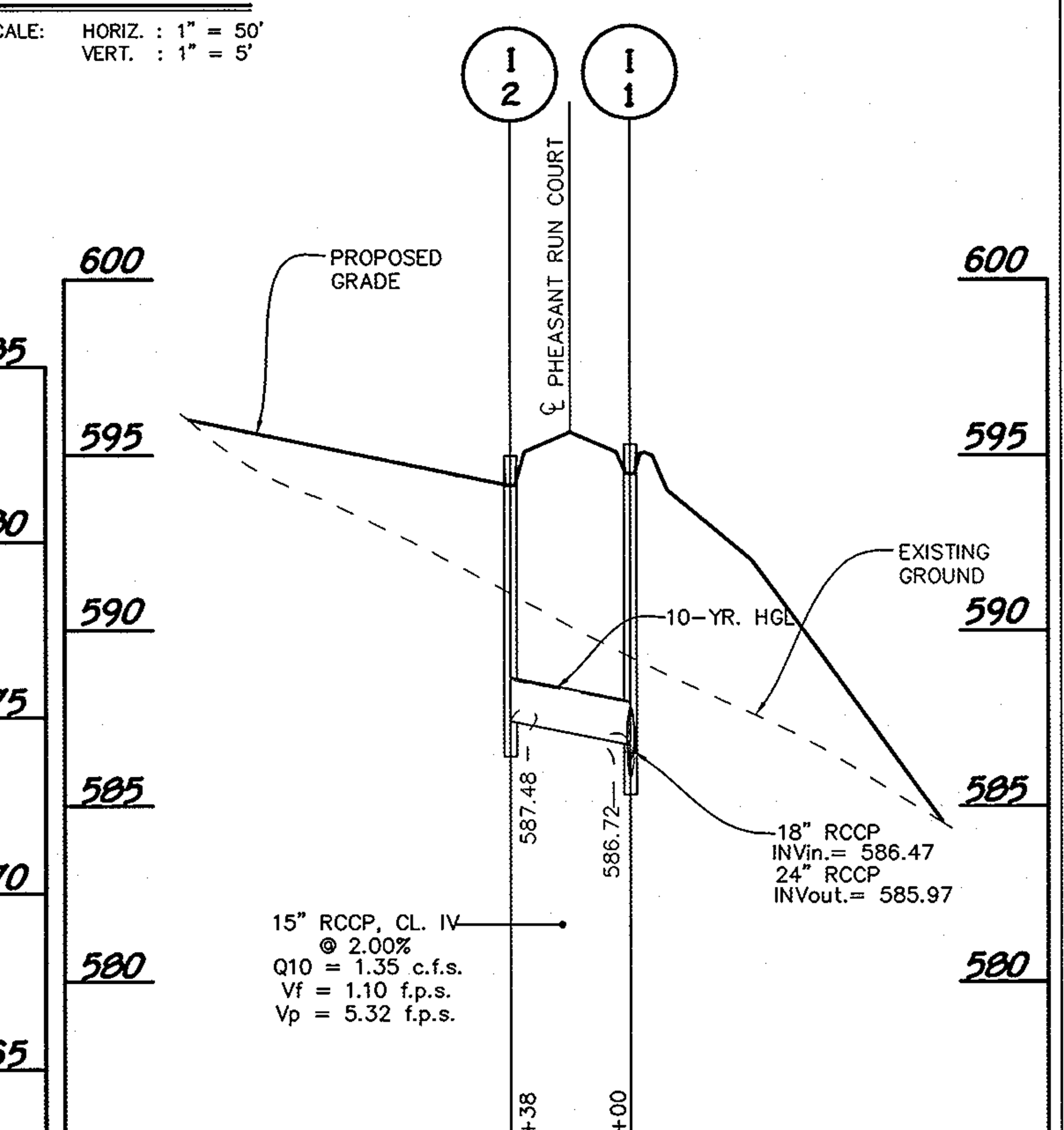
PROFILE
SCALE: HORIZ. : 1" = 50' VERT. : 1" = 5'



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



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



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

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

ALDO M. VITIELLO — DATE 9-23-08

"Professional Certification. I 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. 20748, Expiration Date 2-22-09."

OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI,
RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
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DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

STORM DRAIN PROFILES

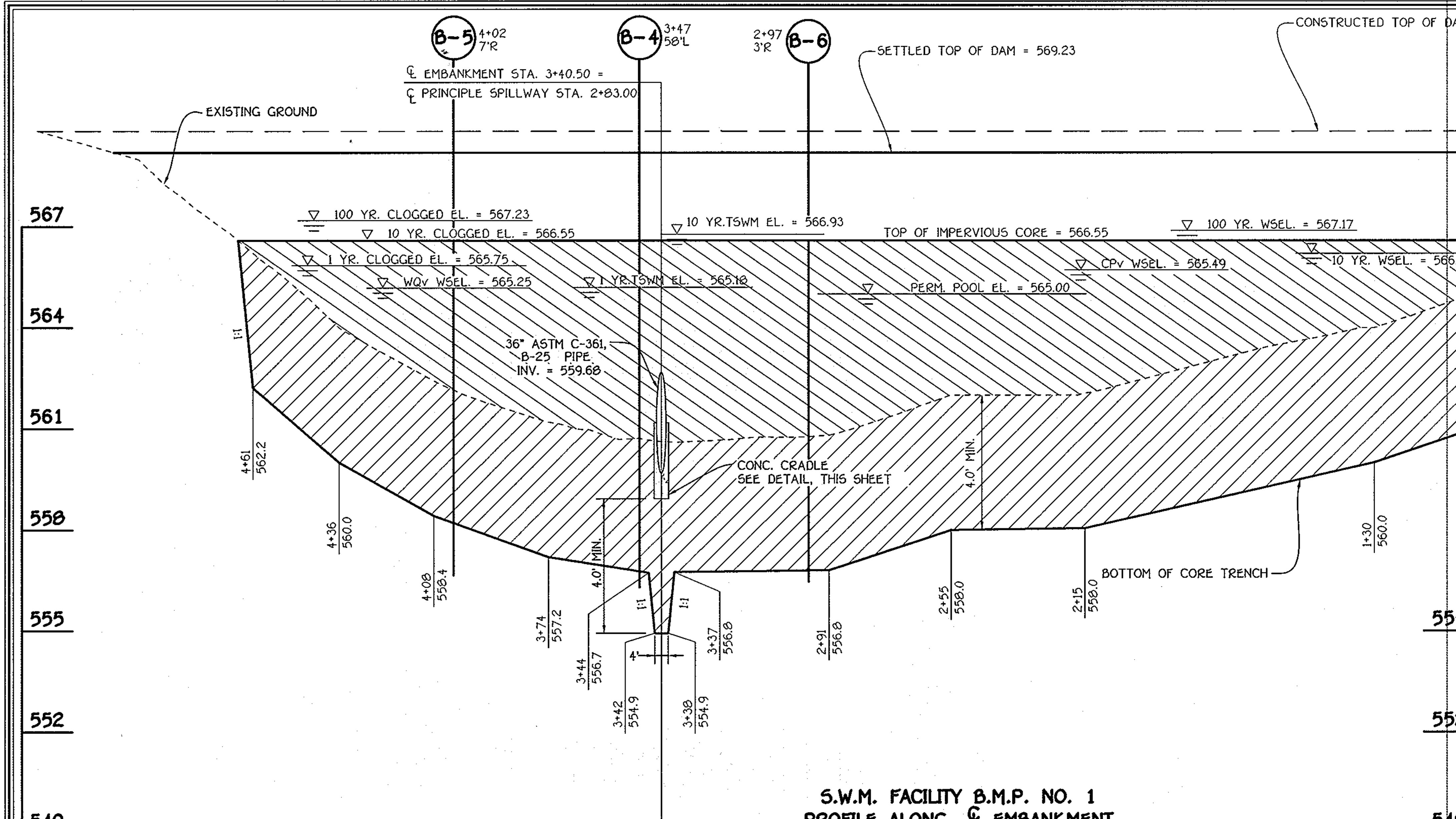
PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

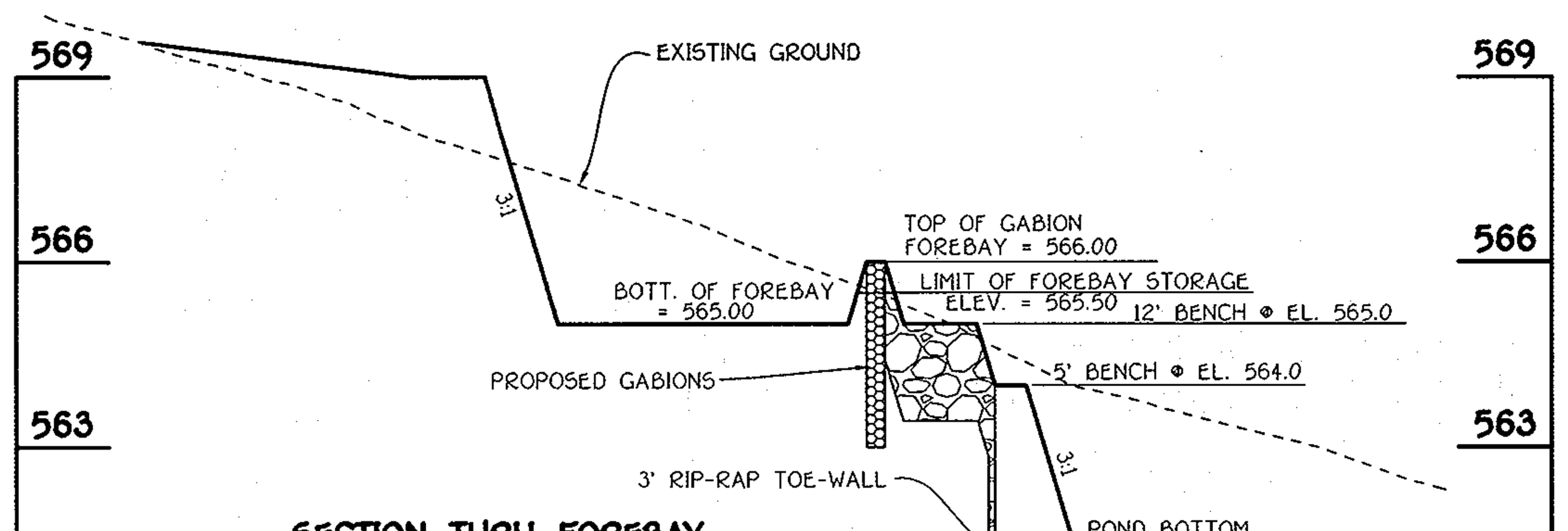
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 10 OF 19

F-08-011

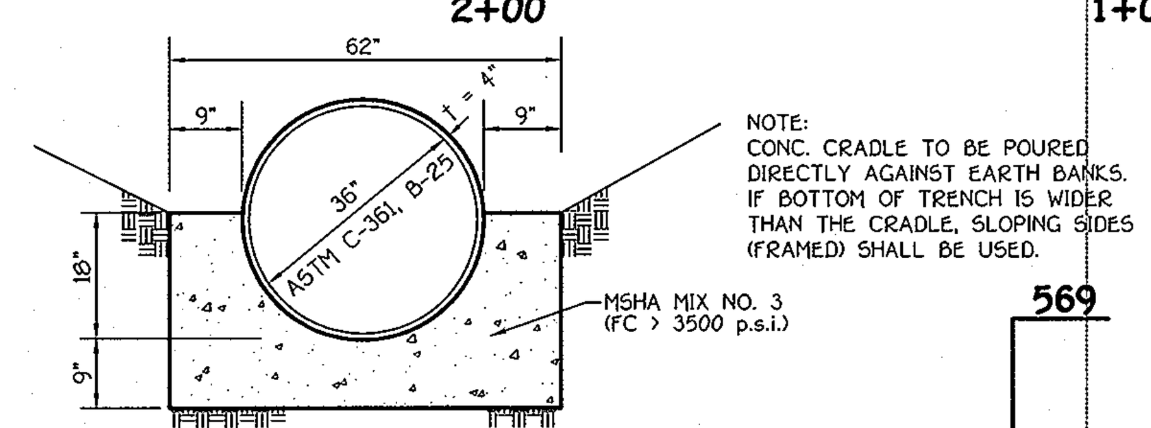
K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 10 SD PROFILES.dwg, 9/22/2008 4:32:27 PM, jamesl, 1:50



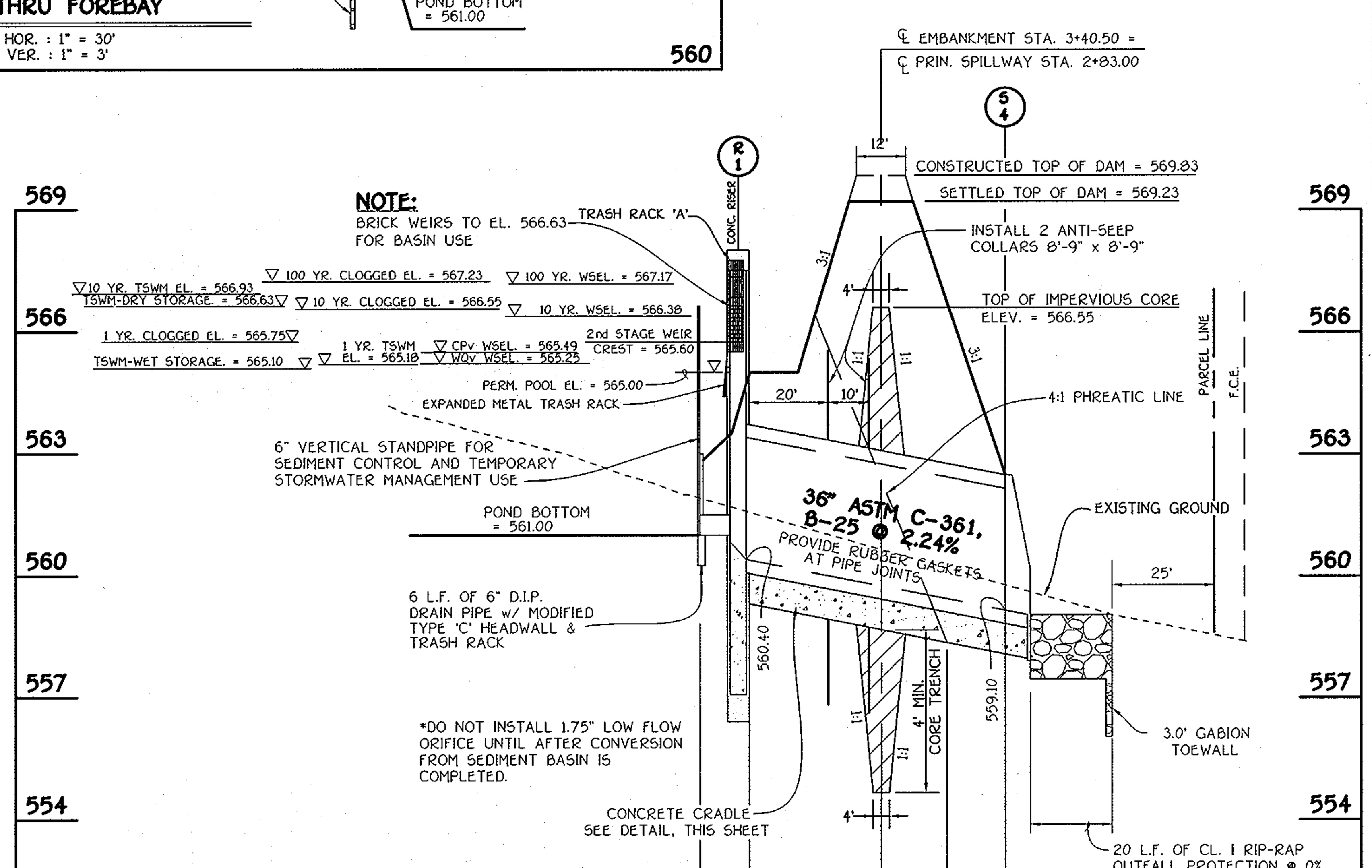
S.W.M. FACILITY B.M.P. NO. 1
PROFILE ALONG ℄ EMBANKMENT
SCALE: HORIZ. 1" = 30' VERT. 1" = 3'



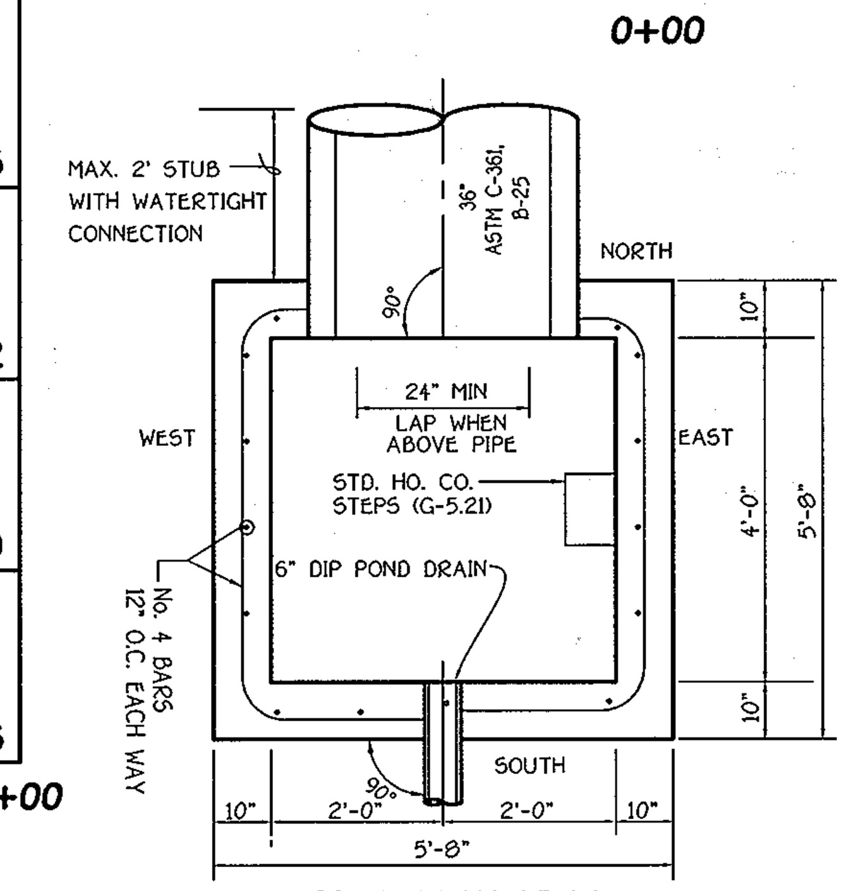
SECTION THRU FOREBAY
SCALE: HOR. : 1" = 30' VER. : 1" = 3'



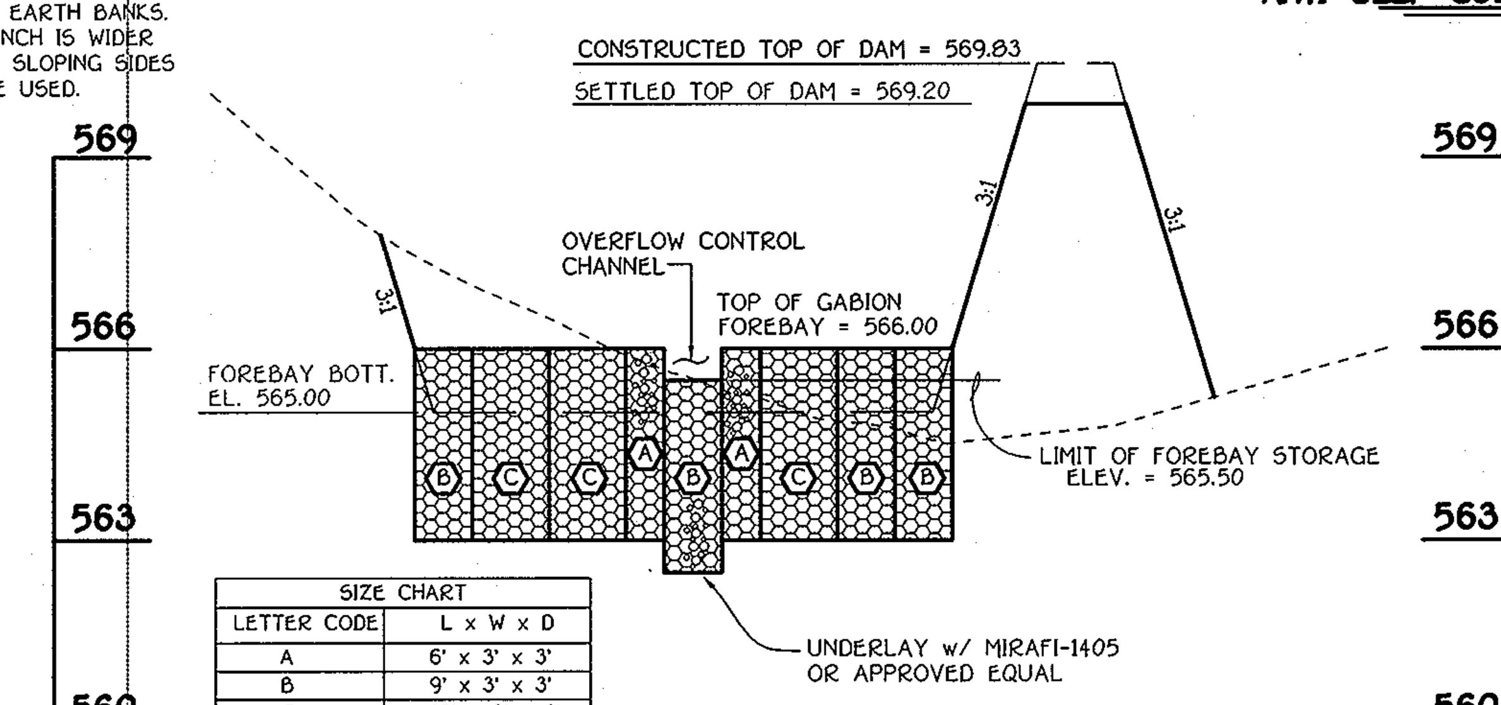
SCS TR-46 A2 CRADLE
NO SCALE



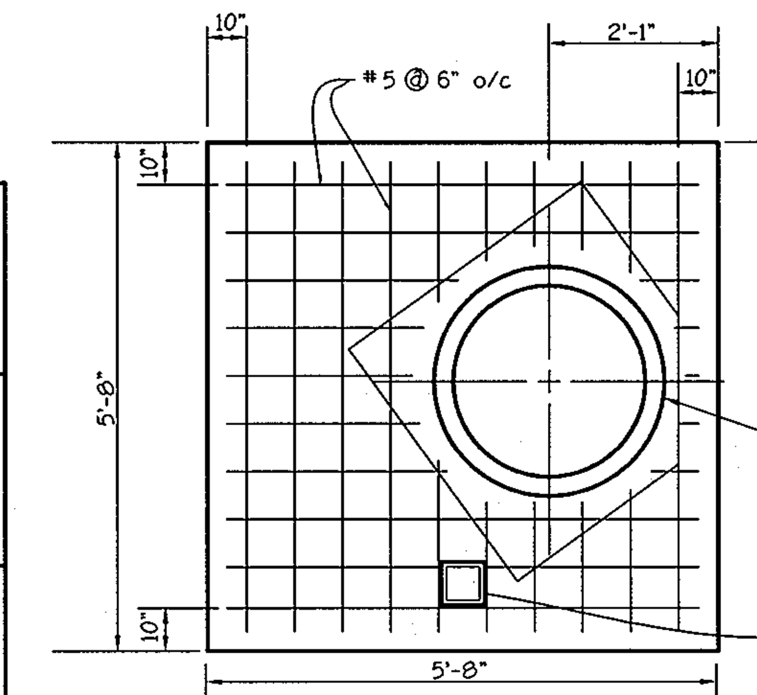
S.W.M. FACILITY B.M.P. NO. 1
PRINCIPAL SPILLWAY PROFILE
SCALE: HOR. : 1" = 30' VER. : 1" = 3'



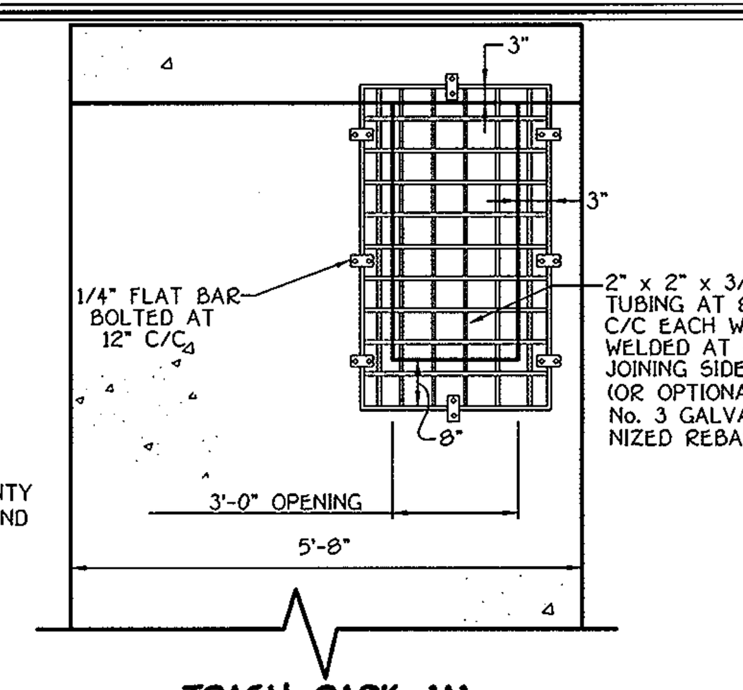
RISER PLAN VIEW
NO SCALE



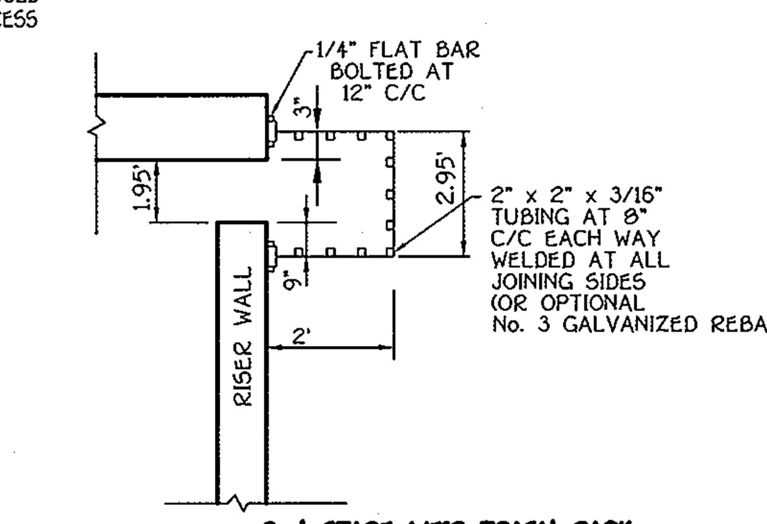
GABION FOREBAY PROFILE
SCALE: HORIZ. 1" = 30' VERT. 1" = 3'



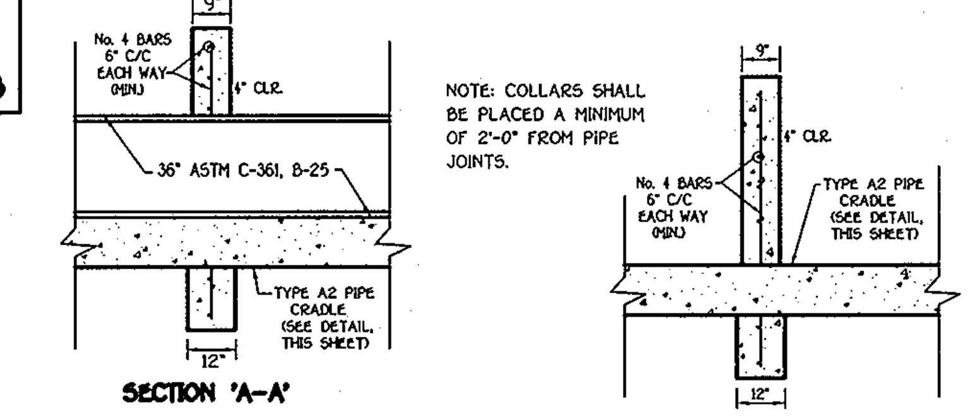
TOP SLAB DETAIL
NO SCALE



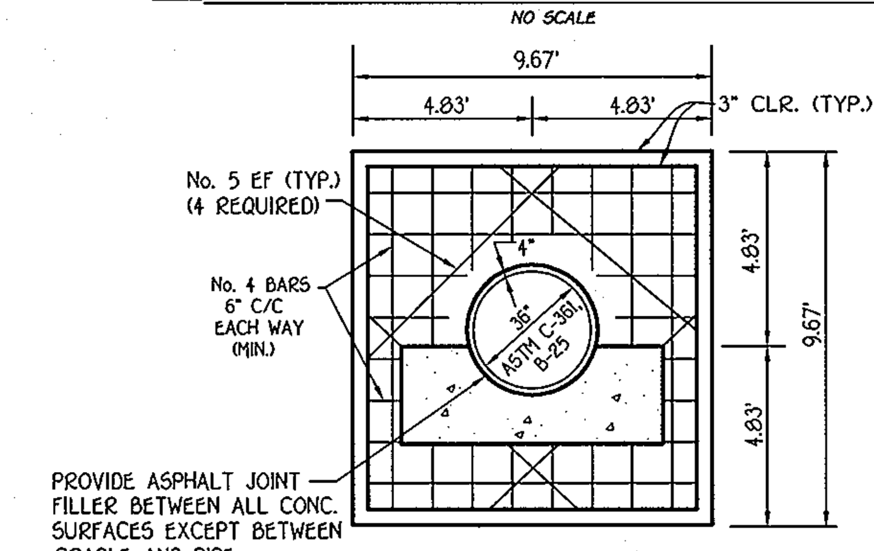
TRASH RACK 'A'



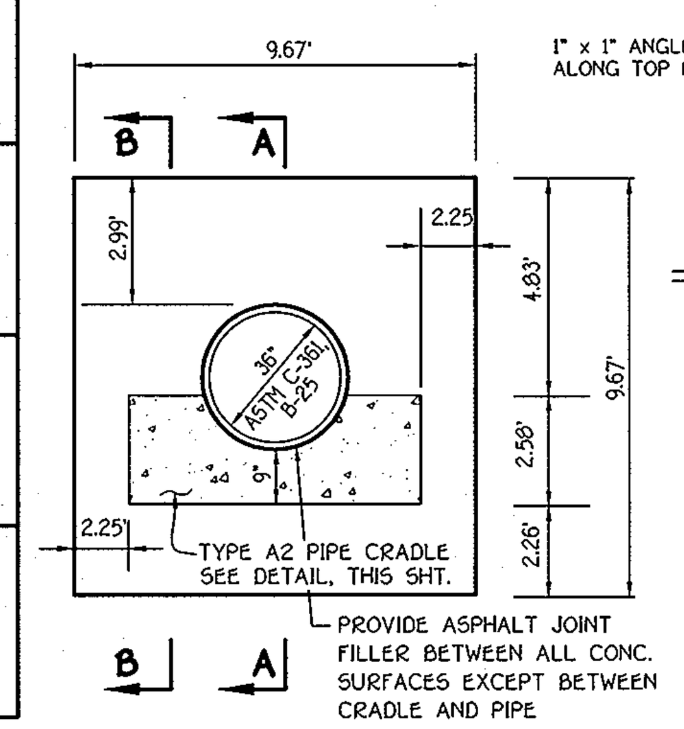
2nd STAGE WEIR TRASH RACK
TRASH RACK DETAIL
(NO SCALE)



TYPICAL SECTION THROUGH BARREL, CRADLE AND ANTI-SEEP COLLAR
NO SCALE

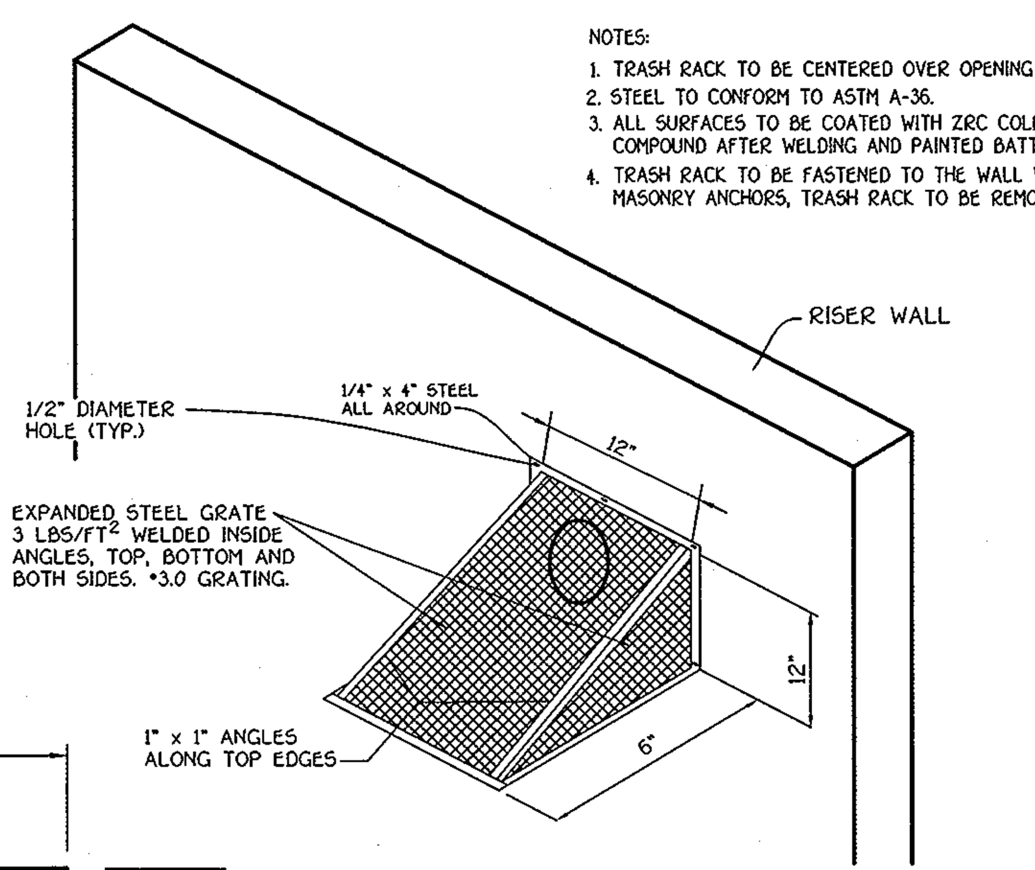


ANTI-SEEP COLLAR REBAR PLACEMENT
NO SCALE



ANTI-SEEP COLLAR
NO SCALE

NOTES:
1. TRASH RACK TO BE CENTERED OVER OPENING .
2. STEEL TO CONFORM TO ASTM A-36.
3. ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING AND PAINTED BATTLESHIP GREY.
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2" MASONRY ANCHORS, TRASH RACK TO BE REMOVABLE.



EXPANDED METAL TRASH RACK
NOT TO SCALE

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — 9/24/08 Date

Timothy W. Feaga
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Of The Pond Within 30 Days Of Completion."

Signature Of Engineer — 9-23-08 Date

Printed Name Of Engineer

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — 10/7/08 Date

Approved: Department Of Public Works

Chief Bureau Of Highways — 10-9-08 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 10/24/08 Date

Chief, Development Engineering Division — 10/16/08 Date

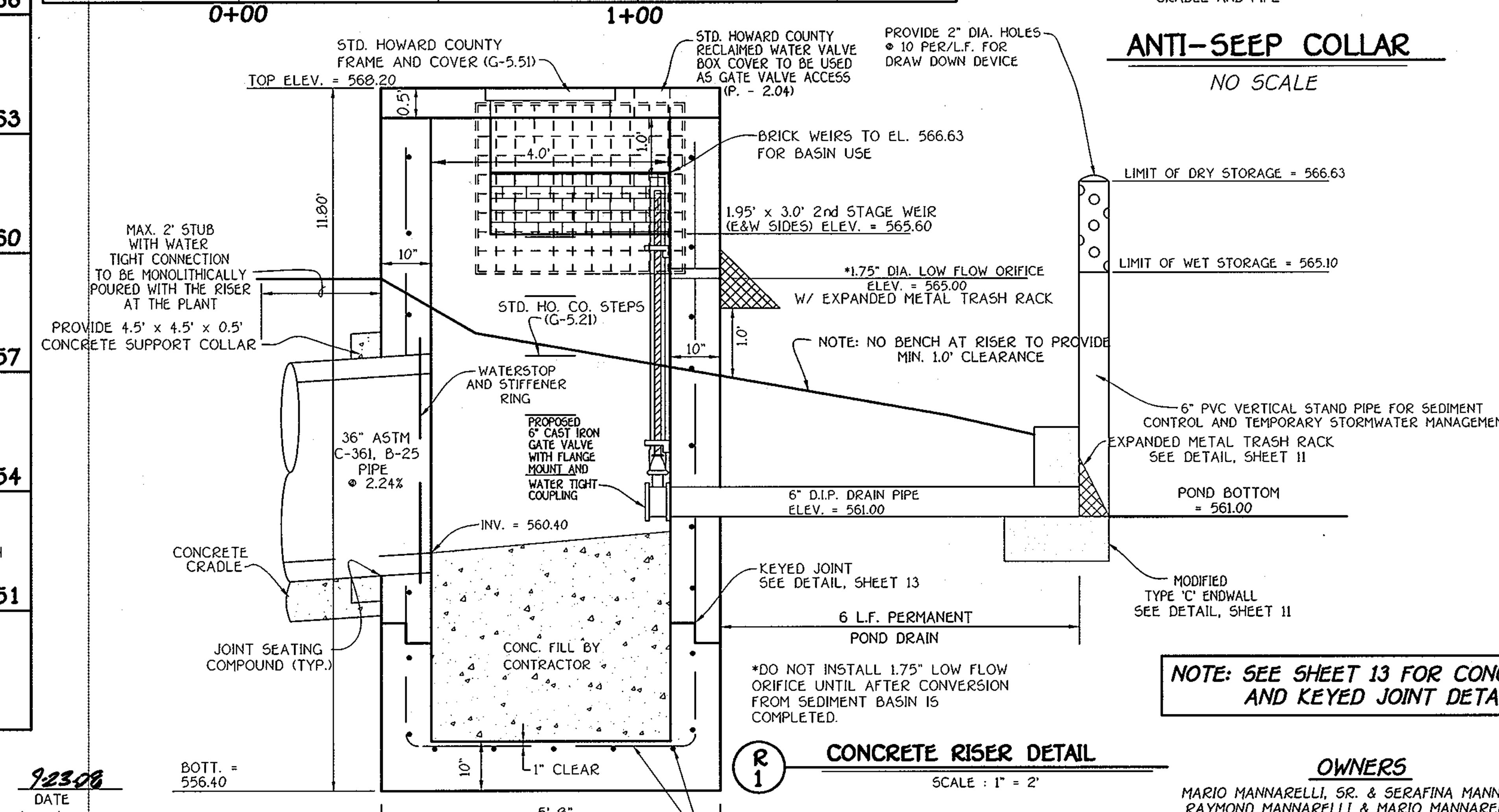
AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

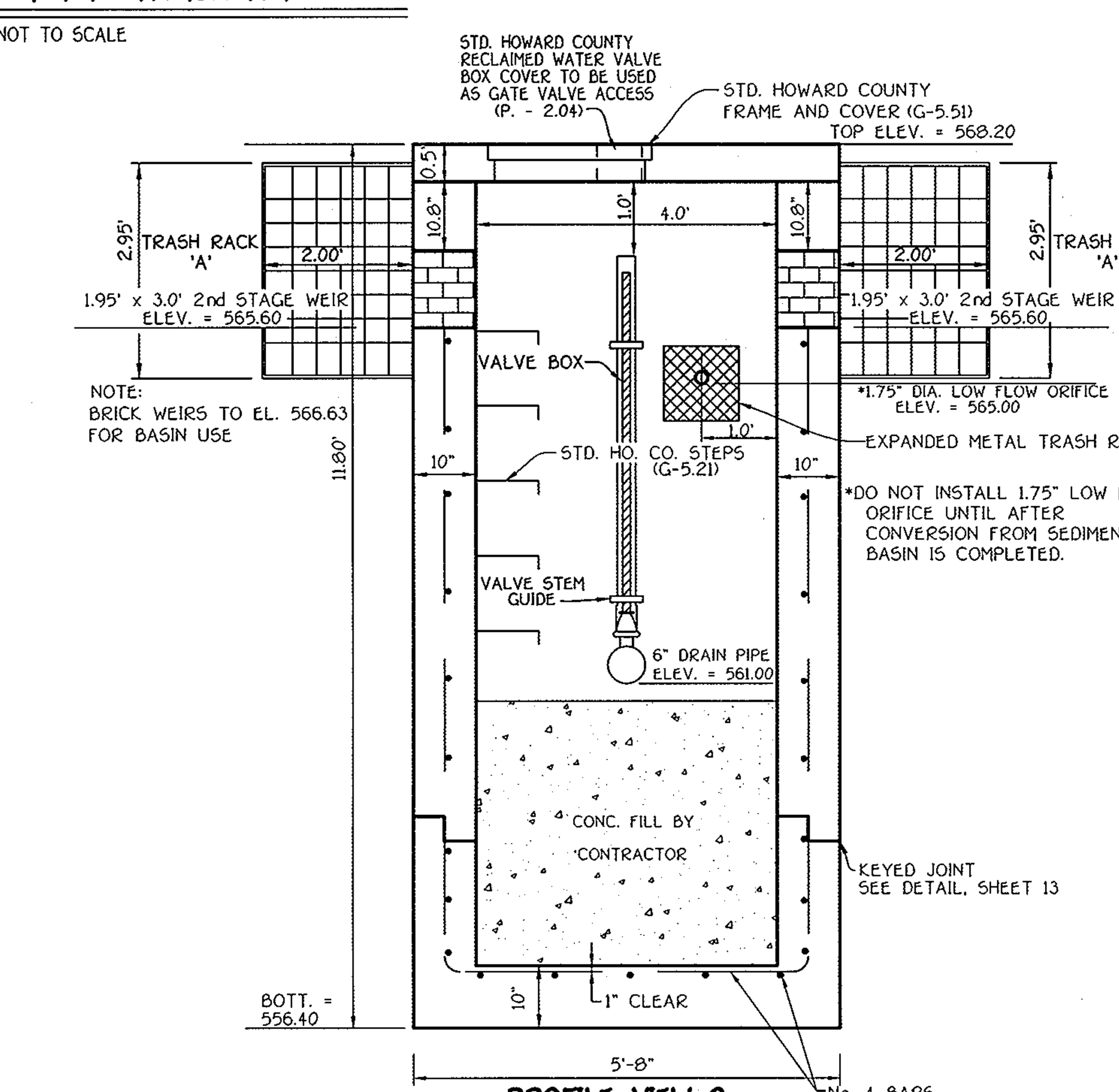
Signature — P.E. No. — Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

NOTES:
1. CONCRETE SHALL BE MSHA MIX No. 3 (FC > 3,500 P.S.I.)
2. REINFORCING STEEL: GRADE 60
3. FOR WALLS OF STRUCTURE SHALL UTILIZE L.M. SCOFIELD CO. T-9055 FORM LINERS (RANDOM SPLIT-FACE ROCK) OPTIONAL.
4. PROVIDE ROUGH BROOM FINISH.
5. ANCHOR BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 6.07.03.59 OF THE MSHA STANDARDS AND SPECS.
6. ALL REINFORCING SPLICES SHALL BE LAP SPLICES OF 30 BAR DIA. UNLESS OTHERWISE SHOWN.



PROFILE VIEW A
R1 CONCRETE RISER DETAIL
SCALE : 1" = 2'



PROFILE VIEW B
R1 CONCRETE RISER DETAIL
SCALE : 1" = 2'

NOTE: SEE SHEET 13 FOR CONCRETE PIPE JOINT DETAIL AND KEYED JOINT DETAIL.

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

ALDO M... 9-23-08 DATE
"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. 20748, Expiration Date 2-22-09."

OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI,
RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

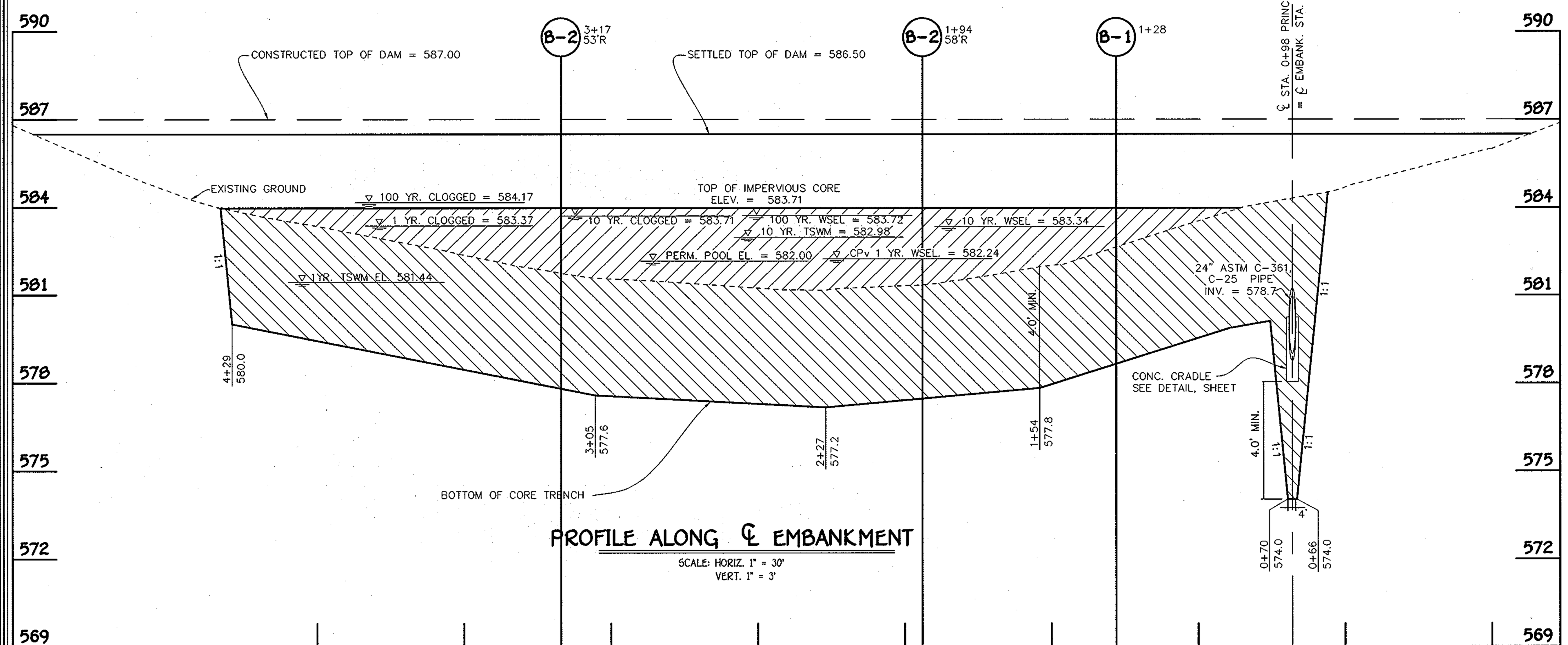
DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

STORMWATER MANAGEMENT FACILITY B.M.P. No. 1 DETAILS

PHEASANT RUN EAST

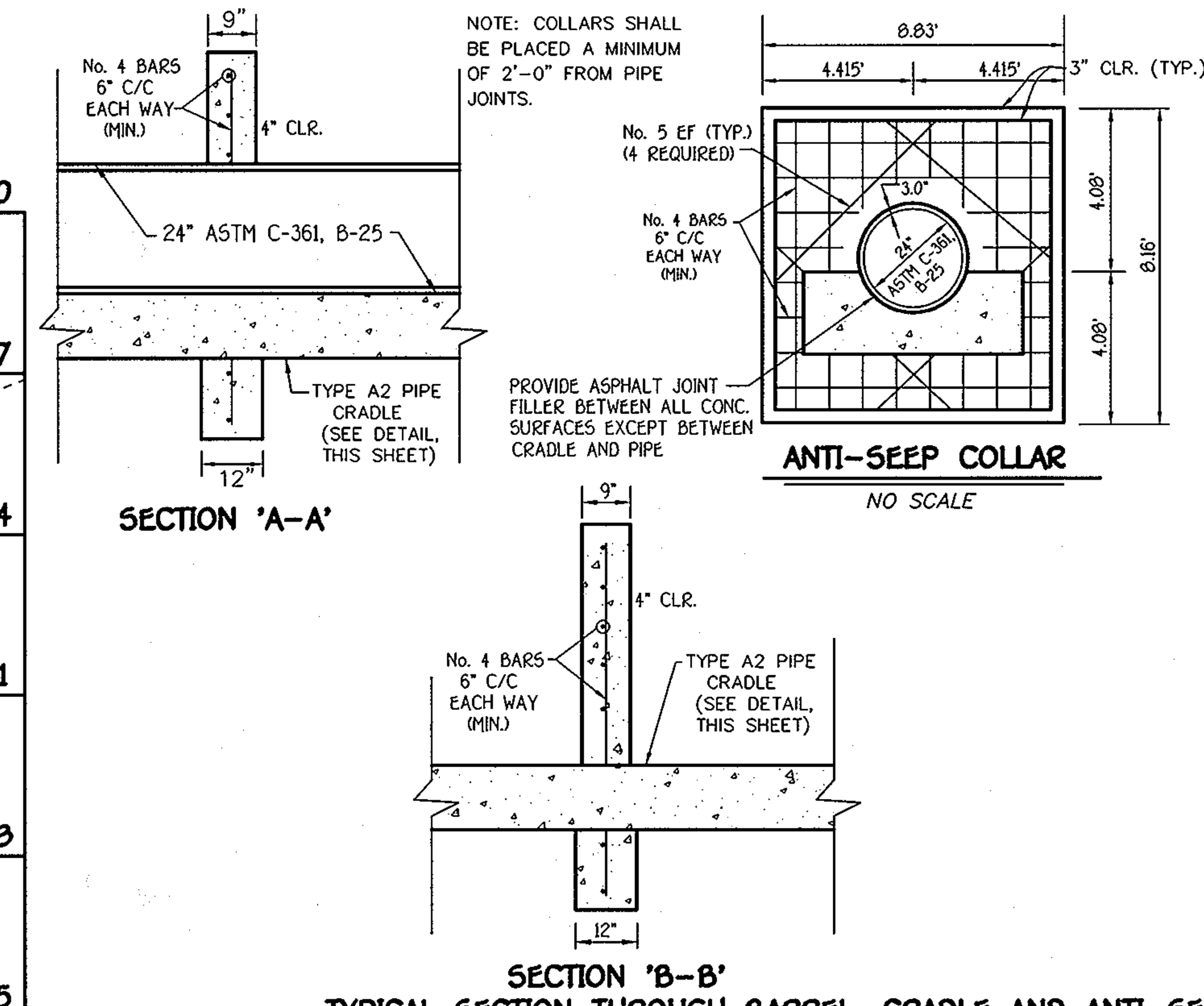
LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15,
BUILDABLE PRESERVATION PARCEL "A" &
NON-PRESERVATION PARCELS "B" THRU "D"
ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008

F-08-011



PROFILE ALONG ℄ EMBANKMENT

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



SECTION 'A-A'

NOTE: COLLARS SHALL BE PLACED A MINIMUM OF 2'-0" FROM PIPE JOINTS.

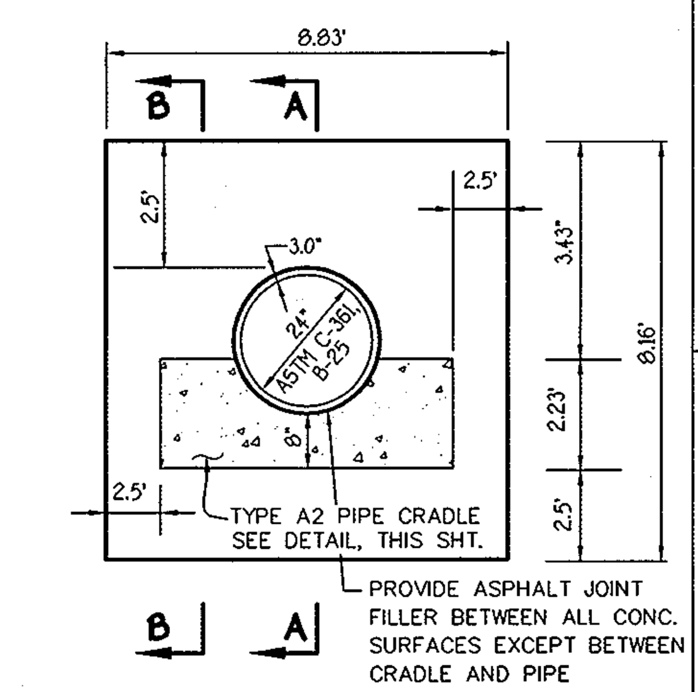
ANTI-SEEP COLLAR

NO SCALE

SECTION 'B-B'

TYPICAL SECTION THROUGH BARREL, CRADLE AND ANTI-SEEP COLLAR

NO SCALE



PROVIDE ASPHALT JOINT FILLER BETWEEN ALL CONC. SURFACES EXCEPT BETWEEN CRADLE AND PIPE

NOTES:
1. CONCRETE SHALL BE MSHA MIX No. 3 (FC > 3,500 P.S.I.)
2. REINFORCING STEEL: GRADE 60
3. FOR WALLS OF STRUCTURE SHALL UTILIZE L.M. SCOFIELD CO. T-9055 FORM LINERS (RANDOM SPLIT-FACE ROCK) OPTIONAL.
4. PROVIDE ROUGH BROOM FINISH.
5. ANCHOR BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 6.07.03.59 OF THE MSHA STANDARDS AND SPECS.
6. ALL REINFORCING SPLICES SHALL BE LAP SPLICES OF 30 BAR DIA. UNLESS OTHERWISE SHOWN.

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — Date: 9/24/08

Printed Name Of Developer: Timothy W. Feaga

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature Of Engineer — Date: 9-23-08

Printed Name Of Engineer

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — Date: 10/7/08

Approved: Department Of Public Works

Chief Bureau Of Highways — Date: 10-9-08

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 10/20/08

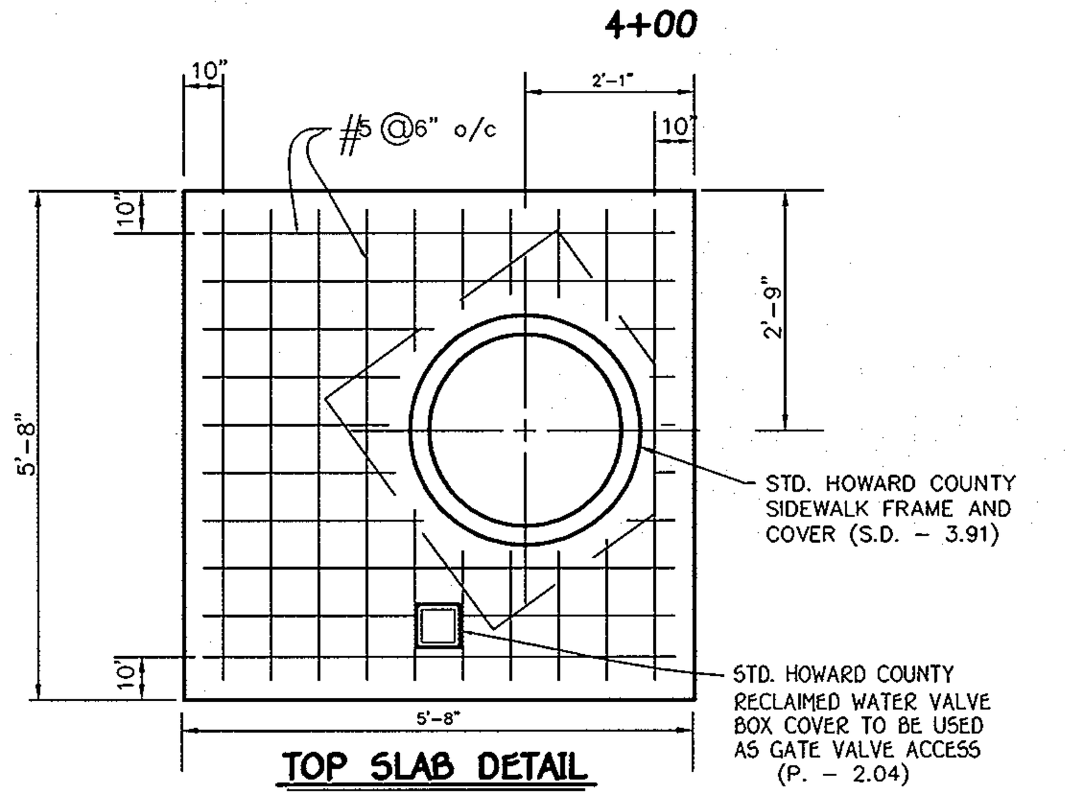
Chief, Development Engineering Division — Date: 10/16/08

AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

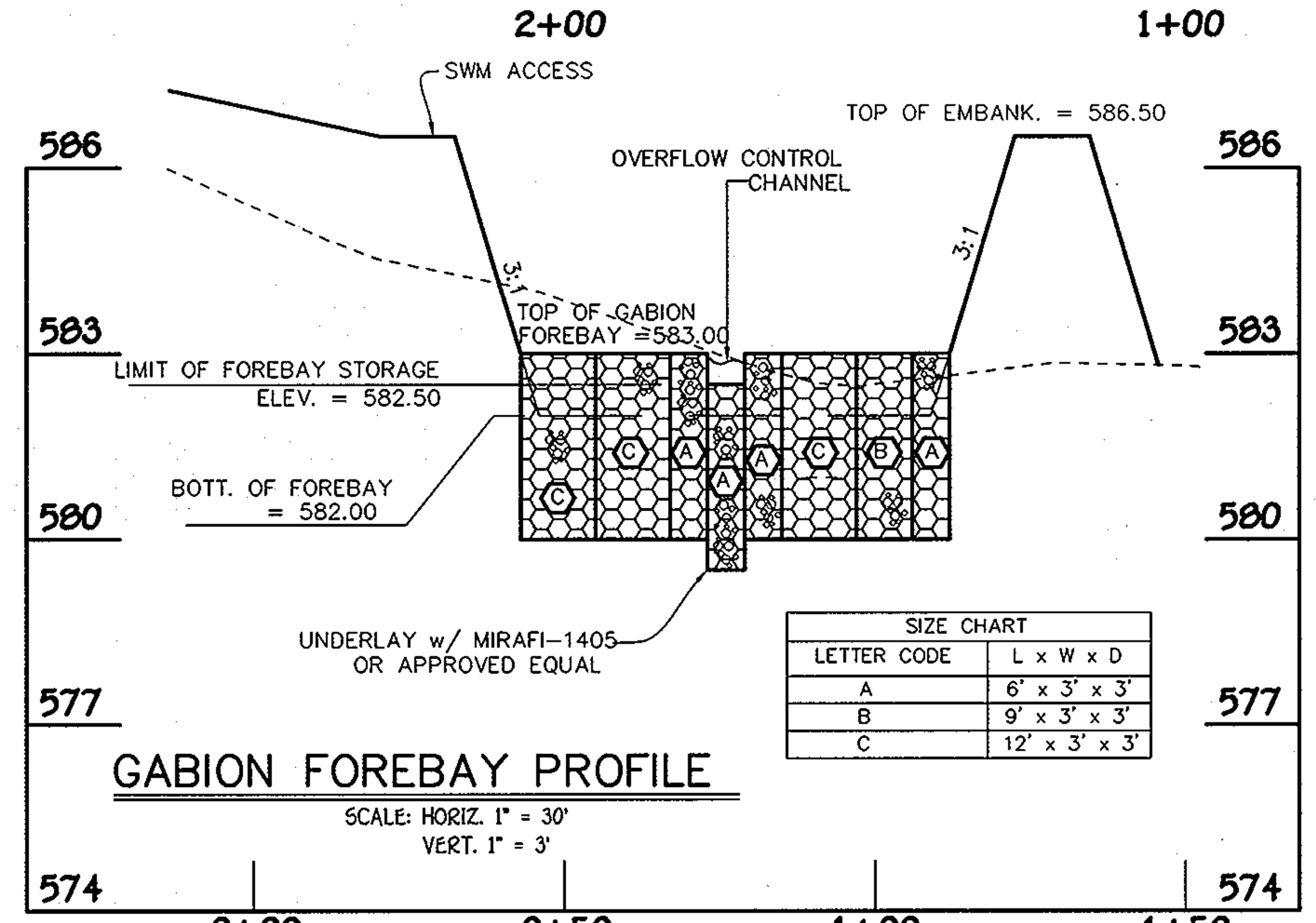
Signature — P.E. No. — Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.



TOP SLAB DETAIL

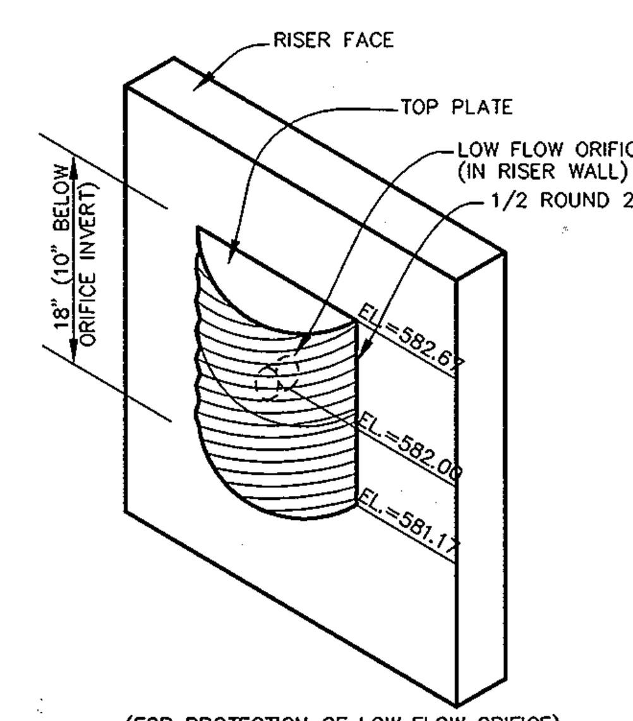
NO SCALE



GABION FOREBAY PROFILE

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

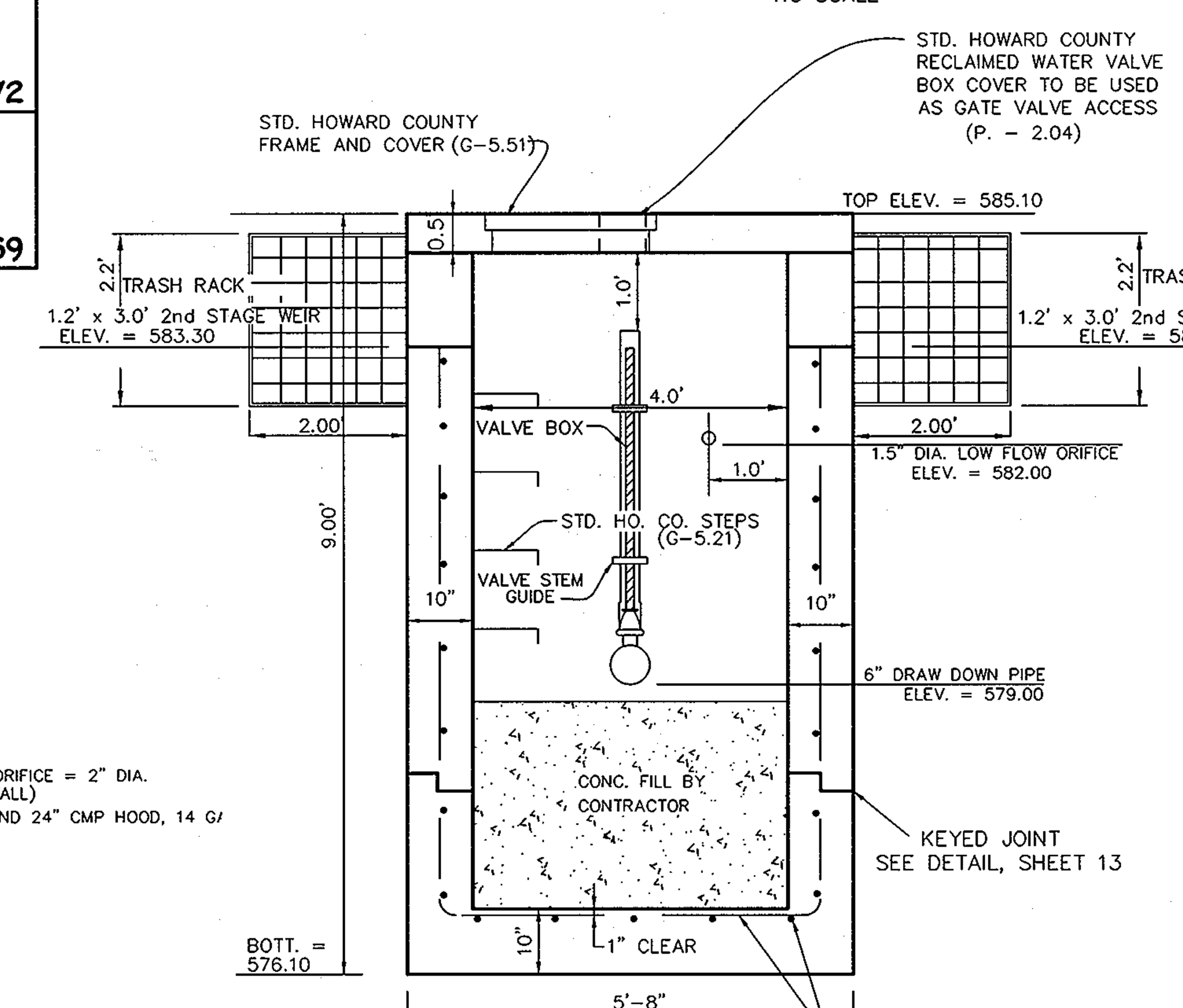
SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'
C	12' x 3' x 3'



(FOR PROTECTION OF LOW FLOW ORIFICE)

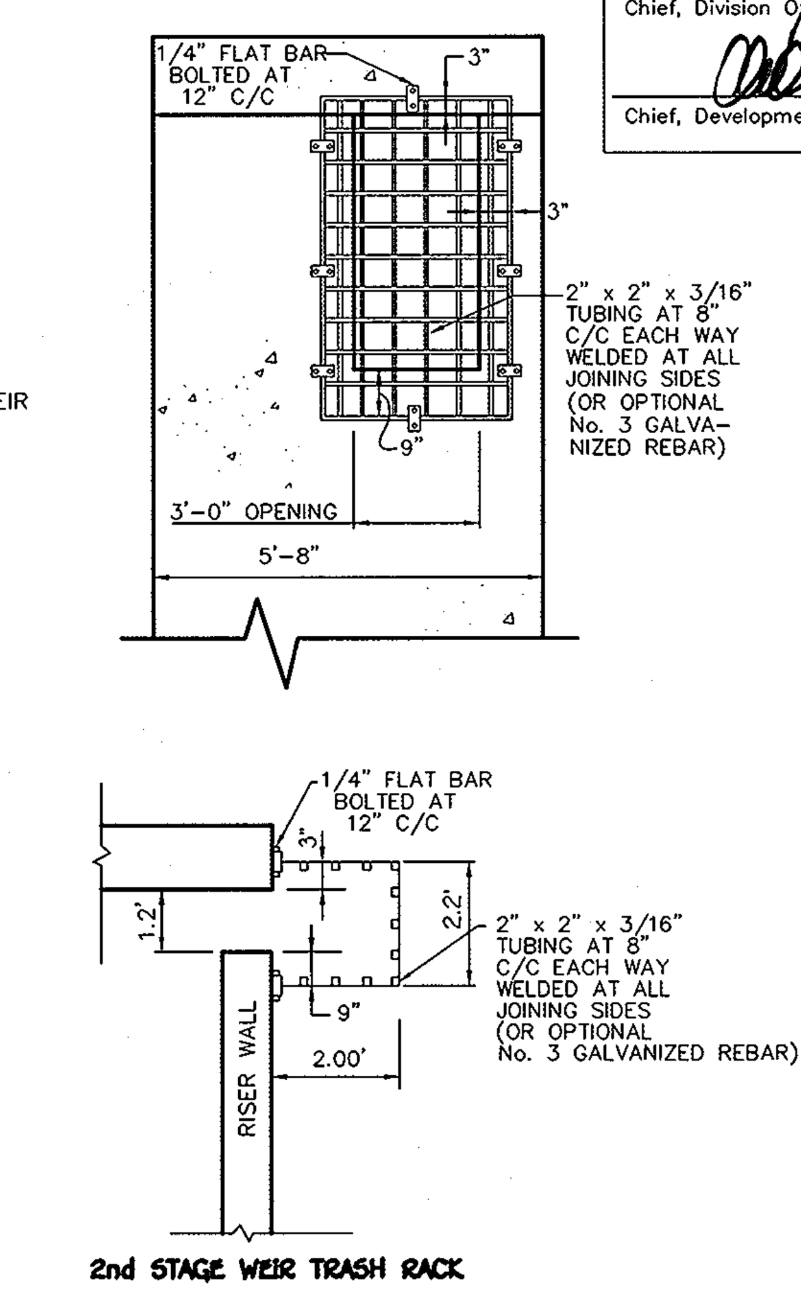
HALF ROUND CMP PIPE-HOOD

NOT TO SCALE



PROFILE VIEW B CONCRETE RISER DETAIL

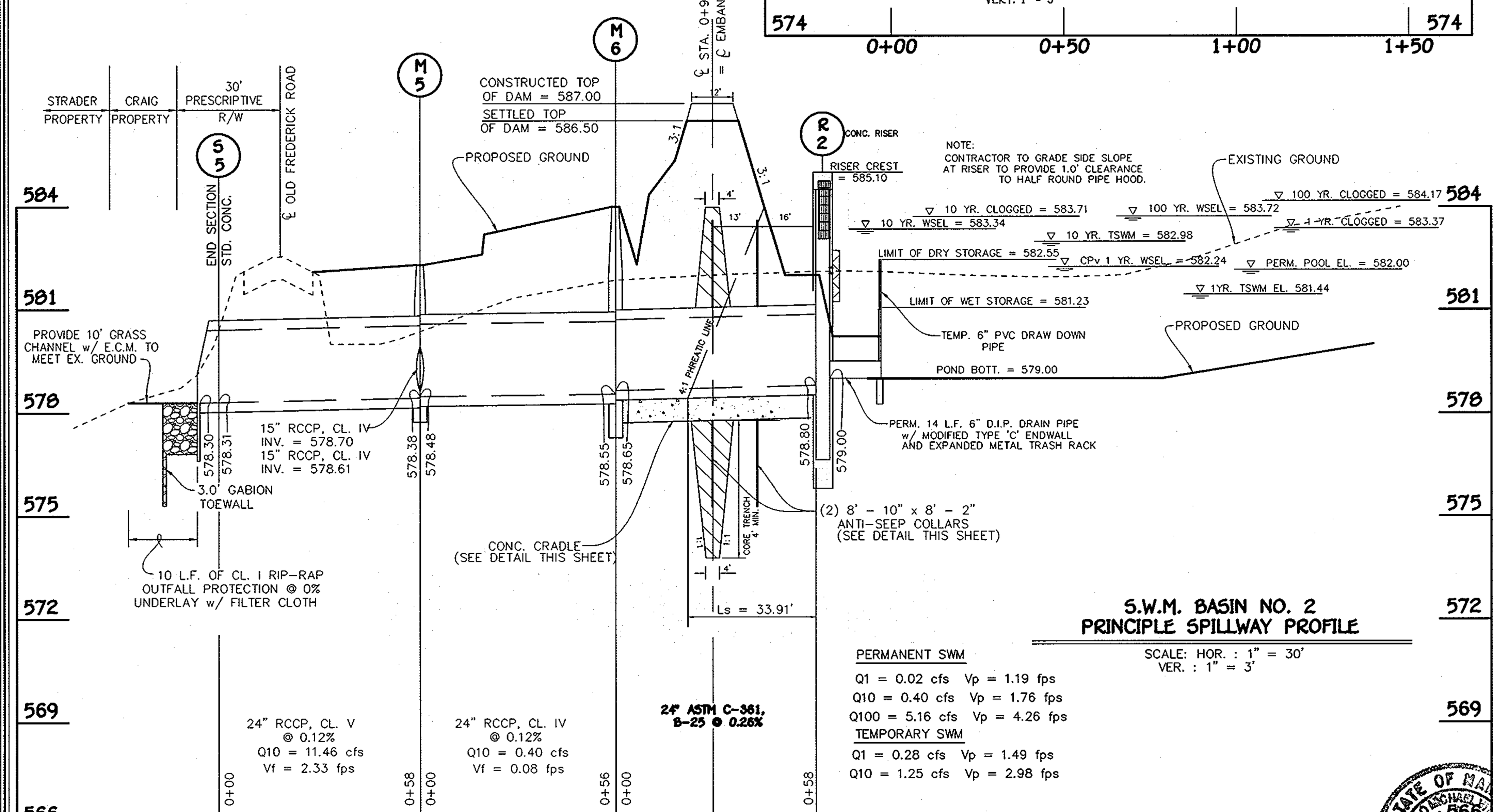
SCALE : 1" = 2'



2nd STAGE WEIR TRASH RACK

TRASH RACK 'A' DETAIL

(NO SCALE)



S.W.M. BASIN NO. 2 PRINCIPLE SPILLWAY PROFILE

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

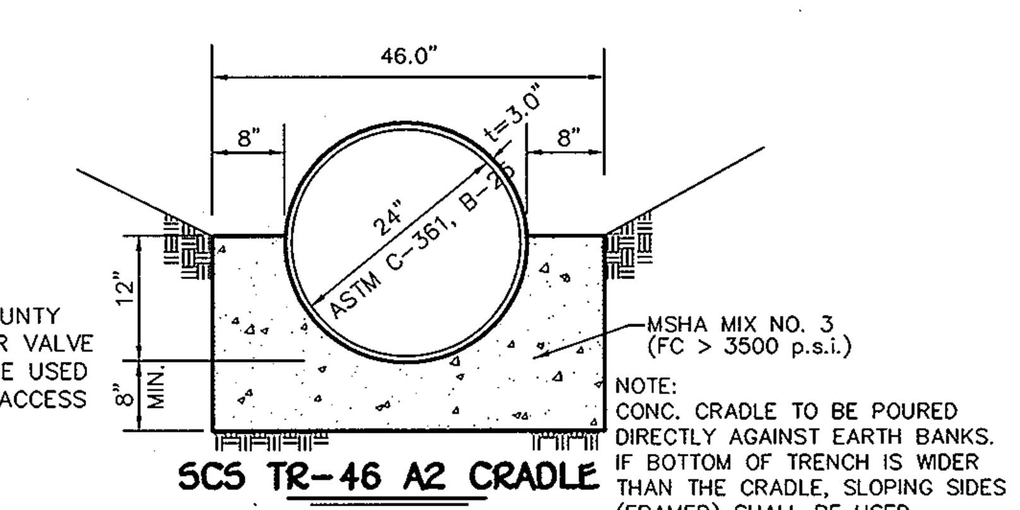
PERMANENT SWM
Q1 = 0.02 cfs Vp = 1.19 fps
Q10 = 0.40 cfs Vp = 1.76 fps
Q100 = 5.16 cfs Vp = 4.26 fps

TEMPORARY SWM
Q1 = 0.28 cfs Vp = 1.49 fps
Q10 = 1.25 cfs Vp = 2.98 fps

24" RCCP, CL. V @ 0.12% Q10 = 11.46 cfs Vf = 2.33 fps

24" RCCP, CL. IV @ 0.12% Q10 = 0.40 cfs Vf = 0.08 fps

24" ASTM C-361, B-25 @ 0.26%

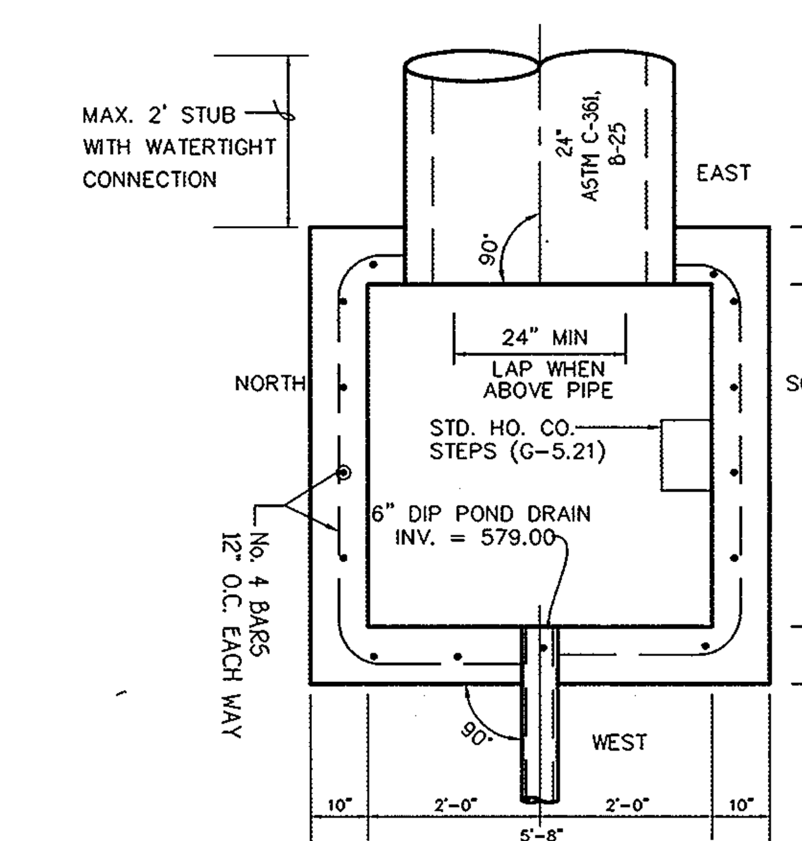


SCS TR-46 A2 CRADLE

NO SCALE

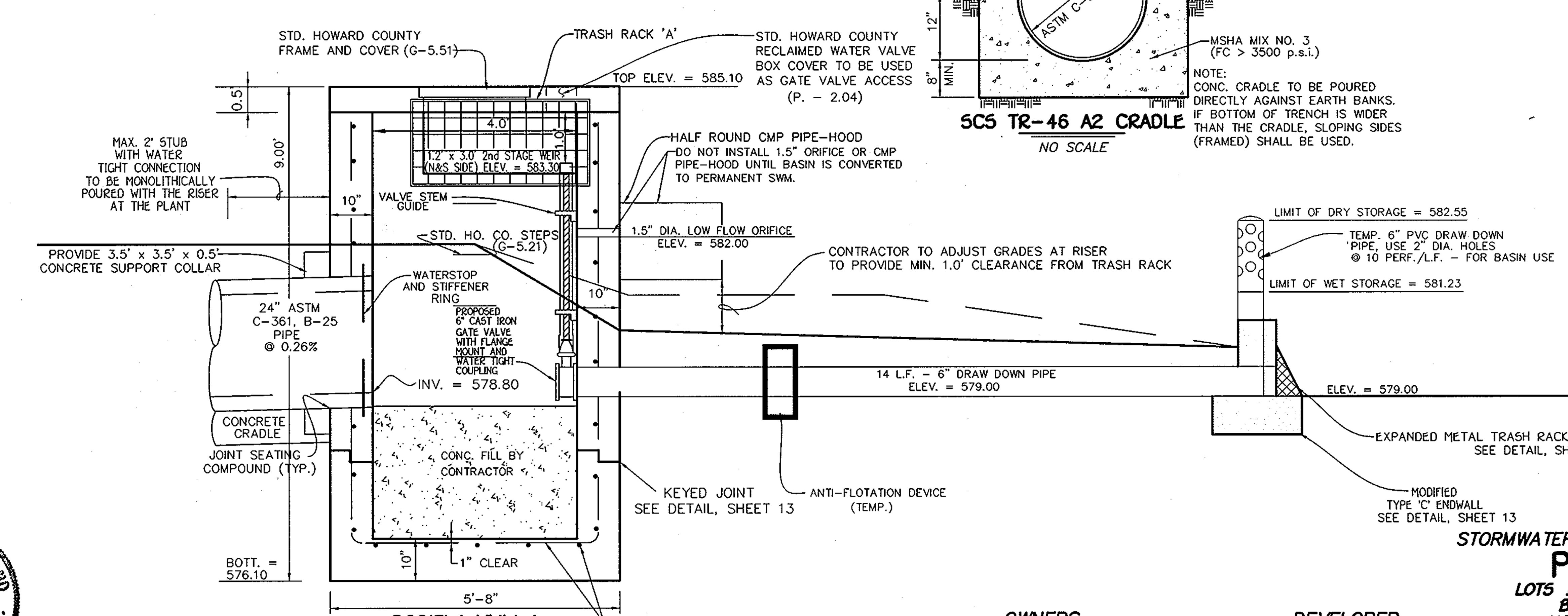
MSHA MIX No. 3 (FC > 3500 p.s.i.)

NOTE: CONC. CRADLE TO BE POURED DIRECTLY AGAINST EARTH BANKS. IF BOTTOM OF TRENCH IS WIDER THAN THE CRADLE, SLOPING SIDES (FRAMED) SHALL BE USED.



RISER PLAN VIEW

NO SCALE



PROFILE VIEW A CONCRETE RISER DETAIL

SCALE : 1" = 2'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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(410) 461 - 2855

ALDO M. — DATE: 92308

"Professional Certification. I 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. 20748, Expiration Date 2-22-09."

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RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

STORMWATER MANAGEMENT FACILITY B.M.P. No. 2 DETAILS

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 12 OF 19

F-08-011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 12 BASIN DETAILS.dwg, 9/22/2008 4:42:02 PM, Jamesl, 1:1

STORM WATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

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

EARTH FILL

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8-inch thick before compaction? layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within +2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grades or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill flowable fill zone shall be of the type and quality conforming to the specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Stel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections- All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24-inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2-inch greater than the corrugation depth. Pipes 24-inches in diameter and larger shall be connected by a 24-inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12-inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

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

5. Backfilling shall conform to "Structure Backfill".

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

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe for at least 1/4 of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

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

Plastic Pipe

The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following 4" - 10" inch pipe shall meet the requirement of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirement of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

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

4. Backfilling shall conform to "Structure Backfill".

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

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

Stabilization

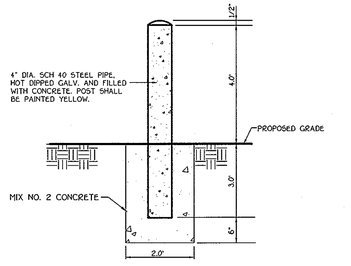
All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting MD-342 or as shown on the accompanying drawings.

Erosion and Sediment Control

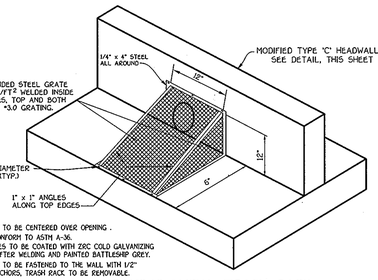
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

OPERATION AND MAINTENANCE

An operation and maintenance plan in accordance with Local or State Regulations will be prepared for all ponds. As a minimum, the dam inspection checklist located in Appendix A shall be included as part of the operation and maintenance plan and performed at least annually. Written records of maintenance and major repairs needs to be retained in a file. The issuance of a Maintenance and Repair Permit for any repairs or maintenance that involves the modification of the dam or spillway from its original design and specifications is required. A permit is also required for any repairs or reconstruction that involve a substantial portion of the structure. All indicated repairs are to be made as soon as practical.



TYPICAL METAL BOLLARD DETAIL
NOT TO SCALE (STD. G-7.42)



NOTES:
1. TRASH RACK TO BE CENTERED OVER OPENING.
2. STEEL TO CONFORM TO ASTM A-36.
3. ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING AND PAINTED BATTLESHIP GREY.
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2" MASONRY ANCHORS. TRASH RACK TO BE REMOVABLE.

EXPANDED METAL TRASH RACK
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER MANAGEMENT FACILITIES FOR BMP POND #1 & #2

ROUTINE MAINTENANCE

1. Facility shall be inspected annually and after major storms. Inspections shall be preformed during wet weather to determine if the pond is functioning properly.
2. Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes and maintenance access should be mowed as needed.
3. Debris and litter shall be removed during regular mowing operations and as needed.
4. Visible signs of erosion in the pond as well as the rip-rap or gabion outlet area shall be repaired as soon as it is noticed.
5. The off-line storm drain (M-1 to CO-2) and underground reservoir shall be inspected annually and after major storms.

NON-ROUTINE MAINTENANCE

1. Structural components of the pond such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components shall be inspected during routine maintenance operations.
2. Sediment shall be removed from the pond, and forebay, no later than when the capacity of the pond or forebay, is half full of sediment, or, when deemed necessary for aesthetic reasons, upon approval from the Department of Public Works.

POND CONSTRUCTION RECOMMENDATIONS

A. General Design Recommendation

It is recommended that the geotechnical aspects of the pond design and construction be in accordance with MD 378/2000 specifications.

B. Principal Spillway

From review of the preliminary plans, it appears that principal spillways would be located below basin grade at boring locations B-1, B-9, and between B-5 and B-6. From soils were encountered immediately below the topsoil in B-9; however, soft or loose soils were found to a depth of 3 feet in B-1 and to 6 feet in B-5 and B-6. Depending upon basin cut depth, it may be necessary to undercut weak soils and replace with controlled compacted fill for adequate riser and outfall pipe support.

C. Earth Slope Stability

Given the soft to barely medium stiff and loose nature of the residual soils encountered in many of the borings, it is recommended that the cut and fill slopes be no steeper 3H1V for slope stability. These soil types are highly susceptible to erosion and the slopes may require periodic maintenance until uniformly thick mature grass cover can be established. Also, ground water seepage from the base of the slopes may result in toe instability requiring the installation of drains or undercutting and replacing failed materials with more suitable soils or aggregate. The location and extent of drains and undercuts would best be determined at the time of construction.

D. Core Trench

The core trench, may be excavated to the typical MD 378/2000 specified dimensions below stripped existing grade or at least 2 feet into original soils below any undercut backfill, whichever depth is greater. Given the relatively gradual gentle slopes downstream of the proposed pond areas, and the "expected limited height of embankment, excessive seepage beneath the slope is not expected to be a problem in embankment stability with proper core trench construction.

A review of test boring results and laboratory data indicate that Unified "C" classification soils would be available in the borings upper 3 feet of cut at boring B-2. It has been our experience in similar geologic areas, however, that the Unified "C" classification soils are of limited quantity and have excessive moisture content. Consequently, it is anticipated that at least some off site borrow would be required for completion of core trench and dam core fill.

E. Permanent Ground Water Control

Groundwater would be a consideration for basins excavated near or below the indicated groundwater soils. Ground water control was addressed to some extent in the slope stability section. In addition to slope drains, it may be necessary to construct pilot ditches in the basins to direct seepage into a low flow orifice to prevent shallow accumulation of water.

EARTHWORK CONSTRUCTION

Prior to placement of embankment fill, we recommend that the stripped surface from toe to toe of the embankment footprint be proofrolled and any exceptionally soft yielding areas undercut to expose firmer soils. Undercuts of 3 to 6 feet deep could be expected at six of the nine boring locations. Any undercut should extend at least 1 foot beyond each exposed toe of slope for every foot depth of undercut. Upon achieving an acceptable surface, the undercut should be backfilled with approved soils, placed and compacted in accordance with APPENDIX I, COMPACTED FILL. Undercut backfill soils should exclude Unified GP, GW, SP or SW materials but need not be particularly impermeable since the core trench would be extended down through the fill after embankment undercut and backfilling is complete. Undercut backfill should have an AASHTO T-99 maximum compacted dry density of at least 100 PSF.

Examination of the moisture/compacted density relationship test results presented on SHEETS 1 through 3, COMPACTION TEST indicates that the tested proposed cut soils have acceptably high compacted maximum dry densities, but the existing moistures at the time of sampling were approximately 6 to 10 percent above the optimum for most efficient compaction. These soils types would be suitable for use as embankment or site development fill. Only the sample from B-2 would be of suitable classification for use as core trench fill. With the existing moistures averaging 8 percent over optimum, the soils would require significant drying by aeration prior to use as controlled compacted fill. Given the limited area of a core trench for drying, it may be more feasible to bring in approved off-site clay borrow for core trench fill.

Given the elevated soil moistures and the clayey soil types near the surface, it is imperative that earthwork operations be performed during the normally warmer drier summer and early fall construction season when more intense sun and warmer temperatures will maximize drying capabilities. Clearing, grubbing, and topsoil stripping operations during wet weather may mix topsoil into the wet surface clayey soils resulting in deeper surface stripping. Construction during the colder, wetter seasons of the year may make these high moisture soils unavailable for use as controlled, compacted fill further, construction during the cooler, wetter seasons of the year may result in saturated or frozen subgrades requiring undercut and replacement with more suitable materials.

Normal soil excavation techniques will be sufficient for removal of materials encountered in the test borings with the exception of materials with standard penetration resistances exceeding 100 blows per foot. Depending upon type of excavation, ripping and/or rock removal techniques may be required in the equivalent 100 plus blow count material at the base of borings B-5 and B-6.

Temporary ground water control will be required in excavations extended below indicated ground water levels. In residual soils, seepage rates are usually low, unless a fractured rock seam is encountered, and can be controlled by a series of pits, trenches and pumps during construction.

INFILTRATION POTENTIAL

The Maryland Department of the Environment (MDE) requires that design storm waterdisposal by infiltration be considered only in undisturbed native soils with an infiltration rate of at least 0.52 inches/hour. Howard County has more stringent minimum requirements of 1.02 inches/hour. It is further required that the bottom of the infiltration structure be at least 4 feet above the ground water table or rock (i.e., impermeable materials).

Ground water levels will prohibit design storm water disposal by infiltration in any of the three basins if basin or filter grades are within close proximity to the groundwater table. The water level in B-9 eliminated infiltration testing at the 6-foot depth.

Tests were performed in accordance with the procedures outlined in MDE storm water management manual. The test results and test procedures are presented in TABLE 2, INFILTROMETER TEST DATA. The test results indicate that infiltration would be possible in the Sandy Loam soil between depths of 3 and 6 feet in B-2. We would recommend a design infiltration rate of 1.02 inches per hour.

It is our opinion that infiltration rates of soils will decrease over time as very fine sediments carried in with initial storm runoff begin to cover the infiltrating surface. Consequently, all infiltration structures should have a gravity overflow discharge directed so as not to adversely affect adjacent structures or property.

GEOTECHNICAL MONITORING

We recommend that Herbst/Benson & Associates be retained to provide the geotechnical monitoring and testing services during the earthwork and principal spillway construction phases of the work. This is to observe compliance with design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. The earthwork construction including stripping, undercutting, proofrolling and controlled fill placement shall be inspected with in-place density tests taken to verify construction according to the specifications. Also, the principal spillway excavations shall be examined and the exposed soil conditions approved for the design bearing. We will provide the indicated geotechnical monitoring and testing services upon request.

GENERAL CONDITIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice to aid in the evaluation and design of this project. In the event of changes or refinement in the proposed construction plans (types, elevations, locations, etc.) the conclusions and recommendations presented in this report should not be considered valid unless changes are reviewed and the conclusions of this report are modified or approved in writing by our office.

The analyses and recommendations included in this report are based upon the data obtained from the test borings performed at the approximate locations indicated on the boring location plan. This report does not reflect variations which may occur between or away from the borings. The nature and extent of the variations may not become evident until the time of construction. If significant variations then become evident, it may be necessary for us to reevaluate the recommendations of this report.

By The Developer:

"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District."

Signature Of Developer — Date: 9/24/08

Timothy W. Fenga
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Advised The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature — Date: 9-23-08

ALDO M. Marcelli
Printed Name Of Engineer

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — Date: 10/7/08

Approved: Department Of Public Works

Chief Bureau Of Highways — Date: 10-9-08

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 10/20/08

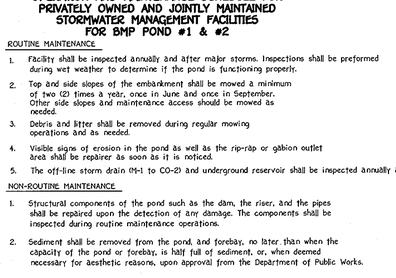
Chief, Development Engineering Division — Date: 10/16/08

AS-BUILT CERTIFICATION

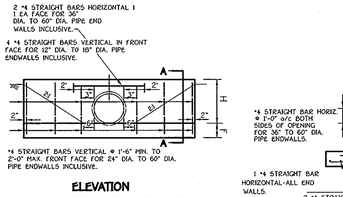
I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No. — Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.



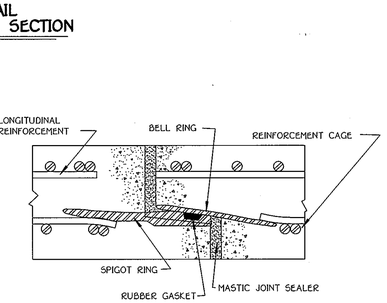
KEYED JOINT DETAIL
WALL SECTION TO WALL SECTION
(NO SCALE)



OPENINGS		DIMENSIONS							VOLUME	STEEL
D IN.	AREA SQ.FT	A	B	C	E	F	H	L	CONC. C.Y.	LBS.
6"	0.79	9"	6"	6"	1'-9"	9"	1'-6"	5'-5"	0.61	38

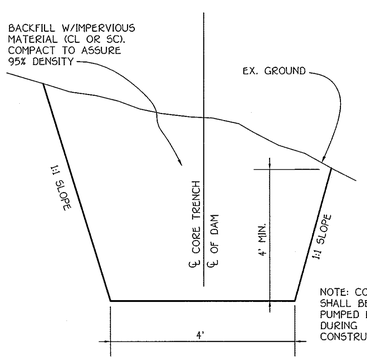
DISPOSITION OF BARS - DETAIL
REINFORCING: DEFORMED STEEL BARS (1/2" DIA.)
CHAMFER: ALL EXPOSED EDGES 1"x 1" OR AS DIRECTED.
CONC. SHALL BE S.H.A. A. MIX No. 2.

MODIFIED
TYPE 'C' ENDWALL
NO SCALE



NOTE: PROVIDE MASTIC JOINT SEALER FROM OUTSIDE OF PIPE JOINTS PRIOR TO INSTALLING BARREL UNDERGROUND
ASTM DESIGNATION C361
DIAMETERS 12 THRU 168 INCH
PRESSURES TO 125 FEET OF HEAD

CONCRETE PIPE JOINT DETAIL
(NO SCALE)



CORE TRENCH DETAIL
NOT TO SCALE

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

ALDO M. Marcelli — DATE: 9-23-08

"Professional Certification. I 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. 20745, Expiration Date 2-22-09."

STORMWATER MANAGEMENT NOTES & DETAILS

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE - SEPTEMBER, 2008
SHEET 13 OF 19

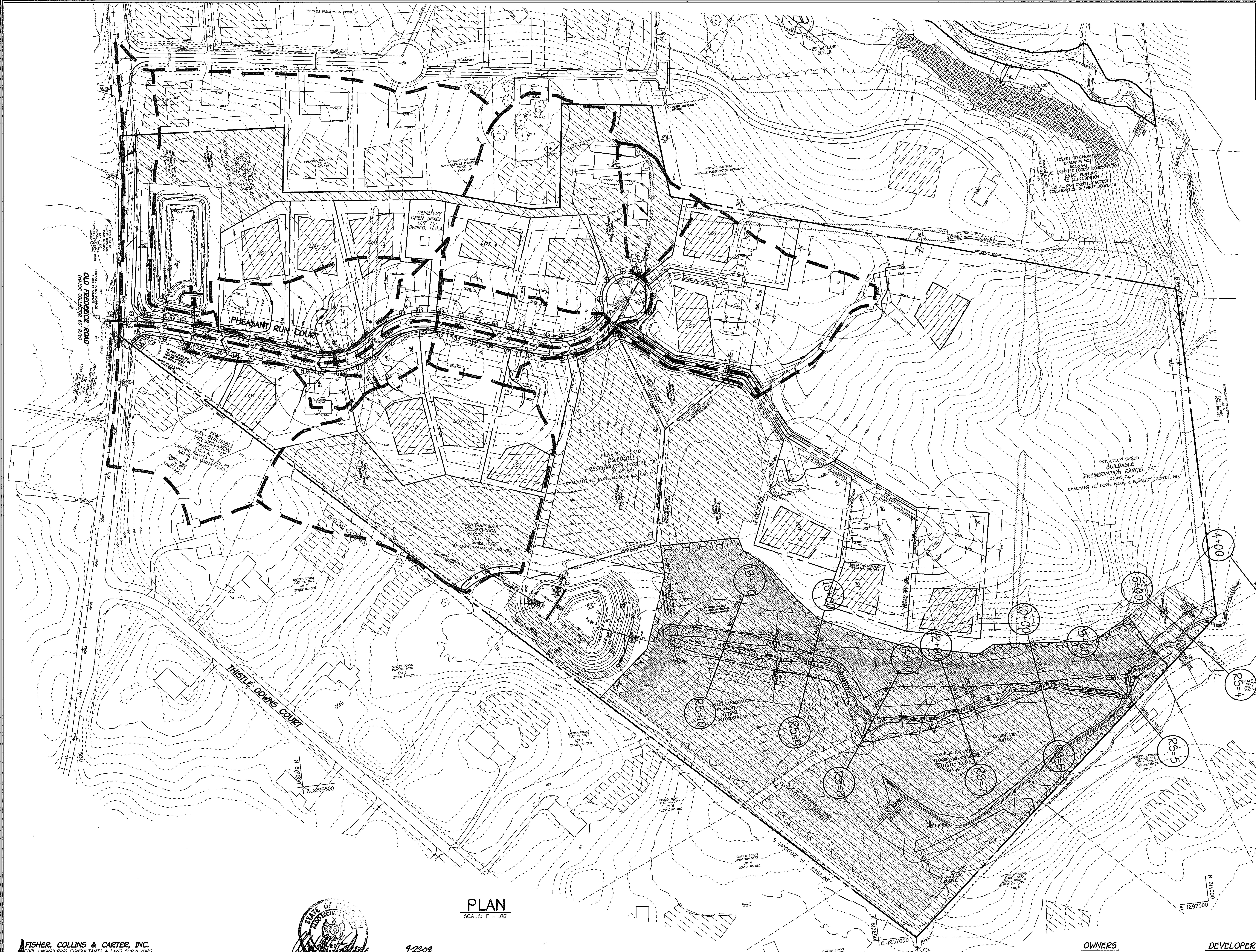
OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI, RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

F-08-011

K:\Drawings 3130551 Spiekerman\FINALS-EAST 22'PAV\30551 SHEET 13 SWM DETAILS.dwg, 9/23/2008 8:07:28 AM, jamesj, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	10-9-08 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	10/20/08 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/16/08 DATE



PLAN

SCALE: 1" = 100'

DRAINAGE AREA DATA					
STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONED	% IMP.
I-1	A	0.61 AC.	0.47	RC-DEO	31%
I-2	B	0.78 AC.	0.45	RC-DEO	29%
I-3	C	3.84 AC.	0.33	RC-DEO	12%
I-4	D	0.18 AC.	0.52	RC-DEO	38%
I-5	E	0.41 AC.	0.45	RC-DEO	29%
I-6	F	0.39 AC.	0.42	RC-DEO	25%
I-7	G	0.42 AC.	0.44	RC-DEO	27%
I-8	H	3.21 AC.	0.32	RC-DEO	10%
I-9	I	1.07 AC.	0.47	RC-DEO	32%
I-10	J	5.05 AC.	0.29	RC-DEO	6%
I-11	K	0.14 AC.	0.39	RC-DEO	20%
I-3a	L	0.74 AC.	0.39	RC-DEO	20%
I-11a	M	2.99 AC.	0.39	RC-DEO	20%

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CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

ALDO M. [illegible] P.E. — 9-23-08 DATE

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STORMDRAIN DRAINAGE AREA MAP

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008

F-08-011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 14 STORMDRAIN DA MAP.dwg, 9/23/2008 8:11:15 AM, jamesl, 1:1

PATTERN SPACING DIAGRAM

```
*  *  *  *  *  *  *  *  *  *  *
*  *  *  *  *  *  *  *  *  *  *
*  *  *  *  *  *  *  *  *  *  *
#   #   #   #   #   #   #   #
#   #   #   #   #   #   #   #
```

* - whip w/shelter 11' on center spacing
# - 1" caliper tree 15' on center spacing
Species shall be randomly interspersed, rows should be planting along contours

Planting Notes:

Planting units defined by the spacing requirements established in the FCA Manual. One plant unit is defined as 1 seedling or whip without shelter.
The Manual states that 700 seedlings/whips without shelters are required per acre, or 350 whips w/shelters, or 200 1" caliper trees, or 100 2" caliper trees.
By conversion it has been determined that a seeding or whip without shelter = 1 unit, whip with shelter = 2 units, 1"caliper tree = 3.5 units and 2" caliper tree =7 units.
The use of plant units simplifies the plant density calculations when mixing stock size.

** - These species should not be planted within the wetland limits.

1" caliper trees should be staggered along the outer perimeter of the planting area to serve as demarcation of the boundary. The trees should be no closer than 15 foot spacing.

Planting shall be made in a curvilinear fashion along contour. The planting should avoid a grid appearance but should be spaced to facilitate maintenance

Multiflora rose/heavy brush removal/control may be required prior to installation of planting.

All whips are required to be installed with tree shelters per Howard County FCA requirements.

GUARANTEE REQUIREMENTS

1. A 75 Percent Survival Rate Of Forestation Plantings Will Be Required At The End Of The 24 Month Maintenance Period. All Plant Material Below The 75 Percent Threshold Will Be Replaced At The Beginning Of The Next Growing Season.

SURETY FOR FORESTATION

1. The Developer Shall Post A Surety (bond, Letter Of Credit) To Ensure That Forestation Plantings Are Completed. Upon Acceptance Of The Plantings By The County, The Bond Shall Be Released.

2. The Forest Conservation Requirements Per Section 16.1200 Of The Howard County Code And The Forest Conservation Manual For This Subdivision Will Be Fulfilled By Providing 11.73 Ac. Of On-site Afforestation. The Total Forest Conservation Area Is 11.73 Acres. The Forest Conservation Surety Amount To Fulfill The Forest Conservation Obligation Is $255,479.40 Based On (11.73 Ac. X 43,560 Sq.ft. X $0.50 Per Sq.ft.) Shall Be Posted With The Developers Agreement For This Final Plan, F-08-011.

FCP NOTES:

1. Any Forest Conservation Easement (FCE) area shown hereon is subject to protective covenants which may be found in the Land Records of Howard County which restrict the disturbance and use of these areas.
2. Forested areas occurring outside of the FCE shall not be considered part of the FCE and shall not be subject to protective land covenants.
3. Limits of disturbance shall be restricted to areas outside the limit of temporary fencing or the FCE boundary, whichever is greater.
4. There shall be no clearing, grading, construction or disturbance of vegetation in the Forest Conservation Easement, except as permitted by Howard County DPZ.
5. No stockpiles, parking areas, equipment cleaning areas, etc. shall occur within areas designated as Forest Conservation Easements.
6. Temporary fencing shall be used to protect forest resources during construction. The fencing shall be placed along all FCE boundaries which occur within 15 feet of the proposed limits of disturbance.
7. Permanent signage shall be placed 50-100' apart along the boundaries of all areas included in Forest Conservation Easements
8. The Forest Conservation Act requirements for this project include 11.73 acres of forest planting. The forestation obligation will be met by providing a total planting area of 11.73CREDITED acres.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-4-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

PLANTING SCHEDULE

FCE • 1 - 11.73 acres
Planting Units Required: 8,211 = 11.73 ACRES x 700 SEEDLINGS/WHIPS WITHOUT SHELTERS.
Planting Units Provided: 8,216

Qty	Species	Size	Spacing	Total FCA Units
24	Acer rubrum - Red maple	1" cal.	15' o.c.	
24	Liriodendron tulipifera - Tulip poplar **	1" cal.	15' o.c.	
24	Platanus occidentalis - Sycamore	1" cal.	15' o.c.	
24	Quercus alba - White oak **	1" cal.	15' o.c.	
96	Total 1" caliper trees	Total 1" caliper tree x 3.5 units/tree = FCA unit credit		336
600	Acer rubrum - Red maple	2-3' whip	11' o.c.	
180	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
750	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	
200	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
700	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	
380	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
380	Quercus alba - White oak	2-3' whip	11' o.c.	
380	Quercus palustris - Pin oak	2-3' whip	11' o.c.	
190	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
180	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	
3,940	total whips with shelters	Total whip plantings x 2 units /tree = FCA unit credit		7,880
		Total Unit Credit		8,216

PLANTING/SOIL SPECIFICATIONS

1. PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15th. AND APRIL 30th. OR SEPTEMBER 15th. AND NOVEMBER 15th.
2. A TWELVE (12) INCH LAYER OF TOPSOIL SHALL BE SPREAD OVER ALL FORESTATION AREAS IMPACTED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT. PLANTING AREAS NOT IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.
3. ALL BAREROOT PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
4. PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.
5. FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
6. A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTINGS.
7. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
8. ALL NON-ORGANIC DEBRIS ASSICIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

1. SEDIMENT CONTROL AND TREE PROTECTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR SITE. SITE SHALL BE GRADED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLANS.
2. PROPOSED FORESTATION AREAS IMPACTED BY SITE GRADING SHALL BE TOPSOILED AND STABILIZED AS PER NOTE NO. 2 OF PLANTING/SOIL SPECIFICATIONS FOR PROJECT.
3. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND THE PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.
4. UPON COMPLETION OF THE PLANTING, SIGNAGE SHALL BE INSTALLED AS PER THE FOREST PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.
5. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.

MAINTENANCE OF PLANTINGS

1. MAINTENANCE OF PLANTINGS SHALL LAST FOR A PERIOD OF 26 MONTHS.
2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1st. GROWING SEASON. WATERING MAY BE MORE OR LESS FREQUENT DEPENDING IN WEATHER CONDITIONS. DURING 2nd. GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED FROM FORESTATION AREAS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
4. PLANTS WILL BE EXAMINED A MINIMUM TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH THE APPROPRIATE AGENT.
5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.

FOREST CONSERVATION WORKSHEET

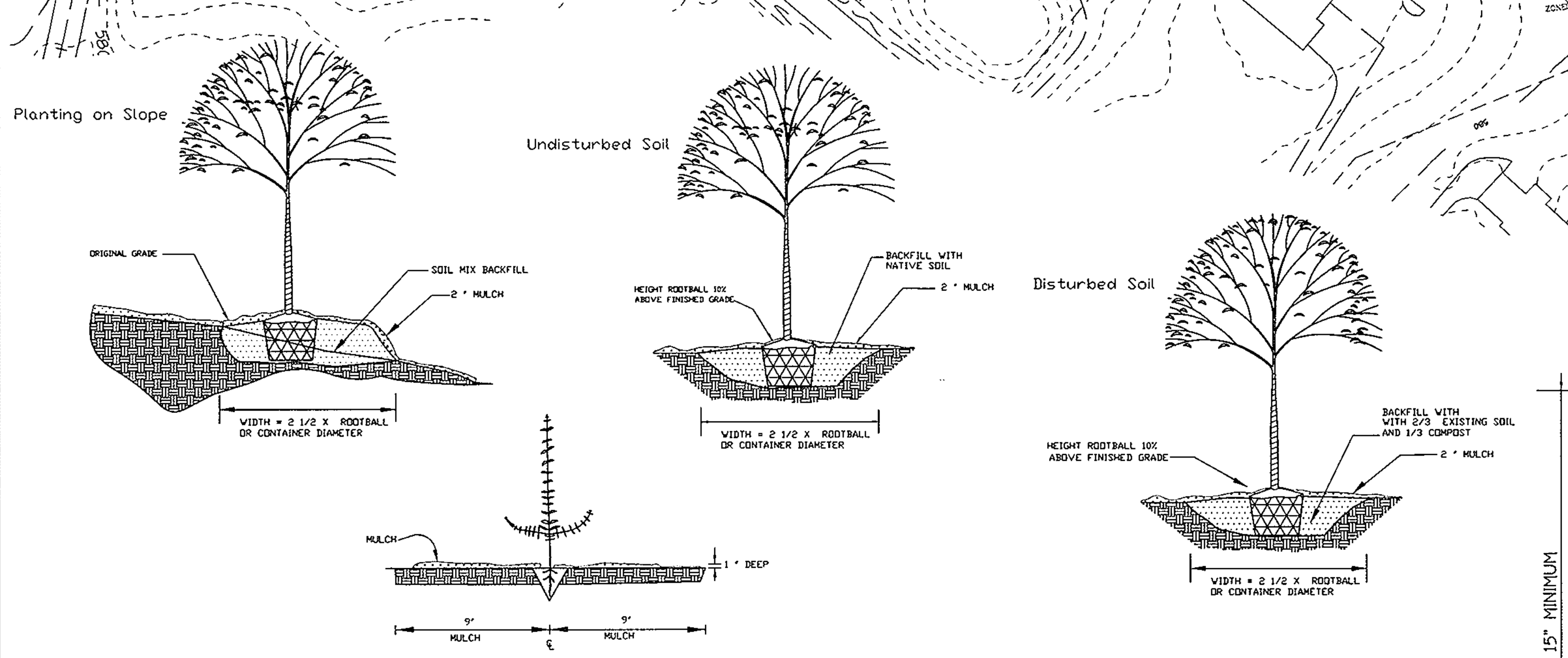
NET TRACT AREA			ACRES
total tract area			60.1
area within 100 year floodplain			1.46
net tract area			58.64
LAND USE CATEGORY: (from table 3.2.1, page 40, manual) ARA MDR IDA HDR MPD CIA — X (MDR)			
afforestation threshold	(PERCENTAGE)	20%	11.73
conservation threshold	(PERCENTAGE)	25%	14.66
EXISTING FOREST COVER			
existing forest on NTA			0.00
area of forest above afforestation threshold			0.00
area of forest above conservation threshold			0.00
BREAK EVEN POINT			
forest retention above threshold with no mitigation			
BREAK EVEN POINT			
clearing permitted without mitigation			
PROPOSED FOREST CLEARING			
total area of forest to be cleared or retained outside FCE			0.00
total area of forest to be retained in FCE			0.00
PLANTING REQUIREMENTS			
reforestation for clearing above conservation threshold			0.00
reforestation for clearing below conservation threshold			0.00
credit for retention above conseration threshold			0.00
total reforestation required			0.00
total afforestation required			11.73
total reforestation and afforestation required			11.73

LEGEND

DENOTES 15% - 24.99% SLOPES
DENOTES PLANTING AREA
DENOTES PUBLIC STORMWATER MANAGEMENT CREDIT EASEMENT
—TP— DENOTES TREE PROTECTION FENCE
DENOTES LIMIT OF DISTURBANCE

FOREST CONSERVATION EASEMENT NO. 1
9.97 AC.
(TO BE PLANTED)

PLAN
SCALE: 1" = 100'



Seeding and Whip Planting Specification

ON-SITE SIGNAGE

FOREST CONSERVATION EASEMENT

UNAUTHORIZED DISTURBANCE OF VEGETATION IS PROHIBITED. VIOLATORS SUBJECT TO PENALTIES UNDER THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1991.

TREES FOR YOUR FUTURE

15" MINIMUM
11" MINIMUM

FISHER, COLLINS & CARTER, INC.
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Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification # WDCP93MD0610044B
JOHN P. CANOLES 9/23/08

ALDO M. VITUCCI — DATE 9-23-08
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FOREST CONSERVATION PLAN
PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
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DATE : SEPTEMBER, 2008
SHEET 15 OF 19

F-08-011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22"PA\\30651 SHEET 15 FOREST CONSERVATION PLAN.dwg, 9/23/2008 8:16:50 AM, James\ 1:1

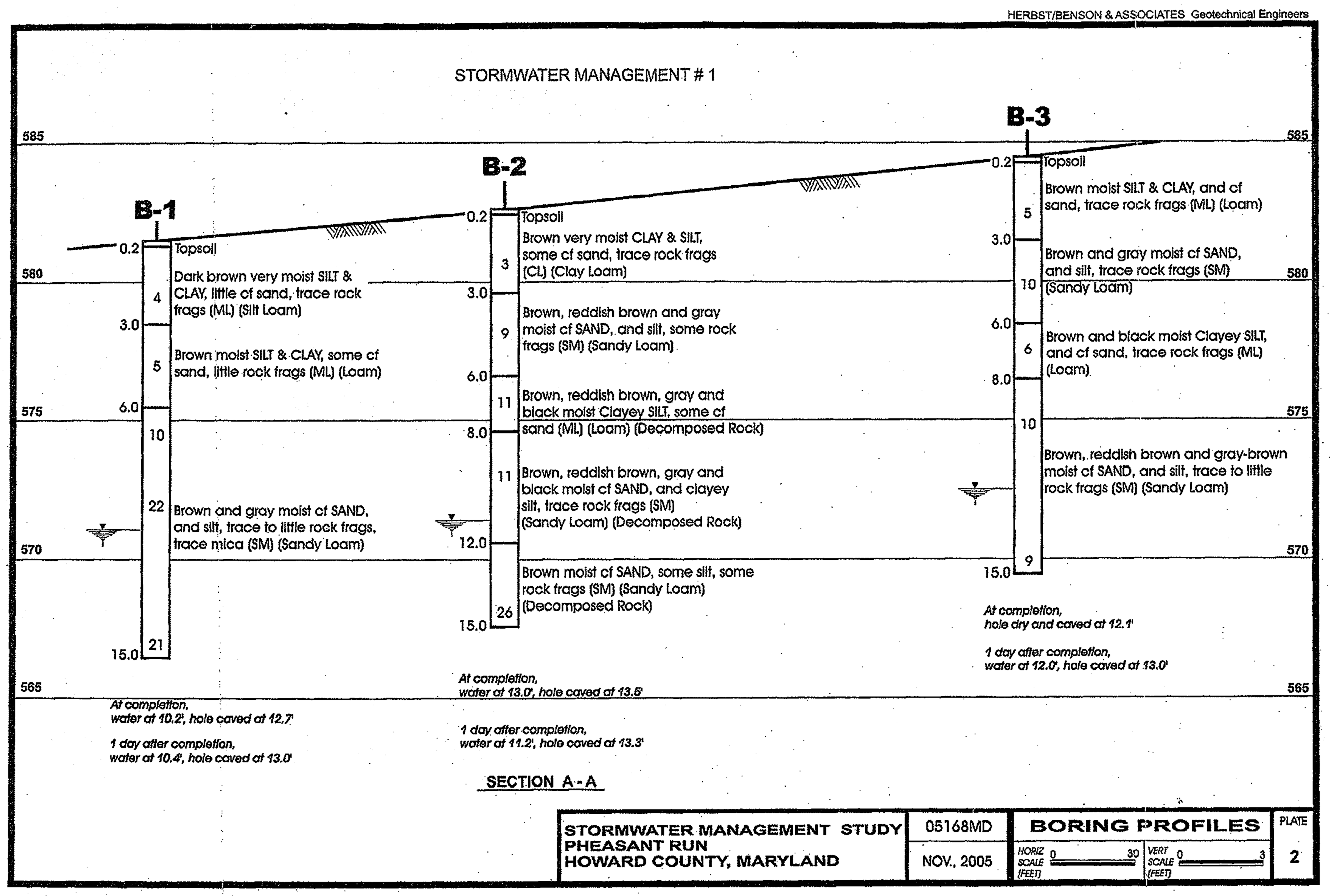
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS	10-9-08 DATE

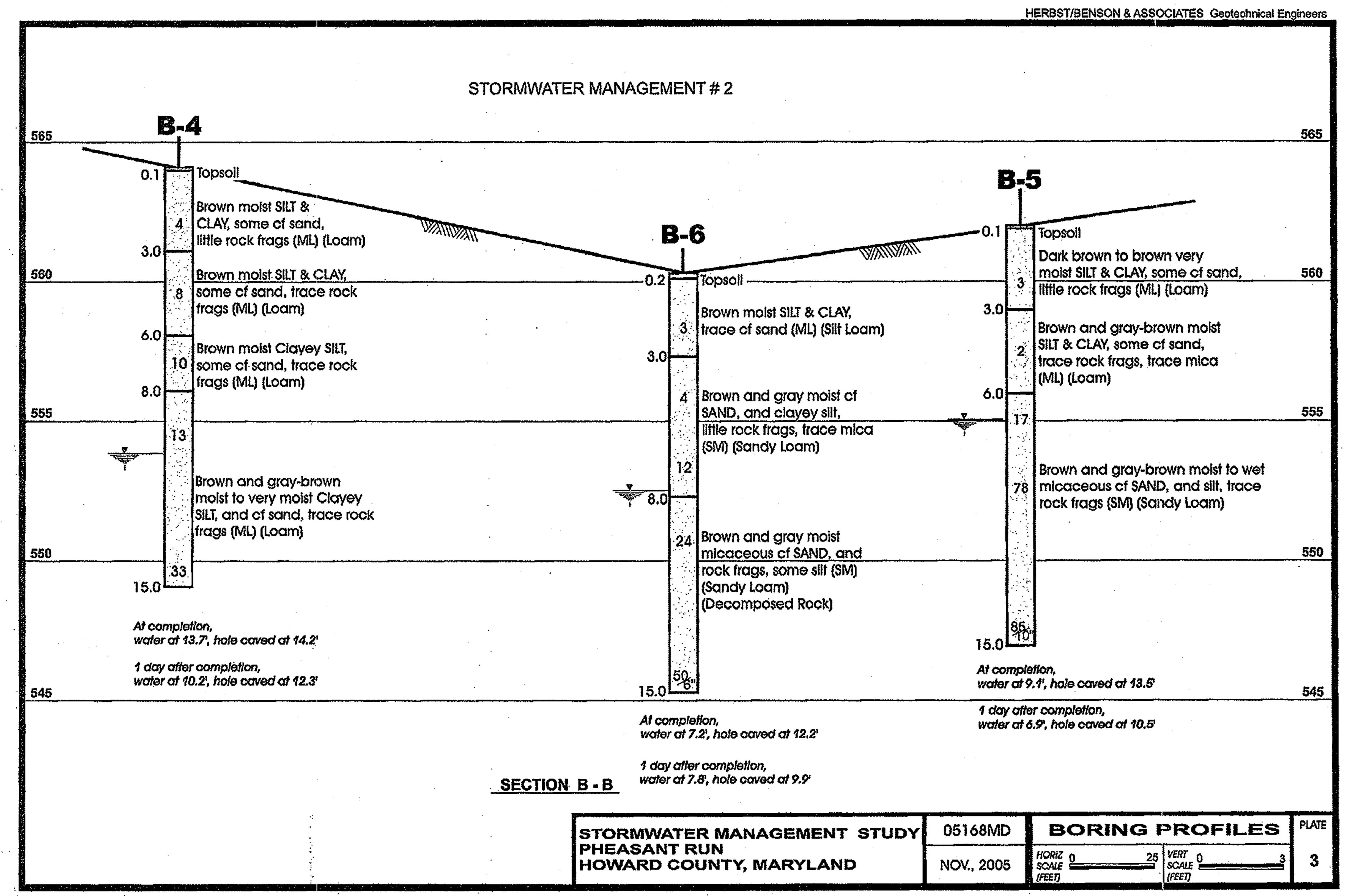
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT	10/20/08 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/16/08 DATE

B.M.P. No. 2



B.M.P. No. 1



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SOIL BORING PROFILES
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SHEET 16 OF 19

F-08-011

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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 Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer — 9-23-08 Date

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 — 9/24/08 Date

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

District Howard Soil Conservation Dist. — 10/7/08 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 10/20/08 Date

Chief, Development Engineering Division — 10/16/08 Date

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — 10-9-08 Date

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20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration O(up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

EFFECTS ON WATER QUALITY AND QUANTITY

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation
- i. Install erosion and sediment control structures (either temporary of permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)
- i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
- iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a •100 mesh sieve and 98-100% will pass through a •20 mesh sieve.
- iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

C. Seedbed Preparation
- i. Temporary Seeding
  - a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
  - b. Apply fertilizer and lime as prescribed on the plans.
  - c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
- ii. Permanent Seeding
  - a. Minimum soil conditions required for permanent vegetative establishment:
    1. Soil pH shall be between 6.0 and 7.0.
    2. Soluble salts shall be less than 500 parts per million (ppm).
    3. The soil shall contain less than 40% clay, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
    4. Soil shall contain 1.5% minimum organic matter by weight.
    5. Soil must contain sufficient pore space to permit adequate root penetration.
    6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
  - b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
  - c. Apply soil amendments as per soil test or as included on the plans.
  - d. Mix soil amendments into the top 3-5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications
- i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
- ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75°-80° F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding
- i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.
  - a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous); 200 lbs/ac; K20 (potassium): 200 lbs/ac.
  - b. Lime - use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
  - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
  - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 265 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
  - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
  - a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
  - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)
- i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
- ii. Wood Cellulose Fiber Mulch (WCFM)
  - a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
  - b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
  - c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
  - d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
  - e. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.
  - f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm. , diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
- i. If grading is completed outside of the seeding season, mulch along shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
- iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
- i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
- ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
- iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

I. Incremental Stabilization - Cut Slopes
- i. All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.
- ii. Construction sequence (Refer to Figure 3 below):
  - a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
  - b. Perform Phase 1 excavation, dress, and stabilize.
  - c. Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as necessary.
  - d. Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions int he operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.

J. Incremental Stabilization of Embankments - Fill Slopes
- i. Embankments shall be constructed in lifts as prescribed on the plans.
- ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15", or when the grading operation ceases as prescribed in the plans.
- iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.
- iv. Construction sequence: Refer to Figure 4 (below).
  - a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.
  - b. Place Phase 1 embankment, dress and stabilize.
  - c. Place Phase 2 embankment, dress and stabilize.
  - d. Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of and placement of topsoil (if required) grading and permanent seed and mulch. any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

SECTION 2 - TEMPORARY SEEDING

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed mixtures - Temporary Seeding

i. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary seeding summary below, along with application rates, seeding dates and seeding depths. If this summary is not put on the plans and completed, then Table 26 must be put on the plans.

ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

Seed Mixture (Hardiness Zone 6b) From Table 26					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
1	BARLEY OATS RYE	122 96 140	3/1 - 5/15, 8/15 - 10/15	1" - 2" 1" - 2" 1" - 2"	600 lb/ac (15 lb/1000sf)	2 tons/ac (100 lb/1000sf)

SECTION 3 - PERMANENT SEEDING

Seeding grass and legumes to establish groung cover for a minimum of one year on disturbed areas generally receiving low maintenance.

A. Seed mixtures - Permanent Seeding

i. Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Techinical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and V Turfgrass.

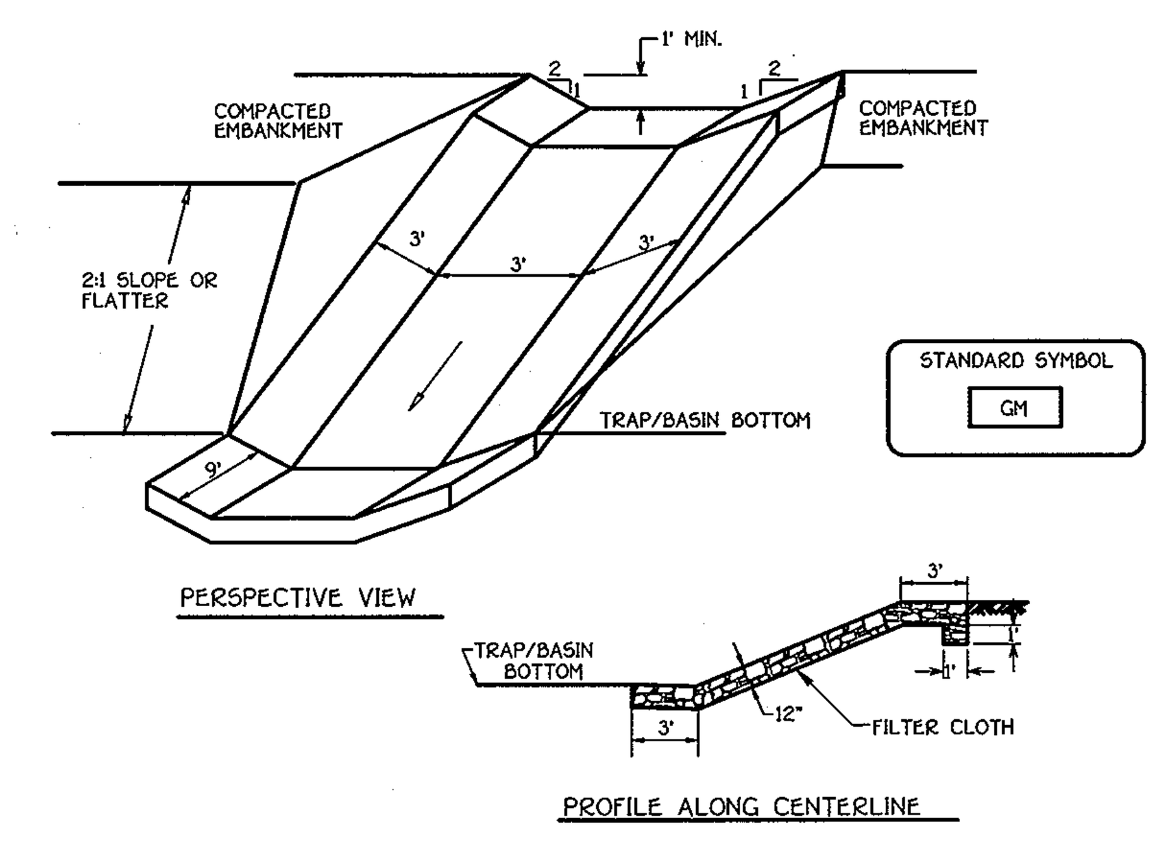
ii. For sites having disturbed area over 5 areas, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq. ft. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

Seed Mixture (Hardiness Zone 6b) From Table 25					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P205	K20	
3	TALL FESCUE (85%) PERENNIAL RYE GRASS (10%) KENTUCKY BLUEGRASS (5%)	125 15 10	3/1 - 5/15, 8/15 - 10/15	1" - 2"	90 lb/ac (2.0 lb/ 1000sf)	175 lb/ac (4 lb/ 1000sf)	175 lb/ac (4 lb/ 1000sf)	2 tons/ac (100 lb/ 1000sf)
10	TALL FESCUE (80%) HARD FESCUE (20%)	120 30	3/1 - 5/15, 8/15 - 10/15	1" - 2"				

GABION INFLOW PROTECTION

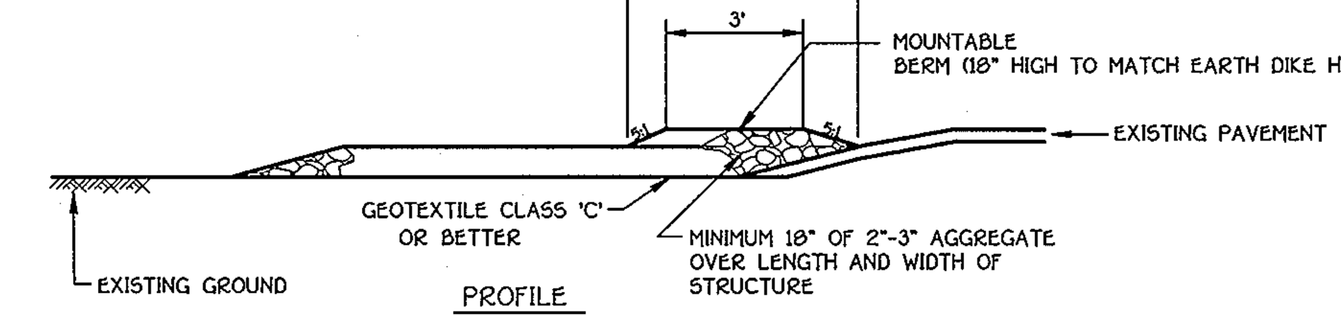
NOT TO SCALE



STANDARD SYMBOL
GM

Construction Specifications

1. Gabion inflow protection shall be constructed of 9' x 3' x 9' gabion baskets forming a trapezoidal cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" - 7".
4. Gabions shall be installed in accordance with manufacturers recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.



MOUNTABLE BERM

NOT TO SCALE

TOPSOIL NOTES

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

I. This practice is limited to areas having 2:1 or flatter slopes where:
- a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
- b. 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.
- c. The original soil to be vegetated contains material toxic to plant growth.
- d. The soil is so acidic that treatment with limestone is not feasible.

II. 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

I. 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 Experimental Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:
- i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy 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 11/2" in diameter.
- ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
- iii. 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.

II. For sites havinc, disturbed areas under 5 acres:
- i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

III For sites having disturbed areas over 5 acres:
- i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
  - a. 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 perscribed to raise the pH to 6.5 or higher.
  - b. Organic content of topsoil shall be not less than 1.5 percent by weight.
  - c. Topsoil havina soluble salt content greater than 500 parts per million shall not be used.
  - d. No sod 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 appopriate approval authority, may be used in lieu of natural topsoil.

- ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

V. Topsoil Application
- i. 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.
- ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- iii. 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.
- iv. 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.

VI. 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:
- i. 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:
  - a. 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.
  - b. 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.
  - c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- iv. 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.

References: Guideline Specifications, Soil Preparation and Sodding,. MD-VA, Pub. •1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

SEQUENCE OF CONSTRUCTION

1. OBTAIN A GRADING PERMIT. (2 DAYS) AND SECURED PUBLIC EASEMENTS (RECORDED)*
2. 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 AT LEAST 24 HOURS BEFORE STARTING WORK. (1 DAY)
3. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE. INSTALL ALL TREE PROTECTION FENCE FOR TREES TO BE UNDISTURBED AS INDICATED ON THE PLANS. (1 DAY)
4. INSTALL SILT FENCE, EARTH DIKES FOR CLEAN WATER DIVERSION AND DEWATERING DEVICES FOR THE CONSTRUCTION OF THE PROPOSED SEDIMENT BASIN/SWM POND AND DAM EMBANKMENT. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. AFTER CONSTRUCTION OF THE SEDIMENT BASINS INSTALL THE REMAINING EARTH DIKES AND INSTALL THE STORM DRAIN SYSTEM. SEE NOTE ON SHEET 7 REGARDING STABILIZATION FROM M-3 TO I-11. DO NOT BLOCK INLETS AS STORM DRAIN SYSTEM WILL BE USED TO CONVEY SEDIMENT RUNOFF INTO THE BASIN.
NOTE THAT NO DISTURBANCE IS ALLOWED UNTIL ALL SWM/BASIN MATERIALS FOR THE PRINCIPAL SPILLWAY ARE ON SITE AND PERMISSION FROM THE INSPECTOR IS GRANTED IN WRITING TO PROCEED. (2 WEEKS)
5. UPON COMPLETION OF THE SWM POND/SEDIMENT BASIN CONSTRUCTION RECEIVE PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR PRIOR TO PROCEEDING. (1 DAY)
6. GRADE SITE TO PROPOSED SUBGRADE. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. (1 WEEK)
7. CONSTRUCT ROAD BASE COURSE FOR SUBDIVISION ROAD. (3 DAYS)
8. WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL DEVICES AND THE POND HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE SEDIMENT CONTROL DEVICES MAY BE REMOVED AND/OR BACKFILLED AND THE REMAINING AREAS BROUGHT TO FINAL GRADE. STABILIZE ALL AREAS IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (1 WEEK)
9. THE CONTRACTOR SHALL REMOVE ALL OLD AND NEW JUNK, TRASH, DEBRIS AND OTHER UNNATURAL ITEMS FROM THE FORESTS, FLOODPLAINS, STREAMS, WETLANDS AND BUFFER AREAS. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT. (1 WEEK)

NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON, AFTER EACH RAINFALL AND ON A DAILY BASIS. REMOVE SEDIMENT FROM THE POND/BASIN WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED. ALL SEDIMENT MUST BE PLACED UPSTREAM OF THE APPROVED TRAPPING DEVICE.

NOTE: ALL DAM EMBANKMENT AND CORE TRENCH CONSTRUCTION SHALL BE COORDINATED WITH A PROFESSIONAL GEOTECHNICAL ENGINEER IN ACCORDANCE WITH THE RECOMMENDATIONS SHOWN ON THESE PLANS. NO BLASTING WILL BE PERMITTED FOR THE EXCAVATION OF SEDIMENT BASIN/SWM POND EMBANKMENT. WHERE NECESSARY, RIPPING AND JACK HAMMERING SHOULD BE UTILIZED IN THE EXCAVATION OF THE FACILITY. (1 WEEK)

* CONSTRUCTION MAY NOT BEGIN UNTIL ALL PUBLIC DRAINAGE AND UTILITY EASEMENTS HAVE BEEN RECORDED AND COPY THEREOF GIVEN TO INSPECTOR.

ALDO M. VITTUCCI, P.E. — 9-23-08 DATE

"Professional certification. I 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. 20748, Expiration Date 2-22-09."

OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI,
RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

SEDIMENT AND EROSION CONTROL DETAILS

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008
SHEET 17 OF 19

F-08-011

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 Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer — 9-23-08 Date

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 — 9/24/08 Date

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

District Howard Soil Conservation Dist — 10/7/08 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 10/29/08 Date

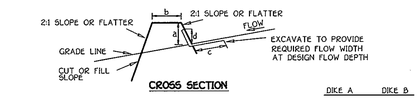
Chief, Development Engineering Division — 10/16/08 Date

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — 10-9-08 Date

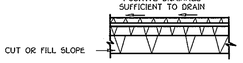
EARTH DIKE

NOT TO SCALE



CROSS SECTION

	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"



PLAN VIEW

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

STANDARD SYMBOL A-2 B-3

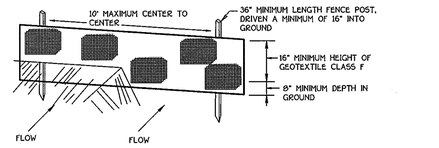
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

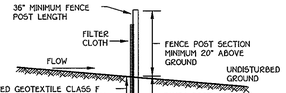
1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

SILT FENCE

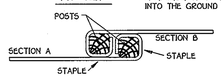
NOT TO SCALE



PERSPECTIVE VIEW



TOP VIEW



CROSS SECTION

STANDARD SYMBOL SF

JOINING TWO ADJACENT SILT FENCE SECTIONS

Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

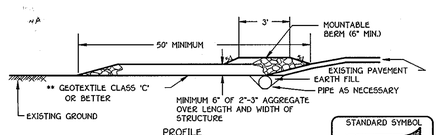
Tensile Strength	50 lbs/in (min)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min)	Test: MSMT 509
Flow Rate	0.3 gal ft / minute (max)*	Test: MSMT 322
Filtering Efficiency	75% (min)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

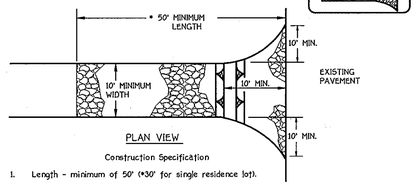
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



PROFILE

STANDARD SYMBOL SCE



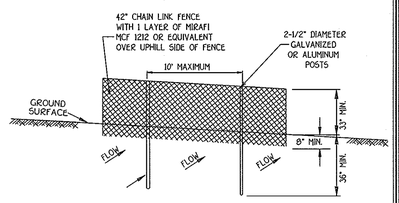
PLAN VIEW

Construction Specification

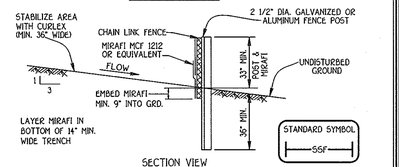
1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. 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 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE 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.
6. 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.

SUPER SILT FENCE DETAIL

NOT TO SCALE



PERSPECTIVE VIEW



STANDARD SYMBOL SSF

SECTION VIEW

CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42" HIGH CHAIN CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD DETAILS 690.01 AND 690.02 FOR CHAIN U FENCING. THE SPECIFICATIONS FOR A 6'-0" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 8' POSTS. POSTS SHALL BE PLACED WITHOUT CONCRETE EMBEDMENT.
2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.
3. FILTER CLOTH TO BE FASTENED SECURELY TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
4. FILTER CLOTH SHALL BE IMBEDDED A MINIMUM OF 9" INTO THE GROUND.
5. WHEN TWO SECTIONS OF DIVERSION CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED.

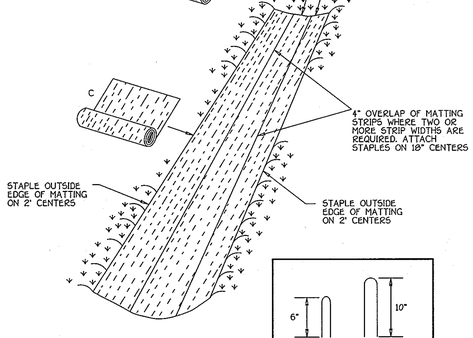
Fabric Properties	Value	Test Method
Grab Tensile Strength (lbs.)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs.)	40	ASTM D751
Slurry Flow Rate (gal/min/sf)	0.3	Virginia DOT VTM-51
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	400 feet	1,500 feet
20 - 33%	5:1 - 3:1	300 feet	1,000 feet
33 - 50%	3:1 - 2:1	200 feet	500 feet
50% +	2:1 +	100 feet	250 feet

EROSION CONTROL MATTING

NOT TO SCALE

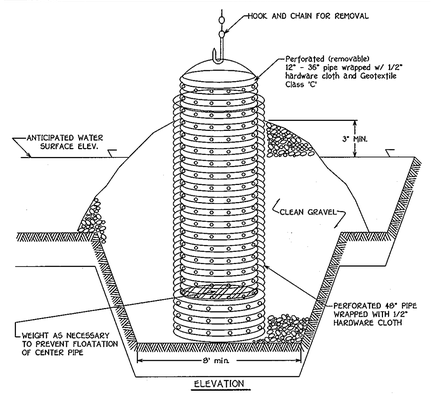


Construction Specifications

1. 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".
2. Staple the 4" overlap in the channel center using an 18" spacing between staples.
3. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
5. 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", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.
6. The discharge end of the matting liner 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 keyed-in.

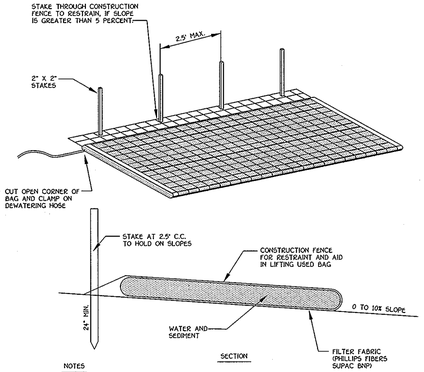
REMOVABLE PUMPING STATION



ELEVATION

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.



SECTION

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. WITDH AND LENTH SHALL BE AS SHOWN IN THE TABLE.
3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISHARGE 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. 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) 659-5111

OR

A.C.F. ENVIRONMENTAL 1801-A WILLIS ROAD RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-448-3636

OR

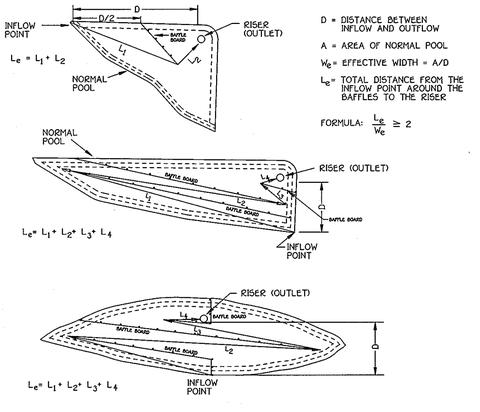
PRICE AND COMPANY, INC. 425 36TH STREET WYOMING, MI 49548 (616) 530-8230

FILTER BAG DETAIL

NOT TO SCALE

SEDIMENT BASIN BAFFLES

PLAN VIEWS



C1028REVISED.DWG

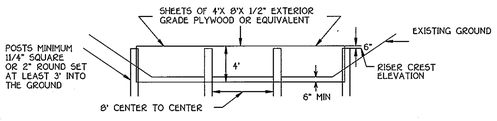
D = DISTANCE BETWEEN INFLOW AND OUTFLOW

A = AREA OF NORMAL POOL

W_e = EFFECTIVE WIDTH = A/D

L_e = TOTAL DISTANCE FROM THE INFLOW POINT AROUND THE BAFFLES TO THE RISER

FORMULA: $\frac{L_e}{W_e} \geq 2$



BAFFLE DETAIL

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3) 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.
4) ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THESE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5) 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, SOD (SEC. 54), 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.
6) 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.
7) SITE ANALYSIS:

TOTAL AREA OF SITE	60.05	ACRES
AREA DISTURBED	14.09	ACRES
AREA TO BE ROOFED OR PAVED	4.00	ACRES
AREA TO BE VEGETATIVELY STABILIZED	10.09	ACRES
TOTAL CUT	20,000	CU.YDS.
TOTAL FILL	20,000	CU.YDS.
OFFSITE WASTE/BORROW AREA LOCATION	N/A	CU.YDS.

8) ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9) ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10) 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.
11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

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

ALDEN J. CARTER — 9-23-08 DATE

"Professional Engineer, I 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. 20748, Expiration Date 2-22-09."

OWNERS
MARIO MANNARELLI, SR. & SERAFINA MANNARELLI, RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
9929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER
HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 402
LISBON, MD. 21765
(410) 489-7900

SEDIMENT AND EROSION CONTROL DETAILS

PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"

TAX MAP No. 3, GRID No. 19, PARCEL No. 29

FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DATE : SEPTEMBER, 2008

SHEET 18 OF 19

F-08-011

K:\Drawings\ 3130\51 Spokesman\FINALS-EAST 22\PAV\30\51 SHEET 17-18 SED.CON. DETAIL SHEETS.dwg, 9/23/2008 8:24:46 AM, jamesj, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-9-09

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/08

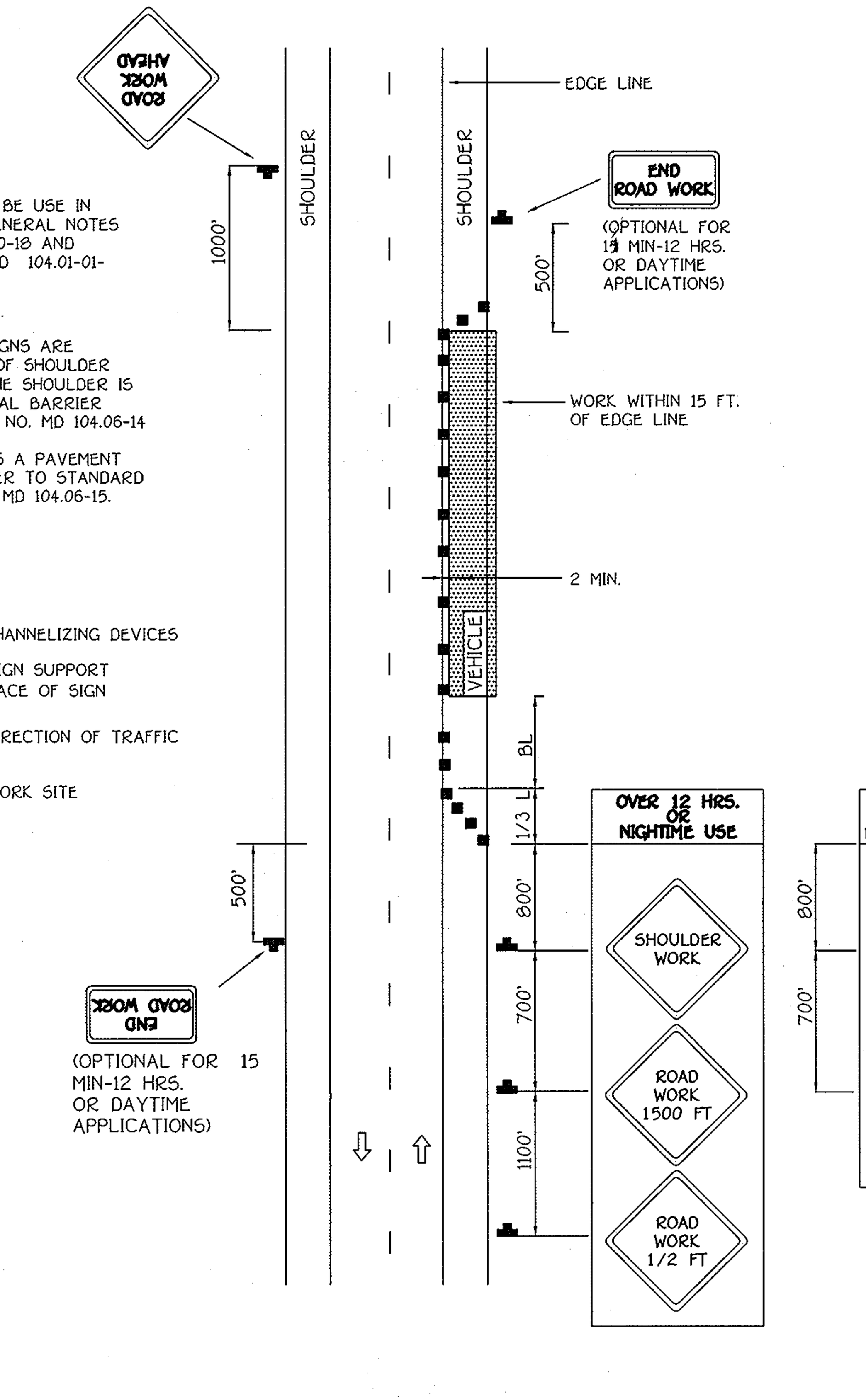
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/16/08

IMPORTANT:
THIS DRAWING SHALL BE USE IN COMBINATION WITH GENERAL NOTES MD 104.00-01-MD 104.00-18 AND STANDARD DETAILS MD 104.01-01-MD 104.01-62

NOTES:
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY A PHYSICAL BARRIER REFER TO STANDARD NO. MD 104.06-14

WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF. REFER TO STANDARD NOS. MD 104.06-11 TO MD 104.06-15.

KEY:
- CHANNELIZING DEVICES
- SIGN SUPPORT / FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE



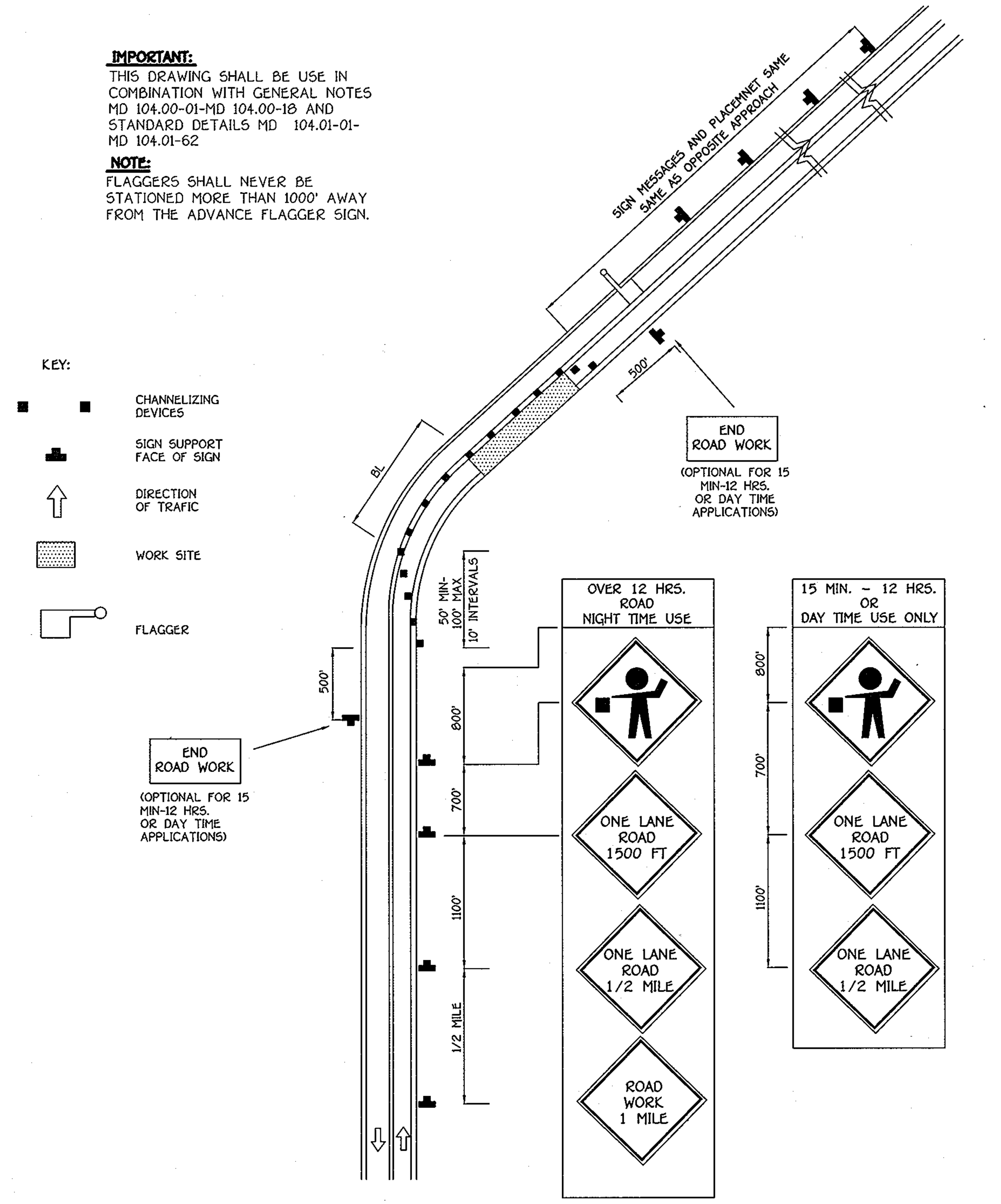
SHOULDER WORK/2-LANE, 2-WAY GREATER THAN 40 MPH

NO SCALE

IMPORTANT:
THIS DRAWING SHALL BE USE IN COMBINATION WITH GENERAL NOTES MD 104.00-01-MD 104.00-18 AND STANDARD DETAILS MD 104.01-01-MD 104.01-62

NOTE:
FLAGGERS SHALL NEVER BE STATIONED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.

KEY:
- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFIC
- WORK SITE
- FLAGGER



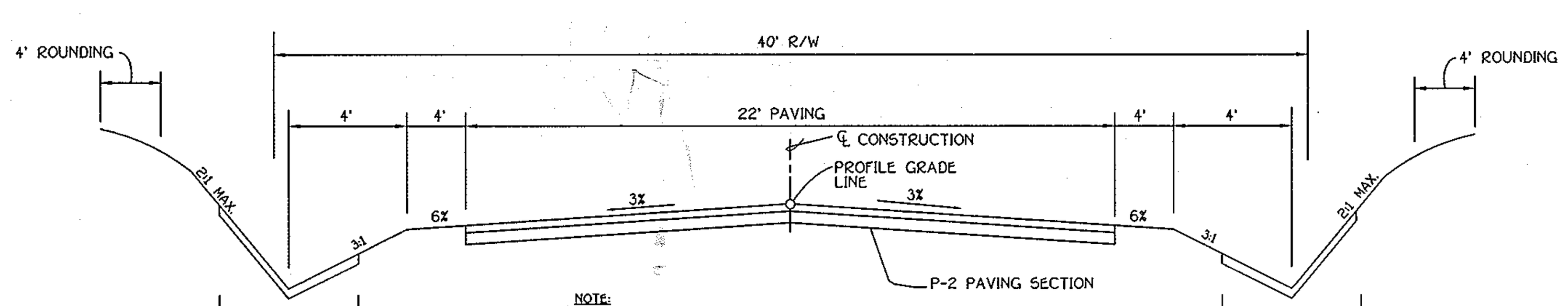
FLAGGING OPERATION /-LANE, 2-WAY GREATER THAN 40 MPH

NO SCALE

MAINTENANCE OF TRAFFIC SPECIAL PROVISIONS

GENERAL

1. 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.
2. PROPERTY TRAFFIC CONTROL THROUGH 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.
3. 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.
4. THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 1988 EDITION, ESPECIALLY PART VI, AND TO SECTION 814 OF THE MARYLAND DOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS (JANUARY, 1982; INCLUDING ALL REVISIONS AND SUPPLEMENTS TO EACH.
5. THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE REQUIREMENTS SET FOR 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.
6. 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.
7. 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.
8. 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.
9. 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 90%%% OF THE VISIBLE REFLECTIVE SURFACE.
10. 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.
11. THROUGHOUT THE PERIOD(S) 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 OR 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 WITHIN 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.
12. 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.
13. 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.



NOTE:
SEE HOWARD COUNTY STD. DETAILS FOR PAVING SECTION.

TYPICAL ROADWAY SECTION

NO SCALE

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	℄ STATION LIMITS	PAVING SECTION
PHEASANT RUN COURT	PUBLIC ACCESS PLACE	25 M.P.H.	RC-DEO	0+00 TO 12+32.69	P-2

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CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

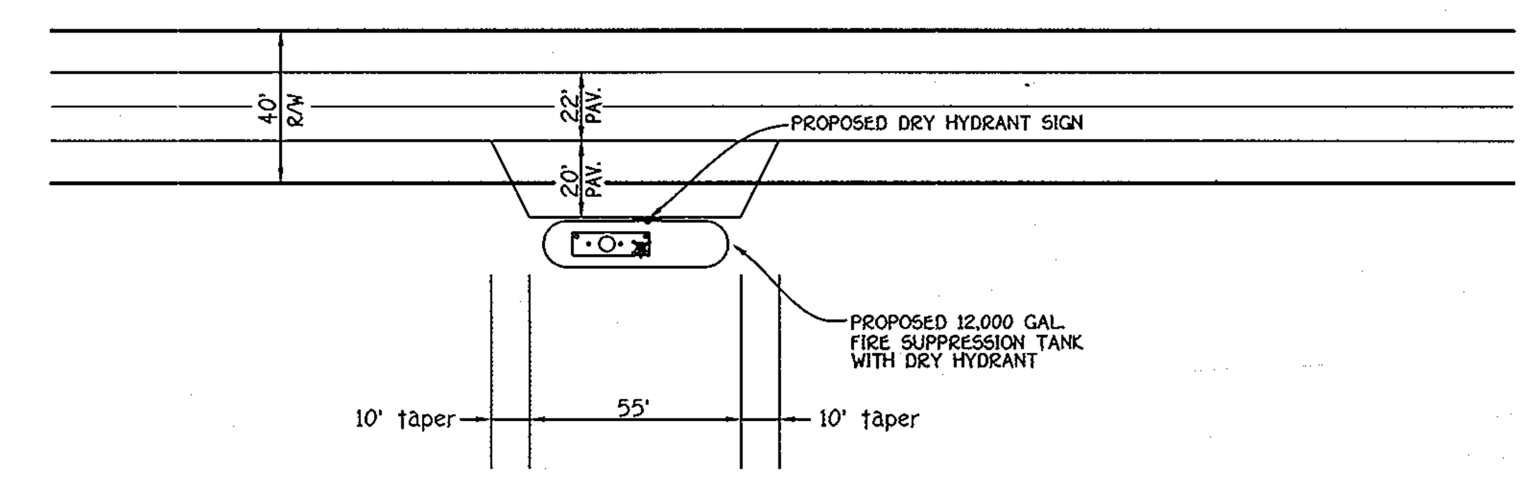
ALDO M. VITRICO — DATE 9.23.08

"Professional Certification. I 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. 20748, Expiration Date 2-22-09."

SPECIFICATIONS FOR UNDERGROUND WATER STORAGE TANKS FOR FIRE PROTECTION

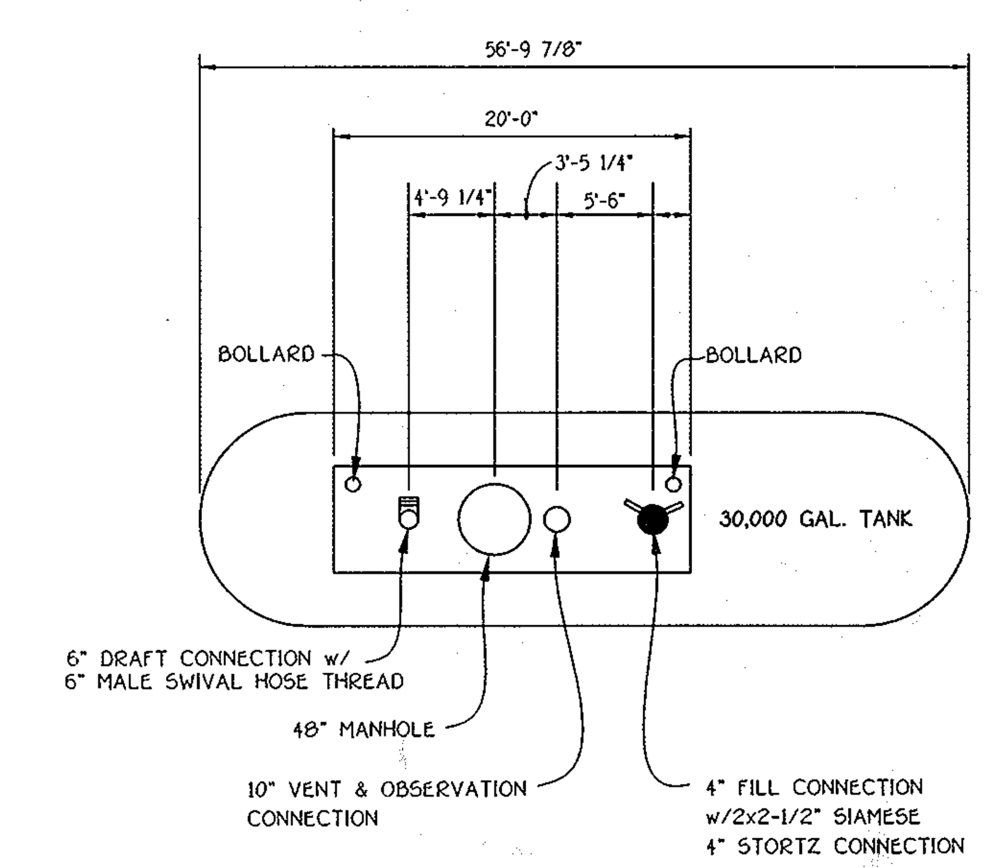
1. Introduction
   - 1.1. Scope
     The construction of underground tanks for fire protection in accordance with Howard County Code, Title 17 and this specification is part of a program designed to improve the level of protection from fires in residential and commercial properties. These Specifications, along with associated documents, provides the information necessary for the construction and placement of fire protection tanks used for this purpose.
   - 1.2. Purpose
     The purpose of this specification is to provide the technical information required for the construction of underground water storage tanks in accordance with Howard County Maryland. Title 17 and all data therein referenced.
2. Underground tanks
   - 2.1. Materials for a static water supply tank
     - 2.1.1. Tanks shall be constructed of single-wall fiberglass per approved manufacturer's specifications.
     - 2.1.2. The manufacturer shall provide a 30-year warranty, against defects in material for the tank system, to the purchaser of the tank and their heirs, successors, and assigns.
   - 2.2. Features
     - 2.2.1. The tank system shall include a device for holding the tank in position against floatation (deadman). This configuration shall be supplied by the tank manufacturer as part of the tank package. Installation shall be in accordance with the manufacturer's recommendations.
     - 2.2.2. The tank shall include a removable access cover at grade (manhole), at least 48" in diameter, to allow entry for maintenance and inspection of the inside of the tank. An internal ladder shall be securely mounted to the tank. The cover shall be properly secured and locked.
     - 2.2.3. A pad consisting of 4 inch thick concrete shall be placed over the tank, and shall encompass all fittings. Refer to tank drawings for concrete specifications.
     - 2.2.4. Fittings
       - 2.2.4.1. One draft connection shall consist of a 6 inch diameter galvanized or ductile iron pipe. The draft connection shall terminate in a 6NH (National Hydrant female) swivel connector with plug or cap. A PVC draft pipe with an anti-vortex plate shall be installed inside the tank by the manufacturer. The draft connection allows a fire department pumper to connect and remove water from the tank at the specified rate of flow (fire flow). Daft connection shall be painted "Fire Engine Red."
       - 2.2.4.2. One combination vent/fill indicator shall consist of an 8 inch diameter PVC pipe which allows visual inspection of the tank water level, as well as providing the required amount of venting to the tank.
       - 2.2.4.3. One fill connection shall consist of a 4 inch diameter galvanized or ductile iron pipe, with a Siamese connection with two, two and one half inch (2-2 1/2") connection and one 4" Stortz connection. The fitting shall be angled downward at 30 degrees to reduce hose and fitting strain during filling operations.
       - 2.2.4.4. All pipe joints above the slab shall be flanged.
     - 2.2.5. Any features not included in this specification, as well as any special circumstances such as multiple-tank designs shall be evaluated and approved during design phase and before any construction is started.
     - 2.2.6. The standard tank drawing Fire Suppression Water Storage, 30,000 Gallon defines the requirements for a typical 30,000 gallon, 10-foot diameter tank installation. Tank sizes other than 30,000 gallons may require additional drawings to be provided to fit the requirements for a particular site. Drawing Fire Suppression Water Storage, 12,000 Gallon defines the general requirements for construction of 8-foot diameter tanks, and shall be used accordingly. Supplemental drawings shall be reviewed and approved by the Fire Official prior to construction on an as needed basis.
   - 2.3. Installation
     - 2.3.1. All tanks shall be installed per the manufacturer's requirements
     - 2.3.2. Location and orientation of the tank shall be determined during site plan or preliminary subdivision plan layout, as approved by the Fire Official.
     - 2.3.3. The installing contractor shall be responsible for obtaining all necessary permits for work and for scheduling required inspections.
     - 2.3.4. The fittings shall be placed as follows:
       - 2.3.4.1. The draft connection shall be located 8 feet or less from the edge of the parking surface or curb line. This allows for one 10 foot section of suction sleeve to be used for drafting. The draft connection opening shall be turned facing directly toward the road surface.
       - 2.3.4.2. Total elevation from the bottom of the suction pipe to the centerline of the draft connection shall not exceed 15 feet zero inches. This dimension shall be minimized as much as possible to reduce head loss, while maintaining correct depth of cover over tank, per manufacturer's specifications.
       - 2.3.4.3. The draft connection shall be fixed at a height of 18 inches above finished grade of the pull off pad, to the centerline of the fitting.
       - 2.3.4.4. The fill connection shall be fixed at a height of 18 inches above finished grade of the pull off pad, to the centerline of the fitting.
     - 2.3.5. Excavation shall be performed per all applicable regulations. The excavation shall be backfilled with a material per manufacturer's specifications. In designs in which the draft pipe is placed on the tank end, the tank shall have a 2 percent slope toward the draft connection end.
   - 2.4. Testing and acceptance
     - 2.4.1. The tank shall be operable with a rate of flow (fire flow) of 1000 gallons per minute (GPM) minimum using a fire department pumper operating under normal conditions.
     - 2.4.2. A pressure test shall be performed prior to installation of the tank, per manufacturer's specifications.
     - 2.4.3. A pressure test shall be performed after the tank is installed and covered at a maximum pressure of 5 psi (pounds per square inch) and held for a time period as determined by the Fire Official, or per manufacturer's specifications.
     - 2.4.4. An operational test shall be performed when construction is completed, in accordance with the approved procedures. The test shall be conducted by the fire department and the installer. When testing has been completed, the installer shall refill the tank to full capacity as required. Once accepted, further use of the tank shall be limited to firefighting operations and routine testing. The fire department shall be responsible for subsequent refilling to full capacity within 12 hours after using water from the tank.
     - 2.4.5. Final approval will be made per notification in writing by the Fire Official.
   - 2.5. Accessibility and surrounding features
     - 2.5.1. A pulloff shall be constructed per Appendix 5.1, Drawing Pulloff, Tank Access unless otherwise specified. The requirements for each site will be evaluated and approved by the Fire Official prior to start of work. Details shall . be indicated on the site or subdivision plan as applicable.
     - 2.5.2. No obstructions shall impede access to tank fittings. The facility shall remain accessible on a year-round basis.
       - 2.5.2.1. Landscaping, brush, and trees shall be trimmed away from fittings. Overhanging branches shall be trimmed away at a minimum of 12 feet overhead. Grass and weeds shall be cut as needed.
     - 2.5.3. Protective devices shall be used as applicable to prevent damage to the fittings and to provide safety to operators. These include, but are not limited to the following:
       - a. Bollards
       - b. Guard rails
       - c. Fencing
       - d. Walkways
       - e. Curbs
       - f. Any other barriers/devices as determined by the Fire Official
     - 2.5.4. A reflective sign shall be posted which clearly indicates tank full capacity and identification (ID) number. An identification number shall be assigned by the county and posted at the site. Signs shall be placed on all major roads indicating the distance and direction to tank with in a 2,500 foot radius.
     - 2.5.5. An approved NO PARKING sign shall be provided and attached to a metal post.
     - 2.5.6. All fittings above grade shall be painted with exterior-grade enamel. Color shall be yellow unless otherwise specified.
3. References
   - 3.1. Published standards
     - 3.1.1. NFPA 1963 - Standard for Fire Hose Screw Threads
     - 3.1.2. NFPA 1142 - Standard for Water Supplies for Suburban and Rural Fire Protection
     - 3.1.3. NFPA 1141 - Standard for Fire Protection in Planned Building Groups
   - 3.2. Other referenced documents
     - 3.2.1. The Code of Public Local Laws and Ordinances of Howard County Maryland, Chapter 112.
     - 3.2.2. Underground Tanks & Dry Fire Hydrants Maintenance and Inspection, Chief Greg Dods / Regional Fire Protection Committee, 2003.
4. Appendix
   - 4.1. Drawing, Pulloff Tank Access.

PHEASANT RUN COURT



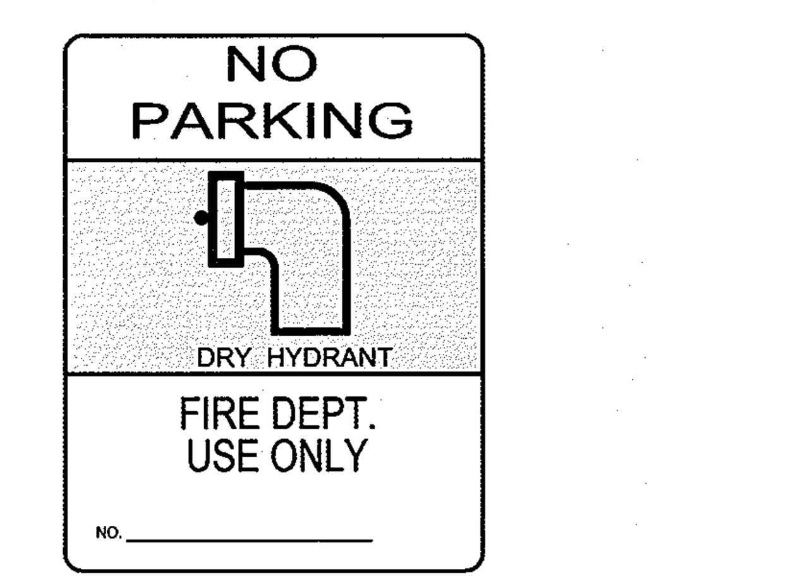
FIRE SUPPRESSION PULL-OFF AREA

SCALE: 1" = 50'



TANK DETAIL

NO SCALE



DRY HYDRANT SIGN

NO SCALE

OWNERS

MARIO MANNARELLI, SR. & SERAFINA MANNARELLI, RAYMOND MANNARELLI & MARIO MANNARELLI, JR.
2929 SUMMIT CIRCLE
ELLICOTT CITY, MARYLAND 21043
(410) 461-2278

DEVELOPER

HERITAGE LAND DEVELOPMENT, INC.
15950 NORTH AVE.
P.O. BOX 482
LISBON, MD. 21765
(410) 489-7900

TRAFFIC CONTROL PLAN & FIRE SUPPRESSION DETAILS
PHEASANT RUN EAST

LOTS 1 THRU 14, CEMETERY OPEN SPACE LOT 15, BUILDABLE PRESERVATION PARCEL "A" & NON-PRESERVATION PARCELS "B" THRU "D"

ZONED "RC-DEO"
TAX MAP No. 3, GRID No. 19, PARCEL No. 29
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE : SEPTEMBER, 2008

F-08-011

K:\Drawings 3\30651 Spiekerman\FINALS-EAST 22'PAV\30651 SHEET 19 TRAFFIC PLAN.dwg, 9/23/2008 8:26:20 AM, jamesl, 1:1