GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF
- THE CONTRACTOR SHALL CONTACT THE CONSTRUCTION INSPECTION DIVISION 24 HOURS IN ADVANCE OF COMMENCEMENT OF WORK AT (410) 313-1880.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AND JHU/APL PLANT FACILITIES OFFICE (443) 778-0167 AT LEAST 48 HOURS PRIOR TO ANY
- CONTRACTOR TO SCHEDULE PRECONSTRUCTION MEETING WITH HOWARD COUNTY, CONSTRUCTION INSPECTION DIVISION (410-313-1880) PRIOR TO STARTING
- 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
- THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE BASED ON FIELD LOCATIONS SUPPLEMENTED WITH EXISTING UTILITY DRAWINGS, AND SHOULD BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO CONSTRUCTION. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING UTILITIES, AND ANY DAMAGE DONE TO THEM DUE TO CONSTRUCTION ACTIVITY SHALL BE REPAIRED IMMEDIATELY AT HIS OWN EXPENSE.
- CONTRACTOR IS RESPONSIBLE FOR ALL SITE CONDITIONS, CONSTRUCTION REQUIREMENTS, AND SHALL CONFORM TO ALL STATE, FEDERAL, AND COUNTY CONSTRUCTION REGULATIONS. THE CONTRACTOR IS NOT RELIEVED OF RESPONSIBILITY SHOULD ANY REQUIRED ITEMS PERTAINING TO SITE CONSTRUCTION NOT BE INCLUDED ON THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS AS SHOWN ON THESE PLANS.
- ANY DAMAGE TO EXISTING UTILITIES, PAVEMENT, OR CURB AND GUTTER DUE TO CONSTRUCTION ACTIVITY OUTSIDE THE LIMITS OF DISTURBANCE IS TO BE REPLACED BY
- WHERE NECESSARY, THE CONTRACTOR SHALL TEST PIT ALL EXISTING UTILITIES AT LEAST FIVE (5) DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PROPERTY MONUMENTS, MARKERS. SIGNS, LIGHTS, OR ANY OTHER EXISTING SITE FEATURES DISTURBED DURING
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY WHITMAN, REQUARDT & ASSOCIATES, LP DATED JANUARY 2004. JHU APPLIED PHYSICS LAB AERIAL TOPOGRAPHY AND UTILITY INFORMATION SHOWN MAY NOT REFLECT CURRENT CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY CURRENT TOPOGRAPHY AND UTILITY INFORMATION TO HIS OWN SATISFACTION.
- THE SITE BOUNDARY, BEARINGS, AND COORDINATES SHOWN ARE BASED ON ELECTRONIC FILES OBTAINED FROM WHITMAN. REQUARDT AND ASSOCIATES.
- ALL WORK SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE "1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROLS" PUBLISHED JOINTLY BY THE WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE
- 15. THE COORDINATES SHOWN HEREON ARE BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM (NAD 83). JOHNS HOPKINS UNIVERSITY CONTROL STATIONS NOS.

STATION	NORTH	EAST
HOPKINS	544836.5300	1340825.3542
G12	550256.5002	1342325.2642
G7	548107.0328	1341025.0830
G8	549478.7005	1341170.4345
41 EA	544825.8093	1339217.4439

- 16. WATER IS PRIVATE WITH CONNECTION TO PUBLIC SYSTEM.
- 17. SEWER IS PRIVATE WITH CONNECTION TO PUBLIC SYSTEM.
- 18. ALL SWM DEVICES ARE PRIVATELY OWNED AND MAINTAINED.
- 19. EXISTING UTILITIES ARE BASED ON JHU/APL FACILITY RECORDS AND SUPPLEMENTED WITH
- THERE ARE NO WETLANDS, STREAMS OR FLOOD PLAINS WITHIN THE AREAS BEING DISTURBED BY THIS PROJECT. WETLANDS, WETLAND BUFFERS, STREAMS, STREAM BUFFERS AND FLOODPLAIN AREAS SHOWN ON THIS PLAN HAVE BEEN OBTAINED BY F-02-40, PLAT #15429-15433, RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY.
- 21. TRAFFIC STUDY COMPLETED BY A. MORTON THOMAS AND ASSOCIATES, INC., DATED MARCH 27, 2003 WITH AN ADDENDUM DATED JULY 2004.
- 22. THE CONTRACTOR SHALL CONTACT MR. JAMES LOESCH (443) 778-5134 AT LEAST TEN DAYS BEFORE STARTING WORK OR DISRUPTION OF ANY UTILITIES.
- 23. THE SUBJECT PROPERTY IS ZONED PEC PER THE 02-02-04 COMPREHENSIVE ZONING
- SEE PREVIOUS DEPARTMENT OF PLANNING AND ZONING FILES: F 02-40, F 04-188, SDP 04-35, SDP 04-66, SDP 04-76, SDP 04-133, AND SDP 05-43.
- 25. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, WETLAND BUFFERS, STREAM(S) OR STREAM BUFFERS AND FOREST CONSERVATION EASEMENT AREAS.
- 26. THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE OF FOREST CONSERVATION BY F-04-188 AND F-02-40.
- 27. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- 28. A GEOTECHNICAL STUDY WAS CONDUCTED FOR THIS PROJECT BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED JUNE 22, 2004.
- 29. TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADWAYS AND PARKING AREAS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL, VOL. IV, STANDARD NO.
- 30. ALL COMPACTED FILL SHALL BE IN ACCORDANCE WITH AASHTO T-180 REQUIREMENTS.
- 31. ALL EXTERIOR LIGHTING SHALL COMPLY WITH ZONING REGULATIONS SECTION 134. SEE SHEET #19 FOR LIGHT DETAIL. 32. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION

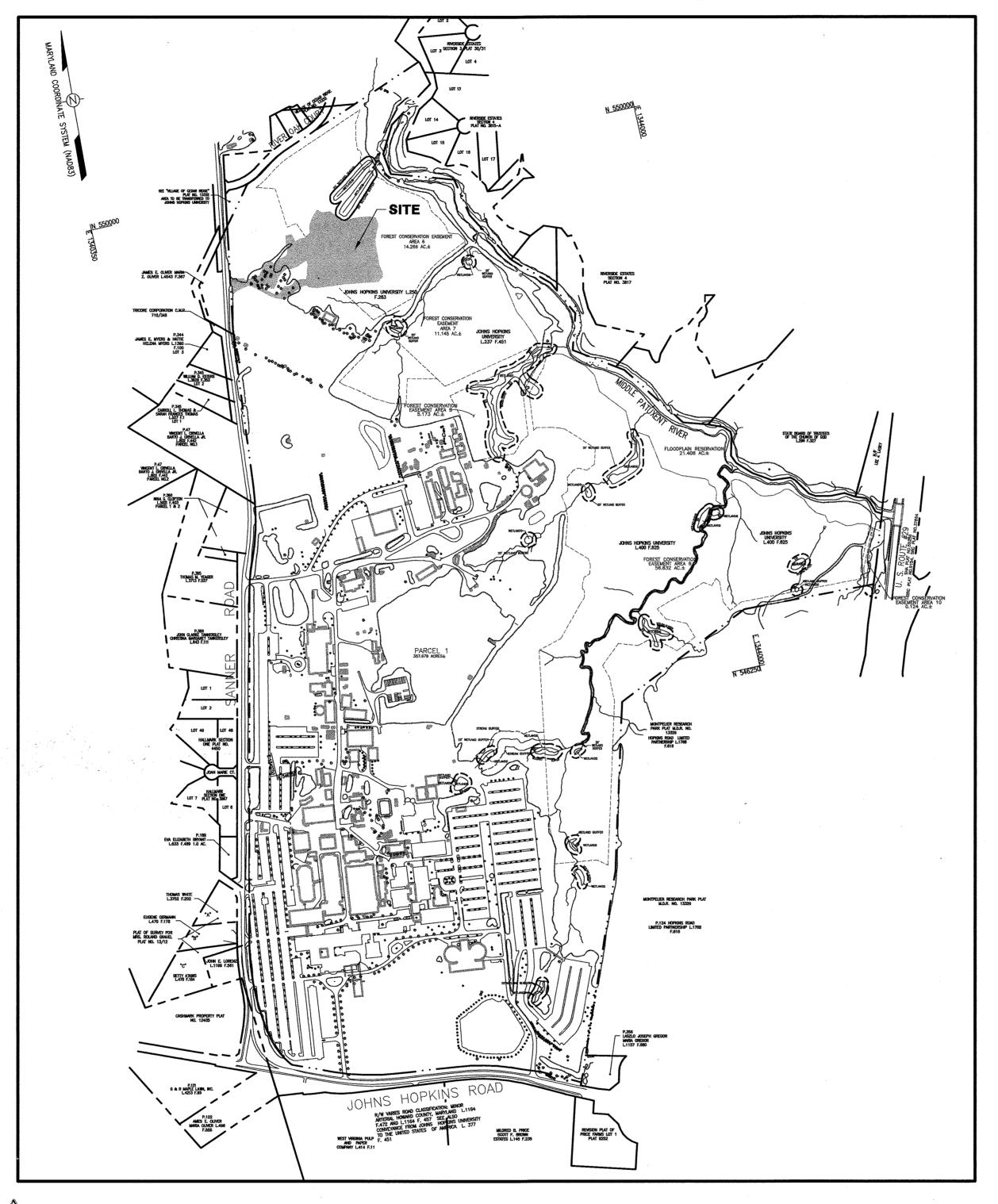
16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL

- SURETY FOR THE REQUIRED LANDSCAPING (SEE GENERAL NOTE #6 ON SHEET 19) IN THE AMOUNT OF \$3,300.00 (FOR 7 SHADE TREES AND 8 EVERGREENS) IS PART OF THE DEVELOPER'S AGREEMENT.
- 33. AT SITE ENTRANCE, PRIOR TO ANY CONSTRUCTION ACTIVITY, CONTRACTOR TO ENCASE EXISTING COMMUNICATIONS DUCT BANK WITH CONCRETE. MINIMUM ENCASEMENT TO BE 6" OVER AND BEYOND DUCT BANK. SEE UTILITY PLAN FOR LIMITS OF
- 34. PRIOR TO INITIAL PAVING, CONTRACTOR TO INSTALL A NEW COMMUNICATIONS DUCT BANK AT THE SITE ENTRANCE. PROPOSED DUCT BANK TO MATCH EXISTING. HAVE 4' MINIMUM COVER AND IS TO RECONNECT TO THE EXISTING DUCT BANK AS SHOWN ON THE UTILITY PLAN. EXISTING DUCT BANK UNDER SITE ACCESS ROAD WILL BE ABANDONED AND ALL EXISTING WIRING TO BE FED THROUGH NEW DUCT BANK.
- 35. FIRE ACCESS ROAD RESTRICTION SIGN TO BE PLACED AT ENTRANCES TO FIRE LANES AND ARE TO READ "DO NOT ENTER - FIRE DEPARTMENT ACCESS ONLY."
- 36. CONTRACTOR TO INSTALL TWO (2) 5" PVC SLEEVES ACROSS ACCESS ROAD TO SERVE AS ENCASEMENT FOR INSTALLATION OF ELECTRICAL CONDUIT BY BG&E. 5" PVC SLEEVE TO EXTEND TEN (10) FEET BEYOND BACK OF CURB OF ACCESS ROAD.
- 37. CONTRACTOR TO CONTACT AND COORDINATE THE CONNECTION OF COMMUNICATIONS CONDUIT TO EXISTING LATTA BUILDING WITH JHU-APL REPRESENTATIVE.



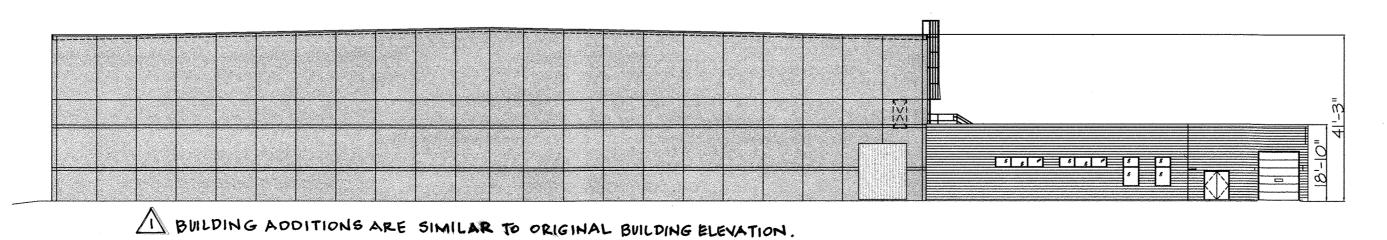
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

JOHNS HOPKINS APPLIED PHYSICS LABORATORY LIBRARIES SERVICE CENTER



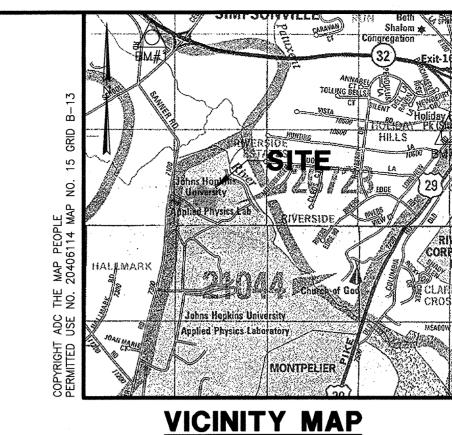
38. A SIMPLIFIED ECP PLAN WAS APPROVED BY HOWARD COUNTY, DEVELOPMENT ENGINEERING DIVISION ON APRIL 30, 2021.

OVERALL SITE MAP SCALE: 1" = 500'



ARCHITECTURAL PROFILE

SITE DEVELOPMENT PLAN



1 COVER SHEET

BENCHMARKS

B.M.#1 - HOWARD COUNTY BENCHMARK 41BB - EAST SIDE OF GUILFORD ROAD 1760' WEST OF PINDELL SCHOOL ROAD. N553,338.80 E1,340,517.48 ELEV. 370.395

B.M.#2 - HOWARD COUNTY BENCHMARK 0057 - EAST SIDE OF LONGVIEW ROAD, SOUTH OF VISTA ROAD INTERSECTION. N550,835.21 E1,347,017.69 ELEV. 398.925

SHEET INDEX

	2	DEMOLITION PLAN
	3	SITE LAYOUT PLAN
	4	SITE GRADING PLAN
	5	STORM DRAIN & UTILITY PLAN
BUILDING SQUARE	6	SITE DETAILS
FOOTAGE TABULATION	7	STORM DRAIN PROFILES
TOOTAGE TABOLATION	8	STORM DRAIN PROFILES
1. PROPOSED BUILDING COVERAGE = 39,729 S.F. 28,893 S.F.	9	UTILITY PROFILES
T	10	UTILITY PROFILES
3. TOTAL (ULTIMATE) BUILDING COVERAGE = 68,622 S.F.	11	STORMWATER MANAGEMENT PLAN
1. GROSS BUILDING SQUARE FOOTAGE = 38,206 S.F.	12	STORMWATER MANAGEMENT PLAN
2. FUTURE (ULTIMATE) BUILDING SQUARE FOOTAGE = 89,920 S.F.	13	STORM DRAIN & SWM DRAINAGE AREA MAPS
3. TOTAL (ULTIMATE) BUILDING SQUARE FOOTAGE = 128,126 S.F.	14	MD 378 NOTES
	15	GEOTECHNICAL REPORT
∧	16	EROSION & SEDIMENT CONTROL PLAN
D PROPOSED DISTURBANCE = 52,220 SA/1.19 AC.	17	EROSION & SEDIMENT CONTROL DETAILS
	18	LIGHTING & LANDSCAPING PLAN
SNM WILL BE REQUIRED WHEN CUMULATIVE LOD	19	LIGHTING & LANDSCAPING DETAILS
exceeds 5000 SF.	20	RETAINING WALL PLAN & GENERAL NOTES
CADECIS 3500 01.	21	RETAINING WALL PROFILE, TYPICAL SECTION & DETAILS
	22	GRINDER PUMP DETAILS
$\triangle 1 \setminus [$	23	EROSION & SEDIMENT CONTROL DETAILS/NOTES

	SITE ANALYSIS DATA	CHART	
1. 2. 3. 4. 5.	TOTAL PROJECT AREA: AREA OF PLAN SUBMISSION: LIMIT OF DISTRUBANCE: PRESENT ZONING: PROPOSED USE: LIBRARY BOOK STORAGE FACILITY JOHNS HOPK	361 ACRES +/- 6.45 ACRES +/- 6.45 ACRES +/- PEC INS UNIVERSITY	
6. 7. 8. 9.	EXISTING NUMBER OF EMPLOYEES (JHU/APL CAMPUS): PROPOSED NUMBER OF EMPLOYEES (PER THIS PLAN): TOTAL NUMBER OF EMPLOYEES (JHU/APL CAMPUS, INCL. THIS PLAN): MAXIMUM NUMBER OF EMPLOYEES ALLOWED PER APFO STUDY PER F-02-	3646 20 3666 -40: 3937	
12.	EXISTING MINIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING: EXISTING ONSITE PARKING SPACES (JHU/APL CAMPUS): PROPOSED PARKING SPACES (PER THIS PLAN): TOTAL NUMBER OF ONSITE PARKING SPACES (JHU/APL CAMPUS, INCL. TH	2953 (F-02-40) 4793 (SDP 04-76) 22 (INCL. 4 HC SPACES) IS PLAN): 4815	
15. 16.	· · · · · · · · · · · · · · · · · · ·		``\
	EXISTING GROSS FLOOR AREA COVERAGE (JHU/APL CAMPUS): PROPOSED GROSS FLOOR COVERAGE* (PER THIS PLAN):	44.8 ACRES (SDP-04-133) 128,126 SF OR 2.94 ACRES ±	

*THE GROSS FLOOR AREA COVERAGE INFORMATION INCLUDES THE FUTURE BUILDING AREA. SEE THE BUILDING SQUARE FOOTAGE TABULATION ON THIS SHEET.

20. CASE NUMBERS - APPLICABLE IMPROVEMENTS: FOREST CONSERVATION, FLOODPLAIN, PUBLIC R/W FOREST CONSERVATION AND WETLANDS SWM BASIN G BALL FIELD ENTRANCE AND PARKING LOTS SERVICES AREA COMPLEX

BASIN C SWM FACILITIES & LAYDOWN AREA SANNER ROAD IMPROVEMENTS

21. SANITARY SEWER/ WATER SERVICE: PRIVATE ONSITE SYSTEM, PUBLIC CONNECTION

22. EXISTING OPEN SPACE AREA (LOT AREA MINUS PARKING & BUILDINGS): 286 ACRES, 81.7% OF TOTAL LOT AREA (PROVIDED BY JHU APL) 23. PROPOSED OPEN SPACE AREA:

283 ACRES, 78.4% OF TOTAL LOT AREA

19. TOTAL GROSS FLOOR AREA COVERAGE* (JHU/APL CAMPUS, INCL. THIS PLAN): 47.74 ACRES, 13.2% OF TOTAL LOT AREA

OPTION 3: PREVIOUSLY ADDRESSED (Including Use of FC Bank)	FOREST CONSERVATION DATA SUMMARY
File Number: F-04-188	Project/Subdivision Name: JOHNS HOPKINS UNIVERSITY PROPERTY (APPLIED PHYSIC LABORATORY SITE)
	Subdivision & Land Development Regulations, See F—04—188 Plat # 17042 thru 17046.

			AD	DRES	S CH	ART		
	LO	T/PARCEL	NO.				STREET A	DDRESS
		289 / 1			Å	-	LAUREL, MD	HOPKINS ROAD 20723
OWNER:	PE	RMIT IN	FOR M A	TION			s sanh	N NOAD
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY 11100 JOHNS HOPKINS ROAD LAUREL, MD 20723 ATT. MR. JAMES LOESCH VOICE (443)778-5134 FAX (443)778-6122	JOHNS HOF (APPLIED F PLAT # OR L/F 17042 - 17046	BDIVISION PARCEL PKINS UNIV PHYSICS LA GRID # 11 ER CODE: E-21	1 ERSITY F	RY SITE	RTY E) MAP N 41		ETION/AREA N/A ELECT. DIS 5TH SEWER C 64800	605102 CODE:

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2 REVISED ADDRESS	10/8/

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CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAPETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

THE JOHNS HOPKINS UNIVESITY APPLIED PHYSICS LABORATORY

JOHNS HOPKINS ROAD

LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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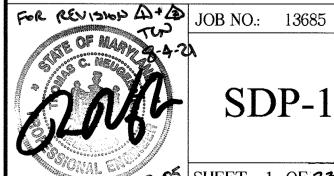
GRAPHIC SCALE



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

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COVER SHEET

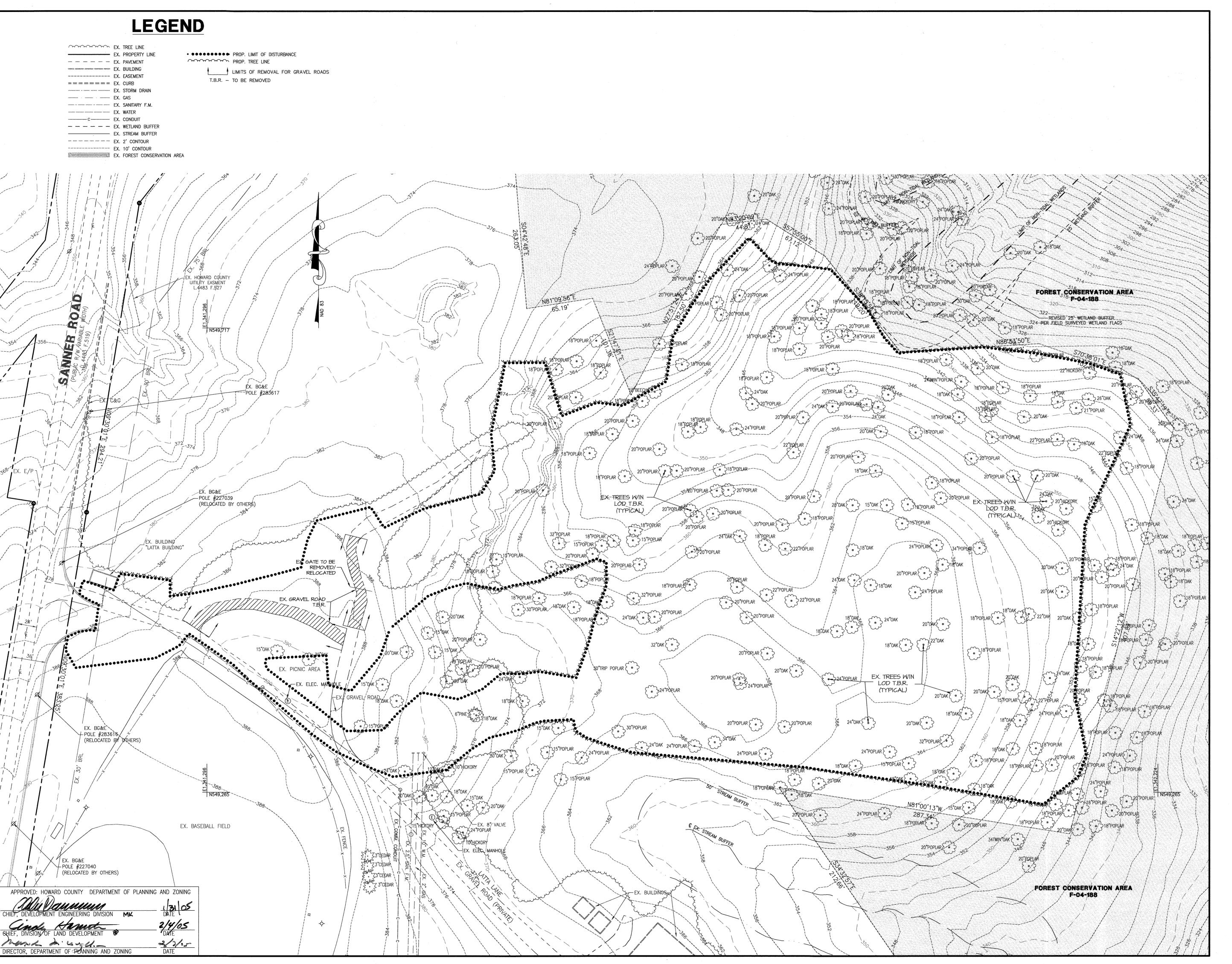


-0-05 SHEET: 1 OF 23

SDP-1

SCALE: AS SHOWN

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CODE COMPLIANCE REVIEW	
TSC GROUP	
TSF GROUP	
SAFETY OFFICER	
DIRECTORS OFFICE	
COORDINATOR	

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TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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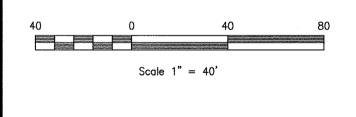


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EXISTING CONDITIONS /DEMOLITION PLAN



JOB NO.: 13685

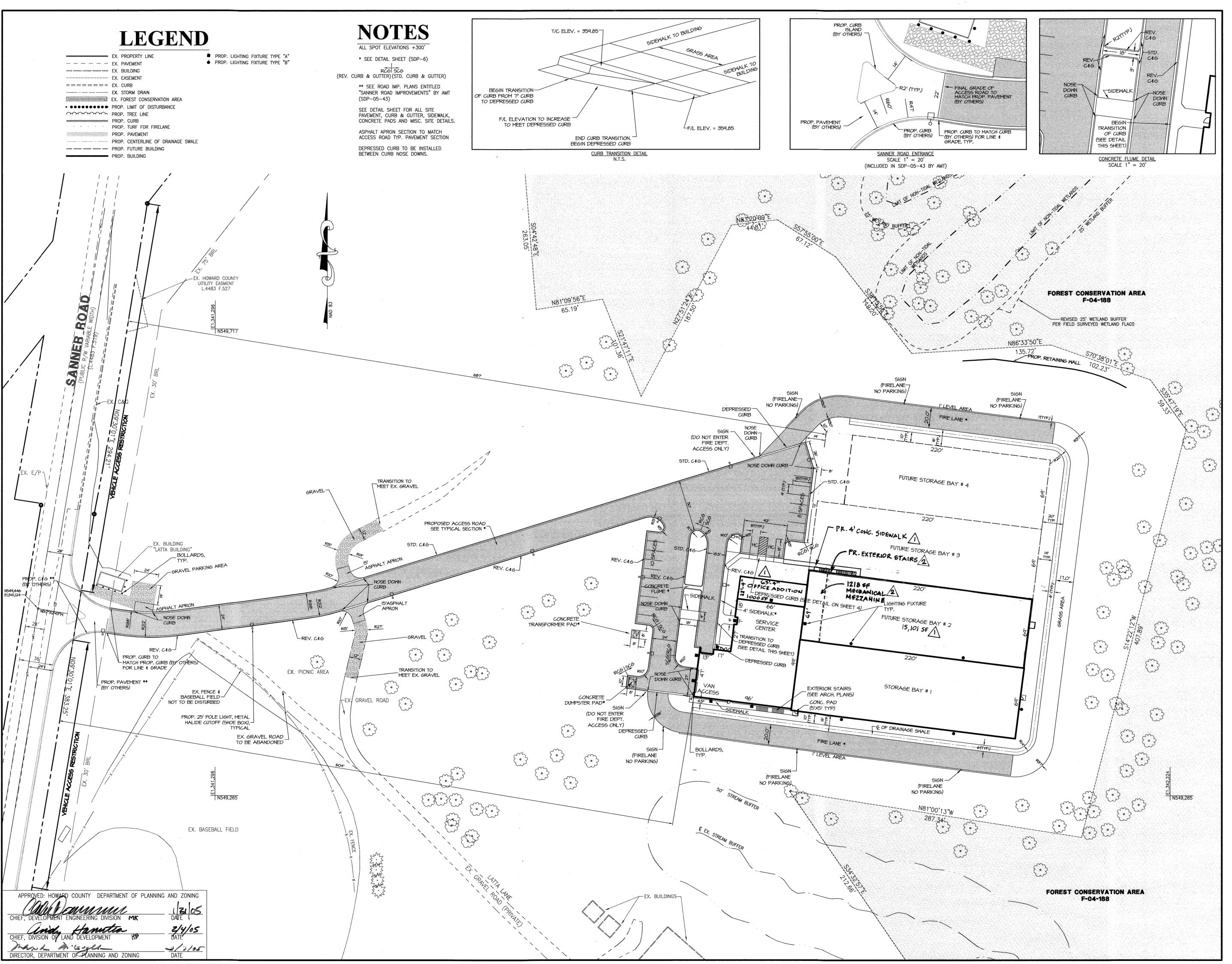
SDP-2

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1-n-5 SHEET: 2 OF 23

SCALE: 1"= 40'

DES: LFB | CHECK: TCN | DATE: 01-17-05



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2	ADDED STAIRS + MEZZANINE	10/8/21

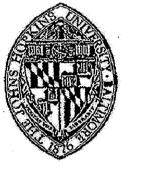
	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

JOHNS HOPKINS ROAD

LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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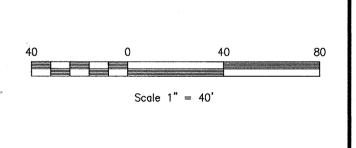


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SITE LAYOUT PLAN

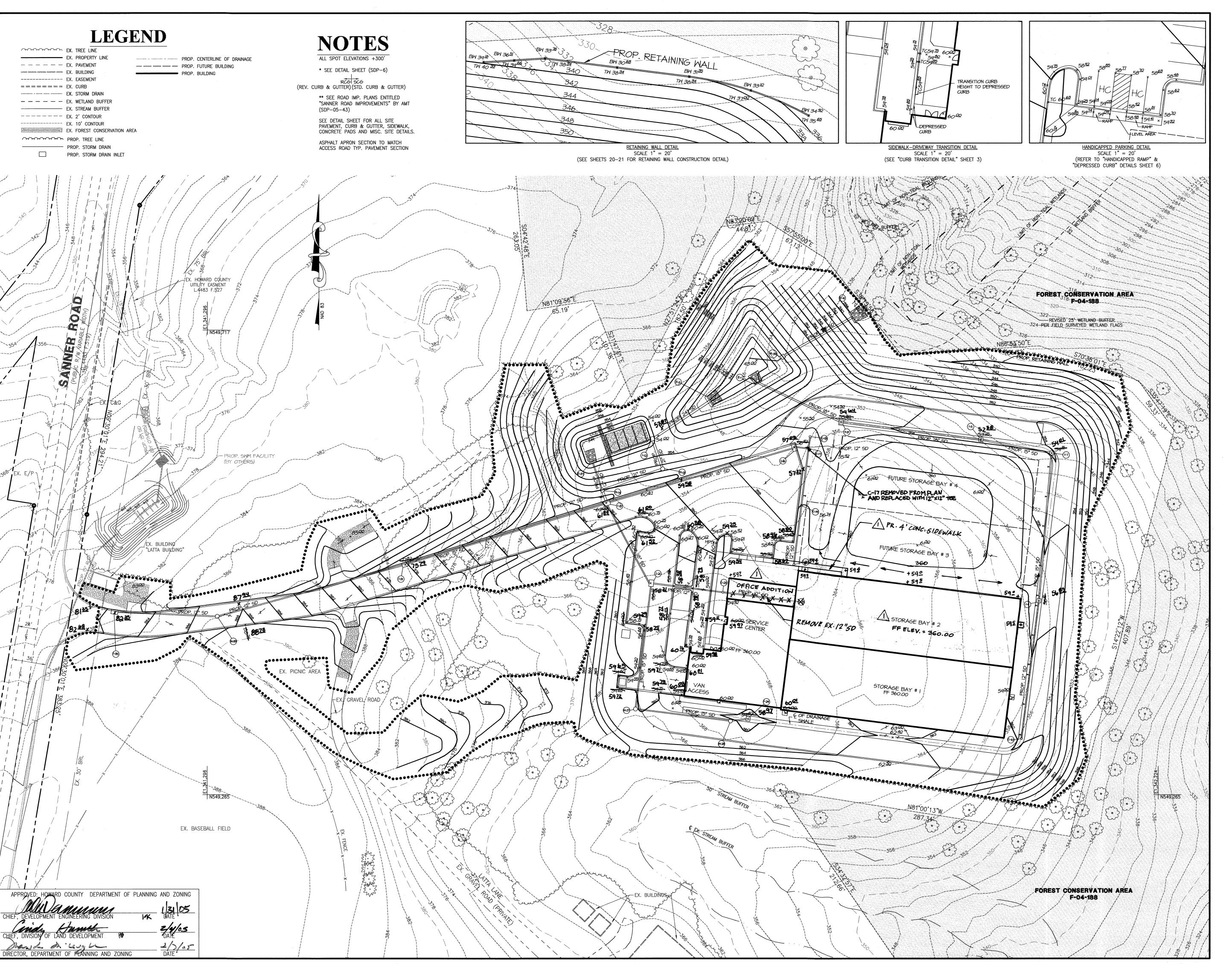
FOR REVISION A+2 JOB NO.: 13685



1-17-05 SHEET: 3 OF 23

SCALE: 1"= 40'

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1 REDLIN	e revision #1	5/7/21

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CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
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GRAPHIC SCALE

0 40 80

Scale 1" = 40'

NOTE: ALL PAVEMENTELEVATIONS.
ARE FLOWLING ELEVATIONS.



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ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

GRADING PLAN

FOR (ENSIDE A) 4 | 21 JOB NO.: 13685

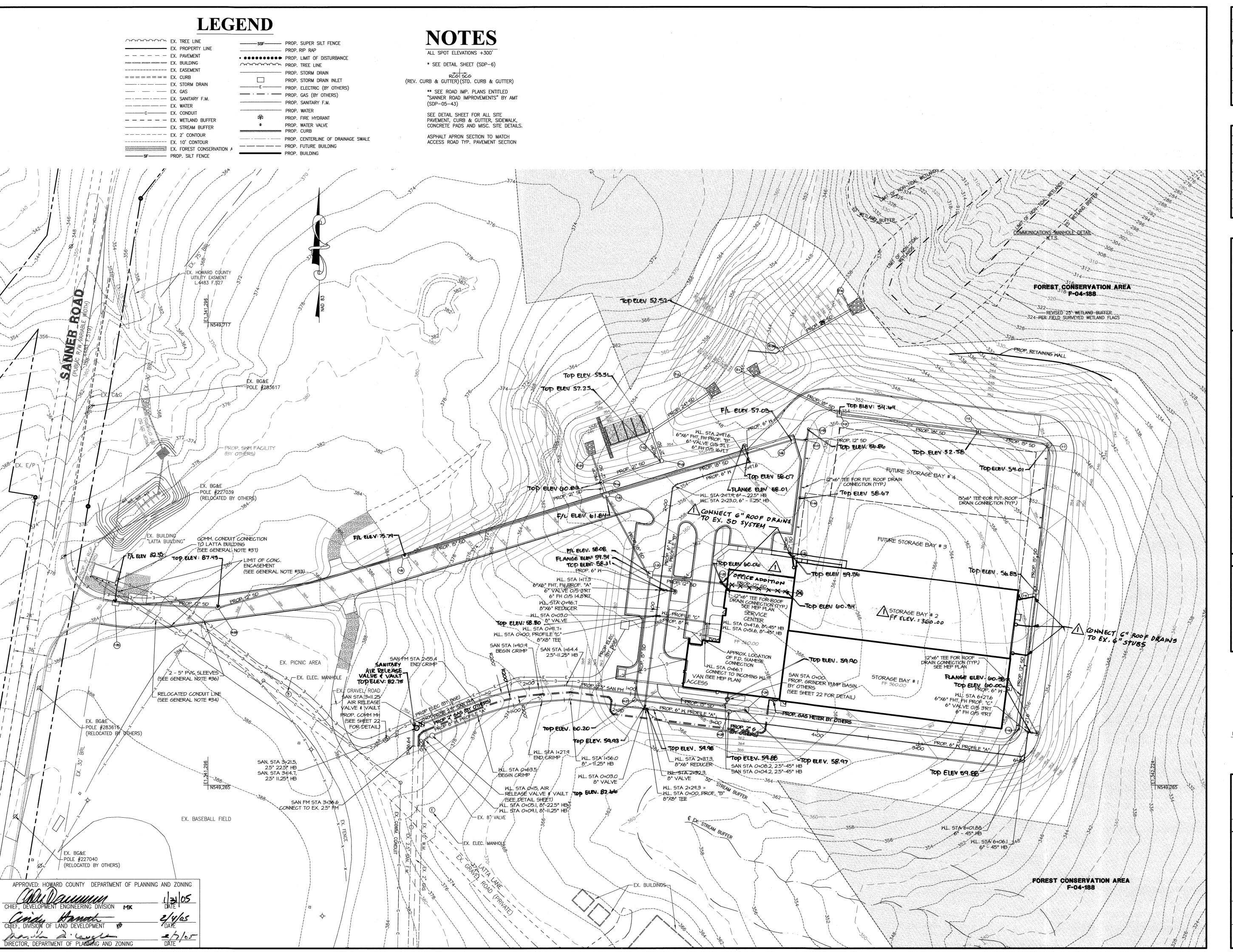


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SHEET: 4 OF 23

SCALE: 1"= 40'

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	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

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TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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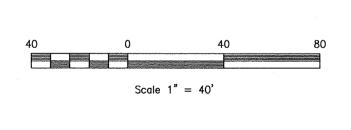


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14280 PARK CENTER DRIVE, SUITE A
LAUREL, MARYLAND 20707

(410) 792-9792 or (301) 776-1690

FAX (410) 792-7395

UTILITY PLAN

FOR REVISION A JOB NO.: 13685

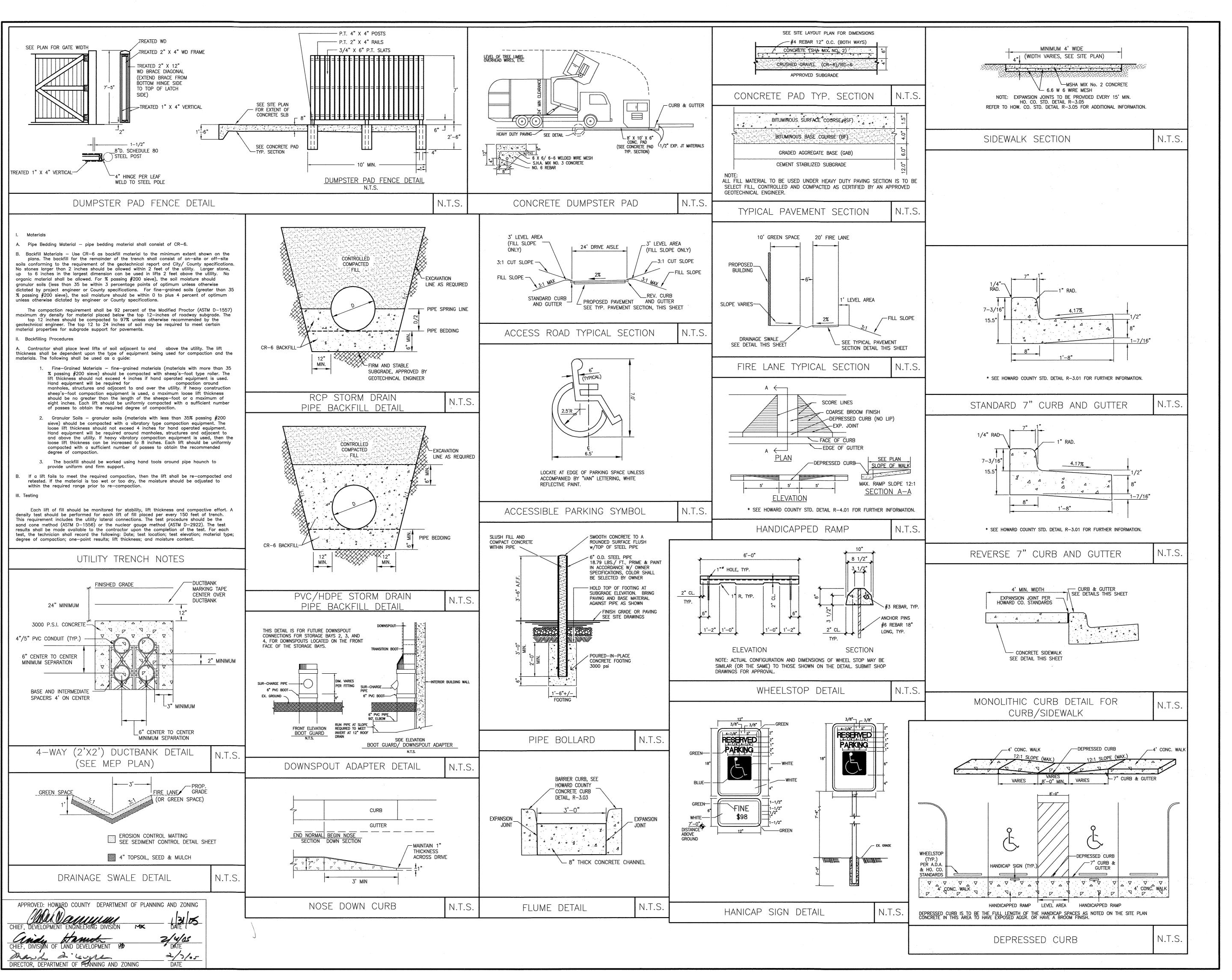


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1-17-05 SHEET: 5 OF 23

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REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
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TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		

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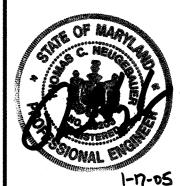
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SITE DETAILS



JOB NO.: 13685

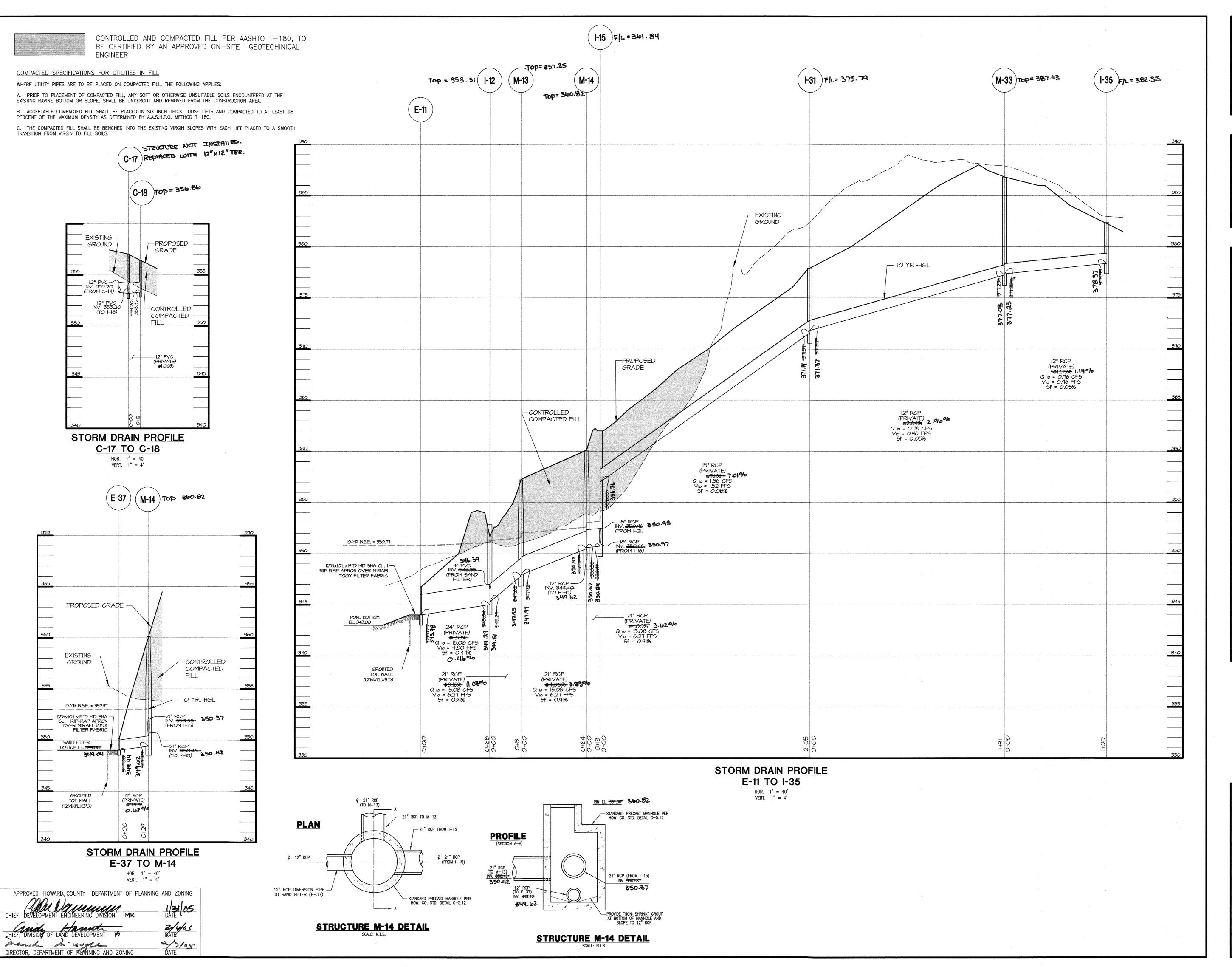
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SHEET: 6 OF **23**

SCALE: AS NOTED

SCALE: AS NOTED

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	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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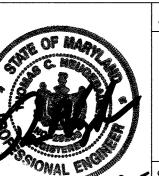
MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A

LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

STORM DRAIN PROFILES



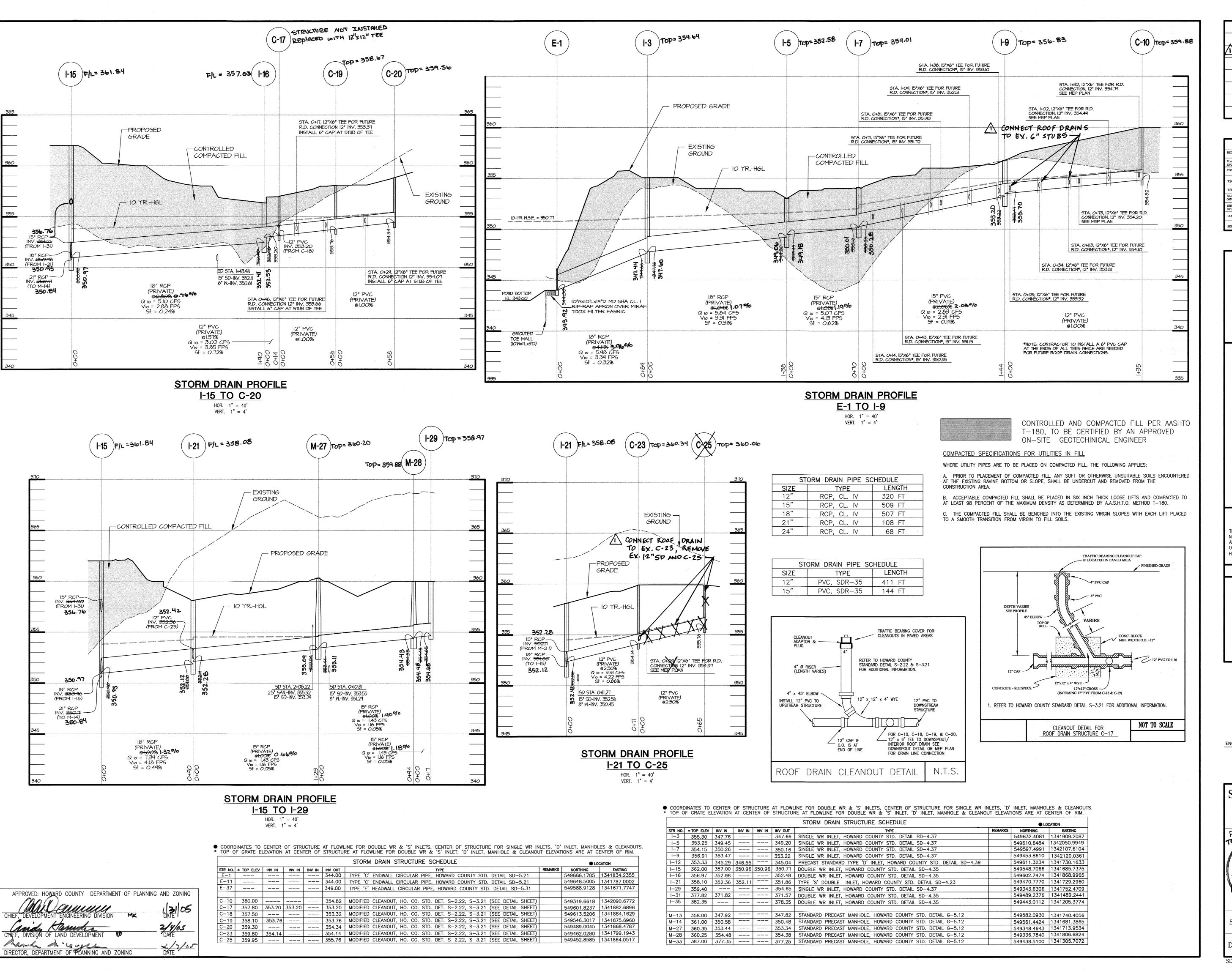
JOB NO.: 13685

SDP-7

1-17-05 SHEET: 7 OF 23

SCALE: 1"= 40'

DES: BCC CHECK: TCN DATE: 01-17-05



REVISIONS

Asbuilt into Added 03/06

REDLINE REVISION#/ 5/7/21

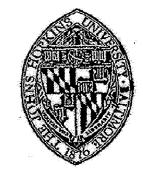
	APPROVAL	S	
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PLANT FACILITIES CHIEF ENGINEER			
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TSF GROUP			
SAFETY OFFICER		· · · · · · · · · · · · · · · · · · ·	
DIRECTORS OFFICE			
COORDINATOR			

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JOB NO.: 13685

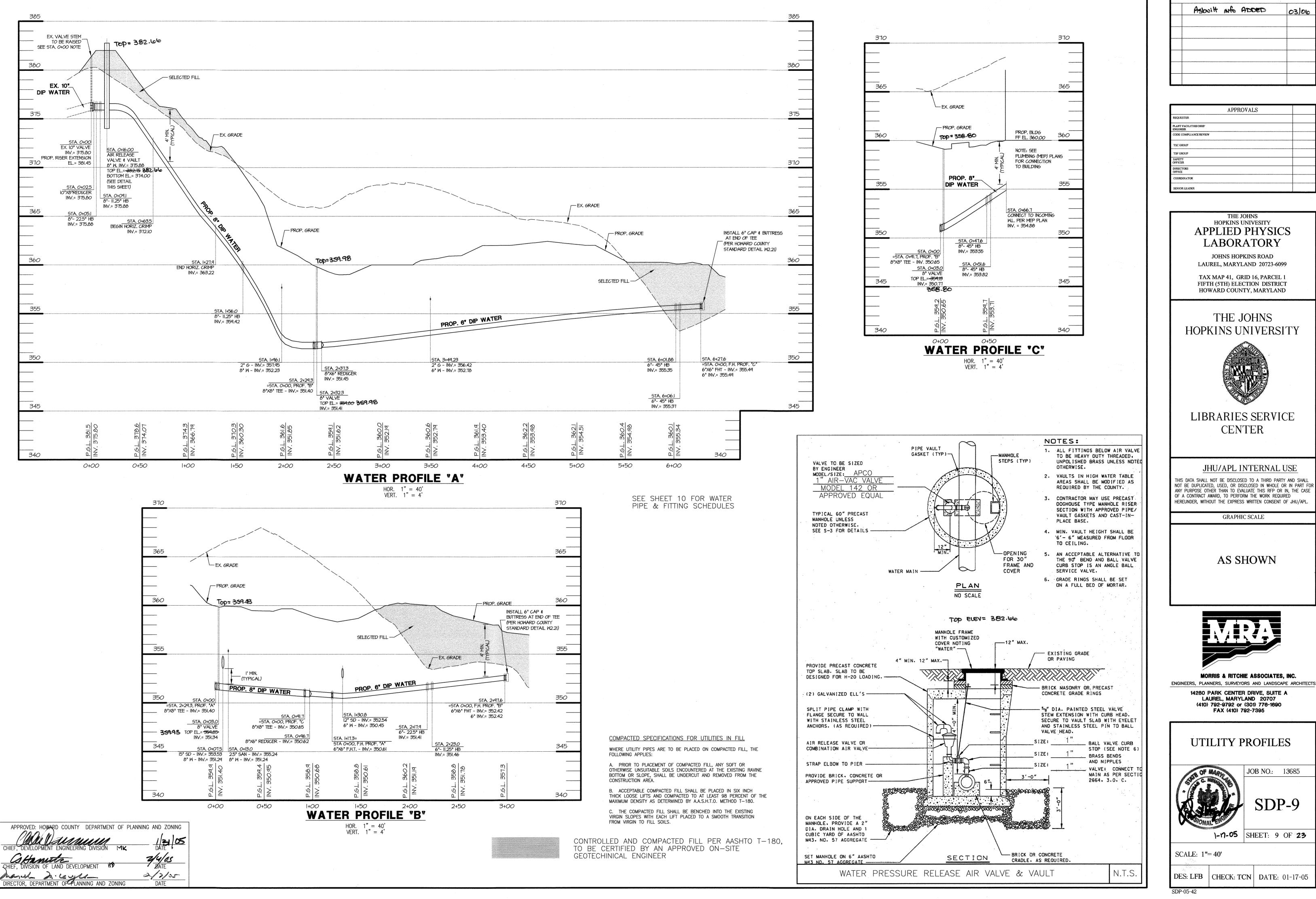
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1-17-05 SHEET: 8 OF 23

: 1"= 40'

SCALE: 1"= 40'

DES: BCC | CHECK: TCN | DATE: 01-17-05



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	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER	<i>*</i>	
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TSC GROUP		
TSF GROUP		
SAFETY OFFICER	, '	
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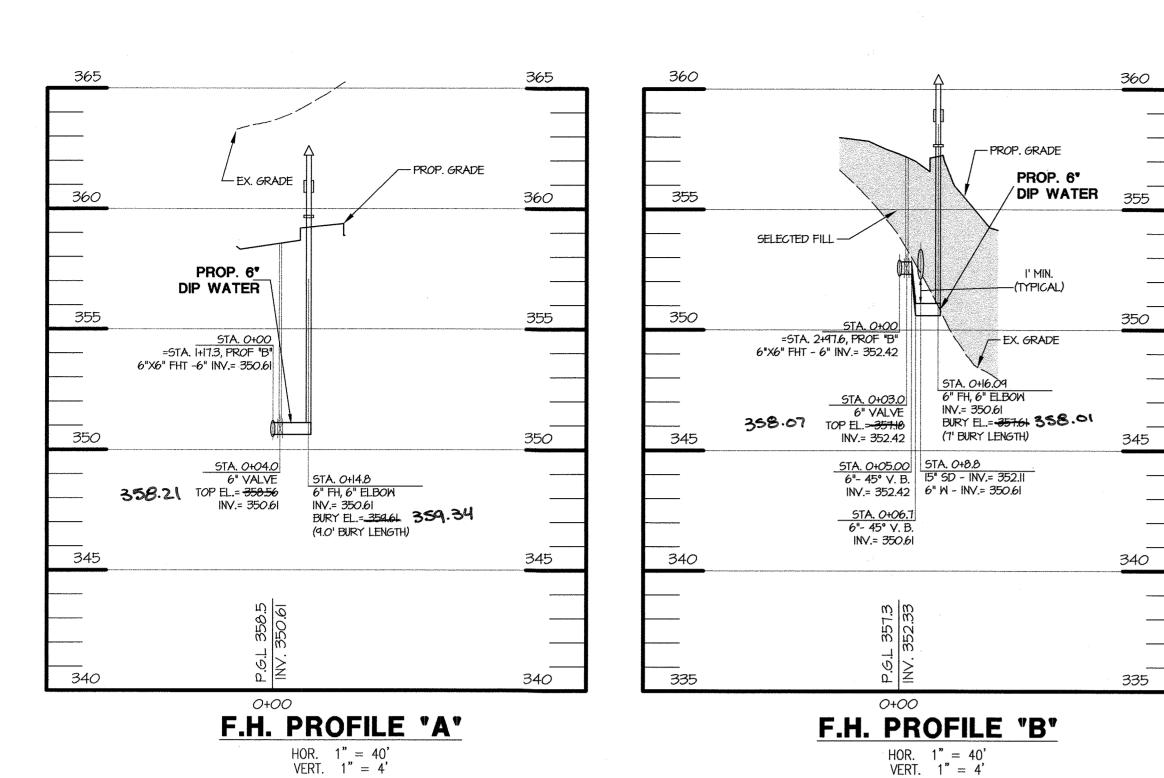
UTILITY PROFILES

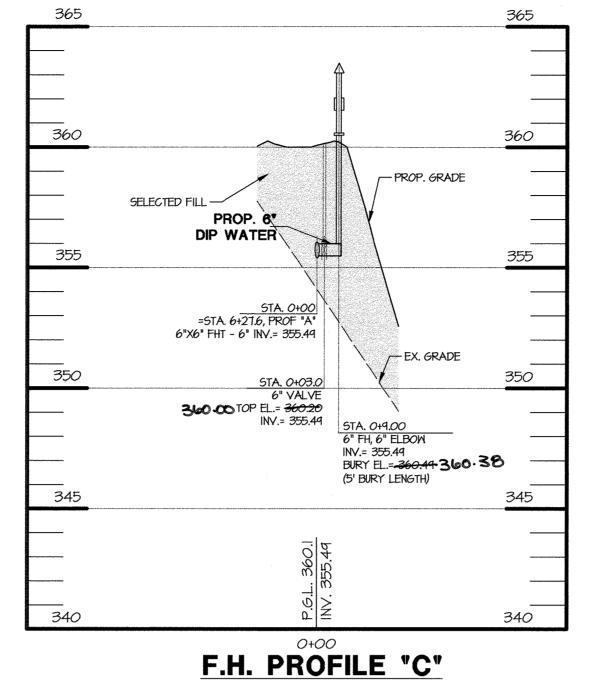


JOB NO.: 13685

1-17-05 | SHEET: 9 OF 23

SCALE: 1"= 40'





P.6-1	340	B. ACCEPTABLE COMPACTED FILL SHALL BE PLACED IN SIX INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 98 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O. METHOD T-180.
PROFILE "C"		C. THE COMPACTED FILL SHALL BE BENCHED INTO THE EXISTING VIRGIN SLOPES WITH EACH LIFT PLACED TO A SMOOTH TRANSITION FROM VIRGIN TO FILL SOILS.
HOR. 1" = 40' VERT. 1" = 4'		
		CONTROLLED AND COMPA

			PIPE SCHE	DULE ((PRIVA	TE)	
	 360		SIZE	TYPE		LE	NGTH
~	500		2.5"	PVC SDR	21	3	46 LF
PROP. GRADE							
	-						
		Г	101000				
	 355		SANITARY PI	PE FITTINGS	SCHED	ULE (PRIVATE)
				TYPE			QUANTITY
				2.5"-45° H	В		2
1		2.5"-22.5° HB					1
1			2	.5"-11.25°	НВ		2
- EX. GRADE				2.5"-45° VI	3		2
	35 <i>0</i>		AIR RELE	EASE VALVE	& VAU	LT	1

WATER PIPE FITTINGS SCHEDULE (F	RIVATE)
TYPE	QUANTITY
6" CAP & BUTTRESS	2
6" VALVE	3
8" VALVE	3
6" FIRE HYDRANTS	3
8"X8" TEE	2 3
6"X6" F.H.T.	3
8"-45° HB	2
8"-22.5° HB	1
8"-11.25° HB	2
6"-45° HB	2
6"-22.5° HB	1
6"-11.25° HB	1
6"-45° VB	2
10"X8" REDUCER	1
8"X6" REDUCER	2
AIR RELEASE VALVE & VAULT	1

WATER PIPE SCHEDULE (PRIVATE)

TYPE

CLASS 50 DIP

CLASS 50 DIP

CLASS 50 DIP

SIZE

LENGTH

403 LF

622 LF

2 LF

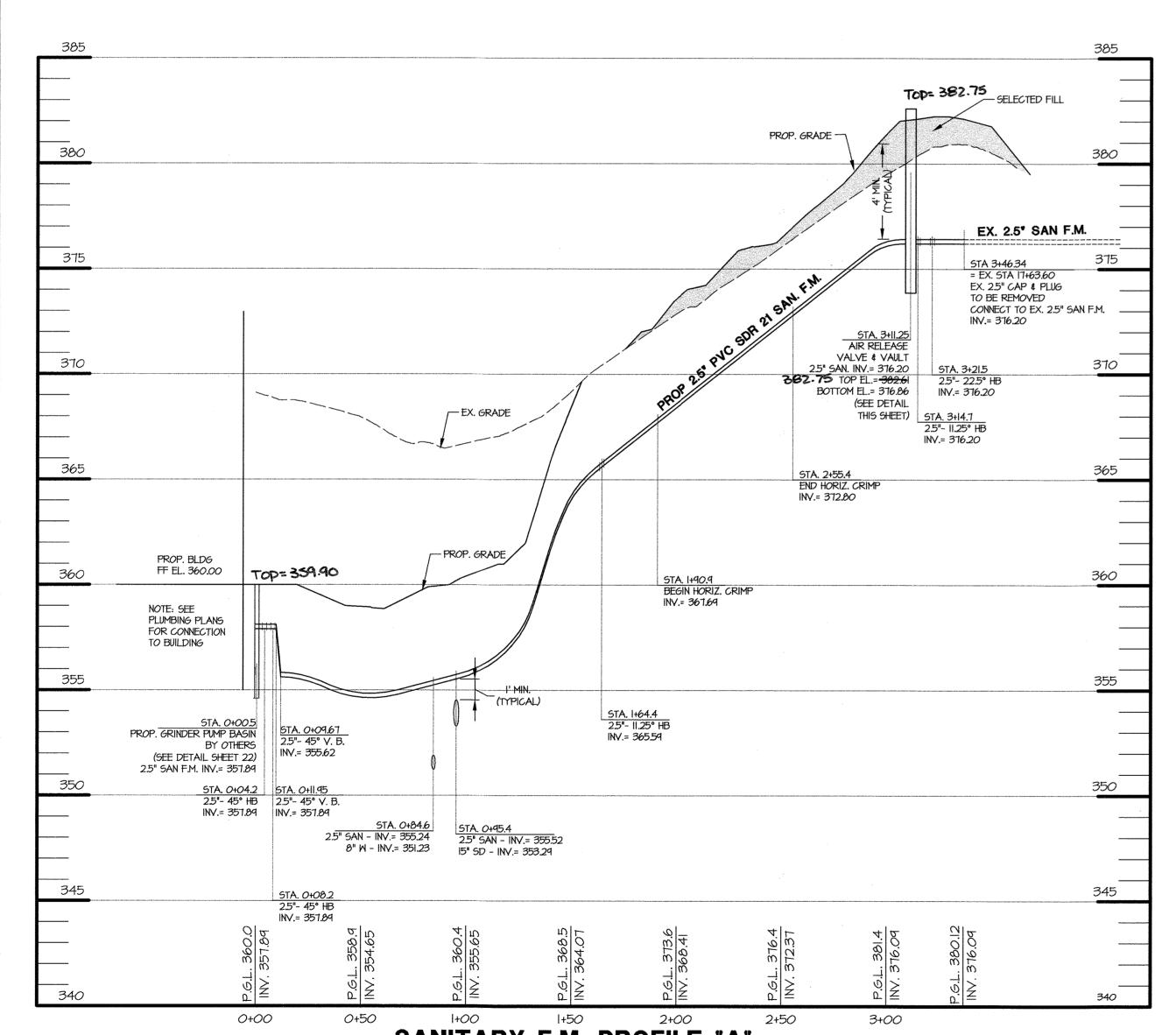
TYPE	QUANTITY	
6" CAP & BUTTRESS	2	
6" VALVE	3 3 3	
8" VALVE	3	
6" FIRE HYDRANTS	3	
8"X8" TEE	3 2	
6"X6" F.H.T.	3	
8"-45° HB	2	
8"-22.5° HB	1	
8"-11.25° HB	2	
6"-45° HB	2	
6"-22.5° HB	1	
6"-11.25° HB 6"-45° VB	1	
	2	
10"X8" REDUCER	1	
8"X6" REDUCER	2	
AIR RELEASE VALVE & VAULT	1	
· .		

COMPACTED SPECIFICATIONS FOR UTILITIES IN FILL

WHERE UTILITY PIPES ARE TO BE PLACED ON COMPACTED FILL, THE FOLLOWING APPLIES:

A. PRIOR TO PLACEMENT OF COMPACTED FILL, ANY SOFT OR OTHERWISE UNSUITABLE SOILS ENCOUNTERED AT THE EXISTING RAVINE BOTTOM OR SLOPE, SHALL BE UNDERCUT AND REMOVED FROM THE CONSTRUCTION AREA.

> CONTROLLED AND COMPACTED FILL PER AASHTO T-180, TO BE CERTIFIED BY AN APPROVED ON-SITE GEOTECHINICAL ENGINEER



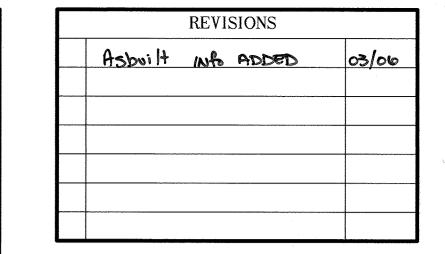
SANITARY F.M. PROFILE "A" HOR. 1" = 40'VERT. 1" = 4'APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

2/4/05 DATE

2/1/5

DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

	\sim		NOTES:
VALVE TO BE SIZED BY ENGINEER	PIPE VAULT GASKET (TYP)	MANHOLE STEPS (TYP)	1. ALL FITTINGS BELOW AIR VALVE TO BE HEAVY DUTY THREADED. UNPOLISHED BRASS UNLESS NOTE OTHERWISE.
MODEL/SIZE: APCO 2" AIR-VAC VALVE MODEL 400 OR -			2. VAULTS IN HIGH WATER TABLE AREAS SHALL BE MODIFIED AS REQUIRED BY THE COUNTY.
APPROVED EQUAL TYPICAL 60" PRECAST MANHOLE UNLESS			3. CONTRACTOR MAY USE PRECAST DOGHOUSE TYPE MANHOLE RISER SECTION WITH APPROVED PIPE/ VAULT GASKETS AND CAST-IN-PLACE BASE.
NOTED OTHERWISE. SEE S-3 FOR DETAILS	12"		4. MIN. VAULT HEIGHT SHALL BE 6'- 6" MEASURED FROM FLOOR TO CEILING.
WATER	MAIN.	OPENING FOR 30" FRAME AND COVER	5. AN ACCEPTABLE ALTERNATIVE TO THE 90 BEND AND BALL VALVE CURB STOP IS AN ANGLE BALL SERVICE VALVE.
	PLAN		6. GRADE RINGS SHALL BE SET ON A FULL BED OF MORTAR.
, A	NO SCAL	Ē	
	TOP	ELEV. 382.75	
	MANHOLE FRAME WITH CUSTOMIZED COVER NOTING "WATER"	12" MAX.	EVICTING CDARG
PROVIDE PRECAST CONCRETE	MIN. 12" MAX.		OR PAVING
TOP SLAB. SLAB TO BE DESIGNED FOR H-20 LOADING.			
(2) GALVANIZED ELL'S			- BRICK MASONRY OR, PRECAST CONCRETE GRADE RINGS
SPLIT PIPE CLAMP WITH FLANGE SECURE TO WALL WITH STAINLESS STEEL ANCHORS. (AS REQUIRED)	4'-0" MIN		- 5/8" DIA. PAINTED STEEL VALVE STEM EXTENSION WITH CURB HEAD. SECURE TO VAULT SLAB WITH EYELET AND STAINLESS STEEL PIN TO BALL VALVE HEAD.
AIR RELEASE VALVE OR COMBINATION AIR VALVE		; ::	SIZE: 2" BALL VALVE CURB STOP (SEE NOTE 6) BRASS BENDS
STRAP ELBOW TO PIER			SIZE: 2" AND NIPPLES VALVE: CONNECT TO
PROVIDE BRICK, CONCRETE OR APPROVED PIPE SUPPORT	58.684.688.68	6", 3'-0"	MAIN AS PER SECTION 2664. 3.0. C.
	\$65 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	3, -0, 28, 28, 28, 28, 28, 28, 28, 28, 28, 28
ON EACH SIDE OF THE MANHOLE, PROVIDE A 2" DIA, DRAIN HOLE AND 1 CUBIC YARD OF AASHTO M43, NO. 57 AGGREGATE			
		\ .	



APPROVA	LS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER	And the second of the second or seco	
DIRECTORS OFFICE		
COORDINATOR		

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UTILITY PROFILES



JOB NO.: 13685

SDP-10

1-17-05 | SHEET: 10 OF 23

SCALE: 1"= 40'

DES: LFB | CHECK: TCN | DATE: 01-17-05

INFILTRATION TRENCH GENERAL NOTES AND SPECIFICATIONS AN INFILTRATION TRENCH MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AERA TO THE INFILTRATION TRENCH HAS RECEIVED 1. HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE PROPOSED LOCATION OF THE INFILTRATION TRENCH TO MINIMIZE 2. EXCAVATE THE INFILTRATION TRENCH TO THE DESIGN DIMENSIONS. EXCAVATED MATERIALS SHALL BE PLACED AWAY FROM THE TRENCH SIDES TO ENHANCE TRENCH WALL STABILITY. LARGE TREE ROOTS MUST BE TRIMMED FLUSH WITH THE TRENCH SIDES IN ORDER TO PREVENT FABRIC PUNCTURING OR TEARING OF THE FILTER FABRIC DURING SUBSEQUENT INSTALLATION PROCEDURES. THE SIDE WALLS OF THE TRENCH SHALL BE ROUGHENED WHERE SHEARED AND SEALED BY HEAVY EQUIPMENT. 3. A CLASS "C" GEOTEXTILE OR BETTER (SEE SECTION 24.0, MATERIAL SPECIFICATIONS, 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, MDE, 1994) SHALL INTERFACE BETWEEN THE TRENCH SIDE WALLS AND BETWEEN STONE RESERVOIR AND GRAVEL FILTER LAYERS. A PARTIAL LIST OF NON-WOVEN FABRICS THAT MEET THE CLASS "C" CRITERIA FOLLOWS. ANY ALTERNATIVE FILTER FABRIC MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY. AMOCO 4552 CARTHAGE FX-80S GEOLON N70 MIRAFI 180-N WEBTEC NO7 THE WIDTH OF GEOTEXTILE MUST INCLUDE SUFFICIENT MATERIAL TO CONFORM THE TRENCH PERIMETER IRREGULARITIES AND FOR A 6-INCH MINIMUM TOP OVERLAP. THE FILTER FABRIC SHALL BE TUCKED UNDER THE SAND LAYER ON THE BOTTOM OF THE INFILTRATION TRENCH FOR A DISTANCE OF 6 TO 12 INCHES. STONES OR OTHER ANCHORING OBJECTS SHOULD BE PLACED ON THE FABRIC AT THE EDGE OF THE TRENCH TO KEEP THE TRENCH OPEN DURING WINDY PERIODS. WHEN OVERLAPS ARE REQUIRED BETWEEN ROLLS, THE UPHILL ROLL SHOULD LAP A MINIMUM OF 2 FEET OVER THE DOWNHILL ROLL IN ORDER TO PROVIDE A SHINGLED EFFECT. 4. IF A 6" SAND FILTER LAYER IS PLACED ON THE BOTTOM OF THE INFILTRATION TRENCH, THE SAND FOR THE FILTRATION TRENCH SHALL BE WASHED AND MEET AASHTO-M-43, SIZE NO. 9 OR NO. 10. ANY ALTERNATIVE SAND GRADATION MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY. 5. THE STONE AGGREGATE SHOULD BE PLACED IN A MAXIMUM LOOSE LIFT THICKNESS OF 12 INCHES. THE GRAVEL (ROUNDED "BANK RUN" GRAVEL IS PREFERRED) FOR THE INFILTRATION TRENCH SHALL BE WASHED AND MEET ONE OF THE FOLLOWING AASHTO-M-43, SIZE NO. 2 OR NO. 3. 6. FOLLOWING THE STONE AGGREGATE PLACEMENT, THE FILTER FABRIC SHALL BE FOLDED OVER THE STONE AGGREGATE TO FORM A 6-INCH MINIMUM LONGITUDINAL LAP. THE DESIRED FILL SOIL OR STONE AGGREGATE SHALL BE PLACED OVER THE LAP AT SUFFICIENT INTERVALS TO MAINTAIN THE LAP DURING SUBSEQUENT BACKFILLING. 7. CARE SHALL BE EXERCISED TO PREVENT NATURAL OR FILL SOILS FROM INTERMIXING WITH THE STONE AGGREGATE. ALL CONTAMINATED STONE AGGREGATE SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED STONE AGGREGATE. 8. VOIDS MAY OCCUR BETWEEN FABRIC AND THE EXCAVATION SIDES SHALL BE AVOIDED. REMOVING BOULDERS OR OTHER OBSTACLES FROM THE TRENCH WALLS IS ONE SOURCE OF SUCH VOIDS. THEREFORE, NATURAL SOILS SHOULD BE PLACED IN THOSE VOIDS AT THE MOST CONVENIENT TIME DURING CONSTRUCTION TO ENSURE FABRIC CONFORMITY TO THE EXCAVATION SIDES. 9. VERTICALLY EXCAVATED WALLS MAY BE DIFFICULT TO MAINTAIN IN AREAS WHERE SOIL MOISTURE IS HIGH OR WHERE SOFT COHESIVE OR COHESIONLESS SOILS ARE DOMINANT. THESE CONDITIONS MAY REQUIRE LAYING BACK OF THE SIDE SLOPES TO MAINTAIN STABILITY. 10. PVC DISTRIBUTION PIPES SHALL BE SCHEDULE 40 AND MEET ASTM-D-1785. ALL FITTINGS SHALL MEET ASTM-D-2729. PERFORATIONS SHALL BE 3/8" IN DIAMETER, A PERFORATED PIPE SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT FO THE INFILTRATION TRENCH WALL. THE END OF THE PVC PIPE SHALL BE CAPPED. NOTE: PVC PIPE WITH A WALL THICKNESS CLASSIFICATION OF SDR-35 MEETING ASTM-D-3034 IS AN ACCEPTABLE SUBSTITUTE FOR THE SCHEDULE 40 PIPE. 11. THE OBSERVATION WELL IS TO CONSIST OF 6-INCH DIAMETER PERFORATED PVC SCHEDULE 40 PIPE (M278 OR F758, TYPE PS 28) WITH A CAP SET FLUSH TO FINAL PAVED SURFACE AND IS TO BE LOCATED NEAR THE LONGITUDINAL CENTER OF THE INFILTRATION TRENCH. THE PIPE SHALL HAVE A PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING THE CAP. THE SCREW TOP LID SHALL BE A CLEANOUT WITH A LOCKING MECHANISM OR SPECIAL BOLT TO DISCOURAGE VANDALISM. THE DEPTH TO THE INVERT SHALL BE MARKED ON THE LID. THE PIPE SHALL BE PLACED VERTICALLY WITHIN THE GRAVEL PORTION OF THE INFILTRATION TRENCH AND A CAP PROVIDED AT THE BOTTOM OF THE PIPE. THE BOTTOM OF THE CAP SHALL REST ON THE INFILTRATION TRENCH BOTTOM. 12. CORRUGATED METAL DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, AND SHALL BE ALUMINIZED IN ACCORDANCE WITH AASHTO-M-274. ALUMINIZED PIPE IN CONTACT WITH CONCRETE SHALL BE COATED WITH AN INERT COMPOUND CAPABLE OF PREVENTING THE DELETERIOUS EFFECT OF ALUMINUM ON THE CONCRETE. PERFORATED DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, CLASS 2 AND SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT OF THE INFILTRATION TRENCH WALL. AN ALUMINIZED METAL PLATE SHALL BE WELDED 13. IF A DISTRIBUTION STRUCTURE WITH A WET WELL IS USED, A 4-INCH DRAIN PIPE SHALL BE PROVIDED AT OPPOSITE ENDS OF THE INFILTRATION TRENCH DISTRIBUTION STRUCTURE. TWO (2) CUBIC FEET OF POROUS BACKFILL MEETING AASHTO-M-43, SIZE NO. 57 SHALL BE PROVIDED AT EACH 14. IF A DISTRIBUTION STRUCTURE IS USED, THE MANHOLE COVER SHALL BE BOLTED TO THE FRAME. SAND FILTER SPECIFICATIONS 1. MATERIAL SPECIFICATIONS FOR SAND FILTER THE ALLOWABLE MATERIALS FOR SAND FILTER CONSTRUCTION ARE DETAILED IN TABLE B.3.1. (SEE PAGE SDP-3) 2. SAND FILTER TESTING SPECIFICATIONS UNDERGROUND SAND FILTERS, FACILITIES WITHIN SENSITIVE GROUNDWATER AQUIFERS, AND FILTERS DESIGNED TO SERVE URBAN HOT SPOTS ARE TO BE TESTED FOR WATER TIGHTNESS PRIOR TO PLACEMENT OF FILTER MEDIA. ENTRANCES AND EXITS SHOULD BE PLUGGED AND THE SYSTEM COMPLETELY FILLED WITH WATER TO DEMONSTRATE WATER TIGHTNESS. WATER TIGHTNESS MEANS NO LEAKAGE FOR A PERIOD OF 8 HOURS. ALL OVERFLOW WEIRS, MULTIPLE ORIFICES AND FLOW DISTRIBUTION SLOTS ARE TO BE FIELD-TESTED TO VERIFY ADEQUATE DISTRIBUTION OF FLOWS. 3. SAND FILTER CONSTRUCTION SPECIFICATIONS PROVIDE SUFFICIENT MAINTENANCE ACCESS (I.E., 12-FOOT-WIDE ROAD WITH LEGALLY RECORDED EASEMENT). VEGETATED ACCESS SLOPES ARE TO BE

MAXIMUM OF 10%; GRAVEL SLOPES TO 15%; PAVED SLOPES TO 25%. ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED.

ALL UNDERGROUND SAND FILTERS SHOULD BE CLEARLY DELINEATED WITH SIGNS SO THAT THEY MAY BE LOCATED WHEN MAINTENANCE IS DUE. SURFACE SAND FILTERS MAY BE PLANTED WITH APPROPRIATE GRASSES. SEE APPENDIX A.

"POCKET" SAND FILTERS (AND RESIDENTIAL BIORETENTION FACILITIES TREATING AREAS LARGER THAN AN ACRE) SHALL BE SIZED WITH A STONE "WINDOW" THAT COVERS APPROXIMATELY 10% OF THE FILTER AREA. THIS "WINDOW" SHALL BE FILLED PEA GRAVEL (3/4 INCH STONE)

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMAWATER FILTRATION SYSTEMS

1. THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.

2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE A YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS 3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF 3 (THREE) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.

4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATION AND AS NEEDED.

5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOOS ASA IT IS NOTICED.

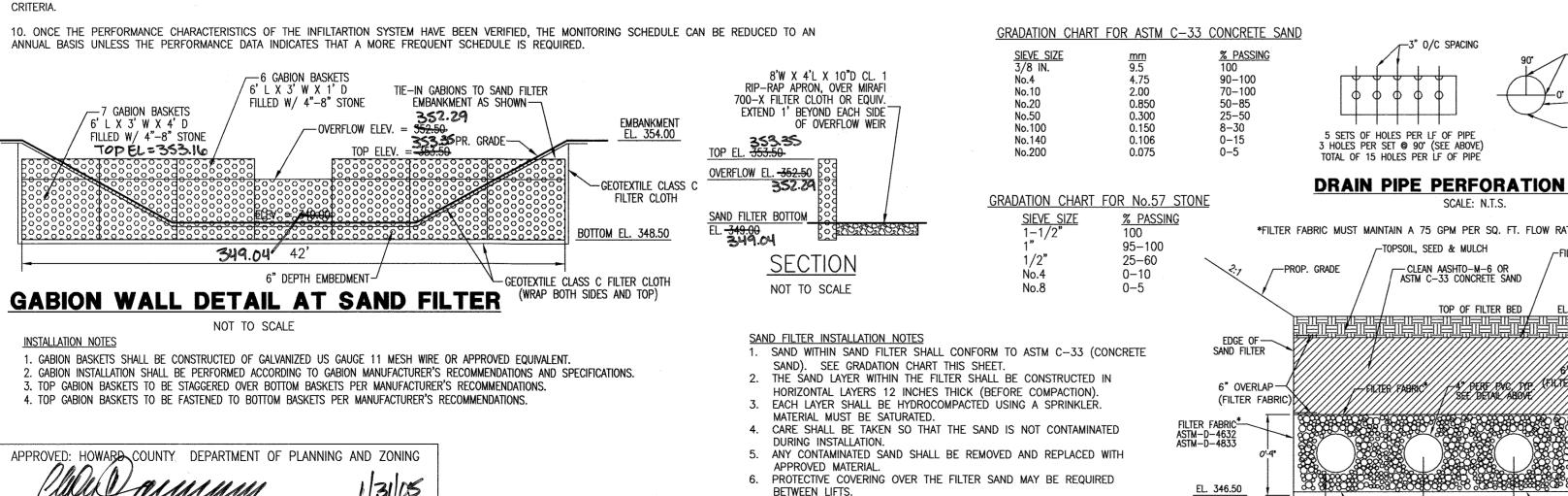
6. REMOVE SILT WHEN IT EXCEEDS 4 (FOUR) INCHES DEEP IN THE FOREBAY.

DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

7. WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS, THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.

8. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH FACILITY DRAINS.

9. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE



CONSTRUCTION.

CLOTH IS NOT TORN OR PUNCTURED DURING CONSTRUCTION.

8. A REGISTERED PROFESSIONAL ENGINEER MUST BE PRESENT DURING INSTALLATION AND MUST SUPERVISE AND INSPECT SAND FILTER DURING

GRAVEL D=9"** (SEE TABLE THIS SHEET) 21" RCP (IN) INV. 345.29 344.51 345 345 345 40LF OF 4" PERF. UNDERDRAIN - 24" RCP (OUT), INV. 345.04 90.50%, SEE DETAIL THIS SHEE -- BOTTOM OF GRAVEL EL. 346.50 [4"x4" TEE TO 4" LATERAL, TYP. - FILTER FABRIC, ALL SIDES, \$EE NOTE #3 **ReV STORAGE** 340 340 D=75', SEE NOTE #5 BOTTOM OF STONE EL. 334,25 PRETREATMENT FORBAY SECTION BOTTOM OF SAND EL. 338.25 HOR. 1" = 40VERT. 1" = 4-- I' CLEAN SAND, SEE NOTE #4 OBSERVATION WELL, SEE NOTE #11-SAND FILTER PROFILE HOR. 1" = 40'VERT. 1" = 4-1/4" DIA. PERFORATIONS DRILLED THROUGH PIPE (SCH. 40 OR SDR 3.5) DRAIN PIPE PERFORATION DETAIL *FILTER FABRIC MUST MAINTAIN A 75 GPM PER SQ. FT. FLOW RATE. PROP. GRADE-7. CARE SHOULD BE TAKEN DURING INSTALLATION SO THAT THE FILTER (SEE GRADATION CHART)

I-I2 TO BE A PRECAST STRUCTURE WITH 3 WEIR OPENINGS PLACED AT THE FRONT AND SIDES OF

PRECAST STANDARD TYPE "D" INLET (1-12)

— PROP. GABION WALL (SEE DETAIL THIS SHEET)

(SEE TABLE THIS SHEET)

3'L x 20'W PEA GRAVEL WINDOW*

HOW, CO. STD. DETAIL SD-4.39

— EX. GROUND

OF WEIR OPENINGS = 3 352.68

353.51 TOP EL. 353.33, THROAT EL. 352.50

THE INLET. BACK OF INLET (AGAINST FILL SLOPE) WILL NOT HAVE A WEIR OPENING.

PRETREATMENT FOREBAY

PROP. GRADE -

349.15 4" PVC CLEANOUT.

TOP EL. 344.25, SEE NOTE #10

3" TOPSOIL, SEE TOPSOIL SPECS.

SAND FILTER FILTER BED DETAIL

ON SEDIMENT CONTROL DETAIL SHEET

FILTER MEDIA D=1.5** (SEE TABLE THIS SHEET)-

10-YR EL. 352.97

BOTTOM EL. 349.00

360

350

—EX. GROUND

PRETREATMENT -

BOTTOM EL. 349.00

20' BOTTOM

WIDTH

350

- 10-YR EL. 352.97

-PROP. GRADE

352.68

IA	BLE B.3.1 MATERIAL	SPECIFICA	TIONS FOR SAND FILTERS
MATERIAL	SPECIFICATION/TEST METHOD	SIZE	NOTES
PEA GRAVEL	AASHTO-M-43	0.25" - 0.50"	WASHED, RIVER RUN, ROUND DIAMETER
SAND	CLEAN AASHTO-M-6 OR ASTM-C-33 CONCRETE SAND, SEE GRADATION CHART	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
PEAT	ASH CONTENT: <15% PH RANGE: 5.2 TO 4.9 LOOSE BULK DENSITY 0.12 TO 0.15 G/CC	N/A	THE MATERIAL MUST BE REED-SDGE HEMIC PEAT, SHREDDED, UNCOMPACTED, UNIFORM, AND CLEAN.
LEAF COMPOST		N/A	
UNDERDRAIN GRAVEL	AASHTO-M-43	0.375" TO 1.50"	DOUBLE WASHED NO. 57 STONE, SEE GRADATION CHART
GEOTEXTILE FABRIC (IF REQUIRED)	ASTM-D-4833 (PUNCTURE STRENGTH- 125 LB.) ASTM-D-4632 (TENSILE STRENGTH- 300 LB.)	0.08" THICK EQUIVALENT OPENING SIZE OF #80 SIEVE	MUST MAINTAIN 75 GPM PER SQ. FT. FLOW RATE. NOTE: A 4" PEA GRAVEL LAYER MAY BE SUBSTITUTED FOR GEOTEXTILES MEANT TO "SEPARATE" SAND FILTER LAYERS. SEE INFILTRATION TRENCH GENERAL NOTE 3.
IMPERMEABLE LINER (IF REQUIRED)	ASTM-D-4833 (THICKNESS) ASTM-D-412 (TENSILE STRENGTH 1,100 LB.,ELONGATION 200%) ASTM-D-624 (TEAR RESISTANCE - 150 LB./IN) ASTM-D-471 (WATER ADSORPTION: +8 TO -2% MASS)	30 MIL THICKNESS	LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD BE USED TO PROTECT THE LINER FROM PUNCTURE.
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO-M- 278	4"-6" RIGID SCH. 40 PVC OR SDR35	1/4" PERF. © 3" ON CENTER, 3 HOLES PER ROW. SEE DRAIN PIPE PERFORATION DETAIL; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. SEE INFILTRATION GENERAL NOTE 10.
CONCRETE (CAST-IN-PLACE)	MSHA STANDARDS AND SPECS. SECTION 902, MIX NO. 3, F'c =3500 PSI, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON SITE TESTING OF POURED—IN—PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST—IN—PLACE OR PRE—CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND.
CONCRETE (PRECAST)	PER PRE-CAST MANUFACTURER	N/A	SEE ABOVE NOTE
NON-REBAR STEEL	ASTM A-36	N/A	STRUCTURAL STEEL TO BE HOT-DIPPED GALVANIZED ASTM-A-123

335

335

END/CORE TRENCH (SEE PROFILE SHEET 12) PO & DAM STA 2+76.31 N 549.744.85 DEWATERING DEVICE APROP, 15', "NO MOODY BURFER! YUNG FILTER DIAPHRAGM CURVAELTABLE PT & DAM STA 3+21.89 RT & DAM STA 2+08.60 CHORD BEARING 562°17'29"E N66°56'58,"E N 549,742.87 N.549 69185 E 1341806.54 5 1841,887.67--324-PER_FIELD_SURVEYED_W & DAM STA 1+05.4T BEGIN CORE TRENCH _N 549,624.45 E 1,341,827.75 PROP. RETAINING WALL N 549,628.66 N74°42'08"E PC & DAM STA O+11.48 N59°11'49"E N 549,617.82 E 1341,724.18 5592 549,600 N 549,656.30 E 1341,881.18 © DAM STA 14.38 13418175 FUTURE STORAGE BAY # 4 P. DAM STA 0+40.00 1.549,605.77 1,341,765.12-

> STORMWATER MANAGEMENT PLAN (PRIVATE FACILITY) NOTE: POND BOTTOM FROM ELEVATION 348.00 & BELOW TO BE LINED WITH A 3" CLAY SCALE: 1" = 40LINER, COVERED BY 3" OF TOPSOIL, SEED, & MULCH. CLAY MATERIAL TO MATCH THAT

> > CONCRETE TYPE 'C ENDWALL, CIRCULAR PIPE

HOW. CO. STD. DETAIL SD-5.21

* WRAP ALL SIDES OF PEA GRAVEL

/- 68' OF 24" RCP @ +53% O. 4690

WINDOW EXPOSED TO SAND MEDIA AND

SEE SHEET 9 FOR SWM POND DETAILS

- 24" RCP, INV. 344.00

RIP-RAP APRON. SEE

** FILTER MEDIA TO BE CONCRETE SAND. GRAVEL TO BE NO. 5T STONE. SEE TABLE B.3.I.

STORM DRAIN PROFILES

360 360 360 -EX. GROUND * WRAP ALL SIDES OF WINDOW 355 EXPOSED TO SAND MEDIA AND 355 TOPSOIL WITH FILTER FABRIC -TOP EL.354.00 **353.87** 10-YR EL. 352.9 352.68 ---- 3'L x 20'W PEA GRAVEL WINDOW* (SEE TABLE THIS SHEET) -PROP. GRADE 3" TOPSOIL SEE TOPSOIL SPECS BOTTOM EL. 344.00 349.04 SEDIMENT CONTROL DETAIL SHEE **FILTER MEDIA D=1.5' (SEE TABLE THIS SHEET) **GRAVEL D=9 BOTTOM OF GRAVEL EL. 346.50 (SEE TABLE THIS SHEET) 4" CAP, I' FROM EDGE OF FILTER, TYPICAL FOR ALL LATERALS 345 345 18LF OF 4" PERF, UNDERDRAIN @0.50%, SEE DETAIL THIS SHEET - 4"x4" TEE TO 4" OUTFALL PIPE FILTER FABRIC, ALL SIDES, **ReV STORAGE** D=7.5', SEE NOTE # 340 OBSERVATION WELL, BOTTOM OF STONE EL. 334.25 SEE NOTE #11 BOTTOM OF SAND EL. 338,25

USED IN CORE TRENCH AND COMPACTED PER MD-378 NOTES SHOWN ON SHEET 14.

** FILTER MEDIA TO BE CONCRETE SAND. GRAVEL TO BE NO. 57 STONE. SEE TABLE B.3.I. SAND FILTER SECTION

HOR. 1" = 40'

VERT. 1" = 4

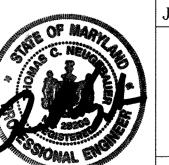
-- I' CLEAN SAND SEE NOTE #4

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14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690

SWM PLAN



SCALE: 1"= 40'

DES: KKB | CHECK: TCN | DATE: 01-17-05

LANT FACILITIES CHIEF CODE COMPLIANCE REVIE COORDINATOR SENIOR LEADER

> THE JOHNS HOPKINS UNIVERSITY

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APPROVALS

HOPKINS UNIVESITY

APPLIED PHYSICS

LABORATORY

JOHNS HOPKINS ROAD

LAUREL, MARYLAND 20723-6099

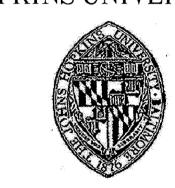
TAX MAP 41, GRID 16, PARCEL 1

FIFTH (5TH) ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

Asbuilt into ADDED

03/00



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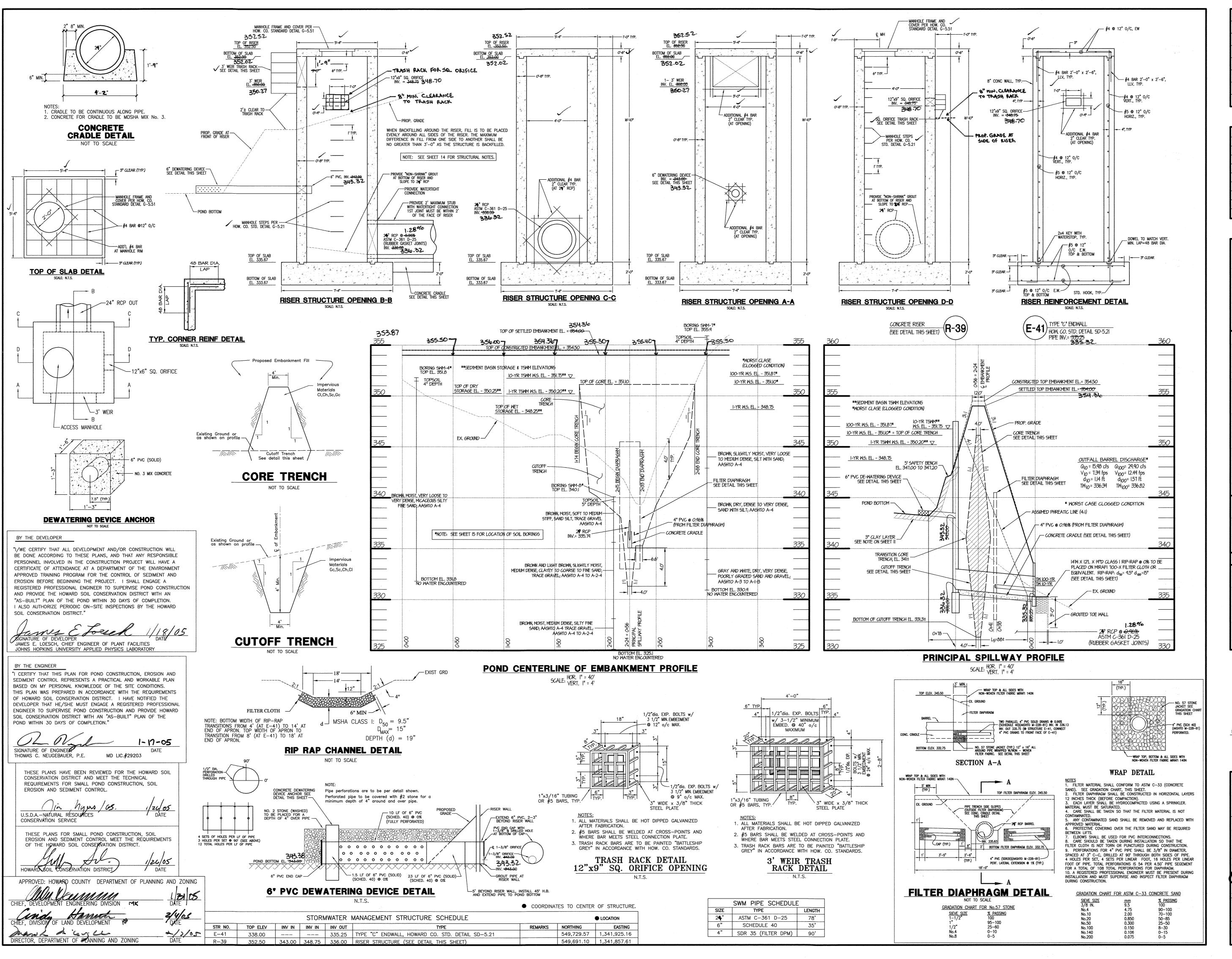
GRAPHIC SCALE

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

FAX (410) 792-7395

JOB NO.: 13685

1-17-05 | SHEET: 11 OF 23



REVISIONS		
Asbuilt info ADDED	03/06	

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CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
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TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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GRAPHIC SCALE



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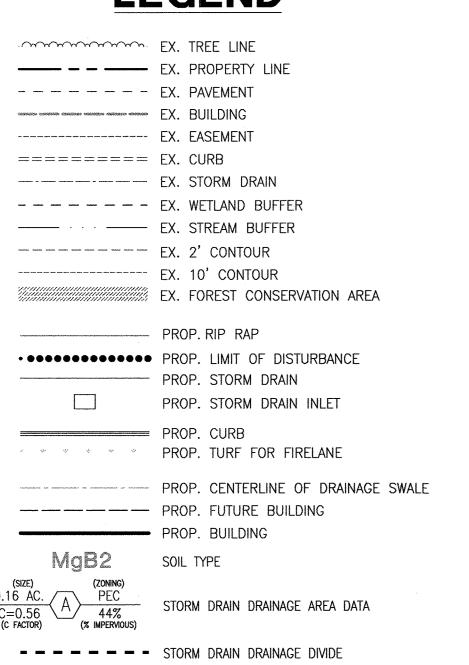


17-05 SHEET: 12 OF 23

SCALE: 1"= 40'

DES: KKB | CHECK: TCN | DATE: 01-17-05

LEGEND



SUMMARY OF PROP. FACILITY

TIME OF CONCENTRATION PATH

SOIL TYPE DIVIDE

DESIGN STORM	Proposed Facility Inflow (cfs)	Proposed Facility Discharge (cfs)	Facility Water Surface Elevation (ft)	Facility Storage Volume (acre-ft)
1 year	6.60	0.12	348.75	0.294
5 year	17.03	3.58	350.01	0.447
10 year*	23.50	15.98	351.10	0.348
100 year*	39.25	29.90	351.87	0.491

*WORST CASE CLOGGED CONDITION Drainage Area <u>6.57</u> acres Impervious Area <u>2.73</u> acres

SWM HYDROLOGIC DATA-PROPOSED CONDITION

TR-55 HYDROLOGIC DATA	TIME OF
DRAINAGE AREA: 6.57 AC.	A-B
RCN: 76 SOIL TYPE: 'B'	B-C
ARFA LAWN: 3.84 AC.	C-D
7.1.2.1 2 0.0.1 7.0.1	D_E

AREA IMPERVIOUS: 2.73 AC.

AREA WOODS: 0.00 AC.

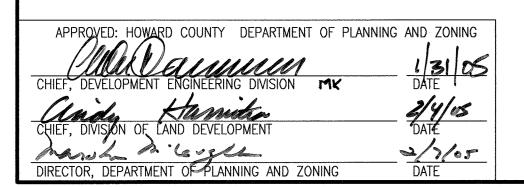
OF CONCENTRATION PATH 48' SHEET FLOW AT 4%, GRASS, DENSE B-C 16' SHEET FLOW AT 25%, GRASS, DENSE C-D 28' SHALLOW CONC. FLOW AT 2%, PAVED D-E 554' OF OPEN CHANNEL FLOW AT 8 FPS

TIME OF CONCENTRATION: 0.14 HR

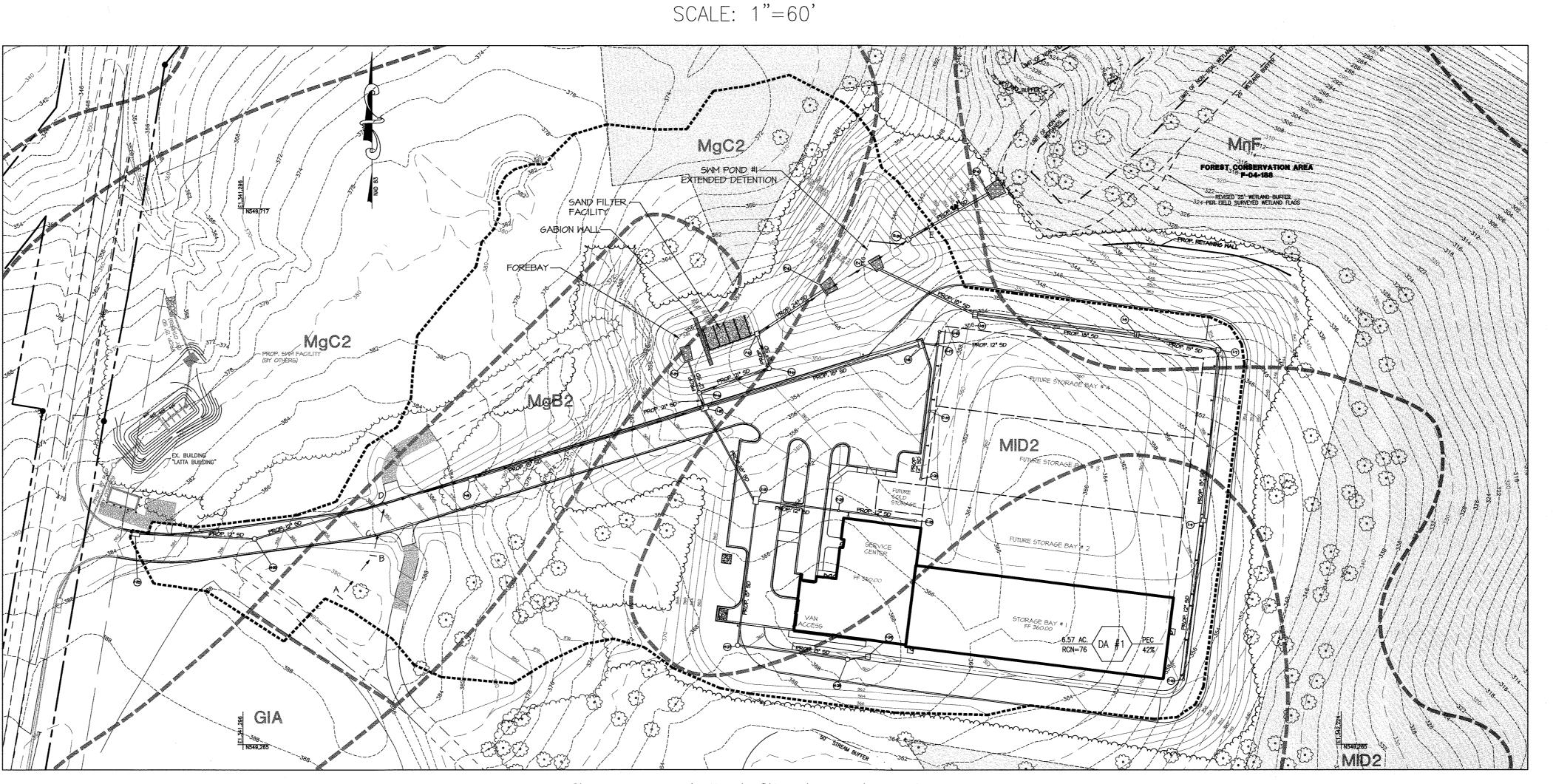
	GENERAL SWM STORAGE REQUIREMENTS				
STEP	REQUIREMENT	VOLUME REQUIRED (ac.—ft.)	NOTES		
1	WATER QUALITY VOLUME (WqV)	0.2321 acft.	0.177 acft. PROVIDED BY SAND FILTER 0.061 acft. PROV. BY RECHARGE TRENCH		
2	RECHARGE VOLUME (ReV)	0.0604 acft.	0.061 acft. PROVIDED BY RECHARGE TRENCH LOCATED UNDER SAND FILTER		
3	CHANNEL PROTECTION VOLUME (CpV)	0.2714 ac.—ft. 0.15 cfs RELEASE RATE	RELEASE RATE=0.12 cfs © WSEL=348.75 0.294 acft. PROVIDED © WSEL=348.75		
4	OVERBANK FLOOD PROTECTION VOLUME (Qp)	N/A	10.14 cfs @ WSEL=350.69 * 15.98 cfs @ WSEL=351.10 **		
5	EXTREME FLOOD PROTECTION VOLUME (Qf)	PROVIDE SAFE PASSAGE OF THE 100-YR EVENT IN FINAL DESIGN	28.55 cfs @ WSEL=351.79 * 29.90 cfs @ WSEL=351.87 **		

* NORMAL POND ROUTING
** WORST CASE (CLOGGED) POND ROUTING

	WORST CASE (CE	
	SOILS LEGEND	
SYMBOL	NAME/DESCRIPTION	SOIL TYPE
GIA	GLENELG LOAM, 0-3% SLOPES	В
MgB2	MANOR GRAVEL LOAM, 3%-8% SLOPES, MODERATLEY ERODED	В
MgC2	MANOR GRAVEL LOAM, 8%-15% SLOPES, MODERATLEY ERODED	В
MID2	MANOR GRAVEL LOAM, 15%-25% SLOPES, MODERATLEY ERODED	В
MnF	MANOR VERY STONY LOAM, 25%-60% SLOPES	В



STORM DRAIN DRAINAGE AREA MAP



SWM DRAINAGE AREA MAP

SCALE: 1"=60'

	REVISIONS	
	·	
-		

	APPROVALS	
REQUESTER		T
PLANT FACILITIES CHIEF ENGINEER		T
CODE COMPLIANCE REVIEW		T
TSC GROUP		T
TSF GROUP		T
SAFETY OFFICER		T
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		T

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TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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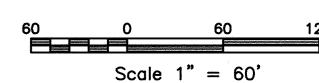


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GRAPHIC SCALE





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DRAINAGE AREA MAP



1-17-05 SHEET: 13 OF 23

SCALE: 1'' = 60'

DES: KKB | CHECK: TCN | DATE: 01-17-05

MD-378 STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS

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 OI 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.

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 'HE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAI 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.

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.

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 MINIMUM OF FOUR COMPLETE OF A SHEEPSPOOT, RUBBER TURED OR VIBRATORY ROLLER. ILL 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).

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 GRADE 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.

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 LOWABLE 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. MATE—RIAL 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 ILL 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 THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE 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 STEEL 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 COM-POUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMAT 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.

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.

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 O 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 OLLOWING 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, PRE-PUNCHED 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 0-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 ULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE. HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY /ELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD

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

BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE

MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND

SHALL EQUAL OR EXCEED ASTM C-361. 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 AT LEAST 50% 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 THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

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 HE 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.

C. PLASTIC PIPE 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 REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING <u>2/7/45</u> DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

C. PLASTIC PIPE (CONTINUED)

JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT

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.

BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS. VII. DRAINAGE DIAPHRAGMS

CONSTRUCTION INSPECTION. VIII. CONCRETE STRUCTURES

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

REINFORCEMENT SHALL MEET THE MINIMUM REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 416 (REINFORCEMENT FOR CONCRETE STRUCTURES): SECTION 908 (REINFORCING STEEL - GRADE 60, WIRE ROPE AND WIRE FARIC), AND SECTION 909.02 (STEEL FOR MISCELLANEOUS USE).

WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND

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. X. 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.

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.

SPECIFICATIONS - SOD SHALL BE "K-31" TALL FESCUE OR KENTUCKY BLUEGRASS/RED FESCUE MIXTURE OR APPROVED EQUAL. CLASS OF TURFGRASS SOD SHALL BE MARYLAND OR VIRGINIA STATE CERTIFIED OR 'APPROVED SOD.

SITE PREPARATION - WHERE SOIL IS ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 100 LBS./1000 SQ.FT. IN ALL SOILS 5-10-5 FERTILIZER OR APPROVED EQUAL SHALL BE APPLIED AT THE RATE OF 30 LBS/1000 SQ.FT. FERTILIZER SHALL BE UNIFORMLY APPLIED AND MIXED INTO THE TOP 3" OF SOIL WITH THE REQUIRED LIME. SLOW RELEASE NITROGEN, AT THE RATE OF 3.5 LBS/1000 SQ. FT., SHALL BE APPLIED TO THE PREPARED SOIL IMMEDIATELY PRIOR TO SOD INSTALLATION. THIS MATERIAL SHALL BE APPROXIMATELY ONE—THIRD IMMEDIATELY AVAILABLE. AND TWO-THIRDS WATER INSOLUBLE NITROGEN. UREA FORMALDEHYDE (UF) AND ISOBUTYLIDENE (IBDU) MEET THESE STANDARDS.

SOD INSTALLATION — THE FIRST ROW OF SOD SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACE PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. INSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS. ON SLOPING AREAS WHERE EROSION MAY BE A PROBLEM, SOD SHALL BE LAID WITH LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. SECURE THE SOD BY TAMPING AND PEGGING OR OTHER APPROVED METHODS. AS SODDING IS COMPLETED IN ANY ONE SECTION, THE ENTIRE AREA SHALL BE ROLLED OR TAMPED TO INSURE SOLID CONTACT OF ROOTS WITH THE SOIL SURFACE. SOD SHALL BE WATERED IMMEDIATELY AFTER ROLLING OR TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOLID SURFACE BELOW THE SOD ARE THOROUGHLY WET. THE OPERATION OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

B. PERMANENT SEEDING

ALL DISTURBED AREAS SHALL BE STABILIZED AS FOLLOWS:

1. SEEDBED PREPARATION - LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING. 2. SOIL AMENDMENTS - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ. FT.), 600 LBS. PER ACRE 10-10-10

FERTILIZER (14 LBS./1000 SQ. FT.) AND 400 LBS. PER ACRE OF 30-0-0 UREAFORM FERTILIZER (9.2 LBS./100 SQ. F HARROW OR' DISC LIME AND FERTILIZER INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE (9.2 LBS./1000 SQ. FT.) OF 30-0-0 UREAFORM FERTILIZER AND 500 LBS. PER ACRE (11.5 LBS./1000 SQ.FT.) OF 10-10-10 FERTILIZER.

SEEDING - FOR THE PERIOD MARCH 1 THROUGH APRIL 30 SEED WITH 40 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND 15 LBS. PER ACRE INOCULATED CROWNVETCH. FOR THE PERIOD MAY 1 THROUGH JULY 31 SEED WITH 60 LBS. PER ACRE KENTUCKY 3 TALL FESCUE AND 2 LBS. PER ACRE INOCULATED WEEPING LOVEGRASS. FOR THE PERIOD OF AUGUST 1 THROUGH OCTOBER 15 SEED WITH 40 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND 20 LBS. PER ACRE INOCULATED INTERSTATE SERICA IESPEDEZA. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY: OPTION (1) - 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) - USE SOD.. OPTION (3) - SEED WITH 60 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE WELL ANCHORED STRAW. FOR THE PERIOD OF MAY 1 THROUGH FEBRUARY 28, INOCULATED CROWNVETCH SHALL BE APPLIED DURING THE SUBSEQUENT PERIOD OF MARCH 1 THROUGH APRIL 30 AT THE RATE OF 15 LBS. PER ACRE.

MULCHING - APPLY 1.5 TO 2 TONS PER ACRE OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING 218 GALLONS PER ACRE OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE FOR ANCHORING.

MAINTENANCE - INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDING. C. TEMPORARY SEEDING

SEEDBED PREPARATION - . LOOSEN UPPER 3 INCHES OF SOIL BY DISCING, RAKING OR OTHER ACCEPTABLE MEANS BEFORE

SOIL AMENDMENTS - APPLY 600 LBS. PER ACRE OF 10-10-10 FERTILIZER. WHERE SOIL IS ACIDIC OR COMPOSED OF HEAVY

CLAYS, GROUND LIMESTONE SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE (92 LBS./1000 SQ.FT.) SEEDING - FOR PERIODS MARCH 1 THROUGH APRIL 30, AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2.5 BUSHELS PER ACRE ANNUAL RYE. FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS. PER ACRES OF WEEPING LOVEGRASS. FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING OR USE SOD.

MULCHING — SAME AS PERMANENT SEEDING.

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.

FENCING SHALL BE 42" HIGH CHAIN LINK FENCE CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD DETAILS 615.02 AND 615.03. THE SPECIFICATIONS FOR A 6'-O" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6'-8" LINE POSTS. GATE SHALL BE CONSTRUCTED IN ACCORDANCE WITH STATE HIGHWAY ADMINISTRATION STANDARD DETAIL 692.01 WITH 42' FABRIC. FABRIC FOR FENCE AND GATE SHALL CONFORM TO ASSHTO DESIGNATION ML8L.74. DARK VINYL COATING IS REQUIRED FOR THE FENCE POSTS AND WIRE FABRIC IN ACCORDANCE WITH THE LANDSCAPE MANUAL ADOPTED BY RESOLUTION 56-90, OCTOBER 1, 1990.

FILTER CLOTH

FILTER CLOTH TO BE MIRAFI 140N OR APPROVED EQUAL.

GABIONS GABIONS TO BE PVC COATED. SEE HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS.

XIII. INSPECTION THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 5 WORKING DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE PLANS SO THAT STORMWATER MANAGEMENT POND MAY BE INSPECTED DURING CONSTRUCTION.

UNLESS OTHERWISE NOTED, ALL MATERIALS AND CONSTRUCTION PRACTICES SHALL CONFORM TO THE FOLLOWING: "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION" OF THE HOWARD COUNTY, MARYLAND, DEPARTMENT OF PUBLIC WORKS, AS AMENDED.

"STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS", 1993, OF THE MARYLAND STATE HIGHWAY ADMINISTRATION, AS AMENDED.

"STANDARD AND SPECIFICATIONS FOR PONDS" OF THE SOIL CONSERVATION SERVICE OF MARYLAND (MD-378), JANUARY 2000

4. "REVISED STORMWATER MANAGEMENT POLICY," REVISED SEPTEMBER 11, 1984, HOWARD COUNTY MARYLAND.

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND THE HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

STRUCTURAL NOTES

A. ALL CONSTRUCTION SHALL CONFORM WITH THE 2000 INTERNATIONAL BUILDING CODE AND ALL SUBSEQUENT SUPPLEMENTS

B. IN ADDITION, ALL CONSTRUCTION SHALL CONFORM WITH THE GOVERNING LOCAL BUILDING CODE. DESIGN LOADS A. THE MINIMUM DESIGN DEAD LOADING FOR ALL FRAMING IS BASED ON THE CONSTRUCTION MATERIALS SHOWN ON THE DRAWINGS AND INDICATED IN THE

MISCELLANEOUS A. THE CONTRACTOR SHALL REVIEW CIVIL DRAWINGS PREPARED BY MORRIS & RITCHIE, INC., DATED 7/20/04 FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.

B. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION. ALL DISCREPANCIES AND OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS SHOP DRAWINGS. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY

SCALING THE DRAWINGS. FOUNDATIONS A. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 2500 PSF. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE

LESS THAN 2500 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER. B. ALL FILL PLACED UNDER FOUNDATIONS SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 ALL EXCAVATION AND BACKFILLING OPERATIONS WITHIN THE BUILDING BUILDING FOOTPRINT, INCLUDING ALL COMPACTION TESTS AND INSPECTIONS, SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER. CONTRACTOR SHALL BACKFILL AROUND PERIMETER OF RISER AT AN EVEN RATE SO AS

D. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL FOUNDATION AND SOIL CONDITIONS WHICH DIFFER FROM THOSE ANTICIPATED OR INDICATED IN THE CONTRACT DOCUMENTS. E. ALL EXISTING SOIL CONTAINING GRAVEL, CONSTRUCTION OR DEMOLITION DEBRIS, ORGANIC SUBSTANCES, OR OTHER FOREIGN OBJECTS SHALL BE REMOVED FROM THE REGION WITHIN THE FOOTPRINT OF THE STRUCTURE. 5. CAST IN PLACE CONCRETE

A. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE "SPECIFICATIONS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350)"; AND TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)".

B. IN ADDITION TO THE ABOVE, ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING: RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING (ACI 305).

RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306). RECOMMENDED PRACTICE FOR CONCRETE FORMWORK (ACI 347).

ALL CONCRETE, UNLESS NOTED OTHERWISE, SHALL BE STONE AGGRÉGATE CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL 6% ± 1%. NO ADMIXTURES HAVE AN AIR ENTRAINMENT OF 6 CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED. MAXIMUM AGGREGATE SIZE SHALL BE 3/4", WATER/CEMENT RATIO SHALL BE 0.45, MAXIMUM SLUMP SHALL BE 4", 3" FOR SLABS ON GRADE. ALL CONCRETE, EXCEPT FOOTINGS, SHALL CONTAIN A WATER REDUCING ADMIXTURE. PORTLAND CEMENT SHALL CONFORM TO ASTM C 150 AND NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C 33 D. ALL REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A 615 GRADE 60. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO ASTM A 185. LAP ALL REINFORCING BARS A MINIMUM OF 48 BAR DIAMETERS AND ALL W.W.F. A MINIMUM OF TWO FULL GRIDS, UNLESS OTHERWISE INDICATED. E. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE CRSI "MANUAL OF STANDARD PRACTICE", ACI 315" DETAILS AND DETAILING OF CONCRETE REINFORCEMENT". ACI SP 66 "DETAILING MANUAL" F. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE

REVIEWED BY ENGINEER PRIOR TO PLACING FIRST CONCRETE. G. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE. H. GROUND BLAST FURNACE SLAG MAY BE USED TO REPLACE UP TO 50 PERCENT OF THE PORTLAND CEMENT IN A CONCRETE MIX, AND FLY ASH OR POZZOLAN MAY BE USED TO REPLACE UP TO 25 PERCENT OF PORTLAND CEMENT, SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND SHALL CONFORM TO ASTM C 989. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:

FOUNDATIONS THE GENERAL CONTRACTOR SHALL SUBMIT PLANS SHOWING ALL PENETRATIONS THROUGH THE FRAMED CONCRETE SLABS. THE OPENINGS SHALL BE ACCURATELY LOCATED AND DIMENSIONED.

6. RETAINING WALLS A. RISER WALLS HAVE BEEN DESIGNED WITH BACKFILL MATERIAL HAVING THE FOLLOWING CHARACTERISTICS:

= 130.0 PCF = 0.40

IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO INSURE THE BACK FILL MATERIAL MEETS THESE CHARACTERISTICS B. RISER HAS BEEN DESIGNED FOR THE FOLLOWING MINIMUM FACTORS OF SAFETY:

OVERTURNING SI IDING

BOUYANCY ALL RISER WALLS SHALL BE BRACED AND SHORED AS REQUIRED DURING BACKFILLING. BOTH SUPPORTING ELEMENTS SHALL BE IN PLACE AND DEVELOPING FULL REQUIRED STRENGTH PRIOR TO BACK FILLING OF WALLS SUPPORTED AT TOP AND BOTTOM.

CONSTRUCTION INSPECTION SCHEDULE

DETENTION AND RETENTION STRUCTURES

I. INSPECTIONS SHALL BE CONDUCTED BY THE AS-BUILT CERTIFYING ENGINEER:

1. UPON THE COMPLETION OF EXCAVATION TO SUB-FOUNDATION AND WHEN REQUIRED, AND UPON THE

INSTALLATION OF STRUCTURAL SUPPORTS OR REINFORCEMENT FOR STRUCTURES. INCLUDING BUT NOT LIMITED TO: . CORE TRENCHES FOR STRUCTURAL EMBANKMENT

3. INLET OR OUTLET STRUCTURES AND ANTI-SEEP STRUCTURES.

WATER-TIGHT CONNECTORS ON PIPES. TRENCHES FOR ENCLOSED STORM DRAIN FACILITIES.

E. UTILITY CROSSINGS OF EMBANKMENT 2. DURING THE PLACEMENT OF STRUCTURAL FILL AND CONCRETE, AND INSTALLATION OF PIPING AND CATCH BASINS.

DURING BACKFILL OF FOUNDATIONS AND TRENCHES.

DURING EMBANKMENT CONSTRUCTION.

5. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE & REPAIR SCHEDULE

MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS. IN GENERAL, THE PRACTICES CONTAINED IN THE "MAINTENANCE AND REPAIR" CHAPTER OF THE "MARYLAND DAM SAFETY MANUAL", DNR-WRA 1988, SHOULD BE FOLLOWED AND CONDUCTED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER FAMILIAR WITH DAM CONSTRUCTION, OPERATION, MAINTENANCE, AND REPAIR.

IN ADDITION, THE MD-378 DAM INSPECTION CHECKLIST MAY BE USED AS A GUIDE FOR MAINTENANCE AND INSPECTION. AT A MINIMUM, THE STORMWATER MANAGEMENT FACILITY SHALL BE INSPECTED BI-ANNUALLY FOR THE FOLLOWING ITEMS.

CONDITION OF EMBANKMENT

2. CONDITION OF VEGETATIVE COVER 3. CONDITION OF FENCES AND MAINTENANCE ACCESS ROAD.

5. CONDITION OF POND RESERVOIR STORAGE AREA

NOTE: OWNER AND CONTRACTOR

PLANS.

THE ENGINEER SHALL BE NOTIFIED 2 WEEKS PRIOR TO THE

COMMENCEMENT OF CONSTRUCTION. THE SWM AND WATER

AS-BUILT PLAN. THE CONTRACTOR SHALL CONSTRUCT THE

SEDIMENT BASIN IN ACCORDANCE WITH THE APPROVED SWM

QUAILITY FACILITIES MUST BE FIELD INSPECTED FOR THE

4. CONDITION OF SPILLWAYS AND PIPE OUTLETS.

1. PER MD-378 SPECIFICATIONS, SOILS USED FOR CUTOFF TRENCH CONSTRUCTION SHALL MEET USCS CLASSIFICATION

GEOTECHNICAL NOTES & RECOMMENDATIONS

CL (LOW PLASTICITY CLAY), CH (HIGH PLASTICITY CLAY), SC (CLAYEY SAND), OR GC (CLAYEY GRAVEL)

2. MATERIALS USED FOR BACKFILL OF PIPE OUTFALL SHOULD BE SIMILAR TO THOSE USED FOR THE CUTOFF TRENCH. 3. ALTHOUGH SUBSURFACE EXPLORATIONS INDICATE THAT NO SUITABLE CUTOFF TRENCH MATERIAL EXISTS ON SITE, TEST PIT EXPLORATION MAY BE PERFORMED IN AN ATTEMPT TO IDENTIFY APPROPRIATE MATERIALS MEETING SCS SPECIFICATIONS FOR CUTOFF CONTRUCTION.

4. IF MATERIALS SUITABLE FOR CUTOFF TRENCH CONSTRUCTION ARE NOT IDENTIFIED ON SITE, OFF-SITE BORROW MAY BE UTILIZED PROVIDED THAT IT MEETS ALL CLASSIFICATIONS REQUIRED BY MD-378, AND BE APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER IN THE FIELD.

5. MD-378 SPECIFIES THAT REFERENCE SOIL CLASSIFICATIONS SUITABLE FOR CUTOFF TRENCH CONSTRUCTION ARE ALSO SUITABLE FOR EMBANKMENT CONSTRUCTION. THE MOST PLASTIC MATERIAL (PI=11 OR MORE) AVAILABLE ON SITE SHALL BE USED FOR EMBANKMENT CONSTRUCTION.

6. FILL FOR CUTOFF TRECH AND EMBANKMENT CONSTRUCTION SHOULD BE PLACED IN 8" LOOSE LIFTS, COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR. ASTM D-698. FILL AROUND THE PIPE OUTFALL SHOULD BE PLACED IN 4" LIFTS AND COMPACTED TO THE SAME STANDARD WITH HAND EQUIPMENT. COMPACTION OF THESE AREAS SHOULD BE MONITORED BY A QUALIFIED GEOTECHNICAL ENGINEER

7. WHERE INDICATED BY SUBSURFACE CONDITIONS, A 6" GRANULAR BEDDING SHOULD BE PLACED UNDER THE PIPE OUTFALL (BEYOND THE CONCRETE CRADLE) TO PROVIDE UNIFORM PIPE SUPPORT.

> THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL U.S.D.A.—NATURAL RESOURCES CONSERVATION SERVICE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD, SOIL CONSERVATION DISTRICT. HOWARD SOM CONSERVATION DISTRICT

REVISIONS

	APPROVALS	***************************************
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PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
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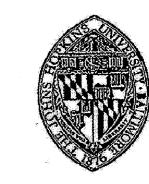
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JOHNS HOPKINS ROAD

LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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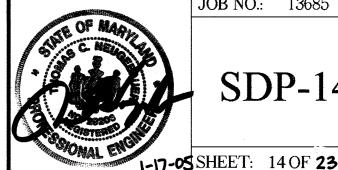
GRAPHIC SCALE



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MD 378 DETAIL **SPECIFICATIONS**



JOB NO.: 13685

SCALE: AS SHOWN

DES: KKB | CHECK: TCN | DATE: 01-17-05

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The preliminary finished floor elevation of the proposed Processing Area Building and Storage Bay is 358.5 feet above MSL. Based upon the aforementioned plan, cuts up to 11 feet and fills up to 13 feet will be required to establish final grades in the area of the building. Cuts up to 10 feet will be required to establish final grades in the roadway and cuts up to 6 feet and fills up to 2 feet will be required to establish final grades for the SWM ponds. The current grading scheme includes 2H:1V cut and fill slopes on the order of 10 and 20 feet height, respectively. The cut slopes are proposed in the southwestern portion of the site. The fill slopes are proposed in the eastern and northern portion of the site. GTA understands that MRA is considering flattening the cut and fill slopes to 3H:1V to enhance stability of the slopes.

SITE GEOLOGY

The Geologic Map of Maryland (1968) and the Geologic Map of Howard County (1993) were reviewed to identify site geology. The site vicinity is situated in the Eastern Piedmont Physiographic Province. The Piedmont is characterized by metamorphic or metamorphose rock formations. Typical Piedmont rocks weather into a saprolite of variable thickness, underlain by less weathered and then relatively sound rock. More specifically, the site is mapped within the Sykesville Formation of the Liberty Complex, near the contact of the Oella Formation. The Sykesville Formation is composed predominantly of fine to medium grained, light to medium gray, locally garnetiferous, muscovite-biotite-plagioclase-quartz gneiss and fels, which can be deceptively granite-like in appearance. This formation can extend to depths of 5,500 feet or more. Quartz veins generally weather at a slower rate, and may be encountered as boulders 'floating' within more weathered materials. Please see the referenced geologic publications for more details.

SUBSURFACE EXPLORATION

The field exploration consisted of drilling 16 Standard Penetration Test (SPT) borings, designated as B-1 through B-5, R-1 through R-3, and SWM-1 through SWM-8, in the areas of proposed development. The test borings were drilled during May 28 through June 2, 2004, to depths of approximately 15 to 30 feet below the existing ground surface, by using an ATVmounted CME-550 drill rig. Borings were drilled in the proposed building, roadway, and the SWM areas. The borings were staked by MRA. The approximate location of the borings is JHU-LIBRARIES SERVICES CENTER

indicated on Figure No. -2 Exploration Location Plan, included in Appendix A. Elevations provided on the boring logs were provided by MRA based on an instrumented survey.

Standard Penetration Testing was performed in the boreholes, with soil samples obtained at approximately 2 1/2 - foot intervals in the upper 10 feet and then at 5-foot intervals thereafter. Standard Penetration Testing involves driving a 2-inch O.D., 1 3/8 - inch I.D. split-spoon sampler with a 140-pound hammer free-falling 30 inches. The SPT N-value, given as blows per foot (bpf), is defined as the total number of blows required to drive the sampler 6 to 18 inches. Samples retrieved from the borings were returned to GTA's laboratory for visual classification by laboratory personnel and limited laboratory testing. Descriptions as provided on the logs are visual, supplemented by available laboratory test results.

In-situ borehole infiltration testing was performed at test locations SWM-1, SWM-4, and SWM-6, at a depths ranging from 5 to 8 feet below existing surface grade. The infiltration test consists of measuring the drop in water level within a solid 5-inch PVC pipe for a period of 4 hours subsequent to a 24-hour pre-soak. The PVC pipe was set in a hole drilled within five feet

The borings confirmed the underlying geologic formation as the Sykesville Formation. Topsoil was encountered at 15 of the 16 boring locations and ranged from 2 to 5 inches in thickness. A two foot thick surficial layer of black organic silty soil was encountered in Boring B-1. Underlying the surficial topsoil layer, the test borings typically encountered residual soils predominantly micaceous, silt and sand, with varying amounts of clay and rock fragments. Clay contents were generally higher in the near surface soils and the soils were more granular and coarser with depth. Refer to the boring logs included in Appendix B for detailed information.

The soils encountered in the upper levels of the test borings were predominantly finegrained silts and clays, with varying percentages of sand and rock fragments. These soils were visually classified as USCS Sandy Silt (ML), Sandy Clay (CL), Clayey Sand (SC), and Silty

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Sand (SM). Below the near-surface soils, the test borings encountered predominantly coarsegrained materials classified as USCS Silty Sand (SM), Poorly Graded Sand (SP), and locally

SPT N-values for the granular materials ranged from 2 to 50/3" blows per foot (bpf). The lower N-values were generally observed in plastic soils indicating soft consistency. The observed N-values indicate that density of the native soils varies significantly with depth and across the site. Relatively dense and very lenses are present in matrix of loose to medium dense soils. The difference in the observed density of the soils is likely due to differential weathering and mineral composition of the soil layers. Auger refusal was not encountered in any of the

Based on information provided by JHU personnel. GTA understands that organic materials (tree stumps, leaves, etc.) and asphalt millings have been deposited in the western portion of the site. The fill materials may be as deep as 25 feet or more. GTA did not encounter such materials in the borings. The presence of organic materials within the fill soils of the subject property represents a potential to generate methane and other gases, which are commonly referred to as landfill gas (LFG). Methane and other LFGs are generally associated with bacteriological decomposition or volatilization of organic waste or compounds. In fill materials, methane gas may be generated by the anaerobic decomposition of buried organic materials and may accumulate in the void spaces of the soil and fill materials. When generated, methane and other LFGs can then migrate through the subsurface. The presence and accumulation of methane gas within site improvements (including buildings, basements, footing excavations, utility trenches, etc.) can represent an explosion hazard. A field exploration and monitoring program is recommended to asses the presence and levels of methane and other landfill gases. Further research and evaluation is also needed to establish the limits of the fill area and to asses its implications for the proposed construction. Depending upon the finalized site development plans and available information, additional explorations may be required to verify the limits of the existing fill.

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Groundwater was observed during drilling in Test Boring SWM-6 at a depth of 12.5 feet below the existing ground surface. Groundwater was not encountered in the remaining borings during drilling or to cave-in depths 24-hours after completion of the borings. The bore hole cave-in depths ranged from 6.5 to 17 feet. Groundwater levels can be expected to fluctuate significantly with seasonal changes and perched or trapped groundwater may be encountered at shallower depths, especially within granular soils overlying less permeable soils and/or dense weathered/unweathered rock

Selected samples obtained from the borings were tested for grain-size analysis, Atterberg Limits, moisture-density relationships, and natural moisture contents. Selected samples were tested for natural (in-situ) moisture content. The natural moisture content of the tested samples ranged from 4.0 to 45.0 percent. Moisture content of the near surface and clayey soils were generally high and generally low for denser and coarser granular soils. The moisture content of the tested samples was predominantly in the range of 11 to 25 percent.

The grain-size analysis and Atterberg Limits testing was performed to determine the Unified Soil Classification System (USCS) designation for the soil. USCS classifications provide information regarding soil behavior beneath pavement and foundation systems. The results of testing are as

SUMMARY OF LABORATORY TESTING

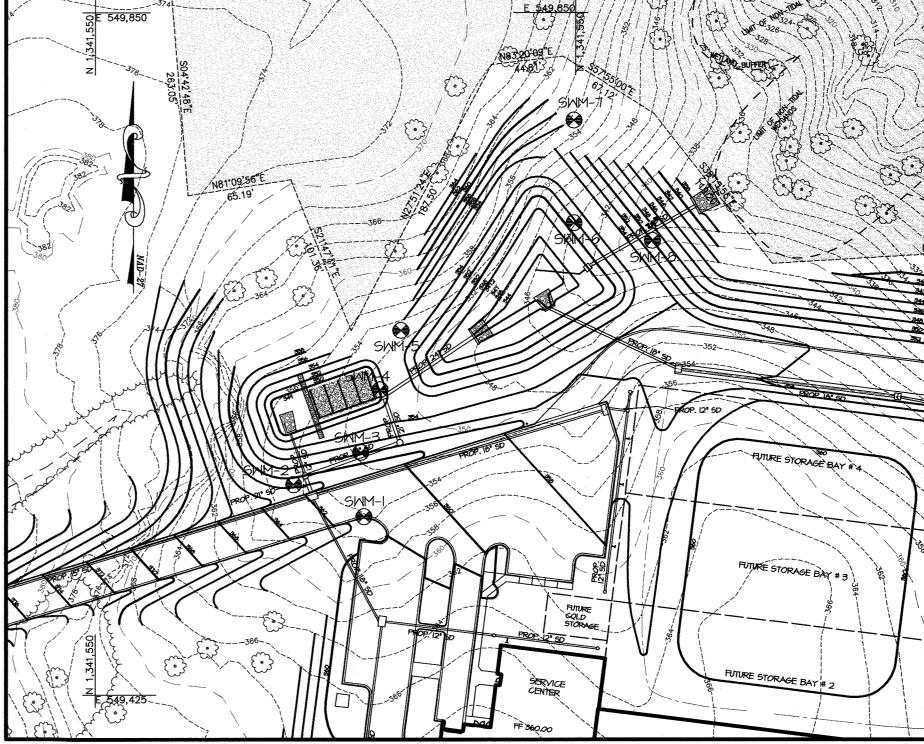
BORING NO.	DEPTH (ft)	USCS CLASSIFICATION	LL %	PI %
B-I	13.5-15.0	Silty Sand (SM)	NP	NP
B-4	8.5-10.0	Silty Sand (SM)	NP	NP
R-1	1.0-6.0	Silty Sand (SM)	NP	NP
SWM-1	8.5-10.0	Silty Sand (SM)	NP	NP
SWM-6	5.0-6.5	Silty Sand (SM)	NP	NP

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Two bulk, near-surface samples, obtained from Boring R-1 and Boring SWM-3, were tested for moisture-density relationships in accordance. The test results are summarized below. SUMMARY OF MOISTURE - DENSITY DATA

oring No.	Depth (Ft)	Test Method	Maximum Dry Density (pcf)	Optimum Moisture (%)	Natural Moisture (%)	
R-1	ì to 6	Modified Proctor (ASTM D 1557)	123.7	11.0	14.5	
VM-3	1 to 6	Standard Proctor (D698)	113.7	14.5	16.7	

A California Bearing Ratio (CBR) test was performed upon the bulk sample of USCS SM soil Modified Proctor (ASTM D-1557) may be assigned to the soils present at this location. Refer to the laboratory data sheets included in Appendix C for more details.



from Boring R-1, 1 to 6 feet depth. The CBR is used in evaluating the suitability of soils for **SOIL BORING LOCATION PLAN** roadway support. Results of this testing indicate that a CBR value of 6.2 at 95 percent of the SCALE: 1" = 60'LOG OF BORING NO. SWM-02 LOG OF BORING NO. SWM-04 LOG OF BORING NO. SWM-01 LOG OF BORING NO. SWM-03 PROJECT: JHU Library Services Center WATER LEVEL:

DATE: 06/01/04 06/02/04 CAVEO (9): 9.0 11.0 PROJECT: JHU Library Services Cente PROJECT: JHU Library Services Center PROJECT: JHU Library Services Center PROJECT NO: 040510 PROJECT NO: 040510
PROJECT LOCATION: Howard County, Maryland PROJECT LOCATION: Howard County, Maryland GROUND SURFACE ELEVATION: 351.8 DATE STARTED: May 28, 2004 DATE STARTED: June 1, 200 DATE COMPLETED: June 1, 2004
DRILLING CONTRACTOR: GTA DATE COMPLETED: May 28, 2004
DRILLING CONTRACTOR: GTA

DRILLER: Fleming
DRILLING METHOD: HSA DESCRIPTION Brown, moist, very loose to medium dense, Micaceous Silty fine 1 0.0 4 1-1-1 2 351.8 0 SM Brown, moist, very loose to very dense, Micaceous Silty fine \AASHTO: A-6
Brown, moist, very loose to very dense, Silty line SAND. AASHTO: A-4 5.0 15 14-27-28 55 AASHTO: A-4 4 8.5 10 8-12-12 24 4 8.5 14 4-5-11 18 Brown, moist, loose Micaceous Silty line SAND. 5 13.5 15 12-17-20 37 5 13.5 12 18-50/6" 50/6" AASHTO: A-2-4 5 13.5 13 11-27-30 57 Bottom of Hole at 15.0 Feet 6 18.5 13 18-27-30 57 331.8 Inlittration Test Performed at 5.0 Fee distration Test Performed at 8.0 Fe Hour Water Level Drop (in LOG OF BORING NO. SWM-01 LOG OF BORING NO. SWM-02 GTA. LOG OF BORING NO. SWM-04 LOG OF BORING NO. SWM-03 CHI. ASSOCIATES, INC SSOCIATES, INC ASSOCIATES, INC. 14280 Park Center Drive, Suite 14280 Park Center Drive, Suite LOG OF BORING NO. SWM-06 Sneet 1 of 1 LOG OF BORING NO. SWM-05 LOG OF BORING NO. SWM-07 LOG OF BORING NO. SWM-08 WATER LEVEL: \$\frac{\textbf{D}}{\textbf{V}} \frac{\textbf{V}}{\textbf{D}} \frac{\textbf{V}}{\tex PROJECT: JHU Library Services Center PROJECT: JHU Library Services Center SROUND SURFACE ELEVATION: 344.5 GROUND SURFACE ELEVATION: 353.3 GROUND SURFACE ELEVATION: 340.1 GROUND SURFACE ELEVATION: 355.5 DATUM: Survey
EQUIPMENT: 550 (2)
LOGGED BY: Fleming
CHECKED BY: P. Fanara DATE STARTED: June 1, 2004 DATE COMPLETED: June 1, 200 DATE COMPLETED: Ju RILLING CONTRACTOR: GTA

DRILLER: Fleming DRILLING CONTRACTOR: GTA

DRILLER: Fleming DRILLER: Fleming DRILLING METHOD: HSA DRILLING METHOD: HSA SAMPLING METHOD: Split Spot SAMPLING METHOD: Split Spoo DESCRIPTION ML Dark brown, moist, very soft, micaceous Sandy SILT, trace Brown, moist, very loose to loose, Sitty fine SAND. Brown and light brown, slightly moist, medium dense, Clayey coarse to fine SAND, trace Gravel. 3 5.0 12 3-3-4 Brown, moist, micaceous loose to medium dense, Sity fine Light brown and gray, slightly moist, medium dense, Silty line 4 8.5 13 8-11-13 24 AASHTO: A-2-4 Brown and light brown, dry, poorly graded SAND, trace Gra Light brown and gray, skightly moist, medium dense, Silly fine AASHTO: A-4 5 13,5 14 16-19-26 45

Material Requirements GTA understands that Maryland Specification 378 (MD 378) governs design and

construction of the pond facilities. MD 378 specifies that soils for use in cutoff trench construction meet USCS Classification CL (low plasticity clay), CH (high plasticity clay), SC (clayey sand), or GC (clayey gravel). Furthermore, GTA recommends that similar materials be used for backfill adjacent to the outfall structure. The use of the fine-grained plastic material adjacent to the pipe should decrease the potential for embankment failure induced by "piping" erosion processes. Use of a filter diaghragm should be considered in lieu of anti-seepage collars.

GTA's exploration identified soils generally classified as USCS SM, SC, CL and SP-GP. Based on the boring data, materials suitable for cutoff trench construction will not likely be available from on-site sources. Therefore, borrow of suitable clay materials from off-site will likely be required for cutoff trench construction. Off-site borrow sources meeting the required classifications should be identified prior to mass grading. All core trench material should meet the classifications required by MD 378, and be approved by GTA prior to placement as fill.

MD 378 specifies that all of the referenced soil classifications suitable for cutoff trench construction are also suitable for embankment construction. The native USCS SM and SC soils present in the majority of borings are also deemed suitable, and should be readily available on site. GTA recommends that the most plastic native materials available be used for embankment construction. GTA should evaluate embankment soils during the pond construction phase.

Basin Excavation and Embankment Construction

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Excavation to achieve the proposed basin bottom elevations will be required for both the SWM facilities. Based on boring data, standard scraping techniques should be suitable for excavation of the proposed ponds. If localized rock is encountered, ripping, jacking, or other mechanical means may be required to achieve basin or outfall inverts. These means are not anticipated to be required on a widespread basis. Groundwater was observed only in Boring SWM-6 located in the proposed extended detention basin at a depth of 12.5 feet. Groundwater is not expected to be a significant concern for the construction of the proposed SWM facilities. However, perched groundwater may be encountered locally and may require dewatering

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Proposed slopes should be designed in accordance with MD 378. Prior to the placement of compacted fill or the construction of the outfall cradle and structures, areas supporting proposed embankments and structures should be stripped and grubbed to remove all topsoil and other organic matter. After stripping, the subgrade should be proof-rolled as directed by a geotechnical engineer or his qualified representative. Unstable soils identified by proofrolling should be removed from subgrade. No fills should be placed or foundations constructed until the subgrade is approved by the geotechnical engineer.

Fills for cutoff trench and embankment construction should be placed in eight-inch loose lifts, and compacted to at least 95 percent of the maximum dry density in accordance with the Standard Proctor, ASTM D-698. Fills around the outfall works should be placed in 4-inch lifts and compacted to the same standard with hand equipment. Based on laboratory analysis, on-site soils are likely to be wet of the optimum moisture for compaction, and moisture conditioning may be required. Compactive effort should be monitored with in-place density testing as performed by a qualified representative under the direction of a professional engineer.

Subsurface Utilities

JUNE 2004

The natural soils are considered suitable for support of below grade utilities. Based upon the results of the borings, GTA anticipates that the excavations may be accomplished using standard utility construction equipment throughout the majority of the site. However, localized zones of very dense weathered/unweathered rock may be encountered. Such materials will require increased excavation. Due to the potential for collapse of unsupported excavation in granular soils, the utility contractor should be prepared to provide adequate earth support systems during utility construction. Dewatering through the use of "sump and pump" techniques may be required in some areas, especially if utility installation occurs during the wet season.

Compaction of the soils to the degree specified in the Site Grading section of this report may require that the soils be moisture conditioned prior to placement and compaction within the trench. If the excavated materials are wet of the optimum moisture content, they should be spread in thin layers and aerated by discing to within 2 to 4 percentage points of the optimum moisture. If soils are not dried, suitable borrow material will need to be imported from other areas of the site for utility trench backfill. Settlement and instability are likely if the on-site soils are used as backfill at moisture levels more than 4 percentage points above optimum.

Surface and Subsurface Drainage

Final grades should be carefully established to provide adequate surface drainage away from the foundations. A minimum grade of 3 percent in lawn and landscape areas is recommended to direct surface waters from proposed construction.

Based on the soil borings, groundwater was encountered only in Soil Boring SWM-6 at a depth of 12.5 feet. Therefore, groundwater is not expected to greatly affect construction. However, there is a potential for perched or trapped groundwater to be encountered in localized portions of the site, particularly within the granular soils underlain by denser

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weathered/unweathered rock. In the even that localized perched water is encountered, the contractor should be prepared to dewater the excavations.

Stormwater Managemen Infiltration Techniques

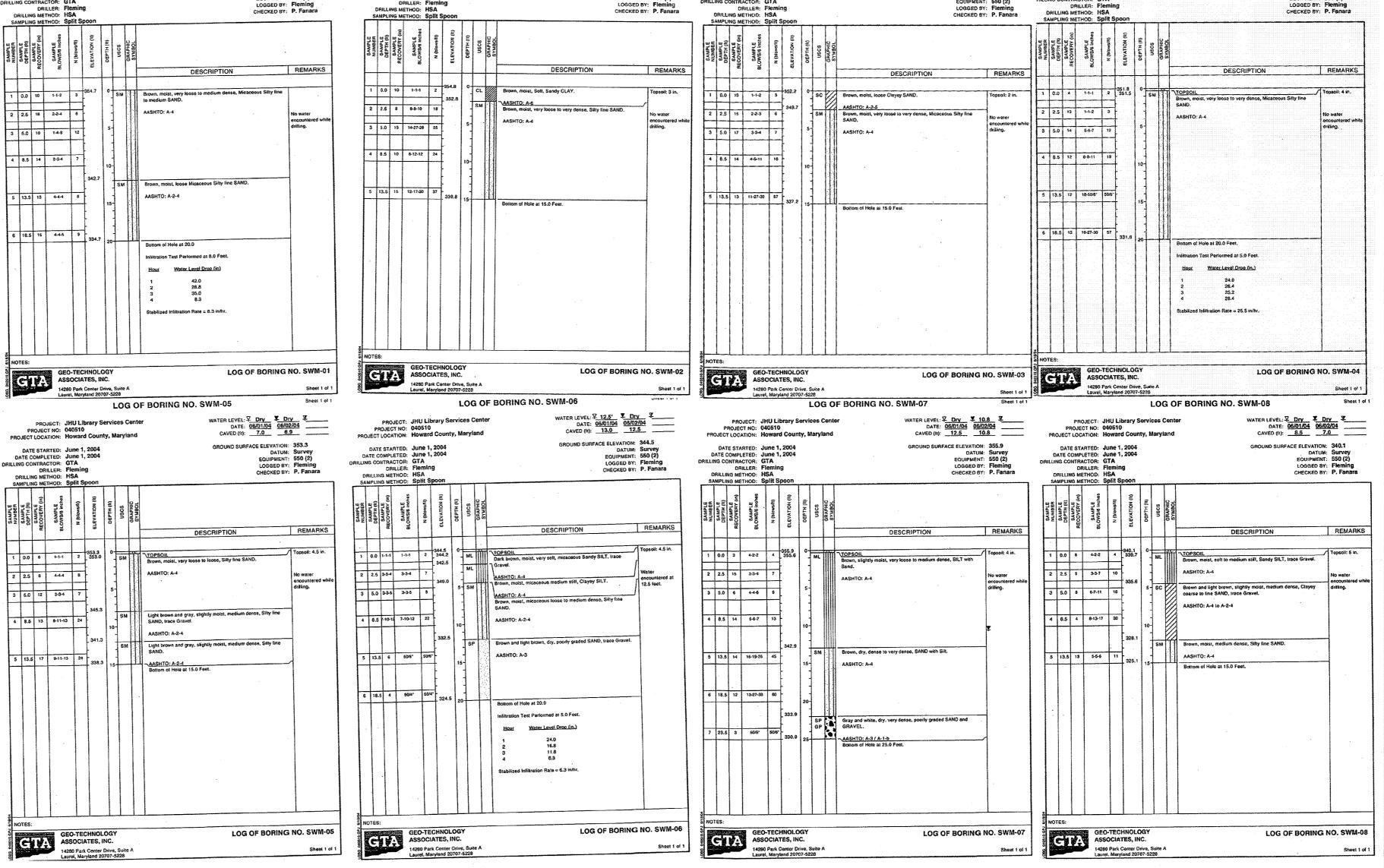
GTA was requested to evaluate the feasibility of infiltration water quality techniques at three of the boring locations. Guidelines adopted by the Maryland Department of Environment (MDE) recommend a vertical buffer of 2 to 4 feet between the infiltration invert and groundwater or rock. In addition, the minimum acceptable average infiltration rate as indicated by the borehole permeability test is 0.5 inch per hour. The following table provides a summary of conditions at each of the locations evaluated.

INFILTRATION TEST RESULTS

Boring No.	Infiltration Rate (in/hr)	Comments		
SWM-1	8.3	Infiltration rate greater than 0.5 inches/hour at 8.0 feet. Infiltration techniques are considered suitable.		
SWM-4	25.5	Infiltration rate greater than 0.5 inches/hour at 5.0 feet. Infiltration techniques are considered suitable.		
SWM-6	6.3	Infiltration rate greater than 0.5 inches/hour at 5.0 feet. Infiltration techniques are considered suitable.		

The relatively high infiltration rates are due to the pervious nature of the granular residual soils. Based on the results of field and laboratory testing, infiltration stormwater management techniques are considered feasible at the locations tested. Stormwater Management Facilities

The site will consist of two SWM facilities. A forebay and sand filter are located to the west and an extended detention pond is to be located to the north of the proposed buildings and will be essentially excavated. The extended detention basin will be constructed by excavation the basin and placing fills for embankments. The cuts and fills for the extended detention pond are expected to be up to 10 to 12 feet.



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GEO-TECHNICAL REPORT **INFORMATION**

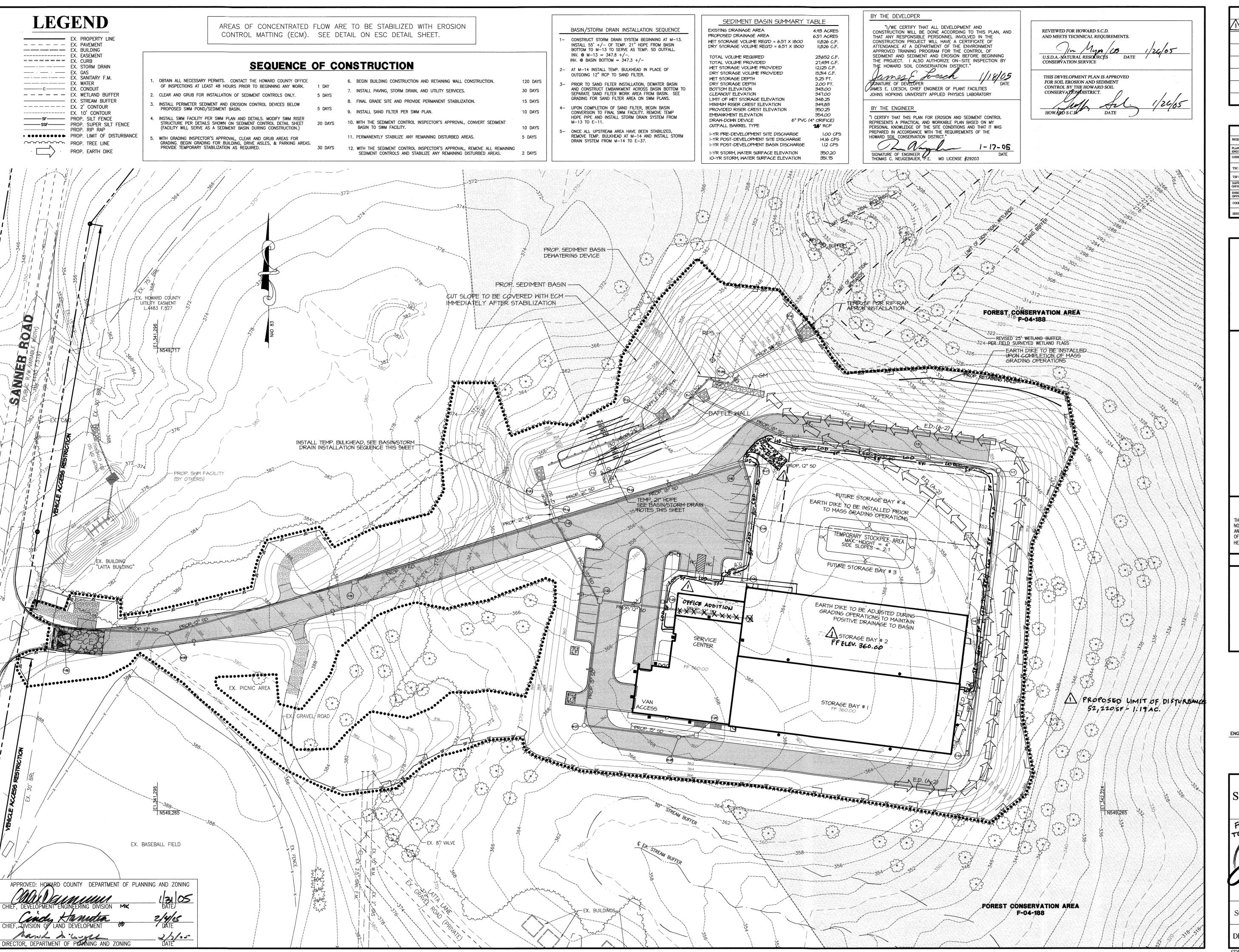


SDP-15

1-17-05 SHEET: 15 OF 23

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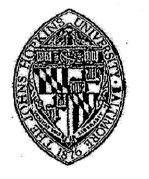
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	Scale 1'	' = 40'	



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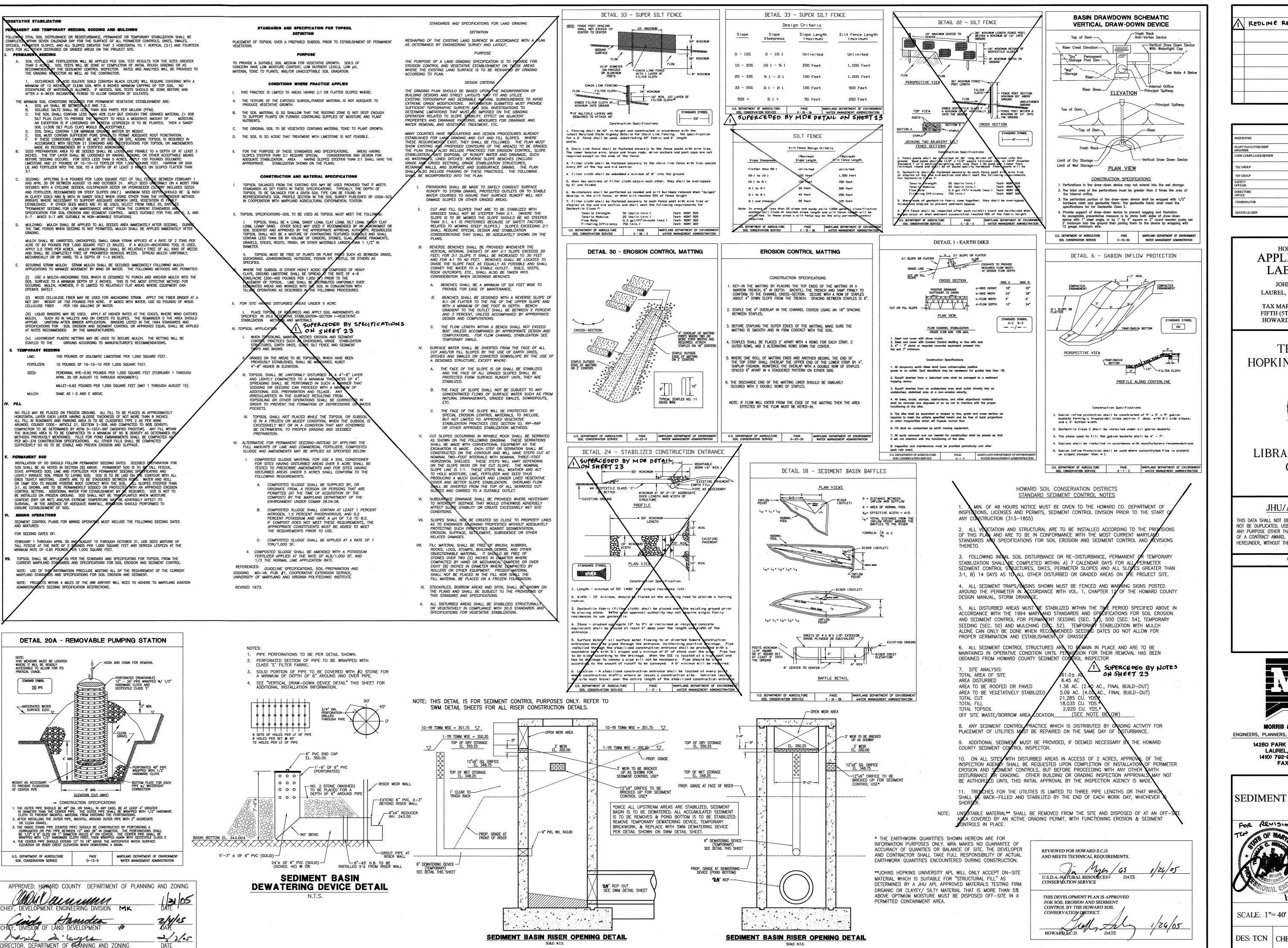
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SDP-16

1-17-05 SHEET: 16 OF 23

SCALE: 1"= 40'

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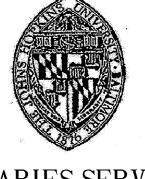
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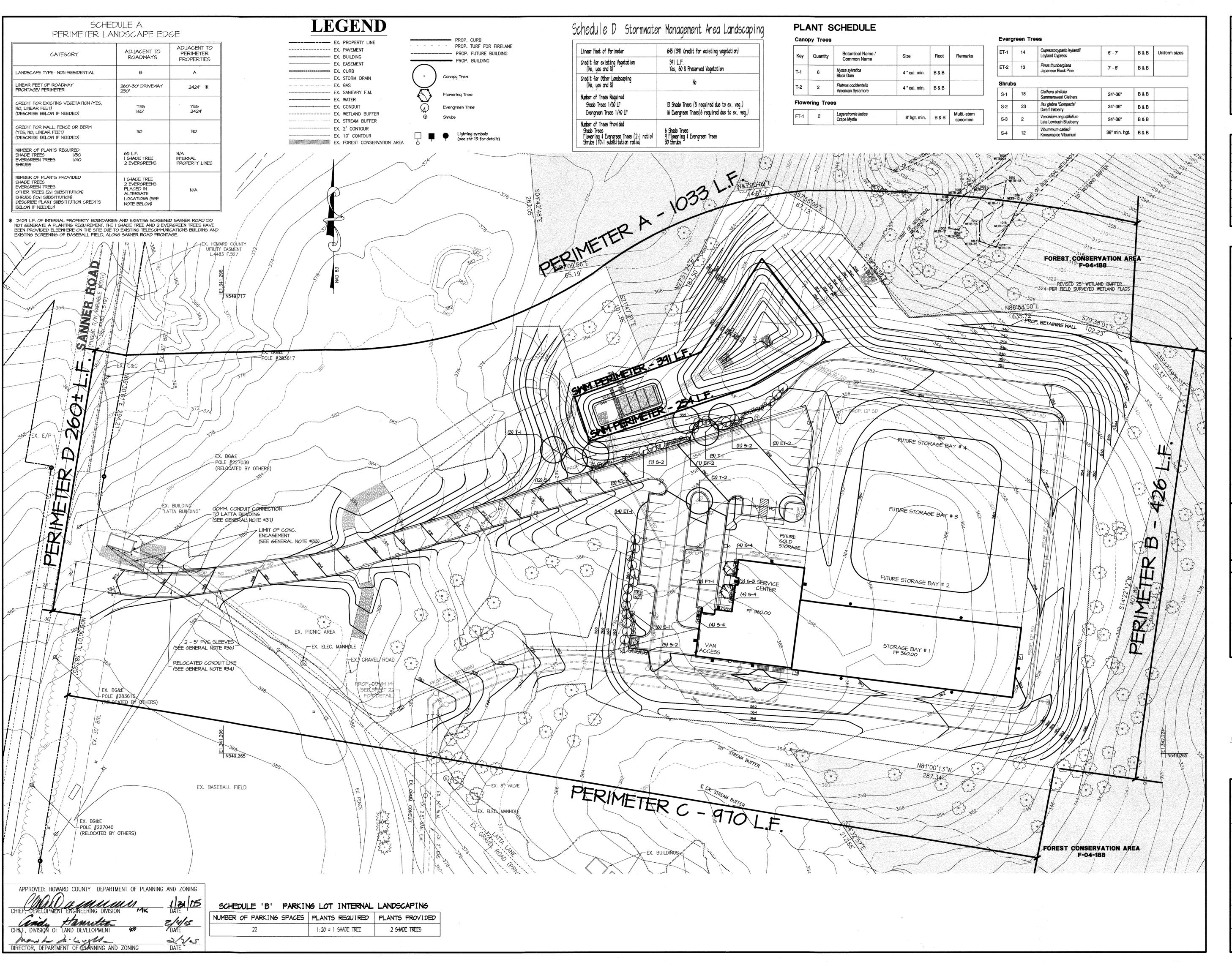
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REQUESTER	
PLANT FACILITIES CHIEF ENGINEER	
CODE COMPLIANCE REVIEW	
TSC GROUP	
TSF GROUP	
SAFETY OFFICER	
DIRECTORS OFFICE	
COORDINATOR	
SENIOR LEADER	

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



LIBRARIES SERVICE CENTER

JHU/APL INTERNAL USE

THIS DATA SHALL NOT BE DISCLOSED TO A THIRD PARTY AND SHALL NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN TO EVALUATE THIS RFP OR IN, THE CASE OF A CONTRACT AWARD, TO PERFORM THE WORK REQUIRED HEREUNDER, WITHOUT THE EXPRESS WRITTEN CONSENT OF JHU/APL.

GRAPHIC SCALE



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395





JOB NO.: 13685

SDP-18

SHEET: 18 OF 23

SCALE: 1"= 40'

DES: LFB | CHECK: DWM | DATE: 01-17-05

5.40

PLANTING SPECIFICATIONS

PART 1 GENERAL:

1.01 DESCRIPTION:

- A. Work consists of all labor, materials, equipment and services necessary for and incidental to the execution and completion of THE FINAL LANDSCAPE PLAN as indicated on the Drawings and specified herein.
 - Furnishing of tree protection and planting materials. Preparation, planting operations, mulching and staking.

1.02 REFERENCES AND QUALITY ASSURANCE:

- A. Landscape Contractors Association MD-DC-VA (LCA), Landscape Specification Guidelines, latest edition except where superseded by specific requirements herein.
- B. American Association of Nurserymen (A.A.N.): American Standard for Nursery Stock, A.N.S.I. Z60.1, latest edition. C. Nomenclature: In accordance with Hortus Third, latest edition, by the staff of the L. H.
- Bailey Hortorium, Cornell University. D. Federal Specification: Q-P-166e as applicable to Peat Moss. E. National Arborist Association, Standard for Pruning of Shade Trees, Guying of Shade
- Trees, Fertilizing Shade and Ornamental Trees and Pesticides Application Operations, F. Maryland Department of Transportation, State Highway Administration (MSHA)
 Standard Specifications for Construction and Materials, October 1993, as amended to

date. Delete references to "Measurement and Payment". 1.03 STANDARD OF COMPARISON:

- A. When requested by the Owner's Representative, the Contractor shall obtain approval of a "standard" of comparison, prior to the delivery of plant material to the site.
 - 1. Contact the Owner's Representative to schedule an inspection for approval of the "standards" for plant material to be installed at the project site. 2. "Standards" shall be assembled at the project site for review and approval, or at the Contractor's principal business location, as determined by the Owner's

Representative. Approved "standards" may be planted at the project site.

- A. Source: Notify the Owner's Representative, in writing, of the source of all material at least ten (10) working days prior to delivery at the project site.
- 1. If requested, a mulch sample shall be provided at the site for approval by the Owner's Representative (1 C.F. minimum).

 2. Submit certification of peat moss compliance with referenced specifications.

- A. Store plants that cannot be planted within 8 hours in a sheltered place. Water and maintain as required until planted.
- B. Transport and handle plants so that foliage and roots are protected from breakage, sun and wind. Tops or roots of plants allowed to dry out or which have been damaged or disturbed root systems may be rejected. C. B & B (balled and burlapped) plants: Firm, natural balls of soil, with size and depth of ball in accordance with A.A.N. Standards.

1.06 QUANTITIES AND SUBSTITUTIONS: A. Quantities of plant material are based upon the plant lists shown on the Drawings.

- 1. Bidders shall notify the Owner's Representative if specified plants are not available
- from sources within 100 miles of the project site, giving the names of all sources 2. If an acceptable source cannot be located for the specified plants, the Owner's Representative will select a substitute and notify the Bidders of the approved
- substitution for the Bid to be based upon, or provide a source for the originally 3. Substituted plants shall be of the same size and condition as the original plant

1.07 PROJECT CONDITIONS

- Primary planting season: September 15 to May 15.
- Other periods with written approval from the Owner's Representative. B. Existing Conditions: Notify Miss Utility (1-800-257-7777), and the Owner's Representative prior to planting operations. Verify the location of underground utilities.
- A. Diameter at Breast Height (DBH): The diameter of a tree measured at a point on the trunk 4.5 feet above the ground. B. Initial Acceptance: Occurs when all plant material is in place in accordance with the
- specifications and approved by the Owner's Representative. C. Maintenance Period: From initial acceptance of the plantings, and continuing thereafter
- D. Owner's Representative: The Landscape Architect or other Qualified Professional designated by the Owner or Developer of the Project.
- The deliberate holding and protecting of existing trees, shrubs or herbaceous $\ddot{}$ plants on the site.
- F. Specimen Tree: A tree which exists on the project site prior to construction or planting having a 30 inch or greater DBH, or tree having 75 percent or more of the diameter of the current state or county champion tree of that same species.
- G. Start of Planting: Installation of plant material into excavated pits or beds.
- H. Final Acceptance: Occurs after Contractor has completed all outstanding items, as determined by the Owner's Representative, at the end of the maintenance period.

1.09 SURVIVAL REQUIREMENT AND REPLACEMENTS:

- A. The minimum survival rate shall be 100 percent of the total number of trees and shrubs planted at the end of the 12-month maintenance period.
- B. Replacement materials shall be the same size as the original plant material taking into account any growth that has occurred since original installation.
- A. Immediately following the completion of construction and installation of the plantings, the owner or owner's representative will be notified for an inspection of the entire
- B. If, upon Final Acceptance Inspection, trees and other vegetation designated as retention plant material are found to be damaged or dead due to mechanical intrusion or related construction activities associated with the landscape contractors installation and maintenance of the said plan, then replacement equivalent will be required.

- A. Plant materials shall meet or exceed the requirements of A.A.N. standards, or as amended herein.

- They shall have been grown under climatic conditions similar to those in the locality of the project or properly acclimated to conditions of the project locality.
- of the project or properly acclimated to conditions of the project locality. All container grown plants shall be well rooted & established in the container
- Seedlings and whips shall be measured at the root collar.

- free from branches up to eight (8) feet in height from finish grade.

2.04 SHRUBS:

At least 75% of the individual branches or canes of a shrub shall be to the height

- A. Contact herbicide shall be "Round-up" or approved equal.
- B. Pre-emergence herbicide shall be "Snapshot" or approved equal. 2.06 TOPSOIL FOR AMENDING EXISTING SOIL:
 - A. General Requirements (only where required by details on the Drawings):
 - 1. Natural, friable sand loam topsoil which is free of subsoil, clay lumps, stones, stumps, roots or similar objects larger than 1-inch.
 - B. In accordance with M.S.H.A. Item 920.01.02 for Furnished Topsoil if borrow topsoil is required from an off-site location.

- Total Nitrogen Available Phosphoric Acid Soluble Potash
- be delivered to the site with formulas attached.

- A. Mulch shall be the following as indicated on the Drawings. Shredded hardwood.
 - Pine Straw.

LIGHTING SPECIFICATIONS

RZ Type II roadwey

R5S Type V square

KAC (prismatic lans)

OPA Drop acryllo

KAD OP KAD FP & KAC 1.4 ft (.13 m³) 1.2 ft (.11 m³) 17-1/2 (44.5) 17-1/2 (44.5) 11.4/6 (26.3) 7-1/6 (18.1) 40 the (18.1 kg) 42 lbs. (18.1 kg)

Metal Halide

SR2 Type II asymmetric

SR3 Type III asymmetric

R3 Type III asymmetric

B. Mulch shall have been prepared within the last four (4) months.

A. Unclassified: Excavate and remove surplus materials encountered, without additional cost to the Owner. Retain only sufficient soil to form soil wells as shown on the Drawings. Disposal of surplus material may be on-site if approved

Potable; if not available at the site from a public water supply, the Contractor

1. Stakes: 2 inch x 2 inch rough sawn oak stakes, notched to hold wire,

B. Tree shelters, netting and stakes: Extruded twin-walled polypropylene with ultra-

Stake shall be oak, pointed, 1 inch x 1 inch x 3 feet nominal. Protective netting: Flexible plastic mesh capable of covering the top opening of the tube to prevent entry by birds.

1. Prior to the beginning of any clearing, grading or disturbance of the site,

The following items, and others as deemed necessary, will be reviewed as applicable to the Project:

a) Staked limits of required retention areas and protection fencing,

sediment control devices, and the sequence of operations.

reviewed in the field during the pre-construction meeting shall be

Prior to the beginning of planting operations, a meeting shall be held at the project site with the Contractor and Owner's Representative to review

b) Areas to receive selective application of herbicides prior to

d) Proposed schedule, sequence of planting operations and other

A. Tree protection fencing, signage and other pre-construction activities noted on

B. Additional temporary, and permanent fencing, shall be installed in conjunction

C. Plant Locations: As shown on the Drawings, to dimensions if shown, or as

D. Utilities: The Contractor shall locate existing and proposed utilities prior to

1. If a conflict is identified between the location of utilities and proposed

2. Bidders shall notify the Owner's Representative of potential conflicts

E. No plant material shall be installed until the Owner's Representative has approved

planting locations, the Owner's Representative shall establish an alternate

with or prior to planting operations as shown on the Drawings.

the Drawings for retention areas shall be installed prior to any on—site clearing

detailed if not specifically labeled. Locations subject to review by the Owner's

planting, if applicable.
c) Proposed location of temporary and permanent fencing.

a) Staked limits, of proposed planting areas, completed prior to the

3. Designated adjustments to the proposed limits and locations of items

incorporated prior to beginning construction.

ne following, as applicable to the project:

Representative prior to planting.

identified prior to submission of a Bid.

the finish grade of areas to receive planting.

b) Staking and flagging shall be completed by the Contractor prior to

a meeting at the project site shall be held with the Contractor and Owner's Representative.

proposed limits of clearing and grubbing, the proposed location of

2.11 ANTI-TRANSPIRANT:

2.12 ACCESSORIES:

Shall be the following or approved equal:

length as required to secure the tree.

Sleeves: Nylon reinforced green vinyl hose.

Wire: Galvanized steel wire, doubled,

Wilt-Pruf Products Inc P. O. Box 469

P.O. Box 7097

PART 3 EXECUTION:

3.01 INITIAL INSPECTIONS

Saint Paul, MN 55107

A. Pre-construction meeting

(203) 767-7033

or approved equa

B. Underground obstruction, rock or other obstructions too massive to remove: Notify Owner's Representative for further direction. Alternate locations will be selected. Make such relocations without additional compensation.

3.04 PLANTING PROCEDURES:

- A. Do not plant when ground is frozen or excessively wet.
- B. Set plants straight and plumb and at such a level, that after settlement the first lateral root is flush with the adjacent ground surface.
- C. When B&B or container plants are set, planting soil shall be carefully tamped around the base of the balls to prevent voids. All burlap, rope, wires, etc., shall be removed from the tops of balls. Plastic/nylon cords or cloth shall not be left in
- D. Backfill plants and tamp to two—thirds depth of pit and thoroughly water before bringing backfill up to proper grade. Thoroughly water the plant again after the soil well has been completely formed in—place.
- E. Wells Around Trees and Shrubs: After planting is complete, form a soil well around designated plants, extending to the outer limit of the plant pit in
- F. Designated Planting Beds: All vegetative growth shall be removed to a sufficient depth to insure a weed—free bed. Till the existing soil to a depth of 8—inches throughout the designated bed areas. The edge of all planting beds shall be cut flush with adjacent grade when the installation has been completed

- Plants and beds shall receive a 2 to 4 inch cover of mulch. Mulch shall be installed within 8 hours after planting has been completed. B. Mulch, surrounding planting mass areas, shall provide a uniform and contiguous surface, and appearance between and around all plant material, buildings and poved areas.
- 3.06 STAKING, WRAPPING AND GUYING: A. Stake trees, which require staking as shown on the Drawings, during the same
 - Guying shall be in accordance with the Details. Stakes shall be securely driven in ground and plants guyed to provide and

- A. Pruning: Any broken or damaged branches shall be removed. Damage, removal or pruning of tree leaders shall be cause for rejection.
- B. Anti-transpirant: Deciduous plants, installed from May 1st to September 15th shall receive application in accordance with the manufacturer's recommendations.

A. Notify Owner's Representative prior to fertilizing operations.

- B. Approximately 1 year after planting, but prior to the maintenance agreement's expiration, the Contractor shall fertilize all plant material. Plant foliage shall be completely dry at the time of application. Fertilizer adhering to plant foliage after application shall be removed. Water thoroughly after application.
 - C. Rate of application shall be in accordance with the fertilizer manufacturer's
 - Shrubs: 4 pounds of 5-10-5 per 100 square feet. Trees: 2 pounds of 5-10-5 per inch of caliper distributed uniformly in

- A. Excess and waste materials shall be removed from the site before or upon completion of planting operations, or daily if required by the Owner's
- B. Repair turf areas and other existing conditions damaged during planting operations, including regrading, seeding and mulching to the satisfaction of the Owner's Representative.
- A. Contractor shall warranty all plant material for a period of one (1) full year after the date of substantial completion against defects, unsatisfactory growth,
- A. Contractor shall inspect and provide necessary services throughout the 12-month
 - Watering as required for local conditions. Inspection for pests and disease shall be performed a minimum of two (2) times within the initial year, after spring leaf-out and at mid-summer, or
- more frequently if necessary to control problems. Weeding and removal of invasive plants shall be performed a minimum of four (4) times per year, during the first two weeks of the months of May,
- June, July and August. Plant material shall be re-mulched, just prior to the maintenance agreement's expiration, with a minimum 1-inch depth of new mulch. 5. Fencing, signs, stakes and guys shall be tightened, repaired or replaced as
- necessary throughout the maintenance period in accordance with original details and installation requirements. Ensure trees to remain plumb and upright

Building Mounted

C. Notify Owner's Representative prior to initiating maintenance operations. 3.12 ACCEPTANCE

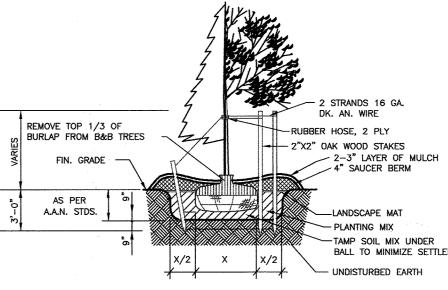
Survival requirement in accordance with Item 1.09 above

Contractor must contact the Owner at least ten working days in advance to schedule acceptance inspection(s).

CORNER OF ROOT SYSTEM TO BE AT LINE OF ORIGINAL GRADE - FIRMLY COMPACTED SAUCER (USE TOPSOIL ANGLE OF REPOSE VARIES WITH STEEPNESS OF SLOPE AND SOIL TYPE. CUT THE ROPES AT TOP OF BALL. REMOVE TOP 1/3 OF BURLAP. NON-BIODEGRADABLE MATERIAL SHALL BE TOTALLY REMOVED.

SHRUB PLANTING DETAIL (BALL & BURLAP OR CONTAINER)

NOT TO SCALE



SHADE, FLOWERING OR EVERGREEN TREE PLANTING DETAIL

GENERAL NOTES:

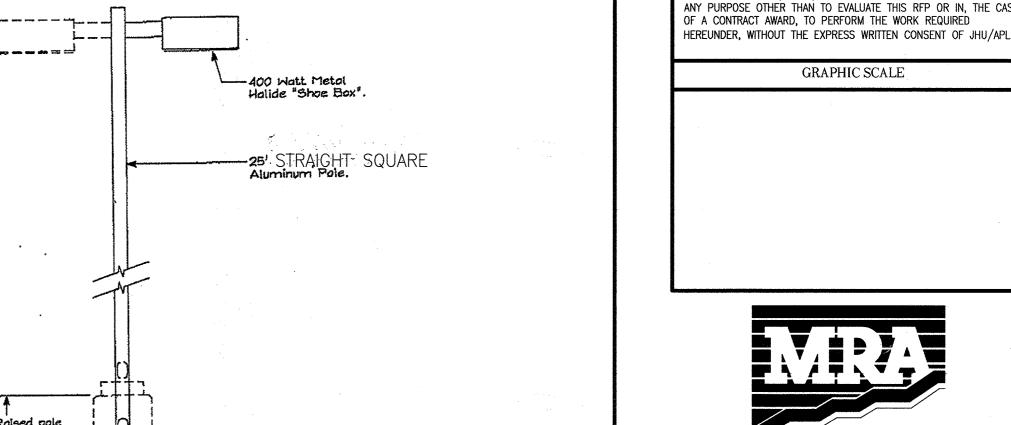
1. NO SUBSTITUTIONS OF PLANT MATERIAL SHALL BE PERMITTED WITHOUT WRITTEN AUTHORIZATION OF THE LANDSCAPE ARCHITECT AND/OR HOWARD COUNTY PLANNING AND ZONING. THIS SHALL APPLY TO SUBSTITUTIONS OF SPECIES, SIZE, QUANTITY, AND

2. TREES SHALL BE LOCATED A MINIMUM OF 5' FROM SEWER/WATER CONNECTIONS. CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO ANY AND ALL PUBLIC AND PRIVATE 3. CONTRACTOR SHALL SLIGHTLY ADJUST PLANT LOCATIONS IN THE FIELD AS NECESSARY TO BE CLEAR OF DRAINAGE SWALES AND UTILITIES. FINISHED PLANTING

- BEDS SHALL BE GRADED SO AS NOT TO IMPEDE DRAINAGE AWAY FROM BUILDINGS. SEEDED AREAS THAT WASH OUT MUST BE FILLED AND GRADED AS NECESSARY AND THE RESEEDED. SOME TYPE OF ANCHORING METHOD SHOULD THEN BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATER COURSED, IN SWALES AND AREAS OF CONCENTRATED FLOWS, AND ON SLOPES.
- 6. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF \$ 3,300.00. (7 SHADE TREES @ \$300.00 ea., 8 EVERGREEN @ \$150.00 ea).

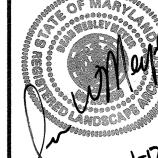
5. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION

16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE, SUITE A

LIGHTING AND LANDSCAPING DETAILS JOB NO.: 13685



1-17-05 SHEET: 19 OF 23

DES: LFB

Ordering Information

available for surface conduit applications. Optics - Anodized aluminum reflectors: segmented, specular or hammertone finish. Electrical - 150W and below utilizes a high reactance, high power ballast, 175W and above utilizes a constent-wattage, autotransformer ballast. Both ballasts are copper wound and 100% factory tested. Socket-Horizontal porcelain socket (WFL2 medium-base, WFL3 mogul-base) with cop-

er architectural colors available. Closed cell silicone gasket prevents the penetration of dust and moisture. Lens - Clear, impact-resistant, tempered

Listings – UL Listed (standard). CSA Certified (see options). UL listed for wet locations. IP65 rated in accordance with standard IEC 529.

For product detells and parformance data, see the OUTDOOR

Architectural Wall-Paks

iF Single fuse (120, 277, 347V, n/e TB) Standard colors:

DBB Dark bronze (standard)
DWH White DF Double fuse (208, 240, 480V, n/a TB) QRS Quartz restrike system (WFL3 only) CR Corrosion-resistent finish CSA CSA Certified CFRO Color lens/Rose CFBL Color lens/Blue EC Emergency pircult (size 3 only)

SCWA Super CWA pulse start beliest (n/a

HPS 70M, 100M or 175M) BBW Back box

> Dimensions are shown in inches (contimeters) unles 1,3 ft² L,12 m²) 18½(47) 11½(129,3) 5½(16.6) 20|bs(13.1 kg) Length Depth Height

DBL Black

DMB Medium bronz

DSS Sandstone

DNA Neturel eluminun

DGC Charooal gray

EV Eggcrate visor (black)

HLV Horizontel louver (black)

VLV Verticel louver (black)

BVG Bubble yandal guard

DTG Tennis green

BV Bottom visor

WG Wire guard

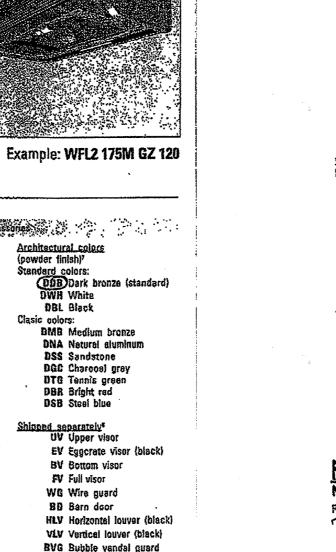
BD Barn door

DSB Steel blue

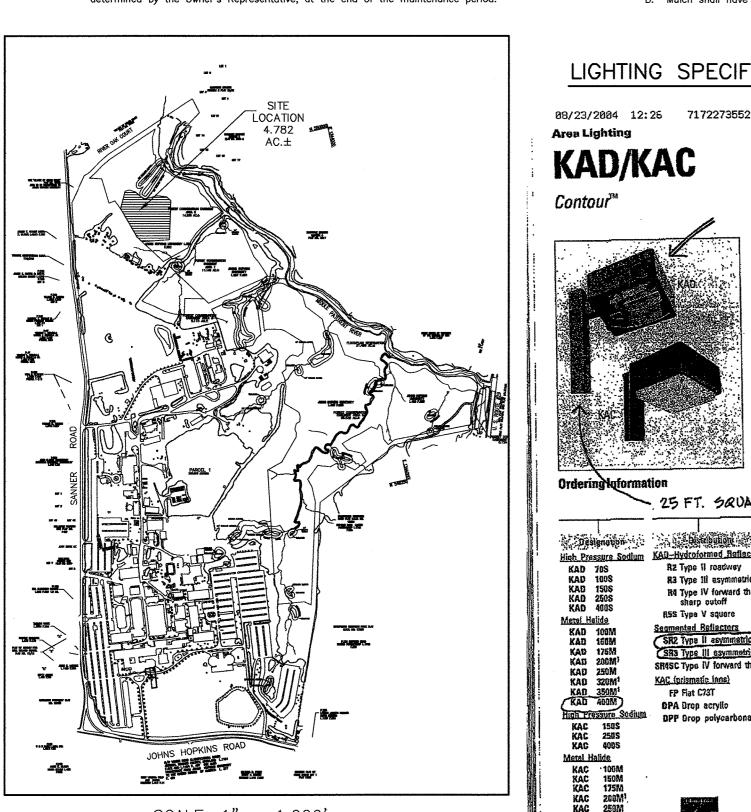
ipped separately* UV Upper visor

FV Full visor





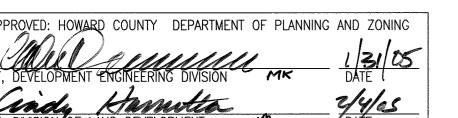
Provide 30" roleed pole base above poving where oted in addition to foundation shown.



SCALE: 1" = 1.000

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DATE RECTOR, DEPARTMENT OF PLANNING AND ZONING

High Pressure Sodium KAD-Hydroformed Reflectors 120 Metal Halida



C. Methods of installation shall be identical to the original. 1.10 PENALTY FOR VIOLATION

- B. Plants shall be typical of the species and variety, and have a normal habit of
- C. Sound, healthy, vigorous, free from plant diseases, insect pests or their eggs and
- E. Plants cut back from larger sizes or pruned prior to delivery will not be accepted.
- in which they are sold. F. Measurements: The caliper of deciduous trees (except seedlings and whips) shall be measured 6-inches above ground level for trees up to and including 4 inch caliper and 12 inches above ground level for material larger than 4 inch caliper.

- A. Single straight leader, well branched, and symmetrical, without suckers or
- B. Trees planted within five (5) feet of pedestrian ways, parking lots or roads shall be

- Sheared evergreen plant material shall not be acceptable.
- 2.05 HERBICIDES:
- 2. Free of brush, objectionable weeds and litter or other substance which is harmful to plant growth.
- 2.07 FERTILIZER FOR POST PLANTING A. 5-10-5 (Plant food by minimum percentages.)
- B. Fertilizer shall be slow release over a minimum 3 year period. Fertilizer shall
- Baled sphagnum peat moss, Type I-A, conforming to Federal Specification Q-P-166e.

SPEARS ENGINEERING Arm-Mounted Drop or Flat Lens Cutoff FOLE MOUNTED metric). Reflectors are field-interchangable. KAC reflector is optical-quality all minum that works in tandem with a lightdiffusing prismatic lens. Electrical - Ballast is high-reactance, high

Features power factor (70-150W HPS,100M &150M) or high power factor constant-wattage a Housing - Rugged, die-cast, soft-corner otransformer (175-400W MH & HPS). Balaluminum housing with 0.12" nominal well thickness, Extruded 4" soft corner arm for pole or wall mounting is standard. Door Frame - KAD die-cast door frame has impact-resistant, tempered glass lens which is fully gasketed with one-piece bonded tubular silicone. KAC die-cast

aluminum door frame has prismatic, impact-resistant, temperad glass, drop dish acrylic lens or drop dish polycarbonate lens. Door frame is fully gasketed with one-piece tubular silicone. Optics - KAD reflectors are anodized hydroformed/segmented aluminum, field-Interchangeable. Four cutoff distributions available: R2 (Roadway), R3 (Asym-

For parking areas, street lighting, walk-

For product details and performance date, see the OUTDOOR binder of the on-line catalog at water hinder com. metric), R4 (Forward Throw) and R5 (Sym-25 FT. SQUARE ALUM. POLE

SP009 4" square pole arm" (std.)
SP009 9" square pole arm RPD09 9 round pole arm WWD04 4" wood pole or well WWD09 8' wood pole or well WBD04 4' wall bracket WBD05 9 wall bracket

Shipped separately with any HPS, 100M or 175M) KMA Mest arm adapter KTMB Twin mounting bar DAD12P Degree arm (pole DAD12WB Degree arm (wall

Shinned Separately KADVG Vendal quare KADWG Wireguard

last is copper wound and 100% factory Finish (Dark bronze polyester powder finish (DDB) is standard with other architectural Socket - Porcelain, horizontally (position oriented mogul-base socket (100M & 150M are medium-base) with copper alloy, nick-

el-plated screw shell and center contact. glass lens with silkscreen. UL listed 1500W-600V. 4KV pulse rated. Mounting - Steel mounting plate attaches Listings - UL Listed (standard). CSA Certified or NOM Certified (see options). UL list-

Example: KAD 400M R3 120 SPD09 LPI Lamp Included SF Single fuse, 120, 277, 347V (n/a TB) DF Double fuse, 208, 240, 480V (n/a TB) ORS Quartz restrike system (250W max lamp not included PO Power trays WTB Terminal backs EC Emergency circuit SCWA Super CWA Pulse Stert Ballast (n/a

NOM NOM Certified (consult factory) For optional architectural colors, see page 349. PE1 NEMA twist-lock PE (120-240V) PE3 NEMA twist-lock PE (347V) PET NEMA twist-lock PE (277V SC Shorting cap for PER option HS House-side shield (H2, R3, R4) (SR2,

> 8 May be ordered as an accessory. Door frame must be factory diffied. Additional architectural colors available; see paint bro

sion for attachment independent of junc-Intended Use ion box. Optional Backbox wall mounting For building and wall-mounted applica-

Housing - Extruded aluminum body with cast end caps is mounted with 1/4" bolts, to formed steel wall bracket. Housing body can be rotated and locked in any position along horizontal axis. Standard finish is dark bronzed (DDB) polyester power. Othper alloy, nickel-plated screw shell and Lens Frame-Castaluminum frame Is hinged and secured by stainless steel fasteners.

center contact. 4KV pulse rated. UL listed

directly to industry standard junction box WFL2 only. Mounting plate includes provi-

Harizontal Housing & Lomp

WFL2 150M WFL2 175M WFL3 200M WHS 400MP TYPE B

30° Roised pole base where noted —Finished Grade Pvc Conduit Sweep

ANCHOR BOLTS (SIZE AND LOCATION PER MANUFACTURER)

HOPKINS UNIVESITY **APPLIED PHYSICS LABORATORY** BALL TO MINIMIZE SETTLEMEN JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099 TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND NOT TO SCALE THE JOHNS HOPKINS UNIVERSITY

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SENIOR LEADER

NT FACILITIES CHIEF INEER

ODE COMPLIANCE REVIE

ANY PURPOSE OTHER THAN TO EVALUATE THIS RFP OR IN, THE CASE OF A CONTRACT AWARD, TO PERFORM THE WORK REQUIRED

THIS DATA SHALL NOT BE DISCLOSED TO A THIRD PARTY AND SHALL NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART FO

GRAPHIC SCALE

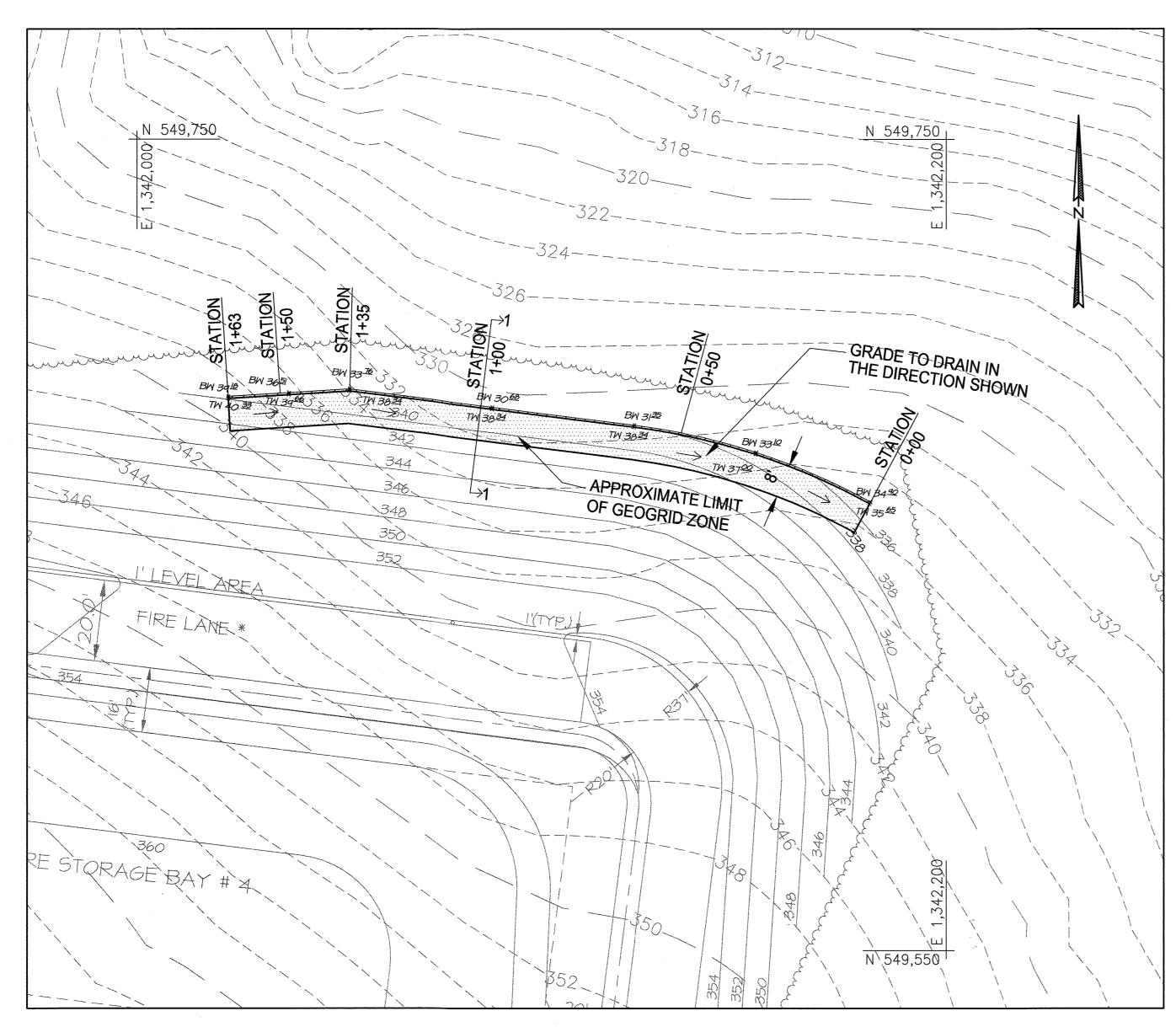


LAUREL, MARYLAND 20707

(410) 792-9792 or (301) 776-1690

FAX (410) 792-7395

SCALE: 1"= 40" | CHECK: DWM | DATE: 01-17-05



RETAINING WALL LOCATION PLAN SCALE: 1" = 20'

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

14280 PARK CENTER DRIVE, SUITE A

LAUREL, MD 20707 (410) 792-9446 or (301) 470-4470

FAX (410) 792-7395

The location plan was adopted from the "Johns Hopkins University, Libraries Service Center, Grading Plan", prepared by Morris & Ritchie Associates, Inc., dated July 20, 2004.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

RECTOR, DEPARTMENT OF PLANNING AND ZONING

2/2/05

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 — GENERAL

1.1 Work includes furnishing and installing segmental retaining wall units, geogrid reinforcement, wall fill, and backfill to the lines and grades shown on the construction drawings and as specified herein. The contract also includes the furnishing and installing all appurtenant materials, equipment, and labor required for construction of the geogrid reinforced, segmental retaining wall. All existing and proposed construction and site grading information was referenced from the Johns Hopkins, Libraries Service Center, Grading Plan, prepared by Morris & Ritchie Associates, Inc, dated July 20, 2004.

1.2 REFERENCE STANDARDS

- A. ASTM C90-75 (1981 rev) Hollow Load Bearing Masonry Units
- B. ASTM C140-75 (1981 rev) Sampling and Testing Concrete Masonry Units
- C. ASTM C145-75 (1981 rev) Solid Load Bearing Concrete Masonry Units D. Geosynthetic Research Institute (GRI), GRI-GG4 - Determination of Long Term Design Strength
- of Geogrids. E. ASTM D 638 - Test Method for Tensile Properties of Plastic
- F. ASTM D 1248 Specification of Polyethylene Plastics Molding and Extrusion Materials G. ASTM D 4218 - Test Method for Carbon Black Content in Polyethylene Compounds by the
- Muffle Furnace Technique H. ASTM D 3034 - Specification for Polyvinyl Chloride (PVC) Pipe
- I. ASTM C 1372 Specifications for Segmental Retaining Wall Units

1.3 DELIVERY, STORAGE AND HANDLING

- A. Contractor should check the materials upon delivery to assure that proper material has
- B. Contractor should prevent excessive mud, wet cement, epoxy, and like materials which may affix themselves, from coming in contact with the materials.
- C. Geogrids should be stored above -20 degrees F.
- D. Contractor should protect the materials from damage. Damaged material should not be incorporated into the reinforced retaining wall.

1.4 SUBMITTALS/CERTIFICATION

The contractor shall submit a Manufacturer's certification, prior to the start of the work, that the retaining wall system components meet the requirements of ASTM C 1372 and other requirements specified herein. This certification should be provided to the geotechnical engineer for review and approval prior to wall construction.

PART 2 - PRODUCTS

retaining wall and geogrid zone.

2.1 DEFINITIONS

- A. Geogrid is a high density polyethylene, polyester, or polypropylene grid, specifically fabricated for
- B. Concrete retaining wall units are as detailed on the drawings and as specified herein.
- C. Geosynthetic Drainage Composites are polyethylene net structure with non-woven geotextiles bonded to both sides.
- D. Erosion Control Blankets consist of a web of polyolefin fibers securely bounded by polyolefin threads between two high strength polyolefin nets.
- E. Backfill is the soil which is used as fill for the reinforced soil mass. F. Foundation soil is the in-situ soil or controlled compacted fill placed below the bottom of the

2.2 MATERIALS

The contractor should submit manufacturer's catalog and samples of the proposed materials for approval by the project geotechnical engineer a minimum of seven days before the start of construction. Materials should be transported to the site only after approval of the proposed materials by the project geotechnical engineer

- A. Concrete Units 1. Masonry units should be Keystone Standard II Retaining Wall Units. Substitution of other concrete
- units may be allowed with the prior approval of the Geotechnical Engineer. 2. Concrete wall units should have a minimum 28 day compressive strength of 3000 psi, in accordance with ASTM C-90. The concrete should have adequate freeze/thaw protection with
- a maximum moisture absorption of 6 percent. 3. Modular concrete materials shall conform to the requirements of ASTM C 1372 - Standard Specifications for Segmental Retaining Wall Units.
- 4. The units shall pass 100 freeze/thaw cycles in water with less than 1% weight loss in accordance with ASTM C 1372.
- 5. Exterior dimensions may vary. Units are required to have a minimum of one square foot of
- face area each. 6. Units should have angled sides and be capable of attaining concave and convex alignment curves
- in accordance with manufacturer's recommendations 7. Units should be interlocked with non-corrosive reinforced fiberglass pins.

8. Units should be interlocked as to provide a maximum of 1 inch of setback per block, where required.

Material for leveling pad/footing should consist of compacted free-draining coarse aggregates meeting the requirements of ASTM #57 Stone or Graded Aggregate Base (GAB) per Maryland State Highway Administration Standard Specifications for Construction and Materials. A minimum of 6 inches deep and 30 inches wide compacted leveling pad is required.

C. Fiberglass Connecting pins

- 1. Thermoset isopthalic polyester resin pultruded fiberglass reinforcement rods, a minimum one-
- 2. Pins should have a minimum flexural strength of 128,000 psi and short beam shear of 6400 psi. 3. For substitute concrete units, use of other compatible connector systems may be allowed with the prior approval of the geotechnical engineer.

D. Geogrid

Geogrid should be Miragrid 07XT, or equivalent as approved by the geotechnical engineer. The geogrid should have an allowable strength of 1970 pounds per foot. The allowable strength is defined as the Ultimate Strength divided by reduction factors for creep, durability, installation damage and an overall factor of safety

E. Reinforced Backfill

Reinforced backfill soils should be non-plastic, controlled fill meeting the requirements of AASHTO A-2-4, or more granular. Based on the available subsurface information, suitable materials may be available from on-site excavations. However, segregation and stockpiling of suitable materials will be required. If adequate adequate quantities of this material are not available on—site, imported backfill should meet the above requirements and should be approved by the geotechnical engineer.

F. Controlled Fill

Controlled Fill soils to be placed outside the Reinforced Backfill area and where specified should consist of on-site or borrow soils meeting the requirements of AASHTO A-4 or more granular. All fill materials proposed to be placed behind the reinforced backfill should be placed as controlled fill compacted to 95 percent of maximum dry density in accordance with the Standard Proctor, ASTM D-698.

G. Low-Permeability Soil

Low-permeability soils to be placed at the top of the wall where specified should consist of sandy, silty or clayey soils meeting the requirements of ML, CL, SM, or SC with a minimum of 25% passing the #200 sieve.

H. Drainage Pipe

The drainage pipes should be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034.

I. Filter Fabric

Filter Fabric should be non-woven, polypropylene geotextile, 140 N manufactured by Nicolon Mirafi Group or approved equivalent.

J. Erosion Control Blanket

Erosion Control Blanket should be Tensar TB 1000 manufactured by the Tensar Corporation or approved equivalent.

K. Drainage Composite

The Drainage GeoComposite should be DC4200 Geotextile manufactured by Evergreen Technologies, Inc. or approved equivalent.

PART 3 - EXECUTION

A. Excavation

- 1. The contractor should excavate to the lines and grades shown on the construction drawings.

 Under no circumstances should the excavation lines and grades be exceeded, except with owner's approval. The contractor should protect the excavation from sloughing by placing a membrane
- 2. Prior to retaining wall construction and the placement of fill, all topsoil should be stripped and
- 3. Excavations should be sloped or otherwise supported in accordance with Occupation Safety and Health Administration (OSHA) and other local and state regulations.

B. Foundation Subgrade Preparation

- 1. Foundation soil should be excavated as required for installation of leveling pad, geogrid and other elements and as shown on the construction drawings.
- 2. Foundation soil should be examined by the Engineer to assure that the actual foundation soil strength meets or exceeds assumed design strength. Soils not meeting required strength should be removed and replaced with controlled, compacted material.
- 3. Over—excavated areas should be filled with select and approved material and compacted to 95 percent of maximum dry density in accordance with the Standard Proctor, ASTM D-698. 4. Allowable bearing pressure for natural and controlled, compacted fill soils should be as specified
- The exposed foundation subgrade should be proofrolled with a loaded dump truck. Any soft or unstable areas identified during proofrolling should be overexcavated and backfilled with Controlled Fill.
- 6. Any fills required to establish sloping surfaces in front of the walls should consist of Controlled Fill and should be placed, compacted and field tested in accordance with the requirements specified herein.

C. Leveling Pad

- 1. The leveling pad should be placed as shown on the construction drawings with a minimum thickness of 6 inches.
- 2. Leveling pad materials should be installed upon undisturbed in-situ soils or controlled,
- 3. Leveling Pad should be prepared to insure complete contact of retaining wall unit with base.

D. Unit Installation

- 1. First course of concrete wall units should be placed on the leveling pad. The units should be checked for level and alignment. The first course is the most important to provide accurate and acceptable results.
- !. Insure that units are in full contact with base. 3. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from base line.
- 4. Install fiberglass connecting pin. 5. Lay up each course insuring that the connecting pins are inserted through front slot of the unit, and into the receiving slot in the course beneath. Repeat procedure to the extent of
- 6. At the end of each course where the wall changes elevation, units should be turned into the backfill. Units should be laid as to create the minimum radius possible. Unless otherwise shown on the drawings, a minimum of one unit should be installed into the grade. Only the
- 7. Convex and concave curves should be made using compac units or by trimming the Standard II units as required in accordance with manufacturer's recommendations.
- 8. Cap units should be installed and bonded with construction adhesive or epoxy cement as
- 9. Contractor should provide positive drainage for the back of the retaining wall during construction.

E. Geogrid Installation

- 1. All utilities in the vicinity of any retaining wall or geogrid reinforcement must be installed and properly backfilled prior to placing the geogrid soil reinforcement or constructing the wall. 2. The geogrid soil reinforcement should be laid horizontally on compacted backfill, connected to the concrete wall units. Hook grid over the fiberglass connecting pin, pull taut, and anchor
- before backfill is placed on the geogrid. 3. Slack in the geogrid at the wall unit connections should be removed in a manner, and to such a degree, as approved by the Engineer.
- 4. Geogrid should be laid at the proper elevation and orientation as shown on the construction drawings or as directed by the Engineer.
- 5. Correct orientation (roll direction) of the geogrid should be verified by the Contractor. 6. Geogrid should be secured in-place with staples, pins, sand bags, or backfill as required by fill properties, fill placement procedures, or weather conditions, or as directed by the Engineer.
- a. Uniaxial geogrid does not need to be overlapped in the across the roll direction, except to contain the fill at the slope face when wrap—around facing is used. Uniaxial grid should be
 - overlapped 48" in the rolled direction. b. A layer of soil a minimum of 4 inches in thickness should be spread between uniaxial geogrid layers in the area to be overlapped, or as directed.

F. Fill Placement

- 1. Wall backfill material should be placed in no more than 8-inch lifts and compacted to 95 percent of the Standard Proctor (ASTM D-698).
- 2. Backfill should be placed, spread, and compacted in such a manner that minimizes the
- development of wrinkles in and/or movement of the geogrid. 3. Only hand-operated compaction equipment should be allowed within 4 feet of the wall face. 4. Backfill should be placed from the wall outward to insure that the geogrid remains taut.
- 5. Tracked construction equipment should not be operated behind or above the wall. 6. Rubber—tired equipment may pass over the geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning should be avoided.
- 7. Place filter fabric between the unit core fill and the reinforced backfill as shown on plans. The filter fabric should be embedded a minimum of two feet into the reinforced fill
- 8. The finished sloping surface on the toe side of retaining walls should be protected by installing the permanent erosion control blanket and loaming and seeding in accordance with project requirements.

G. DRAINAGE

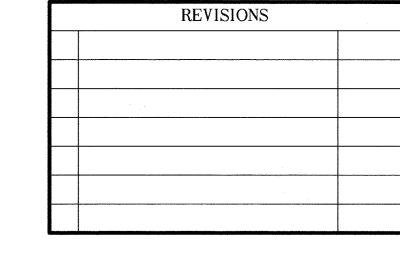
- 1. Drainage fill should be placed behind the wall to the limits shown. The drainage fill should be a minimum of 12—inches thick. The drainage fill should be ASTM #57 stone. The drainage fill should be wrapped in filter fabric (Mirafi 140N or equal) as shown on the drawings.
- 2. Positive drainage should be maintained during and after construction. Soils within the reinforced zone that become wet during construction should be dried to optimum moisture or removed. 3. Install the perforated drainage pipes and lateral drainage pipes incrementally along with the installation of concrete units and placement of fill.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- A. Retaining walls should only be constructed under the observation of a Registered Professional Engineer and a certified (NICET, WACEL, or equivalent) soils technician.
- B. The required bearing pressure beneath the footing of the wall should be verified in the field by a certified soils technician. Testing documentation must be provided to the geotechnical engineer prior to the start of wall construction. The required test procedure shall be the Dynamic Cone Penetrometer (DCP) Test ASTM STP-399.
- C. The suitability of fill material should be confirmed by the on-site soils technician.

PART 5 - DESIGN CRITERIA

- 1. Required minimum allowable foundation bearing pressure is 2,000 psf. 2. Design internal friction angle for reinforced soil = 30 degrees.
- 3. Design moist unit weight for reinforced soil = 125 pcf. 4. Retained soil internal friction angle = 30 degrees and cohesion = 0 psf.
- 5. Retained soil design moist unit weight = 125 pcf.
- 4. Foundation soil internal friction angle = 28 degrees and cohesion = 0 psf. 5. Foundation soil design moist unit weight = 120 pcf. 6. Retaining walls are not designed to resist hydrostatic pressure.



	APPROVALS		
REQUESTER			
PLANT FACILITIES CHIEF ENGINEER		,	
CODE COMPLIANCE REVIEW			
TSC GROUP			
TSF GROUP			
SAFETY OFFICER		-	
DIRECTORS OFFICE			
COORDINATOR		•	

THE JOHNS HOPKINS UNIVESITY **APPLIED PHYSICS** LABORATORY

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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GRAPHIC SCALE



MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A

LAUREL, MARYLAND 20707

(410) 792-9792 or (301) 776-1690

FAX (410) 792-7395

RETAINING WALL PLAN AND GENERAL NOTES

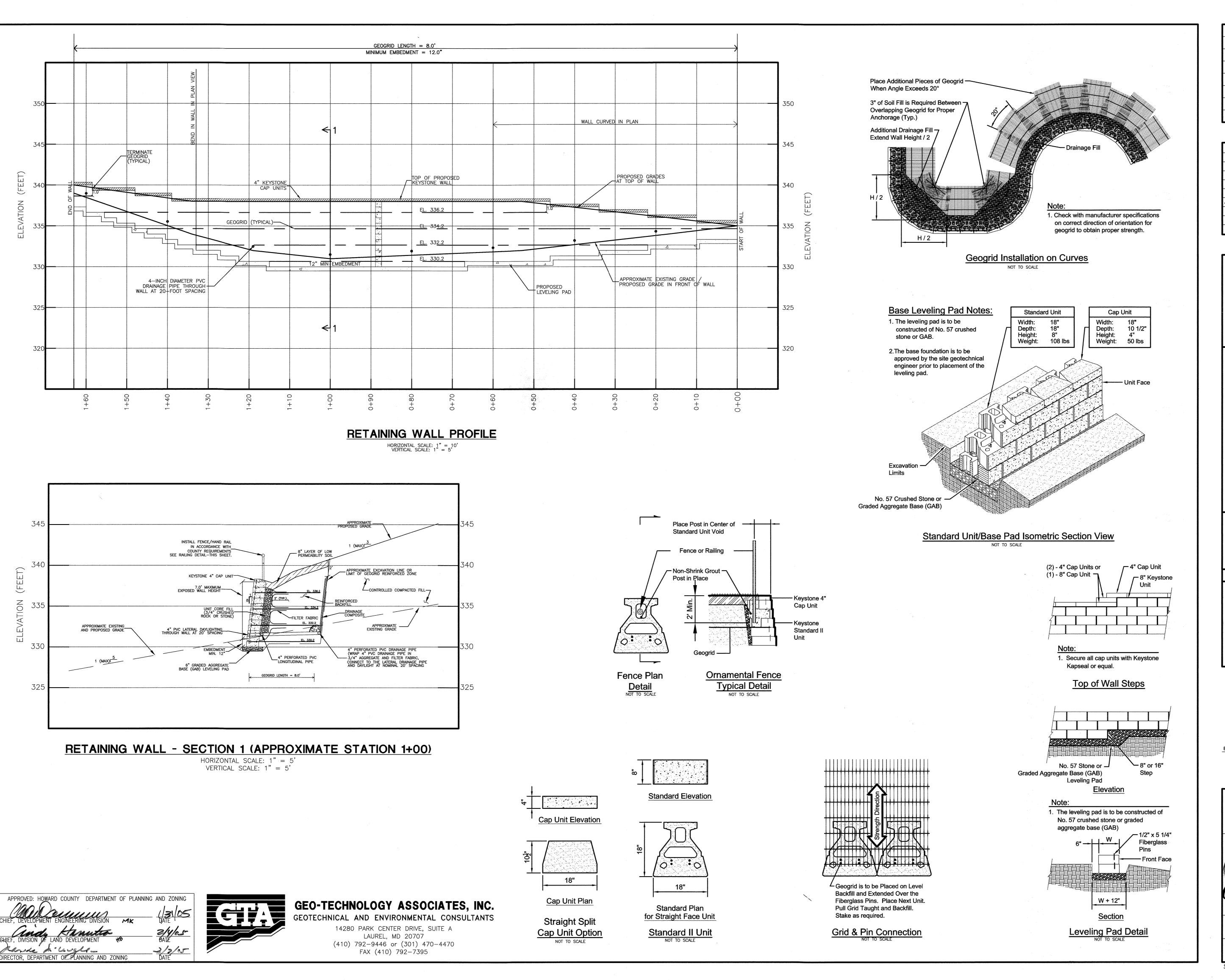


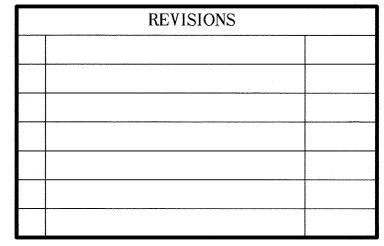
JOB NO.: 13685

1-17-05 SHEET: 20 OF 23

SCALE: AS SHOWN

DES: **SPL** | CHECK: RPM | DATE: 01-17-05





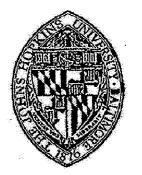
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REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
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TSC GROUP		
TSF GROUP		
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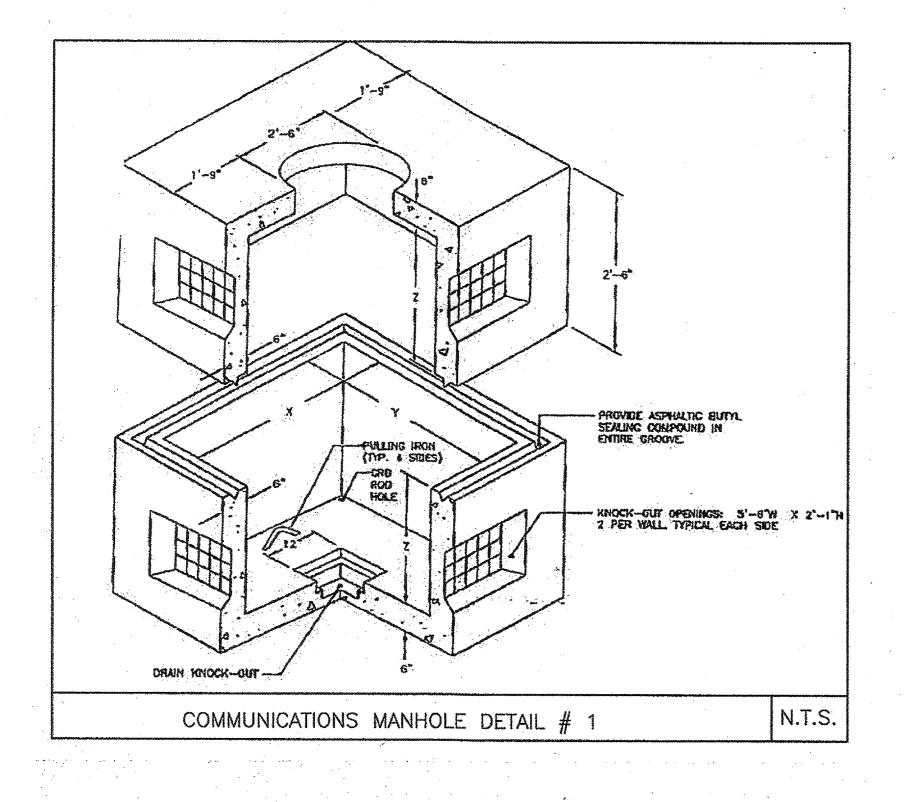
SDP-21

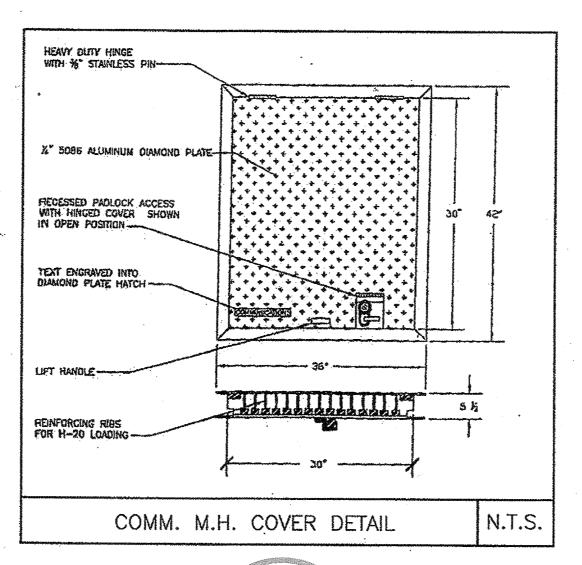
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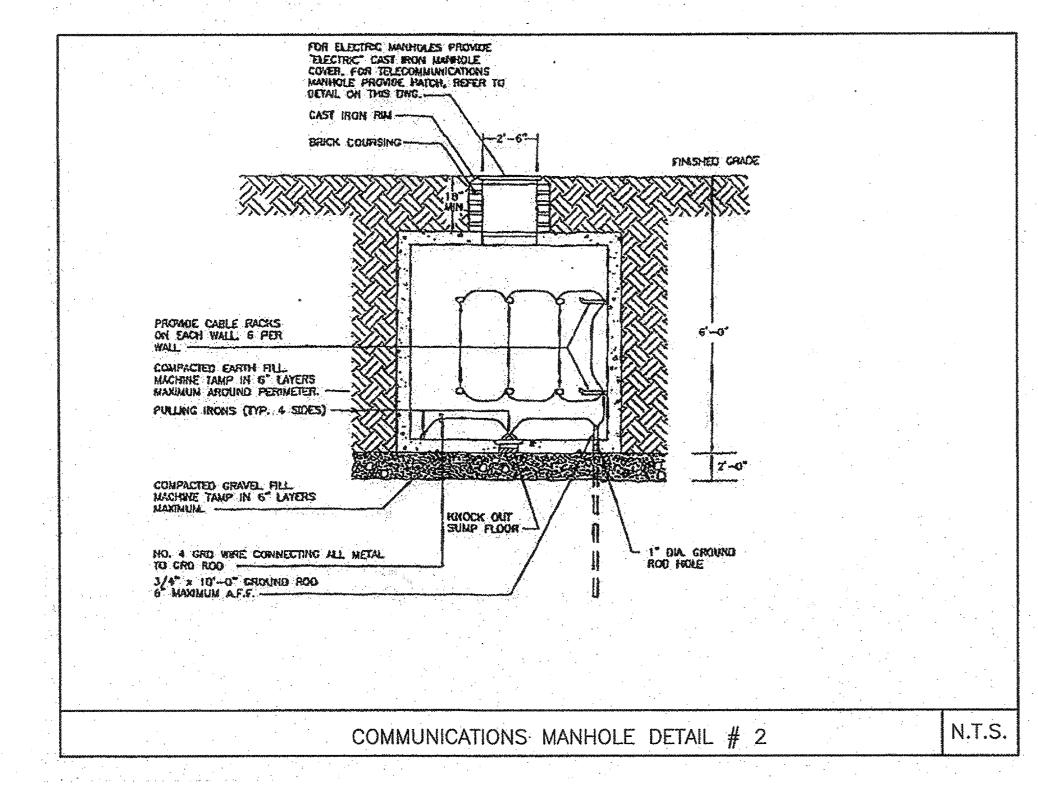
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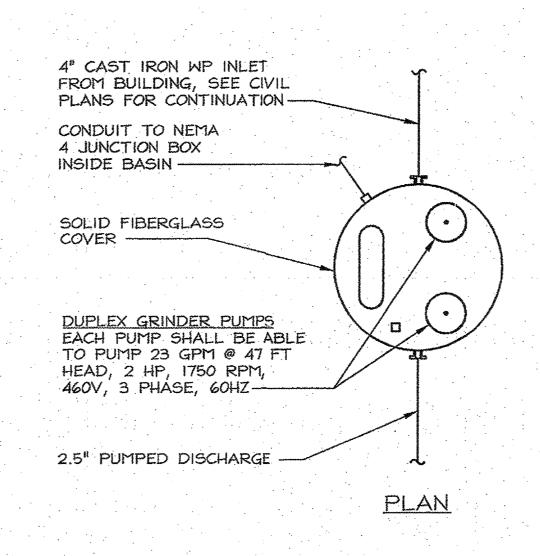
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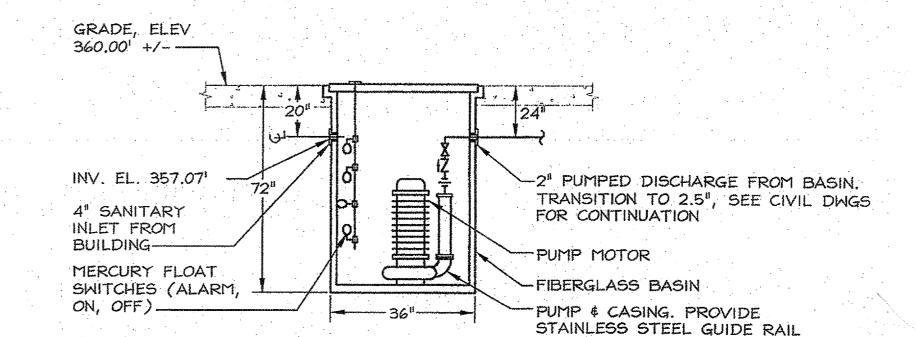






NOTE: GRINDER PUMP SHALL BE PROVIDED AS A TURNKEY PRE-PACKAGED SYSTEM BY PENTAIR, WITH REMOTE CONTROL AND ALARM PANEL. PANEL SHALL BE MONITORED BY JOHNSON CONTROLS METASYS SYSTEM.

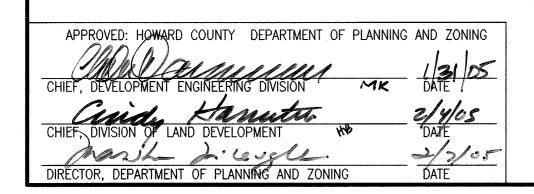
ELEVATION



SYSTEM AND PULL RODS

FOR PUMP REMOVAL

DUPLEX SUBMERSIBLE GRINDER PUMP



NOT TO SCALE

-		REVI	SIONS	3		
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TSC GROUP		
TSF GROUP		
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Engineering Co., Inc. 1257 ANNAPOLIS ROAD ODENTON, MD 21113 410-519-0800 FAX: 410-672-3977



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GRINDER PUMP



JOB NO.: 13685

SDP-22

1-17-05 SHEET: 22 OF 23

SCALE: N.T.S.

DES: AEM | CHECK: AEM | DATE: 01-17-05

To stabilize disturbed soils with permanent vegetation

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils Conditions Where Practice Applie

Exposed soils where ground cover is needed for 6 months or mor

A. Seed Mixtures

- a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting
- c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil
- d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary
- 2. Turfgrass Mixtures a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites
- which will receive a medium to high level of maintenance b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent
- i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management, Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds pounds per seeding Rate: 1.5 to 2.0 pounds per seeding 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
- ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where

B.21

rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bhtegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

- iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/o for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
- iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area, Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 6 to 70 percent. Seeding Rate: 11/2 to 3 pounds per 1000 square feet.

Select turfgrass varieties from those listed in the most current University of Maryland Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

- c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15
- d. Till areas to receive seed by disking or other approved methods to a denth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 11/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses wil

(Hardiness Zones: 7a, 7b)

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot

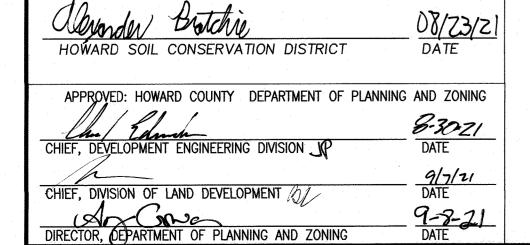
Permanent Seeding Summar

Hardiness Zone (from Figure B.3): 6B Fertilizer Rate Seed Mixture (from Table B.3): 9 (10-20-20)						Lime Rate		
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P ₂ O ₅	K ₂ 0	Zinac Kaic
1	T. FESC.	60	3/1-5/15	1/4- ½ in	45 pounds	acre (2 lb/ (2 lb/	00 lb/ac	2 tons/ac
2	K. BLUE.	40	3/1-5/15	5 1/4-1/2 in per acre (2 lb/ (2	(2 1b/		(2 lb/	(90 lb/
				1/4- ½ in	1000 sf)	1000 sf)	1000 sf)	1000 sf)

- B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).
 - 1. General Specifications a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to
 - the job foreman and inspecto b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time
 - of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the
 - d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may
 - adversely affect its survival. e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its
- a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the so
- b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and street Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensur solid contact exists between sod roots and the underlying soil surface.
- d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
- a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day
- b. After the first week, sod watering is required as necessary to maintain adequate moisture
- c. Do not mow until the sod is firmly rooted. No more than 1/2 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless

HOWARD SOIL CONSERVATION DISTRICT

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



B-4-4 STANDARDS AND SPECIFICATIONS

TEMPORARY STABILIZATION

To stabilize disturbed soils with vegetation for up to 6 months

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applie Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time,

nanent stabilization practices are required

- 1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plan Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below alon with application rates, seeding dates and seeding depths. If this Summary is not put on the plan an
- 2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding. 3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.I.b and maintain until the next seeding season.
 - Temporary Seeding Summary

	Hardiness Zor Seed Mixture	Fertilizer Rate	Lime Rate			
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	(10-20-20)	Dane Raic
1	FOX. MILL.	30	5/16-7/31	0.5"		
			,		436 lb/ac	2 tons/ac
					(10 lb/1000 sf)	(90 lb/1000 st
,						

B-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

The process of preparing the soils to sustain adequate vegetative stabilization.

To provide a suitable soil medium for vegetative growth

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

- 1. Temporary Stabilization
- a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches 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 must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
- b. Apply fertilizer and lime as prescribed on the plans.
- c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable
- 2. Permanent Stabilization
- a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are
- i. Soil pH between 6.0 and 7.0.
- ii. Soluble salts less than 500 parts per million (ppm). iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay)
- would be acceptable iv. Soil contains 1.5 percent minimum organic matter by weight.
- v. Soil contains sufficient pore space to permit adequate root penetration b. Application of amendments or topsoil is required if on-site soils do not meet the above
- conditions. c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil

condition with ridges running parallel to the contour of the slope. I eave the top 1 to 3 inches of

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular

soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

- 1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is 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.
- 2. Topsoil salvaged from an existing site may be used provided 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-NRCS.
- 3. Topsoiling 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.
- 4. Areas having slopes steeper than 2:1 require special consideration and design.
- 5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
- b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth Other soils may be used if recommended by an agronomist or soil scientist and approved by the so that the soil surface is not exposed. When using a mulch anchoring tool, increase the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils application rate to 2.5 tons per acre. and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 11/2 inches in diameter c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per
- b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
- c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
- a. Erosion and sediment control practices must be maintained when applying topsoil
- b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
- c. Topsoil must not be placed if 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

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also 2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer. 3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by

and seedbed preparation.

be used for chemical analyses.

disking or other suitable means

The application of seed and mulch to establish vegetative cover

A. Seeding

To protect disturbed soils from erosion during and at the end of construction

verify type of seed and seeding rate.

dissipation of phyto-toxic materials.

Application

weaken bacteria and make the inoculant less effective.

a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

Permanent Seeding Table B.3, or site-specific seeding summaries

b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).

iii. Mix seed and fertilizer on site and seed immediately and without interruption.

1/4 inch of soil covering. Seedbed must be firm after planting.

200 pounds per acre; K₂O (potassium), 200 pounds per acre.

iv. When hydroseeding do not incorporate seed into the soil.

without inhibiting the growth of the grass seedlings.

a. Apply mulch to all seeded areas immediately after seeding.

of wood cellulose fiber per 100 gallons of water.

upon the size of the area and erosion hazard:

this practice should follow the contour.

1. Mulch Materials (in order of preference)

Application

areas where one species of grass is desired.

processed into a uniform fibrous physical state.

Soil Amendments (Fertilizer and Lime Specifications)

mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the

rate of 4 to 8 tons/acre (200-400 pounds per 1.000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

Purpose

Conditions Where Practice Applies

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject

to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6

months immediately preceding the date of sowing such material on any project. Refer to Table

B 4 regarding the quality of seed. Seed tags must be available upon request to the inspector to

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture

of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used

later than the date indicated on the container. Add fresh inoculants as directed on the 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 to 80 degrees Fahrenheit can

d. Sod or seed must not 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

Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1

ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in

i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least

ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in

i. If fertilizer is being applied at the time of seeding, the application rates should not exceed

ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by

a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in

b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose

i. WCFM is to be dyed green or contain a green dye in the package that will provide an

iii. WCFM materials are to 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 must form a blotter-like ground cover, on application, having moisture absorption

ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds

a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind

or water. This may be done by one of the following methods (listed by preference), depending

i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch

into the soil surface a minimum of 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,

appropriate color to facilitate visual inspection of the uniformly spread slurry.

ii. WCFM, including dye, must contain no germination or growth inhibiting factors.

color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not

musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in

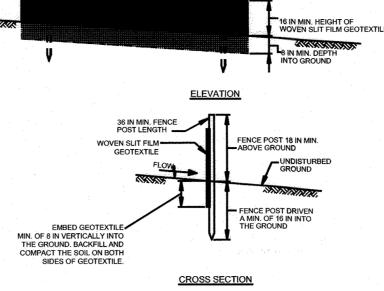
the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous),

hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one

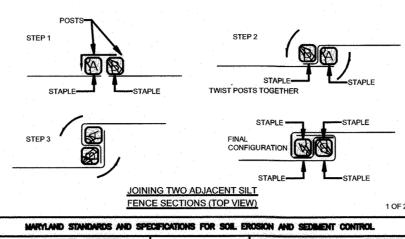
each direction. Roll the seeded area with a weighted roller to provide good seed to soil

frozen. The appropriate seeding mixture must be applied when the ground thaws.

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading



DETAIL E-1 SILT FENCE



2011

MARYLAND DEPARTMENT OF ENVIRONMEN
WATER MANAGEMENT ADMINISTRATION

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

re-construction meeting must occur with the Howard County Department of Public Works, nstruction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are rked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:

- Prior to the start of earth disturbance, b. Upon completion of the installation of perimeter erosion and sediment controls, but before
- proceeding with any other earth disturbance or grading, Prior to the start of another phase of construction or opening of another grading unit, d. Prior to the removal or modification of sediment control practices.

er building or grading inspection approvals may not be authorized until this initial approval by the pection agency is made. Other related state and federal permits shall be referenced, to ensure ordination and to avoid conflicts with this plan. vegetative and structural practices are to be installed according to the provisions of this plan and are

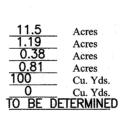
be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR IL EROSION AND SEDIMENT CONTROL, and revisions thereto. lowing initial soil disturbance or re-disturbance, permanent or temporary stabilization is required hin three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches,

imeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days

to all other disturbed areas on the project site except for those areas under active grading. disturbed areas must be stabilized within the time period specified above in accordance with the 1 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND DIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding c. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied ween the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1)

cifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible as shall receive soil stabilization matting (Sec. B-4-6). sediment control structures are to remain in place, and are to be maintained in operative condition il permission for their removal has been obtained from the CID.

2 Analysis: Total Area of Site: Area Disturbed: Area to be roofed or paved: Area to be vegetatively stabilized: Total Cut: Total Fill-



Offsite waste/borrow area location: y sediment control practice which is disturbed by grading activity for placement of utilities must be aired on the same day of disturbance.

ditional sediment control must be provided, if deemed necessary by the CID. The site and all itrols shall be inspected by the contractor weekly; and the next day after each rain event. A written ort by the contractor, made available upon request, is part of every inspection and should include:

- Inspection date • Inspection type (routine, pre-storm event, during rain event)
- Name and title of inspector Weather information (current conditions as well as time and amount of last recorded
- Brief description of project's status (e.g., percent complete) and/or current activities Evidence of sediment discharges
- and percolation properties and must cover and hold grass seed in contact with the soil Identification of plan deficiencies · Identification of sediment controls that require maintenance iv. WCFM material must not contain elements or compounds at concentration levels that will Identification of missing or improperly installed sediment controls
- Compliance status regarding the sequence of construction and stabilization requirements Photographs v. WCFM must conform to the following physical requirements: fiber length of Monitoring/sampling approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5,
 - Maintenance and/or corrective action performed • Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE). nches for the construction of utilities is limited to three pipe lengths or that which can and shall be k-filled and stabilized by the end of each workday, whichever is shorter

he HSCD prior to proceeding with construction. Minor revisions may allowed by the CID per the of HSCD-approved field changes. turbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities in on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit

major changes or revisions to the plan or sequence of construction must be reviewed and approved

been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, nore than 30 acres cumulatively may be disturbed at a given time. sh water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a iment basin or other approved washout structure.

opy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL

- soil shall be stockpiled and preserved on-site for redistribution onto final grade. Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum rvals, with lower ends curled uphill by 2' in elevation.
- ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of am channels must not be disturbed during the following restricted time periods (inclusive): 50 pounds of wood cellulose fiber per 100 gallons of water. Use I and IP March 1 - June 15 Use III and IIIP October 1 - April 30 iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the
- iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

manufacturer. Application of liquid binders needs to be heavier at the edges where wind

catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly

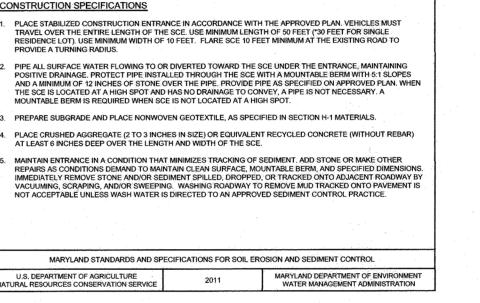
DSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when

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

ENGINEER'S CERTIFICATE



8-4-2021



DETAIL E-1 SILT FENCE

USE WOOD POSTS 1% X 1% ± 16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN

USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.

USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY

PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL

WHERE TWO SECTIONS OF GEOTEXTILE AD IOIN OVERLAP TWIST AND STAPLE TO POST IN ACCORDANCE WITH

EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN: IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011

AGGREGATE OVER LENGT AND WIDTH OF ENTRANCE

50 FT MIN.

PROFILE

PLAN VIEW

SCE

PIPE (SEE NOTE 2)

DETAIL B-1 STABILIZED CONSTRUCTION

ENTRANCE

CONSTRUCTION SPECIFICATIONS

____SF____

SEQUENCE OF CONSTRUCTION

- THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO GRADING, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND
- CONDUCT A PRE-CONSTRUCTION MEETING. NOTIFY THE DEPARTMENT OF PUBLIC WORKS CONSTRUCTION INSPECTION DIVISION (410) 313-1880 AT LEAST 48 HOURS BEFORE COMMENCING WORK. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT & EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.
- PHASE 1 INITIAL OPERATIONS (SEE SHEET 16) 1. WITH THE INSPECTOR'S APPROVAL, CLEAR MINIMUM AREA NECESSARY TO INSTALL SEDIMENT CONTROLS AND THE STAGING/LAYDOWN AREAS. MECHANICAL 2 WEEKS stabilization will be required on the staging/laydown areas and heavy use areas, including travel lanes. A. INSTALL STABILIZED CONSTRUCTION ENTRANCE B. CLEAR FOR AND INSTALL ALL SILT FENCE.
- C. WITH INSPECTOR'S APPROVAL, CLEAR FOR AND INSTALL CONTRACTOR STAGING AREA, STABILIZED STAGING/LAYDOWN AREA WITH WOOD CHIPS OR GRAVEL. D. ALL CLEARING DEBRIS SHALL BE HAULED TO AN APPROVED LANDFILL OR SITE. 2. UPON COMPLETION OF THE INSTALLATION OF THE SEDIMENT CONTROL DEVICES, BUT BEFORE PROCEEDING WITH OTHER EARTH DISTURBANCE OR GRADING,

SEDIMENT CONTROL DEVICES SHALL BE APPROVED BY THE HOWARD COUNTY INSPECTOR. WITH INSPECTOR'S APPROVAL, CONTRACTOR TO CONTINUE TO PHASE 2.

PHASE 2 - MASS GRADING & UTILITIES (SEE SHEET 16) WITH THE INSPECTOR'S APPROVAL, ROUGH GRADE THE SITE WITHIN THE LIMIT OF DISTURBANCE. ALL DEBRIS TO AN APPROVED LANDFILL OR SITE. PROVIDE TEMPORARY STABILIZATION OF ALL NON-WORK AREAS.

2. GRADE TO BUILDING SUB-GRADE ELEVATION. STABILIZE BUILDING PADS AND COMMON AREAS. MAINTAIN OR INSTALL ADDITIONAL BUILDING PERIMETER CONTROLS 1 WEEK

3. BEGIN BUILDING ADDITIONS CONSTRUCTION. STABILIZE AROUND BUILDINGS ONCE FINAL GRADE IS ESTABLISHED. INSTALL ROOF CONNECTIONS AND SIDEWALK. 5 MONTHS 1 WEEK 4. WITH INSPECTOR'S APPROVAL, REMOVE REMAINING SEDIMENT CONTROL PRACTICES AND STABILIZE DISTURBED AREAS.

DEVELOPER'S CERTIFICATE

JHU-APL

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT THE DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

DEVELOPER CHERYL HANKE

REVISIONS

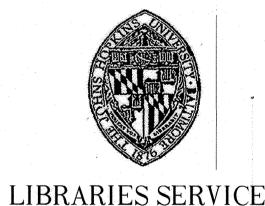
APPROVALS NT FACILITIES CHIEF DE COMPLIANCE REVIEW F GROUP ORDINATOR

> THE JOHNS HOPKINS UNIVESITY APPLIED PHYSICS **LABORATORY** JOHNS HOPKINS ROAD

LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



CENTER

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GRAPHIC SCALE



MORRIS & RITCHIE ASSOCIATES. INC.

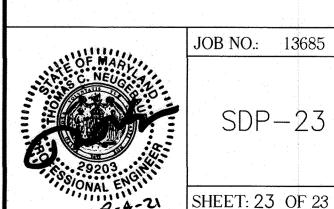
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A

LAUREL, MARYLAND 20707

(410) 792-9792 or (301) 776-1690 FAX (410) 792-7395 REVISED SEDIMENT CONTROL

DETAILS



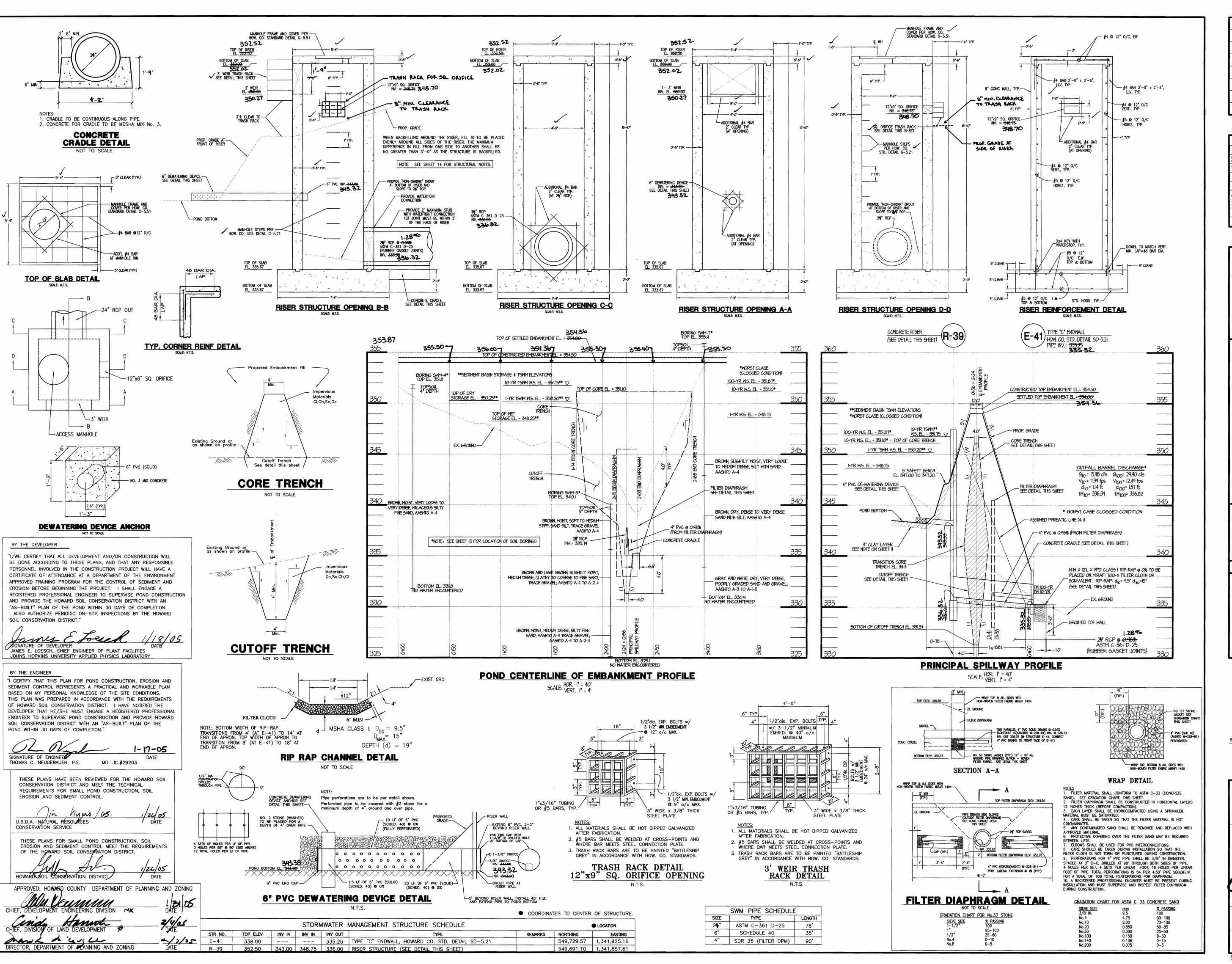
AS SHOWN

4/23/202

SCALE:

1 WEEK

CHECK: MM | DATE: 01-17-05



REVISIONS	
Asbuilt info ADDED	03/06

	APPRO'	VALS	
REQUESTER			
PLANT FACILITIES CHIEF ENGINEER			
CODE COMPLIANCE REVIEW			
TSC GROUP			
TSF GROUP			
SAFETY OFFICER			
DIRECTORS OFFICE			
COORDINATOR			

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



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GRAPHIC SCALE



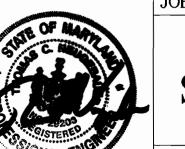
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ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

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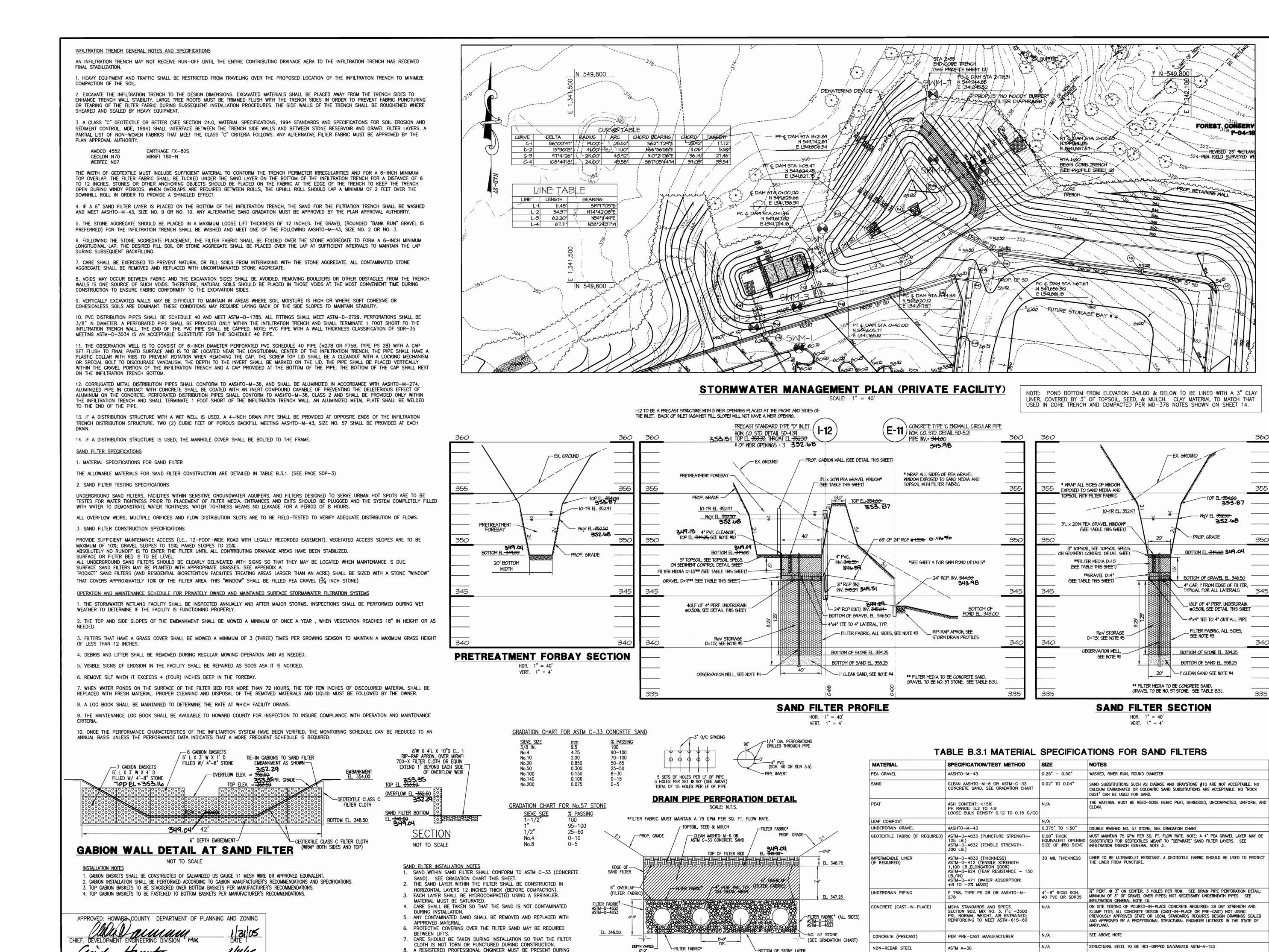
JOB NO.: 13685

SDP-12

17-05 SHEET: 12 OF 22

SCALE: 1"= 40'

DES: KKB CHECK: TCN DATE: 01-17-05



SAND FILTER FILTER BED DETAIL

INSTALLATION AND MUST SUPERVISE AND INSPECT SAND FILTER DURING

CONSTRUCTION.

DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

·	REVISIONS							
	Asbuilt	Asbuilt INTO ADDED						

APPROVALS	
REQUESTER	
PLANT FACILITIES CHIEF ENGINEER	
CODE COMPLIANCE REVIEW	
TSC GROUP	
TSF GROUP	
SAFETY OFFICER	
DIRECTORS	
COORDINATOR	

THE JOHNS HOPKINS UNIVESITY **APPLIED PHYSICS**

LABORATORY

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



355

350

335

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GRAPHIC SCALE



Morris & Ritchie Associates, inc.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

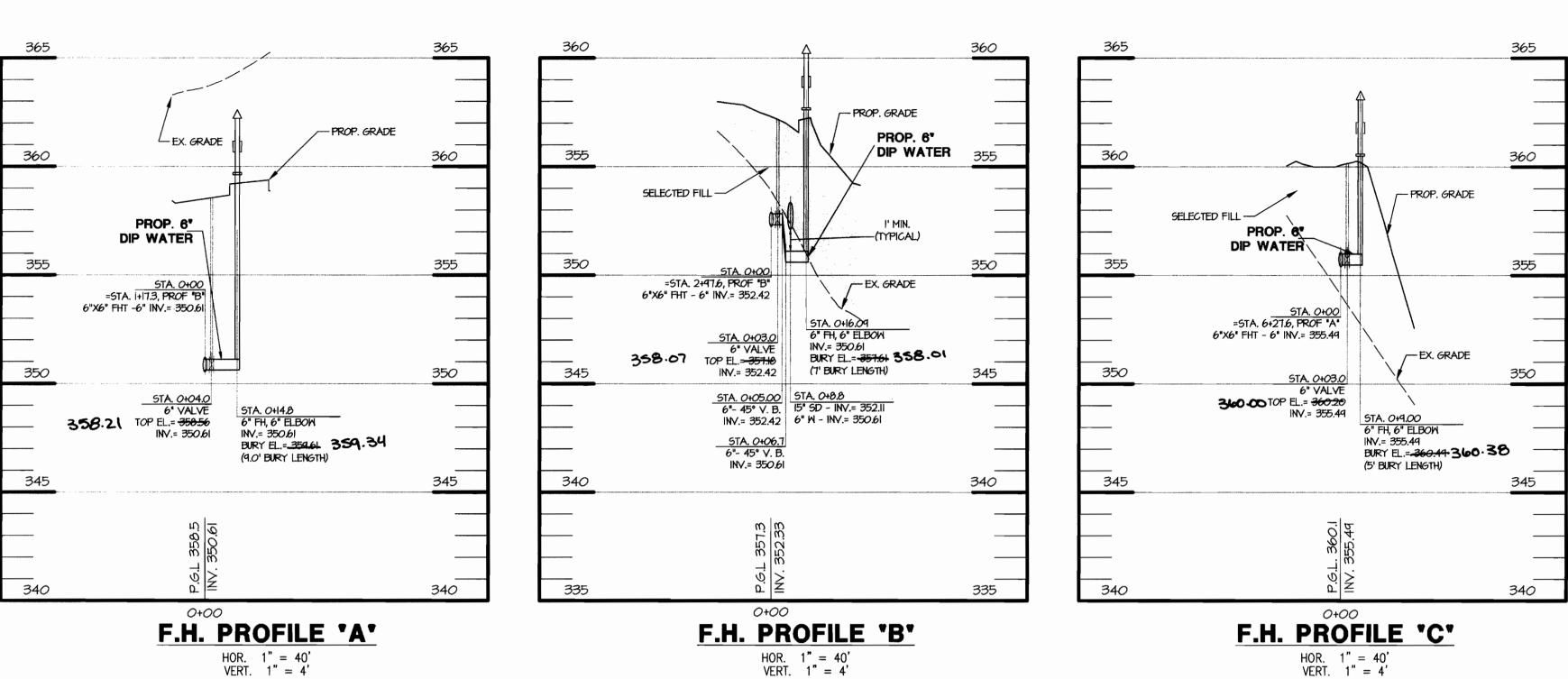
SWM PLAN

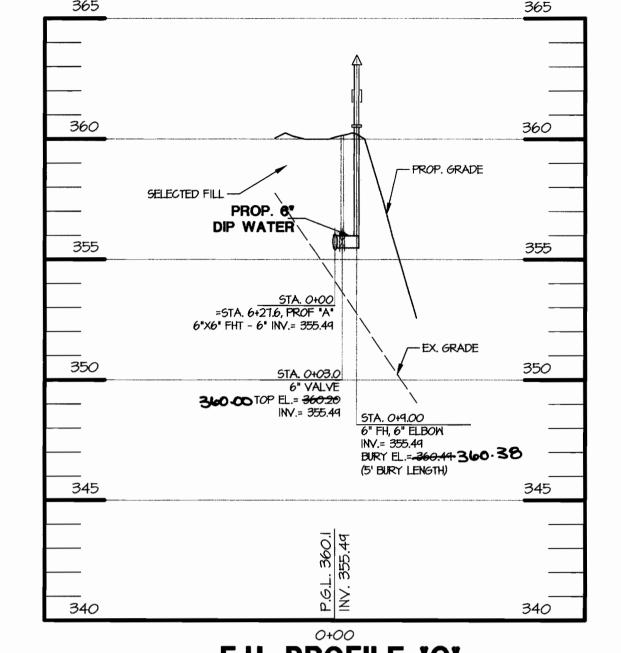


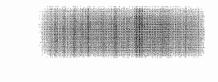
1-17-05 SHEET: 11 OF 22

SCALE: 1"= **40**'

DES: KKB | CHECK: TCN | DATE: 01-17-05







FOLLOWING APPLIES:

SANITARY PIPE SCHEDULE (PRIVATE)

PVC SDR 21

SANITARY PIPE FITTINGS SCHEDULE (PRIVATE)

2.5"-45° HB 2.5"-22.5° HB

2.5"-11.25° HB

2.5"-45° VB

AIR RELEASE VALVE & VAULT

COMPACTED SPECIFICATIONS FOR UTILITIES IN FILL

DENSITY AS DETERMINED BY A.A.S.H.T.O. METHOD T-180.

WHERE UTILITY PIPES ARE TO BE PLACED ON COMPACTED FILL, THE

A. PRIOR TO PLACEMENT OF COMPACTED FILL, ANY SOFT OR OTHERWISE UNSUITABLE SOILS ENCOUNTERED AT THE EXISTING RAVINE BOTTOM OR SLOPE, SHALL BE UNDERCUT AND REMOVED FROM THE CONSTRUCTION AREA.

B. ACCEPTABLE COMPACTED FILL SHALL BE PLACED IN SIX INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 98 PERCENT OF THE MAXIMUM

C. THE COMPACTED FILL SHALL BE BENCHED INTO THE EXISTING VIRGIN

SLOPES WITH EACH LIFT PLACED TO A SMOOTH TRANSITION FROM VIRGIN TO

SIZE

2.5"

LENGTH

346 LF

CONTROLLED AND COMPACTED FILL PER AASHTO T-180, TO BE CERTIFIED BY AN APPROVED ON-SITE GEOTECHINICAL ENGINEER

WATER PIPE SCHEDULE (PRIVATE)

TYPE

CLASS 50 DIP

CLASS 50 DIP

CLASS 50 DIP

6" CAP & BUTTRESS

6" VALVE

3" VALVE

6" FIRE HYDRANTS

8"X8" TEE

6"X6" F.H.T.

8"-45° HB

8"-22.5° HB

6"-45° HB

6"-22.5° HB

8"-11.25° HB

6"-11.25° HB 6"-45° VB

10"X8" REDUCER

AIR RELEASE VALVE & VAULT

8"X6" REDUCER

WATER PIPE FITTINGS SCHEDULE (PRIVATE)

SIZE

10"

LENGTH

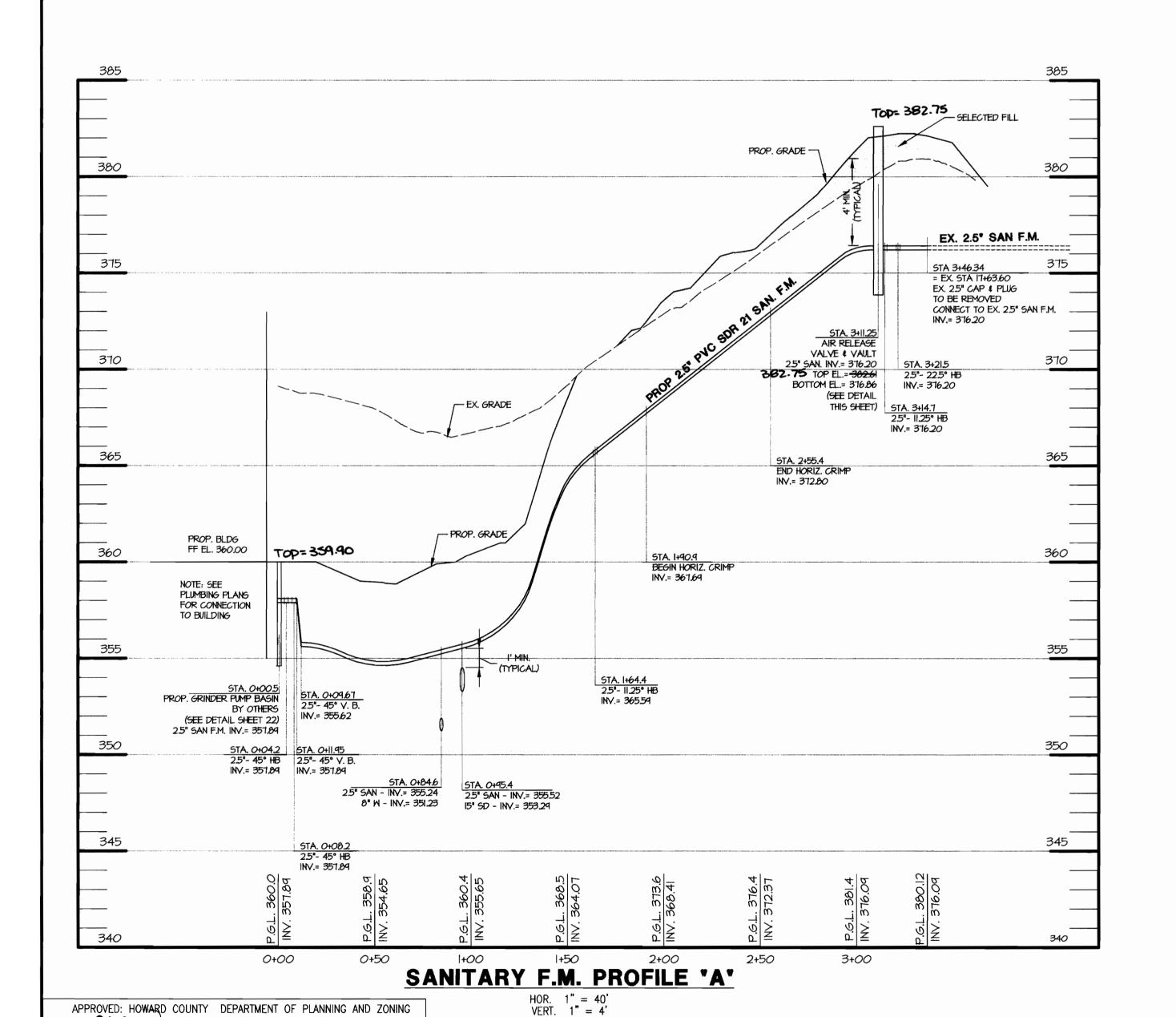
403 LF

1

1

622 LF

2 LF



	\sim		NOTES:	· · · · · · · · · · · · · · · · · · ·
VALVE TO BE SIZED BY ENGINEER	PIPE VAULT GASKET (TYP)	MANHOLE STEPS (TYP)	TO BE HEAVY	S BELOW AIR VALV DUTY THREADED. BRASS UNLESS NOT
MODEL/SIZE: APCO 2" AIR-VAC VALVE MODEL 400 OR			AREAS SHALL	IIGH WATER TABLE BE MODIFIED AS THE COUNTY.
APPROVED EQUAL TYPICAL 60" PRECAST MANHOLE UNLESS NOTED OTHERWISE.			DOGHOUSE TY Section wit	MAY USE PRECAST PE MANHOLE RISER H APPROVED PIPE/ TS AND CAST-IN-
SEE S-3 FOR DETAILS	12"			HEIGHT SHALL BE SURED FROM FLOOR
WATER	MIN.	OPENING FOR 30" FRAME AND COVER	THE 90 BEN	BLE ALTERNATIVE T ID AND BALL VALVE S AN ANGLE BALL VE
	PLA NO SC	IN_	6. GRADE RINGS	
		ALE .		
	Тор	ELEV. 382.75		
	MANHOLE FRAME WITH CUSTOMIZ COVER NOTING "WATER"	-	EXISTÍNG GRADE	· · · · · · · · · · · · · · · · · · ·
PROVIDE PRECAST CONCRETE	MIN. 12" MAX.		OR PAVING	• .
TOP SLAB. SLAB TO BE DESIGNED FOR H-20 LOADING.				
(2) GALVANIZED ELL'S				
SPLIT PIPE CLAMP WITH FLANGE SECURE TO WALL WITH STAINLESS STEEL ANCHORS. (AS REQUIRED)	-0" MIN.		AND STAINLESS ST	ITH CURB HEAD. SLAB WITH EYELET
AIR RELEASE VALVE OR COMBINATION AIR VALVE		- / 	2"	BALL VALVE CURB STOP (SEE NOTE 6
STRAP ELBOW TO PIER			SIZE: 2"	BRASS BENDS AND NIPPLES VALVE: CONNECT
PROVIDE BRICK CONCRETE OR APPROVED PIPE SUPPORT	150,000,000	6", 3'-0	·	MAIN AS PER SECT 2664. 3.0. C.
**************************************			78 P	•
ON EACH SIDE OF THE MANHOLE, PROVIDE A 2" DIA. DRAIN HOLE AND 1 CUBIC YARD OF AASHTO	**************************************	SACS STATES		
M43. NO. 57 AGGREGATE			•	

Asbuilt INFO ADDED 03/06		REVISIONS	
	Asbuilt	INFO ADDED	o3/o6
	_		
			-

APPRO	VALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

THE JOHNS HOPKINS UNIVESITY **APPLIED PHYSICS** LABORATORY

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



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GRAPHIC SCALE

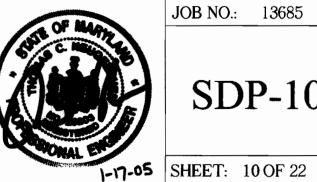
AS SHOWN



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690

UTILITY PROFILES

FAX (410) 792-7395

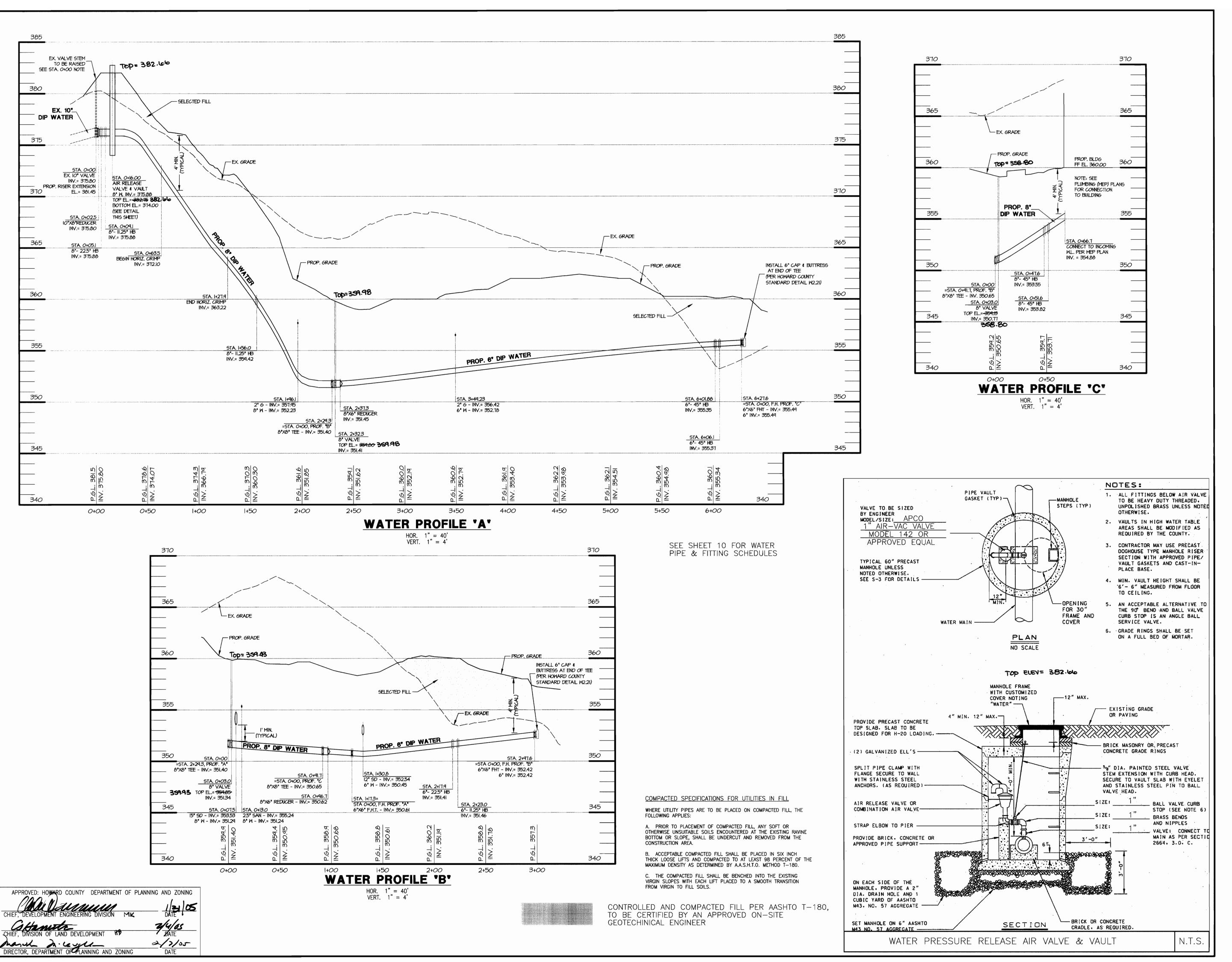


JOB NO.: 13685

SDP-10

SCALE: 1"= 40'

DES: LFB | CHECK: TCN | DATE: 01-17-05



REVISIONS	
Asbuilt info ADDED	03/06

APPROVALS	
REQUESTER	
PLANT FACILITIES CHIEF ENGINEER	
CODE COMPLIANCE REVIEW	
TSC GROUP	
TSF GROUP	
SAFETY OFFICER	
DIRECTORS OFFICE	
COORDINATOR	
SENIOR LEADER	

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GRAPHIC SCALE

AS SHOWN



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

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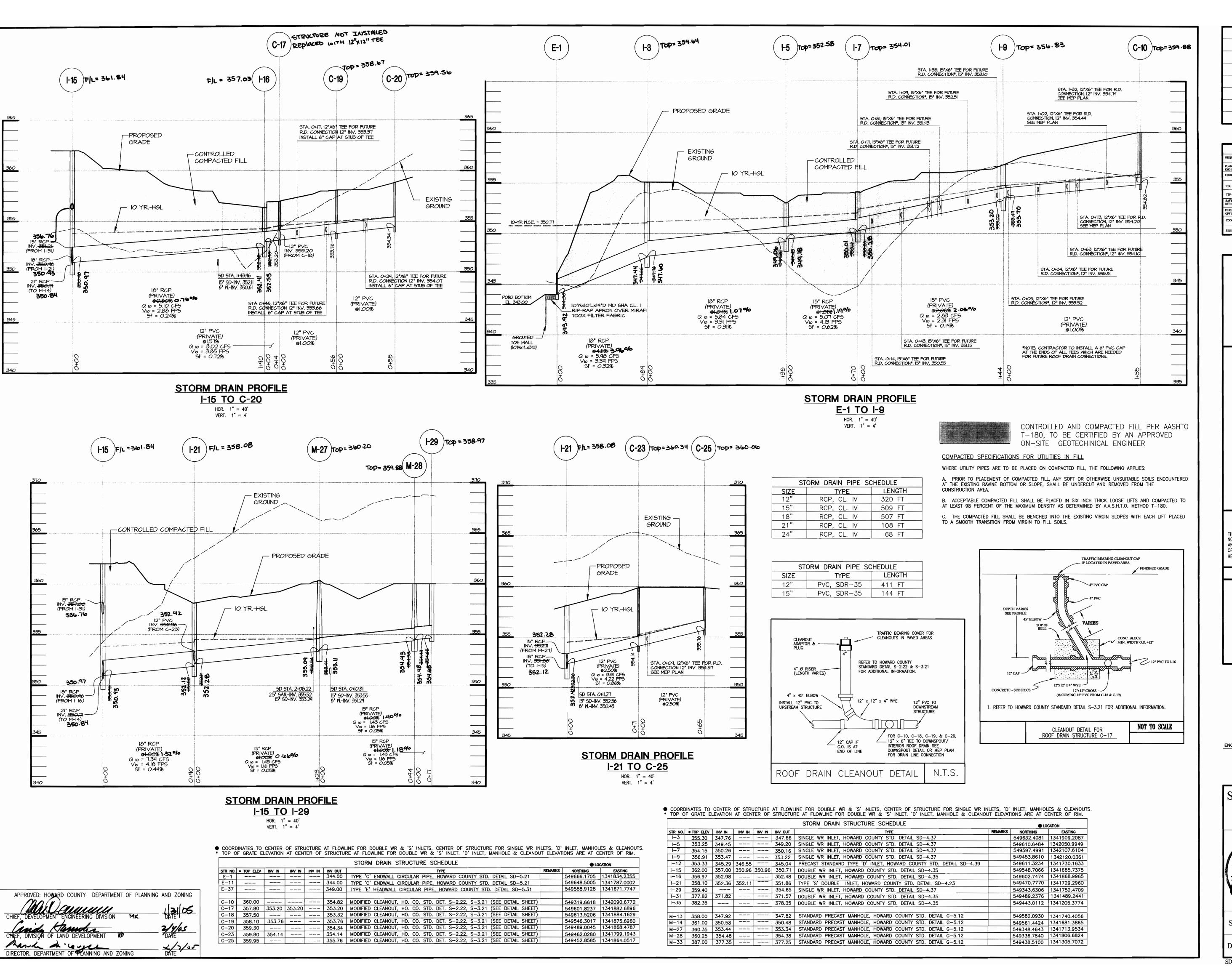
JOB NO.: 13685

SDP-9

1-17-05 SHEET: 9 OF 22

SCALE: 1"= 40'

DES: LFB CHECK: TCN DATE: 01-17-05



REVISI	ONS
Asbuilt Info Ad	ded 03/06

	APPROVALS	
REQUESTER	<u> </u>	
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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GRAPHIC SCALE

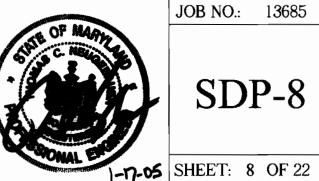
AS SHOWN



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707

(410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

STORM DRAIN PROFILES

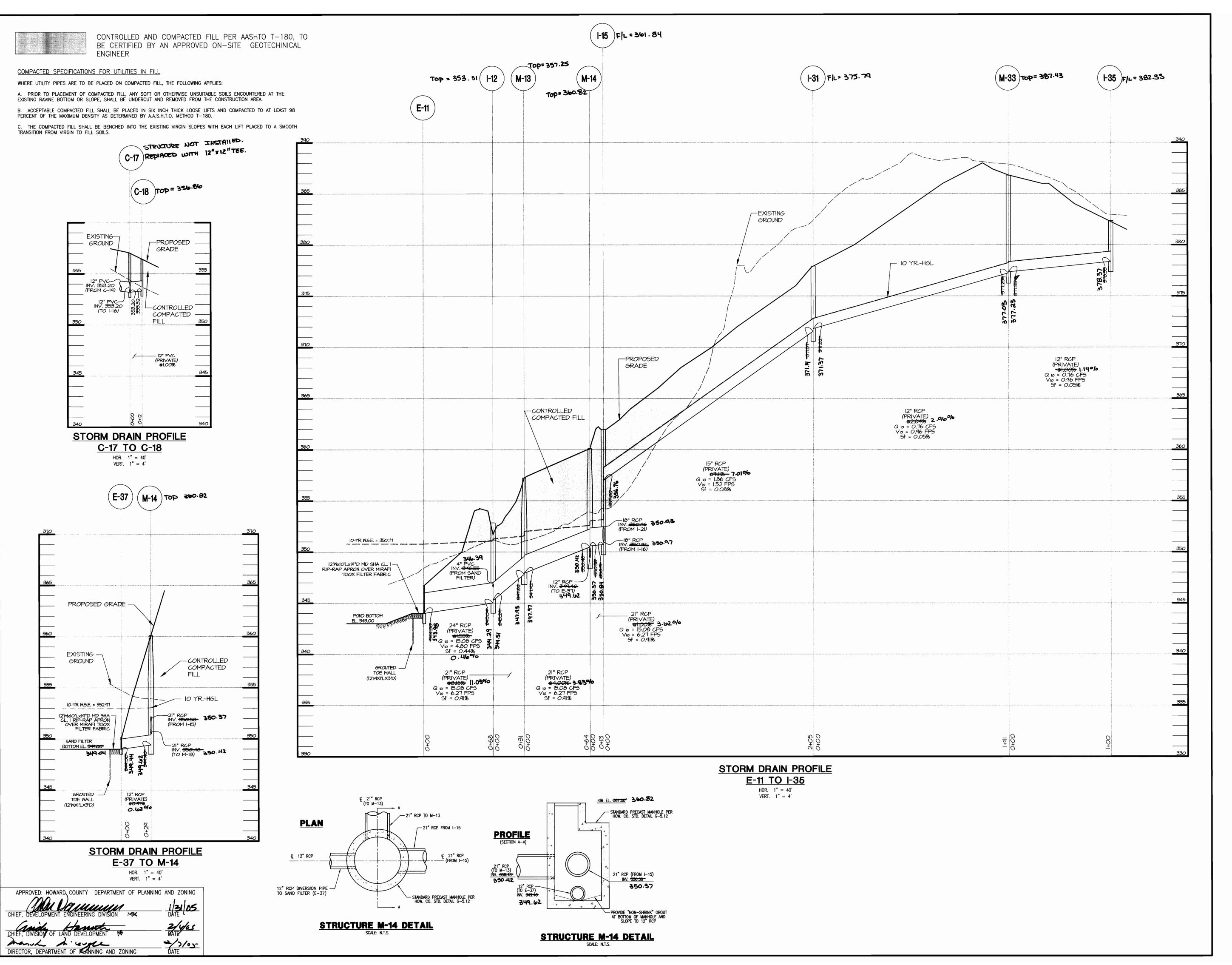


JOB NO.: 13685

SDP-8

SCALE: 1"= 40'

DES: BCC | CHECK: TCN | DATE: 01-17-05



	REV.	ISIONS	
Asbuilt	into	ADDED	03/06
 -			

APPROVALS	
REQUESTER	
PLANT FACILITIES CHIEF ENGINEER	
CODE COMPLIANCE REVIEW	
TSC GROUP	
TSF GROUP	
SAFETY OFFICER	
DIRECTORS OFFICE	
COORDINATOR	
SENIOR LEADER	

JOHNS HOPKINS ROAD

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

LAUREL, MARYLAND 20723-6099

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GRAPHIC SCALE

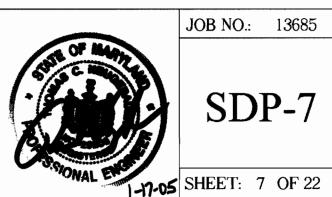
AS SHOWN



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STORM DRAIN PROFILES

FAX (410) 792-7395

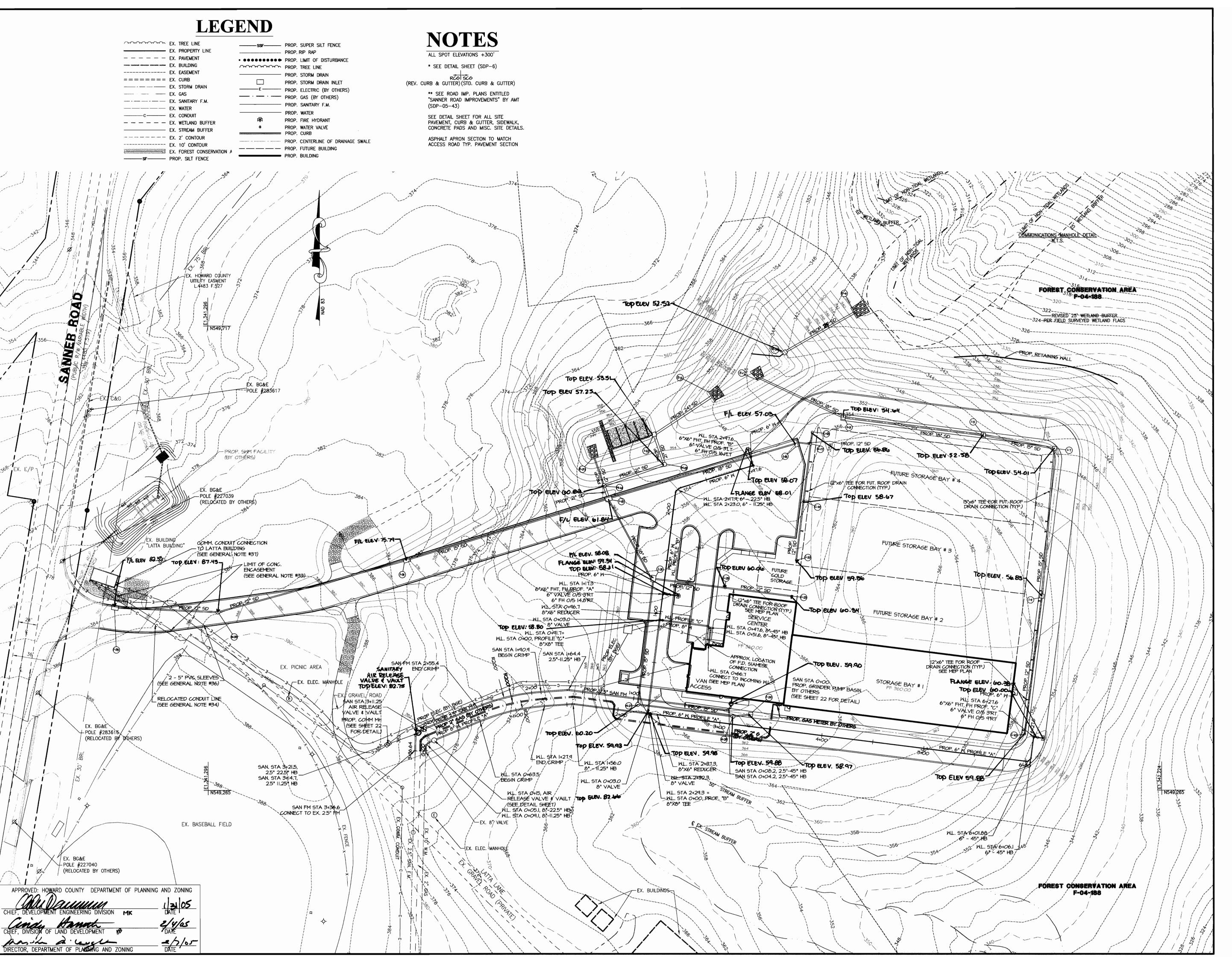


JOB NO.: 13685

SDP-7

SCALE: 1"= 40'

DES: BCC | CHECK: TCN | DATE: 01-17-05



HirdeA	NTO	ADDED	63/00

	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

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TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY

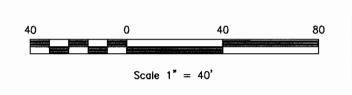


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GRAPHIC SCALE





MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

UTILITY PLAN



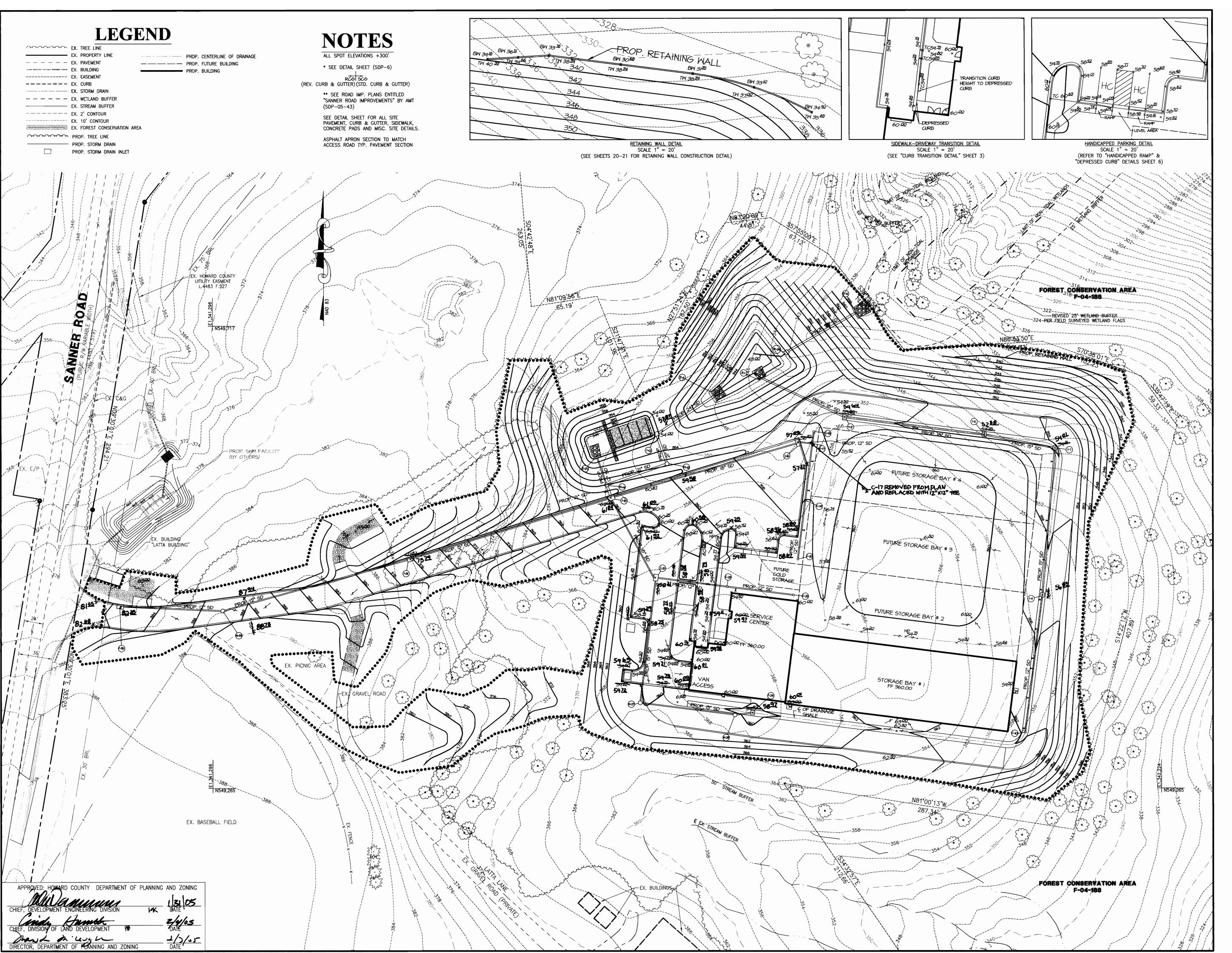
JOB NO.: 13685

SDP-5

1-17-05 SHEET: 5 OF 22

SCALE: 1"= 40'

DES: LFB | CHECK: TCN | DATE: 01-17-05



ASBUILT	T INFO ADDED	03/06

	APPROVALS	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		
TSC GROUP		
TSF GROUP		
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER	,	

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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GRAPHIC SCALE

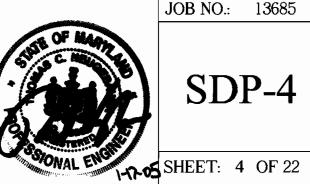
NOTE: ALL PAVENENT ELEVATIONS ARE PLOWLING ELEVATIONS.



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

GRADING PLAN



SCALE: 1"= 40'

DES: LFB | CHECK: TCN | DATE: 01-17-05

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF
- THE CONTRACTOR SHALL CONTACT THE CONSTRUCTION INSPECTION DIVISION 24 HOURS IN ADVANCE OF COMMENCEMENT OF WORK AT (410) 313-1880.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AND JHU/APL PLANT FACILITIES OFFICE (443) 778-0167 AT LEAST 48 HOURS PRIOR TO ANY
- 4. CONTRACTOR TO SCHEDULE PRECONSTRUCTION MEETING WITH HOWARD COUNTY. CONSTRUCTION INSPECTION DIVISION (410-313-1880) PRIOR TO STARTING
- 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
- 6. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE BASED ON FIELD LOCATIONS SUPPLEMENTED WITH EXISTING UTILITY DRAWINGS, AND SHOULD BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO CONSTRUCTION. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING UTILITIES, AND ANY DAMAGE DONE TO THEM DUE TO CONSTRUCTION ACTIVITY SHALL BE REPAIRED IMMEDIATELY AT HIS OWN EXPENSE.
- CONTRACTOR IS RESPONSIBLE FOR ALL SITE CONDITIONS, CONSTRUCTION REQUIREMENTS, AND SHALL CONFORM TO ALL STATE, FEDERAL, AND COUNTY CONSTRUCTION REGULATIONS. THE CONTRACTOR IS NOT RELIEVED OF RESPONSIBILITY SHOULD ANY REQUIRED ITEMS PERTAINING TO SITE CONSTRUCTION NOT BE INCLUDED ON THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS AS SHOWN ON THESE PLANS.
- ANY DAMAGE TO EXISTING UTILITIES, PAVEMENT, OR CURB AND GUTTER DUE TO CONSTRUCTION ACTIVITY OUTSIDE THE LIMITS OF DISTURBANCE IS TO BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- WHERE NECESSARY, THE CONTRACTOR SHALL TEST PIT ALL EXISTING UTILITIES AT LEAST FIVE (5) DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE DRAWINGS. 10. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PROPERTY MONUMENTS, MARKERS,

SIGNS, LIGHTS, OR ANY OTHER EXISTING SITE FEATURES DISTURBED DURING

- 11. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- 12. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY WHITMAN, REQUARDT & ASSOCIATES, LP DATED JANUARY 2004. JHU APPLIED PHYSICS LAB AERIAL TOPOGRAPHY AND UTILITY INFORMATION SHOWN MAY NOT REFLECT CURRENT CONDITIONS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY CURRENT TOPOGRAPHY AND UTILITY INFORMATION TO HIS OWN SATISFACTION.
- 13. THE SITE BOUNDARY, BEARINGS, AND COORDINATES SHOWN ARE BASED ON ELECTRONIC FILES OBTAINED FROM WHITMAN, REQUARDT AND ASSOCIATES.
- 14. ALL WORK SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE "1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROLS" PUBLISHED JOINTLY BY THE WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE
- 15. THE COORDINATES SHOWN HEREON ARE BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM (NAD 83). JOHNS HOPKINS UNIVERSITY CONTROL STATIONS NOS.

HOPKINS, 4	1EA, G12, G7 AND G8 WERE USED	FOR THIS PROJECT.
STATION	NORTH	EAST
HOPKINS	544836.5300	1340825.3542
G12	550256.5002	1342325.2642
G7	548107.0328	1341025.0830
G8	549478.7005	1341170.4345
41 EA	544825.8093	1339217.4439

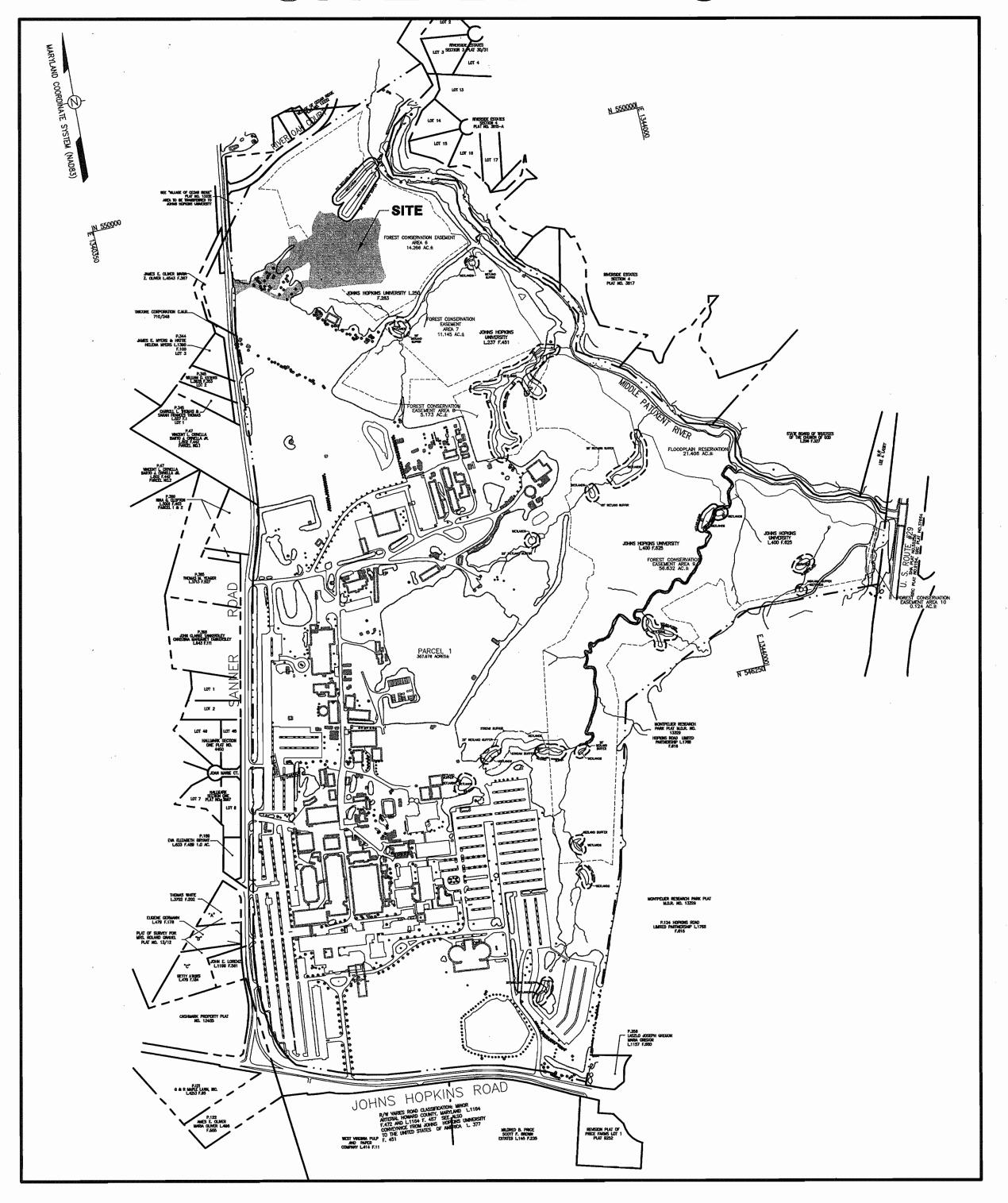
- 16. WATER IS PRIVATE WITH CONNECTION TO PUBLIC SYSTEM.
- 17. SEWER IS PRIVATE WITH CONNECTION TO PUBLIC SYSTEM.
- 18. ALL SWM DEVICES ARE PRIVATELY OWNED AND MAINTAINED.
- 19. EXISTING UTILITIES ARE BASED ON JHU/APL FACILITY RECORDS AND SUPPLEMENTED WITH EXISTING AVAILABLE DESIGN PLANS.
- 20. THERE ARE NO WETLANDS, STREAMS OR FLOOD PLAINS WITHIN THE AREAS BEING DISTURBED BY THIS PROJECT. WETLANDS, WETLAND BUFFERS, STREAMS, STREAM BUFFERS AND FLOODPLAIN AREAS SHOWN ON THIS PLAN HAVE BEEN OBTAINED BY F-02-40, PLAT #15429-15433, RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY.
- TRAFFIC STUDY COMPLETED BY A. MORTON THOMAS AND ASSOCIATES, INC., DATED MARCH 27, 2003 WITH AN ADDENDUM DATED JULY 2004.
- 22. THE CONTRACTOR SHALL CONTACT MR. JAMES LOESCH (443) 778-5134 AT LEAST TEN DAYS BEFORE STARTING WORK OR DISRUPTION OF ANY UTILITIES.
- 23. THE SUBJECT PROPERTY IS ZONED PEC PER THE 02-02-04 COMPREHENSIVE ZONING
- 24. SEE PREVIOUS DEPARTMENT OF PLANNING AND ZONING FILES: F 02-40, F 04-188,
- 25. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, WETLAND BUFFERS, STREAM(S) OR STREAM BUFFERS AND FOREST CONSERVATION EASEMENT AREAS.
- 26. THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD
- COUNTY CODE OF FOREST CONSERVATION BY F-04-188 AND F-02-40. 27. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- 28. A GEOTECHNICAL STUDY WAS CONDUCTED FOR THIS PROJECT BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED JUNE 22, 2004.
- 29. TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADWAYS AND PARKING AREAS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL, VOL. IV, STANDARD NO.
- 30. ALL COMPACTED FILL SHALL BE IN ACCORDANCE WITH AASHTO T-180 REQUIREMENTS. 31. ALL EXTERIOR LIGHTING SHALL COMPLY WITH ZONING REGULATIONS SECTION 134. SEE
- SHEET #19 FOR LIGHT DETAIL. 32. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (SEE GENERAL NOTE #6 ON SHEET 19) IN THE
- AMOUNT OF \$3,300.00 (FOR 7 SHADE TREES AND 8 EVERGREENS) IS PART OF THE 33. AT SITE ENTRANCE, PRIOR TO ANY CONSTRUCTION ACTIVITY, CONTRACTOR TO ENCASE EXISTING COMMUNICATIONS DUCT BANK WITH CONCRETE. MINIMUM ENCASEMENT TO

BE 6" OVER AND BEYOND DUCT BANK. SEE UTILITY PLAN FOR LIMITS OF

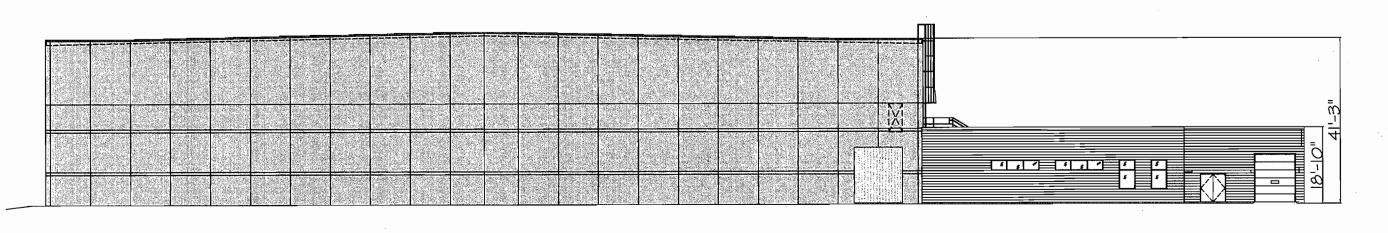
- 34. PRIOR TO INITIAL PAVING, CONTRACTOR TO INSTALL A NEW COMMUNICATIONS DUCT BANK AT THE SITE ENTRANCE. PROPOSED DUCT BANK TO MATCH EXISTING, HAVE 4 MINIMUM COVER AND IS TO RECONNECT TO THE EXISTING DUCT BANK AS SHOWN ON THE UTILITY PLAN. EXISTING DUCT BANK UNDER SITE ACCESS ROAD WILL BE ABANDONED AND ALL EXISTING WIRING TO BE FED THROUGH NEW DUCT BANK
- 35. FIRE ACCESS ROAD RESTRICTION SIGN TO BE PLACED AT ENTRANCES TO FIRE LANES AND ARE TO READ "DO NOT ENTER - FIRE DEPARTMENT ACCESS ONLY."
- 36. CONTRACTOR TO INSTALL TWO (2) 5" PVC SLEEVES ACROSS ACCESS ROAD TO SERVE AS ENCASEMENT FOR INSTALLATION OF ELECTRICAL CONDUIT BY BG&E. 5" PVC SLEEVE TO EXTEND TEN (10) FEET BEYOND BACK OF CURB OF ACCESS ROAD.
- 37. CONTRACTOR TO CONTACT AND COORDINATE THE CONNECTION OF COMMUNICATIONS



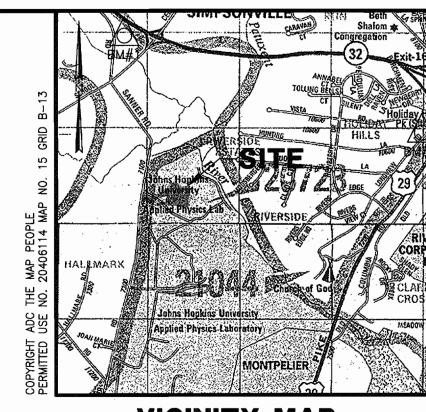
JOHNS HOPKINS APPLIED PHYSICS LABORATORY LIBRARIES SERVICE CENTER SITE DEVELOPMENT PLAN



OVERALL SITE MAP SCALE: 1" = 500'



ARCHITECTURAL PROFILE



VICINITY MAP

BENCHMARKS

B.M.#1 - HOWARD COUNTY BENCHMARK 41BB - EAST SIDE OF GUILFORD ROAD 1760' WEST OF PINDELL SCHOOL ROAD. N553,338.80 E1,340,517.48 ELEV. 370.395

B.M.#2 - HOWARD COUNTY BENCHMARK 0057 - EAST SIDE OF LONGVIEW ROAD, SOUTH OF VISTA ROAD INTERSECTION. N550,835.21 E1,347,017.69 ELEV. 398.925

SHEET INDEX 1 COVER SHEET

			2	DEMOLITION PLAN
			3	SITE LAYOUT PLAN
			4	SITE GRADING PLAN
	•		5	STORM DRAIN & UTILITY PLAN
	BUILDING SQUARE		6	SITE DETAILS
	FOOTAGE TABULATION		7	STORM DRAIN PROFILES
	TOOTAGE TABOLATION		8	STORM DRAIN PROFILES
1.	PROPOSED BUILDING COVERAGE =	23,055 S.F.	9	UTILITY PROFILES
2.	FUTURE (ULTIMATE) BUILDING COVERAGE =	45,567 S.F.	10	UTILITY PROFILES
3.	TOTAL (ULTIMATE) BUILDING COVERAGE =	68,622 S.F.	11	STORMWATER MANAGEMENT PLAN
1.	GROSS BUILDING SQUARE FOOTAGE =	38,206 S.F. 89,920 S.F.	12	STORMWATER MANAGEMENT PLAN
	FUTURE (ULTIMATE) BUILDING SQUARE FOOTAGE =		13	STORM DRAIN & SWM DRAINAGE AREA MAPS
3.	TOTAL (ULTIMATE) BUILDING SQUARE FOOTAGE =	128,126 S.F.	14	MD 378 NOTES
			15	GEOTECHNICAL REPORT
			16	EROSION & SEDIMENT CONTROL PLAN
			17	EROSION & SEDIMENT CONTROL DETAILS
			18	LIGHTING & LANDSCAPING PLAN
			19	LIGHTING & LANDSCAPING DETAILS
			20	RETAINING WALL PLAN & GENERAL NOTES
			21	RETAINING WALL PROFILE, TYPICAL SECTION & DETAILS
			22	GRINDER PUMP DETAILS

CITE ANALYCIC DATA CHART

1.	TOTAL PROJECT AREA:	361 ACRES +/-
2.	AREA OF PLAN SUBMISSION:	6.45 ACRES +/-
3.	LIMIT OF DISTRUBANCE:	6.45 ACRES +/-
4.	PRESENT ZONING:	PEC
5.	PROPOSED USE: LIBRARY BOOK STORAGE FACILITY JOHNS HOPK	KINS UNIVERSITY
6.	EXISTING NUMBER OF EMPLOYEES (JHU/APL CAMPUS):	3646
7.	PROPOSED NUMBER OF EMPLOYEES (PER THIS PLAN):	20
8.	TOTAL NUMBER OF EMPLOYEES (JHU/APL CAMPUS, INCL. THIS PLAN):	3666
9.	MAXIMUM NUMBER OF EMPLOYEES ALLOWED PER APFO STUDY PER F-02-	-40: 3937
10.	EXISTING MINIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING:	2953 (F-02-40)
11.	EXISTING ONSITE PARKING SPACES (JHU/APL CAMPUS):	4793 (SDP 04-76)
12.	PROPOSED PARKING SPACES (PER THIS PLAN):	22 (INCL. 4 HC SPACES)
13.	TOTAL NUMBER OF ONSITE PARKING SPACES (JHU/APL CAMPUS, INCL. TH	IS PLAN): 4815
14.	EXISTING BUILDING COVERAGE (JHU/APL CAMPUS):	21.1 ACRES (SDP-04-133)
15.	PROPOSED BUILDING COVERAGE* (PER THIS PLAN):	68,622 SF OR 1.6 ACRES ±
16.	TOTAL BUILDING COVERAGE* (JHU/APL CAMPUS, INCL. THIS PLAN):	22.7 ACRES, 6.3% OF TOTAL LOT AREA
*THE	BUILDING COVERAGE INFORMATION INCLUDES THE FUTURE BUILDING AREA.	SEE THE BUILDING SQUARE FOOTAGE TABULATION ON THIS SHEET.
17.	EXISTING GROSS FLOOR AREA COVERAGE (JHU/APL CAMPUS):	44.8 ACRES (SDP-04-133)
	PROPOSED GROSS FLOOR COVERAGE* (PER THIS PLAN):	128,126 SF OR 2.94 ACRES ±
	TOTAL GROSS FLOOR AREA COVERAGE* (JHU/APL CAMPUS, INCL. THIS PLA	AN): 47.74 ACRES, 13.2% OF TOTAL LOT AREA
		DING AREA. SEE THE BUILDING SQUARE FOOTAGE TABULATION ON THIS SHEET.
00	OACE NUMBERS ARRIVOARIE NARROVENENTS.	
20.	CASE NUMBERS — APPLICABLE IMPROVEMENTS:	p /w
	F 02-40 - FOREST CONSERVATION, FLOODPLAIN, PUBLIC F 04-188 - FOREST CONSERVATION AND WETLANDS SDP 04-35 - SWM BASIN G	1 /
	SDP 04-35 - SWM BASIN G SDP 04-66 - BALL FIELD ENTRANCE AND PARKING LOTS	
	SDP 04-66 BALL FIELD ENTRANCE AND PARKING LOTS	

SERVICES AREA COMPLEX
BASIN C SWM FACILITIES & LAYDOWN AREA
SANNER ROAD IMPROVEMENTS 21. SANITARY SEWER/ WATER SERVICE: PRIVATE ONSITE SYSTEM, PUBLIC CONNECTION

22. EXISTING OPEN SPACE AREA (LOT AREA MINUS PARKING & BUILDINGS): 286 ACRES, 81.7% OF TOTAL LOT AREA (PROVIDED BY JHU APL) 23. PROPOSED OPEN SPACE AREA: 283 ACRES, 78.4% OF TOTAL LOT AREA

	PREVIOUSLY ADDRESSED cluding Use of FC Bank)	FOREST CONSERVATION DATA SUMMARY
File Number: F-04-188		Project/Subdivision Name: JOHNS HOPKINS UNIVERSITY PROPERTY (APPLIED PHYSIC LABORATORY SITE)
Comment:	Addressed by How. Co. Subdivision & Land Development Regulations, Sec. 16.1202.(6)(1)(ii). See F-04-188 Plat # 17042 thru 17046.	

ADDRESS CHART

	LOT/PARCEL NO.				STREET ADDRESS			
		289 / 1				11100 JOHNS LAUREL, MD	HOPKINS ROAD 20723	
OWNER:	PE	RMIT IN	FORMA	TION C	CHART		-	
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY 11100 JOHNS HOPKINS ROAD LAUREL, MD 20723 ATT. MR. JAMES LOESCH	SUBDIVISION NAME PARCEL 1 JOHNS HOPKINS UNIVERSITY PROPERTY (APPLIED PHYSICS LABORATORY SITE)			γ	ECTION/AREA N/A	LOT/PARCEL NO. 289 / 1		
	PLAT # OR L/F 17042 - 17046	GRID #	ZONE PEC		MAP NO.	ELECT. DIS	CENSUS TRACT 605102	
VOICE (443)778-5134 FAX (443)778-6122	WAT	ER CODE:				SEWER (

South State of the	REVISIONS					
The street of the	Asbuilt INFO ADDED	03/06				
to the total state of	·					
The section of the se						

APPROVALS	3	
REQUESTER		
PLANT FACILITIES CHIEF ENGINEER		
CODE COMPLIANCE REVIEW		•
TSC GROUP		
TSF GROUP		-
SAFETY OFFICER		
DIRECTORS OFFICE		
COORDINATOR		
SENIOR LEADER		

THE JOHNS HOPKINS UNIVESITY **APPLIED PHYSICS LABORATORY**

JOHNS HOPKINS ROAD LAUREL, MARYLAND 20723-6099

TAX MAP 41, GRID 16, PARCEL 1 FIFTH (5TH) ELECTION DISTRICT HOWARD COUNTY, MARYLAND

THE JOHNS HOPKINS UNIVERSITY



LIBRARIES SERVICE **CENTER**

JHU/APL INTERNAL USE

NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN TO EVALUATE THIS RFP OR IN, THE CASE OF A CONTRACT AWARD, TO PERFORM THE WORK REQUIRED HEREUNDER, WITHOUT THE EXPRESS WRITTEN CONSENT OF JHU/APL

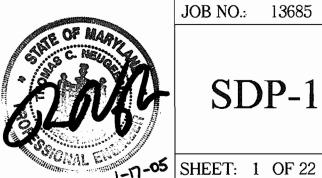
GRAPHIC SCALE



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9792 or (301) 776-1690 FAX (410) 792-7395

COVER	SHEET



SCALE: AS SHOWN

| CHECK: TCN | DATE: 01-17-05