

SITE DEVELOPMENT PLAN

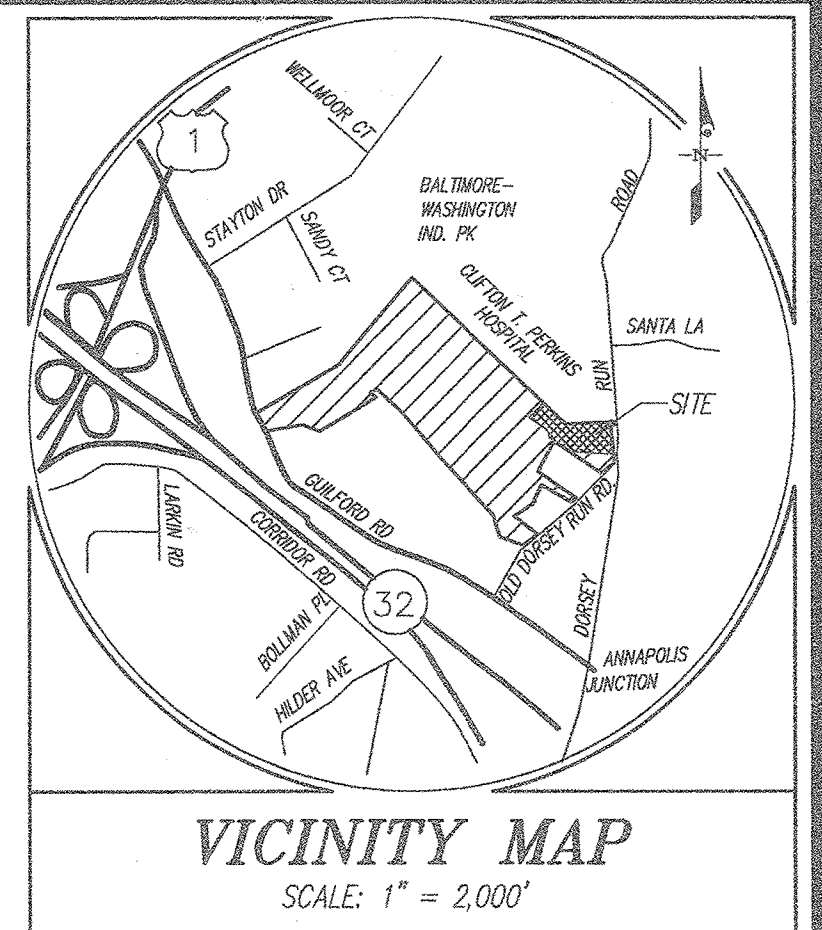
GIANT DISTRIBUTION CENTER

Trailer Storage Surface Parking Addition

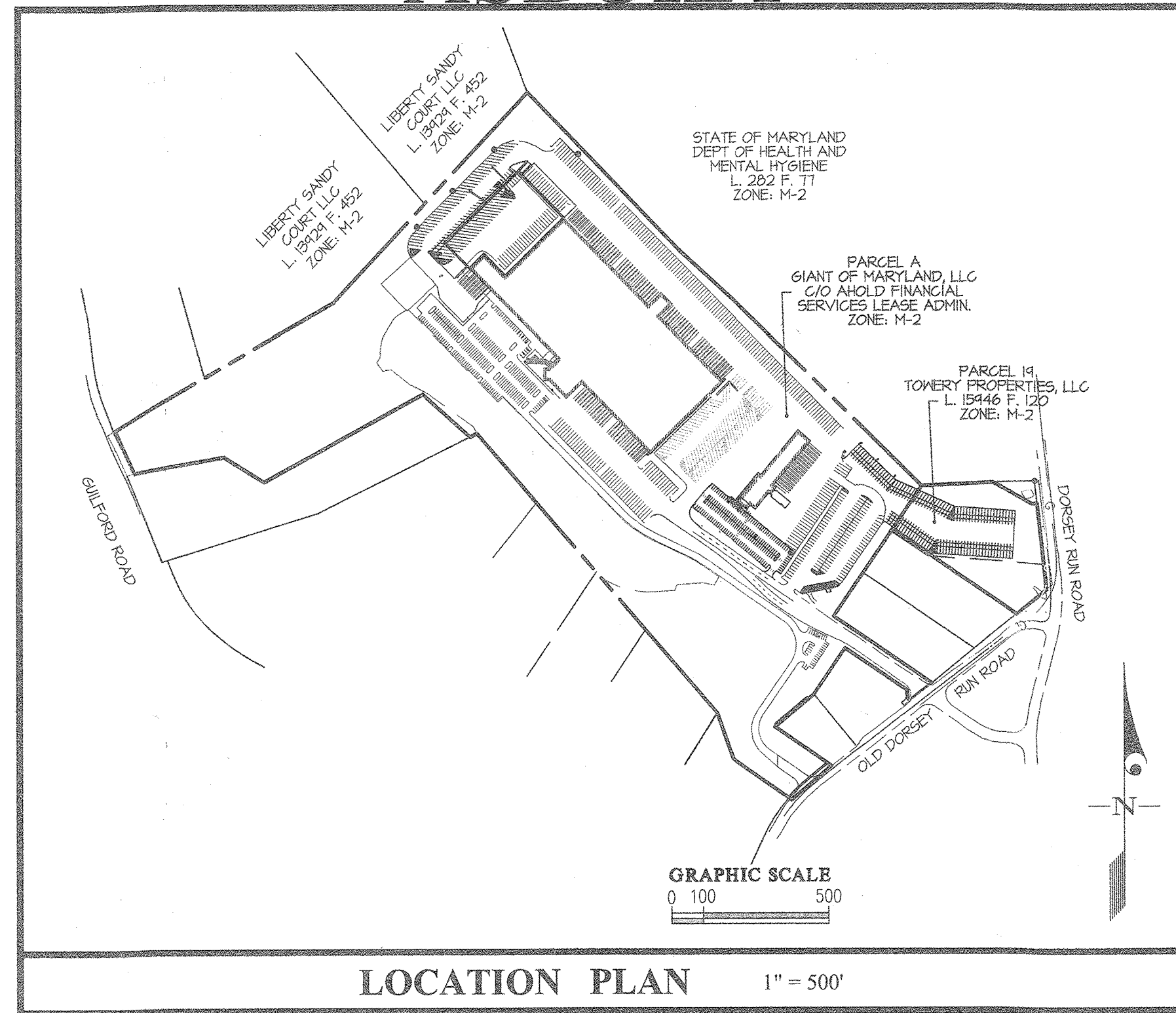
Exeter Industrial Park

Parcel A & Parcel 19

ASBUILT



- GENERAL NOTES**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
 - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION AT (410) 313-1080 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
 - THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, BUREAU OF UTILITIES AT (410) 313-4000 AT LEAST FIVE (5) DAYS PRIOR TO STARTING ANY EXCAVATION WORK.
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-251-1111 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
 - PROJECT BACKGROUND:
LOCATION: TAX MAP #48, GRID B
ZONING: M-2 (PER THE 10-06-2013 COMPREHENSIVE ZONING PLAN)
ELECTION DISTRICT: 6TH
PARCEL AREA: 4.59 AC.
RECORDING REFERENCE: L. 0946 F. 120
 - PROPOSED USE: TRACTOR TRAILER STORAGE
 - ALL PLAN DIMENSIONS ARE TO FACE OF BUILDING AND/OR FACE OF CURB UNLESS OTHERWISE NOTED. DIMENSIONS ARE MEASURED PERPENDICULAR OR RADIIALLY BETWEEN ITEMS UNLESS OTHERWISE NOTED.
 - EXISTING TOPOGRAPHY IS SHOWN PER FIELD SURVEY PERFORMED BY GUTSCHICK, LITTLE & WEBER, P.A. IN FEBRUARY 2018 AND UPDATED IN JULY 2019 AS WELL AS GRADES TAKEN FROM DESIGN PLANS FOR CONSTRUCTION.
 - COORDINATES AND BEARINGS ARE BASED UPON THE '83 MD STATE COORDINATE SYSTEM (NAD 83) AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 4820 AND 482C.
 - PROPERTY IS ZONED M-2 PER THE 10/06/13 COMPREHENSIVE ZONING PLAN.
 - PREVIOUS DEPARTMENT OF PLANNING & ZONING FILE NUMBERS:
SDP 03-44, ECP 20-10, F-03-040, NP-20-052, **F-20-049**
 - WATER AND SEWER SERVICE IS PUBLIC.
 - EXISTING WATER AND SEWER IS PER CONTRACT #20-3236-D.
 - ALL EXISTING PUBLIC STORM DRAIN IS PER SDP 03-44.
 - STORMWATER MANAGEMENT FOR QUALITY AND QUANTITY CONTROL IS BEING PROVIDED IN THE FOLLOWING MANNER:
I. MICRO BIO-RETENTION FACILITY
II. SUBMERGED GRAVEL WETLAND
BOTH OF THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
 - EXISTING UTILITIES ARE BASED ON APPROVED DESIGN PLANS FOR CONSTRUCTION AND FIELD LOCATION BY GUTSCHICK, LITTLE & WEBER, P.A.
 - THERE ARE NO KNOWN CEMETERIES, GRAVE SITES OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
 - THERE ARE NO SCENIC ROADS WITHIN OR ADJACENT TO THE SUBJECT PROPERTY.
 - THERE ARE NO FLOODPLAINS ON THIS SITE.
 - THERE ARE NON-TIDAL WETLANDS ON THE SITE. THERE IS AN AUTHORIZATION LETTER, (M-NT-3226/2019/524) WHICH HAS BEEN ISSUED BY M.D.E. TO PERMIT DISTURBANCE IN THE WETLANDS.
 - THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
 - BUILDING SETBACKS AND BUILDING RESTRICTIONS ARE PER THE HOWARD COUNTY ZONING REGULATIONS, SECTION 123. M-2 (MANUFACTURING - HEAVY) DISTRICT.
 - BECAUSE THIS PLAN SUBMISSION IS NON-RESIDENTIAL, A NOISE STUDY IS NOT REQUIRED.
 - THIS PLAN IS PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL WITH 34 SHADE TREES, AND 13 EVERGREEN TREES. A LANDSCAPE SURVEY IN THE AMOUNT OF \$12,500.00 WILL BE POSTED AS PART OF THE DPM DEVELOPER AGREEMENT.
 - ALL EXTERIOR LIGHT FIXTURES SHALL BE FULLY OR PARTIALLY SHIELDED TO DIRECT LIGHT INWARDS AND DOWNWARDS AWAY FROM ALL ADJOINING RESIDENTIAL USE AREAS AND PUBLIC ROADS IN ACCORDANCE WITH SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
 - NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS, OTHER THAN THE GRADING WITHIN THE EXISTING WETLANDS ALLOWED PER THE ALTERNATIVE COMPLIANCE NUMBER, NP-20-052, AND THE FOREST CONSERVATION EASEMENT BEING ABANDONED PER PLAT NO. F-20-049.
 - THIS SITE IS SUBJECT TO HOWARD COUNTY FOREST CONSERVATION REQUIREMENTS PER SECTION 16.120 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. AN ADDITIONAL FOREST PLANTING OBLIGATION OF 1.22 ACRES IS REQUIRED FOR PARCEL A. THAT OBLIGATION WILL BE SATISFIED AT AN OFFSITE BANK, **CONTRACT CASE# 300-14-31**.
 - A PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON JULY 15, 2019 FOR THE PURPOSE OF THE DEVELOPER AND THEIR CONSULTANTS TO PRESENT THIS DEVELOPMENT PROPOSAL TO THE COMMUNITY AND TO ANSWER QUESTIONS.
 - FUTURE IMPROVEMENTS ALONG DORSEY RUN ROAD ARE SHOWN PER DPM CAPITAL PROJECT J-4102 PHASE 2. THE PROJECT MANAGER FOR THIS CAPITAL PROJECT IS TOM WILKINS (410) 313-6145. THERE ARE NO IMPROVEMENTS WITHIN THE R/W OF DORSEY RUN ROAD PROPOSED ON THESE PLANS.
 - A TRAFFIC STUDY FOR THE GIANT DISTRIBUTION CENTER WAS COMPLETED BY THE TRAFFIC GROUP DATED JULY 24, 2019.
 - AN ALTERNATIVE COMPLIANCE OF SECTION 16.116(a)(1), NP-20-052, FOR THE DISTURBANCE WITHIN THE WETLANDS WAS APPROVED ON DECEMBER 19, 2019 AND HAS THE FOLLOWING CONDITIONS:
1. COMPLIANCE WITH SRC COMMENTS FOR SDP-20-019 FOR THE PROPOSED SITE DEVELOPMENT OF THE STORAGE AREA AND ASSOCIATED PROPOSED IMPROVEMENTS.
2. THE REQUIRED MDE PERMITS FOR WETLAND DISTURBANCE MUST BE GRANTED PRIOR TO THE SIGNATURE APPROVAL OF SDP-20-019 AND NOTE REGARDING THESE PERMITS MUST BE INCLUDED ON THE SDP.
3. PROVIDE A NOTE ON THE SDP-20-019 AND THE FINAL PLAN REGARDING THIS ALTERNATIVE COMPLIANCE PETITION APPROVAL. THIS NOTE SHALL INCLUDE THE REGULATION SECTION REQUESTED, THE DATE OF THE ALTERNATIVE COMPLIANCE APPROVAL, AND THE CONDITIONS OF APPROVAL.



- SITE INDEX**
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 - 2 EXISTING CONDITIONS PLAN
 - 3 SITE DEVELOPMENT PLAN
 - 4 SITE PLAN DETAILS
 - 5 FOREST CONSERVATION AND LANDSCAPE PLAN
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 - 8 STORM DRAIN PROFILES
 - 9 STORMWATER MANAGEMENT PLAN
 - 10 STORMWATER MANAGEMENT PLAN
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 - 12 SEDIMENT CONTROL PLAN
 - 13 SEDIMENT CONTROL - NOTES AND DETAILS

- SITE ANALYSIS DATA**
- ZONING: M-2
 - GROSS AREA OF PARCEL 19 = 19,281 SF = 4.50 AC.
PART OF PARCEL A = 67,483 SF = 1.56 AC.
 - LIMIT OF DISTURBED AREA = 4.6 AC. (LIMIT OF PLAN SUBMISSION)
 - PROPOSED USE: TRACTOR TRAILER STORAGE
 - BUILDING COVERAGE (% OF GROSS SITE AREA): N/A
 - PARKING CALCULATIONS: N/A

ADC MAP 5054 GRID C4
HC CONTROL STATIONS

48DB	48DC
NORTHING: 536,575.672	NORTHING: 534,210.456
EASTING: 1371,005.880	EASTING: 1371,114.513
ELEVATION: 238.881	ELEVATION: 209.058
(LATEST ADJ. FEB. 2014)	(LATEST ADJ. FEB. 2014)

ASBUILT PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285, EXPIRATION DATE: MARCH 17, 2021.

8.19.20
DATE

TODD M. REDDAN, P.E.
MARYLAND REG. NO. 17285

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-2020

Chief, Division of Land Development: *[Signature]* Date: 2/3/20

Chief, Development Engineering Division: *[Signature]* Date: 1-23-20

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PHONE: 301-421-4024 | BALT: 410-880-1820 | DC/VA: 301-889-2524 | FAX: 301-421-4138

DESIGNED BY:	DRAWN BY:	CHECKED BY:	TMR	DATE	REVISION	BY	APPR.
DEV							
DEV							

OWNER/DEVELOPER:
GIANT LANDOVER DIVISION
1385 HANCOCK STREET
10TH FLOOR
QUINCY, MA 02169
ATTN: REDAS ZAKALSKIS
TEL: 617-792-7880

PROFESSIONAL CERTIFICATION

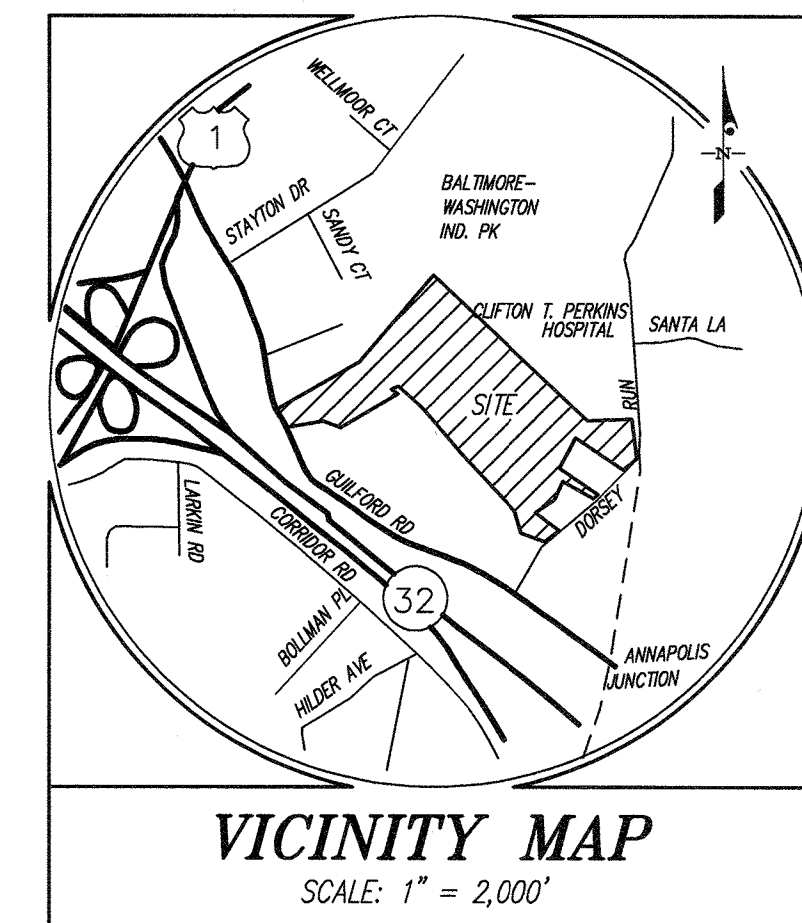
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285, EXPIRATION DATE: MARCH 17, 2021.

[Signature]
TODD M. REDDAN, P.E.
MARYLAND REG. NO. 17285

ASBUILT COVER SHEET

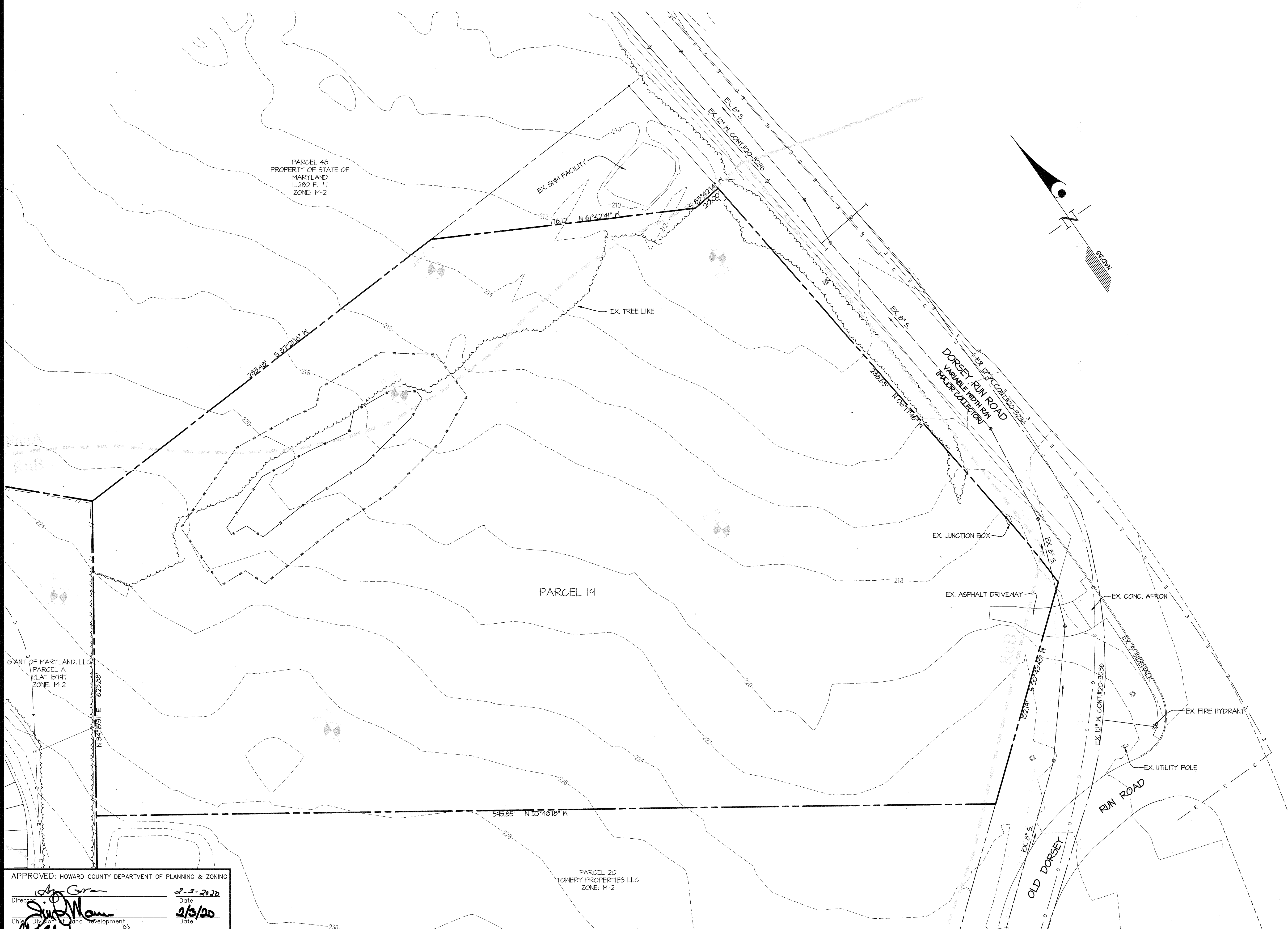
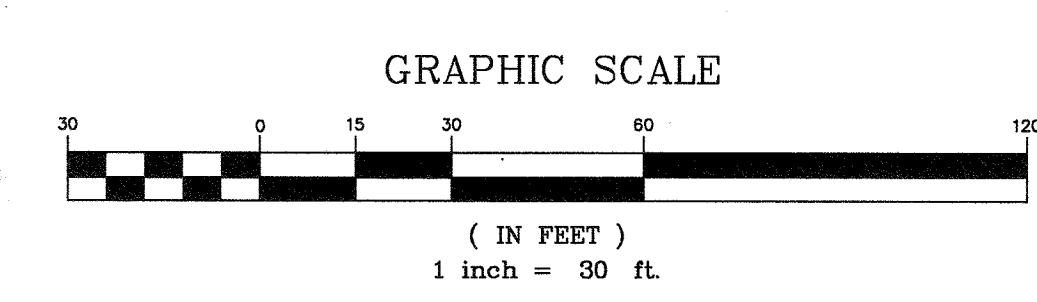
ADDRESS and PERMIT INFORMATION CHART		
BUILDING ADDRESS:	8560 OLD DORSEY RUN ROAD, JESSUP, MD 20794 (PARCEL A)	
SUBDIVISION NAME:	SECTION/AREA:	PARCEL:
EXETER INDUSTRIAL PARK	---	19 / A
DEED REFERENCE:	ZONE:	TAX MAP: BLOCK: ELECTION DIST.: CENSUS TRACT:
L. 0946 F. 120 (PARCEL 19) L. 6378 F. 250 (PARCEL A)	M-2	48 8 6 6049.01
WATER & SEWER WATERSHED: LITTLE PATUXENT RIVER		
SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	M-2	12060
DATE	TAX MAP - GRID	ASBUILT SHEET
AUG, 2020	48-8	1 OF 4
JAN., 2020		1 OF 13

HOWARD COUNTY, MARYLAND



LEGEND

--- 280 ---	EXISTING CONTOURS
--- 278 ---	EXISTING CURB
=====	EXISTING EDGE OF PAVING
--- // ---	EXISTING FENCE
~~~~~	EXISTING TREELINE
--- (X) ---	EXISTING GENER
--- (W) ---	EXISTING WATER
--- (W) ---	WETLANDS
--- (W) ---	WETLAND BUFFER
--- (G) ---	EXISTING GAS LINE
--- (E) ---	EXISTING ELECTRIC POLE
--- (V) ---	EXISTING GAS VALVE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-2020

Chief, Division of Land Development: *[Signature]* Date: 2/3/20

Chief, Development Engineering Division: *[Signature]* Date: 1-23-20

**GLW**  
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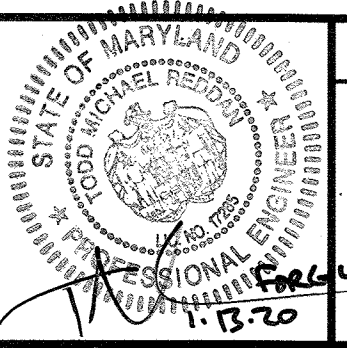
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-988-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
AEB				
TMR				

**OWNER/DEVELOPER:**  
GIANT LANDOVER DIVISION  
1385 HANCOCK STREET  
10TH FLOOR  
QUINCY, MA 02169  
ATTN: REDAS ZAKALSKIS  
TEL: 617-792-7880

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285  
EXPIRATION DATE: MARCH 17, 2021

*[Signature]*  
1-13-20



**EXISTING CONDITIONS PLAN**

**GIANT DISTRIBUTION CENTER  
EXETER INDUSTRIAL PARK  
PARCEL 19 & PARCEL A**

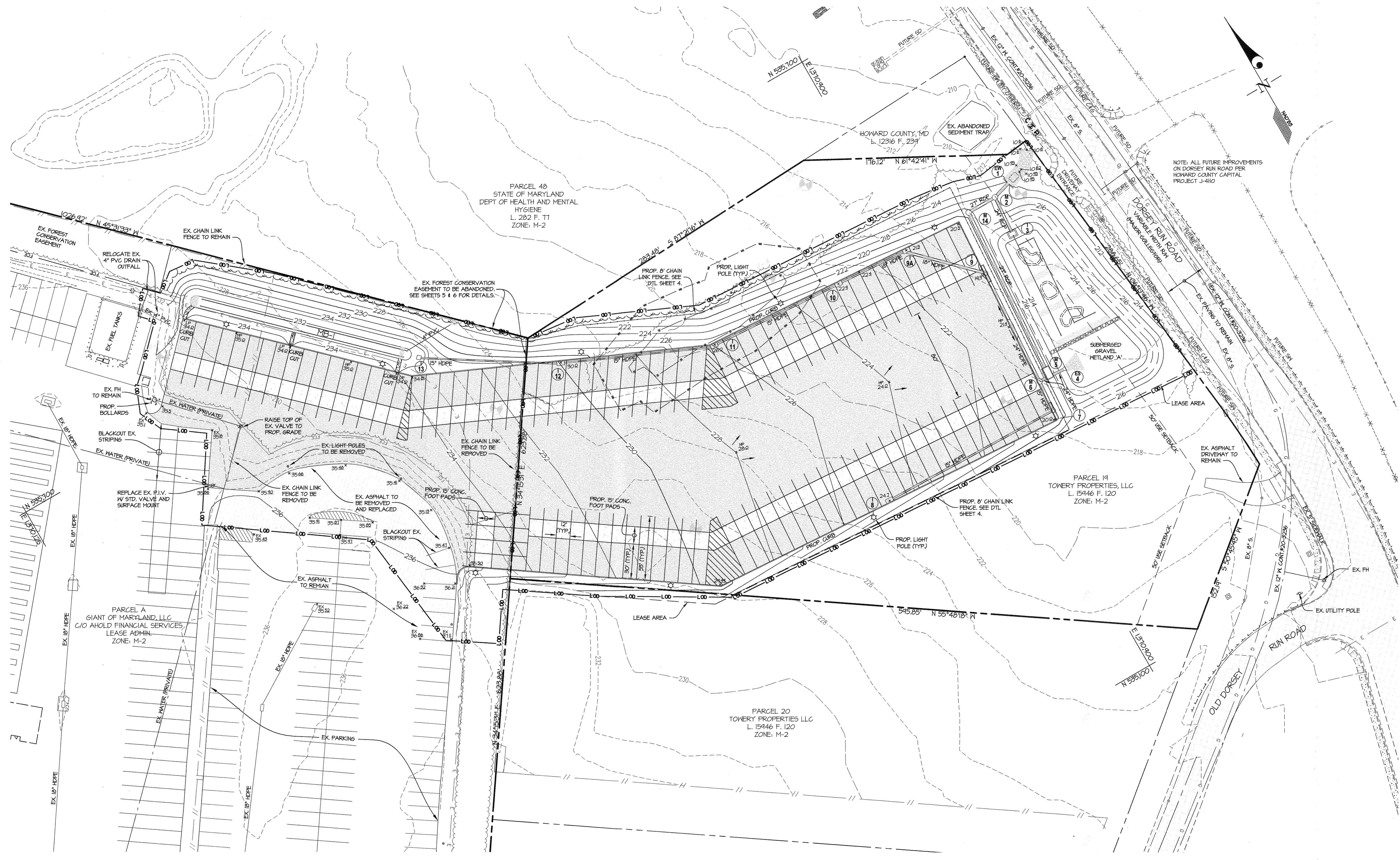
HOWARD COUNTY, MARYLAND

SCALE 1"=30'	ZONING M-2	G. L. W. FILE No. 12060
DATE JAN., 2020	TAX MAP - GRID 48-8	SHEET 2 OF 13

NO AS-BUILT INFORMATION AS OF 08/19/2020

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DATE: 1/17/2020 1:53 PM  
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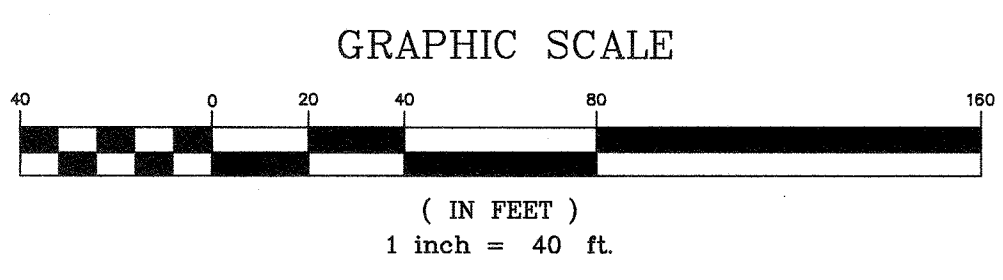
- LEGEND**
- 600 --- EXISTING CONTOUR
  - 600 --- PROPOSED CONTOUR
  - L00 --- LIMIT OF DISTURBANCE
  - EX. FENCE
  - PROP. FENCE
  - EX. TREELINE
  - PROP. TREELINE
  - WETLANDS
  - WETLAND BUFFER

- EX. PAVING
- EX. PAVING TO BE REPLACED
- PROP. PAVING
- PROP. CONCRETE

NOTE: ALL FUTURE IMPROVEMENTS ON DORSEY RUN ROAD PER HOWARD COUNTY CAPITAL PROJECT J-4110

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-2020  
 Chief of Staff: *[Signature]* Date: 2/3/20  
 Chief, Development Engineering Division: *[Signature]* Date: 1-23-20



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 PHONE: 301-421-4024 | BAL: 410-880-1820 | DC&VA: 301-969-2524 | FAX: 301-421-4186

DESIGNED BY:	OWNER/DEVELOPER:	PROFESSIONAL CERTIFICATION:
EWM	GIANT LANDOVER DIVISION 1385 HANCOCK STREET QUINCY, MA 02169 ATTN: REDAS ZAKALSKIS TEL: 617-792-7880	I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285 EXPIRATION DATE: MARCH 17, 2021
EWM		
CHECKED BY:		
TMR		
DATE	REVISION	BY APPR.

**NO AS-BUILT INFORMATION AS OF 08/19/2020**

**SITE DEVELOPMENT PLAN**

**GIANT DISTRIBUTION CENTER  
EXETER INDUSTRIAL PARK  
PARCEL 19 & PARCEL A**

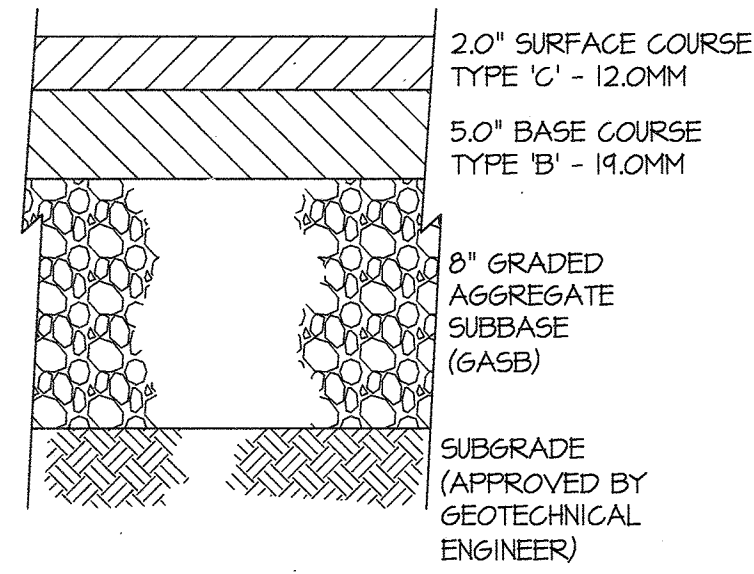
HOWARD COUNTY, MARYLAND

ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE No.
1"=40'	M-2	12060
DATE	TAX MAP - GRID	SHEET
JAN., 2020	48-8	3 OF 13

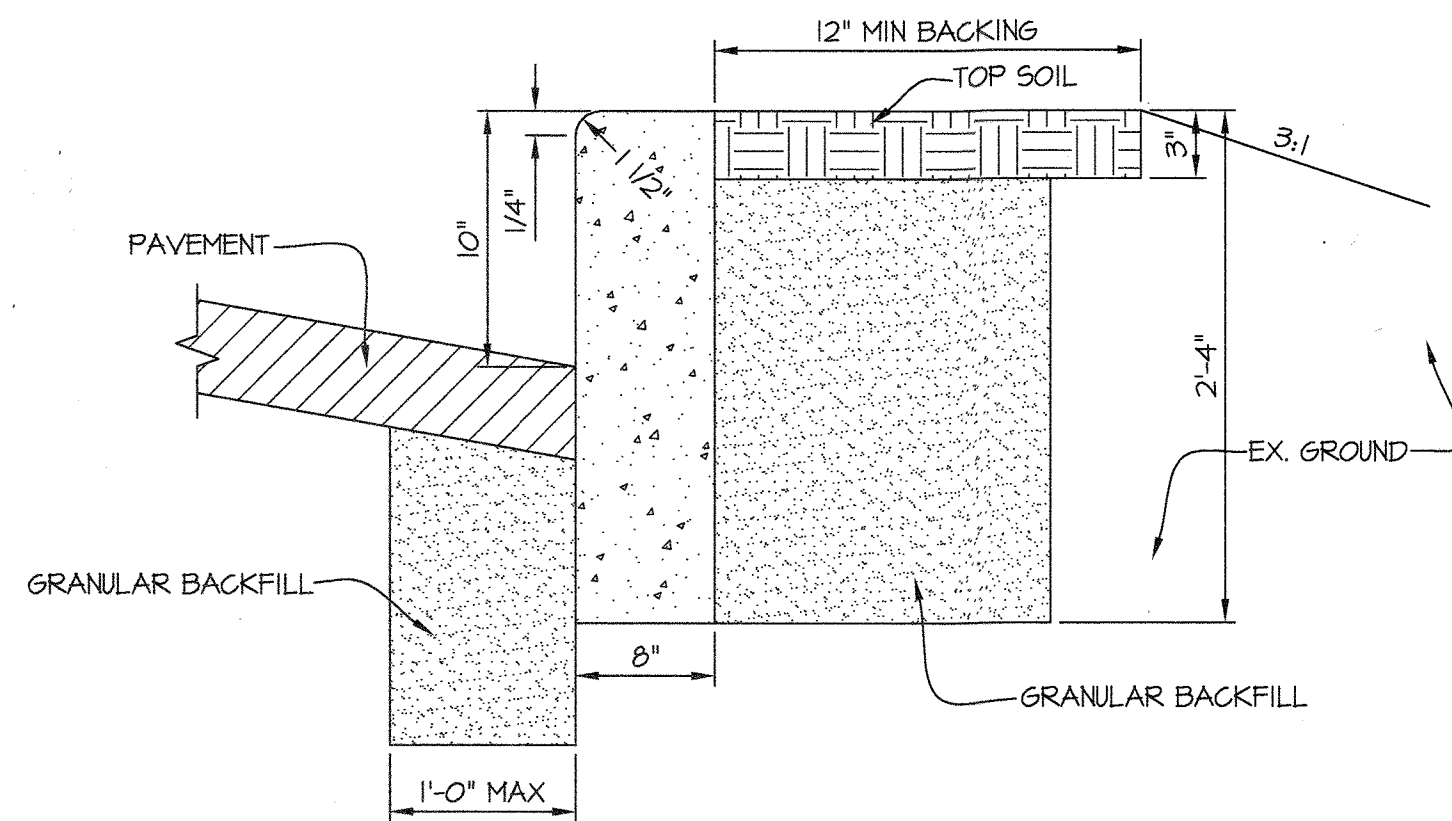
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 PLOTTED: 1/30/2020 1:57 PM, LAST SAVED: 1/29/2020 11:14 AM, PLOTTED BY: Anne E. Bihl  
 © GLW 2019



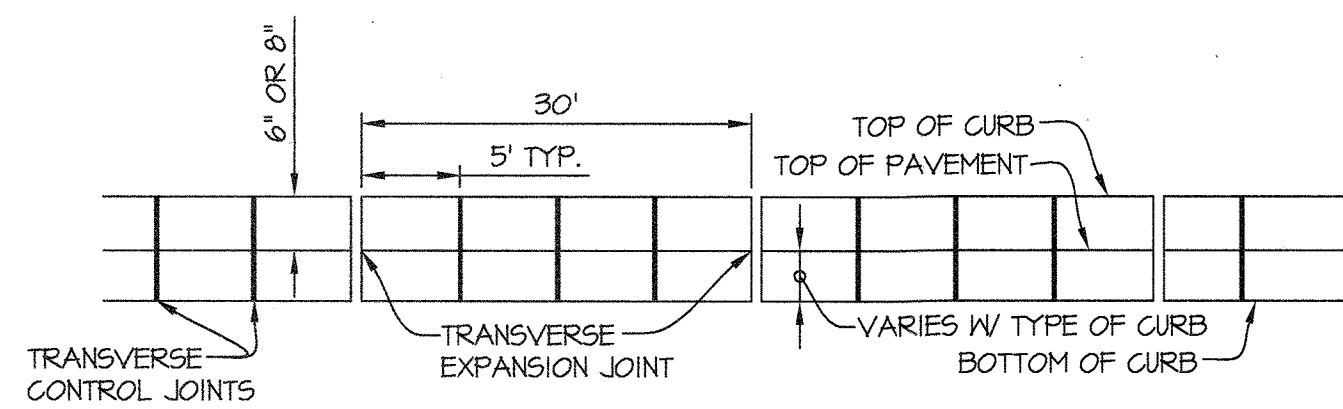


**ASPHALT PAVING SECTION**

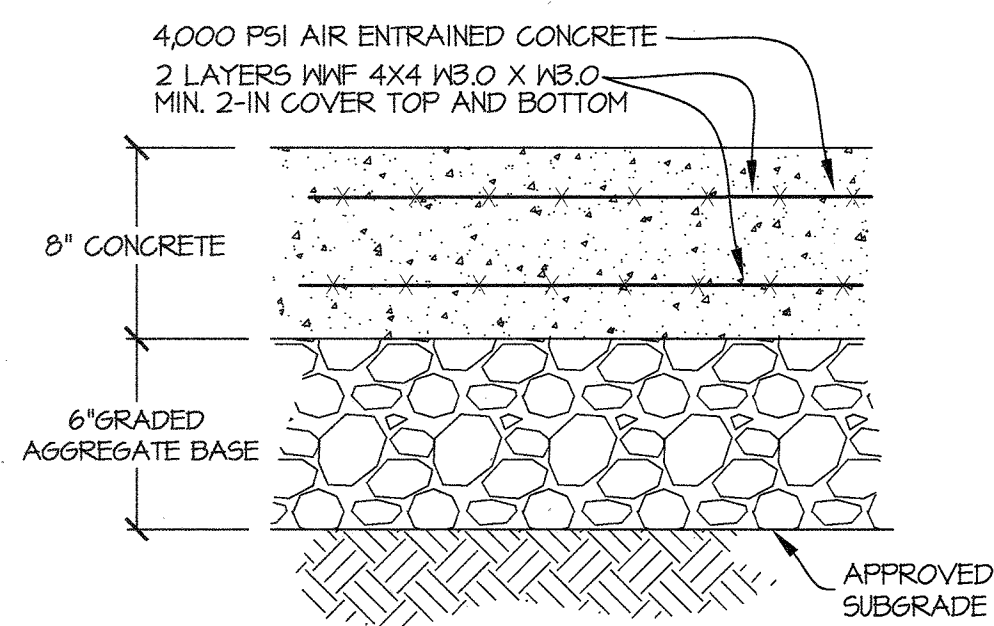
SCALE: N.T.S.  
 NOTE: PAVING SECTION PER ECS GEOTECHNICAL REPORT DATED APRIL 16, 2014, REFER TO GEOTECHNICAL REPORT FOR PAVING CONDITIONS AND ASSUMPTIONS



**10\"/>**



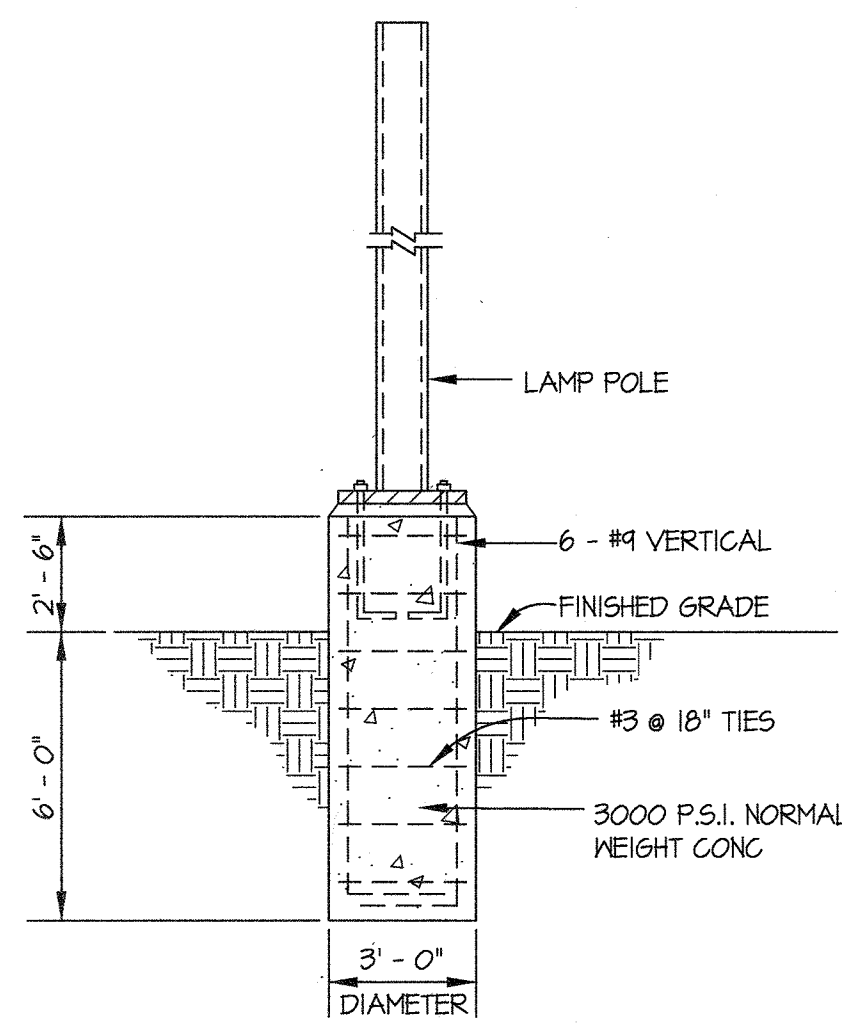
**CURB JOINTS**  
N.T.S.



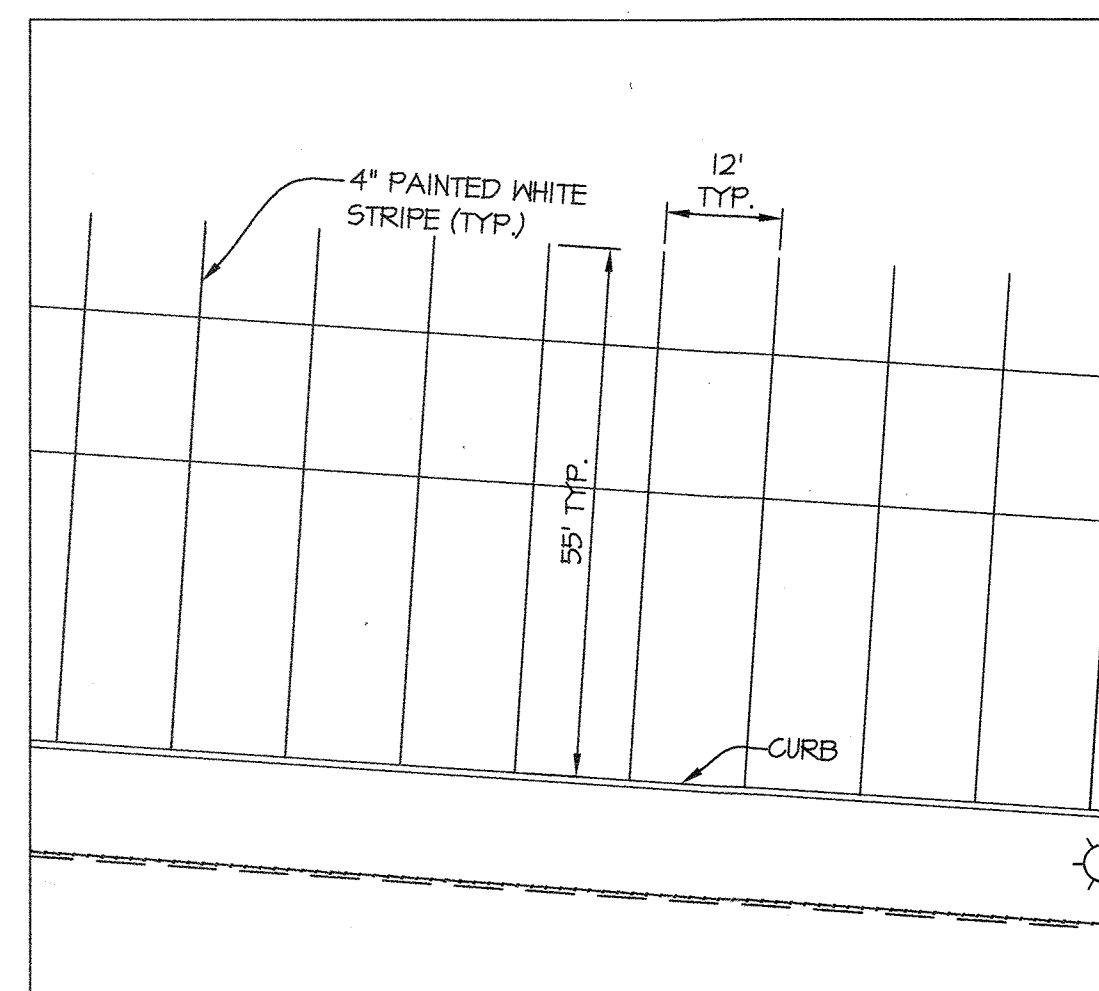
NOTE: PROVIDE EXPANSION JOINT EVERY 30 FT. CONTROL JOINT EVERY 5 FT IN CONCRETE FOOTPAD

**CONCRETE SECTION FOR FOOTPAD PAVEMENT**

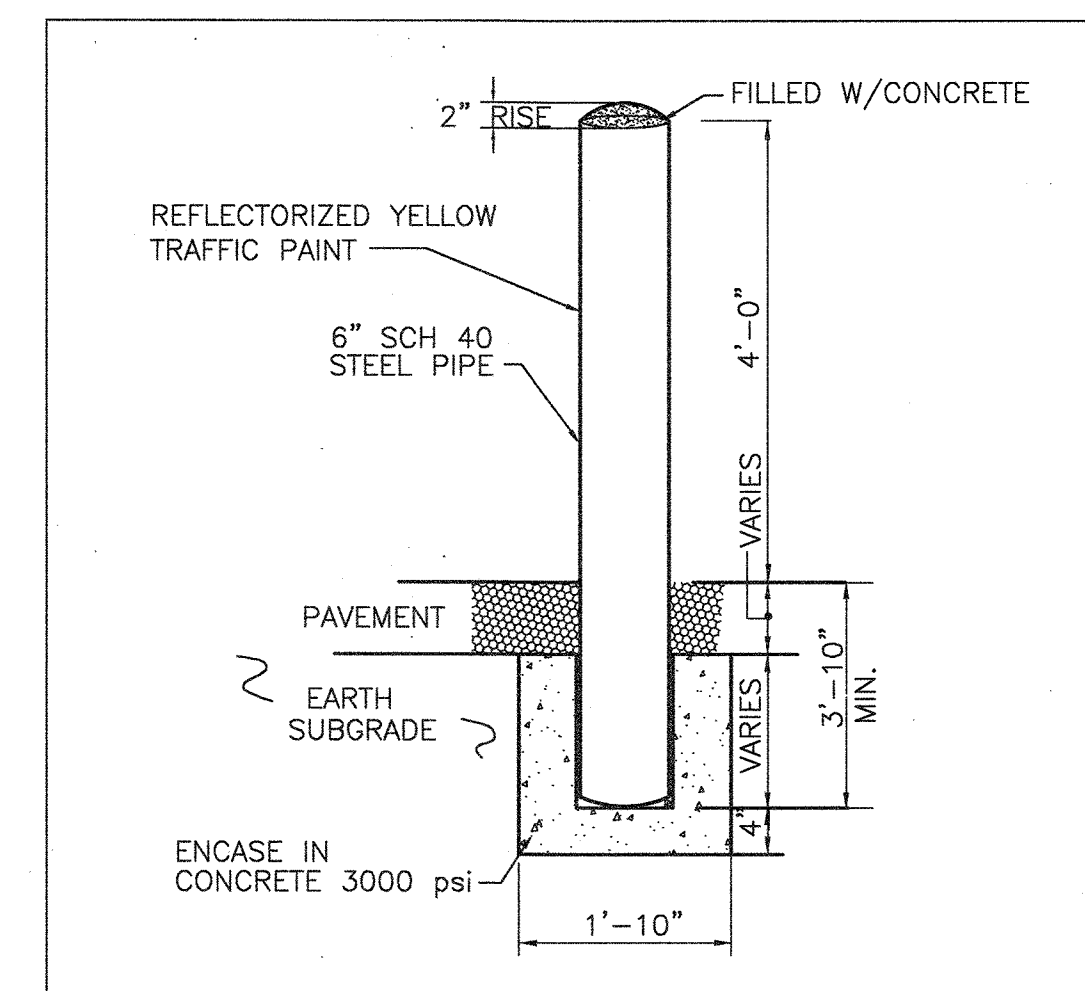
SCALE: N.T.S.  
 NOTE: REFER TO GEOTECHNICAL REPORT REFERENCED ABOVE FOR PAVING CONDITIONS AND ASSUMPTIONS.



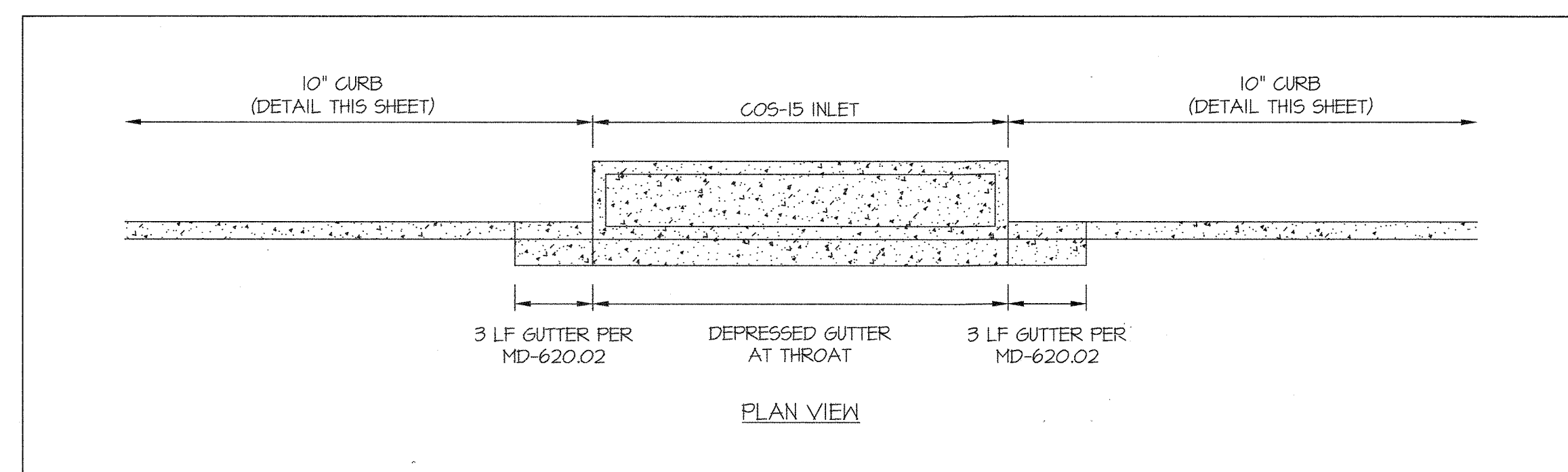
**LAMP POLE BASE DETAIL**  
N.T.S.



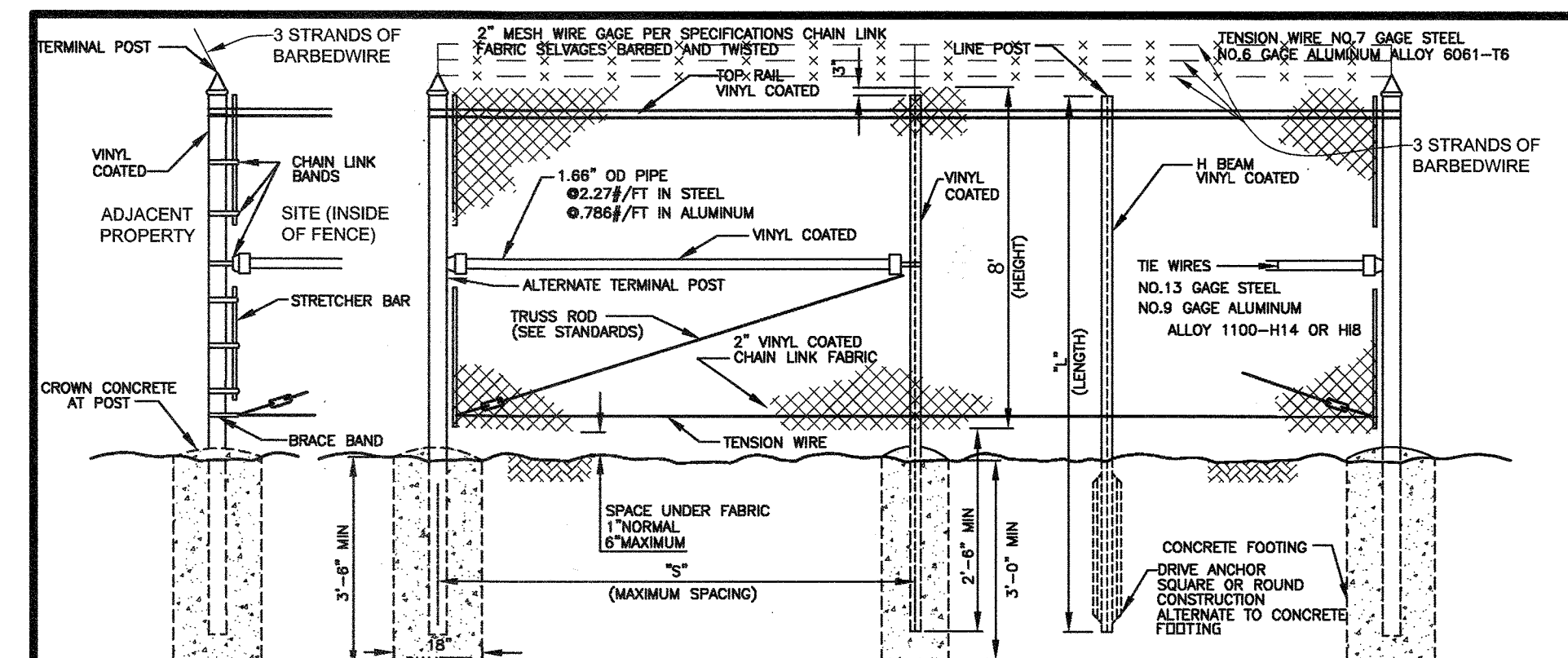
**TYPICAL STRIPING DETAIL**  
SCALE: 1\"/>



**TYPICAL BOLLARD DETAIL**  
SCALE: N.T.S.



**TRANSITION FOR CURB OPENING INLETS**  
SCALE: 1\"/>



	5'-0" RURAL	6'-0"	8'-0"	12" DIAMETER
H" HEIGHT OF FENCE	5'-0"	6'-0"	8'-0"	12"
S" POST SPACING MAX	12'-0"	10'-0"	10'-0"	
L" LENGTH OF H BEAM	7'-8" MIN	8'-8" MIN	10'-8" MIN	
H BEAM - STEEL	1.875"x1.625" @ 0.91"/FT	2.25"x1.95" @ 1.25"/FT	2.25"x1.95" @ 1.25"/FT	
H BEAM - ALUMINUM	1.875"x1.625" @ 0.91"/FT	2.25"x1.95" @ 1.25"/FT	2.25"x1.95" @ 1.25"/FT	
TERM POST STEEL	2.375" @ 0.65"/FT	2.875" @ 0.65"/FT	2.875" @ 0.65"/FT	
TERM POST ALUMINUM	2.375" @ 0.65"/FT	2.875" @ 0.65"/FT	2.875" @ 0.65"/FT	
ALT TERM POST STEEL	2.00" SQ @ 1.25"/FT	2.50" SQ @ 1.25"/FT	2.50" SQ @ 1.25"/FT	HOG RING - STEEL 18" ± 0/C 12.5 GA GALVANIZED STEEL WIRE
ALT TERM POST ALUMINUM	2.50" SQ @ 1.25"/FT	3.00" SQ @ 2.00"/FT	3.00" SQ @ 2.00"/FT	HOG RING - ALUMINUM 18" ± 0/C 110 0 ALUMINUM WIRE ALLOY 5058 - H38

**NOTES:**  
 1. ALL POSTS (TERMINAL AND LINE) TO BE SAME LENGTH (L).  
 2. TENSION WIRE CLIP AT 18" ± 0/C 12 1/2 GA GALVANIZED STEEL WIRE .110 DIAMETER ALUMINUM WIRE ALLOY 5058-H38.  
 3. MATERIALS TO MEET REQUIREMENTS OF AASHTO M181.  
 4. VINYL CLAD STEEL IF SPECIFIED BY ENGINEER SHALL BE COLORED BLACK UNLESS OTHERWISE SPECIFIED.

Howard County, Maryland Department of Public Works  
 Approved: *Thomas J. Smith*  
 Chief, Bureau of Engineering

CHAIN LINK FENCE

Detail G-7.21

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 Director: *John G. ...* Date: 2-3-2020  
 Chief, Division of Land Development: *...* Date: 2/3/20  
 Chief, Development Engineering Division: *...* Date: 1-23-20

**GLW**  
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 PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-868-2524 | FAX: 301-421-4186

DESIGNED BY:	EWM
DRAWN BY:	EWM
CHECKED BY:	TMR
DATE:	REVISION
BY:	APPR.

OWNER/DEVELOPER:	GIANT LANDOVER DIVISION 1385 HANCOCK STREET 10TH FLOOR QUINCY, MA 02169 ATTN: REDAS ZAKALSKIS TEL: 617-792-7880
PROFESSIONAL CERTIFICATION:	I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2020

**NO AS-BUILT INFORMATION AS OF 08/19/2020**

SITE PLAN DETAILS

**GIANT DISTRIBUTION CENTER  
EXETER INDUSTRIAL PARK  
PARCEL 19 & PARCEL A**

ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	M-2	12060
DATE	TAX MAP - GRID	SHEET
JAN, 2020	48-8	4 OF 13

HOWARD COUNTY, MARYLAND







**FOREST CONSERVATION PROGRAM SEQUENCE**

- OBTAIN ALL NECESSARY PERMITS.
- STAKEOUT LIMITS OF DISTURBANCE.
- FIELD MEETING TO REVIEW AND VERIFY LIMIT OF DISTURBANCE FOR THE SITE GRADING AND CONSTRUCTION.
- INSTALL FOREST CONSERVATION SIGNS AND FOREST PROTECTION DEVICES (FENCES) ALONG THE PORTION OF THE LIMIT OF DISTURBANCE (THAT INVOLVES CLEARING AND/OR RETENTION OF TREES).
- COMMENCE SITE CONSTRUCTION.
- PREPARE SITE SOIL BY MULCHING AND REMOVAL OF TRASH AND WEEDS INCLUDING AN APPLICATION OF HERBICIDES TO CONTROL NOXIOUS WEEDS AND INVASIVE SPECIES WHERE NECESSARY.
- INSTALL FOREST PLANTING (WHERE APPLICABLE) AND THE REMAINDER OF THE CONSERVATION SIGNS ALONG THE EDGE OF THE CONSERVATION EASEMENT. MOVE CONSERVATION SIGNS INSTALLED IN #4 (ABOVE) TO THE EDGE OF THE CONSERVATION EASEMENT.
- INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE CONSTRUCTION PERIOD OBLIGATIONS, START OF POST-CONSTRUCTION MANAGEMENT PERIOD.
- POST-CONSTRUCTION MANAGEMENT FOR A PERIOD OF 2 YEARS (MIN).
- FINAL INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE OWNER'S FOREST CONSERVATION SURETY.

**FOREST CONSERVATION CONSTRUCTION PERIOD PROTECTION PROGRAM**

- THE LIMIT OF FOREST RETENTION SHALL BE STAKED AND FLAGGED.
- A PRE-CONSTRUCTION MEETING AT THE SITE SHOULD BE HELD TO CONFIRM THE LIMITS OF CLEARING SPECIFIED, THE MEETING SHOULD INCLUDE THE OWNER OR THE OWNER'S REPRESENTATIVE, THE ON-SITE FOREMAN IN CHARGE OF LAND DISTURBANCE, THE ENVIRONMENTAL CONSULTANT AND THE APPROPRIATE HOWARD COUNTY INSPECTORS.
- FOREST PROTECTION DEVICES AND SIGNS (SEE DETAILS) SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING. THE PROTECTION DEVICES AND SIGNS SHALL BE MAINTAINED DURING THE ENTIRE CONSTRUCTION PERIOD. NONE OF THE DEVICES SHALL BE ANCHORED OR ATTACHED IN ANY WAY TO THE TREES TO BE SAVED.
- EQUIPMENT, VEHICLES AND BUILDING MATERIALS SHALL NOT BE WITHIN THE PROTECTED AREA. ACTIVITIES STRICTLY TO IMPLEMENT ANY REFORESTATION PLANTING AND MAINTENANCE (IE, WATERING, FERTILIZING, THINNING, PRUNING, REMOVAL OF DEAD AND DISEASED TREES WHERE NECESSARY, ETC.) OF THE CONSERVATION AREA ARE PERMITTED. CLEARING FOR THE PURPOSE OF SODDING OR PLANTING GRASS IS NOT PERMITTED WITHIN THE FOREST CONSERVATION AREAS ONCE THEY ARE ESTABLISHED.
- AT THE END OF THE CONSTRUCTION PERIOD, THE DESIGNATED QUALIFIED PROFESSIONAL SHALL CONVEY TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL FOREST RETENTION AREAS HAVE BEEN PRESERVED, ALL REFORESTATION AND/OR AFFORESTATION PLANTINGS (IF APPLICABLE) HAVE BEEN INSTALLED AS REQUIRED BY THE FOREST CONSERVATION PLAN, AND THAT ALL PROTECTION MEASURES REQUIRED FOR THE POST-CONSTRUCTION PERIOD HAVE BEEN INSTALLED. UPON REVIEW OF THE FINAL CERTIFICATION DOCUMENT FOR COMPLETENESS AND ACCURACY, THE PROGRAM COORDINATOR WILL NOTIFY THE OWNER OF RELEASE FROM THE CONSTRUCTION PERIOD OBLIGATIONS. THE 2-YEAR (MIN) POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD THEN COMMENCES.

**FOREST CONSERVATION POST-CONSTRUCTION MANAGEMENT PRACTICES**

MANY OF THE PROTECTION AND MANAGEMENT PRACTICES FOR THE CONSTRUCTION PERIOD MUST BE CONTINUED FOR AT LEAST 2 GROWING SEASONS FOLLOWING OFFICIAL NOTIFICATION OF COMPLETION OF THE DEVELOPMENT (OR A SPECIFIC PHASE OF THE OVERALL DEVELOPMENT IF PHASING HAS BEEN APPROVED). THE RESPONSIBILITY TO MEET THE SURVIVAL STANDARDS REQUIRES ADAPTIVE WATERING, REPLANTING, THINNING OR OTHER APPROPRIATE MEASURES. ALSO, INAPPROPRIATE USES OR INTERFERENCES MUST NOT OCCUR, A RESPONSIBILITY THAT REQUIRES THE KNOWLEDGE AND COOPERATION OF THE NEW OCCUPANTS OF THE DEVELOPMENT.

**MINIMUM TWO GROWING SEASON POST-CONSTRUCTION MANAGEMENT PROGRAM**

A POST-CONSTRUCTION MANAGEMENT PROGRAM MUST BE APPROVED AS PART OF THE ORIGINAL FOREST CONSERVATION PLAN AND REMAIN IN EFFECT FOR A MINIMUM OF TWO GROWING SEASONS. A LONGER PERIOD MAY BE REQUIRED FOR SPECIFIC STRATEGIES (E.G. NATURAL REGENERATION NEAR HIGH USE AREAS WHOSE LONG-TERM VIABILITY MAY TAKE LONGER TO CONFIRM).

IMPLEMENTATION OF THE POST-CONSTRUCTION MANAGEMENT PROGRAM MUST BE SUPERVISED BY A QUALIFIED PROFESSIONAL WHO SHOULD INSPECT THE STATUS OF ALL FOREST RETENTION, REFORESTATION AND AFFORESTATION AREAS AT SPECIFIED TIMES DURING THE LIFE OF THE POST-CONSTRUCTION AGREEMENT AND WHO MUST CERTIFY THAT THE REQUIRED SURVIVAL RATES HAVE BEEN ACHIEVED IN ACCORDANCE WITH THE AGREEMENT PRIOR TO RELEASE OF BONDS.

THERE ARE FIVE PRIMARY COMPONENTS OF THE POST-CONSTRUCTION PROGRAM, INSPECTION, MANAGEMENT OF RETAINED OR NEW PLANTINGS, REPLACEMENT OF DEAD OR DAMAGED MATERIAL WHEN NECESSARY, EDUCATION OF NEW OCCUPANTS OF THE DEVELOPMENT AND FINAL INSPECTION AND RELEASE OF DEVELOPER FROM ADDITIONAL RESPONSIBILITIES.

**INSPECTION**

INSPECTIONS SHOULD BE CARRIED OUT AT THE BEGINNING AND END OF THE GROWING SEASON TO PINPOINT ANY PROBLEMS, MONITOR SURVIVAL RATES, AND SPECIFY REMEDIAL ACTIONS NEEDED TO CORRECT EXISTING PROBLEMS. APPENDIX H HAS AN EXAMPLE OF AN INSPECTION REPORT CHECKLIST.

**MANAGEMENT OF FOREST CONSERVATION AREAS**

POST CONSTRUCTION MANAGEMENT INCLUDES: MAINTENANCE OF ALL FENCES, SIGNS OR OTHER DEVICES DELINEATING FOREST CONSERVATION AREAS AND OTHER MEASURES, SUCH AS OTHER MEASURES, NEEDED WATERING, REMOVAL OF DEAD OR DAMAGED MATERIAL, AND CONTROL OF UNDESIRABLE COMPETING SPECIES, THINNING OR PRUNING TO NECESSARY AND CONTROL OF PESTS. SPECIFIC PRACTICES WILL DEPEND ON THE WEATHER PREVALENT DURING THE POST CONSTRUCTION PERIOD, THE TYPES OF PLANT MATERIAL AND PLANTING METHODS USED, AND SPECIFIC SITE CONDITIONS SUCH AS PROXIMITY TO HIGH USE AREAS. IT IS THE RESPONSIBILITY OF THE POST-CONSTRUCTION PLAN SUPERVISOR TO TAKE APPROPRIATE ACTIONS AS NEEDED. THIS MANUAL, THEREFORE, DOES NOT GIVE RESOURCE MEASURES, SURVIVAL SUCCESS, NOT FULFILLMENT OF A GIVEN SERIES OF TASKS, WILL BE THE MEASURE OF CONFORMANCE TO THE NEEDS OF THE POST-CONSTRUCTION PROGRAM.

NEARLY PLANTED TREES, WHETHER THEY ARE SEEDLINGS OR 4" GALIPER TRANSPLANTS, HAVE BASIC NEEDS. SOME OF THESE NEEDS CAN BE MET BY THEM ALONE, OTHERS MAY REQUIRE HUMAN INTERVENTION. THE THREE MOST LIKELY CAUSES OF DEATH FOR NEARLY PLANTED TREES ARE DROUGHT, COMPETING VEGETATION AND DEER). THE BASIC MAINTENANCE REGIME SHOULD BE DETERMINED BY ON-SITE ENVIRONMENTAL CONDITIONS, STRUCTURE AND NUTRIENT CONTENT OF SOIL, AND RAINFALL. UNDERSTANDING THESE FACTORS AND THE SPECIFIC NEEDS OF THE SPECIES AND SIZE OF PLANTS USED WILL RESULT IN A HEALTHY FORESTED AREA AT THE END OF THE MAINTENANCE PERIOD. APPENDIX H CONTAINS GUIDELINE SPECIFICATIONS FOR MAINTENANCE OF FOREST CONSERVATION AREAS AND FOCUSES ON THE FOLLOWING CRITICAL NEEDS:

- WATERING
- FERTILIZING
- CONTROL OF COMPETING VEGETATION
- PROTECTION FROM PESTS, DISEASES AND MECHANICAL INJURY.

**REPLACEMENT OF PLANT MATERIAL**

AN INSPECTION SHALL TAKE PLACE AT THE END OF YEAR ONE OR BEFORE THE SECOND GROWING SEASON TO EVALUATE SURVIVAL RATES WITH REFERENCE TO THE SURVIVAL REQUIRED AT THE END OF THE TWO YEAR PERIOD. THIS IS AN OPPORTUNITY TO AVOID THE PENALTY FOR VIOLATING SURVIVAL RATE STANDARDS. THIS INSPECTION SHOULD ESTIMATE SURVIVAL POTENTIAL BASED ON THE FOLLOWING:

- WATER AND THREAT OF COMPETING VEGETATION (I.E. IF SEEDLINGS ARE FREE TO GROW)
- STRUCTURE
- GROWTH RATE
- CROWN DEVELOPMENT
- TRUNK HEALTH

IF, AFTER ONE YEAR, THE POSSIBILITY EXISTS THAT THE ORIGINAL PLANTING WILL NOT MEET SURVIVAL STANDARDS, THE APPLICANT MAY CHOOSE TO ESTABLISH REINFORCEMENT PLANTINGS. IF PLANT MORTALITY OR REFORESTATION OR AFFORESTATION EXCEEDS 10% OF PLANTED MATERIAL AT THE END OF THE SECOND GROWING SEASON, SUCH REINFORCEMENT MATERIAL SHOULD BE BRING THE TOTAL NUMBER OF TREES TO 100% OF ORIGINAL TOTAL. SUCH MATERIAL SHALL BE INSTALLED BY THE BEGINNING OF THE SECOND GROWING SEASON. IF AT THE END OF THE SECOND GROWING SEASON, SURVIVAL RATE DROPS BELOW 75%, SUCH MATERIAL AS NEEDED TO GUARANTEE AN 75% SURVIVAL RATE BY THE END OF THE THIRD GROWING SEASON SHALL BE INSTALLED.

**EDUCATION OF NEW OCCUPANTS**

THE OCCUPANTS OF A NEW DEVELOPMENT, WHETHER OWNERS OR TENANTS, MUST AVOID ACTIVITIES THAT DESTROY OR DEGRADE PROTECTED FOREST RESOURCES. THE POST-CONSTRUCTION MANAGEMENT PROGRAM MUST THEREFORE INCLUDE STEPS TO EDUCATE THE NEW OCCUPANTS ABOUT THE PROPER USE OF FOREST CONSERVATION AREAS, ABOUT THE NEED FOR THE DEVELOPER TO CARRY OUT THE POST-CONSTRUCTION MANAGEMENT PROGRAM, AND THE EVENTUAL TRANSFER OF LONG-TERM RESPONSIBILITIES TO THE OWNERS OR OCCUPANTS. SUCH EDUCATIONAL MATERIAL SHOULD INCLUDE A PLAN LOCATING ALL PROTECTED AREAS ON THE SITE AND A DESCRIPTION OF PERMITTED AND PROHIBITED ACTIVITIES WITHIN OR AFFECTING SUCH AREAS, THE FORMAT AND METHOD OF CONVEYING SUCH INFORMATION IS LEFT TO THE DISCRETION OF THE DEVELOPER.

**FINAL INSPECTION AND RELEASE OF OBLIGATIONS**

AT THE END OF THE POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD, THE DESIGNATED RESPONSIBLE PROFESSIONAL SHALL CONVEY TO THE DEPARTMENT OF PLANNING AND ZONING CERTIFICATION THAT ALL FOREST CONSERVATION AREAS HAVE REMAINED INTACT OR HAVE BEEN RESTORED TO THE APPROPRIATE CONDITION, THAT THE STIPULATED SURVIVAL RATES HAVE BEEN ACHIEVED, AND THAT ANY PERMANENT PROTECTION MEASURES REQUIRED BY THE PLAN ARE IN PLACE. APPENDIX J CONTAINS A SAMPLE FORMAT FOR SUCH CERTIFICATION.

UPON REVIEW OF THE FINAL CERTIFICATION DOCUMENT FOR COMPLETENESS AND ACCURACY, THE COUNTY WILL NOTIFY THE DEVELOPER OF RELEASE OF SURETY AND ALL FUTURE OBLIGATIONS. THE DEVELOPER'S LAST OFFICIAL RESPONSIBILITY WILL BE TO TRANSMIT A COPY OF THIS NOTIFICATION TO THE OWNERS OF THE PROPERTIES. SUCH TRANSMITTAL WILL SERVE AS OFFICIAL NOTICE TO OWNERS OF THEIR ASSUMPTION OF FULL RESPONSIBILITY FOR ALL FUTURE FOREST CONSERVATION OBLIGATIONS.

**LANDSCAPE SPECIFICATIONS:**

**1.0 GENERAL CONDITIONS**

- SCOPE OF WORK:
  - THE LANDSCAPE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT TO COMPLETE ALL LANDSCAPE WORK AS SHOWN ON THE PLANS AND AS NOTED HEREON.
  - TOTAL NUMBER OF PLANTS SHALL BE DRAWN ON THE LANDSCAPE PLAN. IF THERE IS A DISCREPANCY BETWEEN THE DRAWING AND THE LIST ON THE PLANS, THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE LANDSCAPE ARCHITECT.
- STANDARDS:
  - ALL PLANT MATERIAL SHALL CONFORM TO THE CURRENT ISSUE OF THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI 260.1). ALL TREES TO BRANCH SYMMETRICALLY AROUND CENTRAL LEADER. NO FORKED LEADER STOCK WILL BE ACCEPTED.
  - PLANT MATERIAL MUST BE SELECTED FROM NURSERIES THAT HAVE BEEN INSPECTED AND CERTIFIED BY STATE PLANT INSPECTORS.
  - NO ENCLATURE WILL BE IN ACCORDANCE WITH HORTUS III BY L.H. BAILEY.
- SUBSTITUTIONS:
  - WHEN REQUESTED BY THE OWNER OR OWNER'S REPRESENTATIVE, SAMPLES OF ALL MATERIAL OTHER THAN PLANTS SHALL BE SUBMITTED TO THE OWNER'S DESIGNATED REPRESENTATIVE FOR APPROVAL.
- APPROVALS:
  - ALL APPROVALS WILL BE IN WRITING.
- SUBSTITUTIONS:
  - IT IS THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY TO MAKE EVERY REASONABLE EFFORT TO FIND THE MATERIAL SPECIFIED BY THE LANDSCAPE ARCHITECT. THE LANDSCAPE CONTRACTOR MAY OFFER SUBSTITUTIONS TO THE LANDSCAPE ARCHITECT FOR HIS/HER CONSIDERATION. THE LANDSCAPE CONTRACTOR WILL NOTIFY THE LANDSCAPE ARCHITECT IF THERE ARE KNOWN DISEASE OR INSECT RESISTANT SPECIES THAT CAN BE SUBSTITUTED FOR A SELECTED PEST-PRONE PLANT. ALL SUBSTITUTIONS SHALL BE APPROVED BY HOWARD COUNTY GOVERNMENT.
- UTILITIES AND UNDERGROUND FEATURES:
  - THE LANDSCAPE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AND/OR THE GENERAL CONTRACTOR IN ADVANCE OF CONSTRUCTION TO LOCATE UTILITIES.
- DRAINAGE:
  - IF PLANTS ARE TO BE INSTALLED IN AREAS THAT SHOW OBVIOUS POOR DRAINAGE, AND THE PLANTS ARE INAPPROPRIATE FOR THAT CONDITION, THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT AND OWNER. IF THEY DEEM NECESSARY, THE PLANTS SHALL BE RELOCATED, THE CONTRACT SHALL BE ADJUSTED TO ALLOW FOR DRAINAGE CORRECTION AT A NEGOTIATED COST, OR THE PLANT SELECTION MODIFIED BY THE LANDSCAPE ARCHITECT TO ACCOMMODATE THE POOR DRAINAGE SITUATION.
- MORCHMANSHIP:
  - DURING DELIVERY AND INSTALLATION, THE LANDSCAPE CONTRACTOR SHALL PERFORM IN A WORKMANLIKE MANNER, COORDINATING HIS/HER ACTIVITIES SO AS NOT TO INTERFERE UNNECESSARILY WITH THE WORK OF OTHER TRADES AND LEAVING HIS/HER WORK AREAS CLEAN AND DEBRIS AT THE CLOSE OF EACH WORKDAY.
  - DURING PLANTING, ALL AREAS SHALL BE KEPT NEAT AND CLEAN. PRECAUTIONS SHALL BE TAKEN TO AVOID DAMAGE TO EXISTING PLANTS, LARGE TREES, TREES AND STRUCTURES. WHERE EXISTING TREES ARE TO BE PRESERVED, ADDITIONAL PRECAUTIONS SHOULD BE TAKEN TO AVOID UNNECESSARY ACCUMULATION OF EXCAVATED MATERIALS, SOIL, COMPOST OR ROOT DAMAGE.
  - UPON COMPLETION, ALL DEBRIS AND WASTE MATERIAL RESULTING FROM PLANTING OPERATIONS SHALL BE REMOVED FROM THE PROJECT AND THE AREA.
  - ANY DAMAGE TO THE EXISTING UTILITIES, BUILDINGS, PAVING, CURB AND WALLS, AND VEGETATION (NOT SO DESIGNATED FOR REMOVAL ON THESE PLANS) SHALL BE REPAIRED TO PREVIOUS CONDITION OR REPLACED BY THE CONTRACTOR AT HIS/HER EXPENSE.
- WATER:
  - THE OWNER SHALL SUPPLY WATER ON SITE AT NO COST. IF THE LANDSCAPE CONTRACTOR HAS TO SUPPLY WATER TO THE SITE, IT SHALL BE AT AN ADDITIONAL COST.
- PLANTING SEASONS:
  - RED OAK, WHITE OAK, HILLTOP OAK, SCARLET OAKS, DOGWOOD, SHEET GUM, CONIFERS, AND BROAD LEAF EVERGREENS WILL NOT BE PLANTED BETWEEN NOVEMBER 15 AND MARCH 1, UNLESS THE LANDSCAPE CONTRACTOR STATES IN WRITING THAT HE/SHE WILL GUARANTEE PLANT SURVIVAL.
- INSPECTIONS AND ACCEPTANCE:
  - INITIAL INSPECTION PRIOR TO PLANTING, ALL PLANT LOCATIONS SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR. THE LANDSCAPE ARCHITECT SHALL BE CONTACTED TO INSPECT AND APPROVE ALL PLANT LOCATIONS BEFORE PLANTING.
  - FINAL ACCEPTANCE INSPECTION: A VERIFICATION OF PERFORMANCE FOR WORK BY CONTRACT DOCUMENTS, TO BE CONDUCTED BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE ON-SITE AND IN THE PRESENCE OF THE LANDSCAPE CONTRACTOR FOR THE PURPOSE OF ACCEPTANCE.
  - FINAL WARRANTY INSPECTION: THE LANDSCAPE CONTRACTOR SHALL CONDUCT A FINAL INSPECTION WITH THE OWNER OR OWNER'S REPRESENTATIVE AT THE END OF THE ONE YEAR PERIOD.
- WARRANTY:
  - THE STANDARD WARRANTY IS FOR ONE (1) YEAR PERIOD, EXCLUDING BULBS AND ANNUALS, COMMENCING ON THE DATE OF INITIAL ACCEPTANCE. ALL PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD.
  - ANY MATERIAL THAT IS 25% DEAD OR MORE SHALL BE CONSIDERED DEAD AND MUST BE REPLACED AT NO CHARGE. A TREE SHALL BE CONSIDERED DEAD WHEN THE MAIN LEADER HAS DIED BACK, OR 25% OF THE CROWN IS DEAD.
  - PERENNIALS SHALL BE GUARANTEED FOR ONE YEAR AFTER INITIAL ACCEPTANCE.

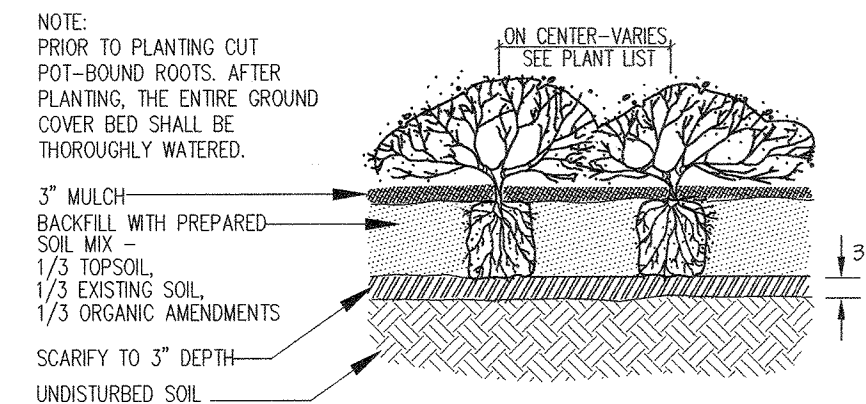
2.0 PLANT MATERIALS

- SCOPE OF WORK:
  - THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL PLANT MATERIAL SHOWN ON THE DRAWINGS AND PLANT LIST.
- INSPECTION:
  - PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE OWNER OR OWNER'S REPRESENTATIVE AT THE PLACE OF GROWTH (BEFORE DIGGING - TREES) OR HOLDING YARD (SHRUBS) FOR CONFORMITY TO SPECIFICATION REQUIREMENTS AS TO QUALITY, SIZE, AND VARIETY.

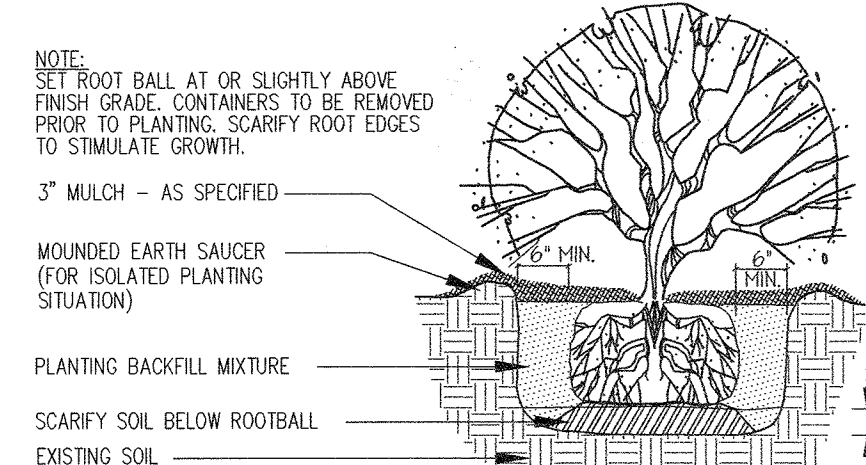
- PRODUCTS:
  - QUALITY ASSURANCE: MANUFACTURER'S CERTIFIED ANALYSIS SHALL ACCOMPANY PACKAGED STANDARD PRODUCTS.
  - ORGANIC MATTER:
    - PEAT MOSS - TYPE I Sphagnum peat moss, finely divided with a pH of 3.1 to 5.0.
    - SEDE PEAT - DECOMPOSES PEAT CONTAINING NO IDENTIFIABLE FIBERS.
    - LEAF COMPOST - THAT IS SCREENED AND FREE TO TRASH.
    - COMPOSTED SEWAGE SLUDGE - APPROVED, SCREENED, POLYMER-DEWATERED SEWAGE SLUDGE WITH A PH OF 4.2 - 12.6 MA.
  - TOPSOIL:
    - IT SHALL BE FREE OF STONES, LUMPS, PLANTS, ROOTS AND OTHER DEBRIS OVER 1/4" TOPSOIL MAY ALSO BE FREE OF OTHERS OR PLANT PARTS OF BRUSHGRASS, QUACKGRASS, JOHNSGRASS, MAHOGNIE, NITSERIE, POKON IVY, CANADIAN TRISTLE OR PLANTS AS SPECIFIED.
    - IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH, I.E. PESTICIDE RESIDUES.
  - BACKFILL MIXTURE:
    - BACKFILL MIXTURE FOR TREES AND SHRUBS SHALL BE 3/4 EXISTING SOIL MIXED WITH 1/4 ORGANIC MATERIAL, PLUS GRANULAR FERTILIZER.
    - MULCH:
      - MATERIAL SHALL BE COMPOSTED, SHREDDED HARDWOOD BARK, WITH LESS THAN 10% SAPHWOOD, DARK BROWN IN COLOR, OR APPROVED EQUAL.
      - MATERIAL SHALL BE UNIFORM IN SIZE AND FREE OF FOREIGN MATTER.

- PLANTING PROCEDURES FOR TREES:
  - TREE PLANTING:
    - MALL OF TREE PIT SHALL BE DUG SO THAT THEY ARE VERTICAL OR SLOPING OUTWARD IN HEAVY SOILS, BE AND SCARIFIED.
    - THE TREE PIT MUST BE A MINIMUM OF 4" LARGER ON EVERY SIDE THAN THE BALL OF THE TREE.
    - PLACE THE TREE IN THE PIT CARRYING THE BALL AND THEN LOWER IT INTO THE PIT. NEVER LIFT THE TREE BY THE TRUNK OR BRANCHES.
    - SET THE TREE STRAIGHT AND IN THE CENTER OF THE PIT WITH THE MOST DESIRABLE SIDE FACING TOWARD THE PROMINENT VIEW.
    - BACKFILL TREE PIT WITH A SOIL MIXTURE STATED IN THE SPECIFICATIONS.
    - CUT AND REMOVE ROPE OR WIRE OFF THE TOP SOIL OF ROOTBALL AND PULL BURLAP BACK TO THE EDGE OF THE BALL. REMOVE AS MUCH BURLAP, MOVEN PRODUCTS AND TWINE AS POSSIBLE. ALL PLASTIC OR SYNTHETIC FILM MUST BE REMOVED FROM THE ROOTBALL. CUT ALL TWINE AWAY FROM TRUNK.
    - FORM A SAUCER ABOVE EXISTING GRADE, AROUND THE OUTER RIM OF THE TREE PIT, ESPECIALLY ON SLOPES AND IN HEAVY SOILS.
    - MULCH TOP OF ROOT BALL AND SAUCER TO A MINIMUM DEPTH OF 2" NOT TO EXCEED 3". DO NOT PLACE MULCH AGAINST THE TRUNK.
    - WATER THOROUGHLY ON THE INTERIOR OF THE TREE SAUCER UNTIL IT IS FILLED, EVEN IF IT IS RAINING. A SECOND WATERING MAY BE NECESSARY TO INSURE SATURATION OF THE ROOT BALL AND ELIMINATION OF AIR POCKETS.
    - PRUNING SHOULD BE RESTRICTED TO CORRECTIVE PRUNING TO IMPROVE FORM ONLY.
    - STAKE TREE FOR PLANTING DETAIL.
  - PLANTING PROCEDURES FOR SHRUBS:
    - FOR A SINGLE SHRUB, THE PIT SHALL BE DUG 1" WIDER THAN THE ROOTBALL AND DEEP ENOUGH TO ALLOW 1/3TH OF THE ROOTBALL TO SET ABOVE EXISTING GRADE (SINGLE SHRUB PLANTINGS ONLY IF NOTED ON PLANS).
    - FOR A SHRUB MASS PLANTING, THE ENTIRE BED AREA SHALL BE TILLED 4-6" DEEP. TILLING SHOULD ONLY BE DONE IN DRY SOIL TO AVOID COMPACTION. IF THE SOIL IS HEAVY CLAY AND SILT, ORGANIC MATERIAL SHOULD BE ADDED. EACH SHRUB PIT SHALL BE EXCAVATED FOR THE PROPER SETTING OF THE ROOTBALL.
    - PLACE THE SHRUB IN THE PIT BY LIFTING AND CARRYING IT BY THE ROOTBALL. REMOVE CONTAINERS FROM ALL CONTAINER-GROWN SHRUBS.
    - SET THE SHRUB AND IN THE CENTER OF THE PIT WITH THE MOST DESIRABLE SIDE FACING TOWARD THE PROMINENT VIEW.
    - CUT AND REMOVE ROPE OR WIRE OFF THE TOP 50% OF ROOTBALL AND PULL BURLAP BACK TO THE EDGE OF THE BALL. REMOVE AS MUCH BURLAP, MOVEN PRODUCTS AND TWINE AS POSSIBLE. ALL PLASTIC OR SYNTHETIC FILM MUST BE REMOVED FROM THE ROOTBALL. CUT ALL TWINE AWAY FROM TRUNK.
    - FORM A SAUCER ABOVE THE EXISTING GRADE AND COMPLETELY AROUND THE PLANTING PIT.
    - MULCH TOP OF ROOTBALL AND SAUCER TO A MAXIMUM DEPTH OF 2".
    - WATER SHRUB MASS THOROUGHLY EVEN IF IT IS RAINING. A SECOND WATERING MAY BE NECESSARY TO INSURE SATURATION OF THE ROOT BALL AND ELIMINATION OF AIR POCKETS.

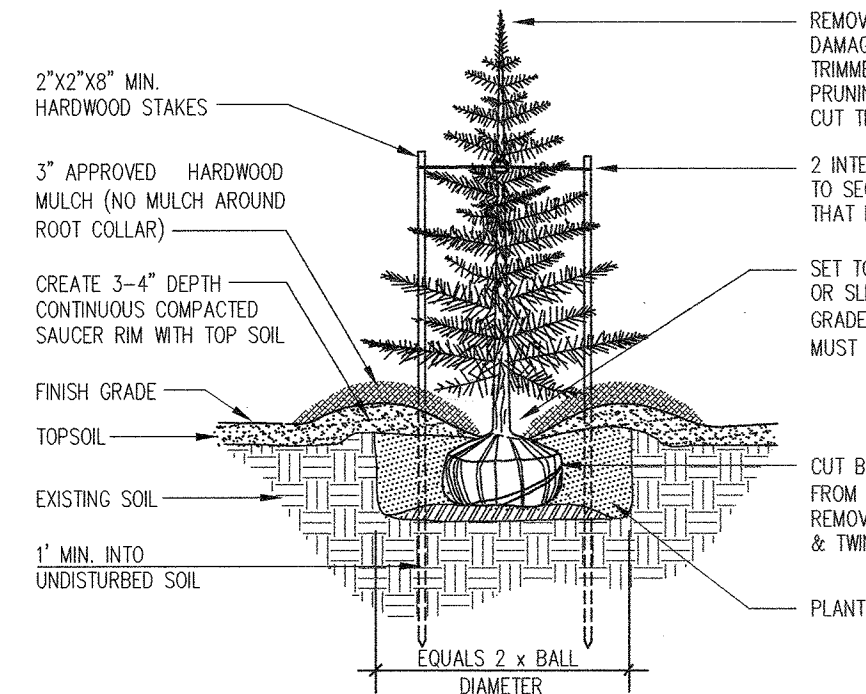
- PLANTING PROCEDURES FOR GROUND COVER, PERENNIALS AND ANNUALS:
  - PLANTING GROUND COVER, PERENNIAL AND ANNUAL BEDS:
    - THE PLANTING BED SHALL BE LOOSEEN WHEN THE SOIL IS DRY PRIOR TO PLANTING BY TILLING. SOIL SHALL BE LOOSEEN TO A DEPTH OF 4" TO 6".
    - ORGANIC MATTER SHALL BE SPREAD OVER THE BED TO A DEPTH OF 2" FOR PEAT MOSS OF 1" DEEP FOR COMPOST, I.E. NOT TO EXCEED 4" CUBIC YARDS OF COMPOST/1000 SQUARE FEET, AFTER THE SOIL HAS BEEN LOOSEEN. THE ORGANIC MATTER SHALL BE WORKED INTO THE BED BY TILLING.
    - FERTILIZER SHALL BE TOP-DRESSED OVER BED AREA.
    - THE PLANT, EITHER POTTED OR BARE ROOT, SHALL BE INSTALLED SO THAT THE ROOTS ARE SURROUNDED BY SOIL BELOW THE MULCH. POTTED PLANTS SHALL BE SET SO THAT THE TOP OF THE POT IS EVEN WITH THE EXISTING GRADE. THE ROOTS OF BARE ROOT PLANTS SHALL BE COVERED TO THE CROWN.
    - SPACING OF PLANTS SHALL BE INSTALLED AS NOTED ON THE LANDSCAPE PLAN.
    - THE ENTIRE BED SHALL BE MULCHED TO A MINIMUM DEPTH OF 1" 2" MAXIMUM WITH APPROVED MULCH.
    - THE ENTIRE PLANTING BED SHALL BE THOROUGHLY WATERED.



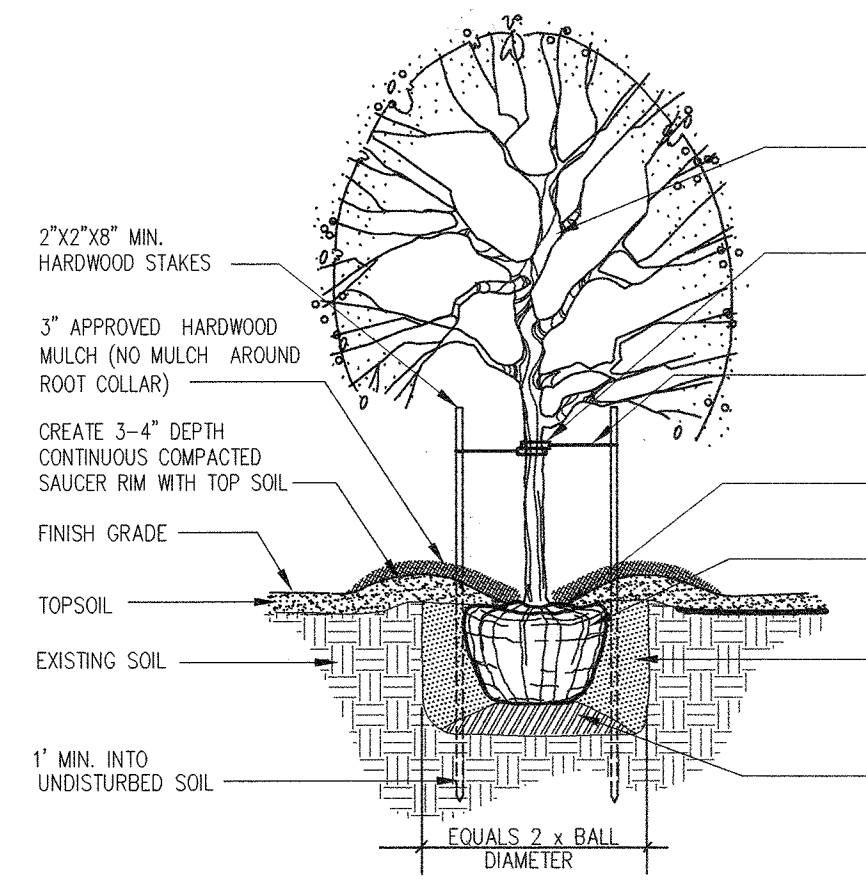
**GROUND COVER PLANTING DETAIL**



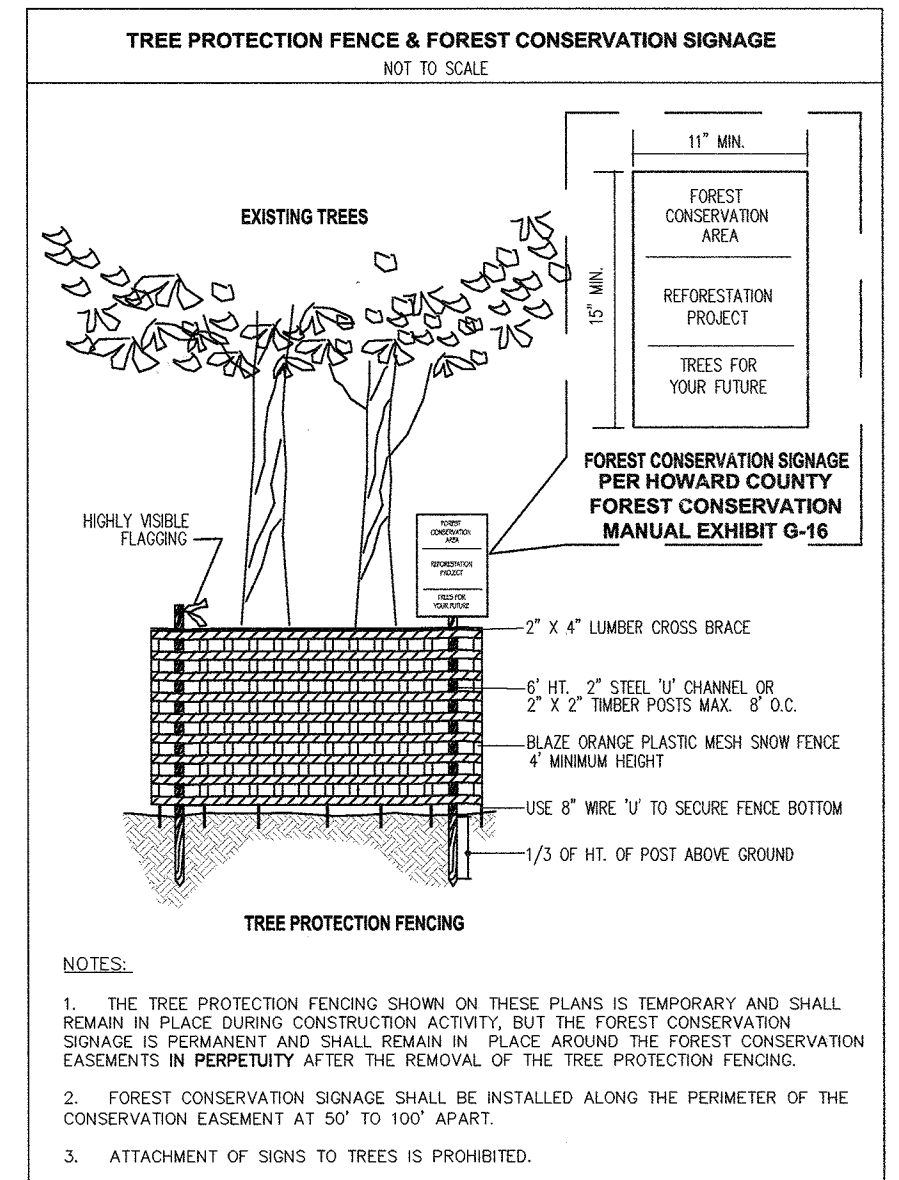
**SHRUB PLANTING DETAIL**



**EVERGREEN TREE PLANTING DETAIL**



**DECIDUOUS TREE PLANTING DETAIL**



**TREE PROTECTION FENCE & FOREST CONSERVATION SIGNAGE**

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN SECTION 16.24 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Michael B. Tran  
 933  
 LANDSCAPE ARCHITECT  
 1/10/20

DATE: 12/30/19

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: [Signature] Date: 2-3-2020

Chief, Planning & Land Development: [Signature] Date: 2/3/20

Chief, Development Engineering Division: [Signature] Date: 1-27-20

**SCHEDULE A: PERIMETER LANDSCAPE EDGE**

PERIMETER	LAND USE	ADJACENT LAND USE	TYPE OF BUFFER	LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER (prior to credits, if any)	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) DESCRIBE BELOW IF NEEDED.	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) DESCRIBE BELOW IF NEEDED.	NUMBER OF PLANTS REQUIRED:	NUMBER OF PLANTS PROVIDED:				
							SHADE TREES	EVERGREEN TREES	SHRUBS	SHADE TREES	EVERGREEN TREES	SHRUBS
EXTERNAL PERIMETER 1	NON-RESIDENTIAL	NON-RESIDENTIAL	1' Buffer	190'	NO	NO	14	0	0	14	0	0
EXTERNAL PERIMETER 2	NON-RESIDENTIAL	ROADWAY (side)	3' Buffer	44'	NO	NO	10	13	0	10	13	0
EXTERNAL PERIMETER 3	NON-RESIDENTIAL	NON-RESIDENTIAL	1' Buffer	590'	YES, SEE NOTE ON PLAN VIEW SHEET	NO	10	0	0	10	0	0

**LANDSCAPE MANUAL, CHAPTER IV, TABLE 1**

BUFFER TYPE	LANDSCAPE CHARACTER	SHADE TREES/LF	EVERGREEN/LF	SHRUBS/LF
A	LIGHT BUFFER	1:60	0	0
B	MODERATE BUFFER	1:50	1:40	0
C	HEAVY BUFFER	1:40	1:20	0

**NO AS-BUILT INFORMATION AS OF 02/19/2020**

**GLW**  
 PLANNING | ENGINEERING | SURVEYING

3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
 PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4188

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

CHECKED BY: [Signature]

DATE: [ ] REVISION: [ ] BY: [ ] APPR: [ ]

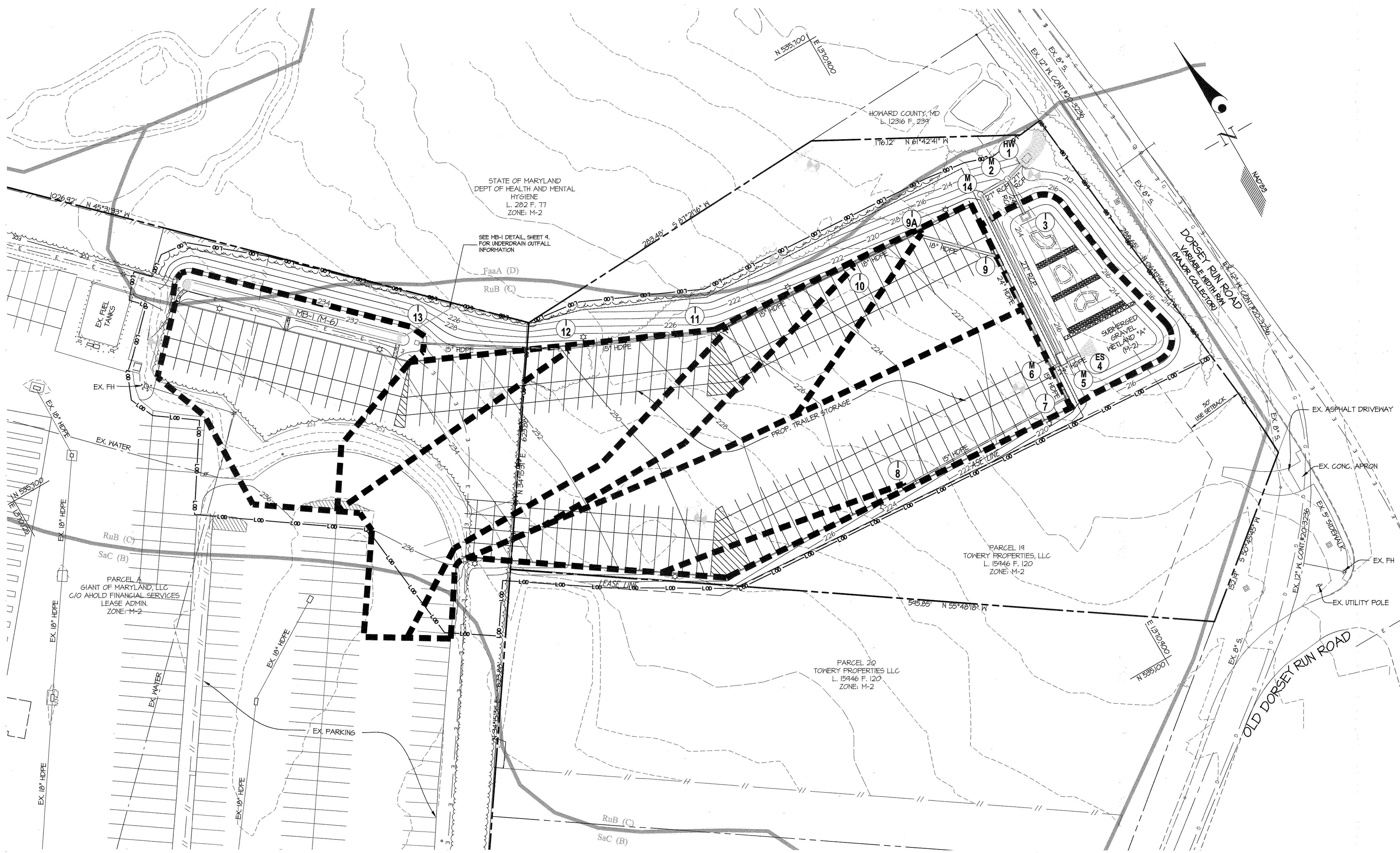
OWNER/DEVELOPER:  
 GIANT LANDOVER DIVISION  
 1385 HANCOCK STREET  
 10TH FLOOR  
 QUINCY, MA 02169  
 ATTN: REDAS ZAKALSKIS  
 TEL: 617-792-7880

**FOREST CONSERVATION and LANDSCAPE DETAILS**

SCALE: 1"=40'	ZONING: M-2	G. L. W. FILE No.: 12060
DATE: NOV. 2019	TAX MAP - GRID: 48-8	SHEET: 6 OF 13

ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND





**LEGEND**

- DRAINAGE DIVIDE
- RuB (C) SOILS
- SaC (B) SOILS

**'C' FACTOR COMPUTATIONS**

STRUCTURE	AREA (AC.)	'C'	IMPERVIOUS
I-3	0.33 Ac.	0.21	0%
I-7	0.86 Ac.	0.86	100%
I-8	0.07 Ac.	0.86	100%
I-9	0.28 Ac.	0.86	100%
I-9A	0.24 Ac.	0.86	100%
I-10	0.29 Ac.	0.86	100%
I-11	0.65 Ac.	0.86	100%
I-12	0.23 Ac.	0.86	100%
I-13	0.62 Ac.	0.71	78%

**SUMMARY - ESD REQUIRED**

	AREA (SF)	IMPERVIOUS	TARGET P ₀	REQUIRED ESDV =P ₀ x I _v x A/12	REQUIRED RECHARGE =9 x I _v x A/12
PARCEL A - NEW DEVELOPMENT	0.84	100%	2.2	6,456 CF	0
PARCEL A - REDEVELOPMENT	0.29	100%	1.0	504 CF	0
PARCEL 19 - NEW DEVELOPMENT	4.58	45%	1.8	13,610 CF	983 CF
				20,520 CF	983 CF

**SUMMARY - ESD PROVIDED**

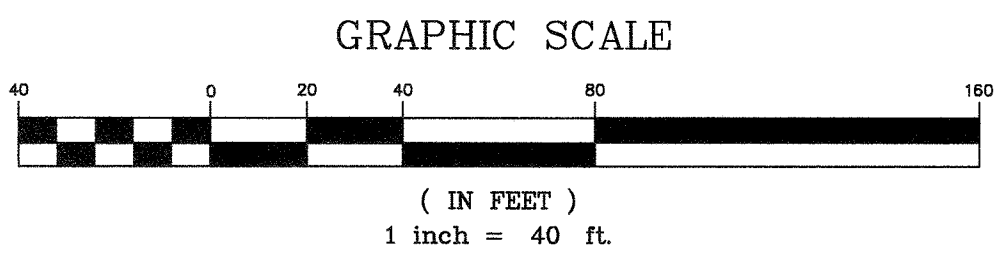
ESD DEVICE	DRAINAGE AREA	AREA (AC.)	IMPERVIOUS	ESDV (CF)	P ₀	RECHARGE (CF)
MB-1 (M-6)	I-13	0.62	78%	2,278	1.2	1,350
SGW A (M-2)	I-3, I-7, I-8, I-9, I-9A, I-10, I-11, I-12	2.95	89%	20,904	2.6	0
				23,182 CF		1,050 CF

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-2020

Chief, Division of Land Development: *[Signature]* Date: 2/3/20

Chief, Development Engineering Division: *[Signature]* Date: 1-23-20



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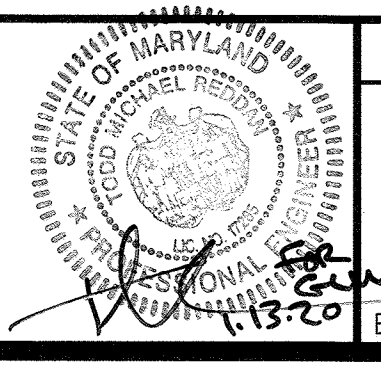
3908 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
PHONE: 301-421-0241 | BALT: 410-880-1820 | DC&VA: 301-889-2524 | FAX: 301-421-4186

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE	REVISION	BY	APP'R.
EWM	EWM	TMR				

**OWNER/DEVELOPER:**  
GIANT LANDOVER DIVISION  
1385 HANCOCK STREET  
10TH FLOOR  
QUINCY, MA 02169  
ATTN: REDAS ZAKALSKIS  
TEL: 617-792-7880

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285  
EXPIRATION DATE: MARCH 17, 2021

*[Signature]*  
1-13-20



**NO AS-BUILT INFORMATION AS OF 08/19/2020**

**STORM DRAIN and STORMWATER DRAINAGE AREA MAP**

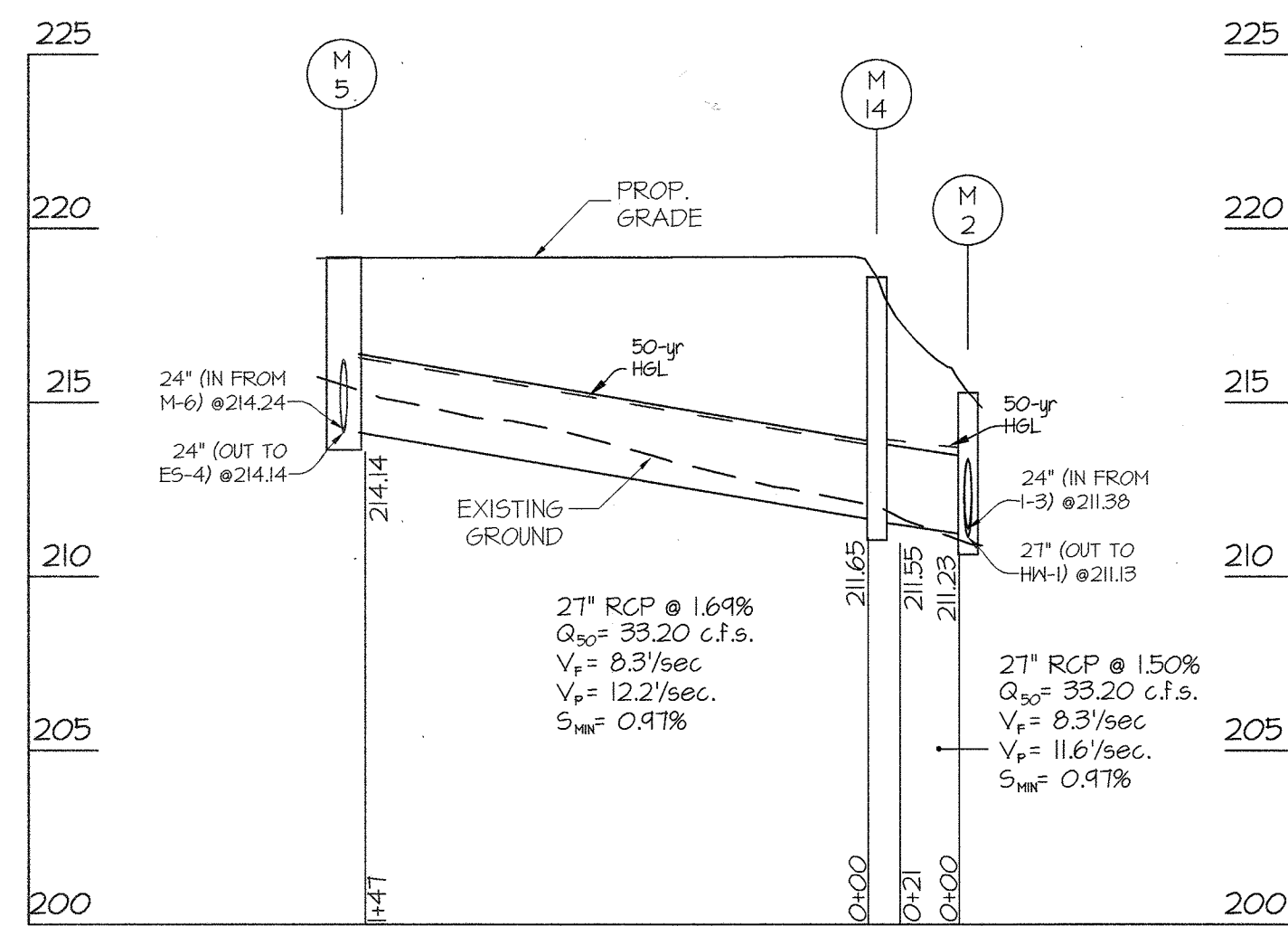
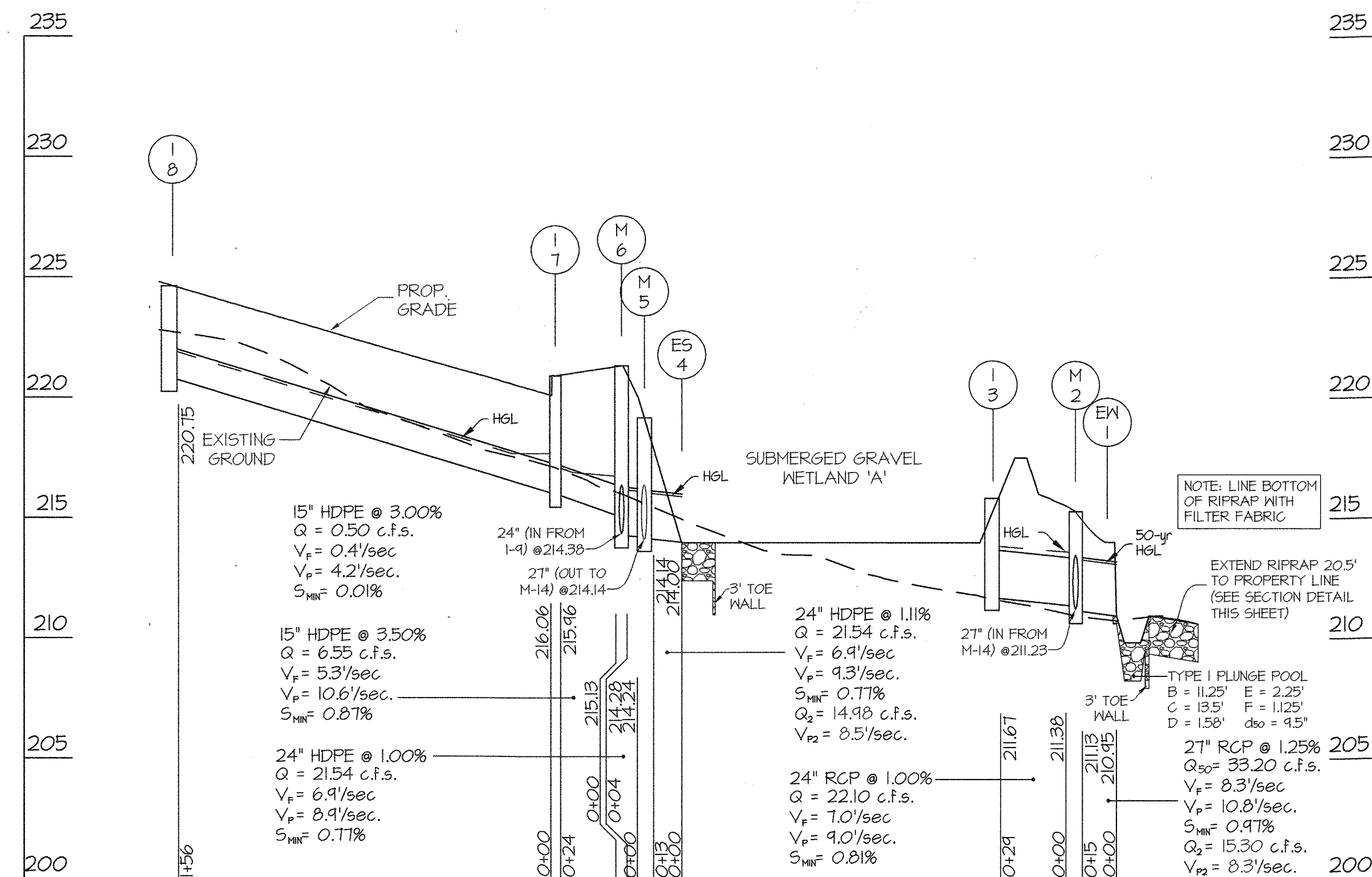
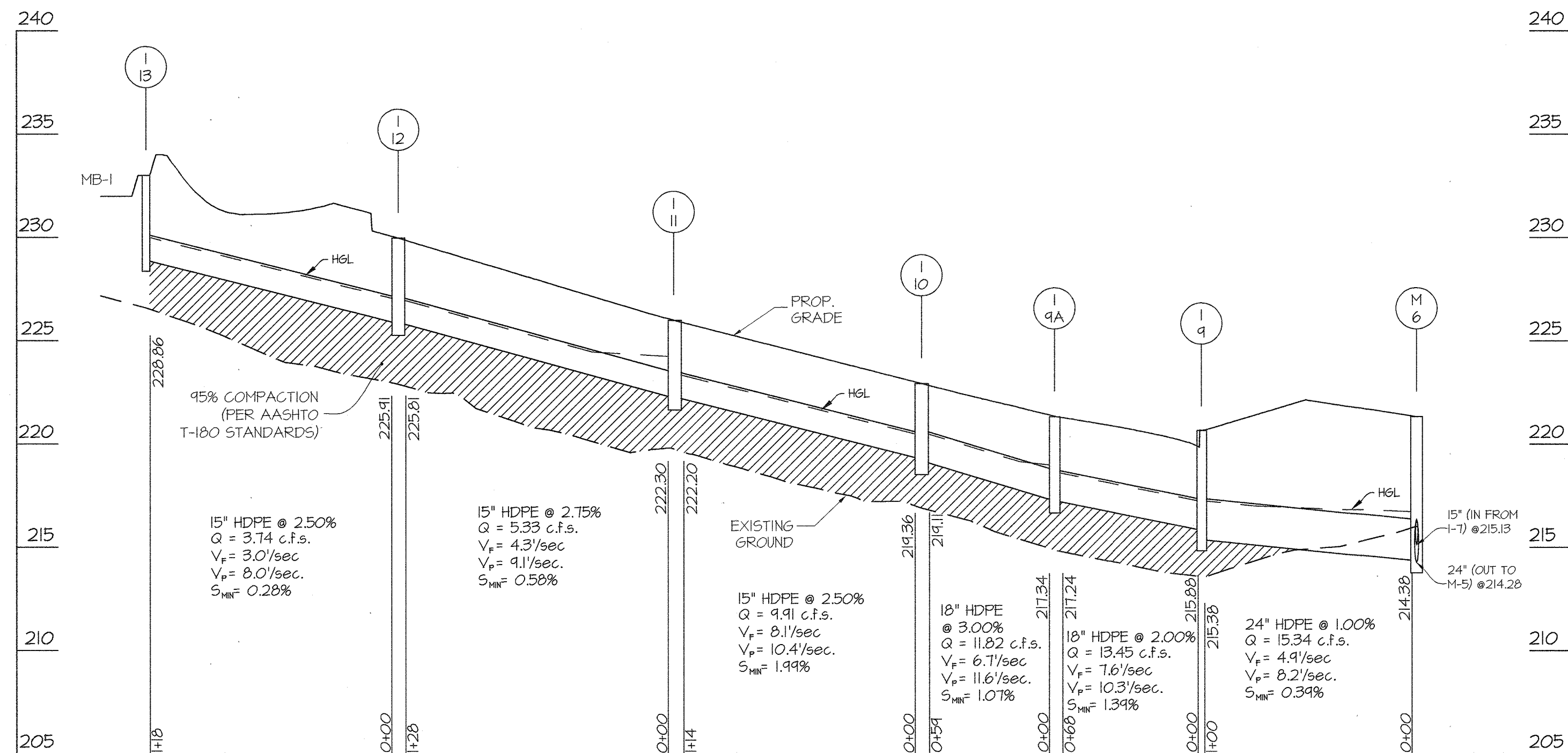
**GIANT DISTRIBUTION CENTER  
EXETER INDUSTRIAL PARK  
PARCEL 19 & PARCEL A**

HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=40'	M-2	12060
DATE	TAX MAP - GRID	SHEET
JAN, 2020	48-8	7 OF 13

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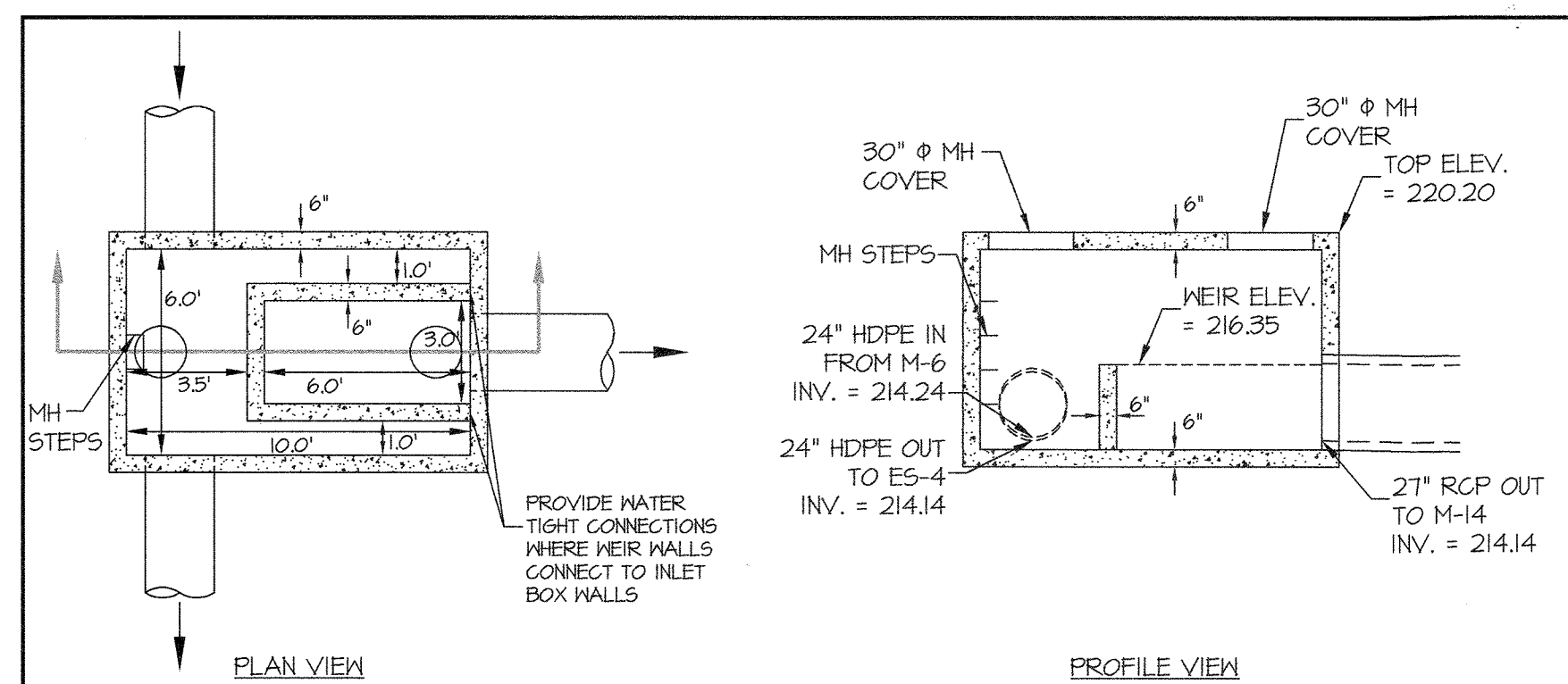




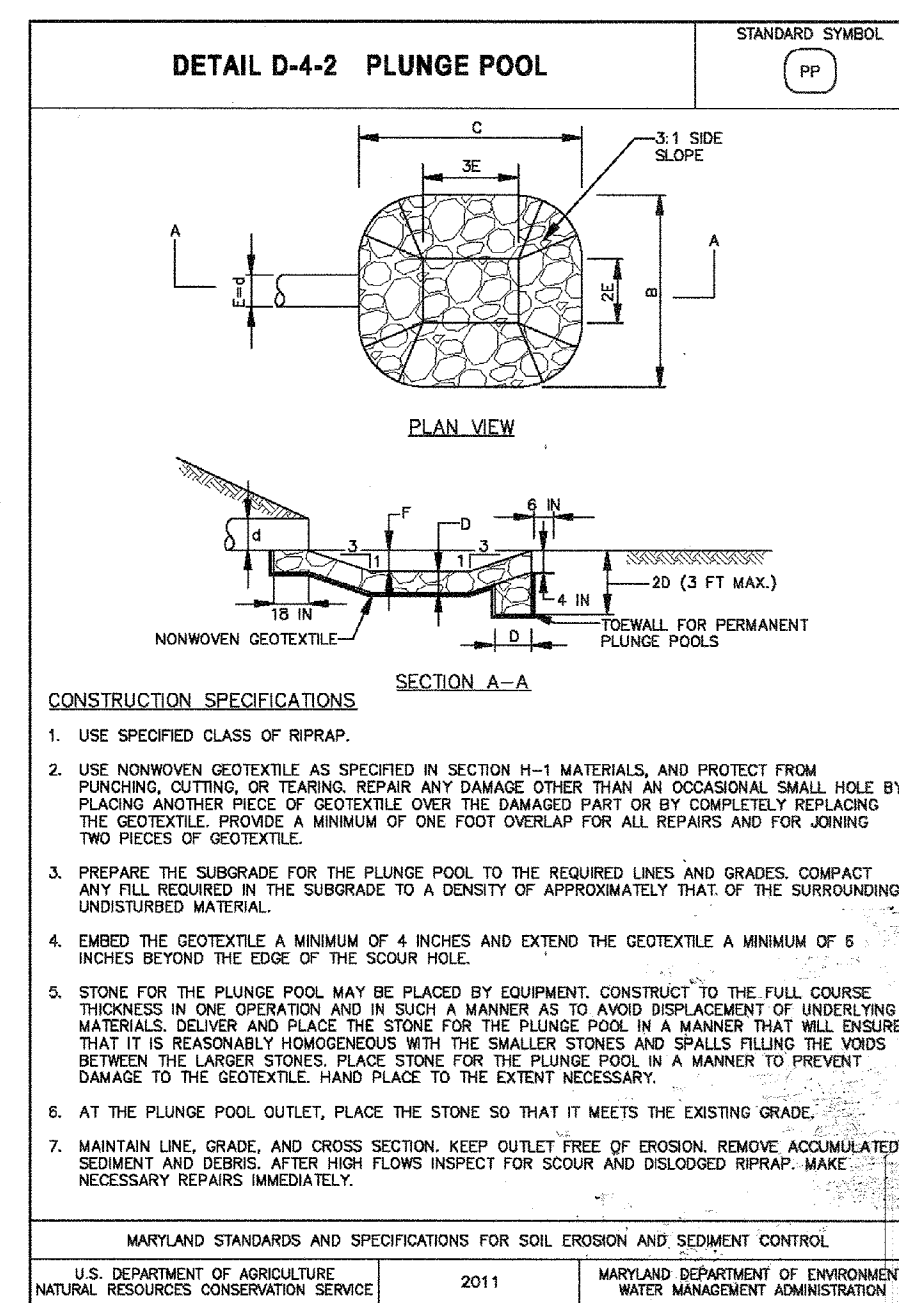
STRUCTURE SCHEDULE									
NO	TYPE	WIDTH (INSIDE)	TOP ELEVATION		INVERT		STD. DETAIL	LOCATIONS	REMARKS
			UPPER	LOWER	UPPER	LOWER			
I-3	RISER STRUCTURE	6'x4'	217.83	217.83	213.61	211.61	---	N 535,401 E 1310,984	
I-7	COS-15 INLET	2'-0"	220.87	220.64	216.06	215.96	MD 374.63	N 535,331 E 1310,936	
I-8	SS INLET	2'-1"	224.78	224.58	---	220.75	HO. CO. D-4.25	N 535,334 E 1310,771	
I-4	COS-15 INLET	2'-0"	220.54	220.54	215.88	215.38	MD 374.63	N 535,463 E 1310,945	
I-9A	SS INLET	2'-1"	221.42	221.26	217.34	217.24	HO. CO. D-4.25	N 535,516 E 1310,841	
I-10	SS INLET	2'-1"	223.00	222.84	219.36	219.11	HO. CO. D-4.25	N 535,521 E 1310,832	
I-11	SS INLET	2'-1"	226.04	225.88	222.30	222.20	HO. CO. D-4.25	N 535,526 E 1310,712	
I-12	SS INLET	2'-1"	230.03	224.84	225.91	225.81	HO. CO. D-4.25	N 535,582 E 1310,540	
I-13	S INLET	2'-1"	233.00	---	---	228.86	HO. CO. D-4.24	N 535,646 E 1310,486	
M-2	STANDARD MANHOLE	5'-0"	215.28	---	211.38	211.13	HO. CO. 6-5.13	N 535,516 E 1310,986	
M-5	A-10 INLET	6'-0"	220.20	---	214.24	214.14	HO. CO. D-4.03	N 535,362 E 1310,950	
M-6	STANDARD MANHOLE	5'-0"	221.34	---	215.13	214.26	HO. CO. 6-5.13	N 535,354 E 1310,940	
M-14	STANDARD MANHOLE	5'-0"	219.00	---	211.65	211.55	HO. CO. 6-5.13	N 535,516 E 1310,960	
EA-1	ENDWALL	2'-3"	214.70	---	---	210.95	HO. CO. D-5.21	N 535,521 E 1310,003	
ES-4	END SECTION	2'-0"	216.00	---	---	214.00	HO. CO. D-5.51	N 535,358 E 1310,965	

**OPERATION AND MAINTENANCE SCHEDULE FOR M-5 GRAVEL WETLAND CONTROL STRUCTURE - OWNED AND MAINTAINED BY THE GIANT DISTRIBUTION CENTER**

- INSPECTIONS SHALL BE PERFORMED SEMI-ANNUALLY AND AFTER HEAVY RAIN EVENTS BY THE OWNER TO CHECK FOR CLOGGING, DEBRIS, CRACKS, ETC.
- THE INLET AND OUTLET PIPES SHALL BE CHECKED FOR OBSTRUCTIONS. IF OBSTRUCTIONS ARE FOUND, THE OWNER SHALL HAVE THEM REMOVED.
- ALL PIPE CONNECTIONS AND JOINTS MUST REMAIN WATER TIGHT. ANY FAILURES IN GROUTING AND/OR SEALANTS MUST BE IMMEDIATELY REPAIRED.
- THE OUTFALL SHALL BE CHECKED FOR DAMAGE AND DEBRIS.
- THE OUTFALL RIP-RAP AND BELOW SHALL BE CHECKED FOR EROSION.



NOTE:  
1. STRUCTURE IS TO BE A PRECAST A-10 INLET WITH A 6' WIDTH AND NO THROAT OPENING. SHOP DRAWINGS MUST BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION OF STRUCTURE. CONTRACTOR MAY CAST IN PLACE, PROVIDED THE APPROPRIATE DRAWINGS ARE SUBMITTED TO ENGINEER FOR APPROVAL.  
2. STRUCTURE DESIGN AND REINFORCEMENT ARE PER SHOP DRAWINGS.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION

- COORDINATE POINT GIVEN IS TO THE CENTERLINE OF THE STRUCTURE AT THE FACE OF CURB FOR INLETS AND TO THE CENTER OF STRUCTURE FOR MANHOLES AND END SECTIONS.
- SEE SHEET II FOR RISER STRUCTURE DETAILS
- SEE DETAIL, THIS SHEET, FOR ADDITIONAL STRUCTURE INFORMATION

PIPE SCHEDULE			
SIZE	TYPE	QUANTITY (LF)	REMARKS
15"	HDPE	540	
18"	HDPE	127	
24"	HDPE	117	
24"	RCP IV	24	
27"	RCP IV	183	

RIP RAP INFORMATION					
STRUCTURE	CLASS	LENGTH	D ₅₀	D ₁₀₀	THICKNESS
EA-1	CLASS I	34'	4.5"	15"	14"
ES-4	CLASS I	14'	4.5"	15"	14"

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 Director: [Signature] Date: 2-3-2020  
 Chief, Division of Land Development: [Signature] Date: 2/12/20  
 Chief, Development Engineering Division: [Signature] Date: 1-23-20

**GLW**  
 PLANNING | ENGINEERING | SURVEYING  
 3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
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DESIGNED BY	DRAWN BY	CHECKED BY	DATE	REVISION	BY	APPR.
EWM	JRC	TMR				

OWNER/DEVELOPER:  
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 1385 HANCOCK STREET  
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**STORM DRAIN PROFILES**  
**GIANT DISTRIBUTION CENTER**  
 EXETER INDUSTRIAL PARK  
 PARCEL 19 & PARCEL A  
 HOWARD COUNTY, MARYLAND  
 ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE NO.
1"=50' (H) 1"=5' (V)	M-2	12060
DATE	TAX MAP - GRID	SHEET
JAN., 2020	48-8	8 OF 13

L:\CADD\DRAWINGS\12060\PLANS BY GLW\PARCEL 19\SDPA\2060-08-SD PROF.dwg, PLOTTED: 7/10/2020 2:03 PM, LAST SAVER: 6/2/2020 11:59 AM, PLOTTED BY: Anne E. Bell



**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED MICRO-BIORETENTION (M-6)**

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A-4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
- THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE UNDERDRAINS WITHIN THE BIO-RETENTION LAYERS.
- THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES PUBLIC EASEMENTS.

- STORMWATER MANAGEMENT GENERAL NOTES:**
- THE STORMWATER MANAGEMENT OBLIGATION WAS MET WITH ESD PRACTICES INCLUDING: MICRO-BIORETENTION (M-6) AND SUBMERGED GRAVEL WETLAND (M-2).
  - THE ESD PRACTICES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE GIANT DISTRIBUTION CENTER.
  - IN ADDITION TO STANDARD MDE REQUIREMENTS, THE CONTRACTOR SHOULD BE PREPARED TO DENATURE EXCAVATIONS AND MAINTAIN TRAFFICABILITY OF THE SIMN AREAS DURING CONSTRUCTION. ALL EXCAVATIONS SHOULD BE PROPERLY SHORED AND SUPPORTED IN ACCORDANCE WITH THE LATEST OSHA REQUIREMENTS. IF INFILTRATION FACILITY AREAS ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE-TRACK OR LIGHTWEIGHT EQUIPMENT WITH TURF TIRES TO MINIMIZE COMPACTION OF THE SUBGRADE SOILS. EXCESSIVE COMPACTION WITHIN THE INFILTRATION AREA WILL RESULT IN POOR PERFORMANCE OF THE FACILITIES. THE BASE OF THE INFILTRATION FACILITIES SHOULD BE FILLED TO A DEPTH OF 12 INCHES TO ALLEVIATE ANY COMPACTION OF THE SUBGRADE BY EXCAVATION EQUIPMENT. BACKFILL OF THE INFILTRATION FACILITIES SHOULD BE PERFORMED IN ACCORDANCE WITH MDE GUIDELINES.

- GENERAL NOTES**
- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
  - PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.05.01.05.
  - THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:**
    - SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (MDE SA TEXTURAL CLASSIFICATION) ORGANIC MATTER 15 - 4% (BY WEIGHT)
    - ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
    - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
    - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR HARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL FLOW RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

- PLANT MATERIAL RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDINGS TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL ASSED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

- UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
  - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 20, TYPE PS 20, OR AASHTO-M-218) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
  - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/2" (NO. 4) OR 3/4" (NO. 6) GALVANIZED HARDWARE CLOTH.
  - GRAVEL - THE GRAVEL LAYER (NO. 51 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
  - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
  - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
  - A 4" LAYER OF PEA GRAVEL (1/8 TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER WILL BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 2-4".

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1,000 SQUARE FEET OF SURFACE AREA).

- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-20 20

Chief, Planning & Development: *[Signature]* Date: 1-23-20

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

**GLW** PLANNING | ENGINEERING | SURVEYING

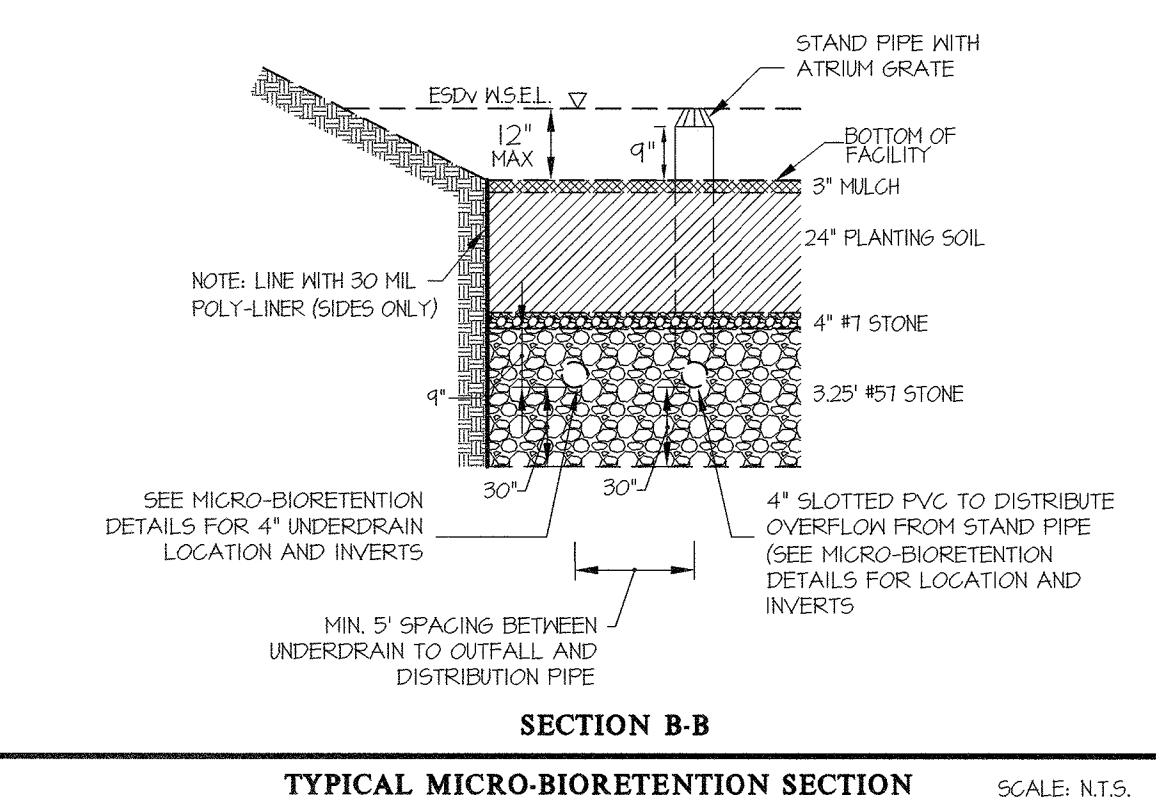
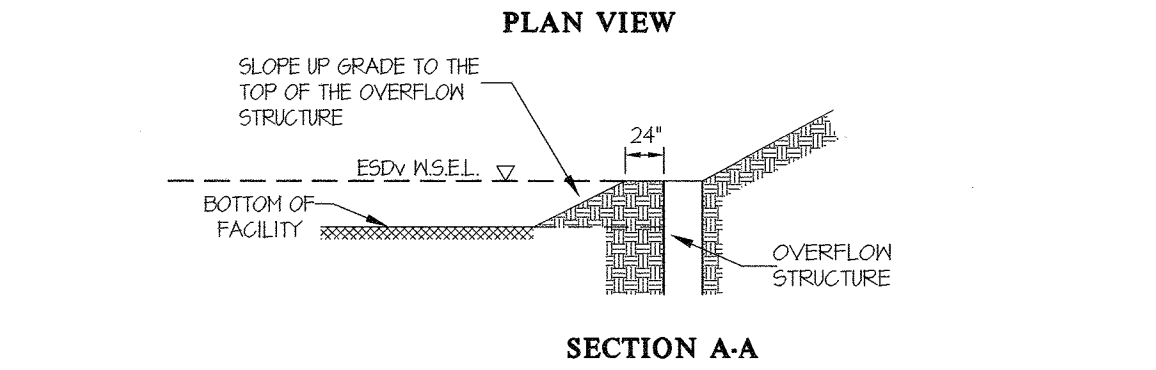
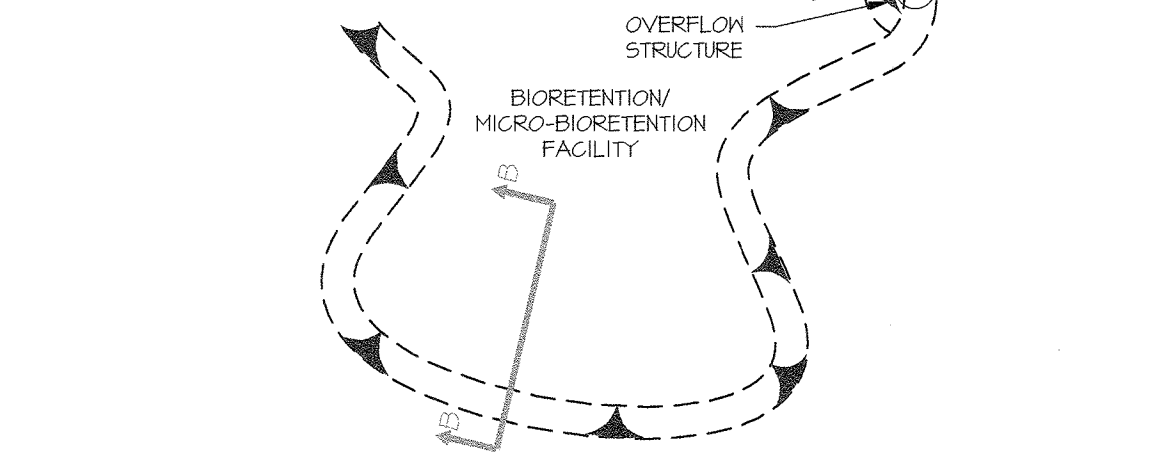
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DESIGNED BY	EWM
DRAWN BY	EWM
CHECKED BY	TMR
DATE	
REVISION	
BY	
APPR.	

**APPENDIX B.1.1 - SUPPLEMENTAL POND SPECIFICATIONS (NON-370)**

- SUPPLEMENTAL STORMWATER PONDS AND WETLAND SPECIFICATIONS (NON-370)
- THESE NOTES AND SPECIFICATIONS ARE IN ADDITION TO THE MD-370 SPECIFICATIONS. IF THERE IS ANY QUESTIONS AS TO THE APPLICABILITY, THE MD-370 SPECIFICATIONS SUPERSEDE.
- IT IS PREFERRED TO USE THE SAME MATERIAL IN THE EMBANKMENT AS IS BEING INSTALLED FOR THE CORE TRENCH. IF THIS IS NOT POSSIBLE BECAUSE THE APPROPRIATE MATERIAL IS NOT AVAILABLE, A DAM CORE WITH A SHELL MAY BE USED. THE CROSS-SECTION OF THE STORMWATER FACILITY SHOULD SHOW THE LIMITS OF THE DAM CORE (UP TO 10-YEAR WATER SURFACE ELEVATION) AS WELL AS THE ACCEPTABLE MATERIALS FOR THE SHELL. THE SHAPE OF THE DAM CORE AND THE MATERIAL TO BE USED IN THE SHELL SHOULD BE PROVIDED BY THE GEOTECHNICAL ENGINEER.
  - IF THE COMPACTION TESTS FOR THE SITE IMPROVEMENTS IS USING MODIFIED PROCTOR (AASHTO T-99), THEN TO MAINTAIN ON-SITE CONSISTENCY, THE MODIFIED PROCTOR MAY BE USED IN LIEU OF A STANDARD PROCTOR (AASHTO T-99). THE MINIMUM DENSITY USING THE MODIFIED PROCTOR TEST METHOD SHALL BE AT LEAST 92% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 12% OF THE OPTIMUM. THE MINIMUM REQUIRED DENSITY USING THE STANDARD PROCTOR TEST METHOD SHALL BE AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 12% OF THE OPTIMUM.
  - FOR ALL STORMWATER MANAGEMENT FACILITIES, A GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE MUST BE PRESENT TO VERIFY COMPACTION IN ACCORDANCE WITH THE SELECTED TEST METHOD. THIS INFORMATION NEEDS TO BE PROVIDED IN A REPORT TO THE DESIGN ENGINEER, SO THAT CERTIFICATION OF THE CONSTRUCTION OF THE FACILITY, IN ACCORDANCE WITH MD-370 SPECIFICATIONS, CAN BE MADE.
  - A 4-INCH LAYER OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS OF THE DAM EMBANKMENT. SEEDING, LIME, FERTILIZING, MULCHING, ETC. SHALL BE IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SERVICE MD-342 OR THE 1944 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PERMANENT SEEDING, SECTION IN CHAPTER 20. THE PURPOSE OF THE TOPSOIL IS TO ESTABLISH A GOOD GROWTH OF GRASS, WHICH IS NOT ALWAYS POSSIBLE WITH SOME OF THE MATERIALS THAT MAY BE PLACED FOR THE EMBANKMENT FILL.
  - GEOTEXTILE PLACED BENEATH RIP-RAP SHALL BE CLASS "C" GEOTEXTILE OR BETTER (SEE SECTION 24.0, MATERIAL SPECIFICATIONS, M44 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (MDE, 1944). SOME ACCEPTABLE GEOTEXTILES THAT MEET THE CLASS "C" CRITERIA INCLUDE:
    - MOHCO 4552
    - GEOLON N10
    - KEBTEC N01
    - CARTHAGE FX-105
    - MERAP 180-N
- THIS IS ONLY A PARTIAL LISTING OF AVAILABLE GEOTEXTILES BASED ON INFORMATION PROVIDED BY THE MANUFACTURERS OF THE 1941 SPECIFIER'S GUIDE DATED DECEMBER 1996. IT IS THE RESPONSIBILITY OF THE ENGINEER TO VERIFY THE ADEQUACY OF THE MATERIAL, AS THERE ARE CHANGES IN THE MANUFACTURING PROCESS AND THE TYPE OF FABRIC USED, WHICH MAY AFFECT THE CONTINUED ACCEPTANCE.

- A RULE OF THUMB TO DETERMINE WHEN AN EXCAVATED POND MAY NEED TO BE CONSIDERED AN EMBANKMENT POND IS AS FOLLOWS:  
PROVIDE CALCULATION OF  $10H + 20$  FEET = L, WHERE H HEIGHT FROM POND BOTTOM TO TOP OF DAM. IF THE PROJECTION OF L, DOWNSTREAM IS A HORIZONTAL LINE FROM THE UPSTREAM TOE OF SLOPE IS BELOW EXISTING GROUND, THE POND CAN BE CONSIDERED AN EXCAVATED POND. IN ADDITION, THE EXISTING GROUND SLOPE, DOWNSTREAM OF THE TOE, MUST BE LESS THAN 10%.
- THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER SHOULD MAKE THE DETERMINATION THAT THE SETTLEMENT OF THE POND WILL NOT CAUSE EXCESSIVE JOINT EXTENSION. FOR FURTHER INFORMATION ON JOINT ANALYSIS, SEE NCEP PUBLICATION TR-10.
- FILL PLACEMENT SHALL NOT EXCEED A MAXIMUM 8-INCH. EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF THE EMBANKMENT.
- THE EMBANKMENT FILL SHALL NOT BE PLACED HIGHER THAN THE CENTERLINE OF THE PRINCIPAL SPILLWAY UNTIL AFTER THE PRINCIPAL SPILLWAY HAS BEEN INSTALLED. THE EMBANKMENT NEEDS TO BE EXCAVATED TO INSTALL THE PRINCIPAL SPILLWAY, THE SIDE SLOPE SHALL BE NO LESS THAN 2:1.
- THE SIDE SLOPES OF A CUT TO REPAIR A DAM, INSTALL A PRINCIPAL SPILLWAY FOR AN EXCAVATED POND, OR OTHER REPAIR WORK, SHALL BE NO LESS THAN 2:1.



GRAPHIC SCALE: 1 inch = 20 ft

GRAPHIC SCALE: 1 inch = 30 ft

ES&S ENGINEERING & SURVEYING

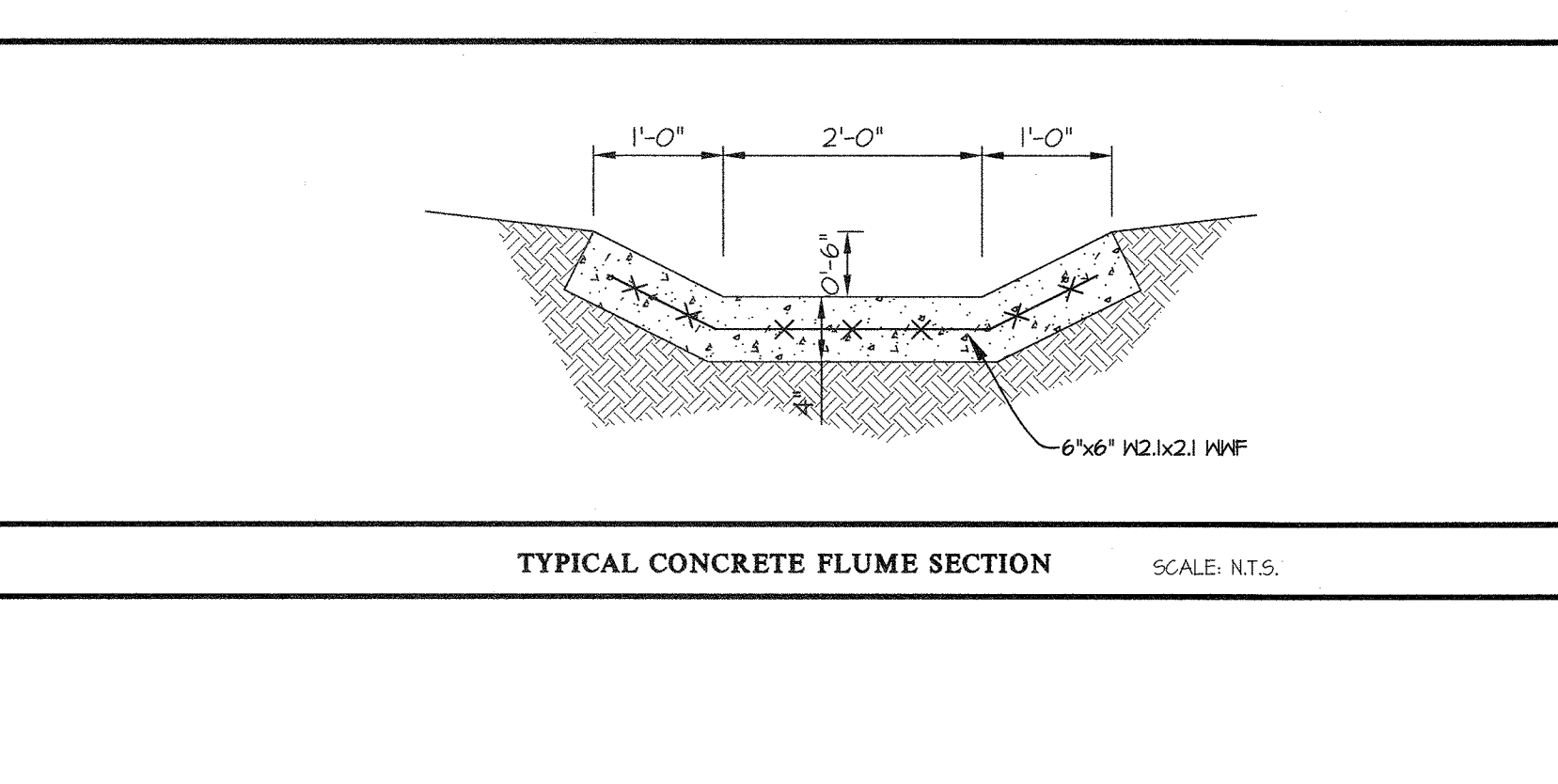
APPENDIX B.1.1 - SUPPLEMENTAL POND SPECIFICATIONS (NON-370)

ES&S DESIGN: 02/27/2020

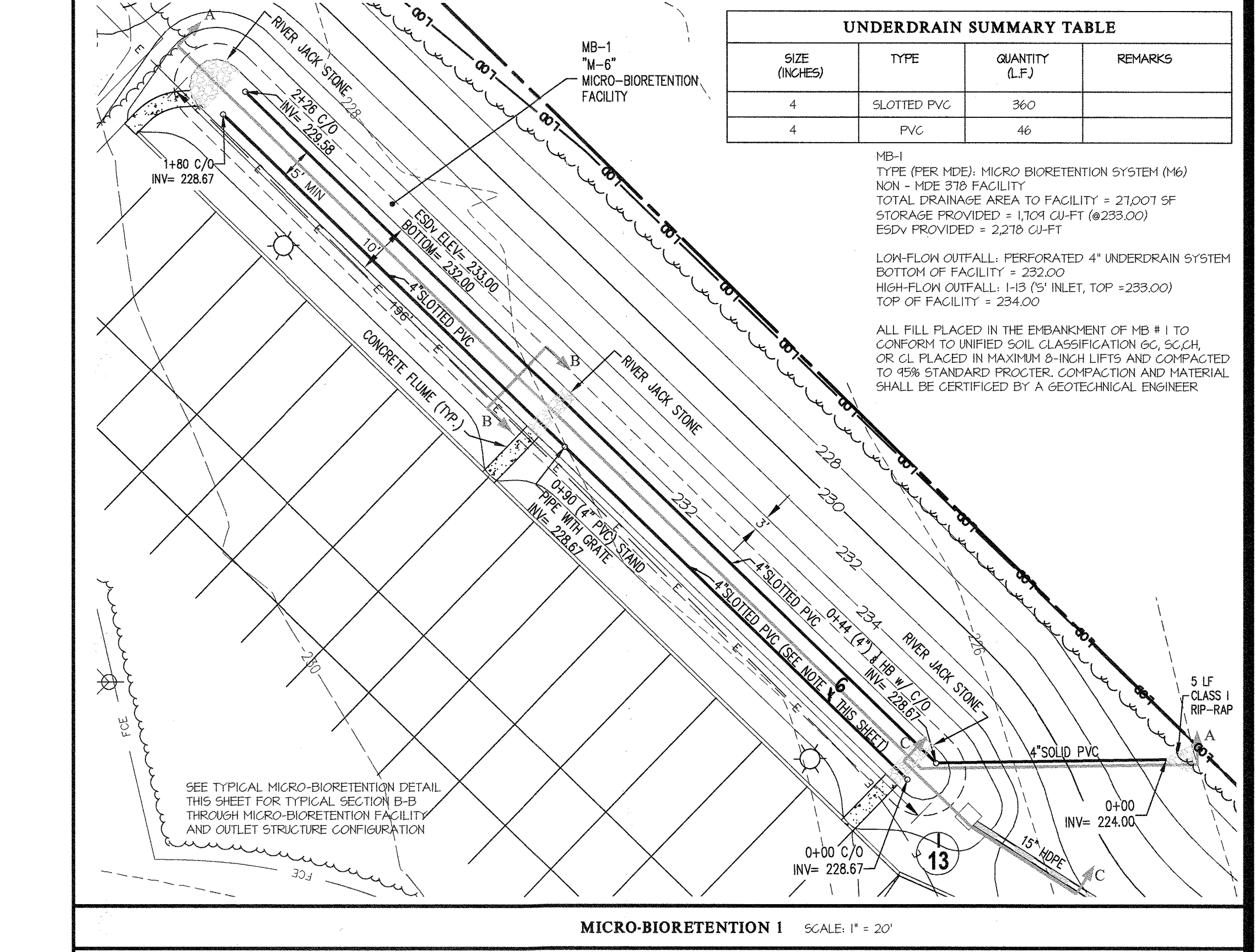
ES&S DESIGN: 02/27/2020

ES&S DESIGN: 02/27/2020

ES&S DESIGN: 02/27/2020



SEE AS-BUILT SHEET 20F 4 08/19/2020



**UNDERDRAIN SUMMARY TABLE**

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	360	
4	PVC	46	

MB-1 "M-6" MICRO-BIORETENTION FACILITY

TYPE (PER MDE): MICRO-BIORETENTION SYSTEM (M-6)  
NON - MDE STORMWATER FACILITY  
TOTAL DRAINAGE AREA TO FACILITY = 27,001 SF  
STORAGE PROVIDED = 1,704 CU-FIT @ 233.00'  
ESDV PROVIDED = 2,218 CU-FIT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM  
BOTTOM OF FACILITY = 232.00'  
HIGH-FLOW OUTFALL: 1-1/2" INLET, TOP = 233.00'  
TOP OF FACILITY = 234.00'

ALL FILL PLACED IN THE EMBANKMENT OF MB #1 TO CONFORM TO UNIFIED SOIL CLASSIFICATION 60, SCL-4, OR CL PLACED IN MAXIMUM 8-INCH LIFTS AND COMPACTED TO 95% STANDARD PROCTOR. COMPACTION AND MATERIAL SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER.

**MICRO-BIORETENTION 1** SCALE: 1" = 20'

**MICRO-BIORETENTION 1 LANDSCAPE PLAN** SCALE: 1" = 30'

**MICRO-BIORETENTION PLANT LIST**

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
(S)	10	CORNUS SERICEA RUBY / RUBY RED OSIER DOGWOOD	18"-24" SFR.	CONTAINER
(R)	1	ITEA VIRGINICA HENRY'S GARNET / VIRGINIA SHEETSPIRE	18"-24" SFR.	CONTAINER
(V)	6	RHOIXODENDRON VISCOSUM / SWAMP AZALEA	18"-24" SFR.	CONTAINER

**SECTION "A-A"** SCALE: 1" = 50' (HORZ.), 1" = 5' (VERT.)

**SECTION "C-C"** SCALE: 1" = 50' (HORZ.), 1" = 5' (VERT.)

**STORMWATER MANAGEMENT PLAN**

**GIANT DISTRIBUTION CENTER EXETER INDUSTRIAL PARK PARCEL 19 & PARCEL A**

SCALE: 1" = 40'

ZONING: M-2

G. L. W. FILE NO.: 12060

DATE: JAN, 2020

TAX MAP - GRID: 48-8

SHEET: 9 OF 13

HOWARD COUNTY, MARYLAND

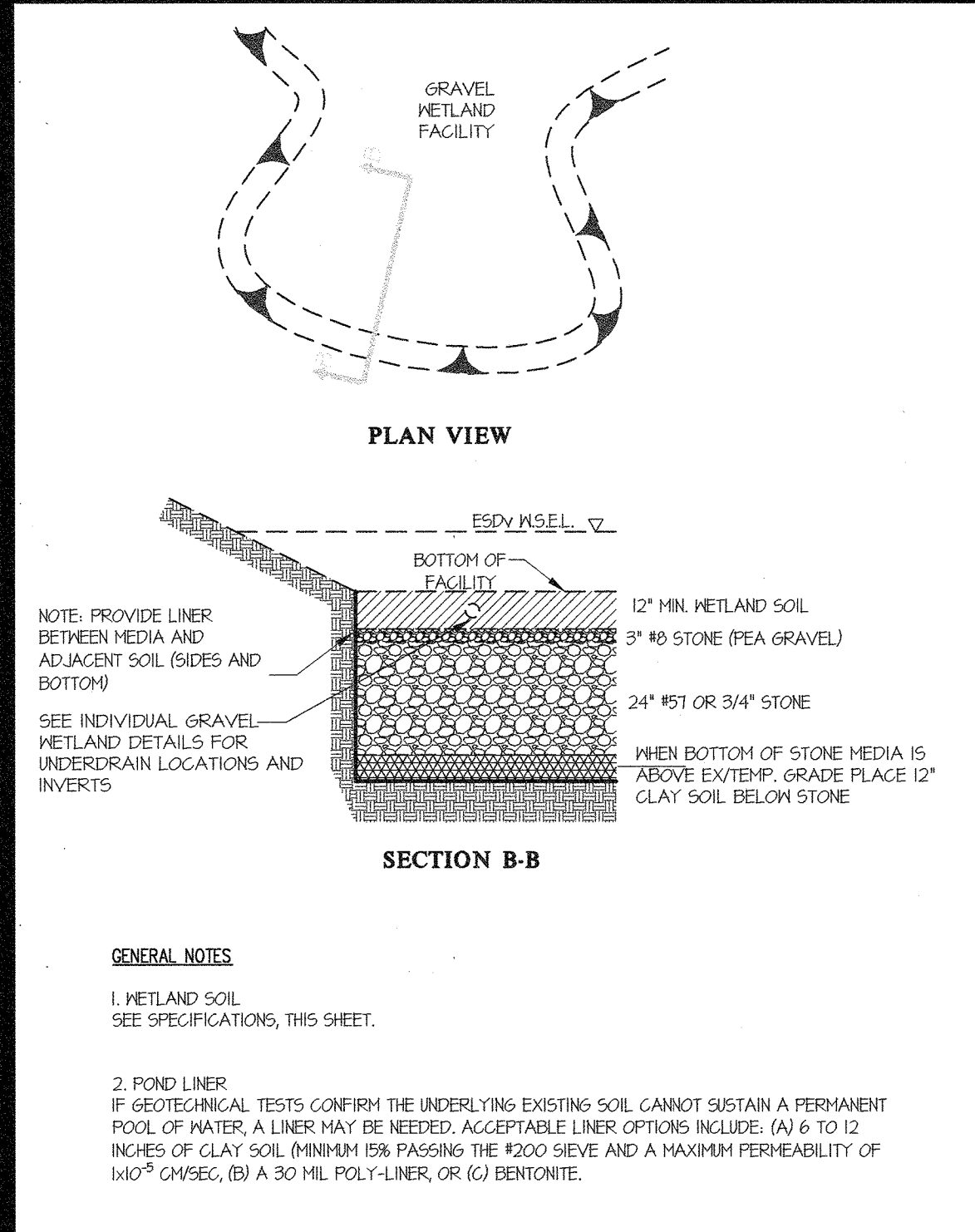
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285

EXPIRATION DATE: MARCH 17, 2021

REGISTRATION DISTRICT No. 6



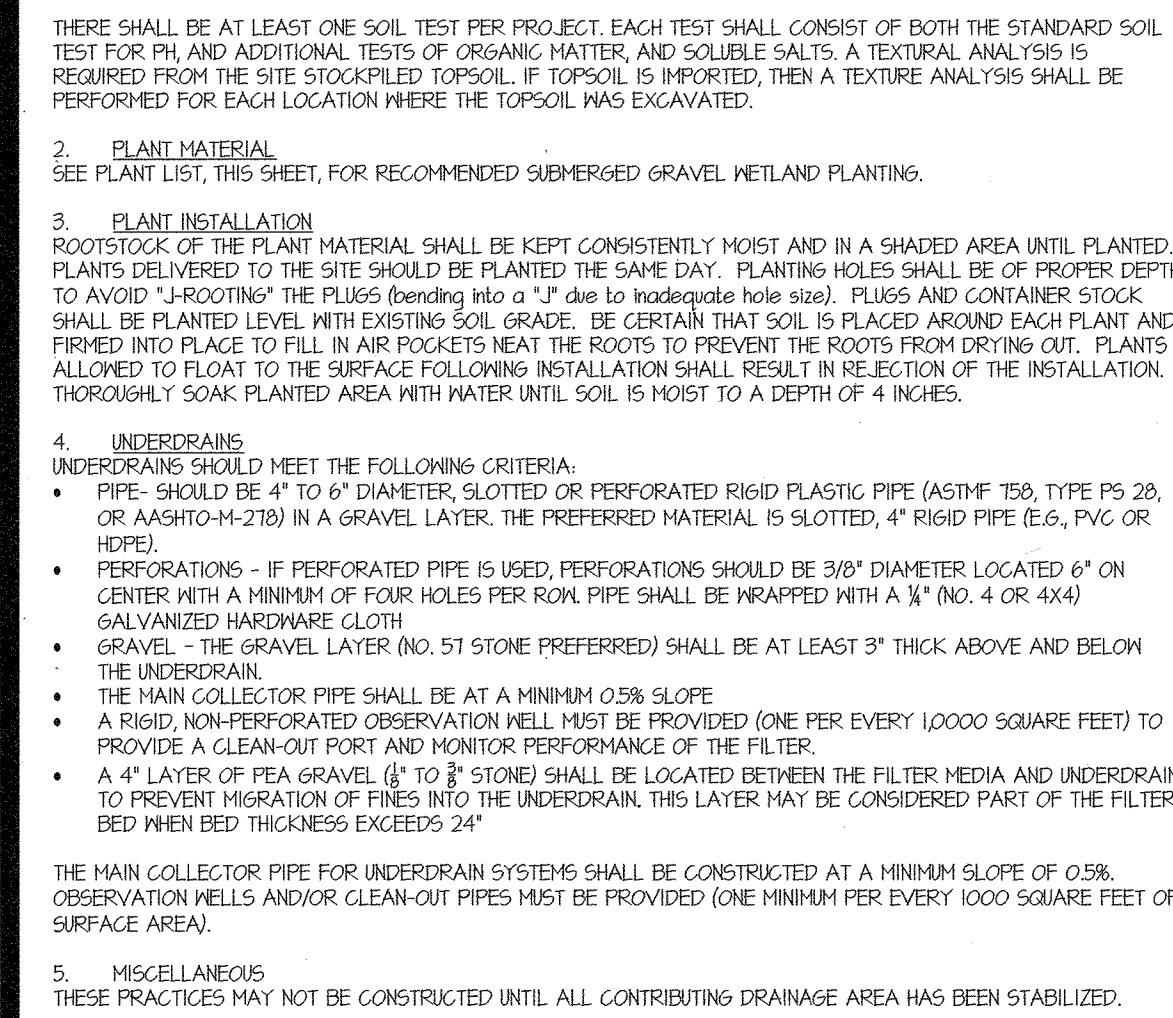


UNDERDRAIN SUMMARY TABLE			
SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
6	SLOTTED PVC	202	
6	PVC	10	

**TYPICAL GRAVEL WETLAND SECTION** SCALE: N.T.S.

**SUBMERGED WETLAND GENERAL NOTES**

- WETLAND SOIL**  
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE GRAVEL WETLAND. PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE WETLAND SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05.
- THE WETLAND SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:**
  - SOIL COMPONENT - SILTY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
  - ORGANIC CONTENT - MINIMUM 15% BY DRY WEIGHT (ASTM D 2014). THIS CAN BE MET BY USING LEAFGRASS COMPOST (LEAFGRASS GOLD), OR SIMILAR CERTIFIED PRODUCT.
  - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
  - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.
- THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.**
- PLANT MATERIAL**  
SEE PLANT LIST, THIS SHEET, FOR RECOMMENDED SUBMERGED GRAVEL WETLAND PLANTING.
- PLANT INSTALLATION**  
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT CONSISTENTLY MOIST AND IN A SHADED AREA UNTIL PLANTED. PLANTS DELIVERED TO THE SITE SHOULD BE PLANTED THE SAME DAY. PLANTING HOLES SHALL BE OF PROPER DEPTH TO AVOID "J-ROOTING" THE PLUGS (bending into a "J" due to inadequate hole size). PLUGS AND CONTAINER STOCK SHALL BE PLANTED LEVEL WITH EXISTING SOIL GRADE. BE CERTAIN THAT SOIL IS PLACED AROUND EACH PLANT AND FERRED INTO PLACE TO FILL IN AIR SPACES NEAR THE ROOTS TO PREVENT THE ROOTS FROM DRYING OUT. PLANTS ALLOWED TO FLOAT TO THE SURFACE FOLLOWING INSTALLATION SHALL RESULT IN REJECTION OF THE INSTALLATION. THOROUGHLY SOAK PLANTED AREA WITH WATER UNTIL SOIL IS MOIST TO A DEPTH OF 4 INCHES.
- UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
  - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F150, TYPE PS 28, OR AASHTO-H-218) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
  - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER FOOT. PIPE SHALL BE WRAPPED WITH A #1 (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH.
  - GRAVEL - THE GRAVEL LAYER (NO. 51 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
  - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
  - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT POINT AND MONITOR PERFORMANCE OF THE FILTER.
  - A 4" LAYER OF PEA GRAVEL (1/2" TO 3/4" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
- THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1,000 SQUARE FEET OF SURFACE AREA).**
- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SUBMERGED GRAVEL WETLANDS (M-2)**

- DURING THE FIRST YEAR OF OPERATION, THE OWNER SHALL INSPECT THE FACILITY AFTER EVERY HEAVY STORM AND REPLACE VEGETATION AS NEEDED.
- THE OWNER SHALL REMOVE SEDIMENT ACCUMULATED IN THE PRETREATMENT AREAS AS NECESSARY.
- SIGNS OF UNEVEN FLOW WITHIN THE WETLAND MAY MEAN THAT THE GRAVEL OR UNDERDRAIN IS CLOGGED. THE GRAVEL OR UNDERDRAIN SHALL BE REMOVED, CLEANED, AND REPLACED, AS NEEDED BY THE OWNER.
- THE OWNER SHALL ENSURE A DENSE STAND OF WETLAND VEGETATION IS MAINTAINED THROUGHOUT THE LIFE OF THE FACILITY AND REPLACE VEGETATION AS NEEDED.
- THE OWNER SHALL ENSURE THE INLETS AND OUTLETS TO EACH GRAVEL WETLAND CELL ARE FREE FROM DEBRIS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *[Signature]* Date: 2-3-2020  
 Chief, Planning & Development: *[Signature]* Date: 2/3/20  
 Chief, Development Engineering Division: *[Signature]* Date: 1-23-20

**GLW** PLANNING | ENGINEERING | SURVEYING  
 3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM  
 PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4196

**OPERATION AND MAINTENANCE SCHEDULE FOR 1-3 (GRAVEL WETLAND CONTROL STRUCTURE)**

- INSPECTIONS SHALL BE PERFORMED SEMI-ANNUALLY AND AFTER ANY HEAVY RAIN EVENTS BY THE OWNER TO CHECK FOR CLOGGING, DEBRIS, CRACKS, ETC.
- ALL PIPE CONNECTIONS AND JOINTS MUST REMAIN WATER-TIGHT. ANY FAILURES IN GROUTING AND/OR SEALANTS MUST BE IMMEDIATELY REPAIRED.
- THE AREA ON AND AROUND THE STRUCTURE SHALL BE CLEANED, CLEARED, AND MOWED.
- THE OUTFALL SHALL BE CHECKED FOR DAMAGE AND DEBRIS.
- THE OUTFALL RIP-RAP AND BELOW SHALL BE CHECKED FOR EROSION.

**SUBMERGED GRAVEL WETLAND A** SCALE: 1" = 20'



**OPERATION AND MAINTENANCE SCHEDULE FOR 1-3 (GRAVEL WETLAND CONTROL STRUCTURE)**

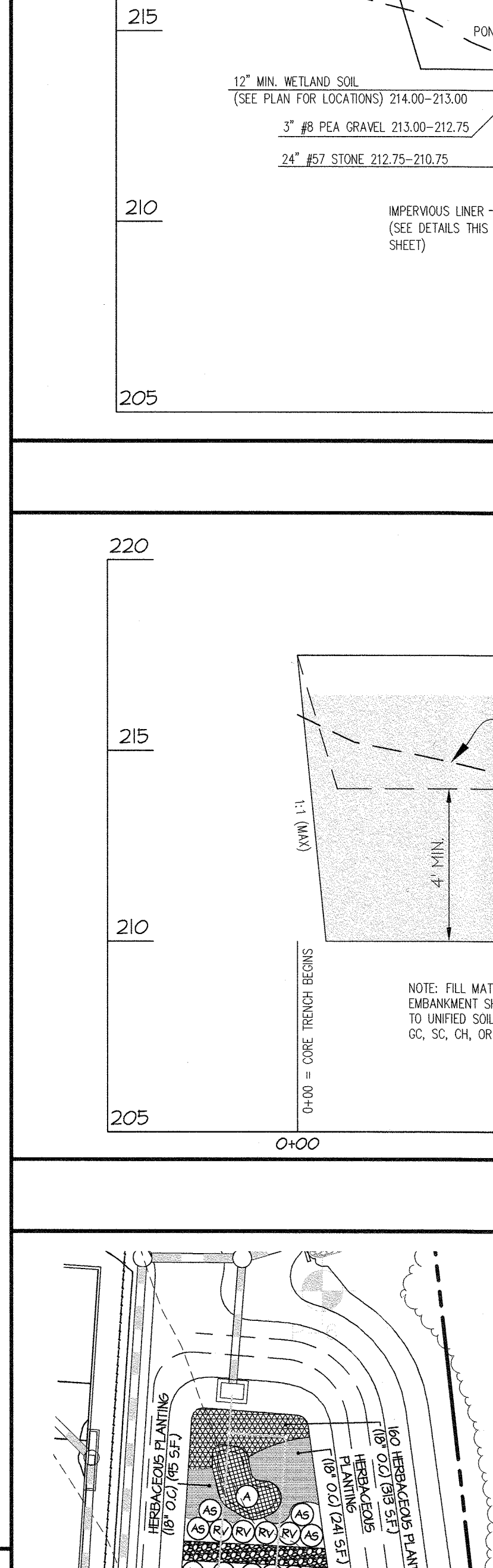
DESIGNED BY	DRAWN BY	CHECKED BY	DATE	REVISION	BY	APPR.
EWM	EWM	TMR				

**OWNER/DEVELOPER:**  
 GIANT LANDOVER DIVISION  
 1385 HANCOCK STREET  
 10TH FLOOR  
 QUINCY, MA 02169  
 ATTN: REDAS ZAKALSKIS  
 TEL: 617-792-7880

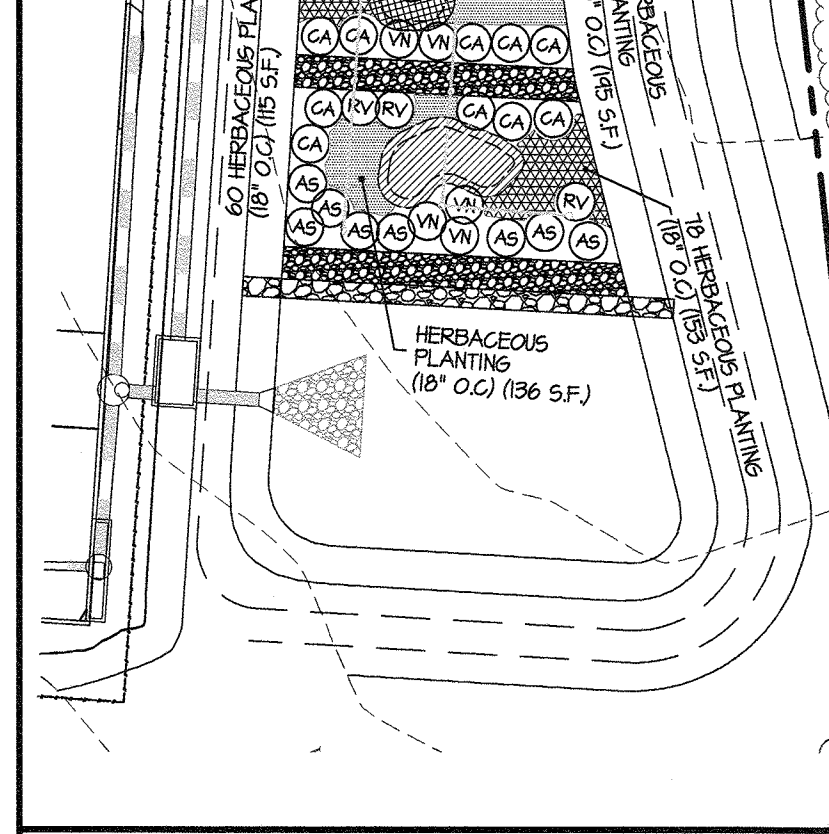
**PROFESSIONAL CERTIFICATION**  
 I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285  
 EXPIRATION DATE: MARCH 17, 2021

*[Signature]*  
 ELECTION DISTRICT No. 6

**SCALE**  
 TYPE (PER HIDE): SUBMERGED GRAVEL WETLAND (M-2)  
 NON - HIDE 578 FACILITY  
 TOTAL DRAINAGE AREA TO FACILITY (1-YR) = 2.95 AC  
 TOTAL DRAINAGE AREA TO FACILITY (10-YR) = 3.51 AC  
 TOTAL ESDV PROVIDED = 19,944 CU-FT  
 LOW-FLOW OUTFALL: SLOTTED 6" UNDERDRAIN SYSTEM W/ 4" ORIFICE  
 BOTTOM OF FACILITY = 214.00  
 HIGH-FLOW OUTFALL: RISER STRUCTURE (1-3)  
 10 YR WSEL = 216.46  
 TOP OF FACILITY = 217.50

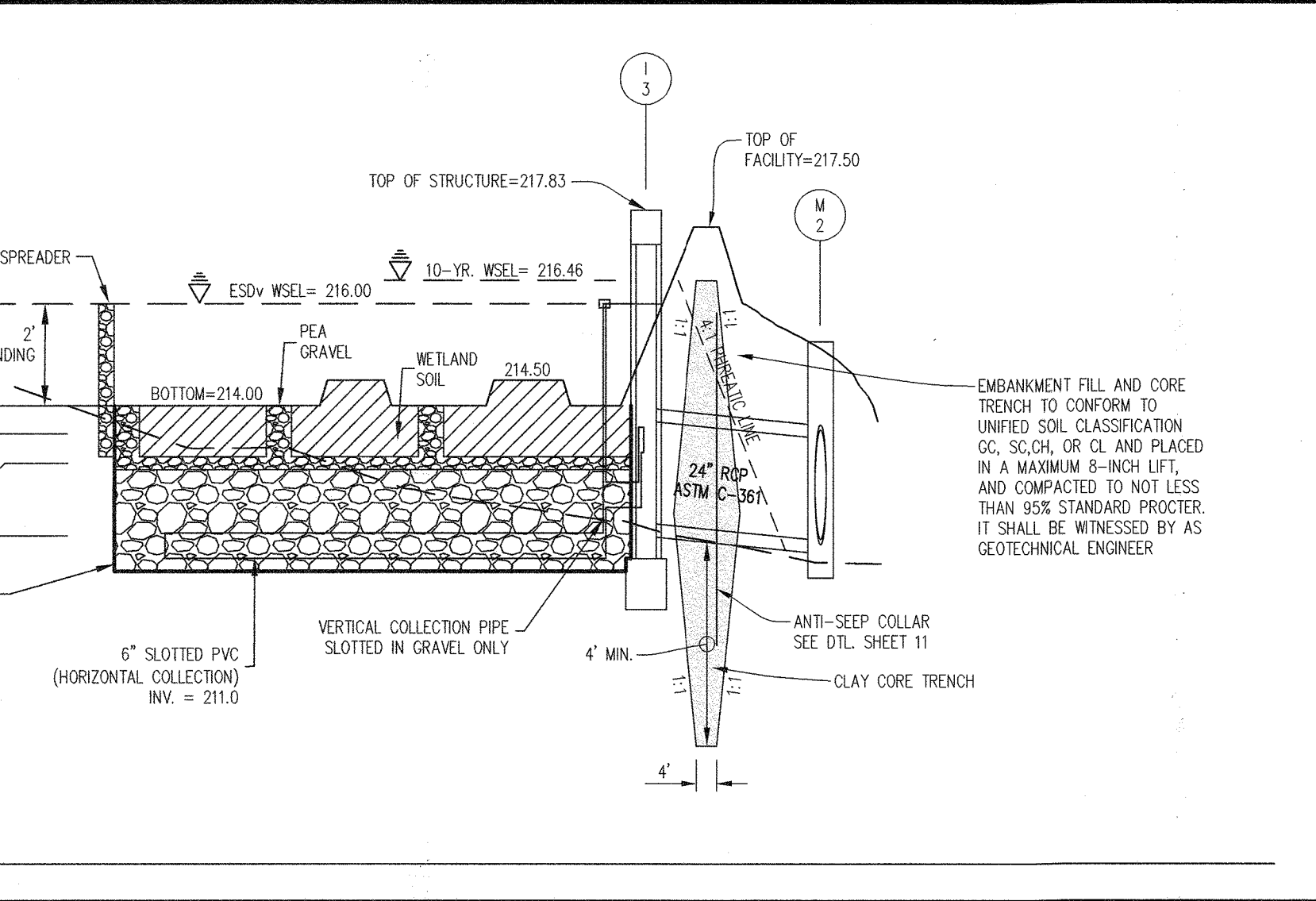


**SUBMERGED GRAVEL WETLAND A** SCALE: 1" = 20'

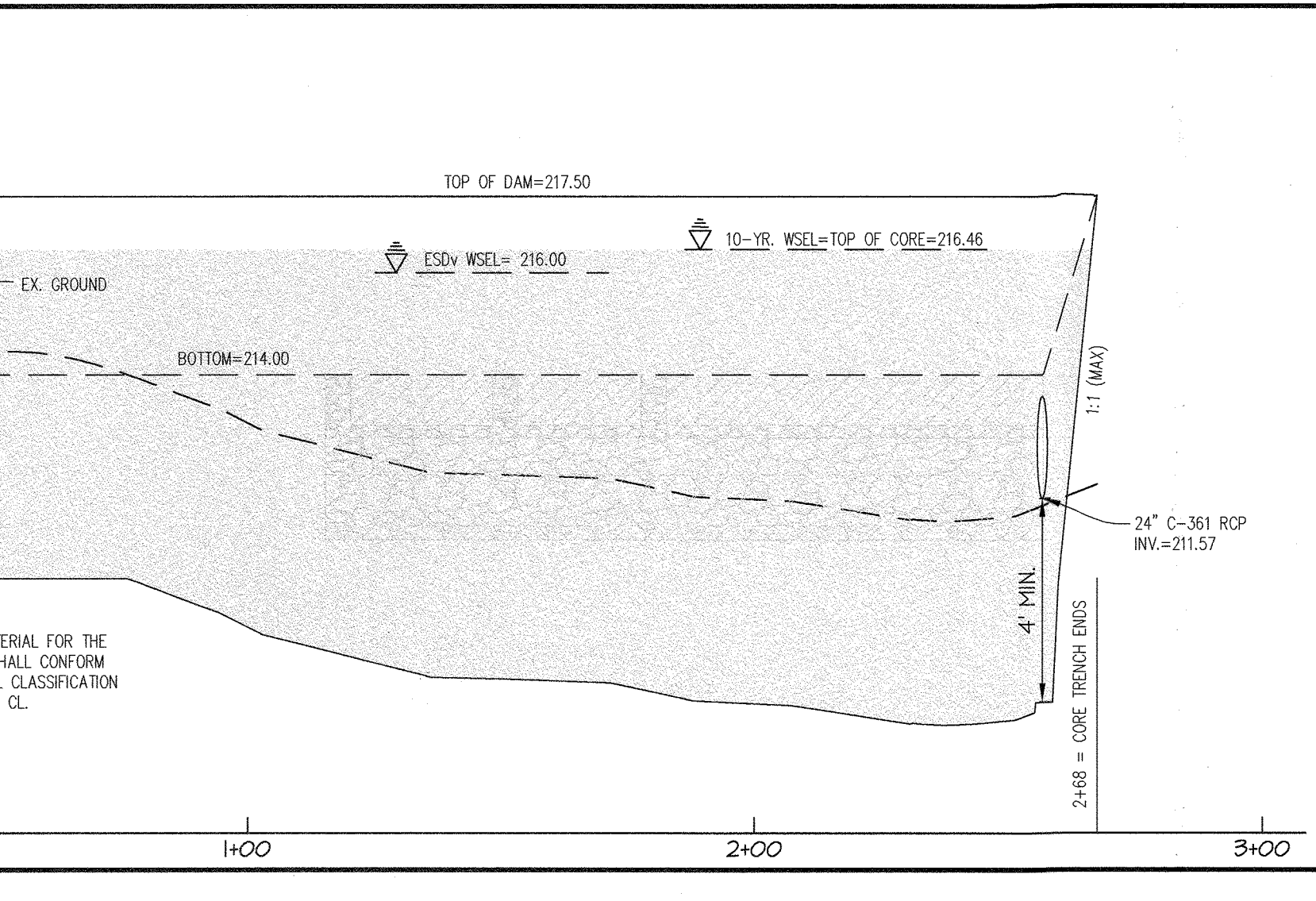


**SUBMERGED GRAVEL WETLAND LANDSCAPE PLAN** SCALE: 1" = 30'

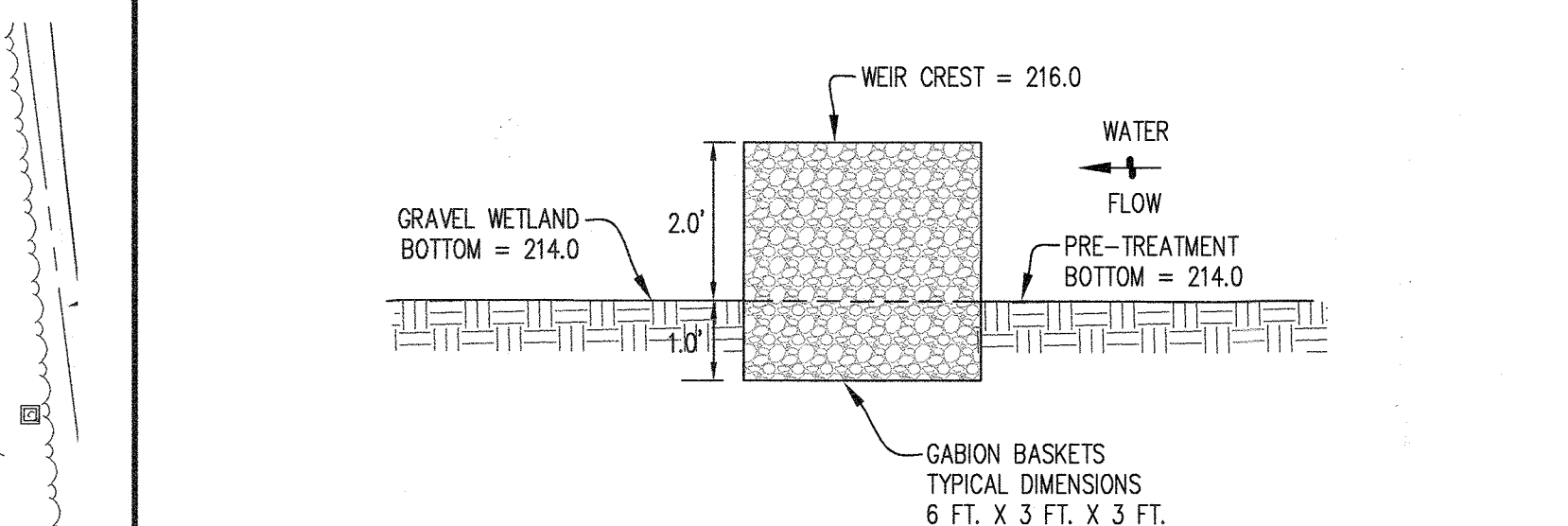
**SEE AS-BUILT SHEET 3 OF 4 08/19/2020**



**SECTION 'A-A'** SCALE: 1" = 30' (HORIZ)  
SCALE: 1" = 3' (VERT)



**DAM CENTERLINE PROFILE** SCALE: 1" = 30' (HORIZ)  
SCALE: 1" = 3' (VERT)



**GABION WEIR DETAIL** SCALE: N.T.S.

**SUBMERGED GRAVEL WETLAND PLANT LIST**

SYMBOL	QUANT.	NAME (Botanical/Common)	Comments
[Symbol]	273	Carex stricta / Tussock Sedge	Mixture of 80% Carex & 20% Lobelia evenly distributed. Total of 341 plugs at 18" o.c. evenly spaced.
[Symbol]	68	Lobelia cardinalis / Cardinal Flower	
[Symbol]	100	Helianthus angustifolius / Swamp Sunflower	Plugs @ 18" o.c. (evenly spaced)
[Symbol]	298	Iris versicolor / Blue Flag Iris	4" pot @ 18" o.c. (evenly spaced)
[Symbol]	112	Scirpus pungens / Common Three-square	Plugs @ 18" o.c. (evenly spaced)
[Symbol]	89	Scirpus tabernaemontani (S. validus) / Soft Stem Bulrush	Plugs @ 18" o.c. (evenly spaced)
[Symbol]	17	Alnus serrulata / Smooth Alder	#1 container
[Symbol]	10	Clethra alnifolia / Sweet Pepperbush	#1 container
[Symbol]	10	Rhododendron viscosum / Swamp Azalea	#1 container
[Symbol]	5	Viburnum nudum / Possumhaw Viburnum	#1 container

**SUBMERGED GRAVEL WETLAND LANDSCAPE PLAN** SCALE: 1" = 30'

**STORMWATER MANAGEMENT PLAN**

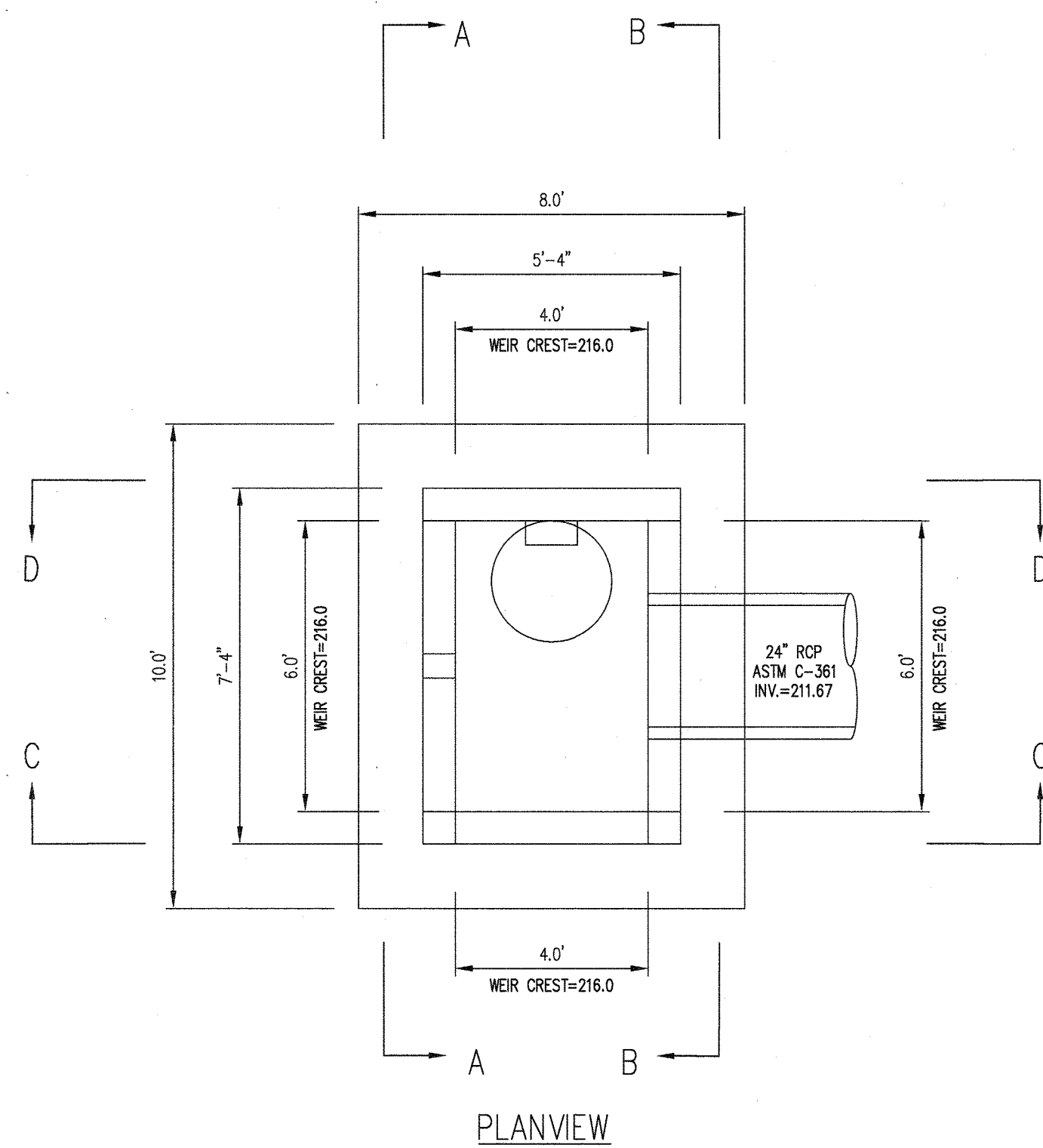
**GIANT DISTRIBUTION CENTER**  
**EXETER INDUSTRIAL PARK**  
**PARCEL 19 & PARCEL A**

SCALE: AS SHOWN  
 ZONING: M-2  
 G. L. W. FILE NO.: 12060

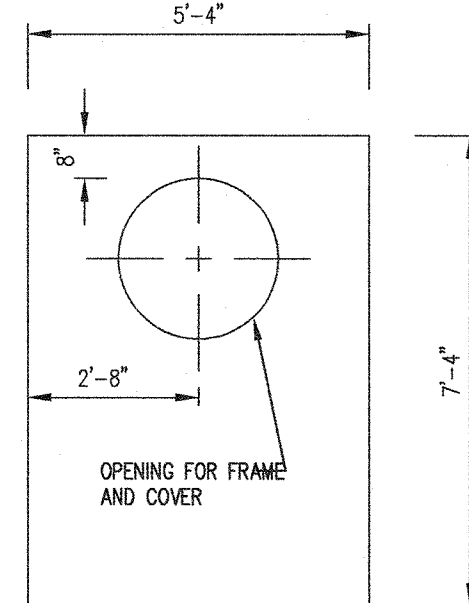
DATE: JAN, 2020  
 TAX MAP - GRID: 48-8  
 SHEET: 10 OF 13

L:\CAD\DRAWINGS\12060\PLANS BY GLW\PARCEL 19\SPR\2060-09-10-11-SWM.dwg  
 PLOTTED: 1/20/2020 2:09 PM, LAST SAVED: 1/20/2020 8:47 AM, PLOTTED BY: Anne E. Bell  
 © GLW 2019

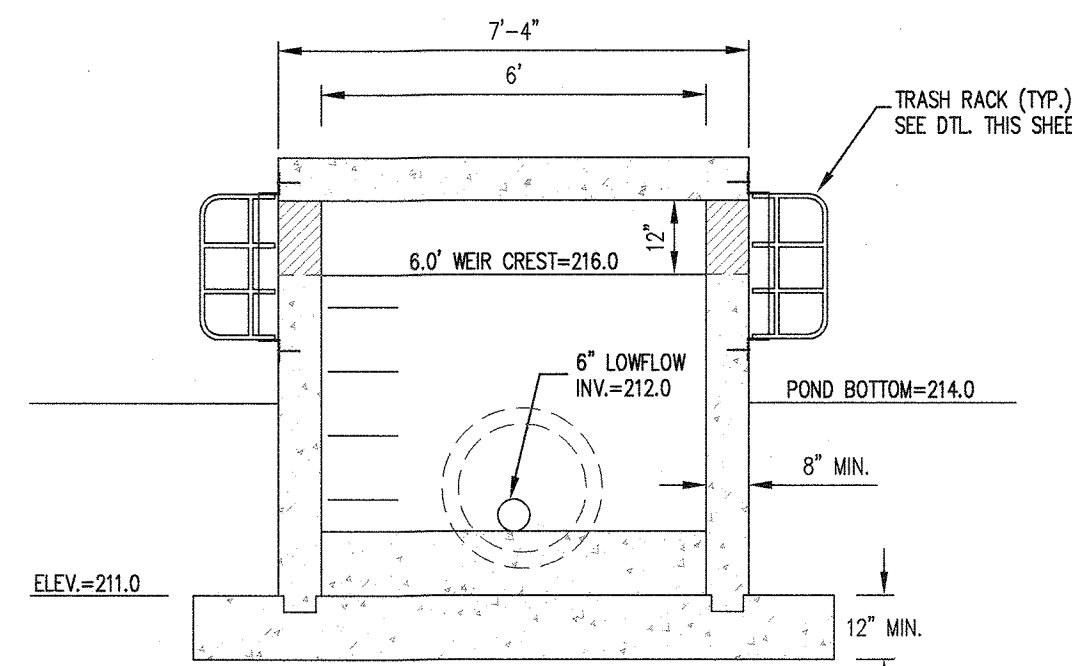




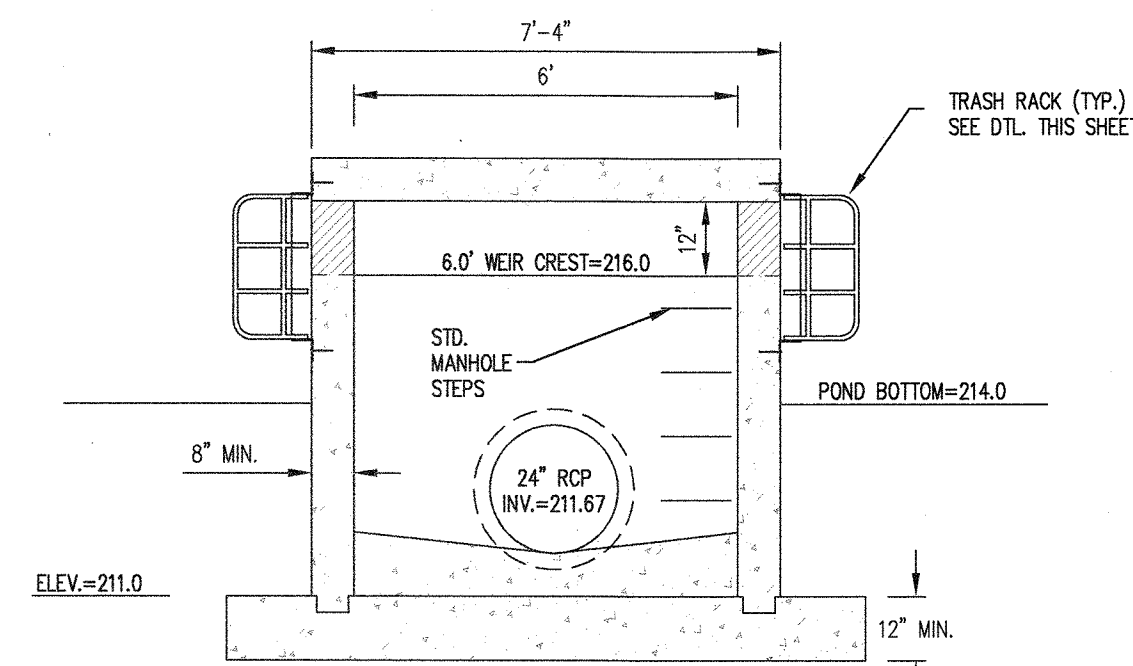
PLANVIEW



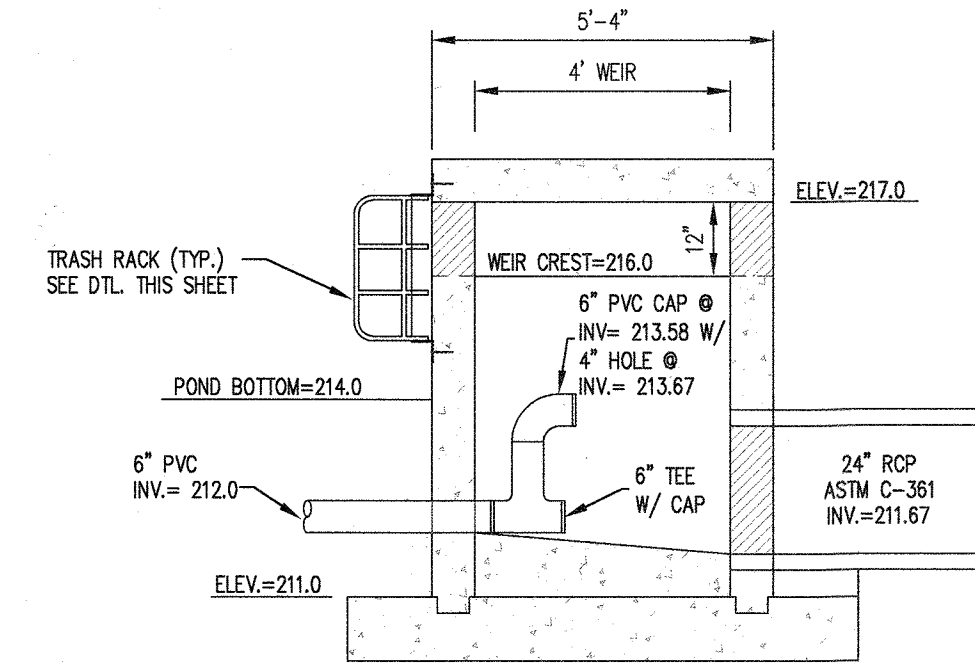
TOP SLAB



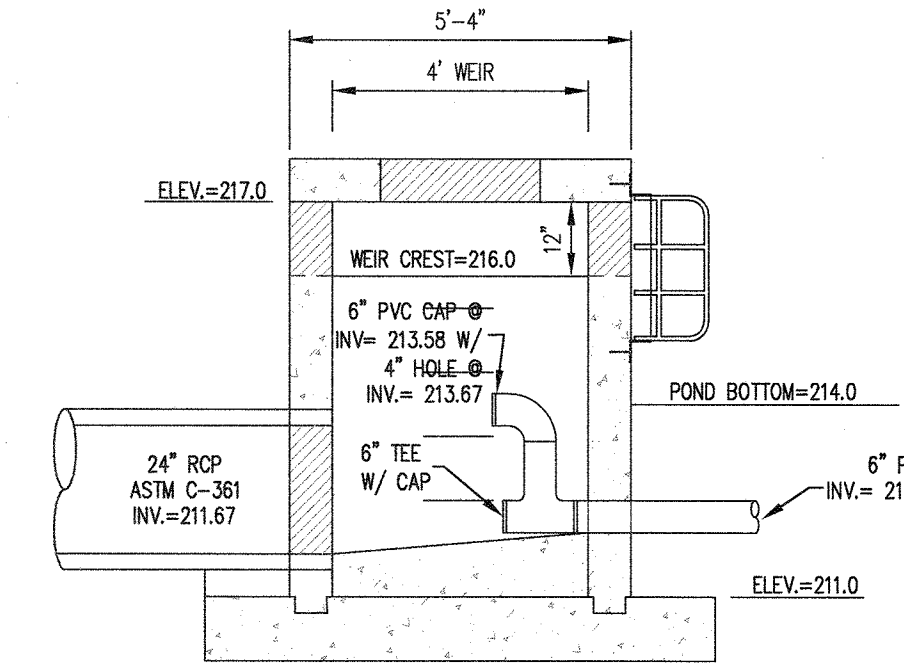
SECTION A-A



SECTION B-B



SECTION C-C

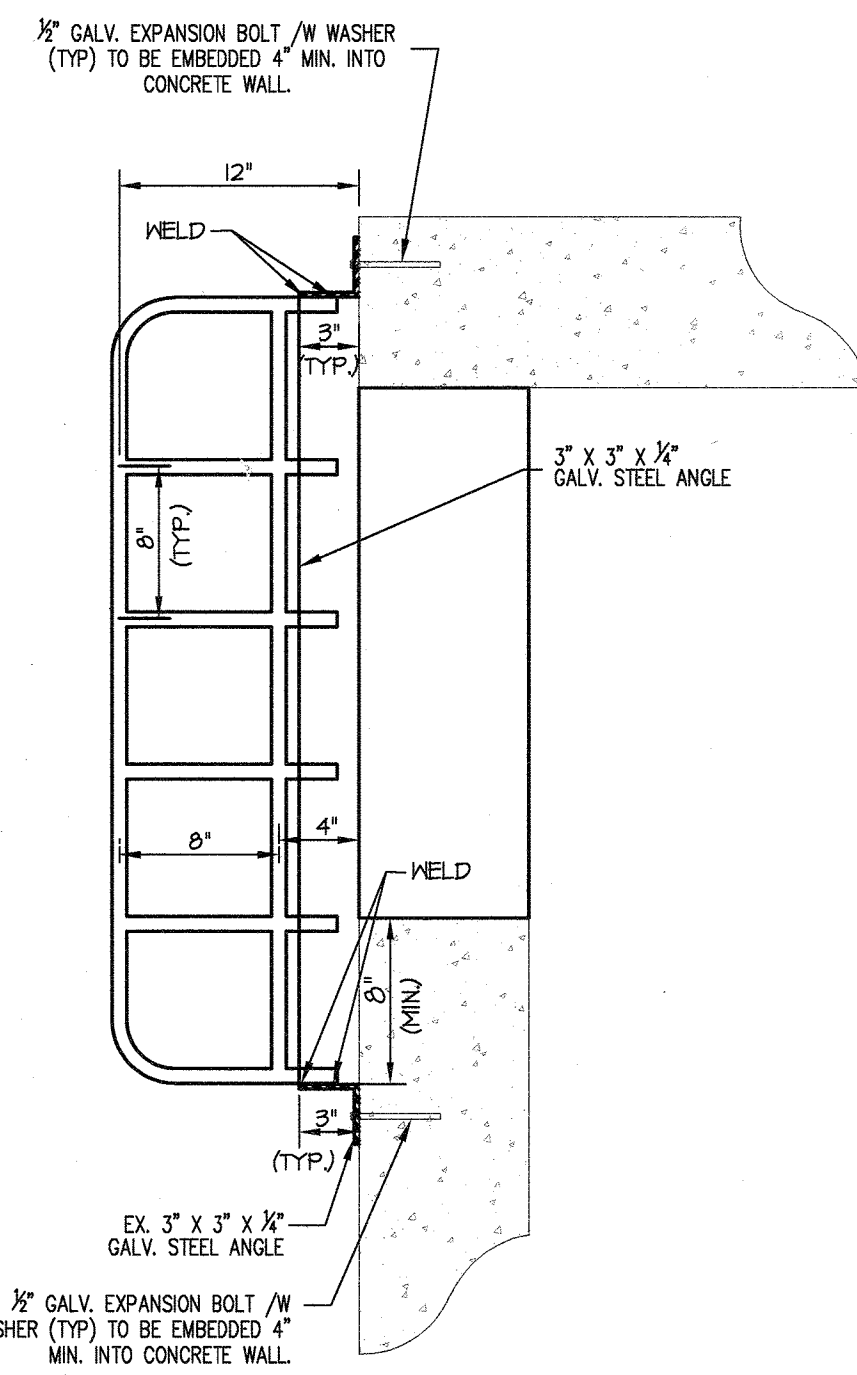


SECTION D-D

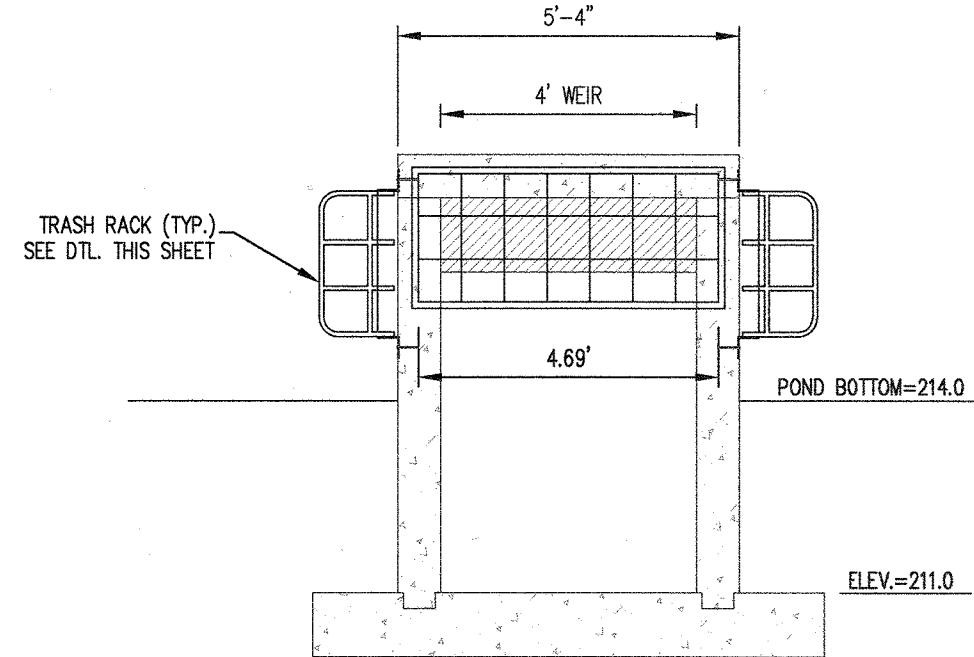
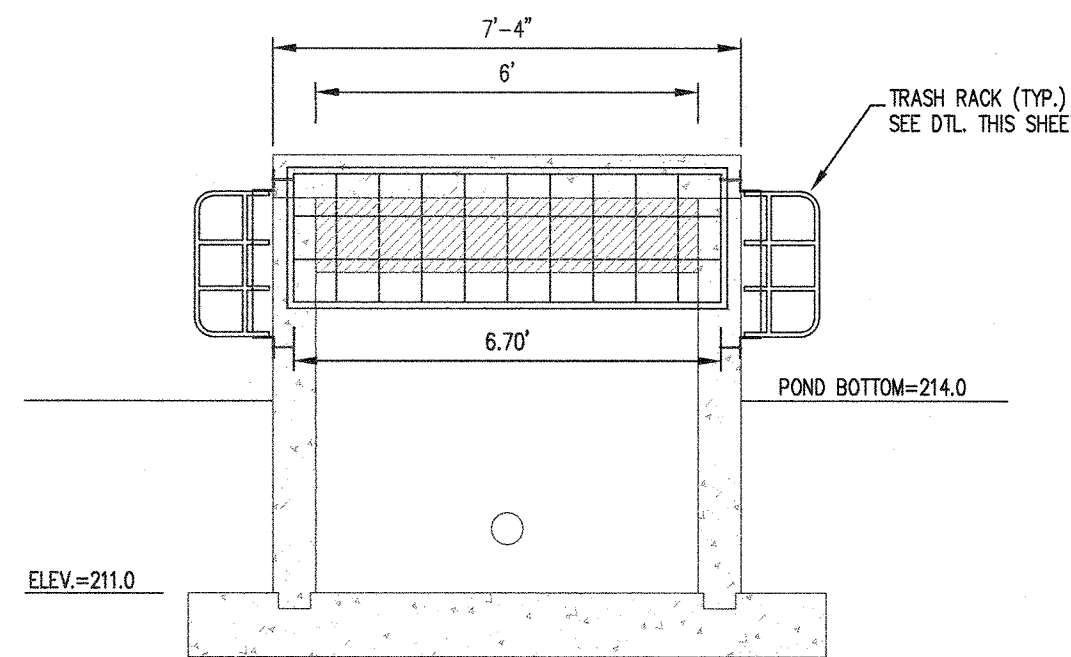
RISER STRUCTURE (1-3) DETAILS

SCALE: 1"=3'

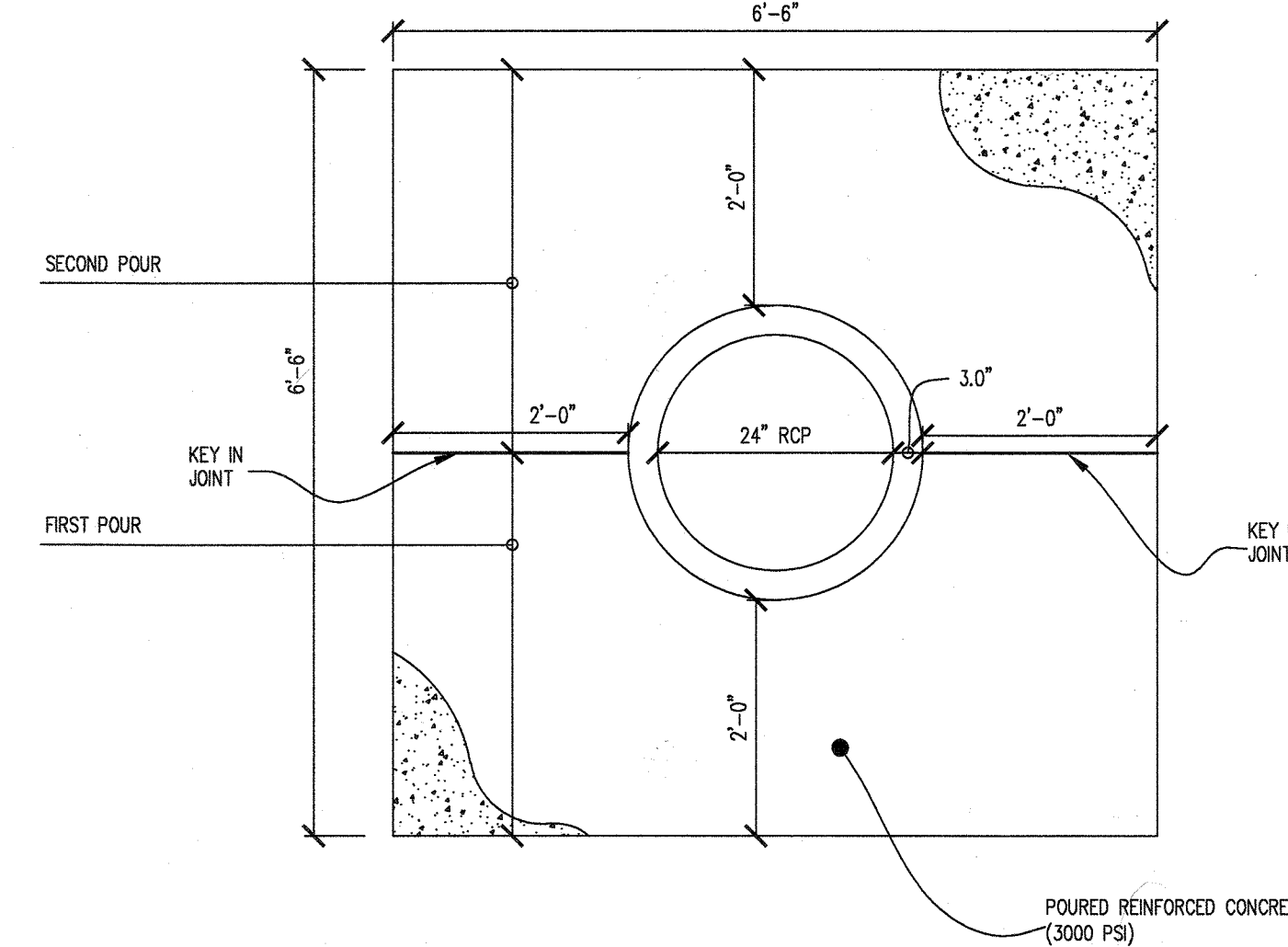
NOTE: PRE-CAST CONCRETE RISER STRUCTURAL DESIGN TO BE PREPARED BY CONCRETE MANUFACTURER AND SUBMITTED WITH SHOP DRAWING.



TRASH RACK DETAIL (TYPICAL)  
N.T.S.



TRASH RACK DETAILS



ANTI-SEEP COLLAR DETAIL  
N.T.S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

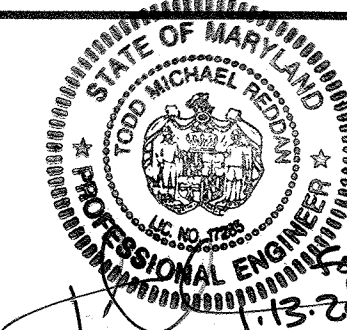
Director: *[Signature]* Date: 2-3-2020  
 Chief, Division of Land Development: *[Signature]* Date: 2/3/20  
 Chief, Development Engineering Division: *[Signature]* Date: 1/23/20

**GLW**  
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 3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
 PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
BWM				
BWM				
TMR				

OWNER/DEVELOPER:  
 GIANT LANDOVER DIVISION  
 1385 HANCOCK STREET  
 10TH FLOOR  
 QUINCY, MA 02169  
 ATTN: REDAS ZAKALSKIS  
 TEL: 617-792-7880

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 EXPIRATION DATE: MARCH 17, 2021



SEE AS BUILT SHEET 4 OF 4 08/19/2020

STORMWATER MANAGEMENT DETAILS

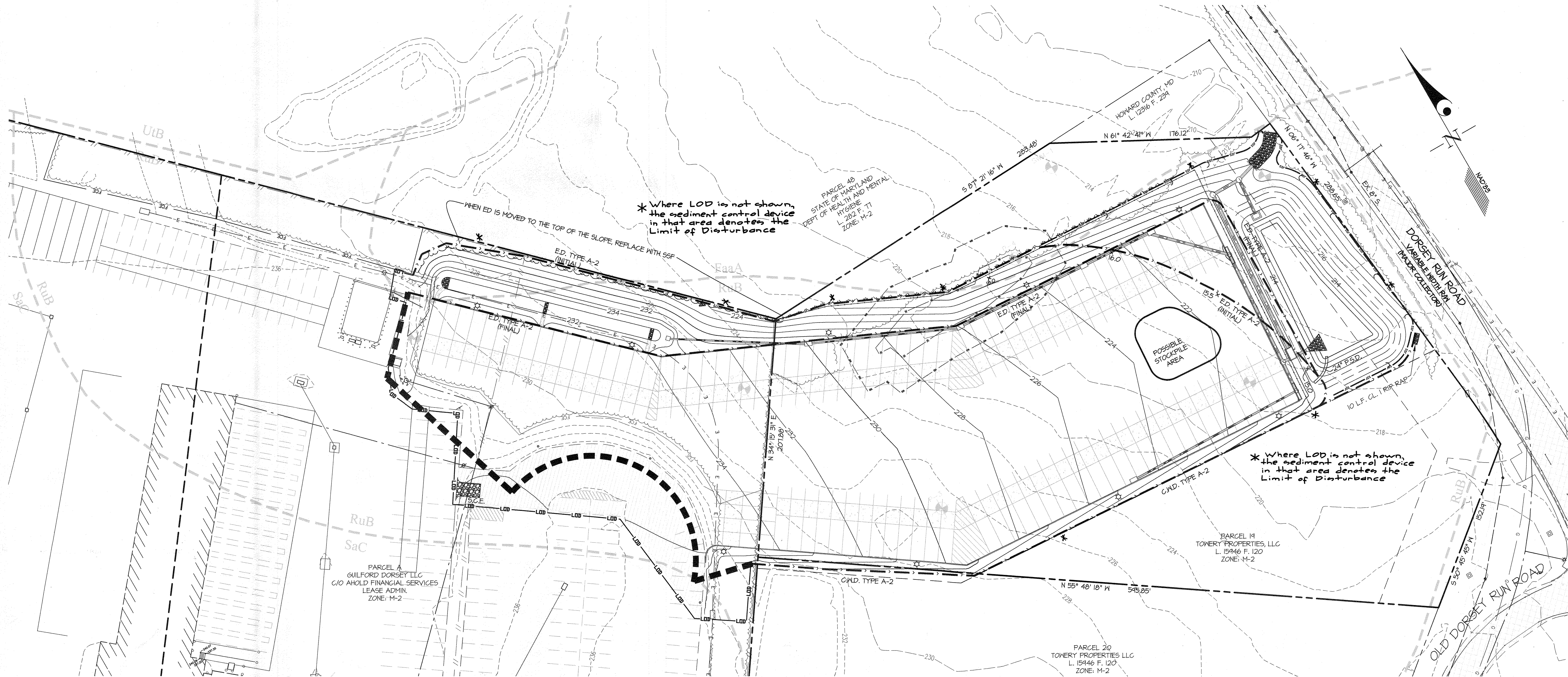
GIANT DISTRIBUTION CENTER  
 EXETER INDUSTRIAL PARK  
 PARCEL 19 & PARCEL A

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	M-2	12060
DATE	TAX MAP - GRID	SHEET
JAN, 2020	48-8	11 OF 13

ELECTION DISTRICT No. 6

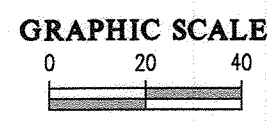
HOWARD COUNTY, MARYLAND





**SOIL TYPES**

Symbol	Description	Soil Type	Kv
FaaA	Fallington Sandy Loam, 0 to 2 percent slopes	D	0.24
RuB	Russell and Beltsville, 2 to 5 percent slopes	C	0.43
SaC	Sassafras Loam, 5 to 10 percent slopes	B	0.32



**LEGEND**

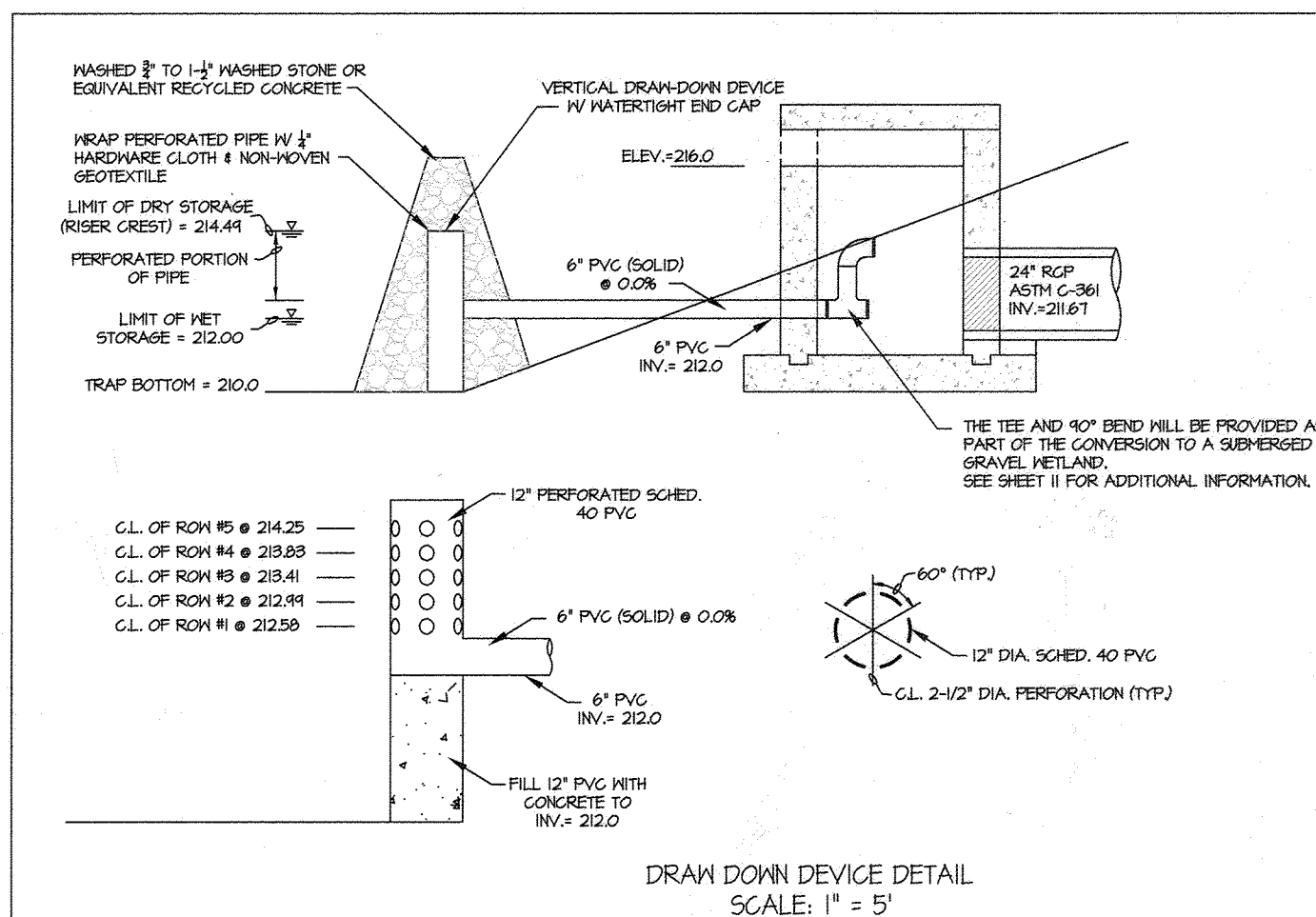
- 600 --- EXISTING CONTOUR
- 600 --- PROPOSED CONTOUR
- L-O-D- LIMIT OF DISTURBANCE
- SSF --- PROPOSED SUPER SILT FENCE
- EARTH DIKE --- EARTH DIKE
- S.C.E. STONE CONSTRUCTION ENTRANCE
- SOIL GROUP LIMIT --- SOIL GROUP LIMIT
- P.S.D. PIPE SLOPE DRAIN
- 5# SOIL BORING

**SEQUENCE OF CONSTRUCTION**

1. APPLY FOR GRADING PERMIT AND SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE INSPECTOR. OBTAIN GRADING PERMIT FROM THE INSPECTOR AT THE MEETING. DURATION: 1 day.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE (SCE), CLEANWATER DIVERSION (CMD), PIPE OUTLET SEDIMENT TRAP, AND SUPER SILT FENCE (SSF) AS SHOWN ON THESE PLANS. IF CLEARING AND GRADING IS REQUIRED TO INSTALL THE PERIMETER DEVICES, IT MUST BE LIMITED TO JUST THAT AREA. DURATION: 2 weeks.
3. INSTALL THE 24" PIPE SLOPE DRAIN (PSD) AND CONSTRUCT THE EARTH DIKE (ED) AT ITS 'INITIAL' LOCATION BEGINNING AT THE DOWNSTREAM END AND WORKING UPHILL. DURATION: 1 week.
4. BEGIN MASS GRADING. AS THE SITE IS BROUGHT UP TO GRADE, THE EARTH DIKE WILL CONTINUE TO BE RELOCATED TO THE TOP OF THE FILL SLOPE PER H.S.C.D. DET. B-4 AT THE END OF EACH WORKING DAY UNTIL IT REACHES ITS 'FINAL' LOCATION. THE CONTRACTOR MUST MAINTAIN POSITIVE DRAINAGE ALONG THE EARTH DIKE. DURATION: 1 month.
5. INSTALL STORM DRAINS AND PERFORM OTHER SITE UTILITY CONSTRUCTION. DURATION: 1 month.
6. FLUSH AND CLEAN STORM DRAIN SYSTEM. DURATION: 1 month.
7. CONVERT THE SEDIMENT TRAP TO A SUBMERGED GRAVEL WETLAND AND CONSTRUCT THE MICRO BIO-RETENTION FACILITY. DURATION: 2 weeks.
8. WHEN PERMISSION HAS BEEN GRANTED BY THE SEDIMENT CONTROL INSPECTOR, AND ALL AREAS DRAINING TO THE SEDIMENT CONTROL DEVICES HAVE BEEN STABILIZED, REMOVE THE SEDIMENT CONTROLS. CONTRACTOR IS TO IMMEDIATELY STABILIZE AREAS DISTURBED DURING THE REMOVAL OF THE DEVICES. DURATION: 1 week.
9. INSTALL SURFACE COURSE PAVING AND PARKING LOT STRIPING. DURATION: 2 weeks.

NOTE: WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, SOME OF THE ITEMS DESCRIBED ABOVE MAY BE PERFORMED CONCURRENTLY.

* WHERE LOD IS NOT SHOWN, THE SEDIMENT CONTROL DEVICE IN THAT AREA DENOTES THE LIMIT OF DISTURBANCE



**NO AS-BUILT INFORMATION AS OF 08/10/2020**  
THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

SEDIMENT CONTROL DESIGN INFORMATION		TRAP 2A (ST-1)
DRAINAGE AREA - INITIAL	3.1	ACRES
DRAINAGE AREA - INTERIM	3.4	ACRES
DRAINAGE AREA - FINAL	22.30	ACRES
TOTAL STORAGE REQUIRED	22,310	CF
TOTAL STORAGE PROVIDED	22,310	CF
NET STORAGE REQUIRED	1,020	CF
NET STORAGE PROVIDED	1,020	CF
DRY STORAGE REQUIRED	15,290	CF
DRY STORAGE PROVIDED	15,290	CF
TRAP BOTTOM ELEVATION	210.00	FT
TRAP DIMENSIONS	VARIABLES	FT x FT
RISER CREST (DRY STORAGE) ELEVATION	214.44	FT
OUTLET (NET STORAGE) ELEVATION	212.00	FT
CLEANOUT ELEVATION	210.00	FT
TOP OF EMBANKMENT ELEVATION	216.30	FT
SIDE SLOPE	2:1	H:V RATIO
TOP OF EMBANKMENT WIDTH	4	FT
PRINCIPAL SPILLWAY MATERIAL (BARREL, RISER, ANTI-SEEP COLLAR)	CONCRETE	
BARREL DIMENSIONS	4 x 6	FT
TRASH RACK DIAMETER	24	IN
TRASH RACK HEIGHT	15	IN
ANTI-SEEP COLLAR DIMENSIONS	152x132	FT x FT
OUTLET PROTECTION - LENGTH	15	FT
OUTLET PROTECTION - WIDTH	15	FT
OUTLET PROTECTION - DEPTH	18	IN

**BUILDER'S CERTIFICATE**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HSCD.

Signature: [Signature] DATE: 12/30/19

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

Signature: [Signature] DATE: 1-6-20

Signature: [Signature] DATE: 1/7/20

**GLW**  
PLANNING | ENGINEERING | SURVEYING  
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20886 | GLWPA.COM  
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DEV	DATE	REVISION	BY	APPR.
DRAWN BY:	DEV				
CHECKED BY:	TMR				

**OWNER/DEVELOPER:**  
GIANT LANDOVER DIVISION  
1385 HANCOCK STREET  
10TH FLOOR  
QUINCY, MA 02169  
ATTN: REDAS ZAKALSKIS  
TEL: 617-792-7880

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17285  
EXPIRATION DATE: MARCH 17, 2021

**SEDIMENT CONTROL PLAN**  
**GIANT DISTRIBUTION CENTER**  
**EXETER INDUSTRIAL PARK**  
**PARCEL 19 & PARCEL A**  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE No.
1"=40'	M-2	12060
DATE	TAX MAP - GRID	SHEET
NOV. 2019	48-8	12 OF 13



