

SERVICE & SUPPORT FACILITY PHASE II: BUILDING 32

HOWARD COUNTY SITE DEVELOPMENT PLAN #SDP-16-072

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
 LOCATED SOUTHWEST OF INTERSECTION OF ROUTE 29 & 32
 HOWARD COUNTY, MD

DEVELOPER & ENGINEER CERTIFICATES

1) BY THE DEVELOPER:
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS FOR SEDIMENT AND EROSION CONTROL, AND THAT ANY RESPONSIBLE PERSONAL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

Alison M. Carey 11/6/16
 SIGNATURE OF DEVELOPER DATE

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

R E Byrne 10/27/2016
 DESIGN ENGINEER SIGNATURE DATE

Richard E. Burgoyne 20906
 PRINTED NAME REGISTRATION NUMBER

3) CERTIFICATION BY PROFESSIONAL:
 THERE ARE NO WETLANDS ON THE SITE THAT WILL BE DISTURBED. THEREFORE, THE REQUIREMENT OF 401 AND 404 WETLANDS PERMITS FORM THE STATE OF MARYLAND AND CORPS OF ENGINEERS ARE NOT NEEDED.

Richard E. Burgoyne 10/27/2016
 PROFESSIONAL'S SIGNATURE DATE

R E Burgoyne
 PRINTED NAME

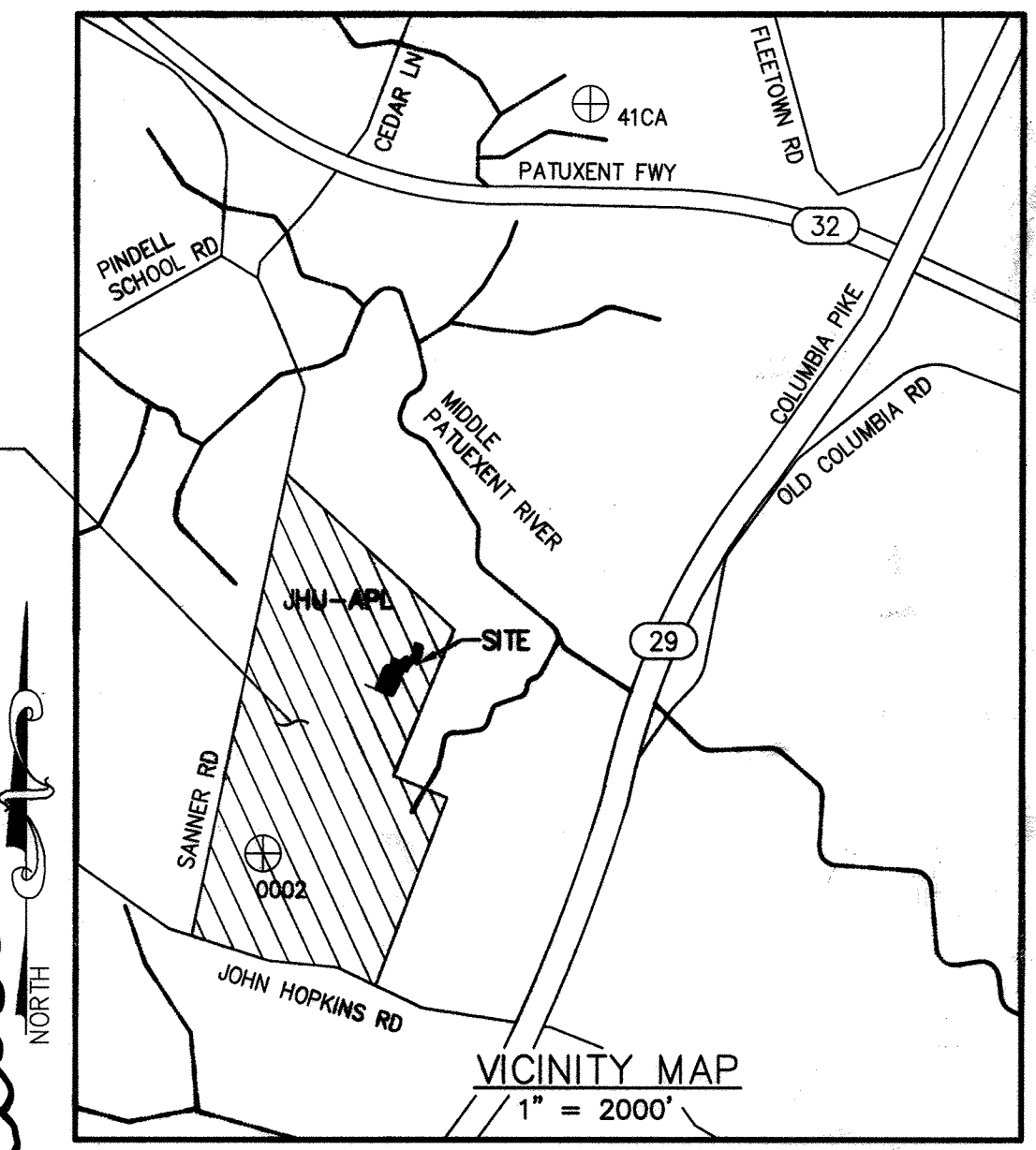
GENERAL NOTES

- WATER TO THE PROPERTY IS PUBLIC (HOWARD COUNTY); WATER DISTRIBUTED WITHIN THE PROPERTY BOUNDARIES IS PRIVATE.
- SEWER DISCHARGE IS TO PUBLIC SYSTEM (HOWARD COUNTY); SEWER COLLECTION WITHIN THE PROPERTY BOUNDARIES IS PRIVATE.
- THE FLOOD PLAIN LIMITS FOR THIS PROJECT WERE TAKEN FROM HOWARD COUNTY STUDY. THERE IS NO FLOOD PLAIN WITHIN THE LIMITS OF THIS PLAN.
- SOIL MAP BASED ON THE SOIL SURVEY OF HOWARD COUNTY (2008) PROVIDED BY THE NATIONAL RESOURCES CONSERVATION SERVICE (NRCS).
- FOREST CONSERVATION OBLIGATION ADDRESSED WITH F-02-040. NO IMPACT TO THE FOREST CONSERVATION EASEMENT WITHIN THE LIMITS OF THIS PLAN.
- ALL DISTURBANCE IS WITHIN DRAINAGE SUB-WATERSHED 'H' WHICH HAS NO EXISTING STORMWATER MANAGEMENT FACILITIES.
- THE SUBJECT PROPERTY IS ZONED PEC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- LANDSCAPING WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE, THE LANDSCAPE MANUAL, AND MDE STORMWATER MANAGEMENT REQUIREMENTS.
- THE TOPOGRAPHIC AND UTILITY INFORMATION SHOWN IN THIS DEVELOPMENT PLAN, WAS OBTAINED FROM FIELD SURVEYS PERFORMED BY WHITMAN, REQUARDT AND ASSOCIATES (TOPOGRAPHY), AVAILABLE RECORDS AND APPLIED PHYSICS LABORATORY (UTILITIES) CONSULTANTS IN EARLY 2004 AND MAY NOT REFLECT EXACT CONDITIONS. WHILE EVERY EFFORT HAS BEEN MADE TO ENSURE THE ACCURACY OF THESE DRAWINGS IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY CURRENT TOPOGRAPHIC AND UTILITY INFORMATION TO HIS OWN SATISFACTION. THE CONTRACTOR MUST FIELD VERIFY EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR MUST TEST PIT TO DETERMINE THE EXACT LOCATION AT ALL CROSSINGS IN ADVANCE OF CONSTRUCTION.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE HOWARD COUNTY AND MSHA SPECIFICATIONS AND DETAILS FOR CONSTRUCTION, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT NO COST TO THE OWNER.
- ACCESS TO THE SECURE AREA OF THE APPLIED PHYSICS LABORATORY (WITHIN THE FENCED ENCLOSURE) MUST BE ARRANGED IN ADVANCE BY CONTACTING THE APL CONSTRUCTION MANAGER, DAVE DELGADO, (443) 778-0972.
- SECURITY MUST BE MAINTAINED WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR IS NOT AUTHORIZED TO TAKE PHOTOGRAPHS.
- THE CONTRACTOR SHALL CONTACT MR. DAVID DELGADO (443) 778-0972 AT LEAST FIVE DAYS BEFORE STARTING UTILITY WORK. THE CONTRACTOR SHALL NOT OPERATE ANY EXISTING WATER OR GAS MAIN VALVES WITHOUT APPROVAL BY JHU-APL.
- THE CONTRACTOR SHALL PERFORM ALL WORK PER AGREED UPON SCHEDULE. NORMAL WORKING HOURS ARE 7:00 A.M. TO 5:00 P.M., MONDAY THROUGH FRIDAY. CONNECTING TO THE EXISTING PIPING SHALL BE SCHEDULED TO BE PERFORMED ON A WEEKEND.
- ALL DISTURBED ROAD OR PARKING LOT PAVEMENT MUST BE REPAIRED AND IN FULL OPERATING CONDITION BY 5:00 AM OF ANY WORKING DAY.
- THE CONTRACTOR SHALL PERMANENTLY SEED AND STABILIZE ALL DISTURBED AREAS THAT ARE NOT TO BE PAVED. SEED MIX SHALL BE THE JHU-APL SEED MIX AS DEFINED IN THE SPECIFICATIONS.
- ALL DRIVEWAYS ARE PRIVATELY OWNED AND MAINTAINED.
- THE AREA SHOWN IS LOCATED ON TAX MAP #41.
- ALL SITE UTILITIES ARE THE PROPERTY OF JHU-APL. UTILITY CROSSINGS SHOWN ON PLAN ARE BASED ON RECORD DATA PROVIDED BY JOHN HOPKINS APPLIED PHYSICS LAB.
- TRAFFIC SHALL BE MAINTAINED BY THE CONTRACTOR ALONG EXISTING ROADWAYS DURING PROPOSED WORK, AT ALL TIMES.
- THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS SO AS NOT TO DAMAGE EXISTING ADJACENT FACILITIES AND STRUCTURES. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION OR BETTER UNLESS NOTED OTHERWISE.
- ACCESS TO ALL EXISTING FACILITIES SHALL BE MAINTAINED AT ALL TIMES.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNER OF ANY DEVIATION FROM THESE PLANS PRIOR TO ANY CHANGE BEING MADE. ANY CHANGES MADE WITHOUT WRITTEN AUTHORIZATION BY THE OWNER WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- SURFACE STREETS AND PARKING AREAS SHALL BE MAINTAINED IN A CLEAN CONDITION, MUD AND DUST FREE AT ALL TIMES. ADEQUATE MEANS SHALL BE PROVIDED TO CLEAN TRUCKS AND OTHER EQUIPMENT USING EXISTING SURFACED STREETS AND PARKING AREAS.
- THE CONTRACTOR SHALL MINIMIZE DAMAGE TO EXISTING TREES. ANY TREES DISTURBED BY THE CONTRACTOR SHALL BE REPLACED WITH AN EQUIVALENT SIZE AND SPECIES AT NO ADDED COST TO THE OWNER.
- ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL MEET CURRENT HOWARD COUNTY AND MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS.
- EXISTING SIGNS, GUARDRAILS AND OTHER MINOR SITE FEATURES IN THE WAY OF PROPOSED CONSTRUCTION, WHETHER OR NOT SHOWN ON THESE PLANS, SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- THERE ARE NO CONNECTIONS TO PUBLIC UTILITIES PROPOSED WITH THIS PLAN.
- IN AREAS OUTSIDE OF THE CONTRACTORS CONTROLLED ZONE TRENCH EXCAVATION AND INSTALLATION OF NEW UTILITIES SHALL BE SCHEDULED SO THAT ALL TRENCHES WILL BE BACK FILLED OR COVERED WITH STEEL PLATES AT THE END OF EACH DAY. NO TRENCHES WILL BE ALLOWED TO BE LEFT OPEN AT THE END OF EACH WORK DAY. TRENCH AREAS SHALL BE MULCHED AND TEMPORARILY SEEDED IN NON-PAVED AREA, AND TRAFFIC BEARING TEMPORARY SURFACE SHALL BE INSTALLED IN PAVED AREAS.
- THESE PLANS REFERENCE HOWARD COUNTY CONTROL MONUMENT 41EA.
- THERE ARE NO EXISTING OR NEW RECORDED EASEMENTS WITHIN THE AREA OF THIS DEVELOPMENT PLAN.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM(S), OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THERE WILL BE NO NEW EMPLOYEES ON THE PROPERTY AS A RESULT OF THIS PROJECT, THEREFORE, NO TRAFFIC STUDY IS REQUIRED.
- STORMWATER MANAGEMENT FOR THE SITE CONSISTS OF INLETS, MANHOLES, AND STORM DRAIN PIPE THAT CONVEY STORMWATER RUNOFF TO A STORMWATER AND THEN TO THE MICRO-BIOFILTRATION BASINS. ALL ON-SITE STORMWATER MANAGEMENT FACILITIES ARE PRIVATELY MAINTAINED.
- THE APPLICANT HAS 1 YEAR FROM THE APPROVAL DATE OF THE REDLINE OR SIGNATURE OF THE SDP IF RELACEMENT SHEETS ARE PROVIDED TO FILE FOR BUILDING PERMITS.

SHEET INDEX

1	C-001	COVER SHEET Contains As-Built Information
2	C-002	NOTES AND LEGEND
3	C-003	EXISTING CONDITIONS PLAN
4	C-004	DEMO PLAN
5	C-005	SITE PLAN
6	C-006	GRADING PLAN - PROPOSED CONDITION Contains As-Built Information
7	C-007	GRADING PLAN - ULTIMATE CONDITION Contains As-Built Information
8	C-008	UTILITY PLAN Contains As-Built Information
9	C-009	SEDIMENT CONTROL PLAN PH I
10	C-010	SEDIMENT CONTROL PLAN PH II
11	C-011	SEDIMENT CONTROL DETAILS
12	C-012	SEDIMENT CONTROL DETAILS
13	C-013	SITE AREA MAP
14	C-014	STORM DRAINAGE AREA MAP - PROPOSED CONDITION
15	C-015	STORM DRAINAGE AREA MAP - ULTIMATE CONDITION
16	C-016	STORM COMPS Contains As-Built Information
17	C-017	STORMWATER/ESD DETAILS As-Built Info
18	C-018	UTILITY PROFILES Contains As-Built Info
19	C-018A	UTILITY PROFILES
20	C-019	ROAD PROFILES
21	C-020	DETAILS
22	C-021	DETAILS
23	C-022	DETAILS
24	C-023	DETAILS
25	L-001	SWM PLANTING PLAN Contains As-Built Information
26	C-026	SUPPLEMENTAL COVER SHEET
27	C-027	SITE PLAN - INTERIM
28	C-028	GRADING PLAN - INTERIM
29	C-029	UTILITY PLAN - INTERIM
30	C-030	SEDIMENT CONTROL PLAN PH I - INTERIM
31	C-031	SEDIMENT CONTROL PLAN PH II - INTERIM
32	C-032	STORM DRAINAGE AREA MAP - INTERIM CONDITION
33	C-033	STORM COMPS - INTERIM
34	C-034	INTERIM DETAILS
35	C-035	DETAILS

LOCATION OF PROJECT



THESE SHEETS HAVE BEEN INSERTED WITH REVISION #1
 TOTAL SHEETS AFTER REVISION #1 = 35

SITE ANALYSIS DATA CHART

TOTAL PROJECT AREA: 357,976 Ac.
 AREA OF PLAN SUBMISSION: ~~2,998~~ Ac. 2,900 Ac.
 LIMIT OF DISTURBANCE: ~~2,998~~ Ac. (130,400 ft²) 1,059 Ac. (124,324 ft²) TOTAL
 PRESENT ZONING: F-0 (130,400 ft²) 1,059 Ac. WITH REV #3
 PROPOSED USE: WAREHOUSE & MATERIAL HANDLING (B32) RESEARCH FACILITY (B2 ADD) SANITARY SEWER/WATER SERVICE PRIVATE ONSITE SYSTEM, PUBLIC CONNECTION
 EXISTING MAXIMUM NUMBER OF JHU/APL EMPLOYEES: 4600
 EXISTING MAXIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING: 2850 (SDP-05-133)
 EXISTING ONSITE PARKING SPACES: 4,798 (SDP 05-133)
 NO PARKING PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL NOT HAVE ANY ASSIGNABLE OFFICE SPACE
 NO ADDITIONAL JHU/APL EMPLOYEES PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL BE 27,803 GROSS ft² (B32) 25,800 GROSS ft² (B32 ADD)
 EXISTING OPEN SPACE AREA = (TOTAL LOT AREA MINUS PARKING & BUILDINGS)
 281.7 ACRES (78.7% OF TOTAL LOT AREA PER SDP-05-133)
 PROPOSED OPEN SPACE AREA
 281.00 ACRES (78.5% OF TOTAL LOT AREA) 281.66 Ac. (78.6% OF TOTAL LOT AREA)
 STEEP SLOPES (>15%) = 0.481 Ac.
 NO HIGHLY ERODIBLE SOILS FOUND TO BE PRESENT WITHIN THE LIMITS OF DISTURBANCE

PREVIOUS SDP AND FINAL PLAN REFERENCES

- SDP-04-76: SERVICES AREA COMPLEX
- F-02-40: SWM BASIN 'A', APFO, FOREST CONSERVATION
- SDP-04-35: SWM BASIN 'G'
- SDP-90-218: BUILDING NO. 31 AND SWM BASIN 'G'
- SDP-99-63: B52
- F-02-77: SWM BASIN 'B'
- SDP-04-133: BASIN 'C' SWM FACILITIES AND LAYDOWN AREA
- SDP-05-042: JHU/LIBRARIES SERVICES CENTER (FOREST CONSERVATION AND WETLANDS UPDATES)
- SDP-03-043: SANNER ROAD IMPROVEMENTS (NEW APFO NUMBER 4,600)
- F-04-188: FOREST CONSERVATION EASEMENT RE-PLAT
- F-04-140: SANNER ROAD SWM, STORM DRAINS AND UTILITY EASEMENT
- F-07-035: FOREST CONSERVATION, RE-PLAT EASEMENT
- SDP-08-084 SERVICES AND SUPPORT AREA INFRASTRUCTURE FACILITY PHASE I
- SDP-08-084 SERVICE & SUPPORT AREA PHASE I

PURPOSE OF PLAN

THE SITE DEVELOPMENT PLAN IS FOR THE SECOND PHASE OF THE DEVELOPMENT OF THE SERVICE AND SUPPORT AREA INFRASTRUCTURE FACILITY. THIS FACILITY WILL SERVE AS A CENTRAL CAMPUS BASE FOR THE COLLECTION OF SURPLUS MATERIALS AND RECYCLING. PHASE COVERED CONSTRUCTION OF THE LOADING DOCK AND TRANSFER PLATFORM FOR RECYCLED MATERIALS. THIS SDP IS FOR THE CONSTRUCTION OF BUILDING 32 PHASE II, PROVISIONS FOR PHASE III AND IV.

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT FOR THE SITE CONSISTS OF INLETS AND STORM DRAIN PIPE THAT CONVEY STORMWATER TO A STORMWATER AND THEN TO THE MICRO-BIOFILTRATION BASINS. ALL ON-SITE STORMWATER MANAGEMENT FACILITIES ARE PRIVATELY MAINTAINED.

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2017

CONTACT PERSON FOR OWNER: G.M. CAREY
 TELEPHONE: 443-778-5118
 FAX:

ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS
1	11100 JOHNS HOPKINS ROAD, LAUREL MD 20723, CONTACT G.M. CAREY 443-778-5118

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL NO			
JOHN HOPKINS UNIVERSITY - APL	N/A	PARCEL 1			
PLAT# OR L/F	GRID#	ZONING	TAX MAP NO	ELECT DISTR	CENSUS TRACT
15429 AND 15433	16	PEC	41	5-0	6051.02
WATER CODE	SEWER CODE				
E-21	6480000				

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
William for Mauna Rosaman 11/3/2017
 County Health Officer Date
 Howard County Health Department

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Phil Chisholm 12-19-16
 Chief, Development Engineering Division Date
Wetzel 1-18-17
 Chief, Division of Land Development Date
Tom McJannet 1-2-17
 Director Date

No	REVISION	DATE	No	REVISION	DATE
1	KEEP BUILDING 10A	07-26-17			
2	BUILDING 32 ADD	12/11/2017			
3	SHIPT BUILDING 32 ADD WITH 7/23/18 (REV 3 SUPERSEDES REV 2)				

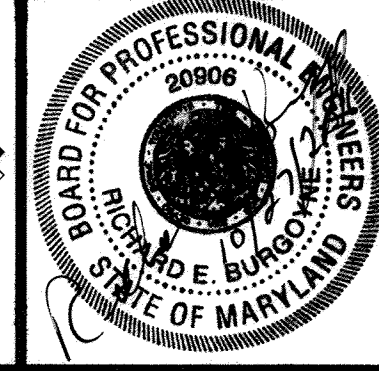
AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.
 PE: Jeffrey Larson, License Number: 51391, Date of AS-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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.

Cowen Design Group
 Planning - Landscape Architecture - Civil Engineering
 1451 DOLLEY MADISON BLVD
 SUITE 200, MCLEAN, VA 22101



THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
 COVER SHEET
 DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO.: C-001 1 OF 22
 CHECKED: REB

GENERAL NOTES FOR NON-RESIDENTIAL SITE DEVELOPMENT PLAN

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE AND COORDINATE WITH JHU/APL.
4. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
5. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
6. THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL SURVEY WITH MAXIMUM ONE FOOT CONTOUR INTERVALS PROVIDED BY JHU/APL.
7. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 0002 AND 41CA WERE USED FOR THIS PROJECT.
8. WATER IS PRIVATE.
9. SEWER IS PRIVATE.
10. STORMWATER MANAGEMENT CONTROL IS OWNED AND MAINTAINED BY JHU/APL.
11. EXISTING UTILITIES ARE BASED ON JOHN HOPKINS ADVANCED PHYSICS LAB RECORDS

CIVIL SITE & GRADING LEGEND

EXISTING	DESCRIPTION	NEW
SITE ITEMS		
	PROPERTY LINE	
	SURVEY BENCHMARK	
	BUILDING FACE	
	BUILDING COLUMN LINE	
	CLIN LINE (BY NUMBER)	
	EDGE OF PAVEMENT (NO CURB)	
	HEADER CURB	
	CURB & GUTTER	
	CURB & REVERSE GUTTER	
	GUTTER PAN TRANSITION	
	PARKING STRIPING	
	ACCESSIBLE PARKING SPACE	
	CROSSWALK	
	SIDEWALK	
	ACCESSIBLE RAMP	
	RETAINING WALL	
	PERIMETER WALL	
	FENCE	
	FENCE SWING GATE	
	DROP ARM VEHICLE GATE	
	SLIDING VEHICLE GATE	
	WEDGE BARRIER	
	BOLLARD	
	T-WALL	
	LIGHT	
	TREE	
	TREE LINE	
SETBACK LINES		
	6' CLEAR ZONE	
	20' SETBACK	
	30' SETBACK	
GRADING		
	MINOR CONTOURS	
	MAJOR CONTOURS	
	FLOW ARROW	
	SLOPE INDICATOR	
	GRADE INDICATOR	
	OVERLAND RELIEF PONDING	

EXISTING	DESCRIPTION	NEW
	SPOT ELEVATIONS	
	SPOT LOCATION	
	DECIMAL FEET OF ELEVATION	
	WHOLE FEET OF ELEVATION	
	SPOT TYPE INDICATOR	
	FINISHED GRADE ELEVATION	
	TOP OF CURB ELEVATION	
	EDGE OF PAVEMENT ELEVATION	
	TOP OF WALL ELEVATION	
	BOTTOM OF WALL ELEVATION	
	TOP OF PAD ELEVATION	
	LOW POINT ELEVATION	
	HIGH POINT ELEVATION	
	UTILITY TOP ELEVATION	

UTILITIES LEGEND

EXISTING	DESCRIPTION	NEW
UTILITIES		
	OVERHEAD ELECTRIC LINE	
	UNDERGROUND ELECTRIC LINE	
	ELECTRIC DUCT BANK	
	MEDIUM VOLTAGE DUCT BANK	
	ELECTRIC MANHOLE/HANDHOLE	
	PAD MOUNTED ELECTRIC SWITCHGEAR	
	PAD MOUNTED TRANSFORMER	
	COMMUNICATION DUCT BANK	
	COMM MANHOLE/HANDHOLE	
	TSS LINE	
	TELEPHONE LINE	
	NATURAL GAS LINE	
	FUEL OIL LINE	
	DIESEL LINE	
	GAS LINE BY SIZE	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	SANITARY SEWER BY SIZE	
	SANITARY SEWER MANHOLE	
	STORM DRAIN	
	CURB INLET	
	GRATE INLET	
	STORM DRAIN MANHOLE	
	ENDWALL	
	WATERLINE	
	IRRIGATION WATERLINE	
	DOMESTIC WATERLINE	
	FIRE WATERLINE	
	HYDRANT WATERLINE	
	CITY WATERLINE	
	RAW WATERLINE	
	RECLAIMED WATERLINE	
	WELL WATERLINE	
	WATERLINE BY SIZE	
	FIRE HYDRANT	
	ISOLATION VALVE	
	POST INDICATOR VALVE	
	WATERLINE FITTING (ELBOW, TEE)	
	WATERLINE VALVE VAULT	
	CHILLED WATER S&R	
	DOMESTIC HOT WATER S&R	
	MECHANICAL HOT WATER S&R	
	HOT OR CHILLED WATER VAULT	
	UTILITY CAP	
	TEST PIT REQUIRED	
	UTILITY TO BE ABANDONED	
	UTILITY TO BE REMOVED	
	BORING LOCATION	

IMPERVIOUS COVER LEGEND

EXISTING	DESCRIPTION	NEW
	EX. STEEP SLOPES (>15%)	
	EX. IMPERVIOUS AREA WITHIN THE LOD	
	EX. IMPERVIOUS AREA WITHIN BASIN H	
	PROP. IMPERVIOUS AREA WITHIN THE LOD	
	FUTURE IMPERVIOUS AREA WITHIN THE LOD	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Ch. P. ...
 Chief, Development Engineering Division
 Date: 12-19-16

V. ...
 Chief, Division of Land Development
 Date: 1-18-17

N. ...
 Director
 Date: 1-23-17

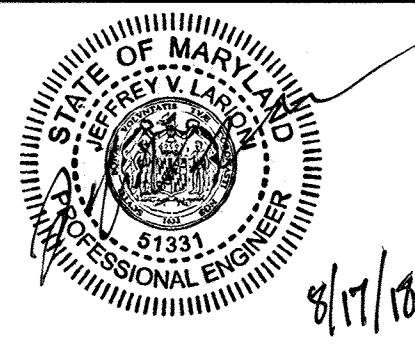
PROFESSIONAL CERTIFICATION

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2017

AS-BUILT CERTIFICATION

Note, there is no AS-Built information provided on this sheet.
 PE: Jeffrey L. ... License Number: 51331. Date of AS-Built: 08/08/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
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JHU/APL INTERNAL USE

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 Planning - Landscape Architecture - Civil Engineering
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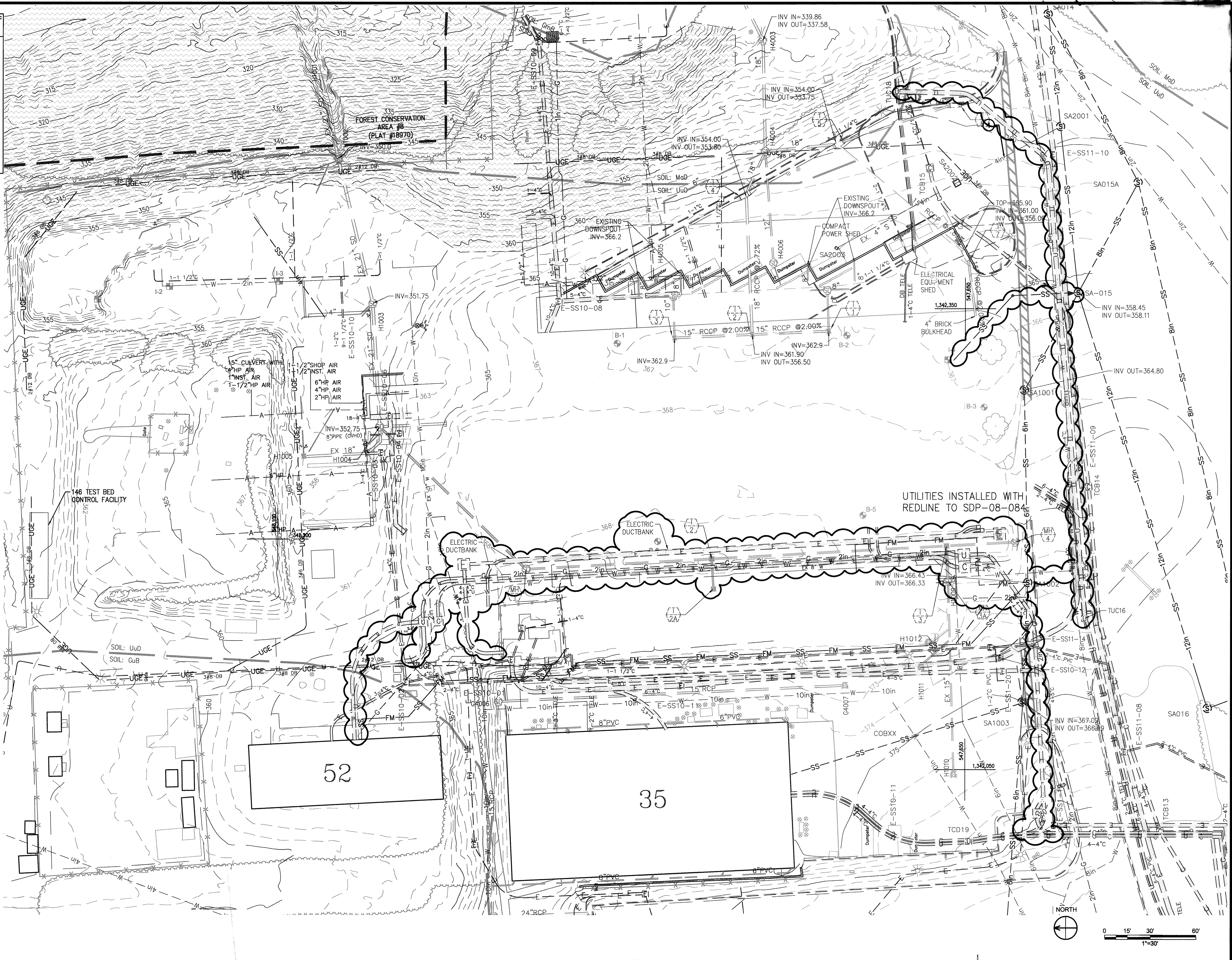


THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
NOTES & LEGEND

SCALE: N/A
 SCALE: N/A
 DESIGNED: JVL
 DRAWN: JVL
 CHECKED: REB
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-002
 2 OF 2

No	REVISION	DATE

SOIL-TYPE SCHEDULE													
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (K _{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors	Wind erodibility index	Hydrologic soil group	
	in	Pct	Pct	Pct	g/cc	in/hr	in/in	Pct	Pct	K _{sw}	K _t	T	
GuB: Glenville ...	0-8	10-40	40-70	10-20	1.20-1.40	0.8-2	0.16-0.20	0.0-2.9	2.0-4.0	37	43	4	56
	8-30	10-50	20-55	10-35	1.40-1.60	0.2-2	0.12-0.16	0.0-2.9	0.0-0.5	43	55		
	30-40	20-50	20-55	20-35	1.80-1.80	0.06-0.6	0.06-0.12	0.0-2.9	0.0-0.5	43	55		
	40-70	30-55	25-50	5-25	1.40-1.50	0.2	0.06-0.12	0.0-2.9	0.0-0.5	43	49		
GuB: Glenville ...	0-8	10-40	40-70	10-20	1.20-1.40	0.8-2	0.16-0.20	0.0-2.9	2.0-4.0	37	43	4	56
	8-30	10-50	20-55	10-35	1.40-1.60	0.2-2	0.12-0.16	0.0-2.9	0.0-0.5	43	55		
	30-40	20-50	20-55	20-35	1.80-1.80	0.06-0.6	0.06-0.12	0.0-2.9	0.0-0.5	43	55		
	40-70	30-55	25-50	5-25	1.40-1.50	0.2	0.06-0.12	0.0-2.9	0.0-0.5	43	49		
MaC: Manor ...	0-6	40-80	20-50	10-25	1.10-1.40	0.8-2	0.17-0.21	0.0-2.9	1.0-3.0	24	28	5	48
	6-22	40-75	10-30	10-20	1.20-1.50	0.8-2	0.14-0.20	0.0-2.9	0.0-0.5	32	37		
	22-72	23-90	5-50	2-18	1.45-1.75	0.8-20	0.10-0.19	0.0-2.9	0.5-2.5	24	24		
MaD: Manor ...	0-6	40-80	20-50	10-25	1.10-1.40	0.8-2	0.17-0.21	0.0-2.9	1.0-3.0	24	28	5	56
	6-22	40-75	10-30	10-20	1.20-1.50	0.8-2	0.14-0.20	0.0-2.9	0.0-0.5	32	37		
	22-72	23-90	5-50	2-18	1.45-1.75	0.8-20	0.10-0.19	0.0-2.9	0.5-2.5	24	24		
UuD: Urban Land ...													



GENERAL NOTE
 EXISTING CONDITIONS REFLECT DEMOLITION AND IMPROVEMENTS COMPLETED UNDER UNDER RED-LINE REVISION TO SDP-08-084.

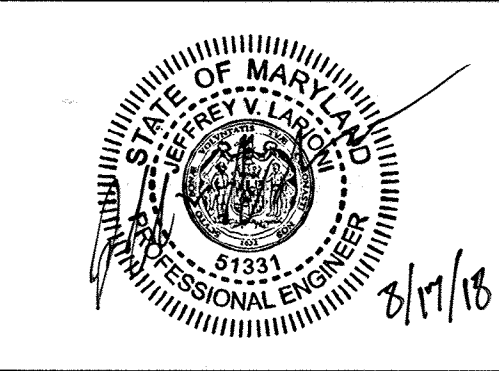
PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2017

APPROVED: DEPARTMENT OF PLANNING AND ZONING

<i>Chad P. ...</i> Chief, Development Engineering Division	12-19-16 Date
<i>Neil ...</i> Chief, Division of Land Development	1-18-17 Date
<i>Val ...</i> Director	1-23-17 Date

No	REVISION	DATE	No	REVISION	DATE

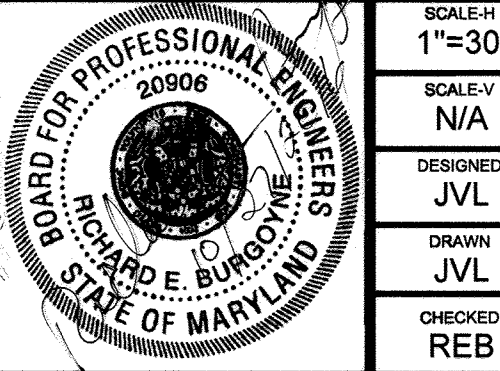
AS-BUILT CERTIFICATION
 Note: there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larioni License Number: 51331. Date of As-Built: 06/08/2018



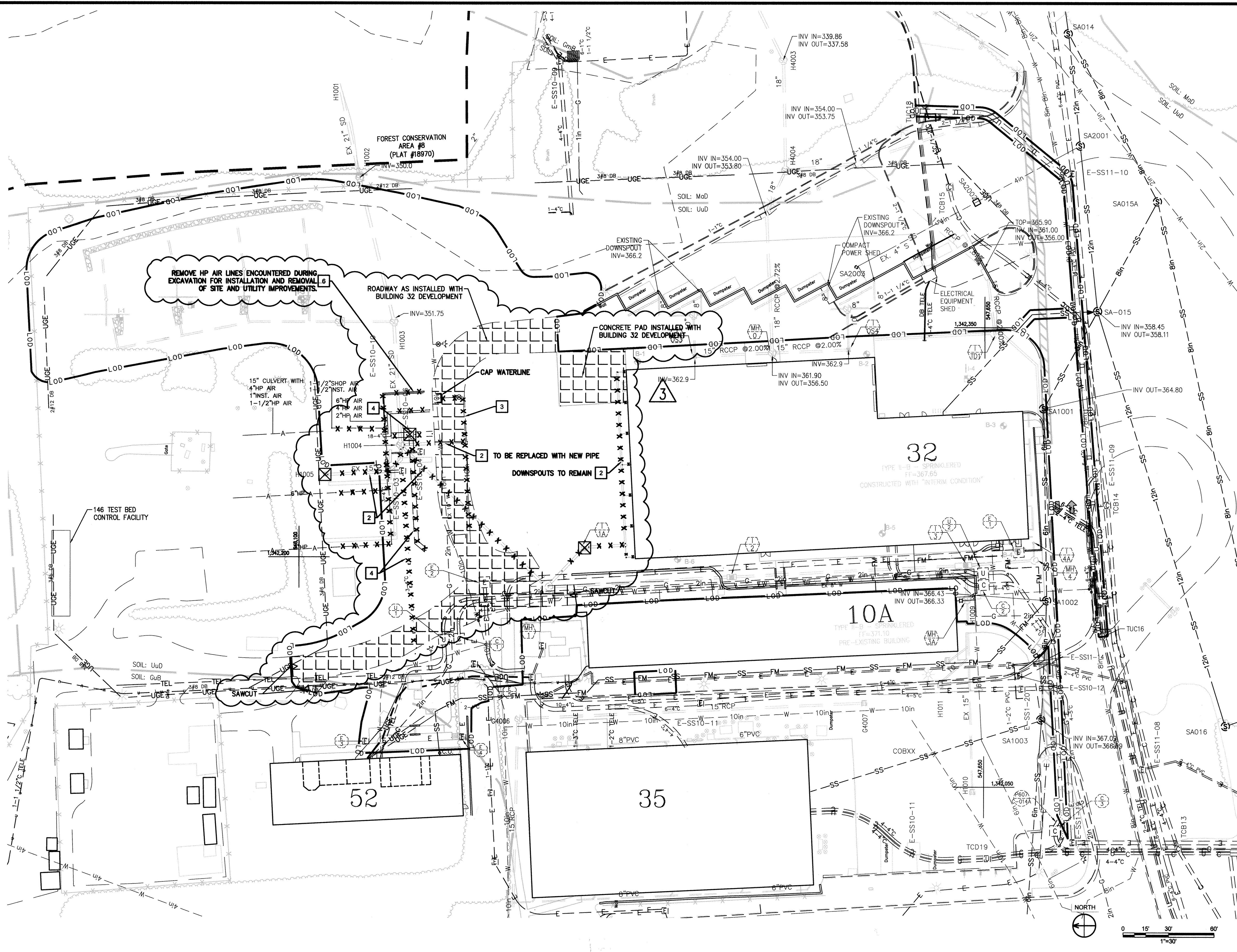
THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
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 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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 SUITE 200, MCLEAN, VA 22101



SCALE: 1"=30'
 SCALE: N/A
 DESIGNED: JVL
 DRAWN: JVL
 CHECKED: REB
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO: C-003
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32
 SITE DEVELOPMENT PLAN
EXISTING CONDITIONS PLAN
 3 OF 3



SHEET NOTES

- PROTECT EDGE OF EXISTING CONCRETE PAVEMENT FOR RE-PAVING.
- DO NOT INTERRUPT EXISTING UTILITIES PRIOR TO CONSTRUCTION OF REPLACEMENT UTILITIES. MAINTAIN CONTINUOUS SERVICE. COORDINATE OUTAGES WITH APL.

UTILITY DEMO LEGEND

X X X X X - REMOVE EX. UTILITY
 ○ ○ ○ ○ ○ ○ ○ - ABANDON EX. UTILITY IN PLACE
 □ - REMOVE EX. UTILITY STRUCTURE
 1 - SANITARY SEWER
 2 - STORM DRAIN
 3 - WATERLINE
 4 - ELECTRIC
 5 - TELECOMM
 6 - COMPRESSED AIR LINES

SITE DEMO LEGEND

□ □ □ □ □ - REMOVE EX. PAVEMENT
 ▨ ▨ ▨ ▨ ▨ - REMOVE EX. BUILDING
 - - - - - SAWCUT
 + + + + + REMOVE EX. CURB

PROFESSIONAL CERTIFICATION

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LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

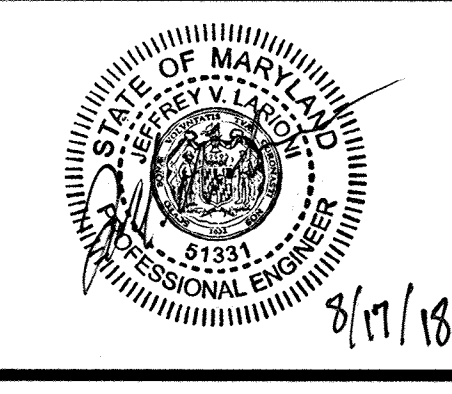
Chief, Development Engineering Division 5-11-18
 Chief, Division of Land Development 5-8-18
 Director 5-8-18

1	KEEP BUILDING 10A	08/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018
No	SDP REVISION	DATE

PLAN STATUS	DATE

AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larian, License Number: 51331. Date of As Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY

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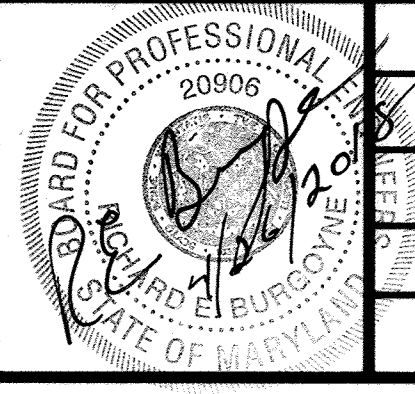
TAX MAP 41 GRID 16 PARCEL 123
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THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32

SITE DEVELOPMENT PLAN DEMOLITION PLAN

SCALE: H 1"=30'
 SCALE: V N/A
 DESIGNED: JVL
 DRAWN: JVL
 CHECKED: REB
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-004
 4 OF 35

SHEET NOTES

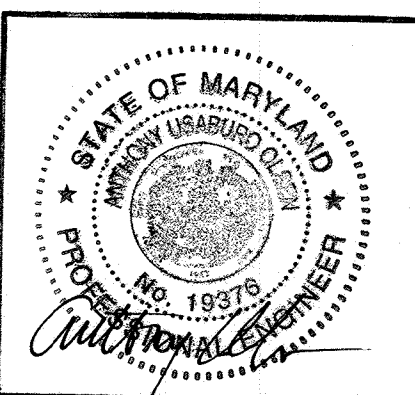
1. ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE INDICATED.
2. SEE ARCHITECTURAL PLANS FOR BUILDING FLOOR PLAN.
3. SEE SHEET 13 FOR SITE AREA MAP, INCLUDING ADA ACCESSIBILITY AND FIRE HYDRANT COVERAGE.
4. SEE SHEET 20 FOR ROAD PLAN/PROFILE AND CENTERLINE ALIGNMENT INFORMATION.

SITE DEVELOPMENT NARRATIVE

The original iteration of this SDP removed an area of 1990s development and then built Building 32, while allocating space for future expansions and a future road. Revision 1 was submitted via Redline to retain one of the existing buildings that was originally to be removed (10A). This was deemed the "Interim Condition." It was still the intent of the Interim Condition to remove 10A at some point in the future and proceed with the final development of building expansions and a roadway. Revision 2 was approved indicating a new building adjacent to Building 32 to be constructed while Building 10A remains active indefinitely.

Revision 3 shifts the Building 32 Addition north by three feet, to provide separation between the new building and existing Building 32. There is no change in concept or site organization from the approved Revision 2. However, the overall limits of disturbance were increased in order to provide adequate vehicle maneuvering room for the new anticipated design vehicle. All ESD computations were re-analyzed based upon these revised limits of disturbance to ensure 100% ESD compliance. The computations are provided within the plan set. The improvements shown in Revision 3, noted as the "Ultimate Condition," replace the Future Expansion II and IV, and the Future Road as documented in the original approved SDP. The Ultimate Condition should be considered permanent; all infrastructure and utility improvements identified are to be considered part of the overall SDP-16-072 development.

As of the date of Redline Revision 3 submission, Building 32 is constructed, and the improvements indicated within the Interim Condition have been installed. This includes all utility, grading, site improvements, and ESD practices. The Revision 3 plans reference these improvements as the existing condition, though the ESD computations are based upon the "Pre-Developed" condition. 100% ESD coverage is maintained for the project, which is still classified as a redevelopment project based on the pre-developed impervious coverage. Building 10A is no longer included within the limits of disturbance, nor is it indicated to be demolished.



NOTE: THIS SEAL & CERTIFICATION APPLIES ONLY TO REVISION 3

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. 19376 EXPIRATION DATE: SEPTEMBER 22, 2021

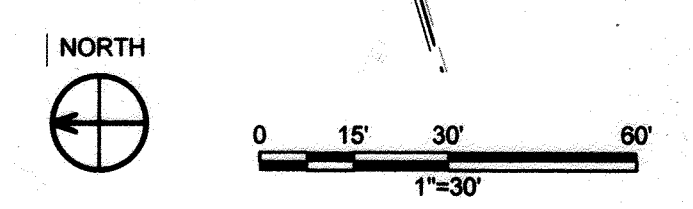
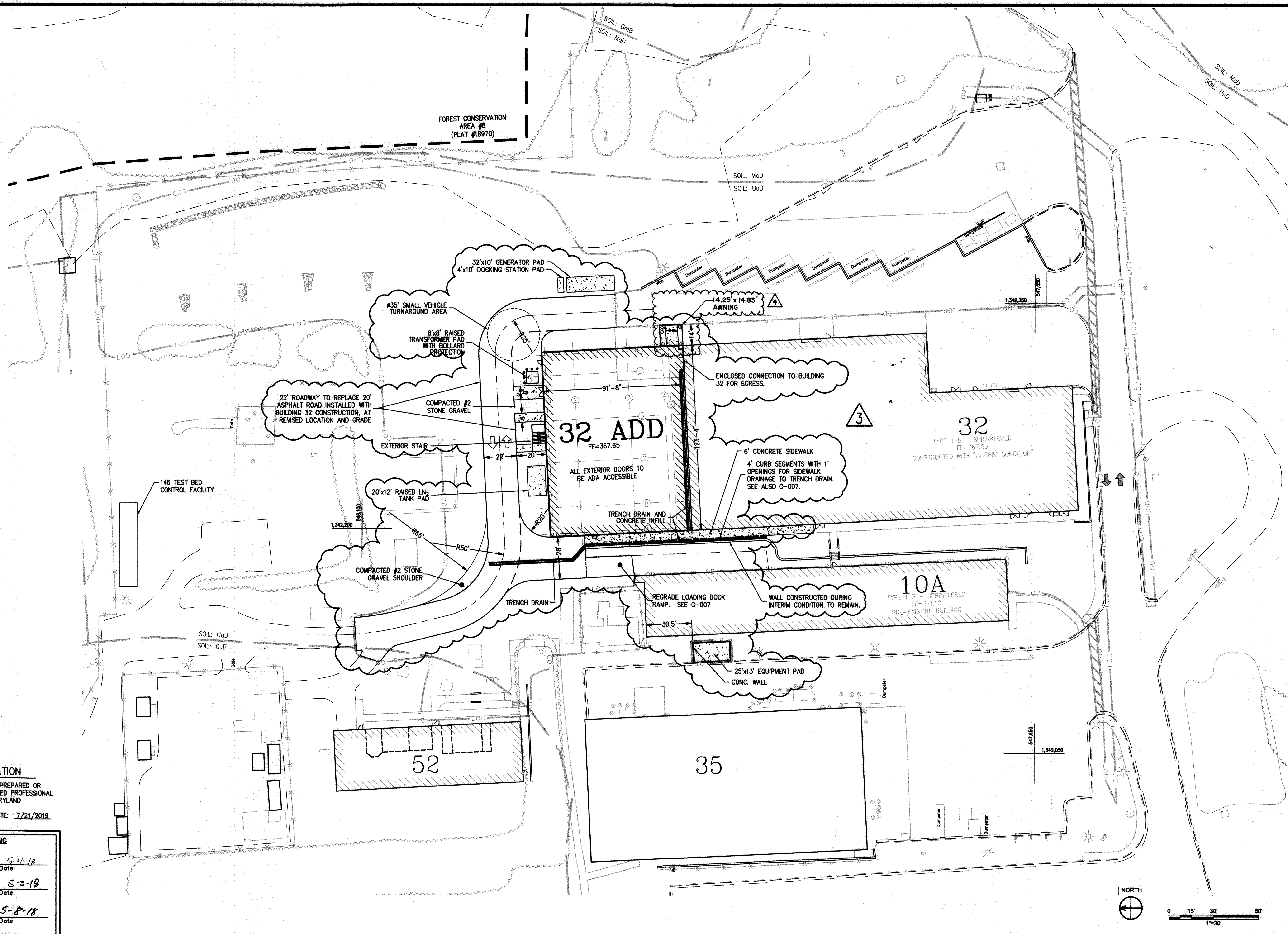
PROFESSIONAL CERTIFICATION

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LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

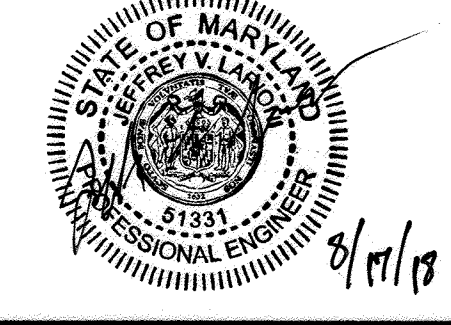
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *5-4-18*
 Chief, Division of Land Development *5-3-18*
 Director *5-8-18*



No	SDP REVISION	DATE	PLAN STATUS	DATE
1	KEEP BUILDING 10A	08/28/2017		
2	BUILDING 32 ADD	12/14/2017		
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018		
4	ADD AWNING ON BLDG 32 A	01/15/2021		

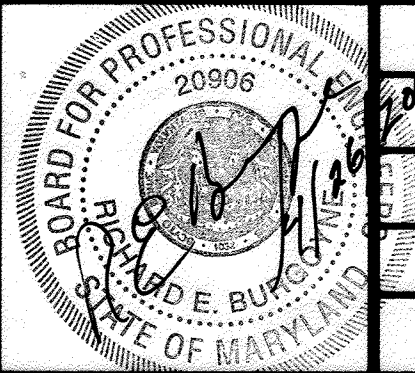
AS-BUILT CERTIFICATION
 Note: there is no "AS-Built" information provided on this sheet.
 PE: Jeffrey Laroni, License Number: 51331, Date of AS-Built: 06/08/2018



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THE JOHNS HOPKINS UNIVERSITY
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BUILDING 32
 SITE DEVELOPMENT PLAN
SITE PLAN

SCALE: 1"=30'
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO: C-005
 SHEET NO: 5 OF 35

SECONDARY OVERFLOW RISER
(TYP. OF 4)

PRIMARY OVERFLOW RISER
(TYP. OF 4)

Micro-Bio As-Built Elevations

	MB-1	MB-2	MB-3	MB-4
Bottom (Low Point)	349.70	349.70	350.00	349.90
Embankment (Low Point)	351.39	351.45	351.33	351.15
Invert In	349.90	350.00	350.10	350.15
Primary Overflow Rim	351.00	351.12	351.19	351.20
Primary Overflow Invert Out	346.90	347.20	347.04	347.05
Secondary Overflow Rim	350.79	350.77	350.92	351.07
Invert/Gabion Downstream	346.6	346.6	346.8	346.8

Date of survey 10/05/2017

STORM DRAIN KEY NOTES

- 21 NEW 4" PVC ROOF DRAIN
- 22 NEW 6" PVC ROOF DRAIN
- 23 NEW 12" PVC ROOF DRAIN
- 24 NEW 15" RCP CL. III STORM DRAIN
- 25 NEW 18" RCP CL. III STORM DRAIN
- 26 CONNECT TO EXISTING STORM DRAIN SYSTEM
- 27 NEW STORM DRAIN MANHOLE
- 28 NEW STORM CLEANOUT
- 29 NEW 6" C900 PVC STORM DRAIN
- 30 INSTALL CURB INLET
- 31 REPLACE WITH MANHOLE FRAME AND COVER
- 32 3"x4" ROOF DRAIN BOOT
- 33 4"x6" ROOF DRAIN BOOT
- 34 PRE-TREATMENT STORMCEPTOR
- 35 INSTALL FLOOR DRAIN

PROFESSIONAL CERTIFICATION

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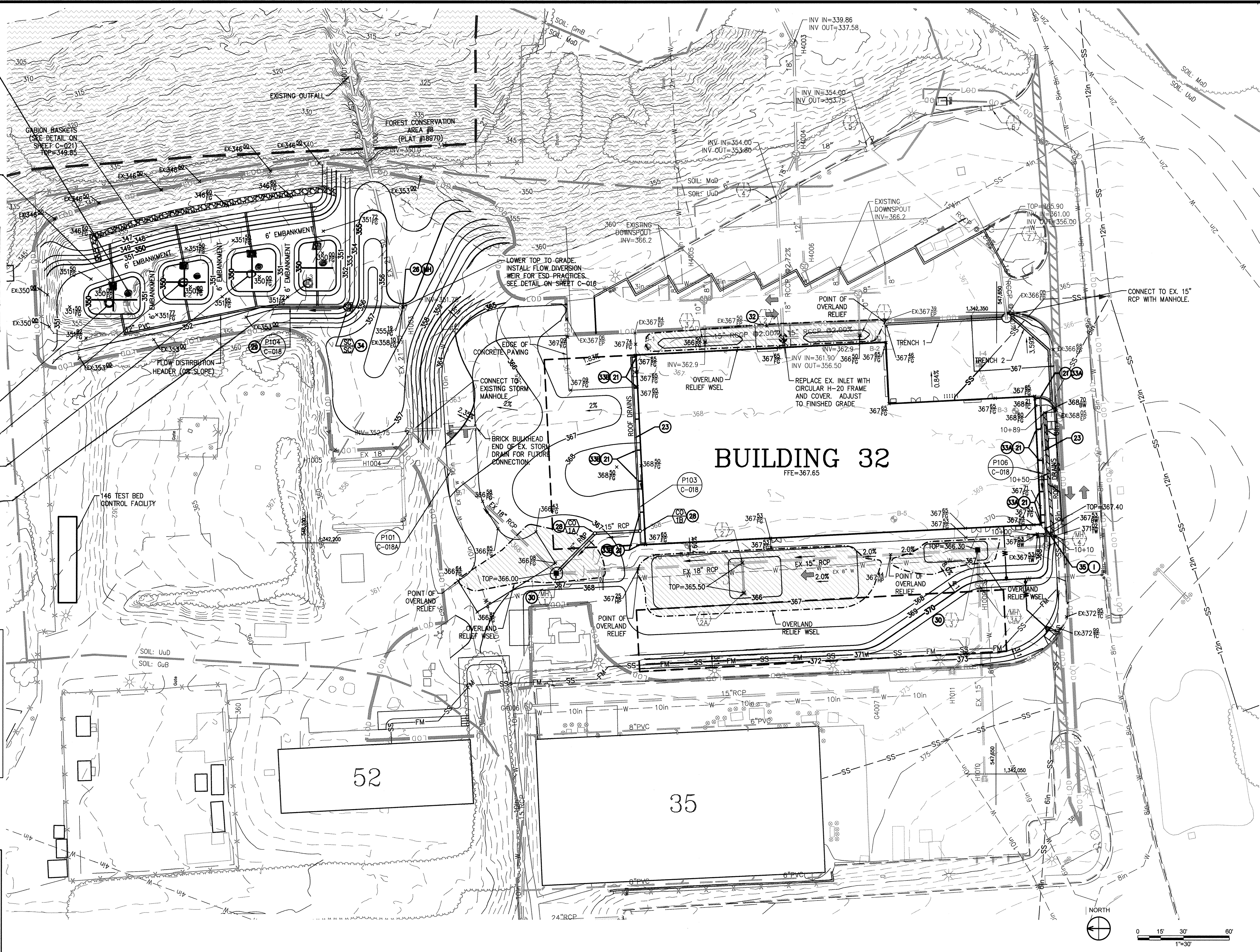
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2017

APPROVED: DEPARTMENT OF PLANNING AND ZONING

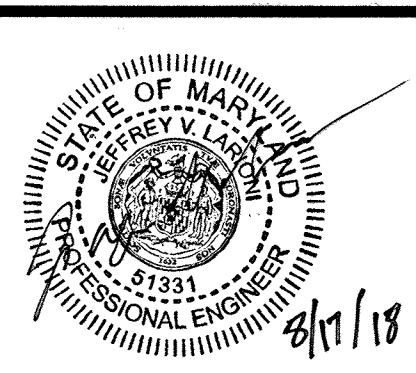
Ch. Ch... 12-19-16
Chief, Development Engineering Division
Date

V... 1-18-17
Chief, Division of Land Development
Date

V... 1-23-17
Director
Date



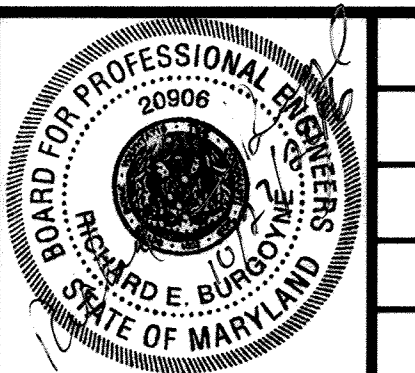
AS-BUILT CERTIFICATION
I hereby certify by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and specifications.
PE: Jeffrey Larios, License Number: 51331, Date of As-Built: 06/08/2018



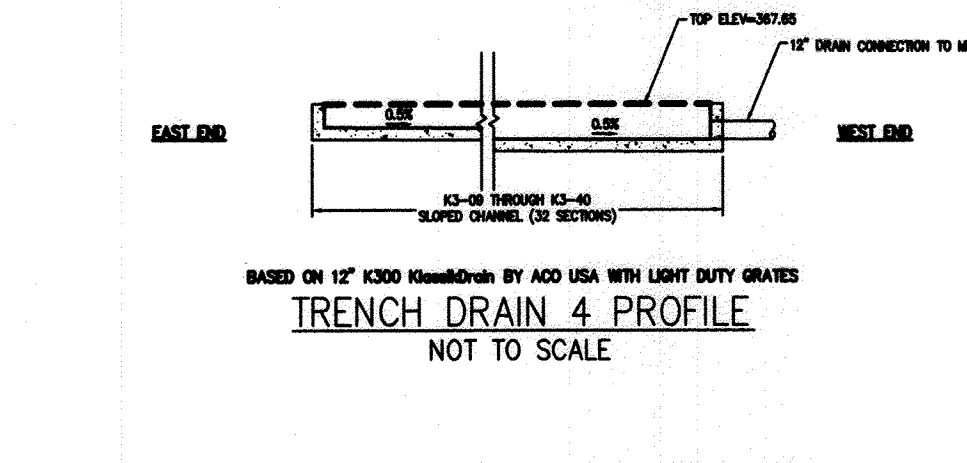
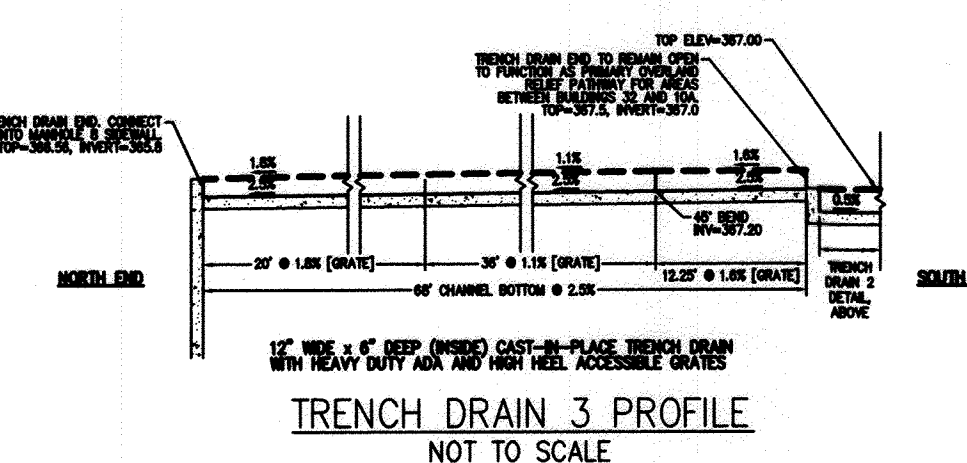
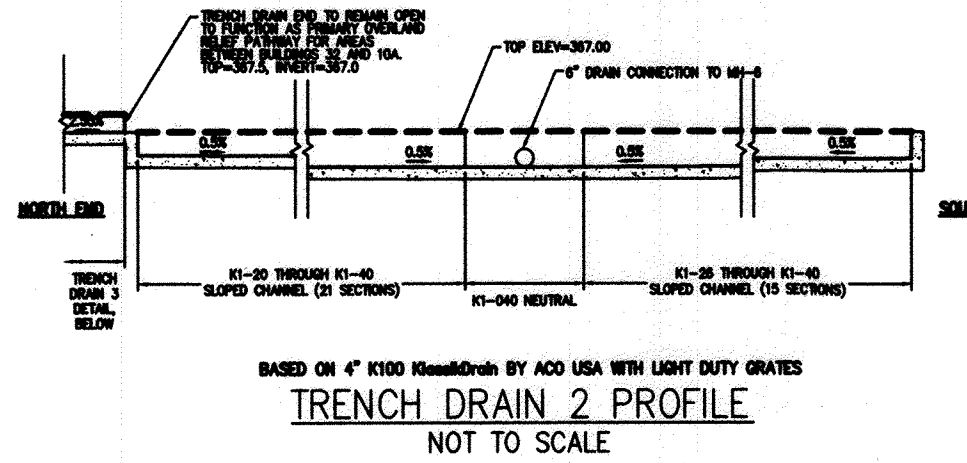
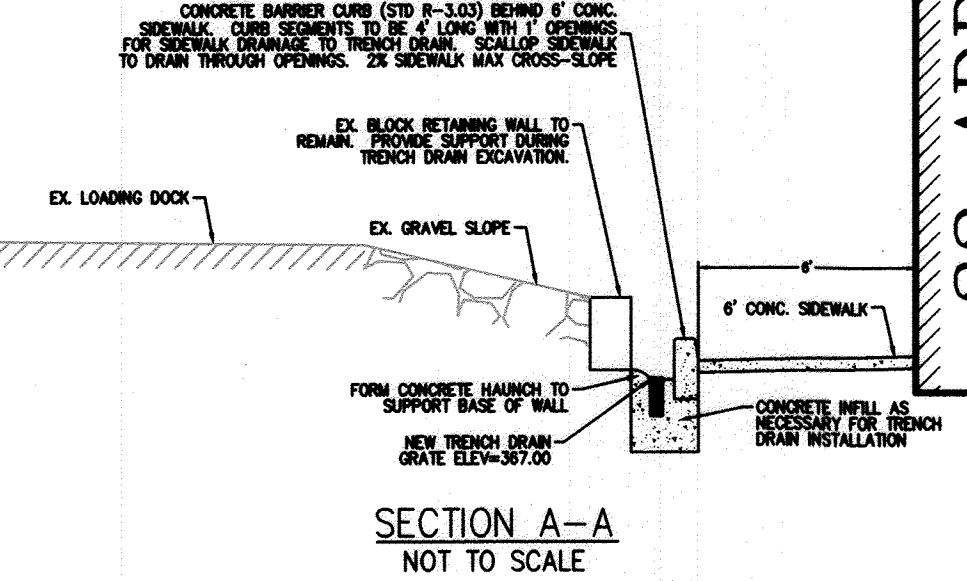
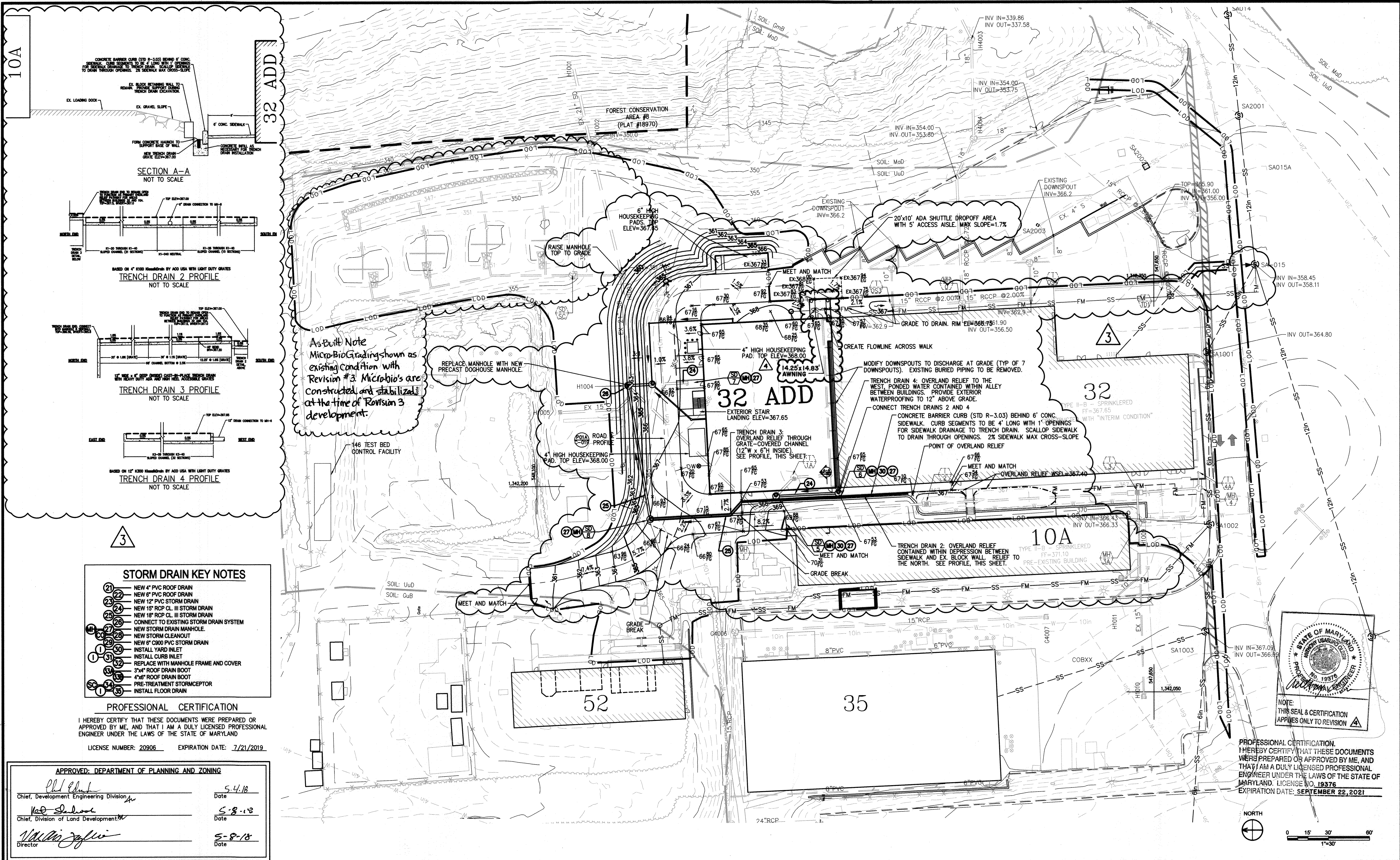
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TAX MAP 41 GRID 16 PARCEL 123
ELECTION DISTRICT NO. 5
SHOARD COUNTY, MARYLAND

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THE JOHNS HOPKINS UNIVERSITY
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BUILDING 32
SITE DEVELOPMENT PLAN
GRADING PLAN - PROPOSED
SCALE: 1"=30'
DESIGNED: JVL
DRAWN: JVL
CHECKED: REB
DATE: 03/11/2016
SDP FILE NUMBER: SDP-16-072
DRAWING NO: C-006
6 OF 6



As-Built Note
 Micro-Bio Grading shown as existing condition with Revision #3. Microbios are constructed and stabilized at the time of Revision 3 development.

- STORM DRAIN KEY NOTES**
- 21 NEW 4" PVC ROOF DRAIN
 - 22 NEW 6" PVC ROOF DRAIN
 - 23 NEW 12" PVC STORM DRAIN
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 - 36 INSTALL FLOOR DRAIN

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 LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 5-4-18
 Chief, Division of Land Development 5-8-18
 Director 5-8-18

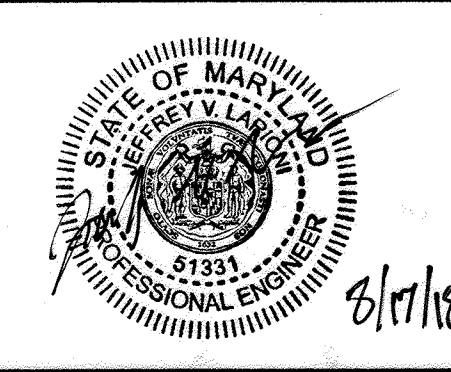


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 EXPIRATION DATE: SEPTEMBER 22, 2021

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4	ADD AWNING ON BLDG 32A	01/15/2021

No	SDP REVISION	DATE	PLAN STATUS	DATE

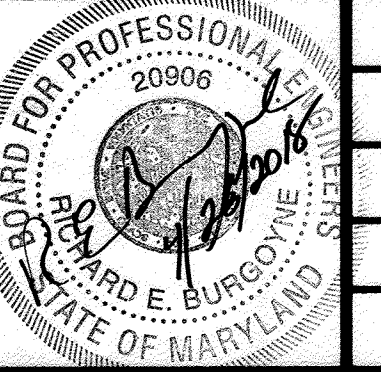
AS-BUILT CERTIFICATION
 I hereby certify by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the approved Plans and specifications.
 PE: Jeffrey Laroni, License Number: 51331. Date of AS-Built: 06/08/2018



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 APPLIED SCIENCE LABORATORY
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 LAUREL, MD 20723
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THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
GRADING PLAN - FUTURE
 SCALE: 1"=30'
 DESIGNED: JM
 DRAWN: JM
 CHECKED: JVL
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-007
 7 OF 35

SHEET NOTES

- EXISTING UTILITIES SHOWN REFLECT:
 - EXISTING UTILITIES BEFORE BUILDING 32 DEVELOPMENT.
 - UTILITIES INSTALLED WITH REVISIONS 0, 1, AND 2 OF SDP-08-084
 - UTILITIES INSTALLED WITH REVISIONS 0 AND 1 OF SDP-16-072
- 10" DIP WATERLINE DEPTH UNKNOWN. RAISE EXISTING WATERLINE TO MAINTAIN 6" OF CLEARANCE ABOVE TOP OF DUCTBANKS. MAINTAIN 4' MINIMUM COVER.

WATERLINE KEY NOTES

- CREATE NEW TAP TO ONSITE WATERMAIN.
- NEW 8" DIP WATERLINE
- CONNECT TO FIRE PUMP ROOM. SEE FIRE PROTECTION PLANS FOR CONTINUATION.
- NEW 10" SERVICE TO BUILDING.
- NEW FIRE HYDRANT
- GATE VALVE (MATCH LINE SIZE)

SANITARY SEWER KEY NOTES

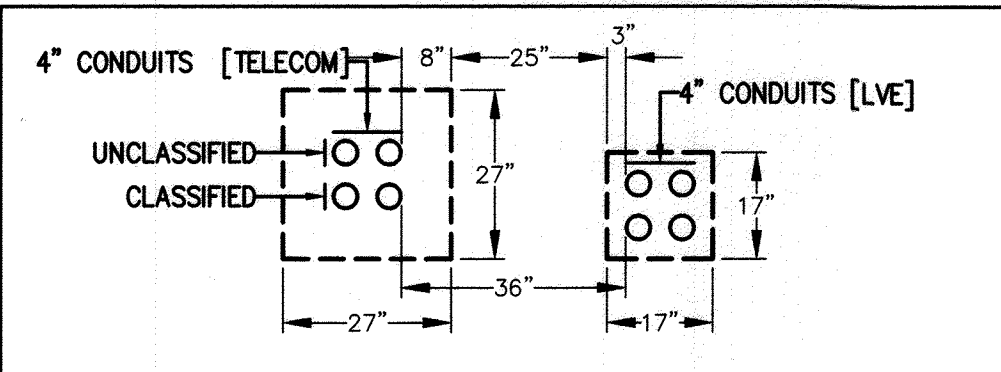
- NEW 4" PVC SANITARY LATERAL
- CONNECT TO EXISTING SANITARY SEWER
- CLEANOUT

ELECTRIC/TELECOMM KEY NOTES

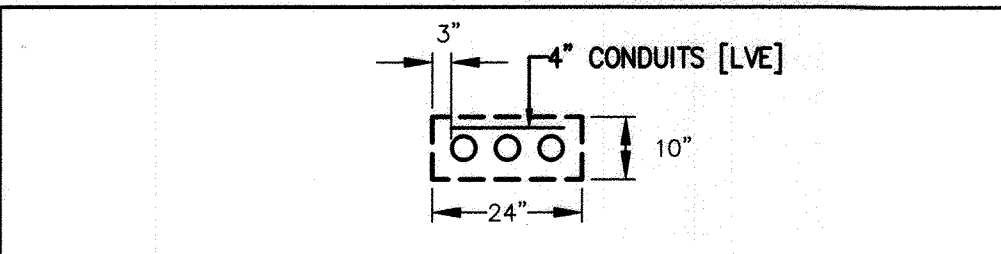
- NEW 3Wx3H (4" CONDUIT) ELECTRIC DUCTBANK
- NEW 2Wx3H (4" CONDUIT) ELECTRIC DUCTBANK
- NEW 2Wx4H (4" CONDUIT) TELECOMM DUCTBANK
- NEW 3Wx2H (4" CONDUIT) TELECOMM DUCTBANK
- NEW 4Wx2H (4" CONDUIT) TELECOMM DUCTBANK
- NEW 2Wx2H (4" CONDUIT) TELECOMM DUCTBANK
- ELECTRIC MANHOLE
- TELECOMM MANHOLE

GAS MAIN NOTES

- 2" HDPE NATURAL GAS CONNECTION



A DUCTBANK SECTION
C-008/C-008 NTS



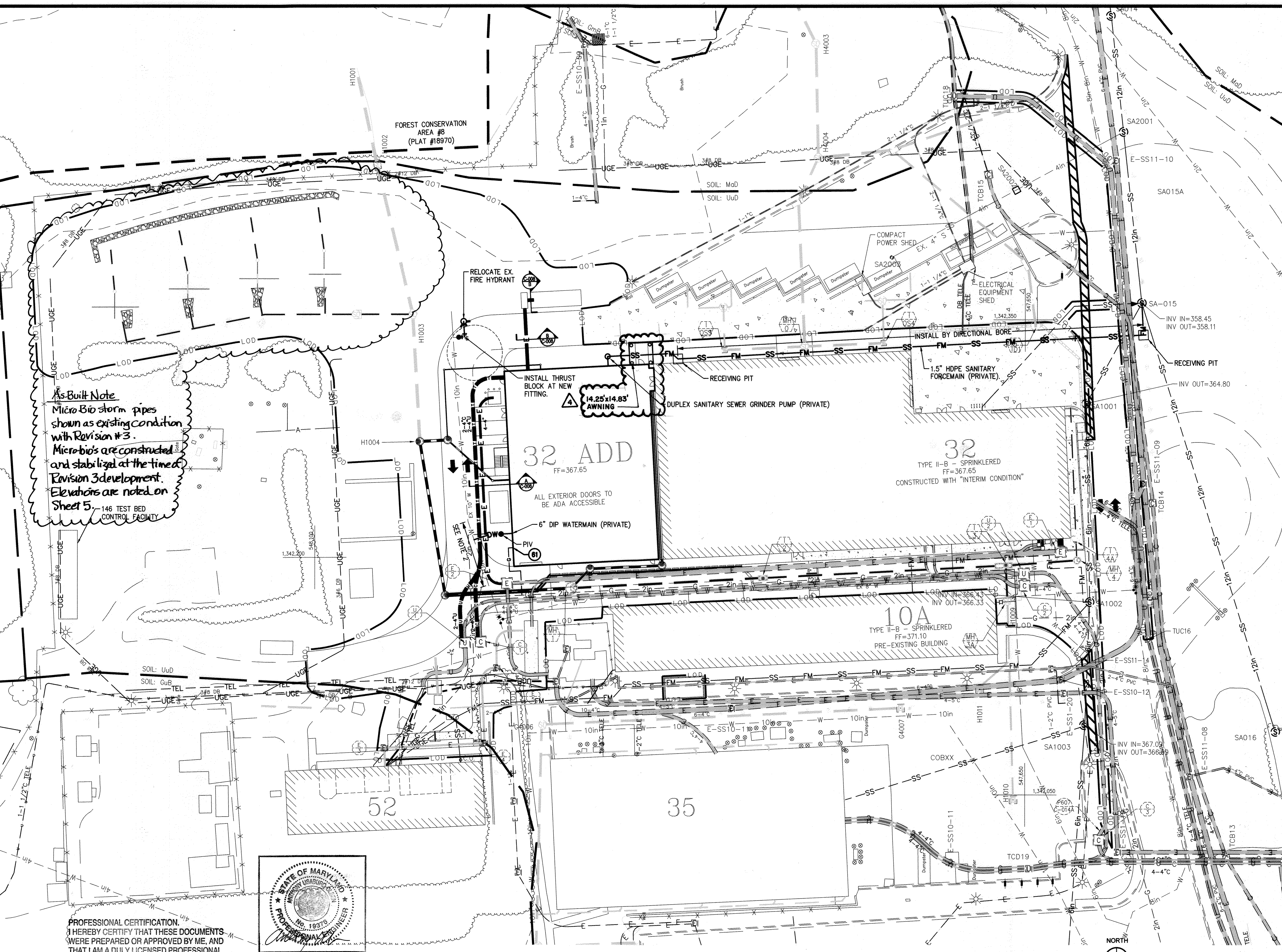
B GENERATOR DUCTBANK SECTION
C-008/C-008 NTS

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

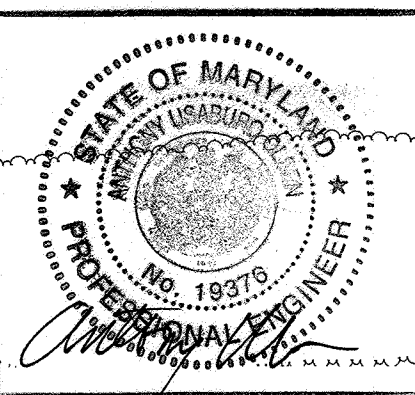
<i>Chad E. ...</i> Chief, Development Engineering Division	5-11-18 Date
<i>Kent ...</i> Chief, Division of Land Development	5-8-18 Date
<i>William ...</i> Director	5-8-18 Date



As-Built Note
Micro Bio storm pipes shown as existing condition with Revision #3. Micro-bios are constructed and stabilized at the time of Revision 3 development. Elevations are noted on Sheet 5.

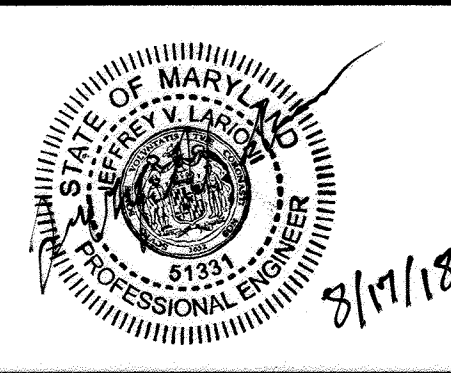
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 19376
EXPIRATION DATE: SEPTEMBER 22, 2021

NOTE:
THIS SEAL & CERTIFICATION APPLIES ONLY TO REVISION A



No	SDP REVISION	DATE	PLAN STATUS	DATE
1	KEEP BUILDING 10A	08/28/2017		
2	BUILDING 32 ADD	12/14/2017		
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018		
4	ADD AWNING ON BLDG 32A	01/15/2021		

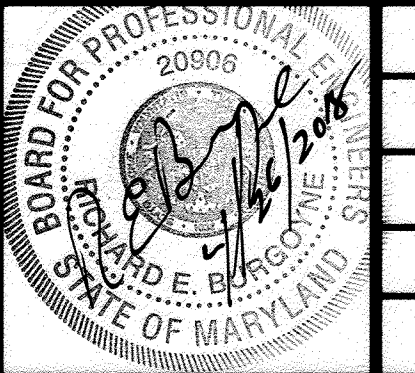
AS-BUILT CERTIFICATION
I hereby certify by my seal that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and specifications.
PE: Jeffrey Lariani License Number: 51331. Date of AS-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
11100 JOHN HOPKINS RD
LAUREL, MD 20723
TAX MAP 41 GRID 16 PARCEL 123
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

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.

Cowen Design Group
Planning • Landscape Architecture • Civil Engineering
3330 WASHINGTON BLVD
SUITE 430, ARLINGTON, VA 22201



SCALE: 1"=30'	DESIGNED: N/A	THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32 SITE DEVELOPMENT PLAN UTILITY PLAN
DRAWN: JM	CHECKED: JVL	
DATE: 03/11/2016	SDP FILE NUMBER: SDP-16-072	DRAWING NO: C-008
		8 OF 35

GENERAL NOTE

TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES PROVIDED IN THE 2011 MARYLAND STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL WHICHEVER IS MORE STRINGENT.

E&S CONTROL LEGEND

	CONCRETE WASHOUT AREA	(H-8) (C-012)
	SILT FENCE	(E-01) (C-011)
	SUPER SILT FENCE	(E-3) (C-011)
	TEMPORARY SWALE	(C-2) (C-011)
	AT-GRADE INLET PROTECTION	(E-2) (C-011)
	CURB INLET PROTECTION	(E-3) (C-011)
	TEMPORARY ASPHALT BERM	(C-2) (C-011)
	STABILIZED CONSTRUCTION ENTRANCE	(C-01) (C-011)
	SLOPE STABILIZATION MATTING/ EXISTING SLOPES >15% (TSSMS)	(H-4) (C-011)
	CHECK DAM	(D-2) (C-011)
	SEDIMENT TRAP	(E-12) (C-012)
	EX. STEEP SLOPES (>15%)	

OWNERS/DEVELOPER CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

M. Alex DeDeo 4/27/2018
OWNER'S/DEVELOPER'S SIGNATURE DATE

MARC ALEX DEDEO - APL FACILITIES PLANNER
PRINTED NAME & TITLE

DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

R. E. Bugeye 4/26/2018
DESIGNER'S SIGNATURE DATE

R. E. Bugeye MD REGISTRATION NO. 20906
PRINTED NAME (P.E.) R.L.S., OR R.L.A. (circle one)

HOWARD SCD SIGNATURE BLOCK:

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

John L. Britton 5/1/18
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clark 5-4-18
Chief, Development Engineering Division Date

K. DeLoe 5-8-18
Chief, Division of Land Development Date

Walter J. Taylor 5-8-18
Director Date

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND

LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

AS-BUILT CERTIFICATION
Note, there is no "As-Built" information provided on this sheet.
P.E. Jeffrey Larrison, License Number: 51331. Date of As-Built: 08/08/2018



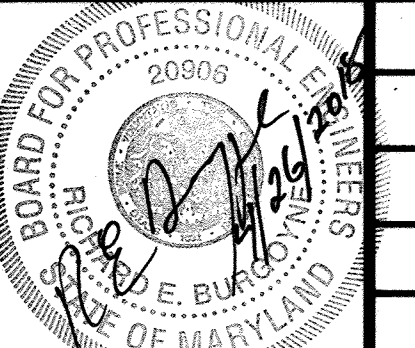
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Cowen Design Group
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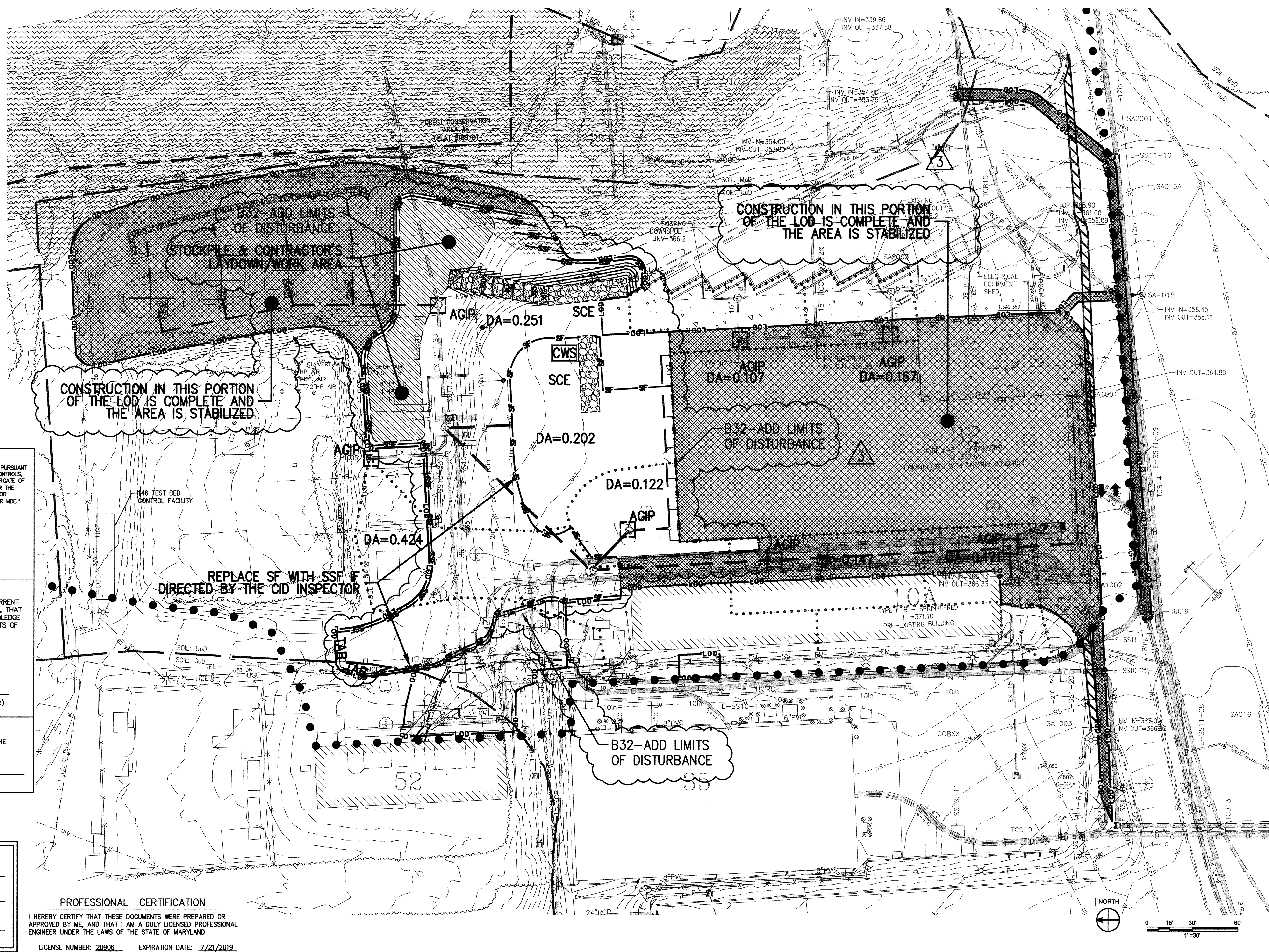
3330 WASHINGTON BLVD
SUITE 430, ARLINGTON, VA 22201



THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 32
SITE DEVELOPMENT PLAN
SEDIMENT CONTROL PHASE I

DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO.: C-009 9 OF 35

AS-BUILT SDP-16-072



STANDARD SEDIMENT CONTROL NOTES

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-315-1655 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED 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.
 - 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.
 - PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
 - OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
 - ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERE TO.
 - FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
 - ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH 2:1 OF CUT AND/OR FILL STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
 - ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMSSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.
- SITE ANALYSIS:**
- Total Area of Site: 359.98 Acres
 - Area Disturbed: 2.92 Acres
 - Area to be roofed or paved: 1.14 Acres
 - Area to be vegetatively stabilized: 1.85 Acres
 - Total Cut: 4,492 Cu. Yds.
 - Total Fill: 422 Cu. Yds.
- Offsite water/wastewater location: WILL BE DISPOSED OF ON-SITE.
- TEMPORARY STABILIZATION PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
 - ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT 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 PRECIPITATION)
 - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
 - EVIDENCE OF SEDIMENT DISCHARGES
 - IDENTIFICATION OF PLAN DEFICIENCIES
 - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
 - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
 - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
 - PHOTOGRAPHS
 - MONITORING/SAMPLING
 - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
 - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION
 - ACTIVITIES (NPDES, ADE)
 - TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
 - ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD APPROVED FIELD CHANGES.
 - DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE HSCD. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT GIVEN TIME. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
 - TOPSOIL SHALL BE STORED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
 - ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBERICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.
 - STREAM CHANNELS SHALL NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
 - USE I AND II: MARCH 1 - JUNE 15
 - USE III AND III: OCTOBER 1 - APRIL 30
 - USE IV: MARCH 1 - MAY 31
 - A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.
 - STANDARD SILT FENCE IS TO BE REPLACED BY "SUPER" SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

OWNERS/DEVELOPER CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

[Signature] 4/27/2018
 OWNER'S/DEVELOPER'S SIGNATURE DATE

MARC ALEX DELORENZO - APL FACILITIES PLANNER
 PRINTED NAME & TITLE

DESIGN CERTIFICATION:

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[Signature] 4/26/2018
 DESIGNER'S SIGNATURE DATE

P. E. BURBOYNE MD REGISTRATION NO. 20906
 PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

HOWARD SCD SIGNATURE BLOCK:

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

[Signature] 5/1/18
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 5-4-18
 Chief, Development Engineering Division Date

[Signature] 5-2-18
 Chief, Division of Land Development Date

[Signature] 5-8-18
 Director Date

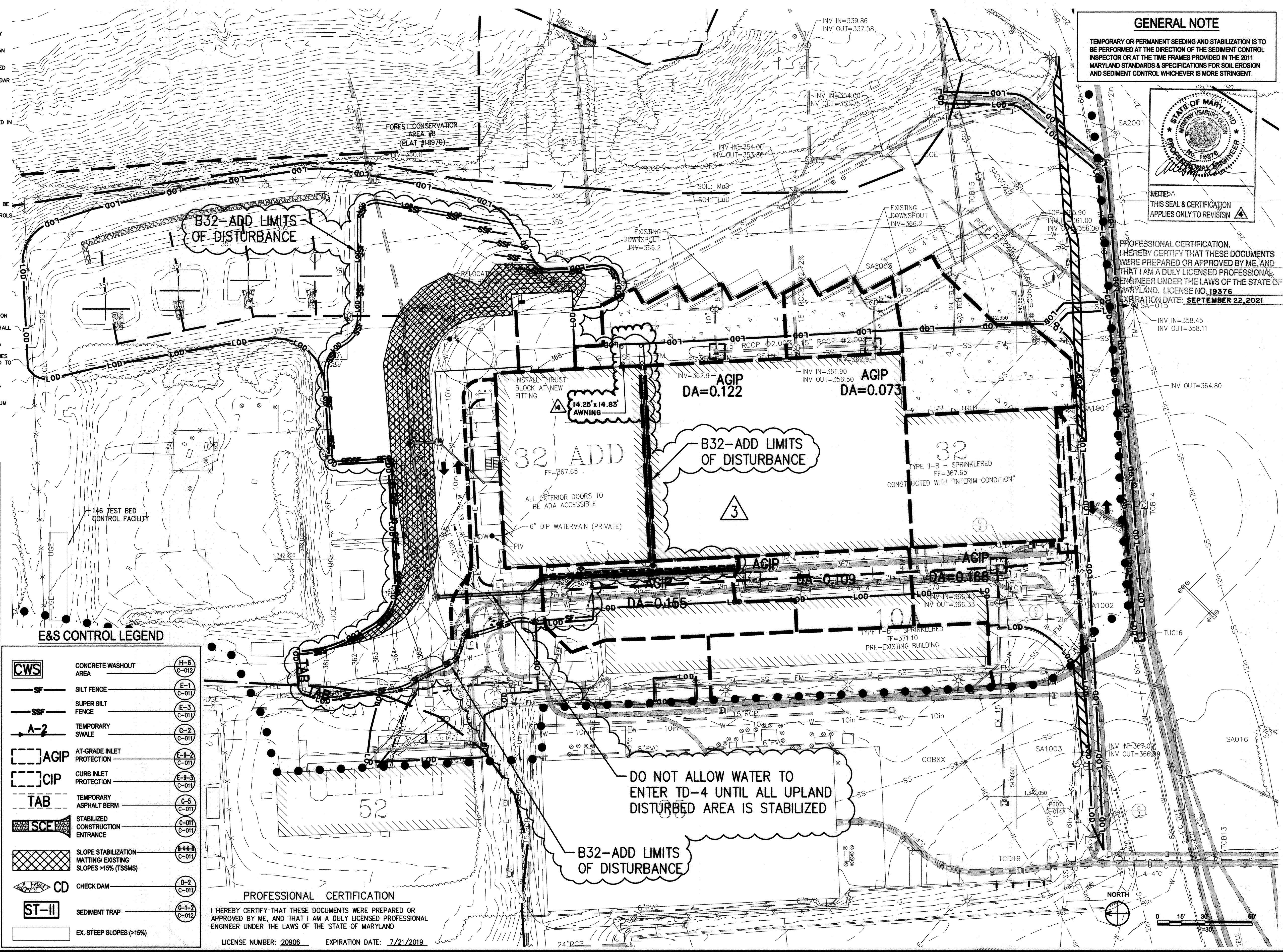
E&S CONTROL LEGEND

	CONCRETE WASHOUT AREA	(H-6 C-012)
	SILT FENCE	(E-1 C-011)
	SUPER SILT FENCE	(E-3 C-011)
	TEMPORARY SWALE	(C-2 C-011)
	AT-GRADE INLET PROTECTION	(E-9-2 C-011)
	CURB INLET PROTECTION	(E-9-3 C-011)
	TEMPORARY ASPHALT BERM	(C-5 C-011)
	STABILIZED CONSTRUCTION ENTRANCE	(C-011 C-011)
	SLOPE STABILIZATION MATTING/EXISTING SLOPES >15% (TSSMS)	(E-1-1 C-011)
	CHECK DAM	(D-2 C-011)
	SEDIMENT TRAP	(E-1-2 C-012)
	EX. STEEP SLOPES (>15%)	

PROFESSIONAL CERTIFICATION

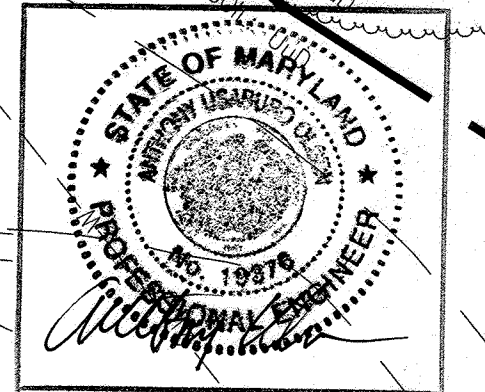
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NOTES:

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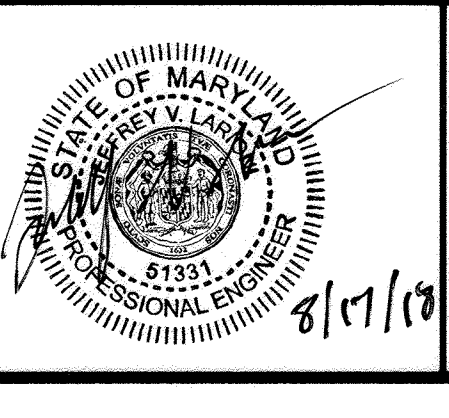
EXPIRATION DATE: SEPTEMBER 22, 2021

No	SDP REVISION	DATE	PLAN STATUS	DATE
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2	BUILDING 32 ADD	12/14/2017		
3	SHIFT BUILDING 32 ADD NORTH (APPLIED REVISION 3 SUPERSEDES REVISION 2)	02/23/2018		
4	ADD AWNING ON BLDG 32A	01/15/2021		

AS-BUILT CERTIFICATION

Note: there is no "As-Built" information provided on this sheet.

PE: Jeffrey Laroni, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
 LAUREL, MD 20723

TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

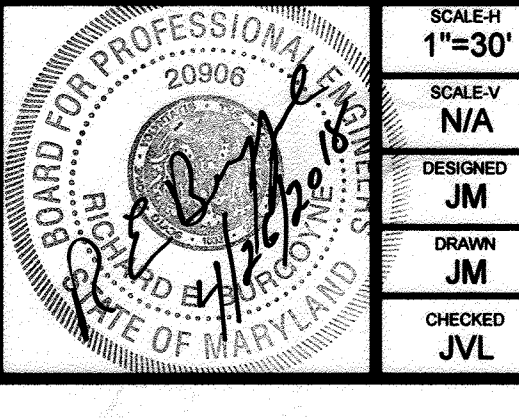
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Cowen Design Group

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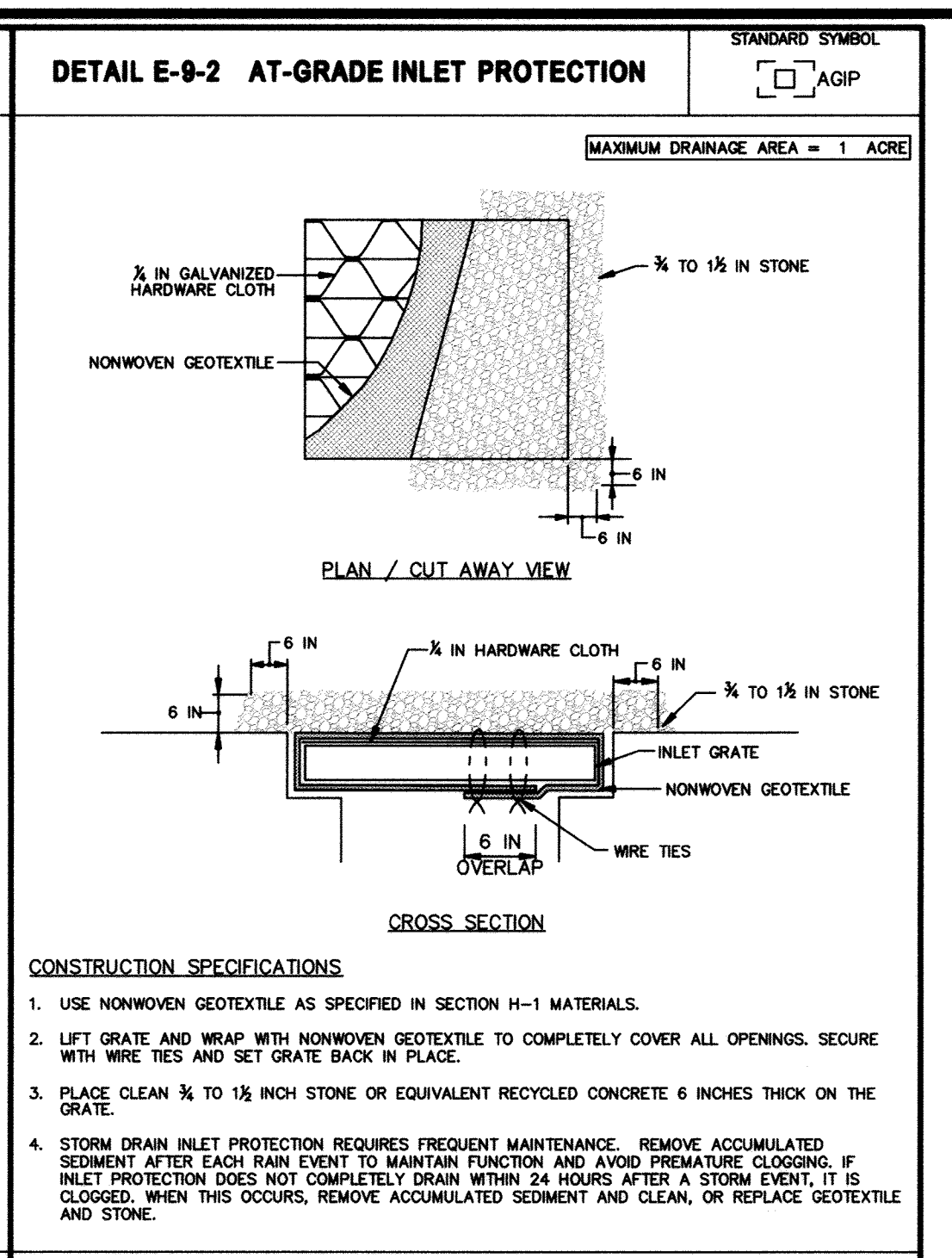
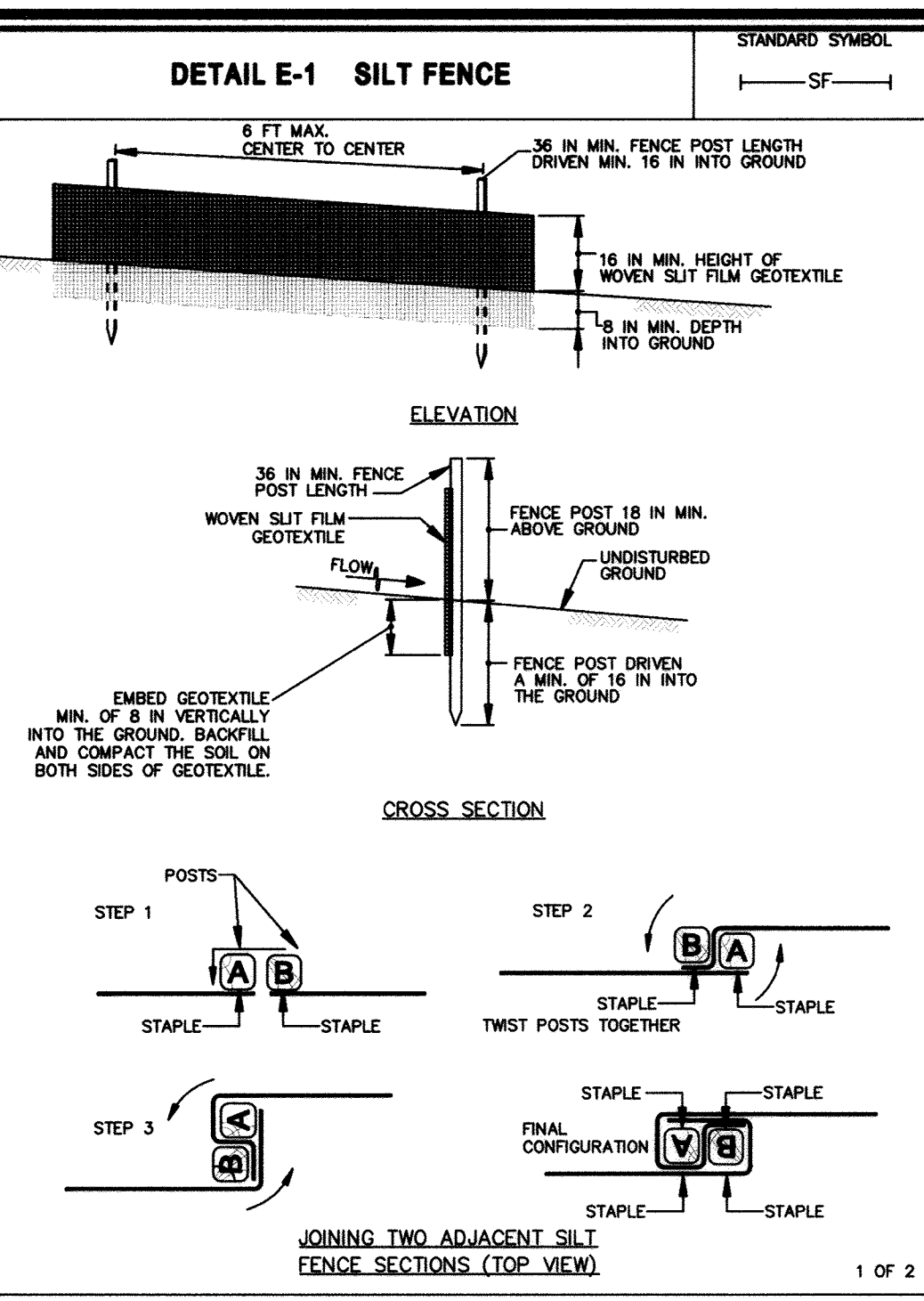
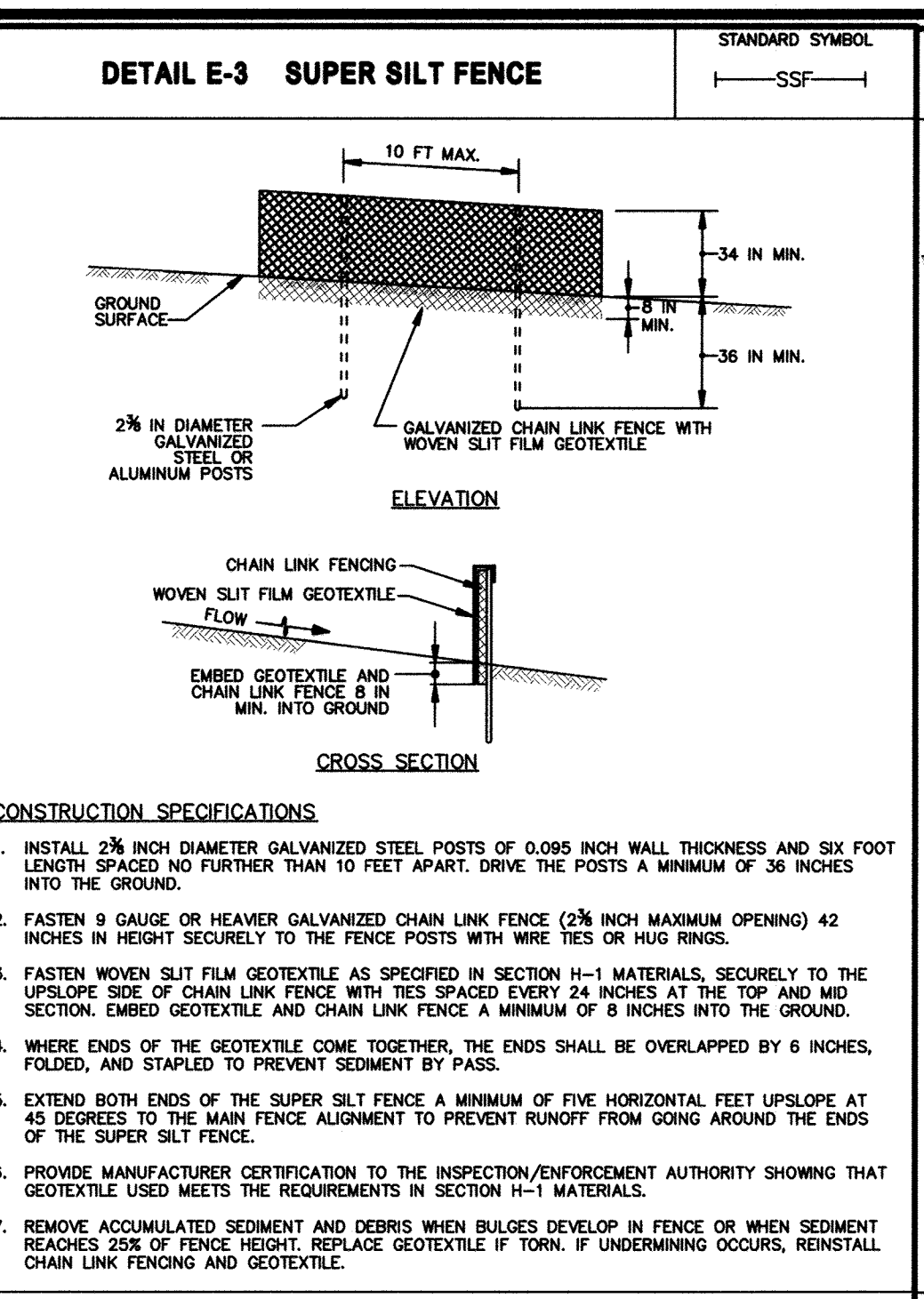
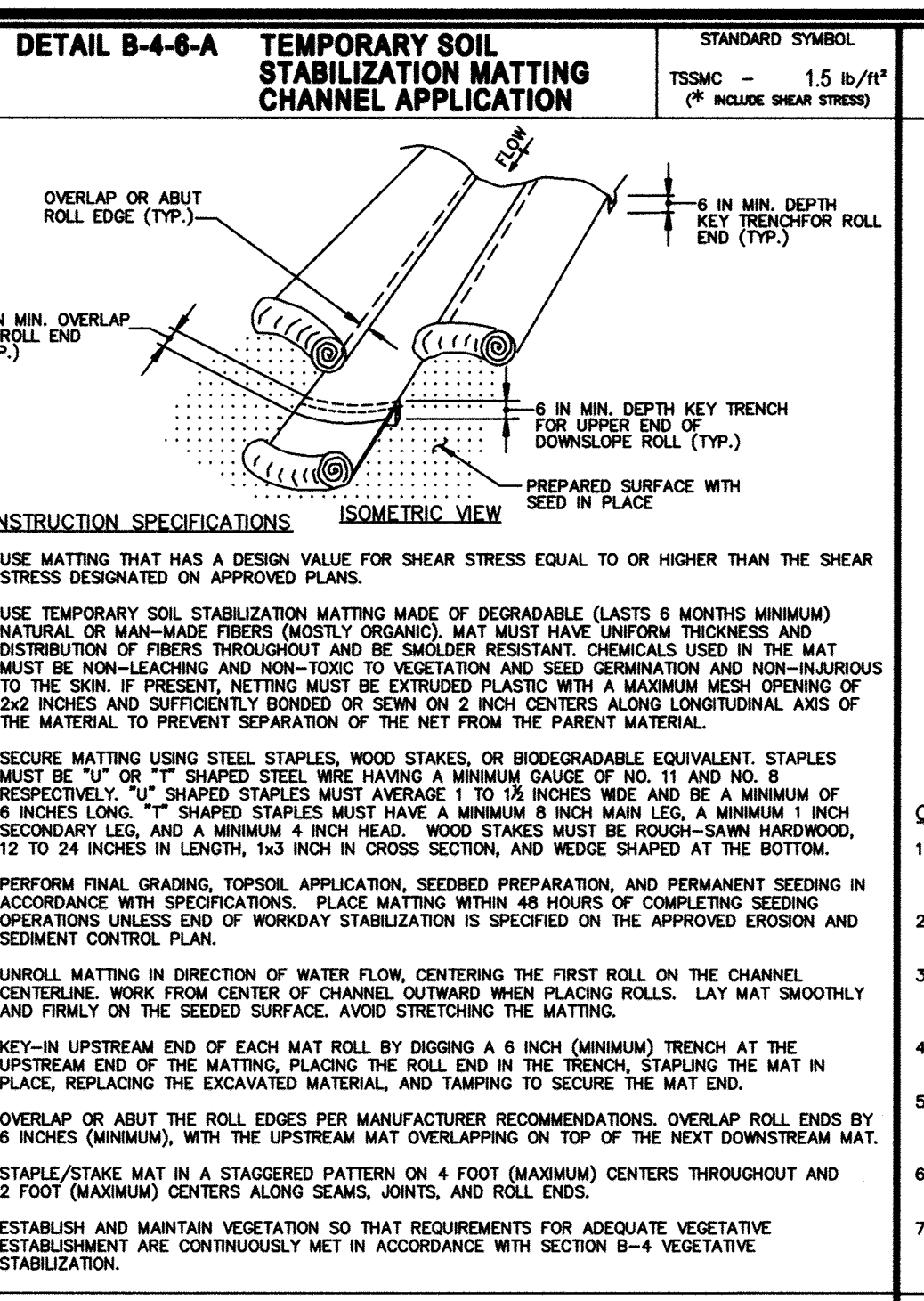
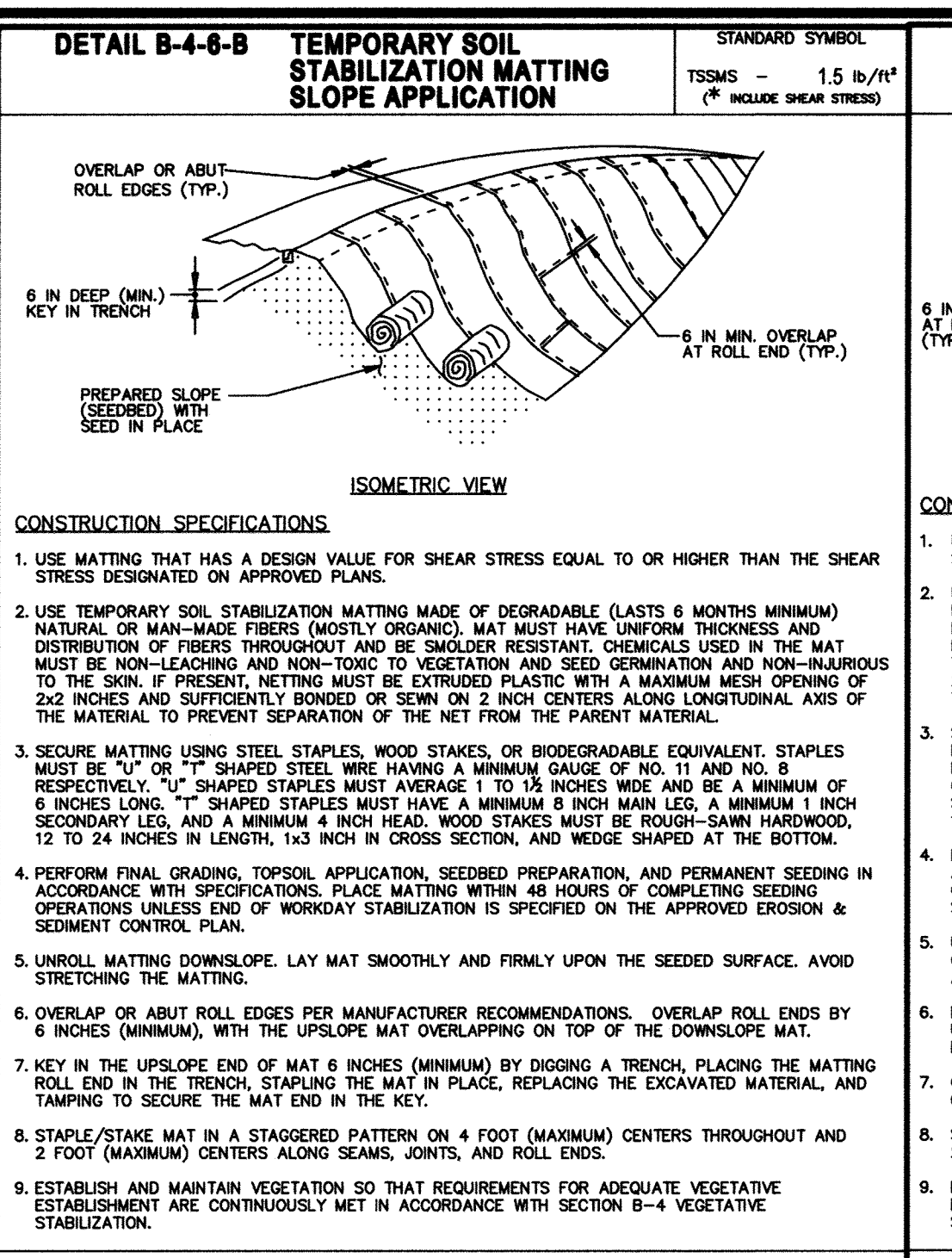
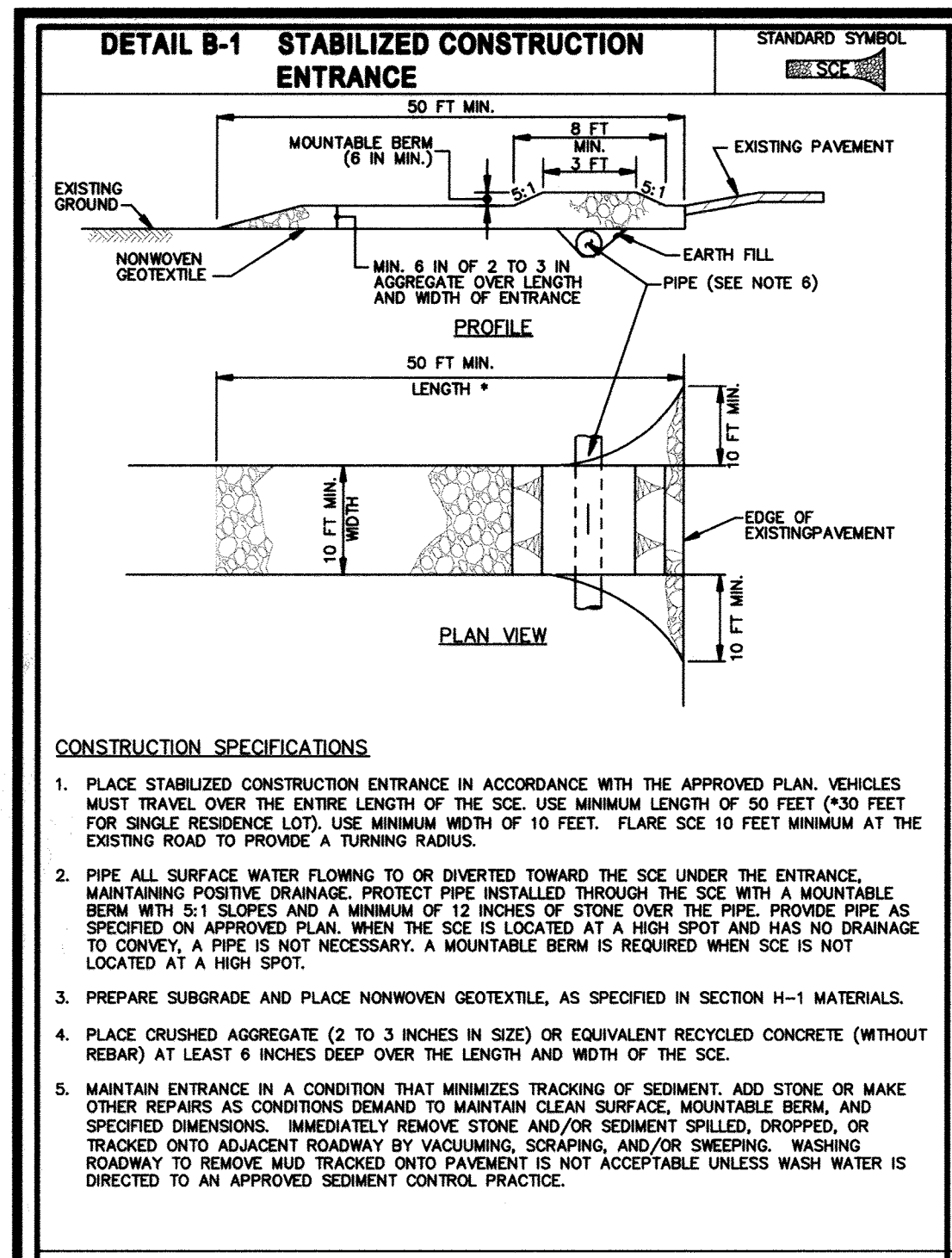
3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32

SITE DEVELOPMENT PLAN
SEDIMENT CONTROL PHASE II

SCALE: 1"=30'	SCALE: N/A	DESIGNED: JM	DRAWN: JM
CHECKED: JVL	DATE: 03/11/2016	SDP FILE NUMBER: SDP-16-072	DRAWING NO: C-010
			10 of 35



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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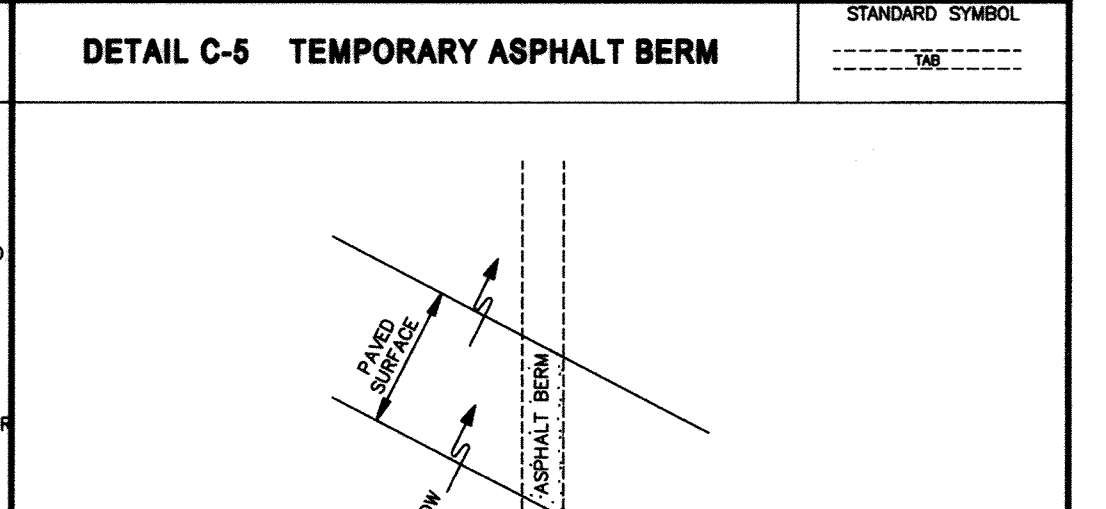
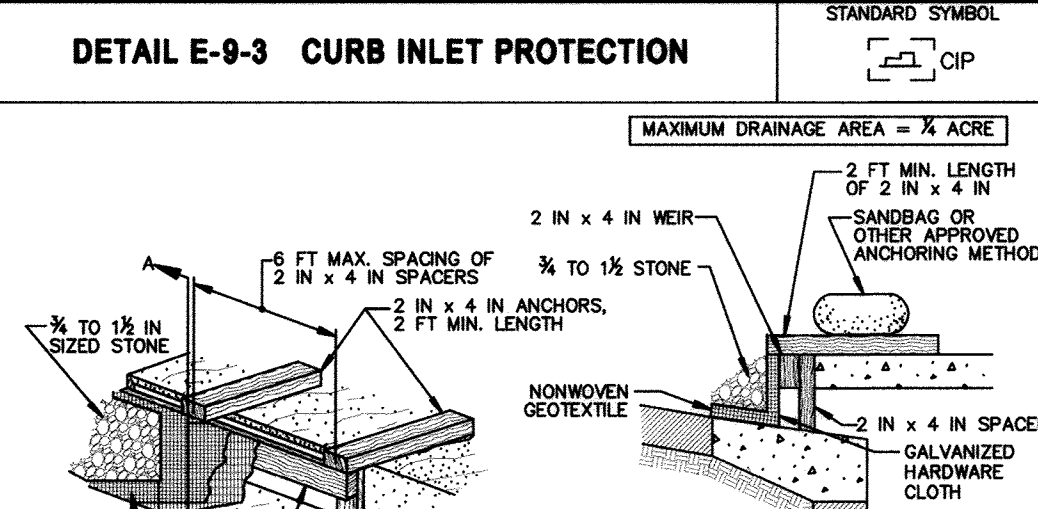
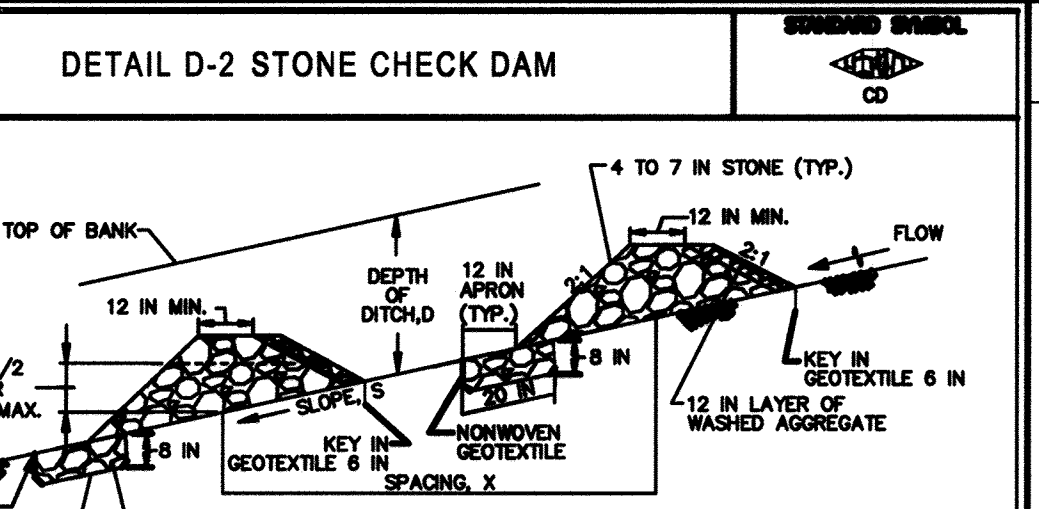
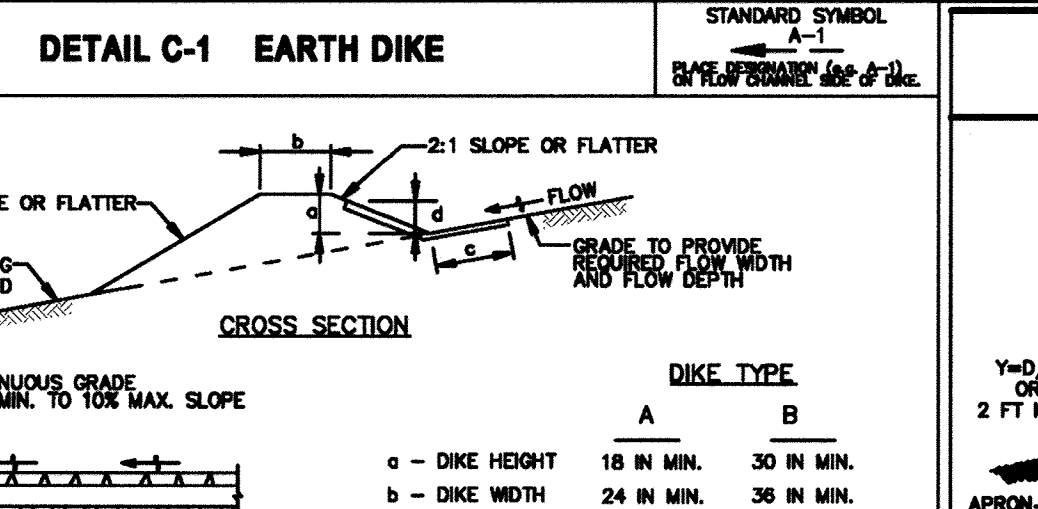
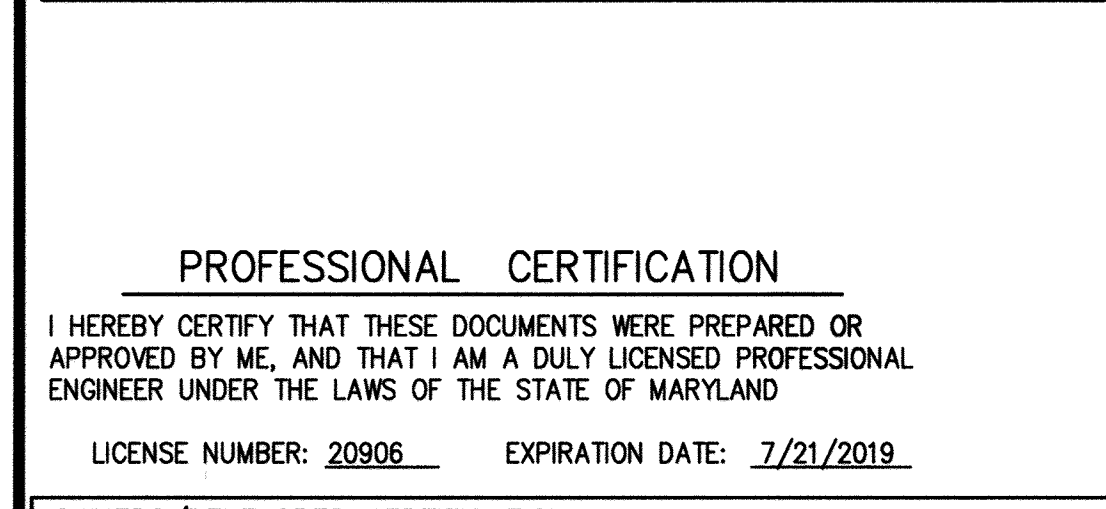
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

OWNERS/DEVELOPER CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Mark Alex DeCenzo 4/27/2018
 OWNER'S/DEVELOPER'S SIGNATURE DATE

Mark Alex DeCenzo - AP, President/Manager
 PRINTED NAME & TITLE

DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, AND THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

R.E. Dwyer 4/26/2018
 DESIGNER'S SIGNATURE DATE

R. E. Burgoyne MD REGISTRATION NO. 20906
 PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

HOWARD SCD SIGNATURE BLOCK:

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

John R. Blanton 5/1/18
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Chubb 5-4-18
 Chief, Development Engineering Division Date

Kevin D. Sullivan 5-8-18
 Chief, Division of Land Development Date

William J. Yllescas 5-8-18
 Director Date

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

PART 1 - MOBILIZATION

1. OBTAIN ALL REQUIRED PERMITS FROM HOWARD COUNTY.
2. NOTIFY THE HOWARD COUNTY DEPARTMENT OF PERMITS & LICENSES, GRADING, AND SEDIMENT CONTROL INSPECTIONS AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
3. COORDINATE ALL CONSTRUCTION ACTIVITIES WITH JHU-APL STAFF.

PART 2 - SEDIMENT CONTROL

4. BEGIN PHASE 1 OF SEDIMENT CONTROL PLANS
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND PERIMETER EROSION CONTROLS: SILT FENCE, DIVERSION DIKES, CHANNELS, AND TEMPORARY ASPHALT BERMS AS INDICATED IN THE SEDIMENT CONTROL PHASE 1 PLANS.
6. INSTALL INLET PROTECTION AS INDICATED IN THE SEDIMENT CONTROL PHASE 1 PLANS.

PART 3 - IMPROVEMENTS

7. CLEAR AND GRUB WITHIN THE LIMITS OF DISTURBANCE. CONTRACTOR IS TO LIMIT CLEARED AREAS TO THOSE WHICH WILL BE WORKED WITHIN 30 DAYS.
8. REMOVE AND DISPOSE/RECYCLE EXISTING ASPHALT PAVING WHERE INDICATED ON PLANS.
9. PREP BUILDING PAD FOR CONSTRUCTION OF NEW BUILDING.
10. BEGIN ROUGH GRADING THE SITE. PROVIDE TEMPORARY STABILIZATION FOR AREAS WHICH WILL NOT BE WORKED FOR 7 DAYS. RE-SET ANY SEDIMENT CONTROLS DAMAGED OR IMPACTED BY EARTHWORK OPERATIONS.
11. INSTALL UTILITIES AS SHOWN WITHIN THE "ULTIMATE CONDITION" AS MODIFIED BY REVISION 2 OF THIS SDP. CONNECT TO THE EXISTING UTILITIES CONSTRUCTED WITH THE SDP-08-04 GRADELINE IMPROVEMENTS AND THE "INTERIM CONDITION" IMPROVEMENTS. COORDINATE ALL OUTGAGES WITH JHU-APL.
12. FINE GRADE THE PROPOSED ROADWAY AND BUILDING DOCK RAMP RECONSTRUCTION. ENSURE ALL COMPACTION IS PER THE SPECIFICATIONS. PROOF ROLL THEN PLACE GRADE AGGREGATE BASE AND BASE COURSE OF ASPHALT. SURFACE AND INTERMEDIATE COURSES OF ASPHALT PAVING ARE TO BE PLACED ONCE THE SITE IS STABILIZED.
13. FINE GRADE THE REMAINDER OF THE SITE. INSTALL INLET PROTECTION AS FINAL GRADE IS ESTABLISHED AT STORM DRAIN INLETS.
14. FINE GRADE AND INSTALL CURB AND GUTTER, INFILL PAVING, SITE WALLS, SIDEWALKS, ETC AS THE SITE REACHES FINISHED GRADE.
15. BEGIN PHASE II OF SEDIMENT CONTROL PLANS
16. PROVIDE PERMANENT STABILIZATION TO ALL OPEN AREAS ONCE FINAL GRADE IS REACHED.

PART 4 - DEMOBILIZATION

17. REMOVE PERIMETER SEDIMENT CONTROLS ONCE THE SITE HAS BEEN STABILIZED, AND APPROVED BY THE HOWARD COUNTY INSPECTOR.
18. ONCE ALL EARTH MOVING ACTIVITIES ARE COMPLETED, WASH AND SWEEP ASPHALT PAVING. INSTALL INTERMEDIATE AND SURFACE COURSES WHEN DRY.

Temporary Soil Stabilization Matting Shear Stress Computation

$\tau = \gamma \cdot R \cdot S_w$ where:

τ = shear stress (lb/ft²)
 γ = weight density of water (62.4 lb/ft³)
 R = average water depth (hydraulic radius) (ft)
 S_w = water surface slope (ft/ft)

$\tau = 1.08 \text{ lb/ft}^2$
 $\gamma = 62.4 \text{ lb/ft}^3$
 $R = 0.182 \text{ ft}$
 $S_w = 0.095$

SOIL K VALUE OF 0.43 WAS FOUND FROM THE NRCS SOIL SURVEY (ACCESSED AUGUST 3, 2016). SINCE K VALUE IS > 0.35; TEMPORARY MATTING WITH DESIGN SHEAR STRESS OF MINIMUM 1.5 lb/ft² IS REQUIRED

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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B-4.2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

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

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

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...

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.

- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

B. Topsoiling

- 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.

- a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

- 2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications.

- 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.

- 4. Erosion and sediment control practices must be maintained when applying topsoil.

C. Soil Amendments (Fertilizer and Lime Specifications)

- 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.

- 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.

2. Application

- a. Dry Seeding: This includes use of conventional drop or broadcast seeders. i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1.

B.15

B. Mulching

1. Mulch Materials (in order of preference)

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

B-4.3 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to store and store soil for later use.

Criteria

- 1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

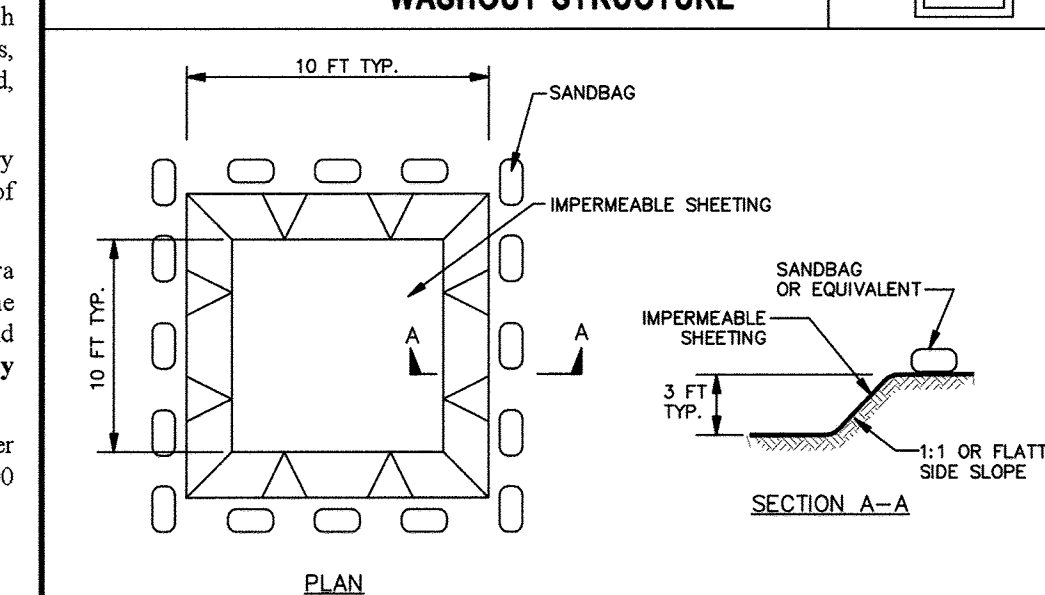
Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization.

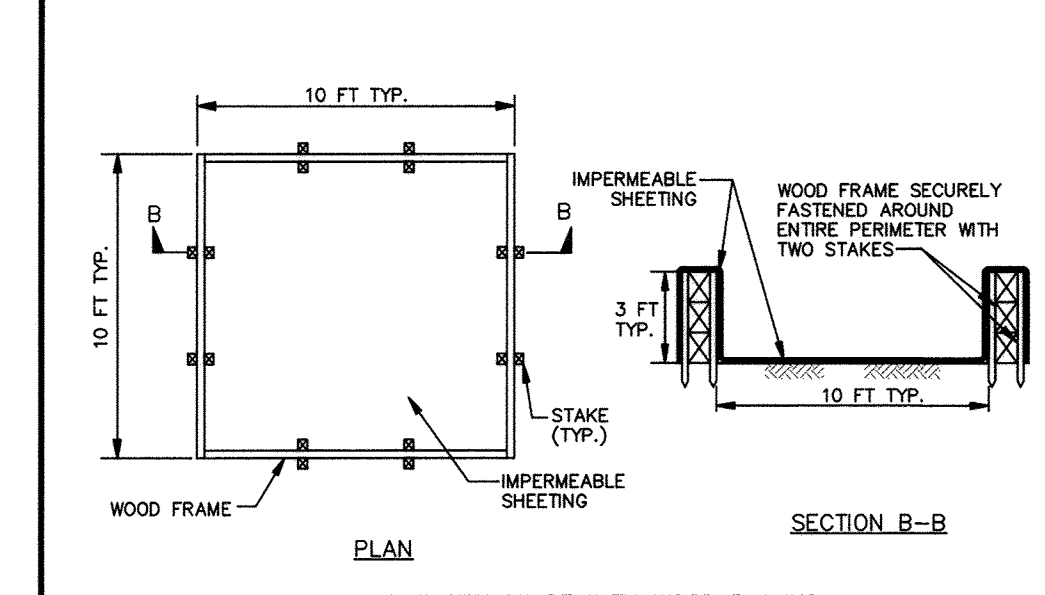
Temporary Seeding Summary

Table with columns: No., Species, Application Rate (lb/ac), Seeding Dates, Seeding Depths, Fertilizer Rate (10-20-20), Lime Rate. Includes rows for Annual Ryegrass and Wood Cellulose Fiber.

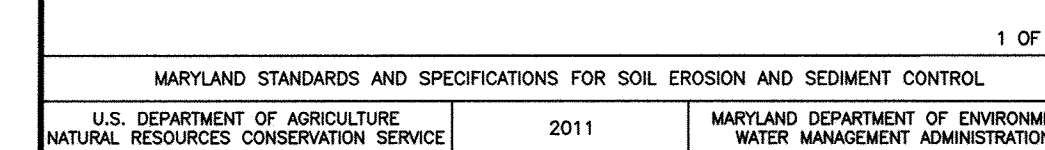
DETAIL H-6 ONSITE CONCRETE WASHOUT STRUCTURE



EXCAVATED WASHOUT STRUCTURE



WASHOUT STRUCTURE WITH WOOD PLANKS



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

OWNERS/DEVELOPER CERTIFICATION: I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN...

DESIGN CERTIFICATION: I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS...

HOWARD SCD SIGNATURE BLOCK: THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: DEPARTMENT OF PLANNING AND ZONING. Chief, Development Engineering Division, Chief, Division of Land Development, Director.

B-4.3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

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

Conditions Where Practice Applies

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

Criteria

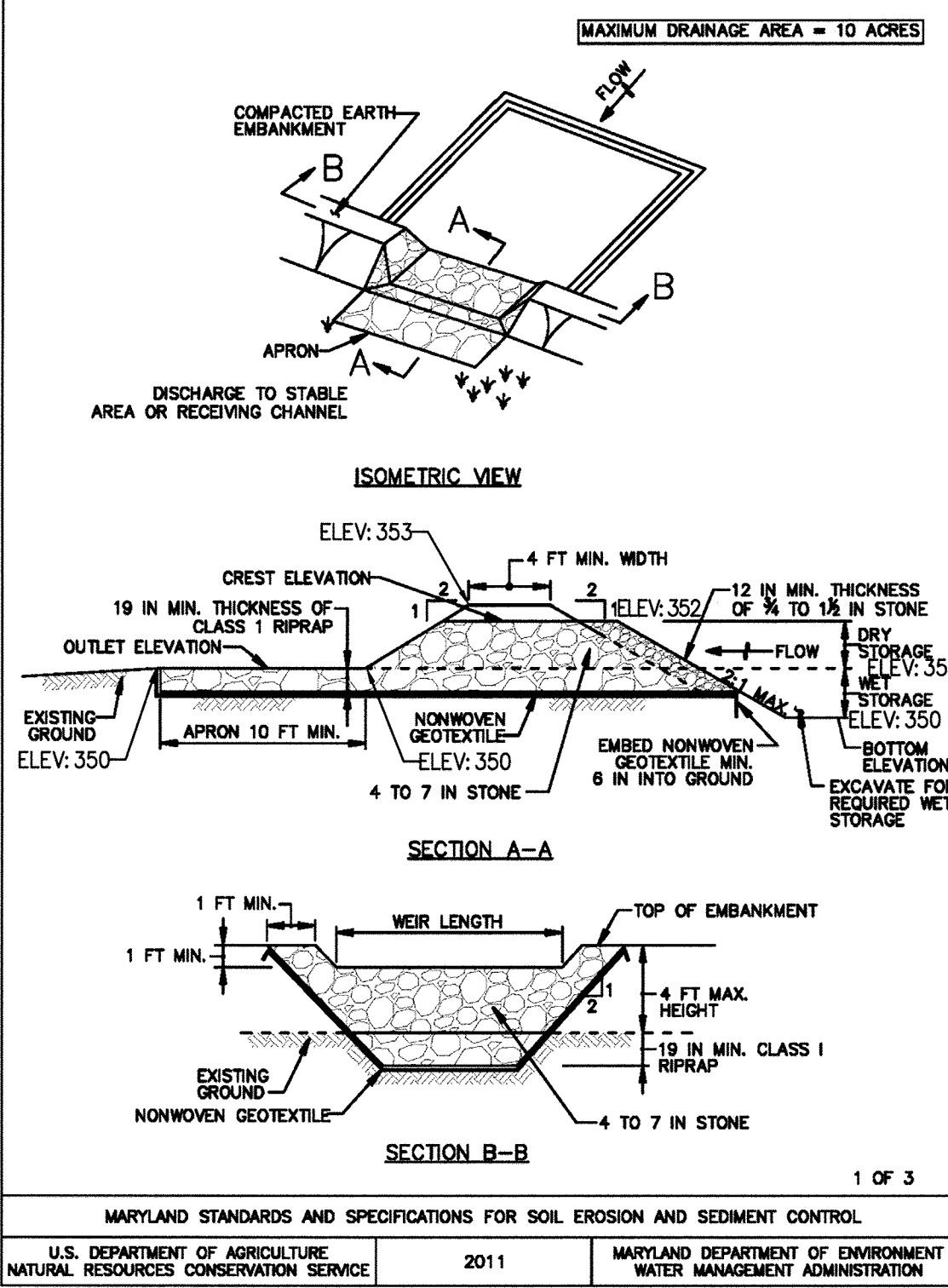
A. Seeding

1. Specifications

- 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.

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II



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

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

- CONSTRUCTION SPECIFICATIONS: 1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED. 2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.

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

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

Table with columns: PIPE OUTLET SEDIMENT TRAP ST-1, TRAP NO. 1. Rows include Drainage Area (Initial, Interim, Final), Total Storage Required, Total Storage Provided, Wet Storage Required, Dry Storage Required, Weir Length, Weir Crest Elevation, Cleanout Elevation, Side Slope, Embankment Top Width, Outlet Protection - Length, Outlet Protection - Depth.

Table with columns: LEVEL SPREADER BASIS OF DESIGN FOR 10-YEAR FREQUENCY RAINFALL EVENT. Rows include Design Criteria, Design Value, L_min. Values for Min Lip Length based on flow and drainage area.

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

Table with columns: No, REVISION, DATE. Includes revision entries for design and engineering changes.

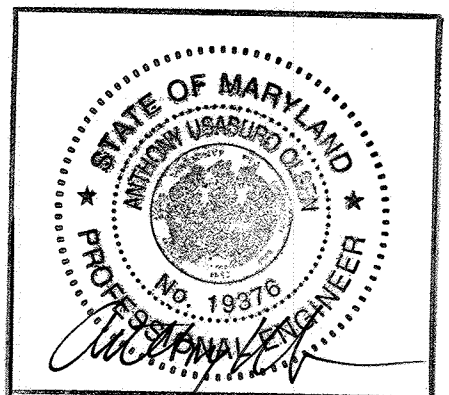
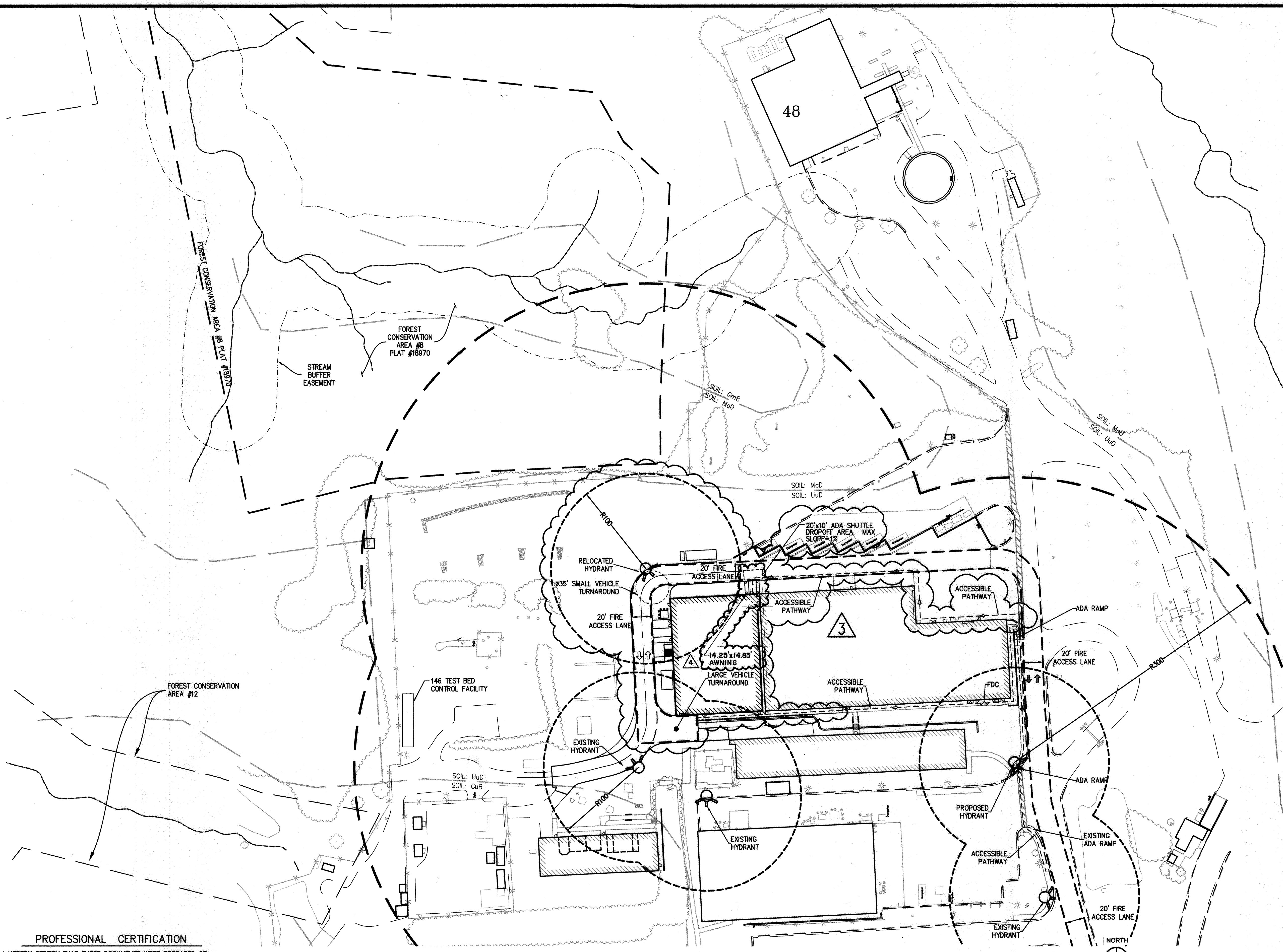
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

AS-BUILT CERTIFICATION: Note, there is no 'As-Built' information provided on this sheet. PE: Jeffrey Larian, License Number: 51331. Date of As-Built: 06/08/2018.

THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY. 11100 JOHN HOPKINS RD LAUREL, MD 20723. TAX MAP 41 GRID 16 PARCEL 123 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND.

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...

SEDIMENT CONTROL NOTES & DETAILS. THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32. SITE DEVELOPMENT PLAN. Includes drawing number C-012 and date 03/11/2016.



NOTE:
THIS SEAL & CERTIFICATION
APPLIES ONLY TO REVISION **A**

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. 51331
EXPIRATION DATE: **SEPTEMBER 22, 2021**

APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Chad Clark</i> Chief, Development Engineering Division	5-4-18 Date
<i>Kathleen</i> Chief, Division of Land Development	5-8-18 Date
<i>Nathan Zylow</i> Director	5-8-18 Date

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR
APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

1	KEEP BUILDING 10A	08/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018
4	ADD AWNING ON BLDG 32A	01/15/2021
No	SDP REVISION	DATE

PLAN STATUS	DATE

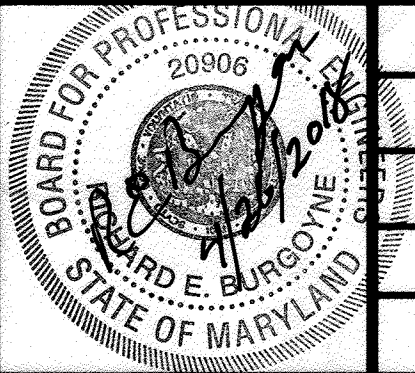
AS-BUILT CERTIFICATION
Note, there is no "As-Built" information provided on this sheet.
PE: Jeffrey Larion, License Number: 51331. Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
11100 JOHN HOPKINS RD
LAUREL, MD 20723
TAX MAP 41 GRID 18 PARCEL 123
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

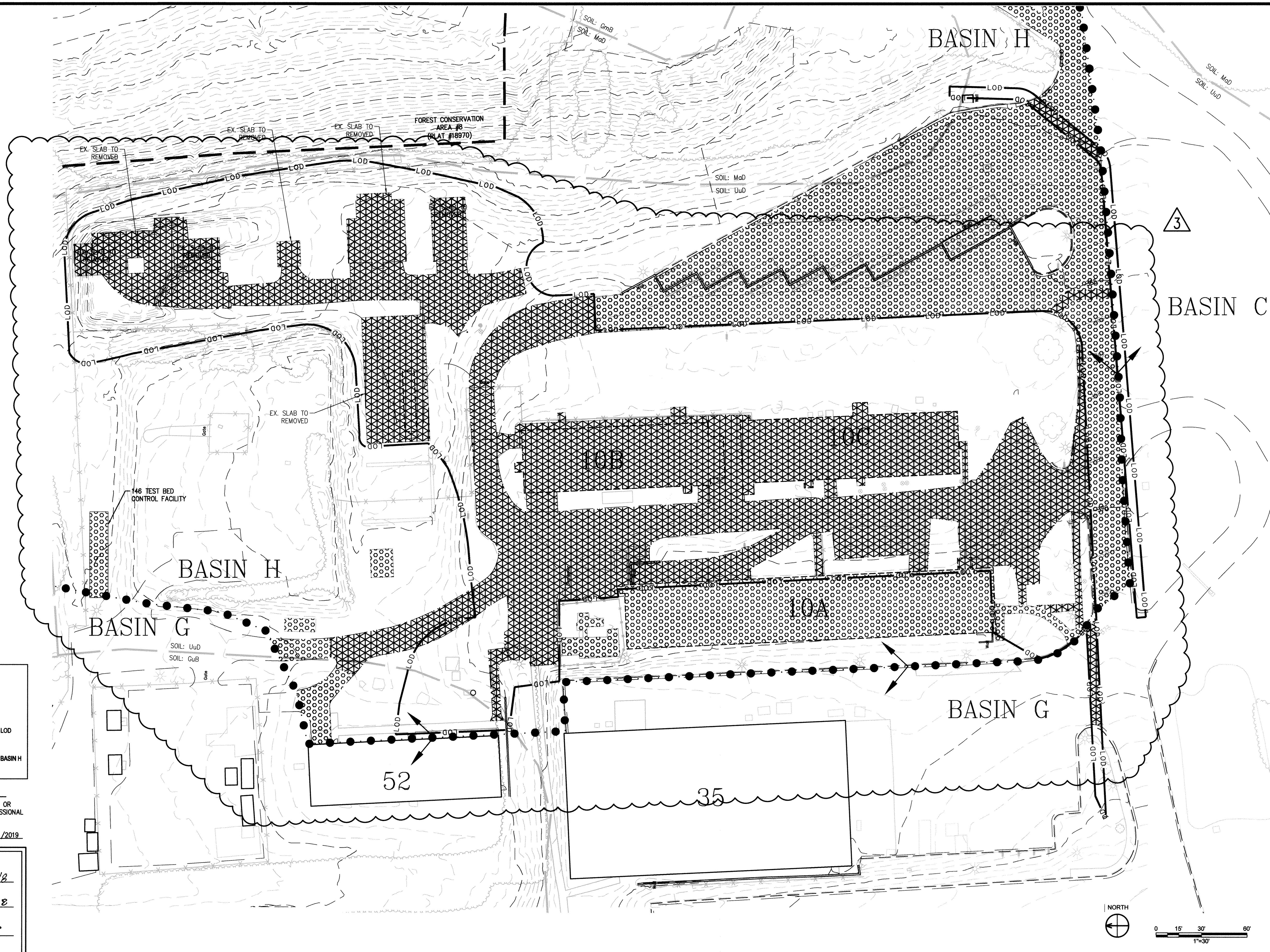
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OF A CONTRACT AWARD, TO
PERFORM THE WORK REQUIRED
HEREUNDER, WITHOUT THE EXPRESS
WRITTEN CONSENT OF JHU/APL.

Cowen Design Group
Planning - Landscape Architecture - Civil Engineering
3330 WASHINGTON BLVD
SUITE 430, ARLINGTON, VA 22201



SCALE: H 1"=50'	SCALE: V N/A	DESIGNED JM	DRAWN JM	DATE 03/11/2016	SDP FILE NUMBER SDP-16-072	DRAWING NO. C-013	13 of 35
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32 SITE DEVELOPMENT PLAN SITE AREA MAP							SDP-16-072

AS-BUILT SDP-16-072



LEGEND

- DRAINAGE BASIN DIVIDE
- LIMITS OF DISTURBANCE
- EX. IMPERVIOUS AREA WITHIN LOD
A = 54,915 sf
- EX. IMPERVIOUS AREA WITHIN BASIN H
A = 66,306 sf

PROFESSIONAL CERTIFICATION

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LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Phelan 5-4-18
 Chief, Development Engineering Division Date

Kurt Sanderow 5-8-18
 Chief, Division of Land Development Date

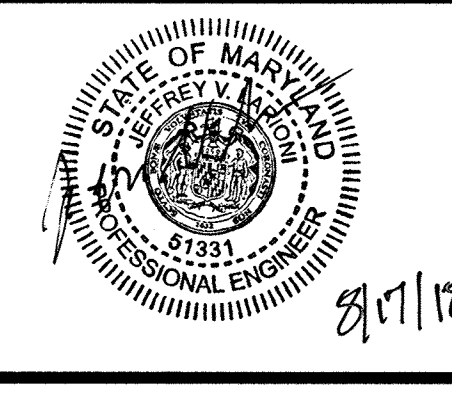
Nadine Jyllian 5-8-18
 Director Date

1	KEEP BUILDING 10A	08/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018
No	SDP REVISION	DATE

PLAN STATUS	DATE

AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larson, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
 LAUREL, MD 20723

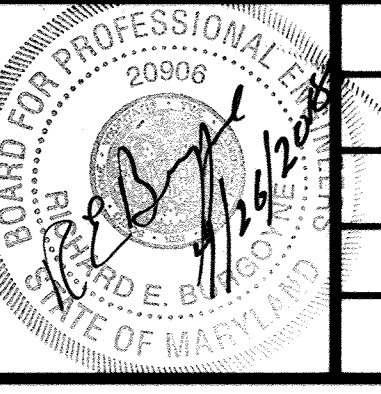
TAX MAP 41 GRID 18 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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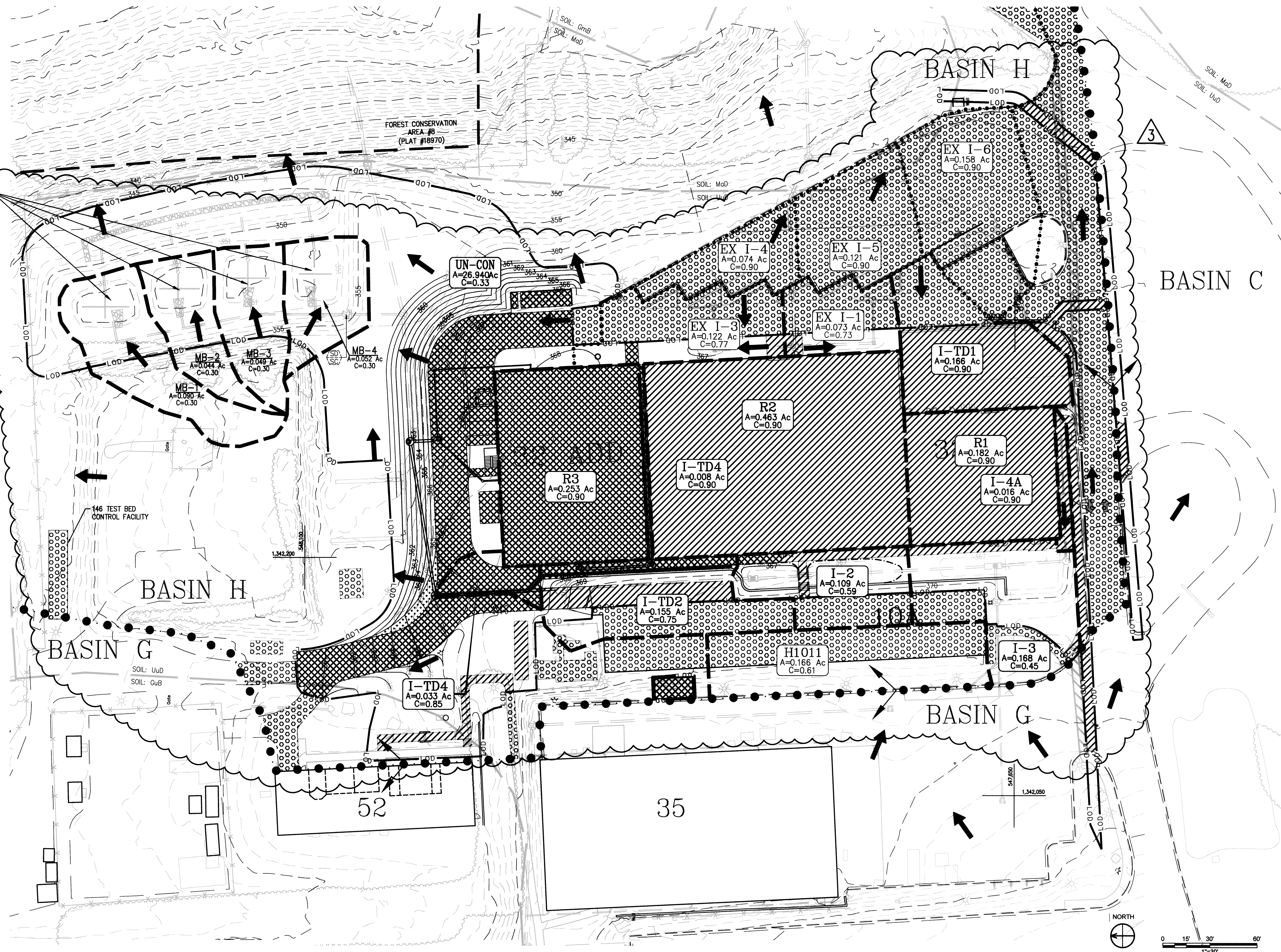
Cowen Design Group
 Planning • Landscape Architecture • Civil Engineering

3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



SCALE-H	1"=30'
SCALE-V	N/A
DESIGNED	JVL
DRAWN	JVL
CHECKED	REB
DATE	03/11/2018
SDP FILE NUMBER	SDP-16-072
DRAWING NO.	C-014
14 OF 35	

MB-1 THROUGH MB-4 INSTALLED IN THE PROPOSED CONDITIONS AND SIZED TO ACCEPT THE ADDITIONAL RUNOFF GENERATED BY THE B32 ADD DEVELOPMENT. SEE AS-BUILT VOLUME COMPUTATIONS ON SHEET 16 OF 35.



LEGEND

- ● ● ● ● DRAINAGE BASIN DIVIDE
- ● ● ● ● EXISTING DRAINAGE DIVIDE
- — — — — PROPOSED DRAINAGE DIVIDE
- — — — — LOD LIMITS OF DISTURBANCE
- [Cross-hatched] IMPERVIOUS AREA WITH 'ULTIMATE'
A = 13,549 sf
- [Diagonal lines] IMPERVIOUS AREA WITH 'PROPOSED'
A = 47,910 sf
- [Dotted] EX. IMPERVIOUS AREA WITHIN BASIN H
A = 69,306 sf
- [Stippled] GRAVEL SHOULDER
A = 369 sf

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 5-4-18
 Chief, Development Engineering Division
 Date

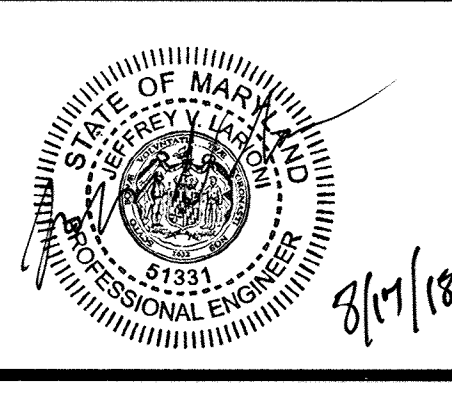
[Signature] 5-8-18
 Chief, Division of Land Development
 Date

[Signature] 5-8-18
 Director
 Date

1	KEEP BUILDING 10A	09/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018
No.	SDP REVISION	DATE

PLAN STATUS	DATE

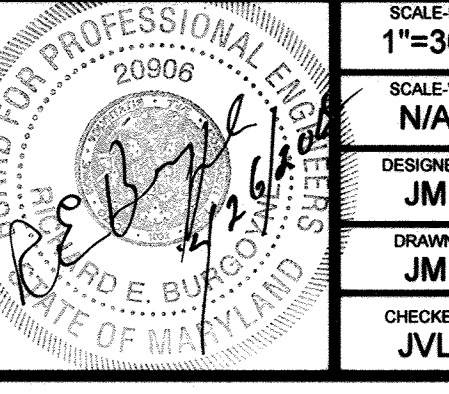
AS-BUILT CERTIFICATION
 Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Lariomi, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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 3330 WASHINGTON BLVD
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THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32
 SITE DEVELOPMENT PLAN
DRAINAGE AREA MAP - ULTIMATE

SCALE: H 1"=30'
 SCALE: V N/A
 DESIGNED: JM
 DRAWN: JM
 CHECKED: JVL
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-015
 15 OF 35

STORMWATER MANAGEMENT NARRATIVE

SITE DESCRIPTION
 THE SUBJECT PROPERTY IS A 359.98 ACRE PARCEL LOCATED AT 11100 JOHNS HOPKINS ROAD, LAUREL, MD 20723. THIS PROPERTY IS CURRENTLY ZONED AS A PLANNED EMPLOYMENT CENTER (PEC). THE SITE, FOR STORMWATER MANAGEMENT AND ESD PURPOSES, IS DEFINED AS THE AREA WITHIN LIMITS OF DISTURBANCE (LOD), WHICH IS 2.90 ACRES, LOCATED AT THE NORTHEAST CORNER OF THE PROPERTY.

PROJECT PHASING
 THE ORIGINAL ITERATION OF THIS REPORT AND SDP DEVELOPED BUILDING 32 WHILE ALLOCATING SPACE FOR FUTURE EXPANSIONS. REVISION 1 ANALYZED IMPACTS OF RETAINING A BUILDING THAT WAS ORIGINALLY TO BE REMOVED (BUILDING 10A). THIS WAS DEEMED AS THE "INTERIM CONDITION," BUT ESD ANALYSIS STILL CONSIDERED ITS FUTURE REMOVAL AND EXPANSIONS IDENTIFIED IN THE SDP DRAWINGS. REVISION 3 NOW CONSIDERS BUILDING 10A AS A PERMANENT INSTALLATION, AND ADDS A NEW ADDITION TO BUILDING 32 (AND INFRASTRUCTURE UPGRADES) AS THE "ULTIMATE CONDITION."

REVISION 3 IS A REFINEMENT UPON REVISION 2, AS THE BUILDING ADDITION HAS SHIFTED TO THE NORTH AND THE LIMITS OF PAVING HAVE EXPANDED TO ACCOMMODATE THE ANTICIPATED DELIVERY VEHICLES. THE ESD DESIGN ANALYZES THE ENTIRE PROJECT FROM EXISTING CONDITIONS AS OF 2015 THROUGH THE ULTIMATE DEVELOPMENT OF BUILDING 32, BUILDING 32 ADDITION, AND BUILDING 10A REMAINING IN SERVICE.

ESD TO THE MEP
 THE MAJORITY OF STORMWATER RUNOFF IS ROUTED THROUGH THE FOUR (4) MICRO-BIORETENTION BASINS, EACH OF WHICH HAVE LESS THAN 20,000 SF OF AVERAGE CONTRIBUTING AREA. THE MICRO-BIO BASINS ARE INSTALLED IN AN OFFLINE CONFIGURATION; A DIVERSION WEIR IS INSTALLED IN AN UPSTREAM MANHOLE TO DIVERT THE FIRST FLUSH VOLUME TO THE MICRO-BIO BASINS WHILE ALLOWING HIGHER INTENSITY STORMS TO BYPASS BY OVERFLOWING THIS WEIR. THE MICRO-BIO BASINS HAVE UPSTREAM PRETREATMENT FROM AN INLINE STORMCEPTOR HYDRODYNAMIC SEPARATOR. THE FOUR BASINS ARE HYDRAULICALLY CONNECTED VIA THE INFLOW FLOW DISTRIBUTION HEADER TO ENSURE UNIFORM NUTRIENT LOADING OF THE BIO MEDIA. OVERFLOW DRAINS ARE PROVIDED IN EACH MICRO-BIO TO PROTECT THE EMBANKMENT FROM OVERTOPPING, AND THE PIPED DISCHARGE TERMINATES IN A STILLING BASIN CREATED BY GABION BASKETS. THE STILLING BASIN REDUCES THE OVERFLOW VELOCITY TO ZERO AND PROMOTES SHEET FLOW DOWN THE ADJACENT SLOPE TO THE WATERCOURSE BELOW.

THE "SITE," FOR PURPOSES OF ESD ANALYSIS, IS DEFINED AS THE OVERALL LIMITS OF DISTURBANCE (2,900 AC). THE PRE-DEVELOPED IMPERVIOUS AREA WITHIN THE SITE IS 1,295 AC, OR 43%. SINCE THE EXISTING IMPERVIOUS AREA IS GREATER THAN 40% THIS PROJECT IS CONSIDERED A REDEVELOPMENT PROJECT. THE PROPOSED IMPERVIOUS AREA OF 1,496 ACRES IS LARGER THAN THE EXISTING IMPERVIOUS AREA, THEREFORE ESD IMPLEMENTATION IS REQUIRED. THE ESDV IS DETERMINED AS THE RUNOFF VOLUME REQUIRED TO BE TREATED IN ORDER TO REDUCE THE SITE'S RUNOFF TO THE EQUIVALENT OF WOODS IN GOOD CONDITION.

SINCE THIS IS A REDEVELOPMENT PROJECT, THE SITE IMPERVIOUS COVER IS BASED ON AN EQUIVALENT IMPERVIOUS AREA OF 50% OF THE EXISTING COVERAGE, PLUS 100% OF ALL ADDITIONAL COVERAGE. THIS LEADS TO AN EQUIVALENT IMPERVIOUS AREA OF 0.849 ACRES, AN EQUIVALENT SITE IMPERVIOUS COVERAGE OF 29%, AND A RESULTANT TARGET PE OF 1.6". THE TARGET RCN VALUE FOR THE SITE IS 55 (WOODS IN GOOD CONDITION) AS FOUND IN CHAPTER 5 OF THE MARYLAND STORMWATER DESIGN MANUAL. SINCE 100% OF TARGET ESDv IS PROVIDED, THE RV, CPV, AND Q10 REQUIREMENTS ARE SATISFIED. SEE THE ESDv PRACTICES SUMMARY TABLES IN APPENDIX A FOR THE VOLUMES OF THE BASINS.

AT THE TIME OF REVISION 3 SUBMISSION, THE "INTERIM CONDITION" HAS BEEN CONSTRUCTED AND THE SITE STABILIZED. THE MICRO-BIO BASINS, AS DESIGNED DURING REVISION 1, HAVE BEEN CONSTRUCTED. THE REVISION 3 ESD ANALYSIS CONSIDERS THEIR AS-BUILT SIZES IN THE ESD DESIGN PROCESS. THE STAGE-STORAGE CURVES FROM THE AS-BUILT SURVEY VERIFY BASINS PROVIDE SUFFICIENT STORAGE FOR 100% OF THE TARGET ESDv, AS CONSTRUCTED.

THROUGH ESD IMPLEMENTATION THE OVERALL SITE RUNOFF CURVE NUMBER (CN) HAS BEEN REDUCED FROM EXISTING CONDITIONS (88) TO POST-DEVELOPMENT (72) AS SHOWN IN APPENDIX A OF THE STORMWATER MANAGEMENT REPORT. SINCE CN HAS BEEN REDUCED FOR THE SITE, NO ADDITIONAL OVERTANK FLOOD PROTECTION VOLUME (OP10) IS REQUIRED.

THERE ARE NO IMPACTS TO EXISTING WETLANDS. NO IMPROVEMENTS ARE PROPOSED WITHIN THE FOREST CONSERVATION EASEMENT.

HGL COMPUTATIONS

FROM: H1001 TO: H1002	114.22 FT @ 0.1817 %	ELEV. = 306.7
HGL = 0.2076		
TP = 346.2		
@ STRUCTURE # H1002 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 10.35 V1= 9.81 A= 0.50 X 1 = 0.5		
Q2= 10.35 V2= 26.12 B= 0.50 X 1 = 0.5		
Q3= 0.00 V3= 0.00 C= 0.50 X 0 = 0		
D= 0.50 X 0.5 = 0.25		
TOTAL = 1.25		
Modeled as culvert under inlet control: HGL = 346.6		
FROM: H1002 TO: H1003	96.93 FT @ 0.3204 %	ELEV. = 347.5
HGL = 0.3591		
TP = 347.9		
@ STRUCTURE # H1003 30" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 10.35 V1= 7.48 A= 0.50 X 1 = 0.5		
Q2= 10.35 V2= 9.81 B= -0.70 X 1 = -0.7		
Q3= 0.00 V3= 0.00 C= 0.30 X 0.67 = 0.201		
D= N/A X 0.5 = N/A		
TOTAL = 0.00		
Modeled as culvert under inlet control: HGL = 350.6		
FROM: H1003 TO: H1004	80.42 FT @ 0.8428 %	ELEV. = 350.1
HGL = 0.6778		
TP = 350.8		
@ STRUCTURE # H1004 45" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 8.41 V1= 8.33 A= 0.42 X 1 = 0.42		
Q2= 10.35 V2= 7.48 B= 0.50 X 1 = 0.5		
Q3= 1.94 V3= 5.88 C= 0.20 X 1 = 0.2		
D= 0.10 X 1 = 0.1		
TOTAL = 1.22		
Modeled as culvert under inlet control: HGL = 351.7		
FROM: H1004 TO: 8	98.39 FT @ 0.557 %	ELEV. = 351.7
HGL = 0.548		
TP = 352.2		
@ STRUCTURE # MH-8 90" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 8.17 V1= 6.90 A= 0.41 X 1 = 0.41		
Q2= 8.41 V2= 8.33 B= -0.70 X 1 = -0.7		
Q3= 0.00 V3= 0.00 C= 0.10 X 3 = 0.3		
D= N/A X 0.5 = N/A		
TOTAL = 0.01		

HGL COMPUTATIONS

FROM: 8 TO: 1	80.06 FT @ 0.526 %	ELEV. = 353.3
HGL = 0.4211		
TP = 355.2		
@ STRUCTURE # MH-1 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 3.58 V1= 4.14 A= 0.41 X 1 = 0.41		
Q2= 8.17 V2= 6.90 B= -0.70 X 1 = -0.7		
Q3= 0.00 V3= 0.00 C= 0.10 X 0 = 0		
D= N/A X 0.5 = N/A		
TOTAL = -0.29		
Modeled as culvert under inlet control: HGL = 355.0		
FROM: 1 TO: 5	17.03 FT @ 0.4397 %	ELEV. = 352.8
HGL = 0.0789		
TP = 354.9		
@ STRUCTURE # MH-5 45" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 4.60 V1= 7.44 A= 0.50 X 1 = 0.5		
Q2= 4.60 V2= 16.35 B= 0.50 X 1 = 0.5		
Q3= 0.00 V3= 0.00 C= 0.50 X 0 = 0		
D= 0.50 X 0.5 = 0.25		
TOTAL = 1.00		
Modeled as culvert under inlet control: HGL = 359.2		
FROM: 5 TO: 6	45.56 FT @ 0.4397 %	ELEV. = 361.8
HGL = 0.2268		
TP = 361.8		
@ STRUCTURE # MH-6 90" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 3.54 V1= 0.00 A= 0.33 X 1 = 0.33		
Q2= 4.60 V2= 7.44 B= -0.70 X 1 = -0.7		
Q3= 0.00 V3= 0.00 C= 0.18 X 3 = 0.54		
D= N/A X 1 = N/A		
TOTAL = -0.19		
Modeled as culvert under inlet control: HGL = 362.9		
FROM: 1 TO: 2	121.63 FT @ 0.1008 %	ELEV. = 354.7
HGL = 0.1226		
TP = 356.0		
@ STRUCTURE # I-2 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 3.03 V1= 3.98 A= 0.11 X 1 = 0.11		
Q2= 3.58 V2= 4.14 B= -0.10 X 1 = -0.1		
Q3= 0.00 V3= 0.00 C= 0.07 X 0 = 0		
D= N/A X 0.5 = N/A		
TOTAL = 0.01		

HGL COMPUTATIONS

FROM: H1004 TO: 7	45.47 FT @ 0.078 %	ELEV. = 353.3
HGL = 0.0355		
TP = 353.3		
@ STRUCTURE # MH-7 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 1.94 V1= 0.00 A= 0.50 X 1 = 0.5		
Q2= 1.94 V2= 5.88 B= 0.50 X 1 = 0.5		
Q3= 0.00 V3= 0.00 C= 0.08 X 0 = 0		
D= N/A X 0.5 = N/A		
TOTAL = 1.00		
Modeled as culvert under inlet control: HGL = 355.8		
FROM: 2 TO: 3	153.1 FT @ 0.1917 %	ELEV. = 355.0
HGL = 0.2936		
TP = 356.3		
@ STRUCTURE # I-3 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 3.03 V1= 3.98 A= 0.15 X 1 = 0.15		
Q2= 1.51 V2= 6.90 B= 0.09 X 1 = 0.09		
Q3= 0.86 V3= 4.91 C= 0.08 X 0 = 0		
D= 0.04 X 0.5 = 0.02		
TOTAL = 0.26		
Modeled as culvert under inlet control: HGL = 357.1		
FROM: 3 TO: 3A	20.89 FT @ 0.0155 %	ELEV. = 356.4
HGL = 0.0193		
TP = 356.4		
@ STRUCTURE # MH-3A 0" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 0.86 V1= 0.00 A= 0.22 X 1 = 0.22		
Q2= 0.86 V2= 4.91 B= 0.20 X 1 = 0.2		
Q3= 0.00 V3= 0.00 C= 0.11 X 0 = 0		
D= N/A X 0.5 = N/A		
TOTAL = 0.42		
Modeled as culvert under inlet control: HGL = 358.0		
FROM: 3 TO: 4	41.57 FT @ 0.0478 %	ELEV. = 358.0
HGL = 0.0199		
TP = 358.0		
@ STRUCTURE # MH-4 90" Manhole		
LOSS NO.	FACTOR	LOSS
Q1= 1.51 V1= 16.29 A= 1.40 X 1 = 1.4		
Q2= 1.51 V2= 6.90 B= 3.00 X 1 = 3		
Q3= 0.00 V3= 0.00 C= 0.95 X 3 = 2.85		
D= N/A X 1 = N/A		
TOTAL = 7.25		

Subarea Summary Table (Revision 3)

Subarea	Area (ac)	Impervious (ac)	Pervious (ac)	C Value	Q ₂ (cfs)	Q ₁₀ (cfs)
ULTIMATE						
I-TD1	0.166	0.166	0.000	0.90	0.88	1.27
I-2	0.109	0.052	0.057	0.59	0.38	0.54
I-3	0.168	0.045	0.123	0.46	0.46	0.66
R1	0.182	0.182	0.000	0.90	0.97	1.39
I-4A	0.016	0.016	0.000	0.90	0.08	0.12
R2	0.463	0.463	0.000	0.90	2.46	3.54
R3	0.253	0.253	0.000	0.90	1.34	1.94
I-TD2	0.155	0.117	0.038	0.75	0.69	0.99
I-TD3	0.033	0.030	0.003	0.85	0.16	0.24
I-TD4	0.008	0.008	0.000	0.90	0.04	0.06
MB-1	0.090	0.000	0.090	0.30	0.16	0.23
MB-2	0.044	0.000	0.044	0.30	0.08	0.11
MB-3	0.049	0.000	0.049	0.30	0.09	0.12
MB-4	0.052	0.000	0.052	0.30	0.09	0.13
H1011	0.166	0.086	0.080	0.61	0.60	0.86
Un-Con	26.940	1.440	25.500	0.33	52.78	76.04
EXISTING						
Ex I-1	0.073	0.052	0.021	0.73	0.31	0.45
Ex I-3	0.122	0.096	0.026	0.77	0.56	0.80
Ex I-4	0.074	0.074	0.000	0.90	0.39	0.57
Ex I-5	0.121	0.121	0.000	0.90	0.64	0.93
Ex I-6	0.158	0.158	0.000	0.90	0.84	1.21
Ex I-7	0.036	0.036	0.000	0.90	0.19	0.28

Storm Drain Computations (Revision 3)

Structure ID	Contributing Area				Runoff Calculations			Pipe Data				Full-Flow Capacity (cfs)	Full Flow Velocity (ft/s)	Actual Velocity (ft/s)	Time in Pipe (s)			
	From	To	DA (Ac)	C	C*A	Cumul. C*A	Tc (min)	i (in/hr)	Q (cfs)	Slope (ft/ft)	Diameter (in)					Manning's "n"	Inv High (ft)	Inv Low (ft)
R1	I-4A	0.182	0.90	0.164	0.164	5	8.50	1.39	0.0165	12	0.013	365.00	363.50	90.90	4.58	5.83	5.06	17.97
I-4	MH-4	0.016	0.90	0.014	0.178	5	8.50	1.51	0.0142	12	0.013	363.50	361.16	5.65	22.93	29.19	16.29	0.35
MH-4	I-3	0.000	0.00	0.000	0.178	5	8.50	1.51	0.0385	15	0.013	359.63	358.03	41.57	12.67	10.33	6.90	6.03
H1011	MH-3A	0.166	0.61	0.101	0.101	5	8.50	0.86	0.0100	10	0.013	366.05	365.90	15.00	2.19	4.02	3.75	4.00
MH-3A	I-3	0.000	0.00	0.000	0.101	5	8.50	0.86	0.0244	15	0.013	356.94	356.43	20.89	10.09	8.22	4.91	4.25
I-3	I-2	0.168	0.46	0.077	0.357	5	8.50	3.03	0.0050	15	0.013	356.23	355.46	153.10	4.58	3.73	3.98	38.47
I-2	MH-1	0.109	0.59	0.064	0.421	5	8.50	3.58	0.0050	18	0.013	355.21	354.60	121.63	7.44	4.21	4.14	29.39
R2	I-TD4	0.463	0.90	0.417	0.417	5	8.50	3.54	Existing Building 32 Roof Drains (Installed in Previous Phase of SDP-16-072)									
I-TD4	MH-6	0.008	0.90	0.007	0.424	5	8.50	3.60	Trench Drain									
I-TD2	MH-6	0.155	0.75	0.117	0.117	5	8.50	0.99	Trench Drain									
MH-6	MH-5	0.000	0.00	0.000	0.541	5	8.50	4.60	0.0200	15	0.013	362.47	361.56	45.56	9.13	7.44	7.44	6.12
MH-5	MH-1	0.000	0.00	0.000	0.541	5	8.50	4.60	0.1800	15	0.013	357.92	354.85	17.03	27.40	22.33	16.35	1.04
MH-1	MH-8	0.000	0.00	0.000	0.962	5	8.50	8.17	0.0114	18	0.013	354.49	353.58	80.06	11.20	6.34	6.90	11.60
I-TD3	MH-8	0.033	0.85	0.028	0.028	5	8.50	0.24	Trench Drain									
MH-8	H1004	0.000	0.00	0.000	0.989	5	8.50	8.41	0.0182	18	0.013	353.48	351.69	98.39	14.17	8.02	8.33	11.81
R3	MH-7	0.253	0.90	0.228	0.228	5	8.50	1.94	Building 32 ADD Roof Drain Pipe Sizing in Building Plans									
MH-7	H1004	0.000	0.00	0.000	0.228	5	8.50	1.94	0.0200	15	0.013	354.17	353.26	45.47	9.14	7.45	5.88	7.73
H1004	H1003	0.000	0.00	0.000	1.21													

B.3.B Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table B.3.2.

2. 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 bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

pH range	5.2 - 7.0
organic matter	1.5 - 4% (by weight)
magnesium	35 lb./ac
phosphorus (phosphate - P ₂ O ₅)	75 lb./ac
potassium (potash - K ₂ O)	85 lb./ac
soluble salts	not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium 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 top soil was excavated.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. If bioretention areas are excavated using a loader, the contractor should use wide track or marsh 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 plow, ripper, or subsoiler. These tilling operations are to refracture 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.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for bioretention areas can be found in Appendix A, Section A.2.3.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded 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 aged (6 to 12 months) for acceptance.

Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8" 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.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers, defats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

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 1000 square feet of surface area).

7. Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Notes
Planting soil (2.5' to 4' deep)	see Appendix A, Table A.4	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4751), and resistance to compression (ASTM-D-4833)	aged 6 months, minimum for use as necessary beneath underdrains only
peat gravel	ASTM-D-448 Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4751), and resistance to compression (ASTM-D-4833)	aged 6 months, minimum for use as necessary beneath underdrains only
underdrain gravel	AAASHTO M-43 F-788, Type PS 28 or AAASHTO M-278	3/8" port, @ 6" on center, 4 holes per row; minimum of 3' of gravel over pipes; not necessary underdrain pipes
underdrain piping	AAASHTO M-43 F-788, Type PS 28 or AAASHTO M-278	3/8" port, @ 6" on center, 4 holes per row; minimum of 3' of gravel over pipes; not necessary underdrain pipes
concrete (if required)	MSHA Min. No. 3, F _c = 3500 ASTM C-1501 air-cured; air-drying to meet ASTM C-15-60	on-site testing of poured-in-place concrete required: 1. 28-day compressive strength (ASTM C-109) or pre-cast) not using previously approved Stone or local materials requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland (14-100000) showing ACT Code 508.800g, vertical loading (14-100000) showing H-2001, and analysis of potential cracking (pressure); and analysis of potential cracking. Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbide or dolomitic sand substitutions are acceptable. No "rock date" can be used for sand.
sand (1' deep)	AAASHTO M-6 or ASTM-C-33	0.02" to 0.04"

MICRO-BIORETENTION CONSTRUCTION

EROSION AND SEDIMENT CONTROL: MICRO-BIORETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED. IF THIS IS IMPRACTICAL, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AWAY AND NO SEDIMENT CONTROL PRACTICES SHALL BE USED NEAR THE PROPOSED LOCATION.

SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION. ONLY LIGHTWEIGHT, LOW GROUND-CONTACT EQUIPMENT SHOULD BE USED WITHIN MICRO-BIORETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.

UNDERDRAIN INSTALLATION: GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED, AND FREE OF FINES. UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPE SHOULD BE CAPPED PRIOR TO INSTALLATION.

FILTER MEDIA INSTALLATION: BIORETENTION SOILS MAY BE MIXED ON-SITE BEFORE PLACEMENT. HOWEVER, SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATING ADJACENT TO THE PRACTICE AND BE PLACED IN HORIZONTAL LAYERS (12 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT UNTIL SATURATED MAY QUICKEN SETTLING TIMES.

LANDSCAPE INSTALLATION: THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE BUT MAY REQUIRE WATERING.

MICRO-BIORETENTION OPERATION AND MAINTENANCE

INSPECTION:
REGULAR INSPECTION DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.
- DURING PLACEMENT OF FILTER MEDIA.
- DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.
- ONCE COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

ONCE INSTALLED, INSPECTION SHALL BE PERFORMED AT LEAST ONCE EVERY TWO (2) YEARS THEREAFTER

AN INSPECTION AND MAINTENANCE LOG SHOULD BE KEPT ON-SITE

MAINTENANCE:
THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION PRACTICES:

- THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER FLOWS FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS ONE INCH.
- WHERE PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS (E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NECESSARY.
- OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.
- IT IS THE SOLE RESPONSIBILITY OF THE PROPERTY OWNER TO HAVE THE BIO-RETENTION AREA FREE OF DEBRIS OR TRASH AFTER EVERY MAJOR STORM EVENT TO PREVENT A CLOGGING EVENT.

MAINTENANCE SHALL BE PERFORMED AS NEEDED

STORMCEPTOR OPERATION AND MAINTENANCE

THE STORMCEPTOR SHALL BE INSPECTED AS SOON AS THE SITE IS STABILIZED

AN INSPECTION AND MAINTENANCE LOG SHOULD BE KEPT ON-SITE

INSPECTIONS SHALL OCCUR AT LEAST ONCE EVERY TWO (2) YEARS

THE STORMCEPTOR IS TO BE INSPECTED AND MAINTAINED BY PROFESSIONAL VACUUM CLEANING SERVICE PROVIDERS WITH EXPERIENCE OF UNDERGROUND TANKS, SEWERS, AND CATCH BASINS, OR EQUIVALENT.

STORMCEPTOR IS TO BE INSPECTED FROM GRADE THROUGH A STANDARD SURFACE MANHOLE ACCESS COVER. SEDIMENT AND OIL DEPTH INSPECTIONS ARE PERFORMED WITH A SEDIMENT PROBE AND OIL DIPSTICK. INSPECTIONS ALSO INVOLVE A VISUAL INSPECTION OF THE INTERNAL COMPONENTS OF THE SYSTEM.

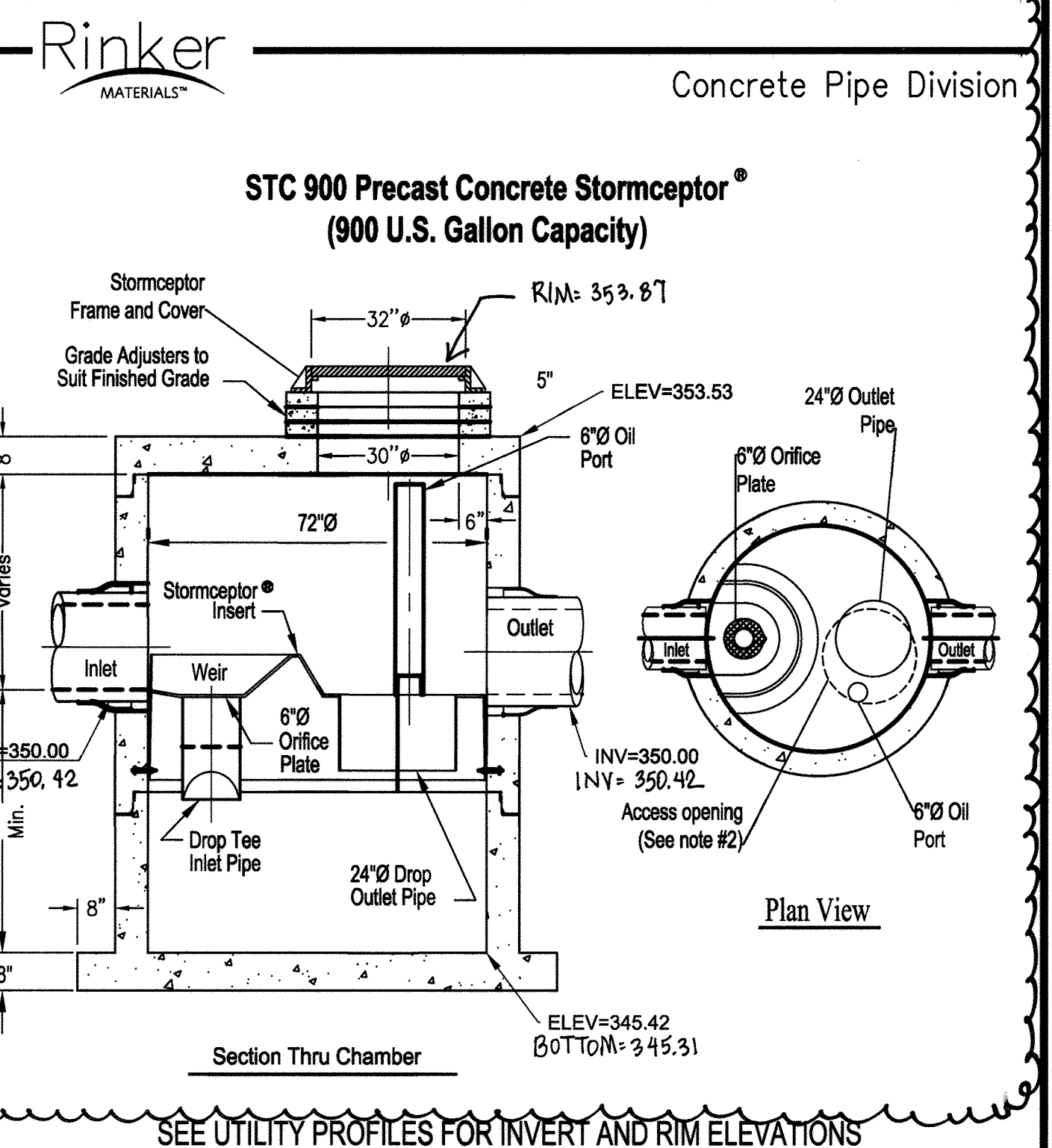
STORMCEPTOR SHALL BE MAINTAINED ONCE A YEAR BUT MAY OCCUR MORE FREQUENTLY BASED ON THE AMOUNT OF SEDIMENT THAT ACCUMULATES WITHIN THE UNIT

CLEAN OUT WHEN SEDIMENT OR DEBRIS HAS REACHED A DEPTH OF 9-INCHES WITHIN THE UNIT

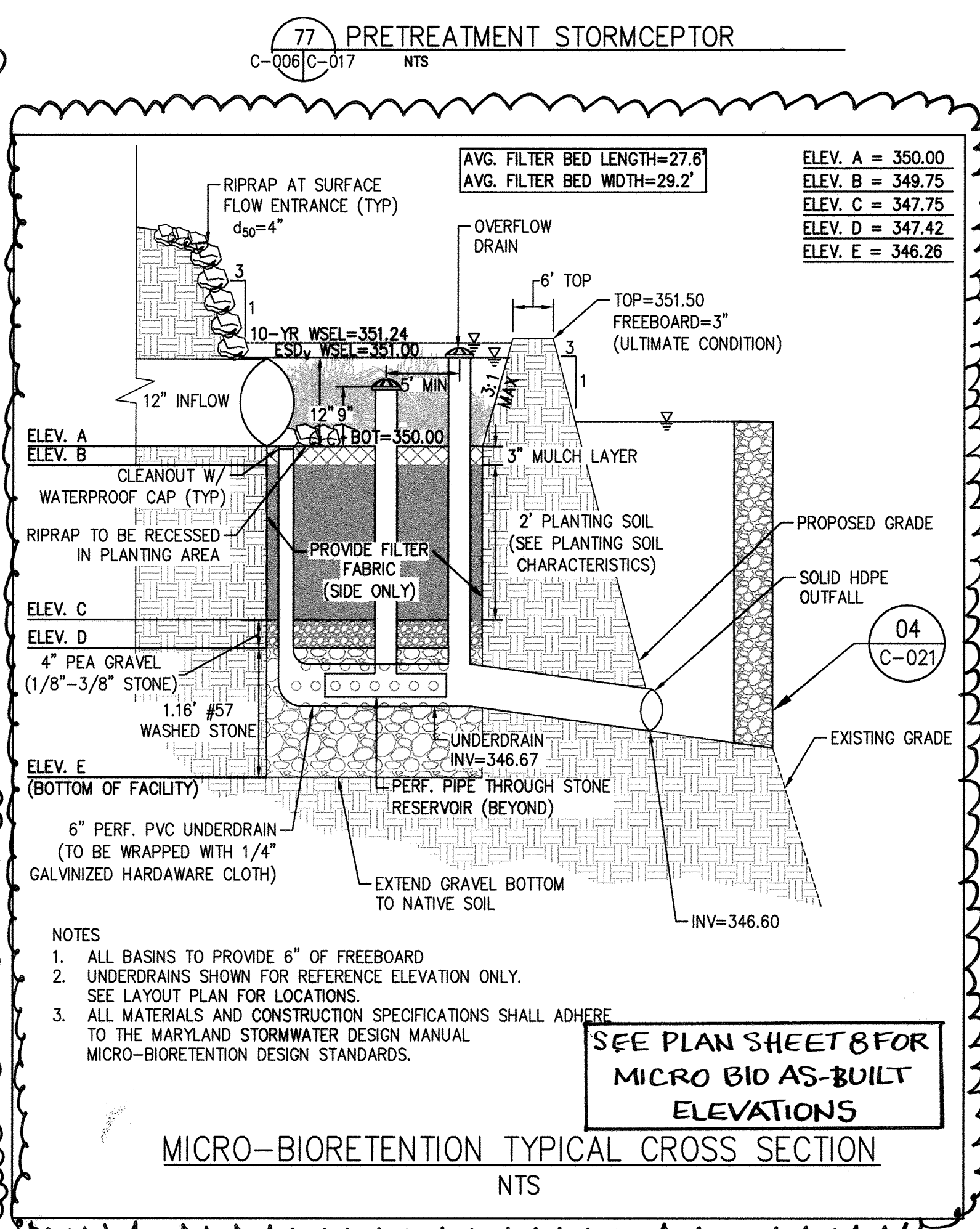
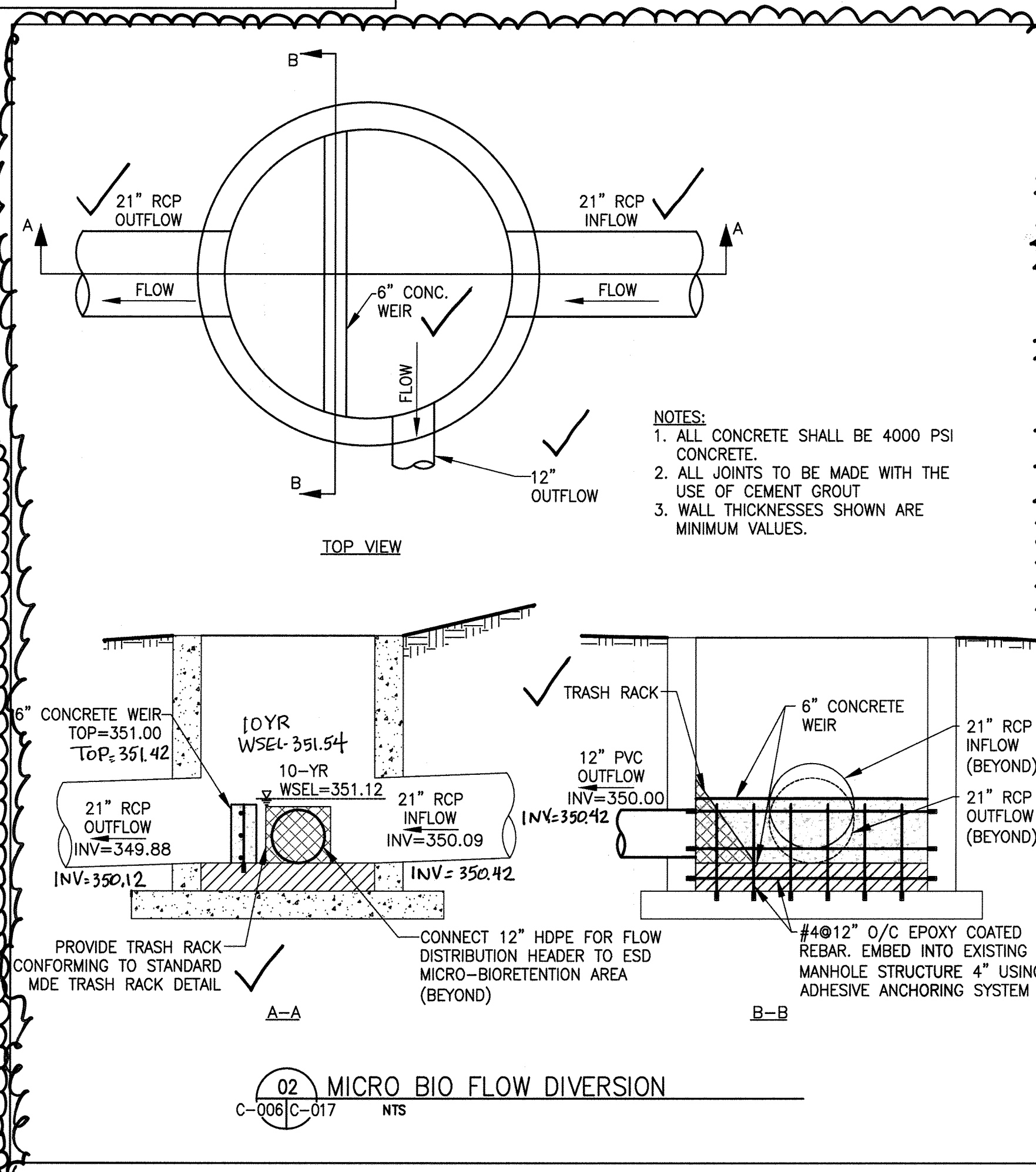
THE UNIT SHALL BE CLEANED OUT IMMEDIATELY AFTER AN OIL, FUEL, OR CHEMICAL SPILL

NO ENTRY INTO THE UNIT IS REQUIRED FOR MAINTENANCE. IDEALLY MAINTENANCE SHOULD BE CONDUCTED DURING DRY WEATHER CONDITIONS WHEN NO FLOW IS ENTERING THE UNIT.

MAINTENANCE OF STORMCEPTOR IS PERFORMED USING A VACUUM TRUCK. MAINTENANCE IS PERFORMED THROUGH THE STANDARD SURFACE MANHOLE ACCESS COVER. INSERT THE OIL DIPSTICK INTO THE OIL INSPECTION PORT. IF OIL IS PRESENT, PUMP OFF THE OIL LAYER INTO SEPARATE CONTAINMENT USING A SMALL PUMP AND TUBING. THE VACUUM HOSE IS TO BE INSERTED INTO THE LOWER CHAMBER VIA THE 24-INCH RISER PIPE. USING THE VACUUM HOSE, DECONTAMINATE THE WATER FROM THE LOWER CHAMBER INTO A SEPARATE CONTAINMENT TANK ONTO THE SANITARY SEWER, IF PERMITTED BY THE LOCAL REGULATING AUTHORITY. REMOVE THE SEDIMENT SLUDGE FROM THE BOTTOM OF THE UNIT USING THE VACUUM HOSE. A FLEXIBLE HOSE IS OFTEN CONNECTED TO THE PRIMARY VACUUM LINE FOR EASE OF MOVEMENT IN THE LOWER CHAMBER. UNITS THAT HAVE NOT BEEN MAINTAINED REGULARLY, HAVE SURPASSED THE MAXIMUM RECOMMENDED SEDIMENT CAPACITY, OR CONTAIN DAMAGED COMPONENTS MAY REQUIRE MANNEED ENTRY BY TRAINED PERSONNEL USING SAFE AND PROPER CONFINED SPACE ENTRY PROCEDURES.



- Notes:
- The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
 - The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
 - The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
 - Contact a Concrete Pipe Division representative for further details not listed on this drawing.



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 NUMBER: 20906 EXPIRATION DATE: 7/21/2017

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 12-19-16 Date

Chief, Division of Land Development 1-18-17 Date

Director 1-23-17 Date

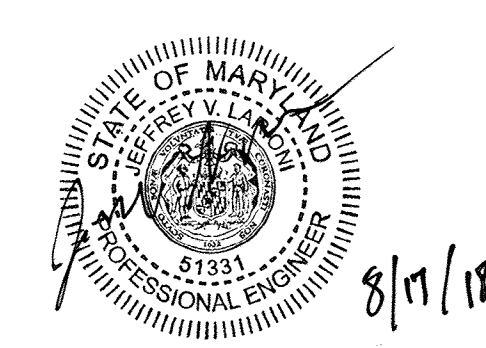
SEE PLAN SHEET 6 FOR MICRO-BIO AS-BUILT ELEVATIONS

MICRO-BIORETENTION OVERFLOW ASSEMBLY NTS

AS-BUILT CERTIFICATION

I hereby certify, by myself, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and specifications.

PE: Jeffrey Lariani, License Number: 51331, Date of AS-Built: 06/06/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD LAUREL, MD 20723

TAX MAP 41 GRID 16 PARCEL 123 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

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.

Cowen Design Group

1451 DOLLEY MADISON BLVD SUITE 200, MCLEAN, VA 22101



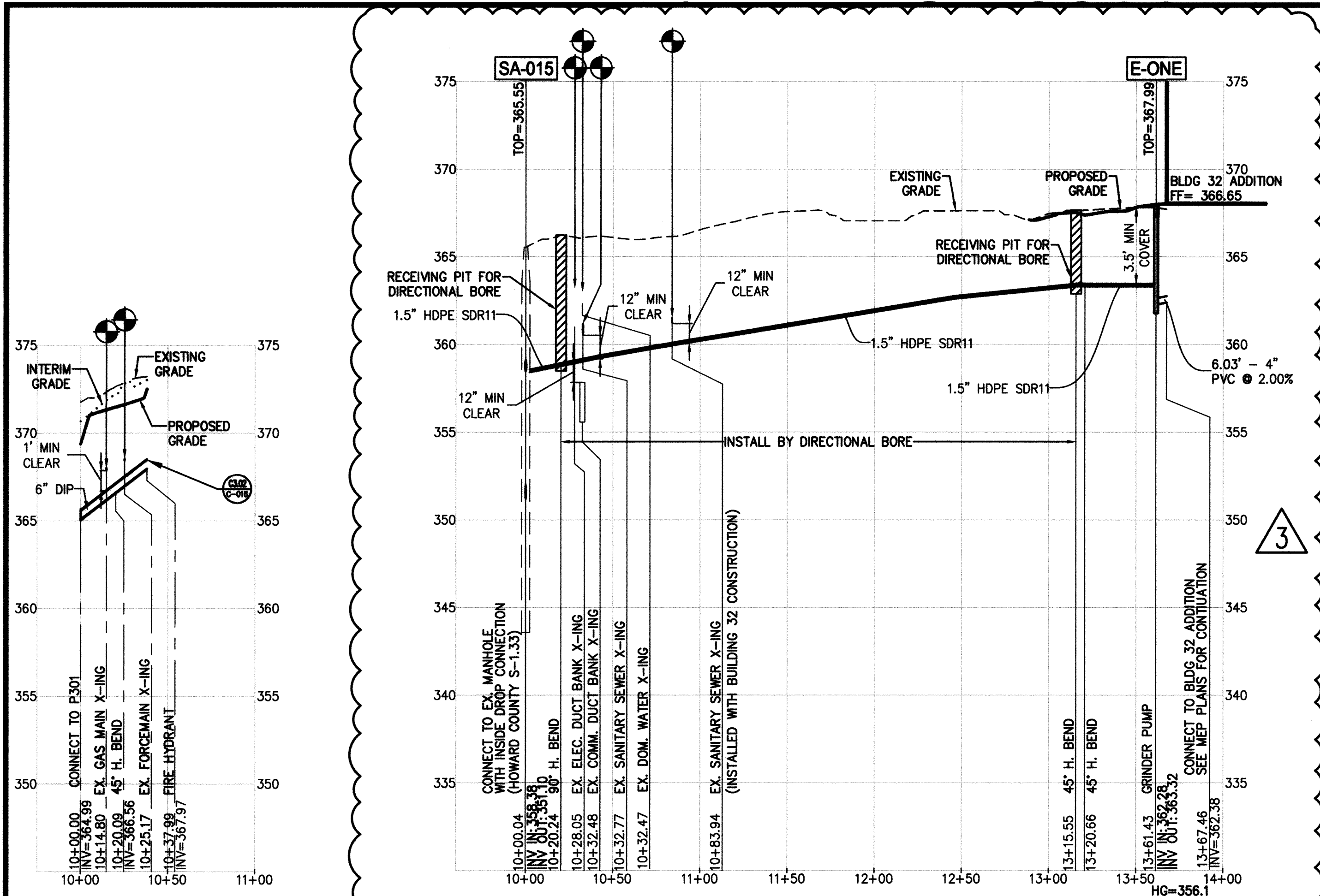
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32

SITE DEVELOPMENT PLAN

STORMWATER/ESD DETAILS

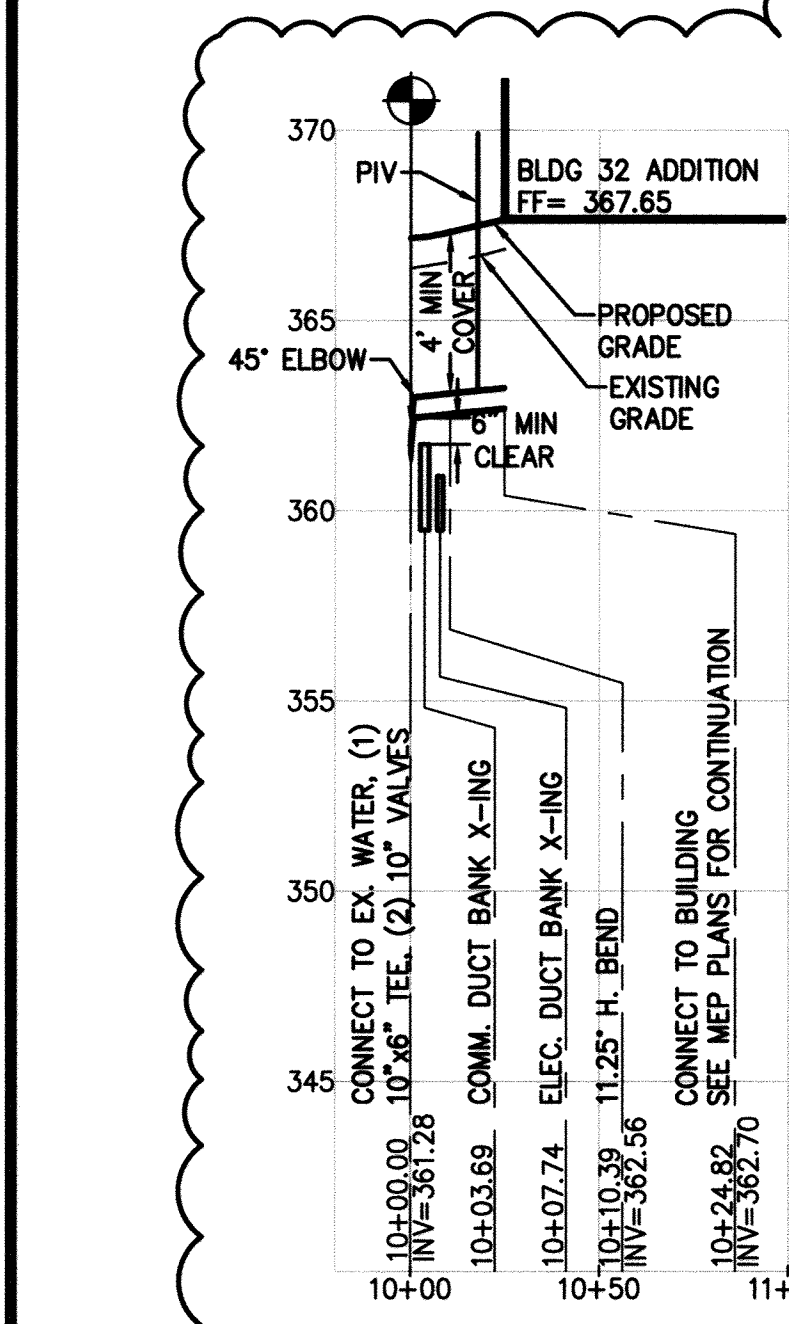
DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO: C-017 17 OF 35

No	REVISION	DATE	No	REVISION	DATE
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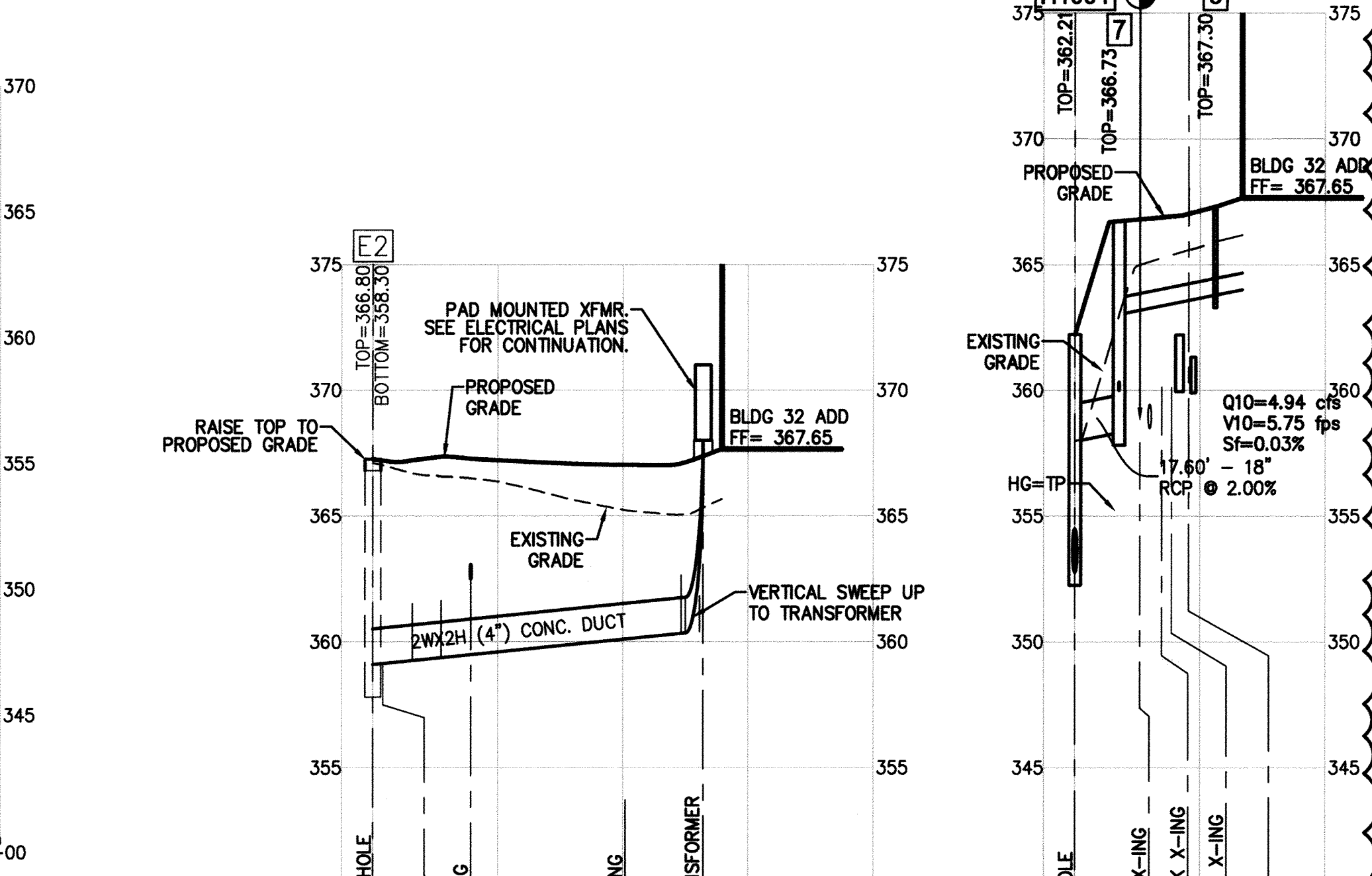


DOMESTIC WATER PROFILE #03
10+00 TO 10+50

FORCEMAIN PROFILE #02
10+00 TO 11+50



DOMESTIC WATER PROFILE #05
10+00 TO 10+50

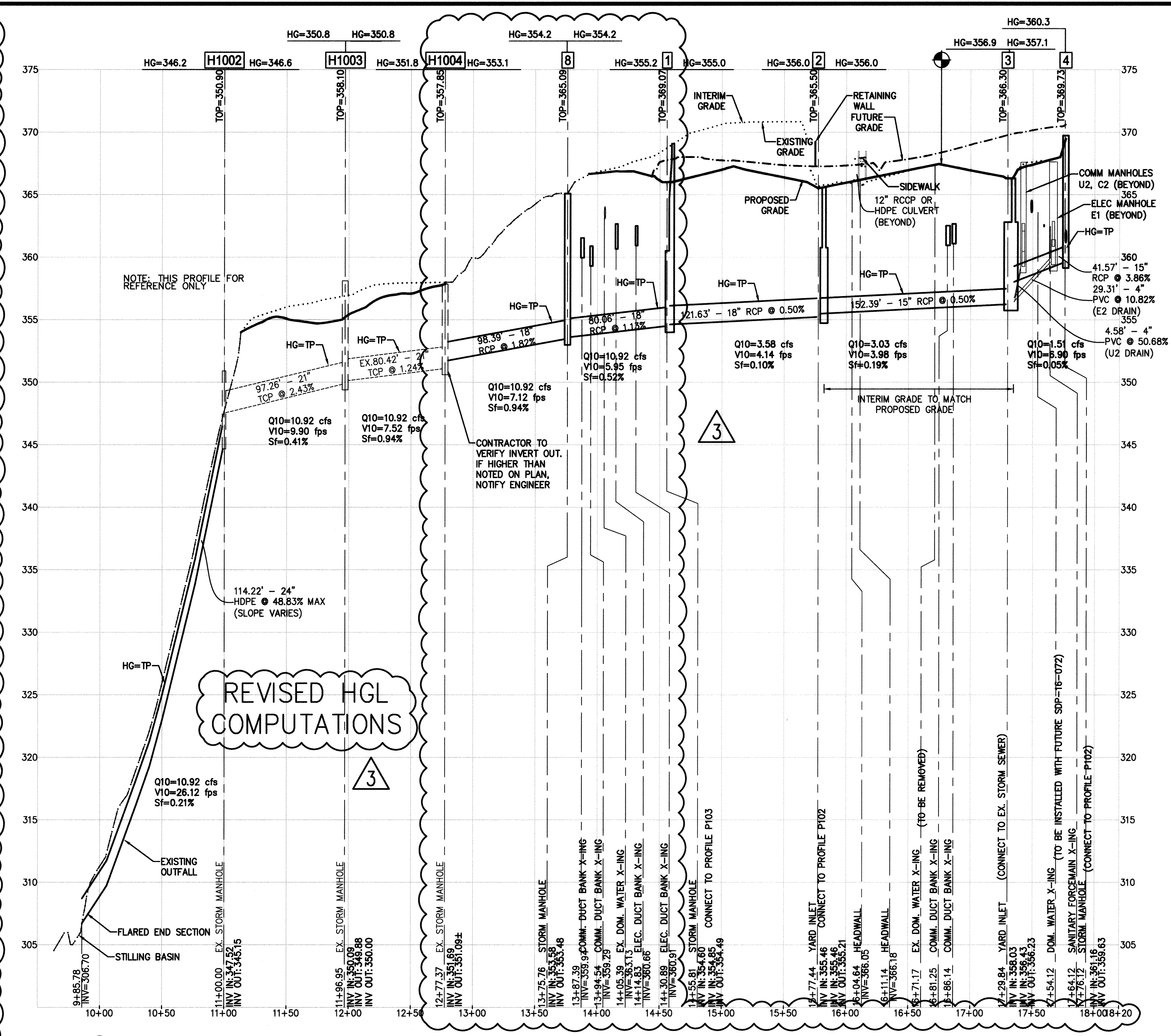


ELECTRICAL DISTRIBUTION PROFILE #04
10+00 TO 11+50

STORM SEWER PROFILE #07
10+00 TO 11+50

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 Chief, Division of Land Development
 Director

Date: 5-4-18
 Date: 5-2-18
 Date: 5-8-18



STORM SEWER PROFILE #01
10+00 TO 17+50

UTILITY PROFILE NOTES

- SEE GRADING PLAN SHEETS C-006 AND C-007 FOR STORM DRAIN INFORMATION
- SEE UTILITY PLAN SHEET C-008 FOR OTHER UTILITY INFORMATION

NOTED TEST PIT LOCATIONS REQUIRE CONTRACTOR TO VERIFY EXISTING UTILITY SIZE AND DEPTH PRIOR TO CONSTRUCTION. DEPTHS SHOWN BASED ON BEST UNDERSTANDING OF AVAILABLE DATA.

PROFESSIONAL CERTIFICATION

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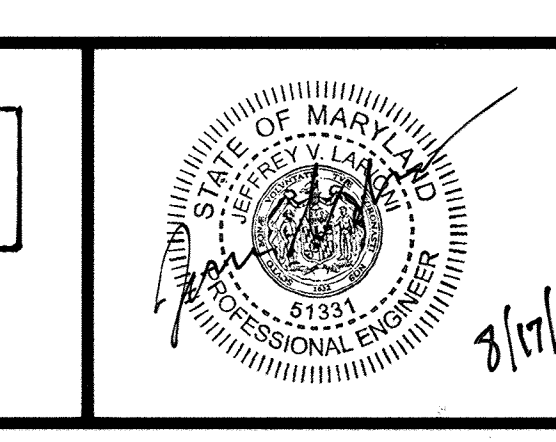
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

NO.	SDP REVISION	DATE
1	KEEP BUILDING 10A	08/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018

PLAN STATUS	DATE

AS-BUILT CERTIFICATION

Note: there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Lariani, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
 LAUREL, MD 20723

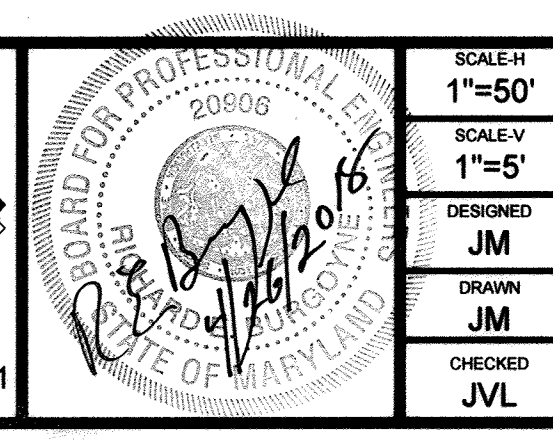
TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

JHU/APL INTERNAL USE

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Cowen Design Group
 Planning • Landscape Architecture • Civil Engineering

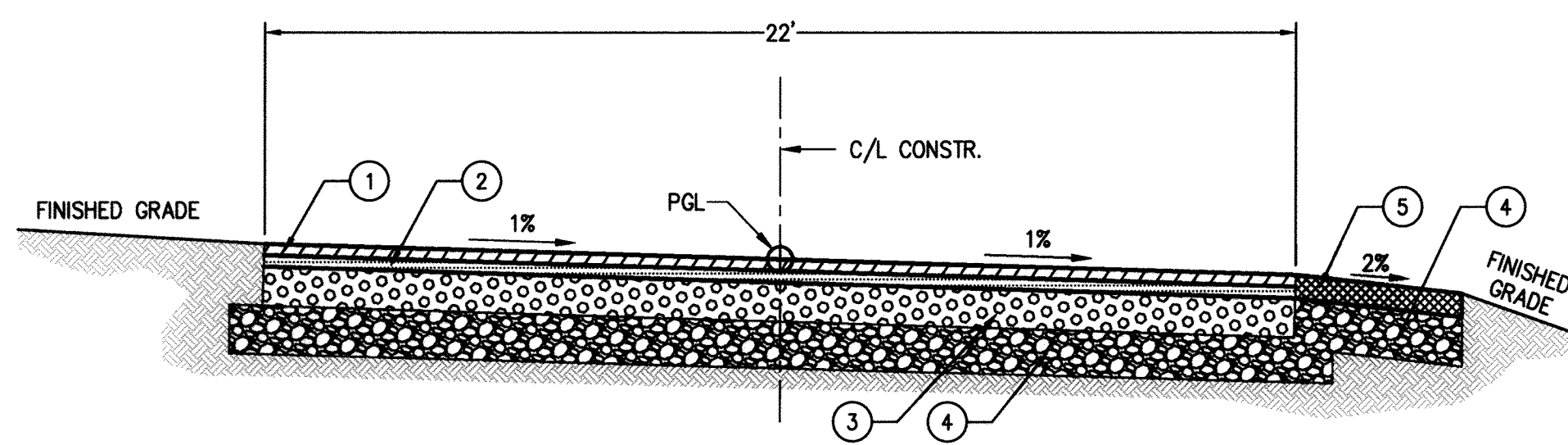
3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
BUILDING 32

SITE DEVELOPMENT PLAN
UTILITY PROFILES

DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO.: C-018A 19 OF 35



- ① 1 1/2" HMA SUPERPAVE FINAL SURFACE
- ② 2 1/2" HMA SUPERPAVE INTERMEDIATE SURFACE
- ③ 4" HMA SUPERPAVE BASE
- ④ 6" GRADED AGGREGATE BASE (GAB)
- ⑤ 4" NO. 2 STONE (2-3" NOMINAL SIZE)

NOTE: PAVEMENT SECTION IS A MODIFIED P-5 SECTION BASED ON A CBR VALUE OF 5 - 7

03 PROPOSED ROAD CROSS SECTION
C-006[C-019] NTS

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	PAVEMENT MATERIAL (INCHES)						
			3 TO <3	3 TO <4	2.7	3 TO <3	3 TO <4	2.7	
P-5 (MODIFIED)	MINOR ARTERIAL	11.0	HMA SUPERPAVE FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5
			HMA SUPERPAVE INTERMEDIATE SURFACE	2.5	2.5	2.5	2.5	2.5	2.5
			HMA SUPERPAVE BASE	4.0	4.0	4.0	4.0	4.0	4.0
			GRADED AGGREGATE BASE (GAB)	6.0	6.0	6.0	6.0	6.0	6.0
P-6	UNIMPROVED INTERMEDIATE ARTERIAL	11.0	HMA SUPERPAVE FINAL SURFACE	2.0	2.0	2.0	2.0	2.0	2.0
			HMA SUPERPAVE INTERMEDIATE SURFACE	2.0	2.0	2.0	2.0	2.0	2.0
			HMA SUPERPAVE BASE	7.0	7.0	7.0	7.0	7.0	7.0
			GRADED AGGREGATE BASE (GAB)	13.0	6.0	4.0	8.0	8.0	8.0
P-7	STABILIZED SHOULDER; MINOR ARTERIAL	11.0	CHP SEAL DOUBLE SURFACE TREATMENT	1.75	1.75	1.75	NA	NA	NA
			GRADED AGGREGATE BASE (GAB)	18.5	14.5	13.0	NA	NA	NA
P-8	PAVED SHOULDER; UNIMPROVED INTERMEDIATE ARTERIAL	11.0	HMA SUPERPAVE FINAL SURFACE	3.0	3.0	3.0	4.0	3.5	3.5
			GRADED AGGREGATE BASE (GAB)	9.5	8.0	5.5	6.0	6.0	6.0

Notes:
 1) HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARAGE TRUCKS.
 2) HMA SUPERPAVE LAYERS SHALL BE PLACED BY APPROPRIATE COMPACTED LIFT THICKNESS: 18.0 MM BASE (2.0" MIN TO 4.0" MAX), 12.5 MM SURFACE (1.25" MIN TO 3.0" MAX), AND 9.5 MM SURFACE (1.25" MIN TO 2.0" MAX).
 3) GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 4" MAX COMPACTED THICKNESS LAYERS.
 4) THE INTERMEDIATE SURFACE COURSE LAYERS MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSEQUENT COMPLETION INSPECTION AND ROAD RECEPTION.
 5) IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYERS FOR COMMERCIAL/INDUSTRIAL ENTRANCE AREAS WITHIN THE COUNTY BOUNDARIES, THESE AREAS SHALL BE PLACED WITHIN THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE SURFACE LAYER.
 6) THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CBR VALUE FOR EACH ROADWAY.

Howard County, Maryland
 Department of Public Works
 PAVING SECTIONS
 P-5 to P-8
 Detail
 R-2.02

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director

5-4-18
 5-8-18
 5-8-18

No	SDP REVISION	DATE	PLAN STATUS	DATE
1	KEEP BUILDING 10A	08/28/2017		
2	BUILDING 32 ADD	12/14/2017		
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018		

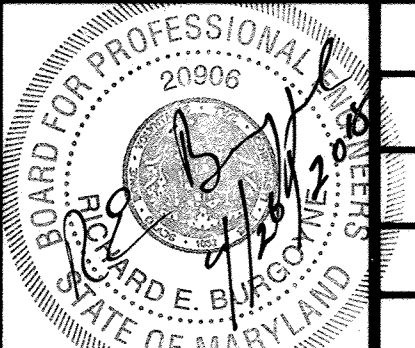
AS-BUILT CERTIFICATION
 Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larson, License Number: 51731. Date of As-Built: 10/6/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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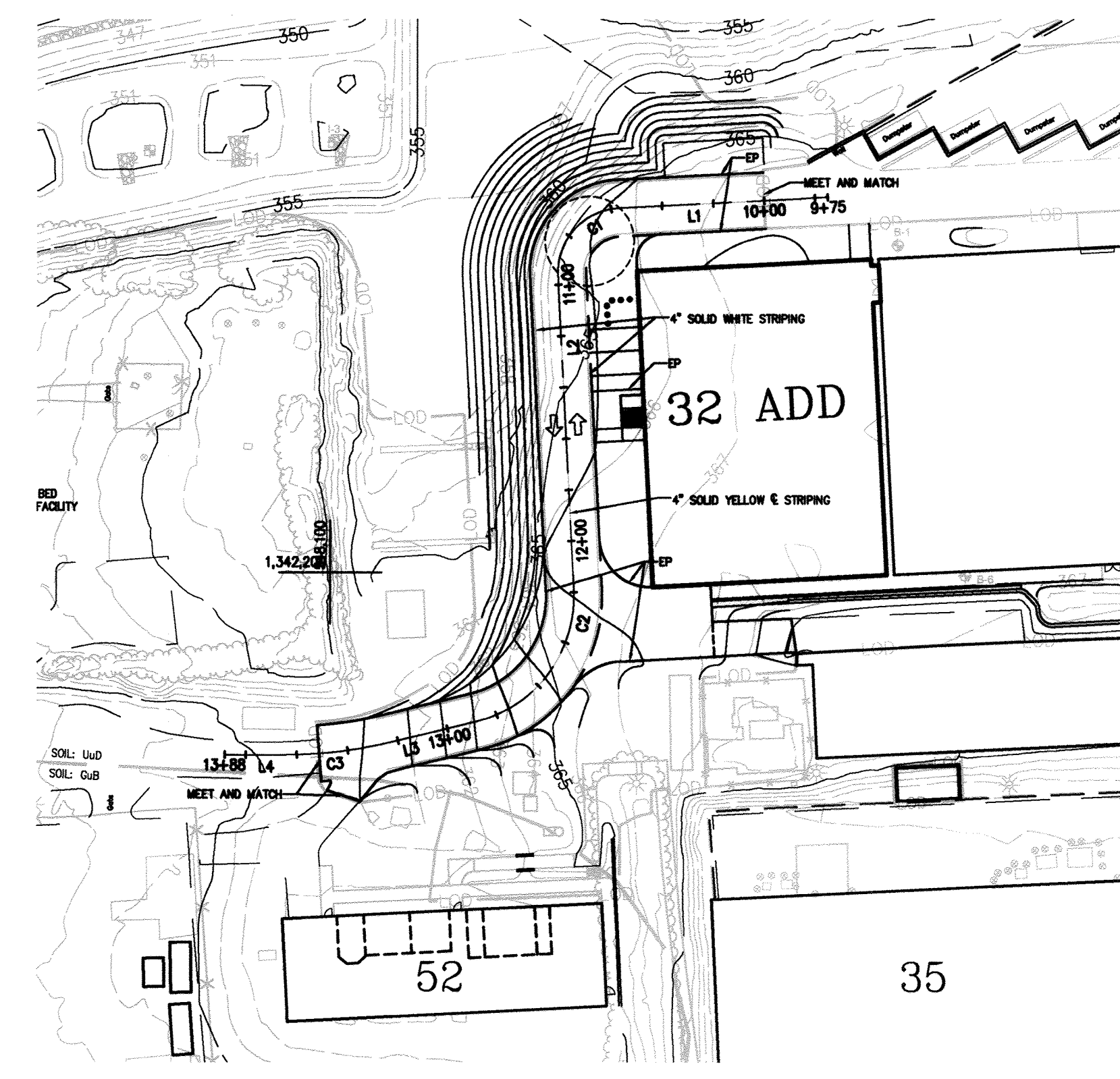


THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
 ROAD PROFILES

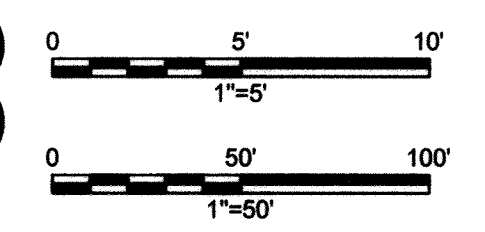
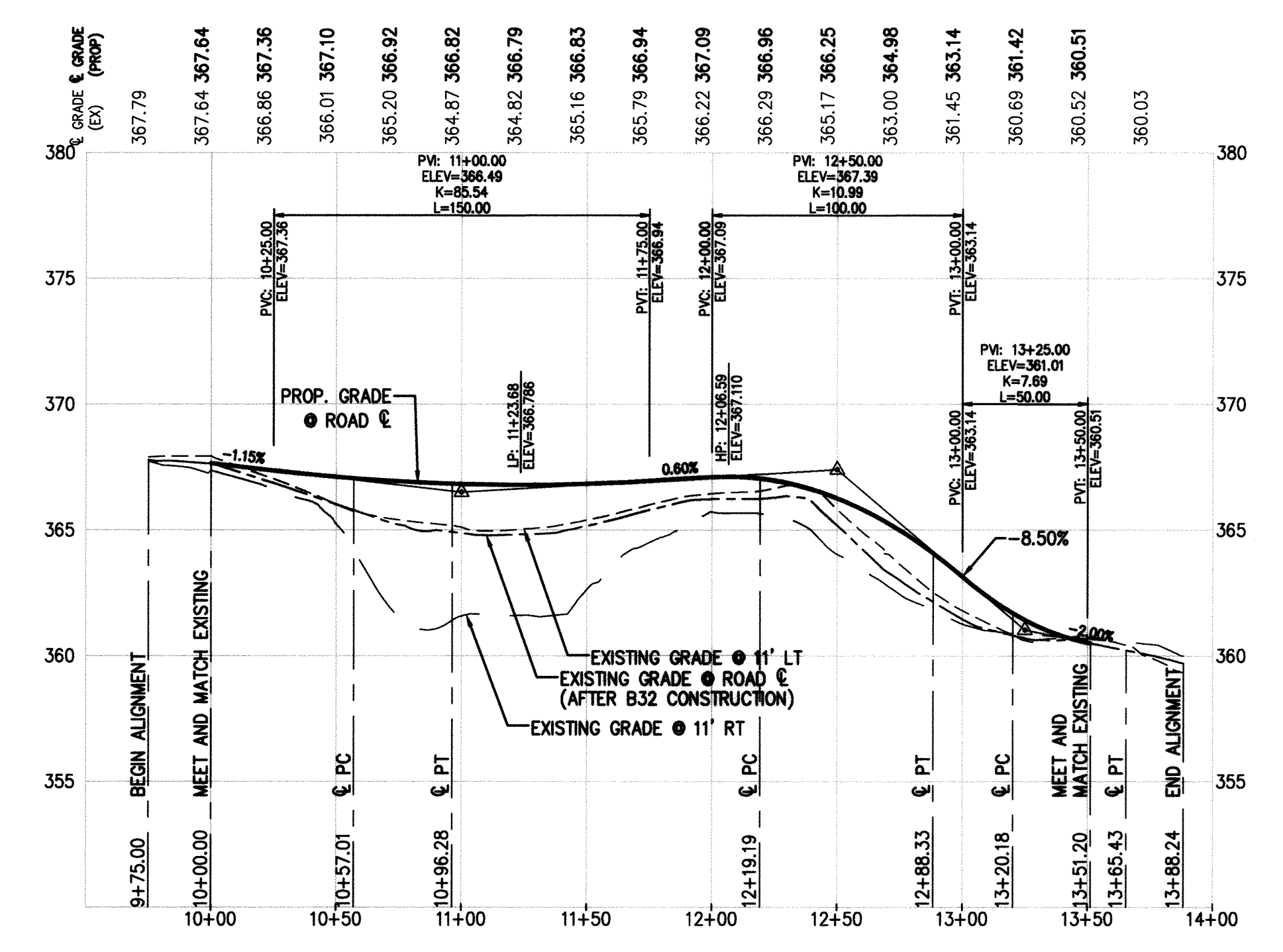
SCALE: H
 1"=50'
 SCALE: V
 1"=5'

DESIGNED: JVL
 DRAWN: JVL
 CHECKED: REB

DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-019
 20 of 35



ROAD & GEOMETRY									
SEGMENT ID	TYPE	START NORTHING	START EASTING	START STATION	SEGMENT LENGTH	CHORD LENGTH	LINE/CHORD DIRECTION	RADIUS	DELTA
L1	LINE	547905.4073	1342346.2196	9+75.00	82.01'	---	N02° 57' 08.78"W	---	---
C1	CURVE	547987.3092	1342341.9955	10+57.01	39.270'	35.355'	N47° 57' 08.78"W	25.0'	90° 00' 00.0"
L2	LINE	548010.9883	1342315.7410	10+96.28	122.908'	---	S87° 02' 51.22"W	---	---
C2	CURVE	548004.6577	1342192.9961	12+19.19	69.146'	63.766'	N53° 20' 04.68"W	50.0'	79° 14' 08.2"
L3	LINE	548042.7352	1342141.8468	12+88.33	31.846'	---	N13° 43' 00.58"W	---	---
C3	CURVE	548073.6734	1342134.2953	13+20.18	45.247'	45.139'	N06° 51' 30.29"W	189.0'	13° 43' 00.6"
L4	LINE	548118.4897	1342128.9049	13+65.43	22.815'	---	N00° 00' 00.00"E	---	---



6'-0" X 6'-0" STANDARD MANHOLE

One-Piece Manhole

HEADROOM	SLAB	WALL	FLOOR
MIN	MAX	MIN	MAX
6'-0"	6'-0"	6"	12'-08" 8"

ELECTRIC/TELECOMM MANHOLE

Two-Piece Manhole

HEADROOM	SLAB	WALL	FLOOR
MIN	MAX	MIN	MAX
12'-0"	12'-0"	6"	12'-08" 8"

31 E. BRIDGE ST. SPRING CITY, PA 19475
 RT 22 WEST BLAIRVILLE, PA 15717

Concrete Products, Inc. www.acmiller.com

DATE: 8/20/03 DRAWN BY: BTH

TELECOMM MANHOLE LID

NOTE: MACHINED RELIEF FOR CLIP TO BE SENT TO OUR SERVICE VENDOR. SEE FAB PROFILES FOR ASSEMBLY DETAILS 00809644.

2 DRAWINGS FOR THIS JOB. DO NOT DELETE EITHER DRAWING

PRODUCT NUMBER: 00809644
 CATALOG NUMBER: 8086ZPT
 MANHOLE COVER: LOAD BEARING HEAVY DUTY
 COATING: DIPPED
 MATERIAL SPECIFICATION: COVER - GRAY IRON WITH AN OILS

DATE: 02/22/06
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 02/22/06

DATE: 02/22/06
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 02/22/06

DATE: 02/22/06
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 02/22/06

7" COMBINATION CURB AND GUTTER

SECTION A-A

SECTION B-B

NOTES:

- INVERTS SHALL BE CONCRETE MIX NO. 3 OR BRICK, ONCE 36" (914.4) MIN.
- WALLS CAN BE GRADE AS BRICK OR MIX NO. 3 CONCRETE.
- TOP 4" OF WALL SHALL BE BRICK MASONRY.
- BOTTOMS SHALL BE MIX NO. 3 CONCRETE.
- MAXIMUM DEPTH OF WALL SHALL BE 3'-6", WHERE OUTLET PIPE REQUIRES GREATER DEPTH, DROP SECTION SHALL BE FINISHED AROUND PIPE.
- WALL AND SLAB REINFORCEMENT SHALL BE #4@12" IN CENTER.
- PROVIDE HEAVY DUTY TRENCH GRATING AND FRAME SYSTEM FROM SAME MANUFACTURER TO BEAT WEIGHT OF TRENCH GRATING SHALL BE BICYCLE SAFE AND CAPABLE OF WITHSTANDING LOADS.

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

MODIFIED COMBINATION CURB AND GUTTER

SECTION A-A

SECTION B-B

NOTES:

- A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4:176" AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
- GUTTER PAN AT THE MEDIUM EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB & GUTTER.
- A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
- POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

STANDARD PRECAST MANHOLE

SHALLOW PRECAST MANHOLE

SECTION A-A

SECTION B-B

NOTES:

- SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.12.
- FOR PIPE SIZES 24" TO 36" AND LARGER USE DETAIL G-5.13.
- WHERE 24" COVERS IS MORE THAN 4.5 FEET USE STANDARD PRECAST MANHOLE.
- MAXIMUM INVERT DEPTH SHALL BE 6' MINUS SET POINT CONNECTION (SEE DETAIL G-5.12 FOR DROP CONNECTION).

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

CAST IRON LAMPPOST FRAME & COVER

SECTION A-A

SECTION B-B

NOTES:

- SEE DETAIL G-5.12 FOR FRAME & COVER CONNECTIONS.
- SEE DETAIL G-5.13 FOR FRAME & COVER CONNECTIONS.
- SEE DETAIL G-5.14 FOR FRAME & COVER CONNECTIONS.
- SEE DETAIL G-5.15 FOR FRAME & COVER CONNECTIONS.

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

LANE POLYPROPYLENE VAULT LADDER WITH PULL-UP HANDRAIL

TOP VIEW

FRONT VIEW

SIDE VIEW

FRONT VIEW

SIDE VIEW

DATE: 8/20/03 DRAWN BY: BTH

1810A2VH 1820ZVH Assembly

PLAN VIEW

SECTION VIEW

COVER SECTION

FRAME SECTION

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

12" FLOOR DRAIN INSTALLATION

FINISHED GRADE TO SLOPE DRAIN

FLOOR DRAIN (NEENAH FOUNDRY R-4040-8)

8" DUCTILE OR CAST IRON RISER

45° ELBOW

12" X 8" REDUCING WYE-FITTING

12" STORM DRAIN

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

ROADS WITH CONCRETE PAVEMENT

ROADS WITH ASPHALT BASE AND HOT MIX ASPHALT SURFACE

ROADS WITH FLEXIBLE PAVEMENT

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

YARD INLET

SECTION A-A

SECTION B-B

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

ELECTRIC/TELECOMM MANHOLE ACCESS LADDER

DATE: 8/20/03 DRAWN BY: BTH

ELECTRIC MANHOLE COVER

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

HEAVY VEHICULAR PAVEMENT

SECTION A-A

SECTION B-B

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

UTILITY TRENCH ROADWAY REPAIRING

SECTION A-A

SECTION B-B

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

YARD INLET

SECTION A-A

SECTION B-B

DATE: 11/12/09
 DRAWN BY: JLD
 CHECKED BY: JLD
 DATE: 11/12/09

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2017

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: 12-19-16
 Chief, Division of Land Development: 1-18-17
 Director: 1-23-17

AS-BUILT CERTIFICATION

Note: there is no "AS-Built" information provided on this sheet.

PE Jeffrey Larion. License Number: 51331. Date of As-Built: 06/08/2018

JHU/APL INTERNAL USE

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY

11100 JOHN HOPKINS RD LAUREL, MD 20723

TAX MAP 41 GRID 16 PARCEL 123 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

Cowen Design Group

1451 DOLLEY MADISON BLVD SUITE 200, MCLEAN, VA 22101

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32

DATE: 03/11/2016 SDP NUMBER: SDP-16-072 DRAWING NO: C-020

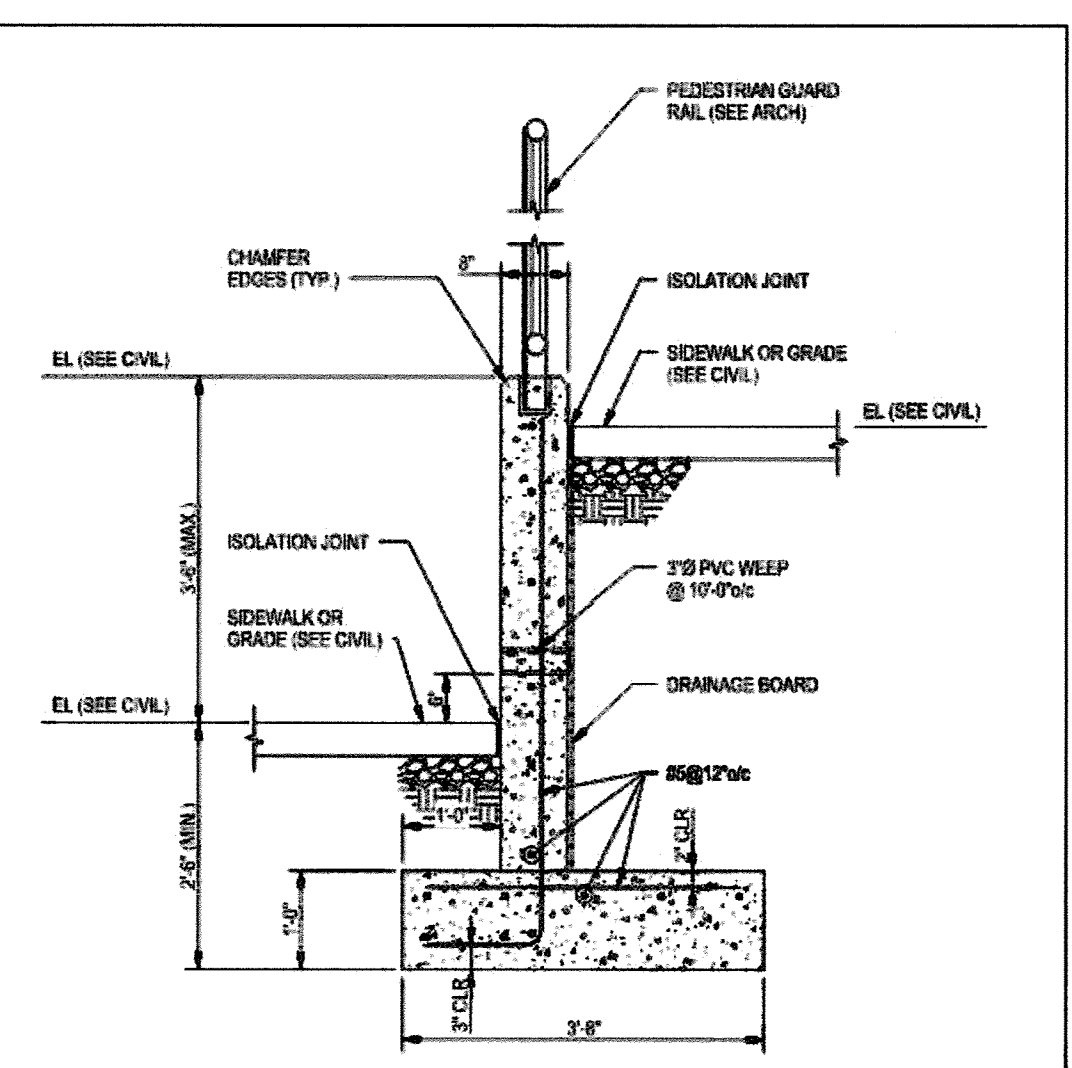
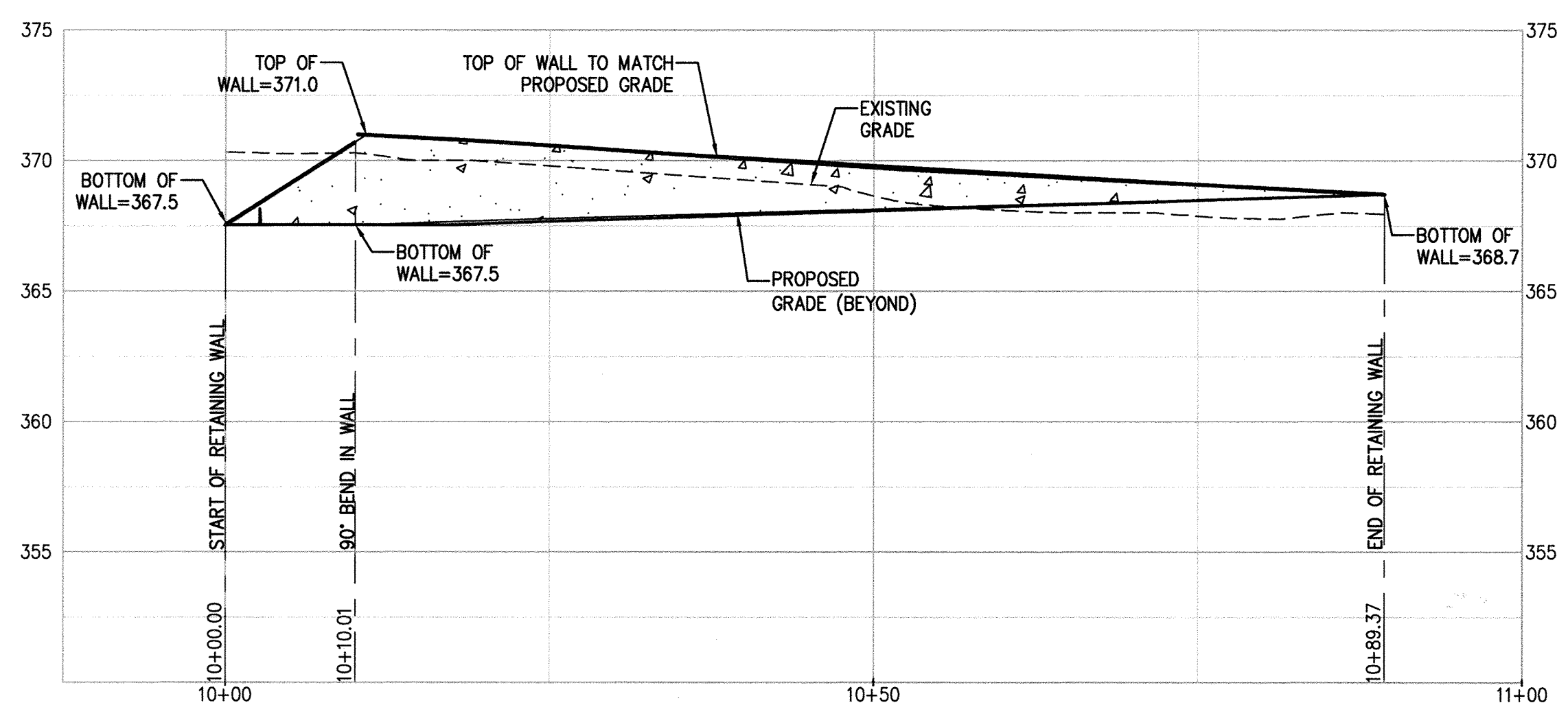
21 OF 35

AS-BUILT SDP-16-072

Retaining Wall

Description: JHU APL B32 - Southern Site Retaining Wall

Criteria	Ball Data
Retained Height = 5.00 ft	Allow Soil Bearing = 3,000.0 psf
Wall height above soil = 0.50 ft	Equivalent Fluid Pressure Method
Slope Behind Wall = 0.00: 1	Heel Active Pressure = 42.0 psf/ft
Height of Soil over Toe = 18.00 in	Toe Active Pressure = 38.0 psf/ft
Water height over heel = 0.0 ft	Passive Pressure = 330.0 psf/ft
Vertical component of active Lateral soil pressure options:	Soil Density, Heel = 126.00 pcf
NOT USED for Soil Pressure	Soil Density, Toe = 110.00 pcf
NOT USED for Sliding Resistance	Friction Coeff. between Fig & Soil = 0.350
NOT USED for Overturning Resistance	Soil height to ignore for passive pressure = 12.00 in



P01 RETAINING WALL
 C-005[C-021] 10+00 TO 10+89

- RETAINING WALL GENERAL NOTES:**
- RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, W ACEL OR EQUIVALENT) CERTIFIED SOILS TECHNICIAN.
 - THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION SHALL BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO THE START OF CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER TEST ASTM STP-399
 - THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH EIGHT (8) INCH LIFT MUST BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION

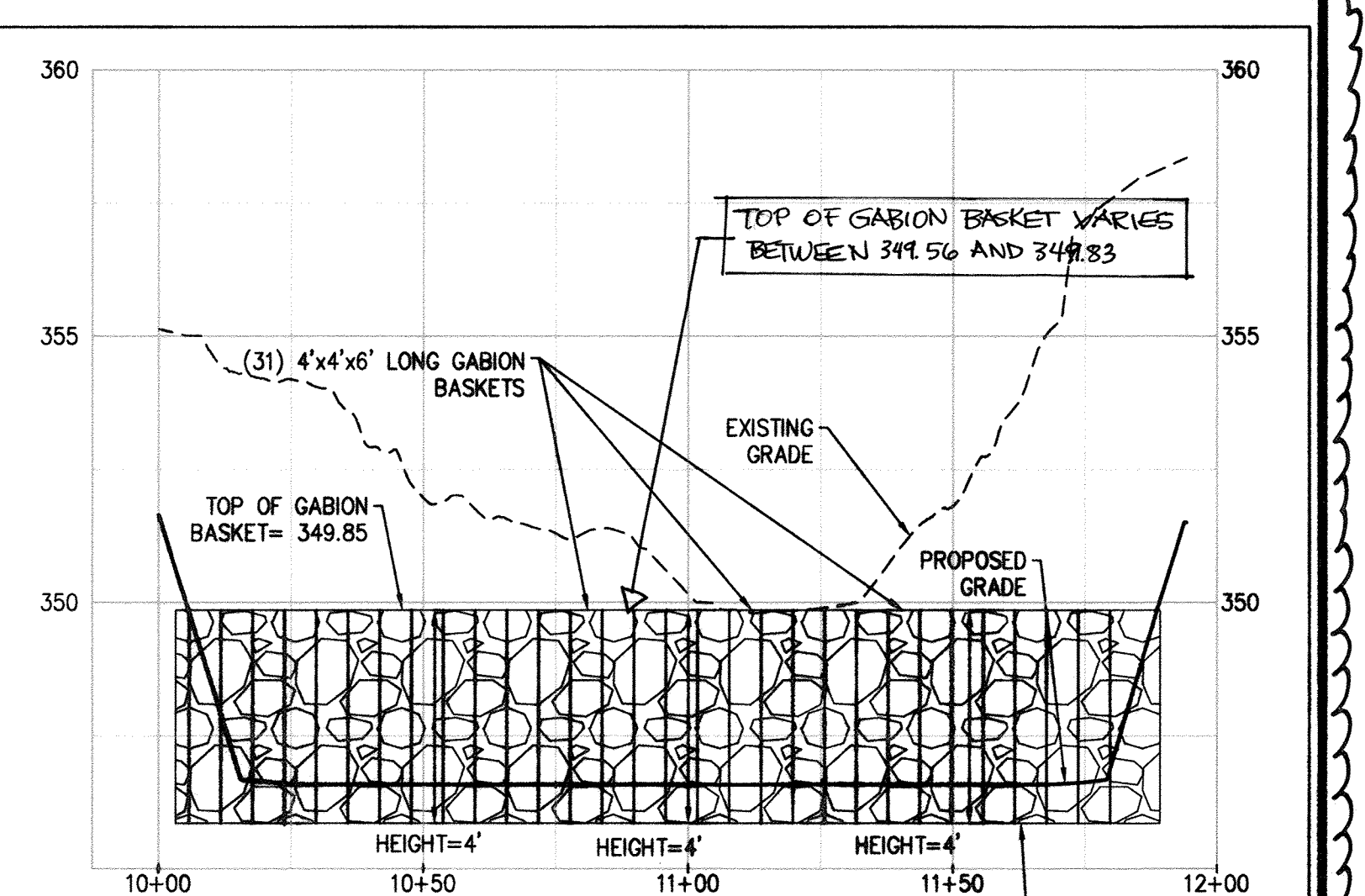
50 RETAINING WALL SECTION
 C-005[C-021] NTS

Design Summary

Design Summary	Design Data
Wall Stability Ratios	Design Height Above Ft = 0.00
Overturning = 1.71 OK	Wall Material Above Ft = Concrete
Sliding = 1.38 Ratio < 1.5	Thickness = 8.00
Total Bearing Load = 2,918 lbs	Rebar Size = # 6
Residual CCS = 11.81 in	Rebar Spacing = in = 12.00
Soil Pressure @ Toe = 1,972 psf OK	Rebar Spaced at = User Spec
Soil Pressure @ Heel = 0 psf OK	Design Data
Allowable Soil Pressure Less Than Allowable = 3,000 psf	Total Force @ Section = 1,447.2
ACI Factors @ Toe = 2,366 psf	Moment - Actual = 4,947.6
ACI Factors @ Heel = 0 psf	Moment - Allowable = 4,947.6
Footing Shear @ Toe = 5.0 psf OK	Shear - Actual = 22.2
Footing Shear @ Heel = 23.4 psf OK	Shear - Allowable = 100.8
Allowable = 88.7 psf	Wall Weight = 100.0
Sliding Cases (Vertical Component NOT Used)	Rebar Depth = in = 3.75
Lateral Sliding Force = 1,260.0 lbs	Lap splice if above = in = 17.44
Less 100% Passive Force = - 868.3 lbs	Lap splice if below = in = 17.44
Less 100% Friction Force = - 882.8 lbs	Hook embed into footing = in = 17.44
Added Force Req'd = 0.0 lbs OK	Concrete Data
for 1.5: 1 Stability = 142.6 lbs NG	f'c = 4,500.0
	f_y =

Summary of Overturning & Resisting Forces & Moments

Item	Force	Distance	Moment	Force	Distance	Moment
Heel Active Pressure	756.0	2.00	1,512.0	Soil Over Heel	1,252.1	2.67
Surcharge Over Heel	504.0	3.00	1,512.0	Sloped Soil Over Heel		
Toe Active Pressure				Surcharge Over Heel		
Surcharge Over Toe				Adjacent Footing Load		
Adjacent Footing Load				Adjacent Dead Load on Slab		
Adjacent Lateral Load				Adjacent Live Load on Slab		
Load @ Slab Above Soil				Soil Over Toe	165.0	0.50
				Surcharge Over Toe		
				Stem Weight	550.0	1.33
				Earth @ Slab Transition		
				Key Weight	550.5	1.84
				Vert. Component		
Total	1,260.0	0.71	3,024.0	Total	2,517.6	5.1670
Resisting/Overturning Ratio				* Actual live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.		
Vertical Loads used for Soil Pressure =	2,517.6 lbs					



P02 GABION BASKET ELEVATION
 C-017[C-021] 10+00 TO 11+95

- CONSTRUCTION SPECIFICATIONS**
- PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
 - USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
 - USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
 - INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
 - EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
 - FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
 - ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
 - REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.

04 GABION BASKET OUTLET (2 OF 2)
 C-017[C-021] NTS 2 OF 2

OWNERS/DEVELOPER CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2017

DESIGN CERTIFICATION:

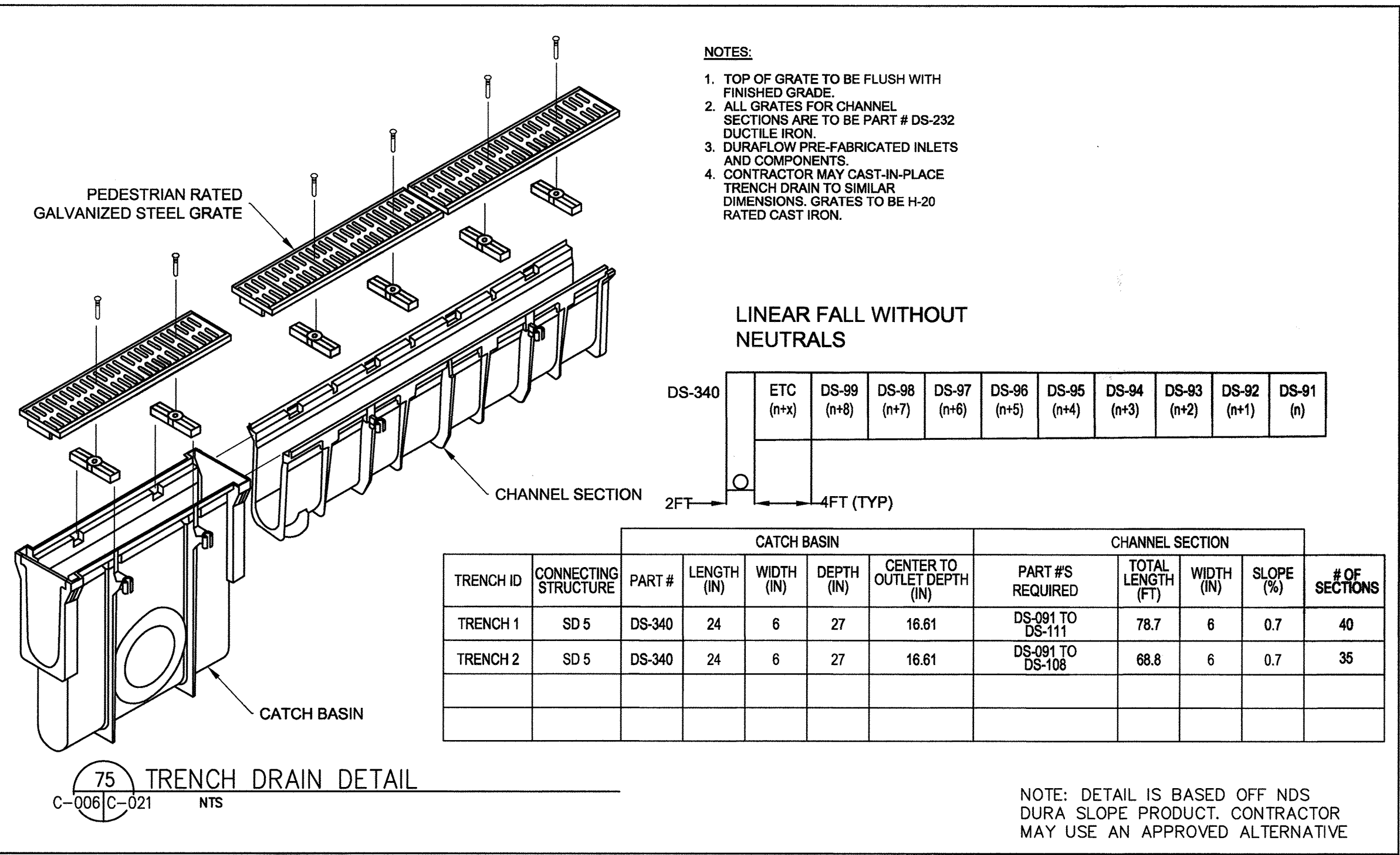
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SCD SIGNATURE BLOCK:

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 12-19-16
 Chief, Division of Land Development 1-18-17
 Director 1-25-17

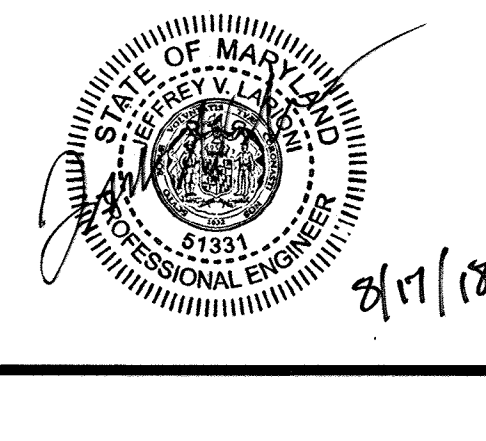


No	REVISION	DATE

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approval Plans and specifications.

PE: Jeffrey Lariani, License Number: 51331, Date of AS-Built: 06/08/2018



JHU/APL INTERNAL USE

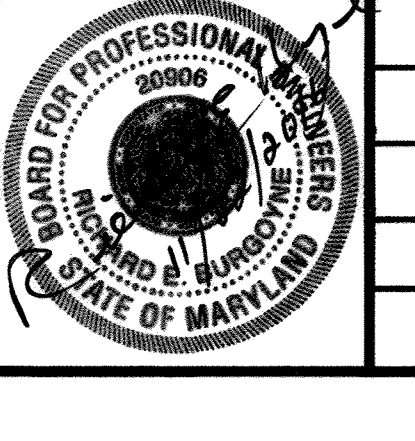
THIS DATA SHALL NOT BE DISCLOSED TO A THIRD PARTY AND SHALL NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN TO EVALUATE THIS RFP OR, IN THE CASE OF A CONTRACT AWARD, TO PERFORM THE WORK REQUIRED HEREUNDER, WITHOUT THE EXPRESS WRITTEN CONSENT OF JHU/APL.

THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723

TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

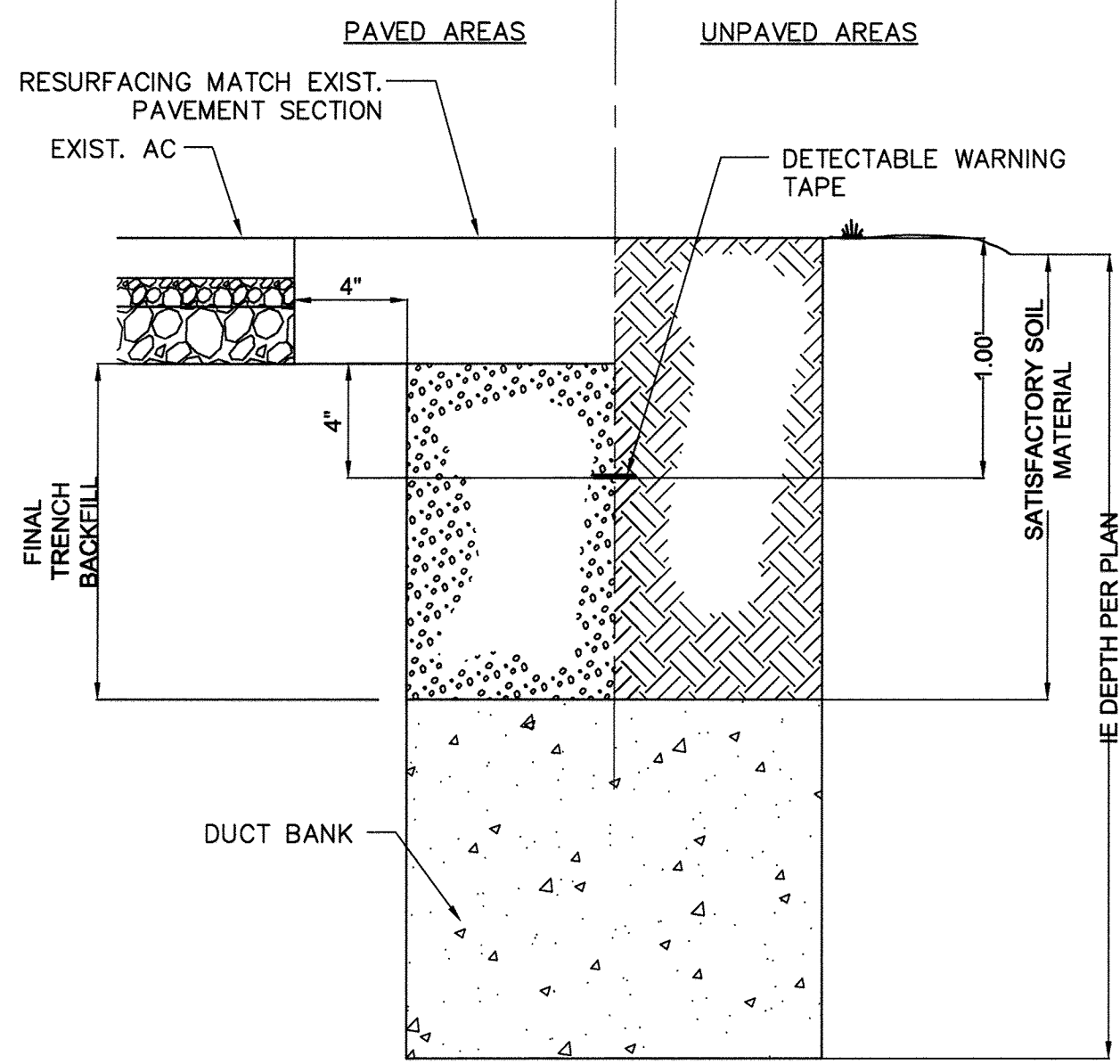
Cowen Design Group
 Planning - Landscape Architecture - Civil Engineering

1451 DOLLEY MADISON BLVD
 SUITE 200, MCLEAN, VA 22101



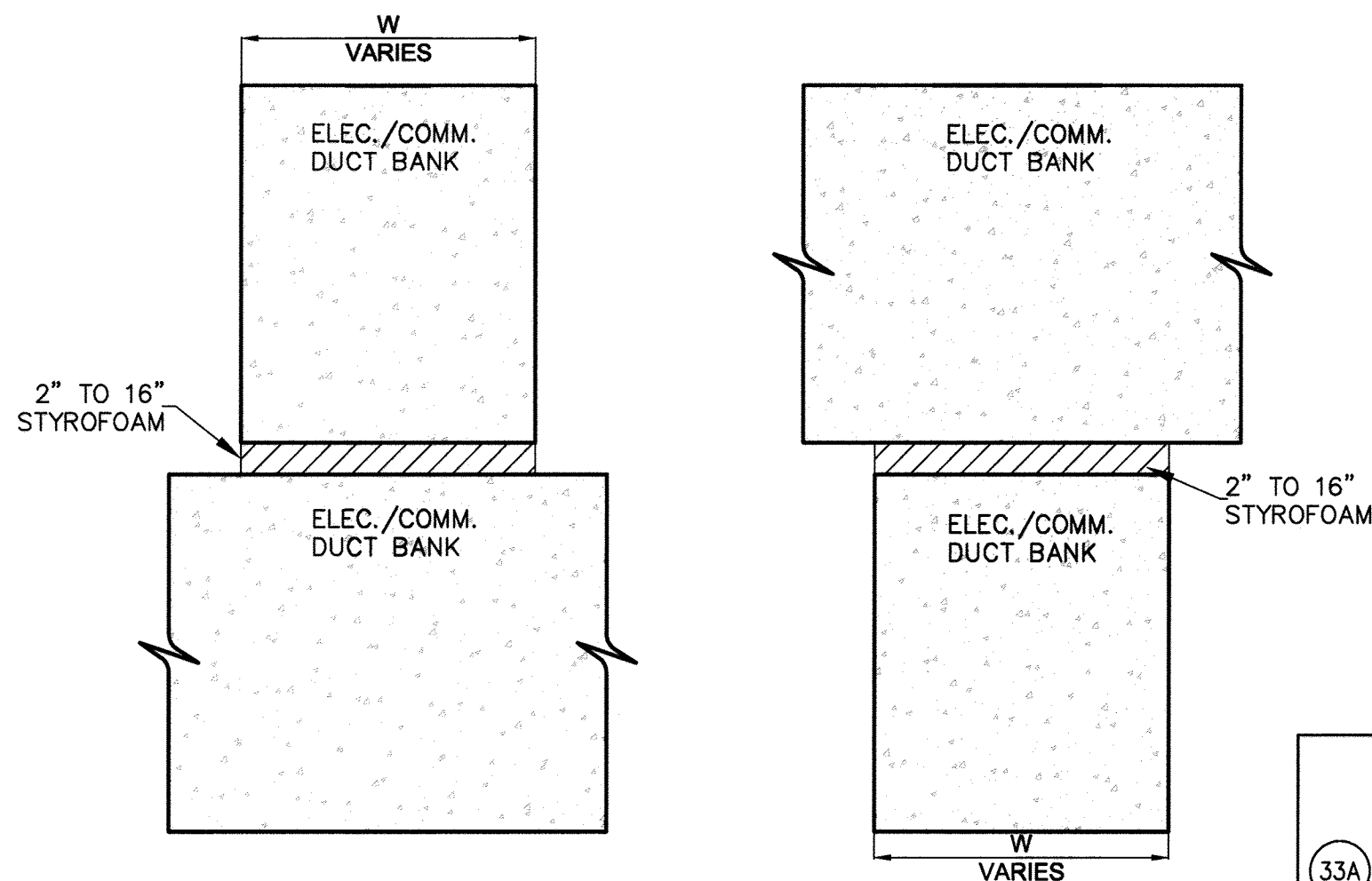
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
BUILDING 32
 SITE DEVELOPMENT PLAN
DETAILS

SCALE-H: N/A
 SCALE-V: N/A
 DESIGNED: JVL
 DRAWN: JVL
 CHECKED: REB
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO: C-021
 22 OF 35
AS-BUILT SDP-16-072

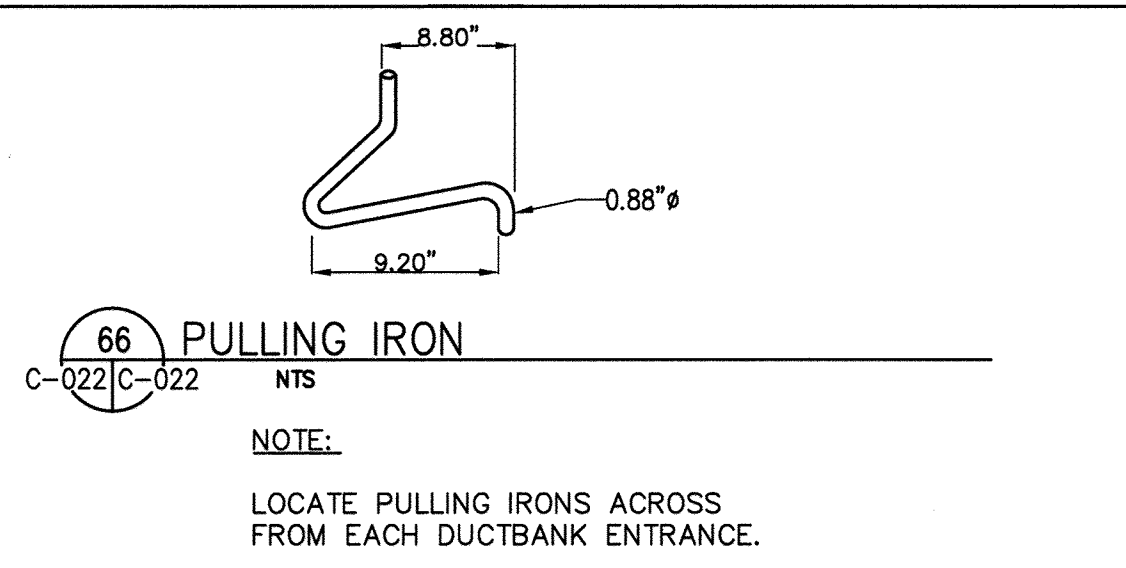


- NOTES:
1. COMPACT BACKFILL IN LANDSCAPE AREAS.
 2. UTILITY TRENCH COMPACTION SHALL BE PER SPECIFICATIONS.

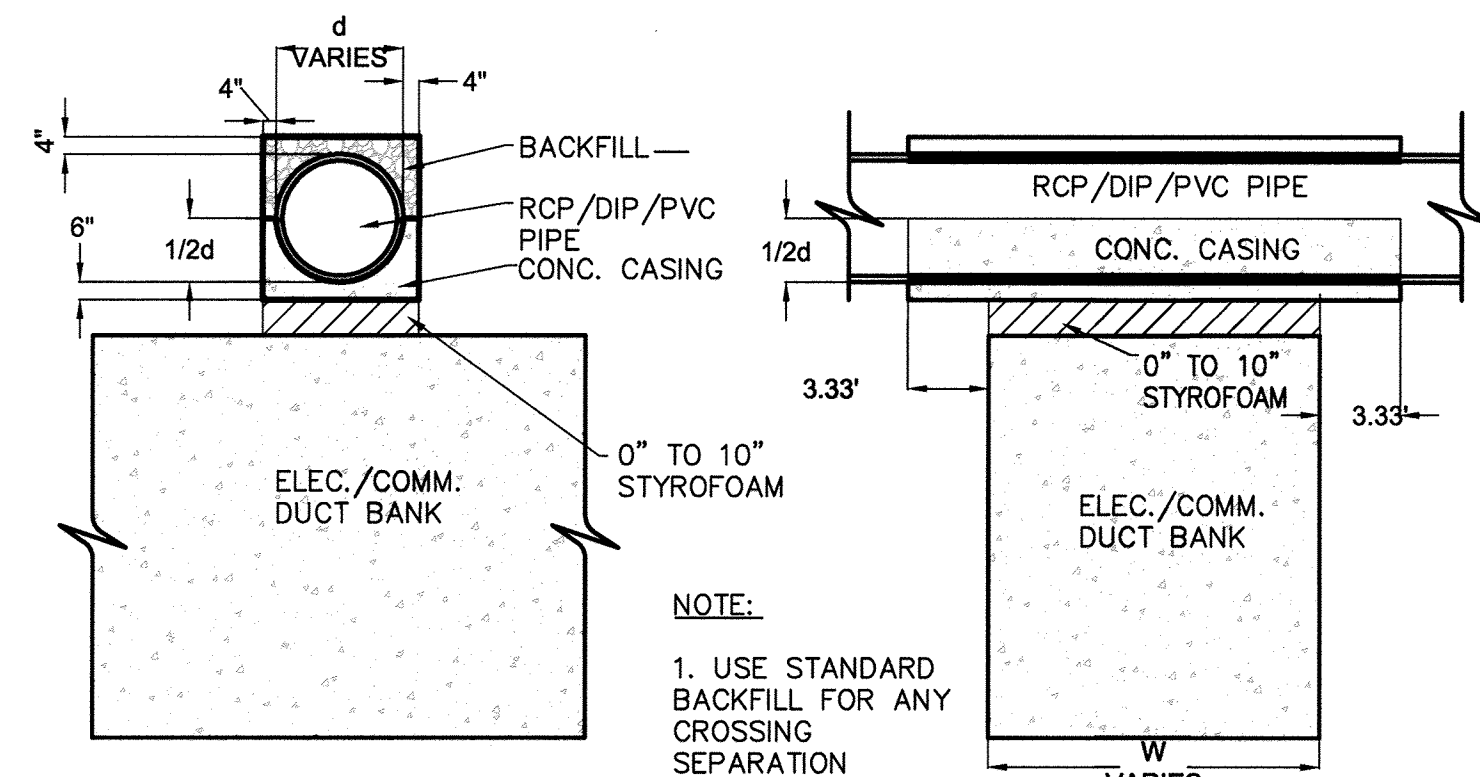
61 TRENCH DETAIL FOR DUCT BANK
C-022/C-022 NTS



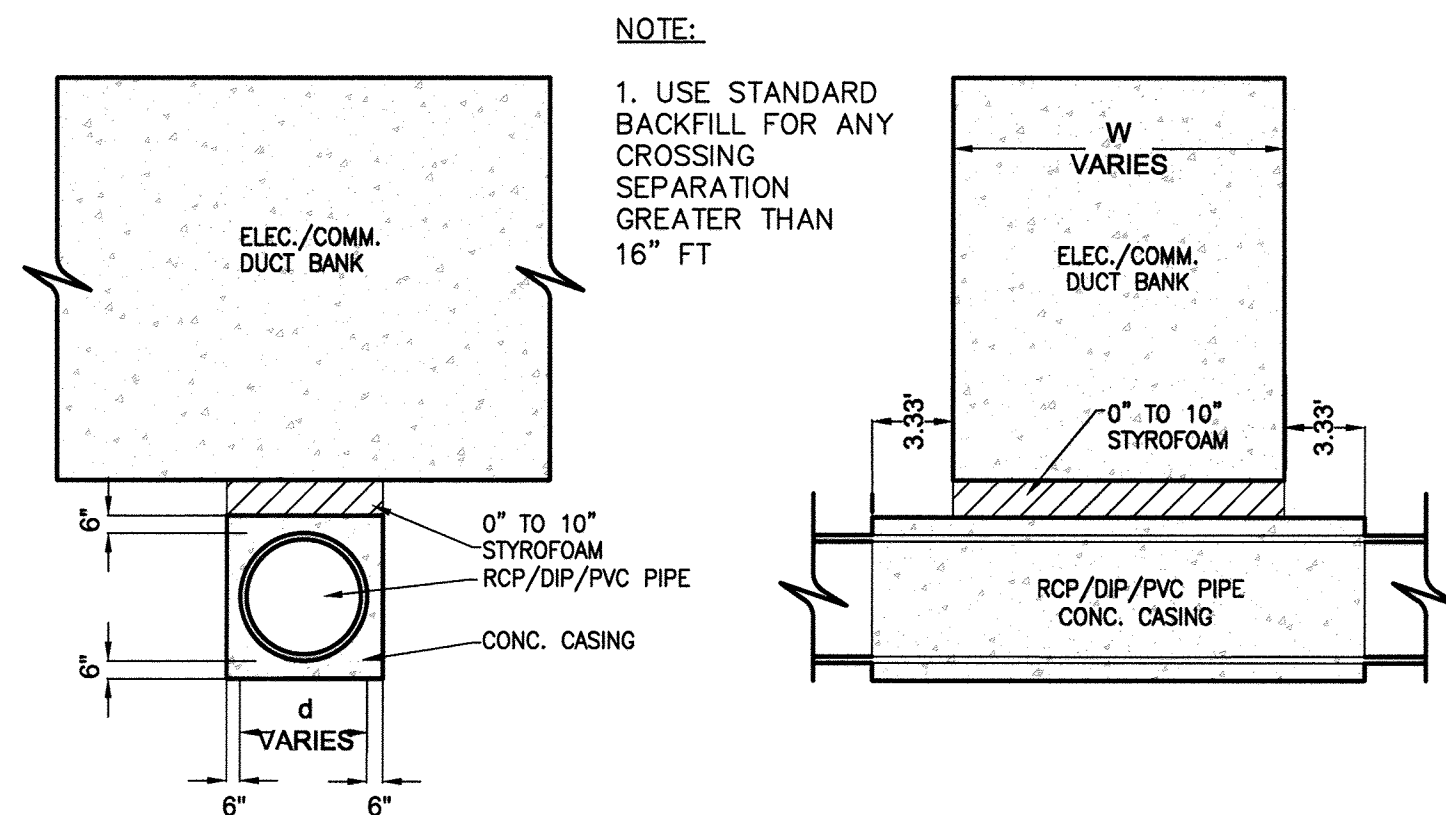
62 DUCT BANK ON DUCT BANK UTILITY CROSSING
C-022/C-022 2" TO 16" SEPARATION
NTS



66 PULLING IRON
C-022/C-022 NTS
NOTE:
LOCATE PULLING IRONS ACROSS FROM EACH DUCTBANK ENTRANCE.

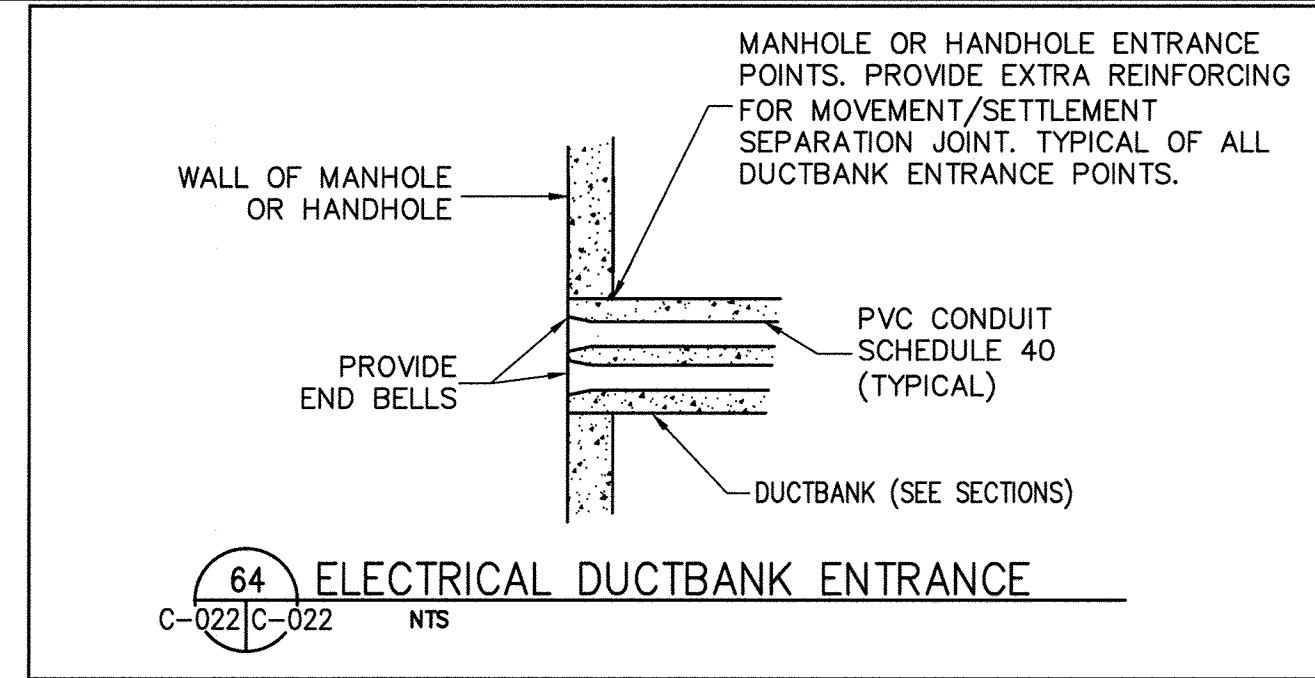


PIPE OVER DUCT

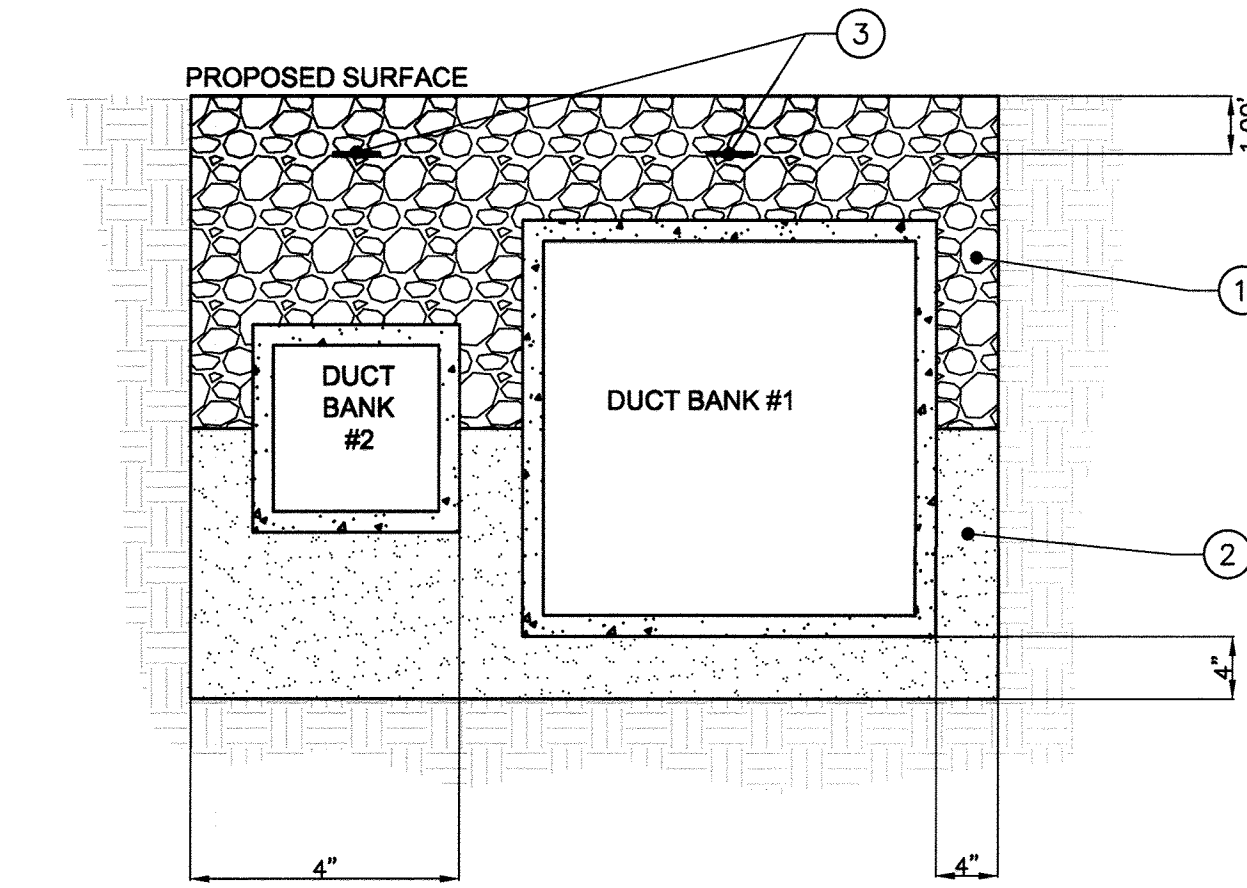


DUCT OVER PIPE

63 DUCT BANK/PIPE UTILITY CROSSING
C-022/C-022 2" TO 16" SEPARATION
NTS



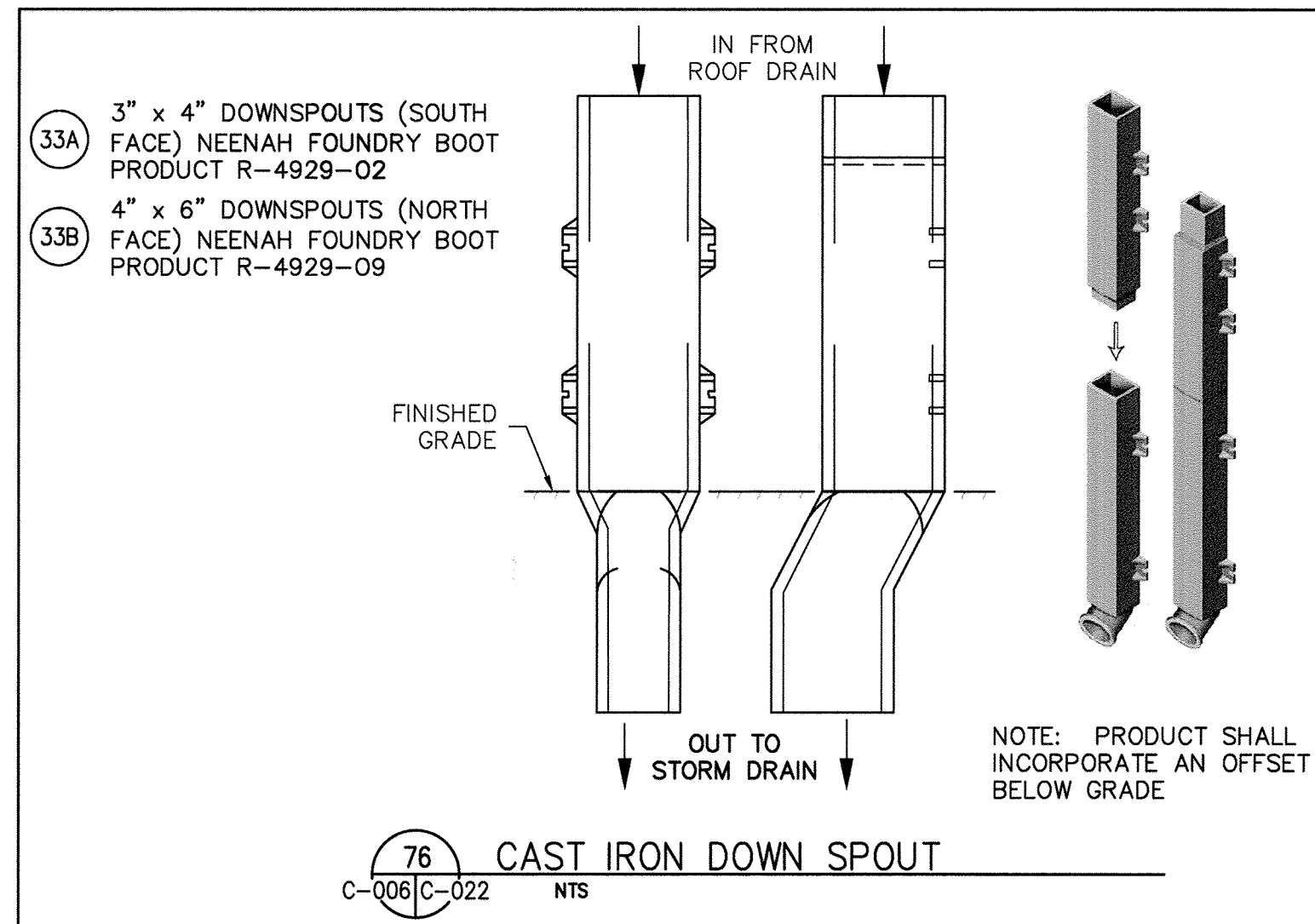
64 ELECTRICAL DUCTBANK ENTRANCE
C-022/C-022 NTS



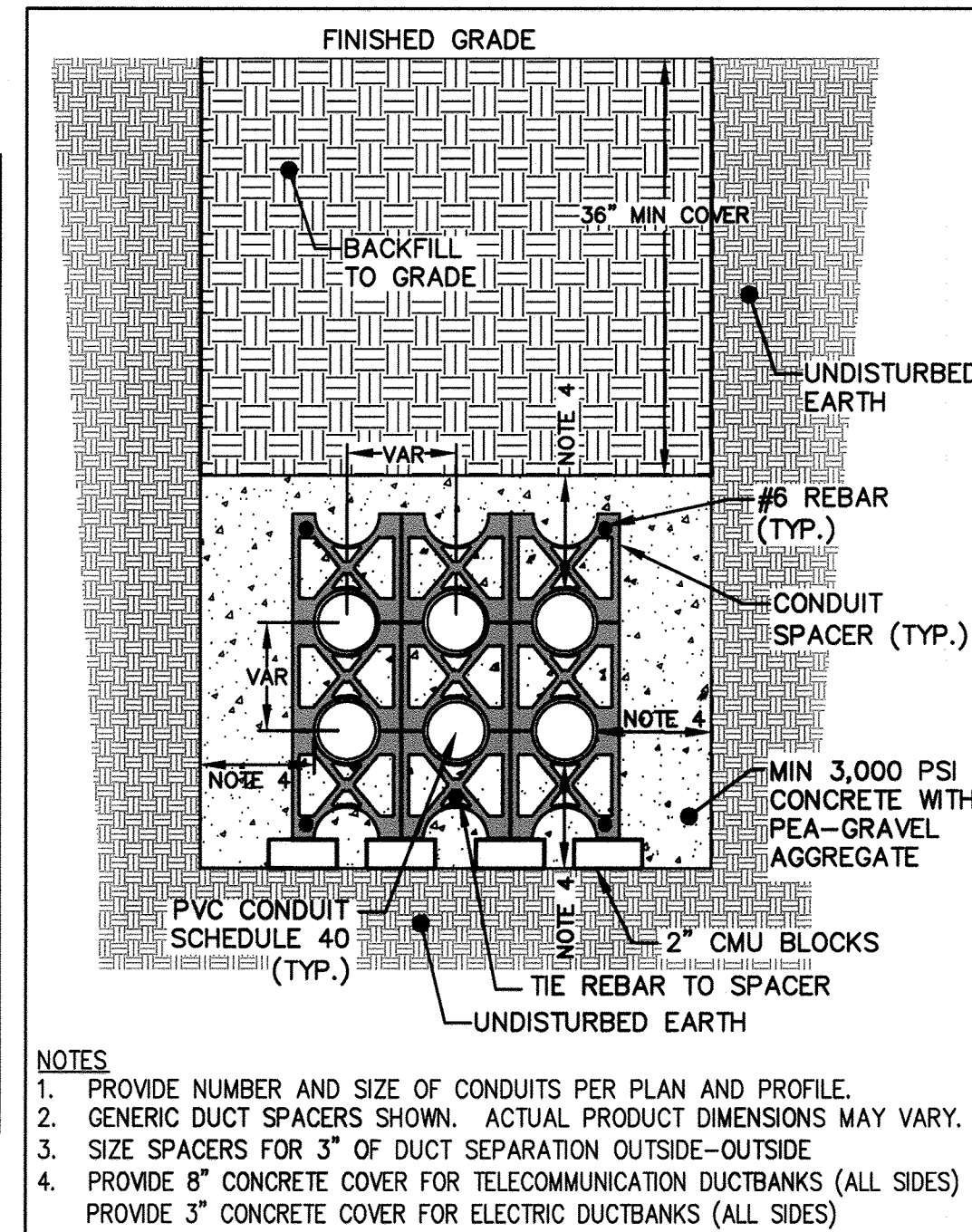
1. SATISFACTORY SOIL MATERIAL SHALL BE USED WHERE UTILITY IS INSTALLED BELOW UNPAVED SURFACES. FINAL TRENCH BACKFILL SHALL BE USED WHERE UTILITY IS INSTALLED BELOW PAVED SURFACES.
2. SAND OR GRAVEL BEDDING MATERIAL.
3. DETECTABLE WARNING TAPE.

- NOTES:
1. COMPACT BACKFILL IN LANDSCAPE AREAS.
 2. UTILITY TRENCH COMPACTION SHALL BE PER SPECIFICATIONS.

67 TRENCH DETAIL FOR DUCT BANK
C-022/C-022 NTS

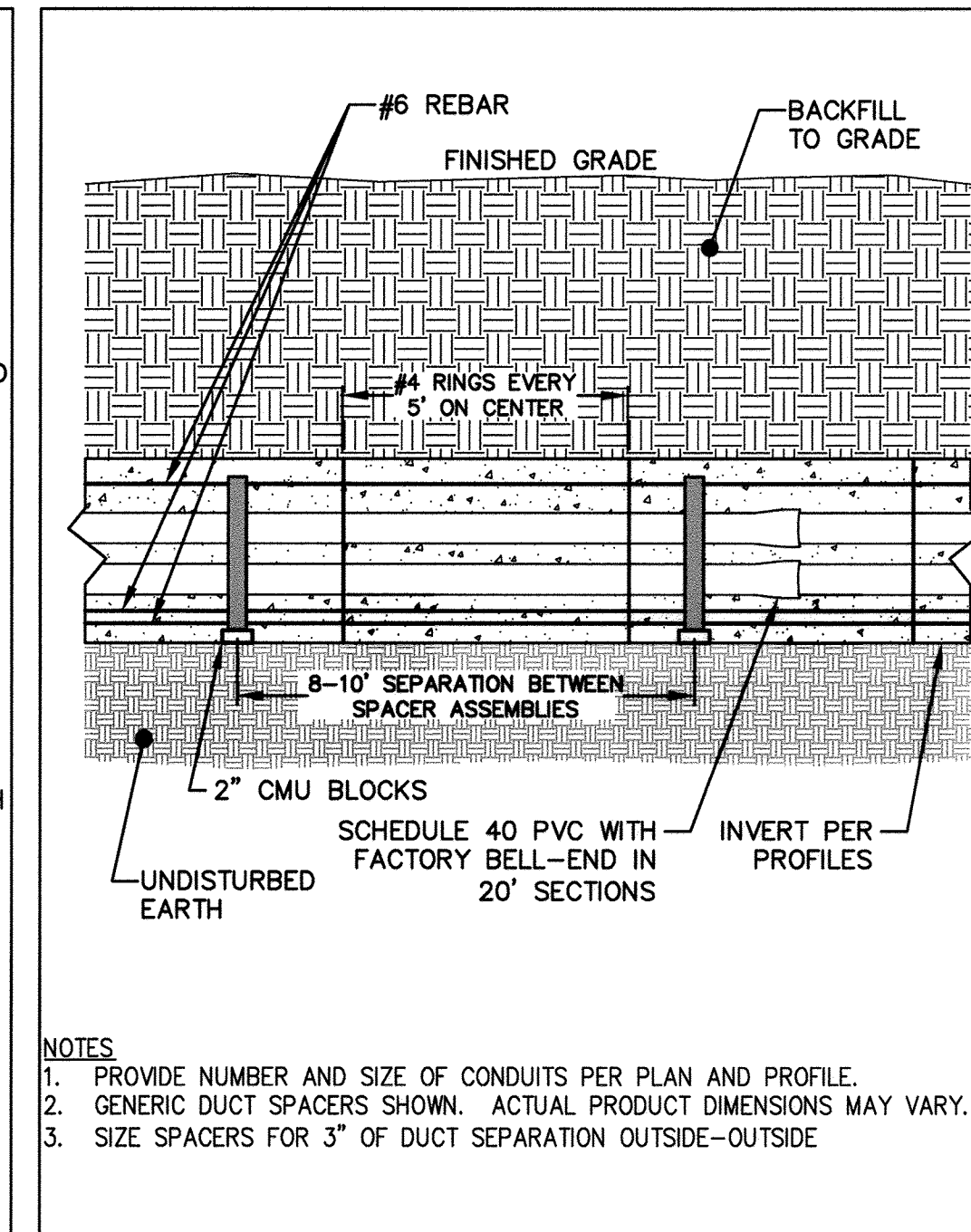


76 CAST IRON DOWN SPOUT
C-006/C-022 NTS



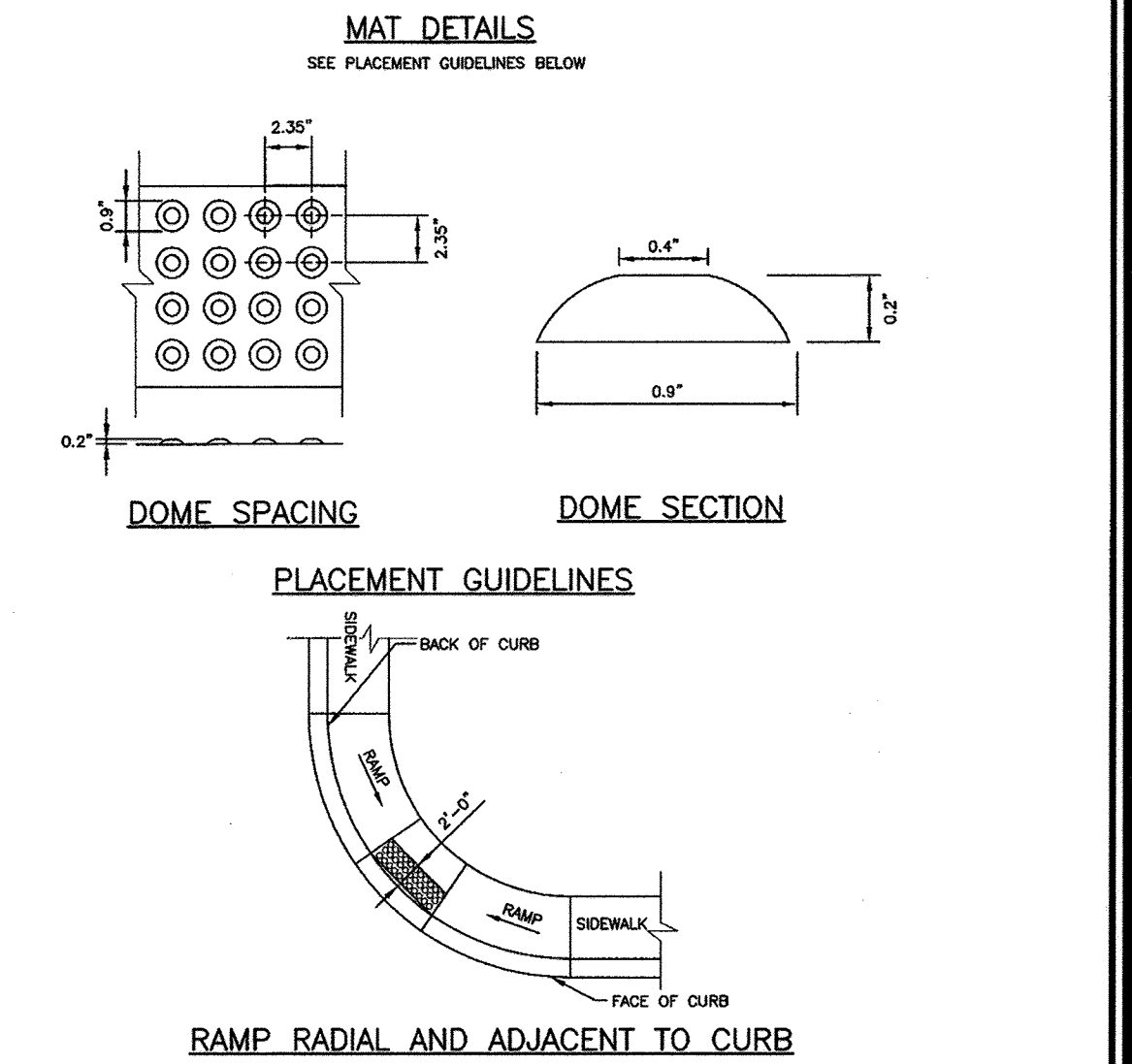
- NOTES:
1. PROVIDE NUMBER AND SIZE OF CONDUITS PER PLAN AND PROFILE.
 2. GENERIC DUCT SPACERS SHOWN. ACTUAL PRODUCT DIMENSIONS MAY VARY.
 3. SIZE SPACERS FOR 3" OF DUCT SEPARATION OUTSIDE-OUTSIDE.
 4. PROVIDE 8" CONCRETE COVER FOR TELECOMMUNICATION DUCTBANKS (ALL SIDES) PROVIDE 3" CONCRETE COVER FOR ELECTRIC DUCTBANKS (ALL SIDES)

68 DUCT BANK CROSS-SECTION DETAIL
C-022/C-022 NTS



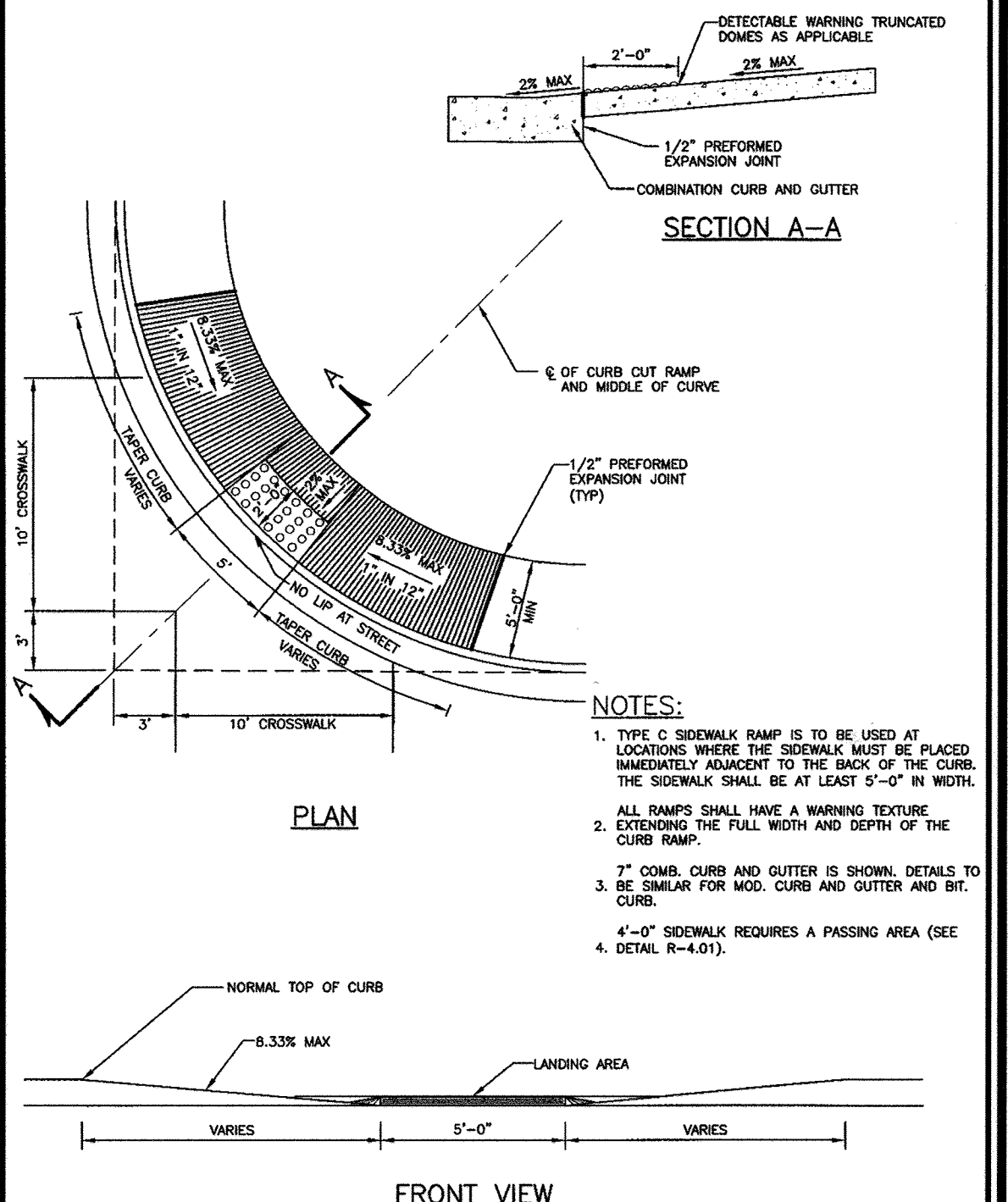
- NOTES:
1. PROVIDE NUMBER AND SIZE OF CONDUITS PER PLAN AND PROFILE.
 2. GENERIC DUCT SPACERS SHOWN. ACTUAL PRODUCT DIMENSIONS MAY VARY.
 3. SIZE SPACERS FOR 3" OF DUCT SEPARATION OUTSIDE-OUTSIDE.

69 TYPICAL DUCT BANK SECTION DETAIL
C-022/C-022 NTS



- NOTES:
1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
 2. FOR SHOWN APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF THE CURB ARE NO LESS THAN 0.5" AND NO MORE 3.0" FROM THE BACK OF THE CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.

65 MAT DETAILS
C-022/C-022 NTS



- NOTES:
1. TYPE C SIDEWALK RAMP IS TO BE USED AT LOCATIONS WHERE THE SIDEWALK MUST BE PLACED IMMEDIATELY ADJACENT TO THE BACK OF THE CURB. THE SIDEWALK SHALL BE AT LEAST 5'-0" IN WIDTH.
 - ALL RAMP SHALL HAVE A WARNING TEXTURE.
 - EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP.
 - 7" COMB. CURB AND GUTTER IS SHOWN. DETAILS TO BE SIMILAR FOR MOD. CURB AND GUTTER AND BIT. CURB.
 - 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

65 MAT DETAILS
C-022/C-022 NTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12-19-16
Chief, Development Engineering Division Date

[Signature] 1-18-17
Chief, Division of Land Development Date

[Signature] 1-23-17
Director Date

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND

LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2017

AS-BUILT CERTIFICATION

Note, there is no AS-Built information provided on this sheet.
PE: Jeffrey Lariani, License Number: 51371, Date of AS-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
LAUREL, MD 20723

TAX MAP 41 GRID 16 PARCEL 123
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

JHU/APL INTERNAL USE

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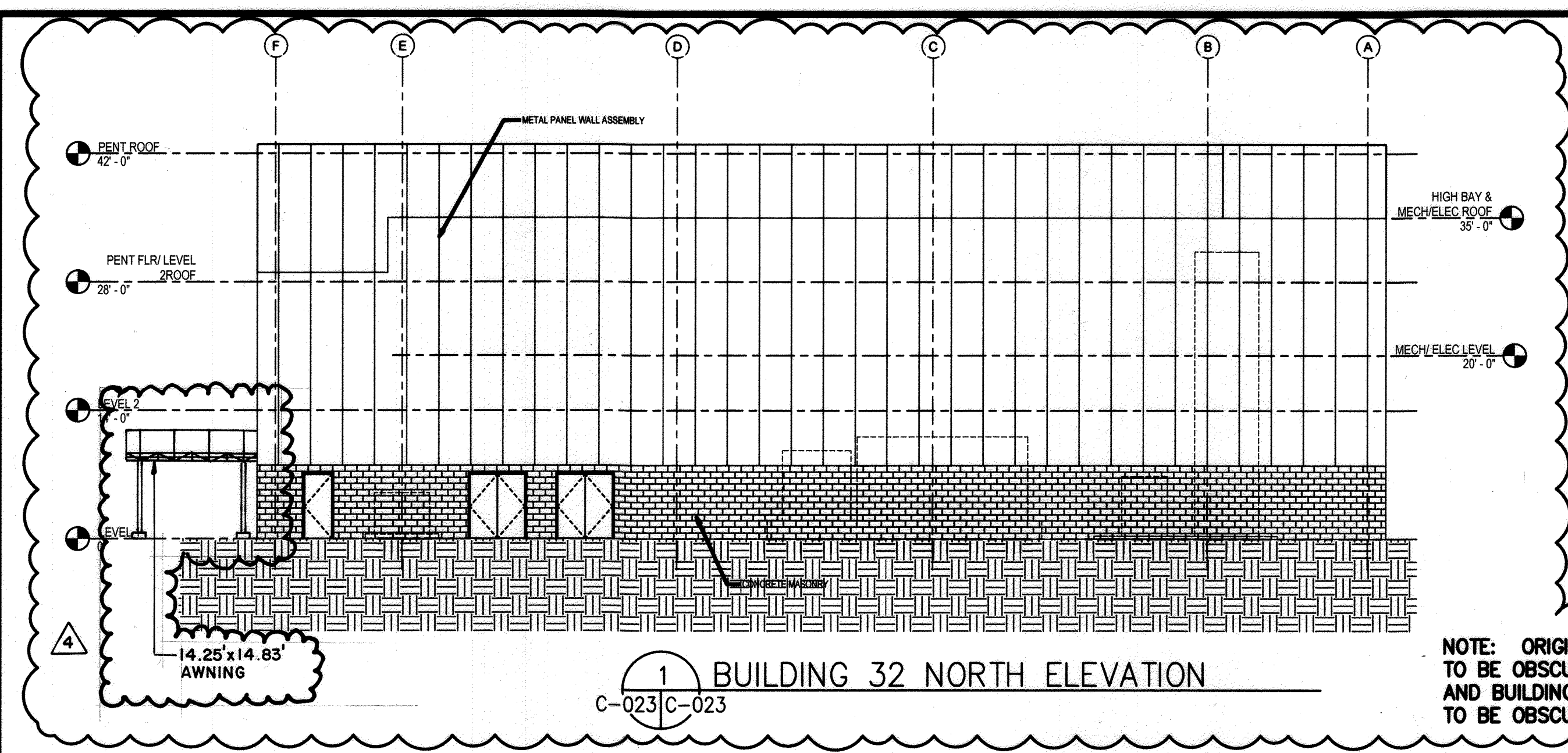
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1451 DOLLEY MADISON BLVD
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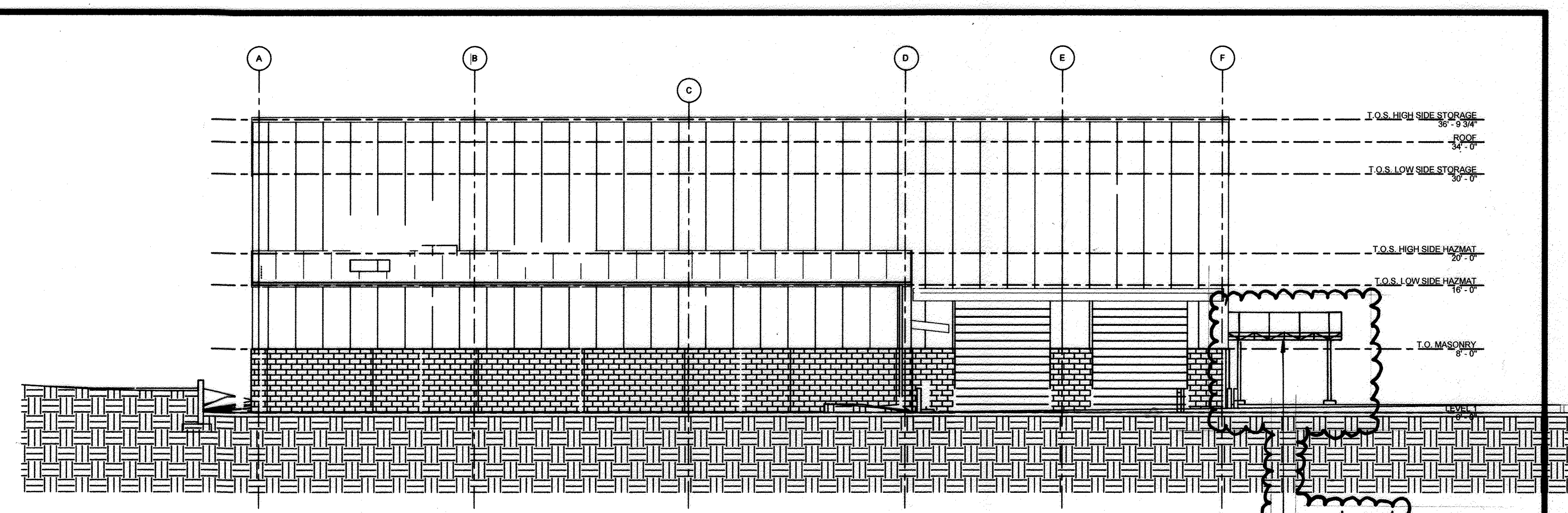
THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 32
SITE DEVELOPMENT PLAN
DETAILS

SCALE: N/A
SCALE: N/A
DESIGNED: JVL
DRAWN: JVL
CHECKED: REB
DATE: 03/11/2016
SDP FILE NUMBER: SDP-16-072
DRAWING NO.: C-022
23 of 23

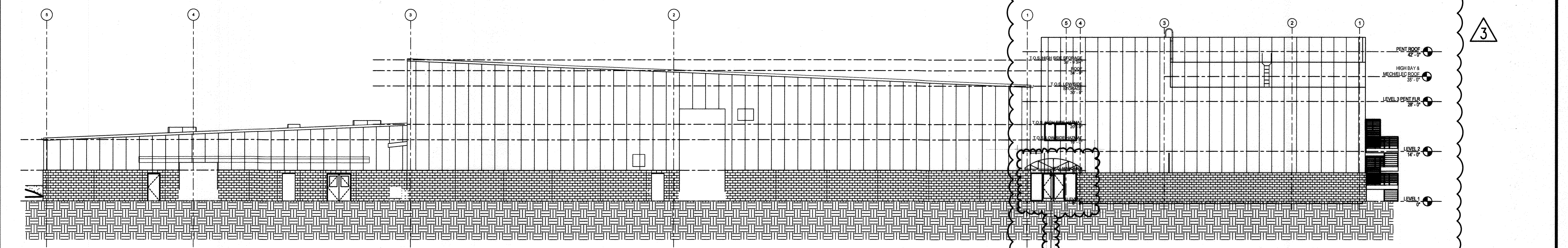


1 BUILDING 32 NORTH ELEVATION
C-023/C-023

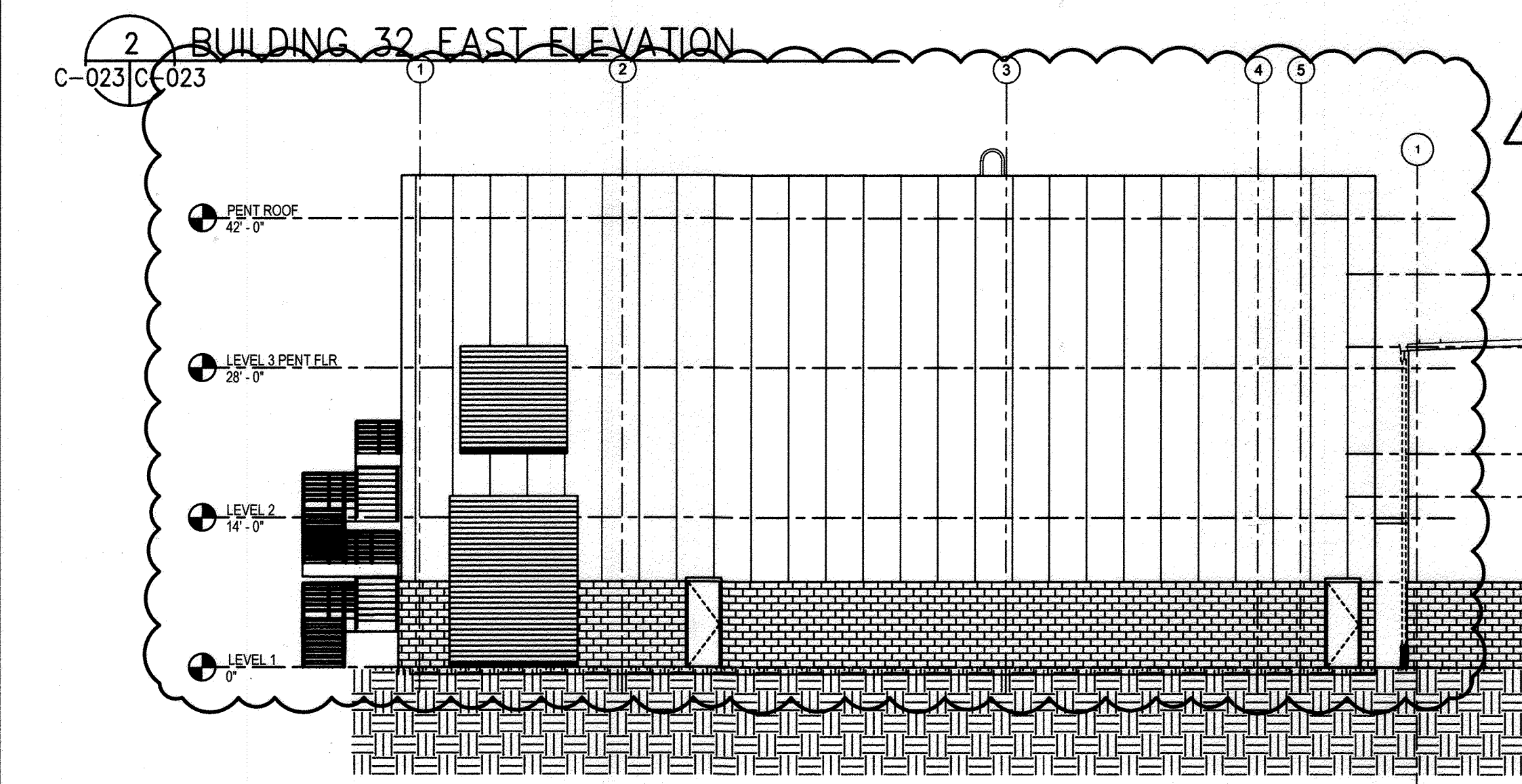
NOTE: ORIGINAL BUILDING 32 NORTH ELEVATION TO BE OBSCURED BY BUILDING 32 ADDITION, AND BUILDING 32 ADDITION SOUTH ELEVATION TO BE OBSCURED BY BUILDING 32.



3 BUILDING 32 SOUTH ELEVATION
C-023/C-023



2 BUILDING 32 EAST ELEVATION
C-023/C-023



4 BUILDING 32 WEST ELEVATION
C-023/C-023

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Paul Edwards
Chief, Development Engineering Division
Date: 5-4-18

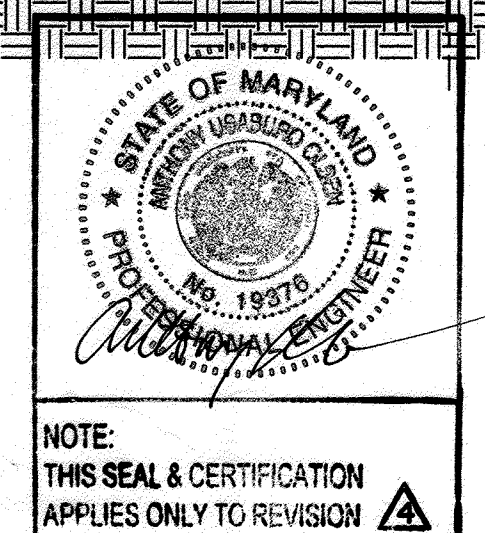
Kathleen...
Chief, Division of Land Development
Date: 5-8-18

Nathan...
Director
Date: 5-8-18

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019



PROFESSIONAL CERTIFICATION.

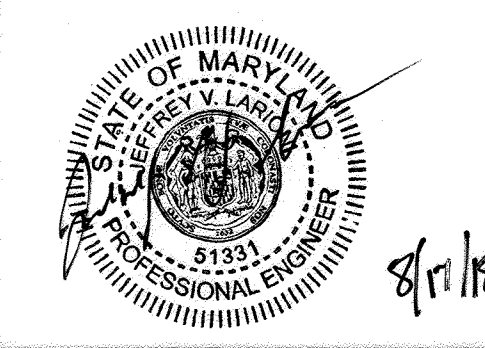
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 19376 EXPIRATION DATE: SEPTEMBER 22, 2021

1	KEEP BUILDING 10A	08/28/2017
2	BUILDING 32 ADD	12/14/2017
3	SHIFT BUILDING 32 ADD NORTH (REVISION 3 SUPERSEDES REVISION 2)	02/23/2018
4	ADD AWNING ON BLDG 32A	01/15/2021

No	SDP REVISION	DATE	PLAN STATUS	DATE

AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
PE: Jeffrey Larini, License Number: 51331, Dated As Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
LAUREL, MD 20723

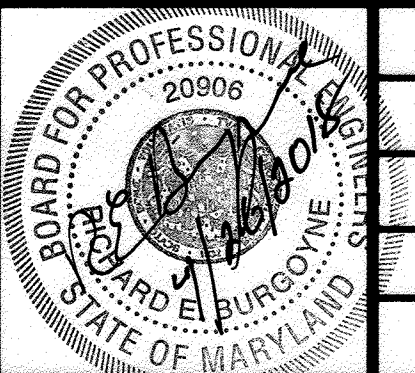
TAX MAP 41 GRID 16 PARCEL 123
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

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.

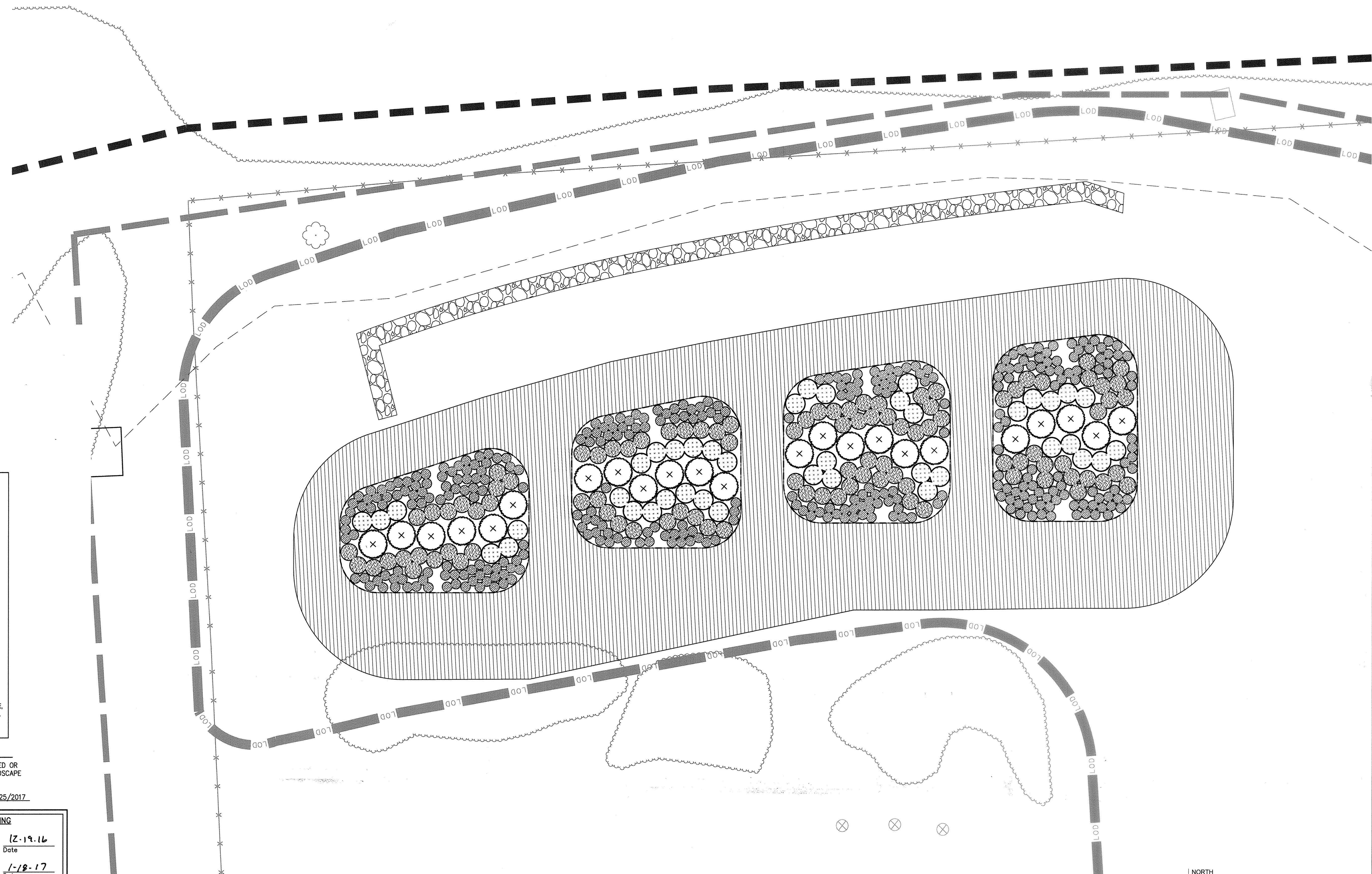
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Planning • Landscape Architecture • Civil Engineering

3330 WASHINGTON BLVD
SUITE 430, ARLINGTON, VA 22201



SCALE-H	N/A	THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32 SITE DEVELOPMENT PLAN DETAILS
SCALE-V	N/A	
DESIGNED	JM	
DRAWN	JM	
CHECKED	JVL	
DATE	03/11/2016	
SDP FILE NUMBER	SDP-16-072	
DRAWING NO.	C-023	
		24 of 35

AS-BUILT SDP-16-072



PLANT MATERIALS LEGEND

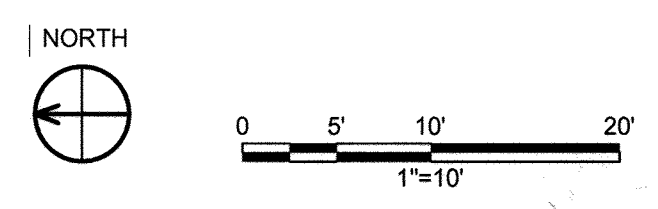
SYMBOL	PLANT NAME	QUANTITY
⊗	Myrica pensylvanica - (Bayberry)	23
●	Carex spp. - (Mixed Sedges)	321
⊙	Scirpus cyperinus - (Woolgrass)	98
⊘	Panicum virgatum - (Switchgrass)	41
▨	Turf Grass - (Match to existing)	N/A

NOTE: PLANT SPECIES AND QUANTITIES AS LISTED ABOVE. IF PLANTS AND/OR QUANTITIES ARE NOT LOCALLY AVAILABLE, REFER TO NURSERY FOR ADEQUATE EQUIVALENT PLANTS.

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NUMBER: 635 EXPIRATION DATE: 9/25/2017

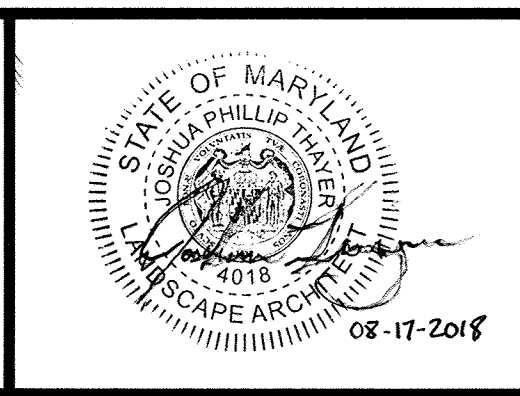
APPROVED: DEPARTMENT OF PLANNING AND ZONING

	12-19-16
Chief, Development Engineering Division	Date
	1-18-17
Chief, Division of Land Development	Date
	1-23-17
Director	Date



No	REVISION	DATE	No	REVISION	DATE

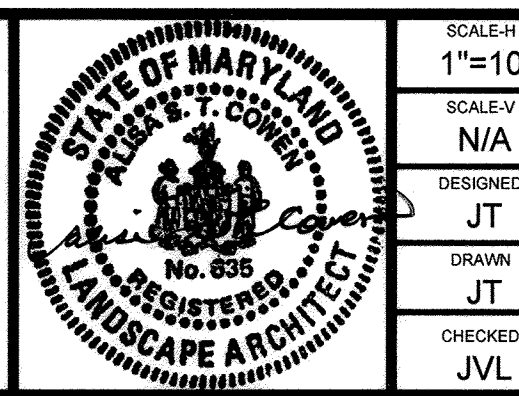
AS-BUILT CERTIFICATION
 I hereby certify by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and specifications.
 RL: Joshua Phillip Thayer, License Number, 4018. Date of AS-Built, 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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 1451 DOLLEY MADISON BLVD
 SUITE 200, MCLEAN, VA 22101



SCALE: 1"=10'	SCALE: N/A	DESIGNED: JT	DRAWN: JT	CHECKED: JVL	DATE: 03/11/2016	SOP FILE NUMBER: SDP-16-072	DRAWING NO.: L-001	25 OF 35
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THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
SWM PLANTING PLAN

SERVICE & SUPPORT FACILITY PHASE II: BUILDING 32

HOWARD COUNTY SITE DEVELOPMENT PLAN #SDP-16-072

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
 LOCATED SOUTHWEST OF INTERSECTION OF ROUTE 29 & 32
 HOWARD COUNTY, MD

DEVELOPER & ENGINEER CERTIFICATES

1) BY THE DEVELOPER:

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

Elenna M. Carey 9/27/17
 SIGNATURE OF DEVELOPER DATE

2) BY THE ENGINEER:

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

R.E. Boyle 9/27/2017
 DESIGN ENGINEER SIGNATURE DATE
R. E. Boyle 20906
 PRINTED NAME REGISTRATION NUMBER

3) CERTIFICATION BY PROFESSIONAL:

THERE ARE NO WETLANDS ON THE SITE THAT WILL BE DISTURBED. THEREFORE, THE REQUIREMENT OF 401 AND 404 WETLANDS PERMITS FROM THE STATE OF MARYLAND AND CORPS OF ENGINEERS ARE NOT NEEDED.

R.E. Boyle 9/27/2017
 PROFESSIONAL'S SIGNATURE DATE
R. E. Boyle
 PRINTED NAME

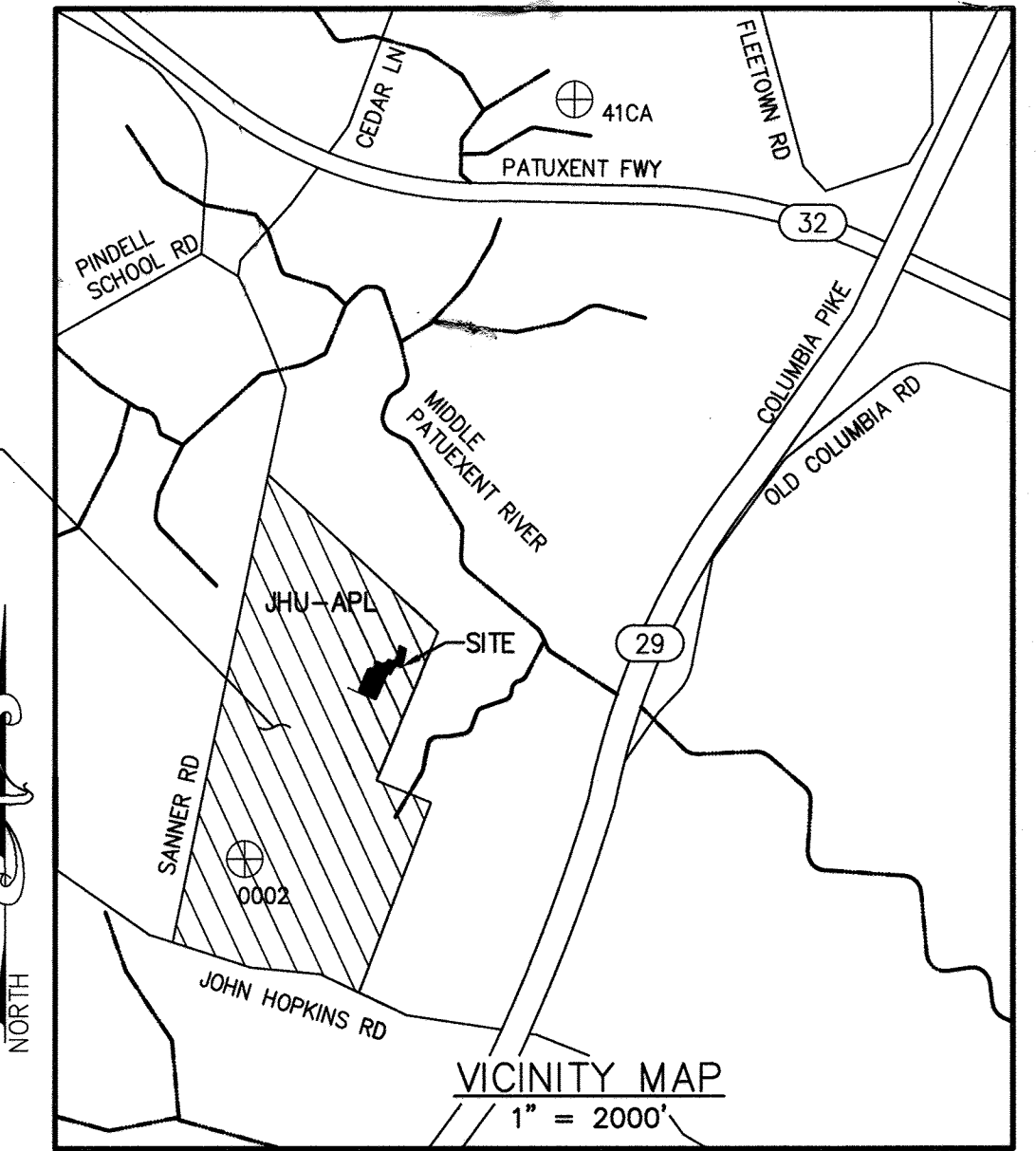
SHEET INDEX

1	C-001	COVER SHEET
2	C-002	NOTES AND LEGEND
3	C-003	EXISTING CONDITIONS PLAN
4	C-004	DEMO PLAN
5	C-005	SITE PLAN
6	C-006	GRADING PLAN - PROPOSED CONDITION
7	C-007	GRADING PLAN - ULTIMATE CONDITION
8	C-008	UTILITY PLAN
9	C-009	SEDIMENT CONTROL PLAN PH I
10	C-010	SEDIMENT CONTROL PLAN PH II
11	C-011	SEDIMENT CONTROL DETAILS
12	C-012	SEDIMENT CONTROL DETAILS
13	C-013	SITE AREA MAP
14	C-014	STORM DRAINAGE AREA MAP - PROPOSED CONDITION
15	C-015	STORM DRAINAGE AREA MAP - ULTIMATE CONDITION
16	C-016	STORM COMPS
17	C-017	STORMWATER/ESD DETAILS
18	C-018	UTILITY PROFILES
19	C-018A	UTILITY PROFILES
20	C-019	ROAD PROFILES
21	C-020	DETAILS
22	C-021	DETAILS
23	C-022	DETAILS
24	C-023	DETAILS
25	L-001	SWM PLANTING PLAN

NEW SHEETS WITH REVISION #1

26	C-026	SUPPLEMENTAL COVER SHEET
27	C-027	SITE PLAN - INTERIM
28	C-028	GRADING PLAN - INTERIM
29	C-029	UTILITY PLAN - INTERIM
30	C-030	SEDIMENT CONTROL PLAN PH I - INTERIM
31	C-031	SEDIMENT CONTROL PLAN PH II - INTERIM
32	C-032	STORM DRAINAGE AREA MAP - INTERIM CONDITION
33	C-033	STORM COMPS - INTERIM
34	C-034	INTERIM DETAILS
35	C-035	DETAILS

LOCATION OF PROJECT



GEODETIC CONTROL
 0002: N 544836.502 E 1340825.389 NGVD ELEV. 444.479
 41CA: N 550124.832 E 1342960.880 NGVD ELEV. 295.393
 ADC MAP 19, GRID A2

SITE ANALYSIS DATA CHART

TOTAL PROJECT AREA: 357.976 Ac.
 AREA OF PLAN SUBMISSION: 2.99± Ac.
 LIMIT OF DISTURBANCE: 2.99± Ac. (130,400 ft²)
 PRESENT ZONING: PEC
 PROPOSED USE: WAREHOUSE & MATERIAL HANDLING
 EXISTING MAXIMUM NUMBER OF JHU/APL EMPLOYEES: 4600
 EXISTING MAXIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING: 2850 (SDP-05-133)
 EXISTING ONSITE PARKING SPACES: 4,798 (SDP 05-133)
 NO PARKING PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL NOT HAVE ANY ASSIGNABLE OFFICE SPACE
 NO ADDITIONAL JHU/APL EMPLOYEES PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL BE 27,803 GROSS ft²
 EXISTING OPEN SPACE AREA = (LOT AREA MINUS PARKING & BUILDINGS)
 281.7 ACRES (78.7% OF TOTAL LOT AREA PER SDP-05-133)
 PROPOSED OPEN SPACE AREA
 281.09 ACRES (78.5% OF TOTAL LOT AREA)
 STEEP SLOPES (>15%) = 0.481 Ac.
 NO HIGHLY ERODIBLE SOILS FOUND TO BE PRESENT WITHIN THE LIMITS OF DISTURBANCE

CASE NUMBERS APPLICABLE:
 SDP-08-084, SDP-04-76,
 F-04-188 - FOREST CONSERVATION
 SANITARY SEWER/WATER SERVICE
 PRIVATE ONSITE SYSTEM, PUBLIC CONNECTION
 EXISTING BUILDING COVERAGE
 22.23 ACRES (6.2%)
 BUILDING DEMOLITION
 0.50 ACRES
 PROPOSED BUILDING COVERAGE (FOOTPRINT)
 0.64 ACRES (28,089 ft²)
 TOTAL PROPOSED BUILDING COVERAGE
 23.37 ACRES (6.5%)
 NO FLOODPLAINS OR FORESTS PRESENT WITHIN THE LIMITS OF DISTURBANCE

INTERIM SITE ANALYSIS DATA CHART

AREA OF PLAN SUBMISSION: 2.70± Ac.
 LIMIT OF DISTURBANCE: 2.70± Ac. (117,700 ft²)
 PRESENT ZONING: PEC
 PROPOSED USE: WAREHOUSE & MATERIAL HANDLING
 EXISTING MAXIMUM NUMBER OF JHU/APL EMPLOYEES: 4600
 EXISTING MAXIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING: 2850 (SDP-05-133)
 EXISTING ONSITE PARKING SPACES: 4,798 (SDP 05-133)
 NO PARKING PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL NOT HAVE ANY ASSIGNABLE OFFICE SPACE
 NO ADDITIONAL JHU/APL EMPLOYEES PROPOSED AS PART OF THIS SUBMISSION
 BUILDING 32 WILL BE 27,803 GROSS ft²
 EXISTING OPEN SPACE AREA = (LOT AREA MINUS PARKING & BUILDINGS)
 281.7 ACRES (78.7% OF TOTAL LOT AREA PER SDP-05-133)
 PROPOSED OPEN SPACE AREA
 280.85 ACRES (78.4% OF TOTAL LOT AREA)
 STEEP SLOPES (>15%) = 0.481 Ac.
 NO HIGHLY ERODIBLE SOILS FOUND TO BE PRESENT WITHIN THE LIMITS OF DISTURBANCE

CASE NUMBERS APPLICABLE:
 SDP-08-084, SDP-04-76,
 F-04-188 - FOREST CONSERVATION
 SANITARY SEWER/WATER SERVICE
 PRIVATE ONSITE SYSTEM, PUBLIC CONNECTION
 EXISTING BUILDING COVERAGE
 22.23 ACRES (6.2%)
 BUILDING DEMOLITION
 0.26 ACRES
 INTERIM BUILDING COVERAGE (FOOTPRINT)
 0.88 ACRES (38,240 ft²)
 TOTAL INTERIM BUILDING COVERAGE
 23.61 ACRES (6.6%)
 NO FLOODPLAINS OR FORESTS PRESENT WITHIN THE LIMITS OF DISTURBANCE

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

NEW SHEET

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
Mauro Rossman 11/15/2017
 County Health Officer Date
 Howard County Health Department

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad E. Buehler 10-17-17
 Chief, Development Engineering Division Date
Kevin Calverley 11-27-17
 Chief, Division of Land Development Date
Valerie J. J. J. 11-27-17
 Director Date

1	KEEP BUILDING 10A	08/28/2017
No	REVISION	DATE

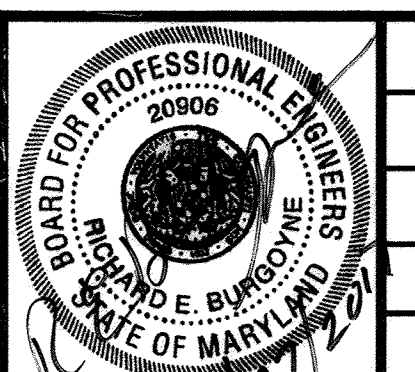
AS-BUILT CERTIFICATION
 Note, there is no "AS-Built" information provided on this sheet.
 PE: Jeffrey L. Lironi, License Number: 51331, Date of AS-Built: 06/08/2018



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 APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

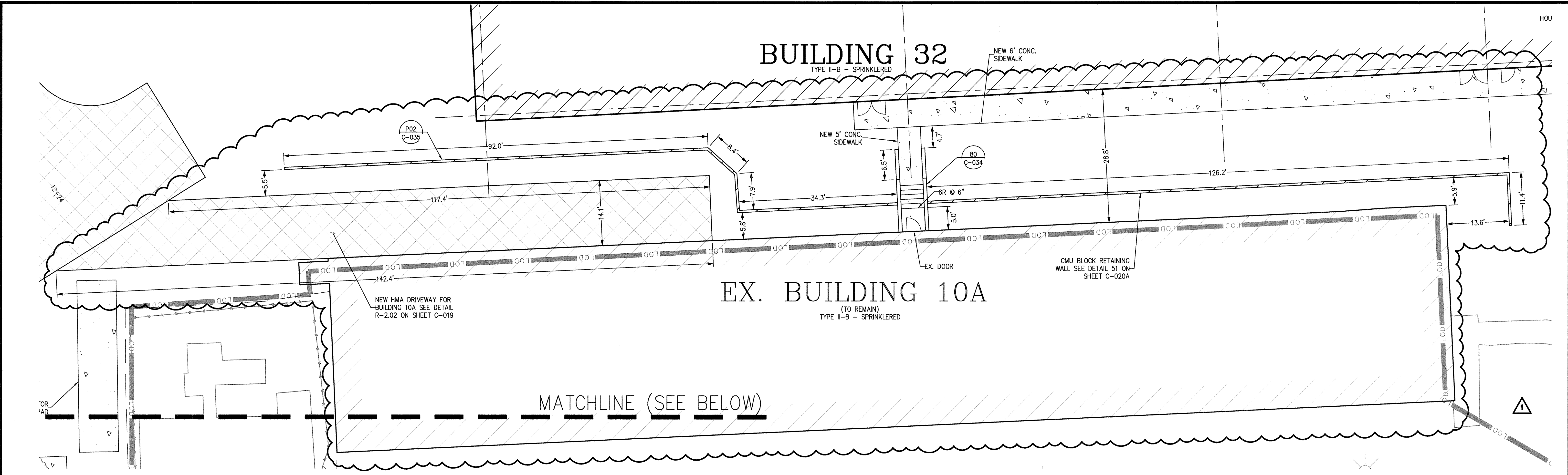
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SCALE: N/A	SCALE: N/A	DESIGNED: JM	DRAWN: JM	CHECKED: REB
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32 SITE DEVELOPMENT PLAN SUPPLEMENTAL COVER SHEET				
DATE: 03/11/2016	SDP FILE NUMBER: SDP-16-072	DRAWING NO.: C-026	26 OF 35	

AS-BUILT SDP-16-072



- SHEET NOTES**
- ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE INDICATED.
 - SEE ARCHITECTURAL PLANS FOR BUILDING FLOOR PLAN.
 - DEVELOPMENT IS PLANNED TO TAKE PLACE IN TWO PHASES (PHASE I - BUILDING, ROAD, AND SITE WORK, PHASE II - FUTURE ROAD)
 - FUTURE ROAD IS FOR CIRCULATION, NOT FIRE ACCESS

SITE DEVELOPMENT NARRATIVE

THE SITE IS CURRENTLY DEVELOPED, AND CONSISTS OF MULTIPLE MULTI-STORY OFFICE BUILDINGS, PARKING AREAS, AND VARIOUS SHEDS AND COVERED STORAGE AREAS. A PROPOSED BUILDING IS BEING CONSTRUCTED TO REPLACE THE EXISTING BUILDING. TOTAL IMPERVIOUS AREA OF 1.00 ACRE OR 37%.

THE PROPOSED DEVELOPMENT WILL HAVE 3 PHASES: INTERIM, PROPOSED, AND FUTURE. THE INTERIM CONDITION WILL HAVE BUILDING 32 CONSTRUCTED WITH BUILDING 10A STILL IN PLACE. THE PROPOSED CONDITION WILL HAVE BUILDING 10A REMOVED. THE FUTURE CONDITION WILL HAVE AN EXPANSION FOR BUILDING 32, A NEW BUILDING 10A, AND A PROPOSED ROAD WEST OF BUILDING 32. THE INTERIM CONDITION WILL HAVE THE MICRO-BIORETENTION BASINS INSTALLED AND SIZED FOR THE FUTURE CONDITION.

ALL PROPOSED UTILITIES WILL BE PRIVATE

PROFESSIONAL CERTIFICATION

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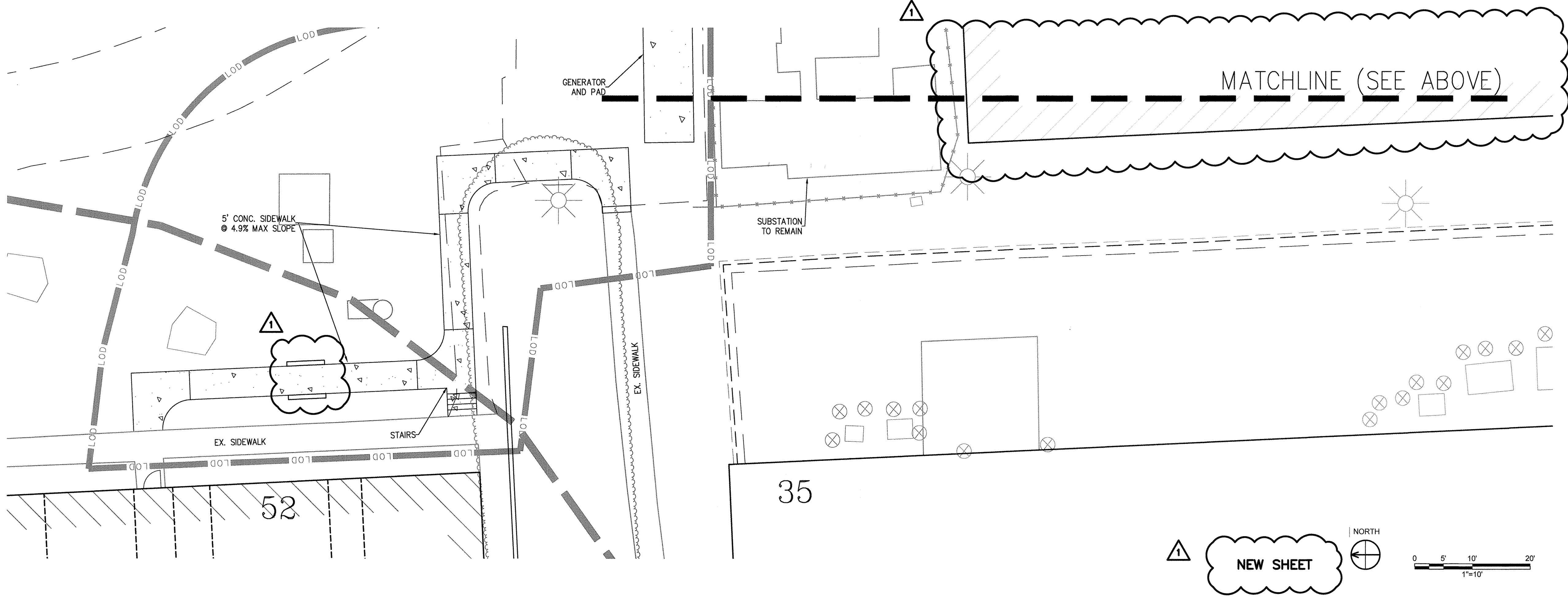
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edelman 10-17-17
 Chief, Development Engineering Division Date

Kevin S. ... 11-27-17
 Chief, Division of Land Development Date

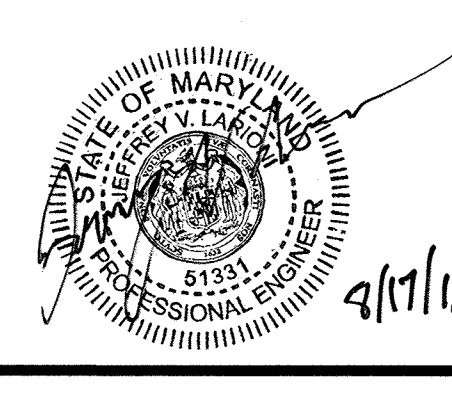
William J. ... 11-27-17
 Director Date



No	REVISION	DATE	No	REVISION	DATE
1	KEEP BUILDING 10A	08/28/2017			

AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Laroni, License Number: 51331, Date of As-Built: 06/08/2018



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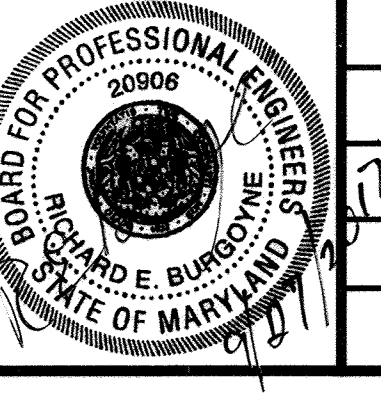
TAX MAP 41 GRID 16 PARCEL 123
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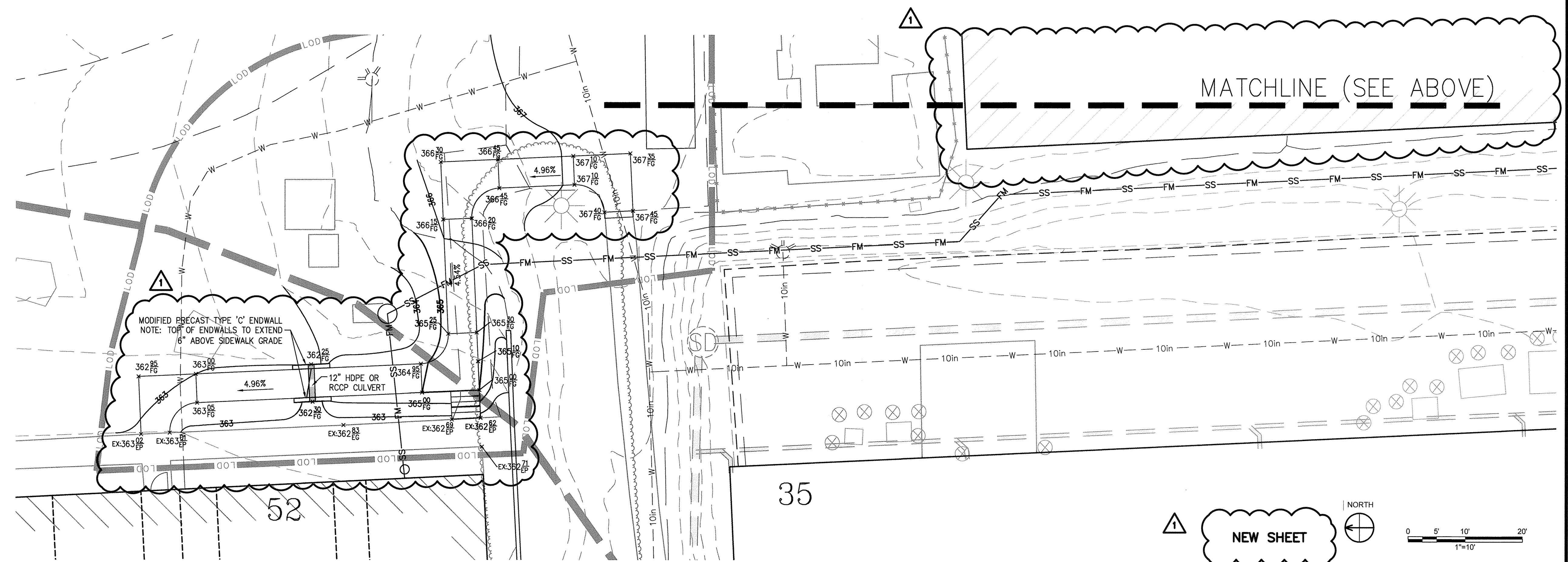
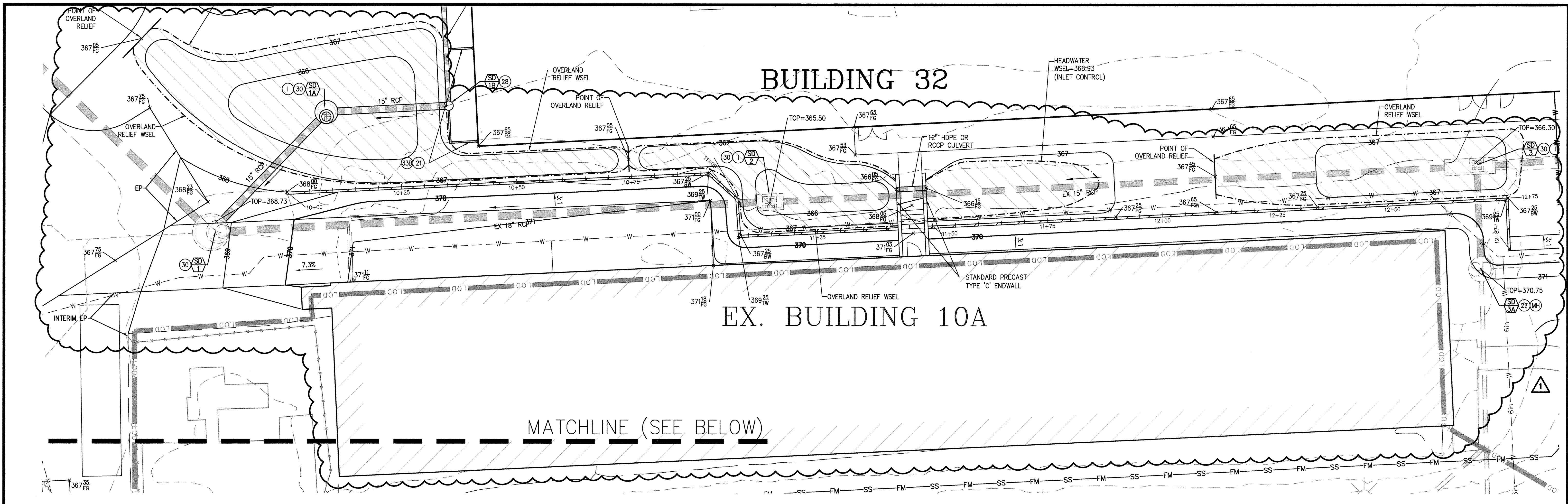


SCALE: H 1"=10'
 SCALE: V N/A

DESIGNED: JM
 DRAWN: JM
 CHECKED: REB

DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO.: C-027 27 OF 35

THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
BUILDING 32
 SITE DEVELOPMENT PLAN
SITE PLAN ENLARGEMENT - INTERIM



- STORM DRAIN KEY NOTES**
- (21) NEW 4" PVC ROOF DRAIN
 - (22) NEW 6" PVC ROOF DRAIN
 - (23) NEW 12" PVC STORM DRAIN
 - (24) NEW 18" RCP CL. III STORM DRAIN
 - (25) NEW 18" RCP CL. III STORM DRAIN
 - (26) CONNECT TO EXISTING STORM DRAIN SYSTEM
 - (27) NEW STORM DRAIN MANHOLE
 - (28) NEW STORM CLEANOUT
 - (29) NEW 6" C900 PVC STORM DRAIN
 - (30) INSTALL YARD INLET
 - (31) INSTALL CURB INLET
 - (32) REPLACE WITH MANHOLE FRAME AND COVER
 - (33) 3/4" ROOF DRAIN BOOT
 - (34) 4"x6" ROOF DRAIN BOOT
 - (35) PRE-TREATMENT STORMCEPTOR
 - (36) INSTALL FLOOR DRAIN

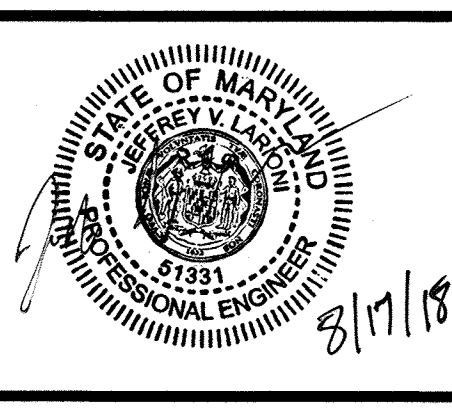
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 LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

<i>Chad...</i> Chief, Development Engineering Division	10-17-17 Date
<i>Keith...</i> Chief, Division of Land Development	11-27-17 Date
<i>Nancy...</i> Director	11-27-17 Date

No	REVISION	DATE	No	REVISION	DATE
1	KEEP BUILDING 10A	08/28/2017			

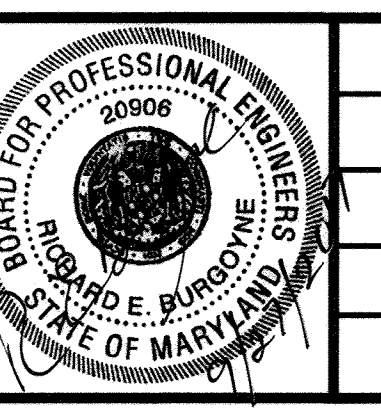
AS-BUILT CERTIFICATION
 Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larson, License Number: 51331, Date of As-Built: 06/08/2018



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 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
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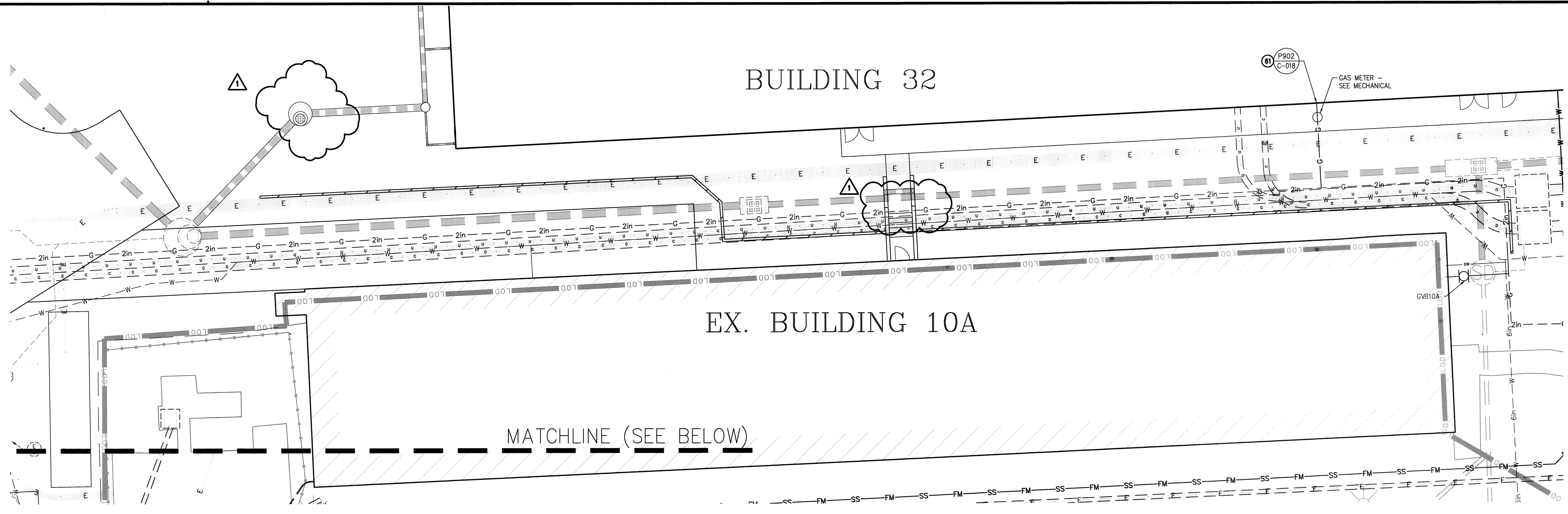
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THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY BUILDING 32
 SITE DEVELOPMENT PLAN
GRADING PLAN - INTERIM

SCALE: 1"=10'
 SCALE: N/A
 DESIGNED: JM
 DRAWN: JM
 CHECKED: REB
 DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-028
 28 OF 35



GENERAL NOTE

UTILITY RELOCATION AND SITE SEDIMENT CONTROL CONSTRUCTED UNDER RED-LINE SDP-08-084.

WATERLINE KEY NOTES

- 1 CREATE NEW TAP TO ONSITE WATERMAIN.
- 2 NEW 8" DIP WATERLINE.
- 3 CONNECT TO FIRE PUMP ROOM, SEE FIRE PROTECTION PLANS FOR CONTINUATION.
- 4 NEW 10" SERVICE TO BUILDING.
- 5 NEW FIRE HYDRANT
- 6 GATE VALVE (MATCH LINE SIZE)

SANITARY SEWER KEY NOTES

- 41 NEW 4" PVC SANITARY LATERAL
- 42 CONNECT TO EXISTING SANITARY SEWER
- 43 CLEANOUT

GAS MAIN NOTES

- 61 2" HDPE NATURAL GAS CONNECTION

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

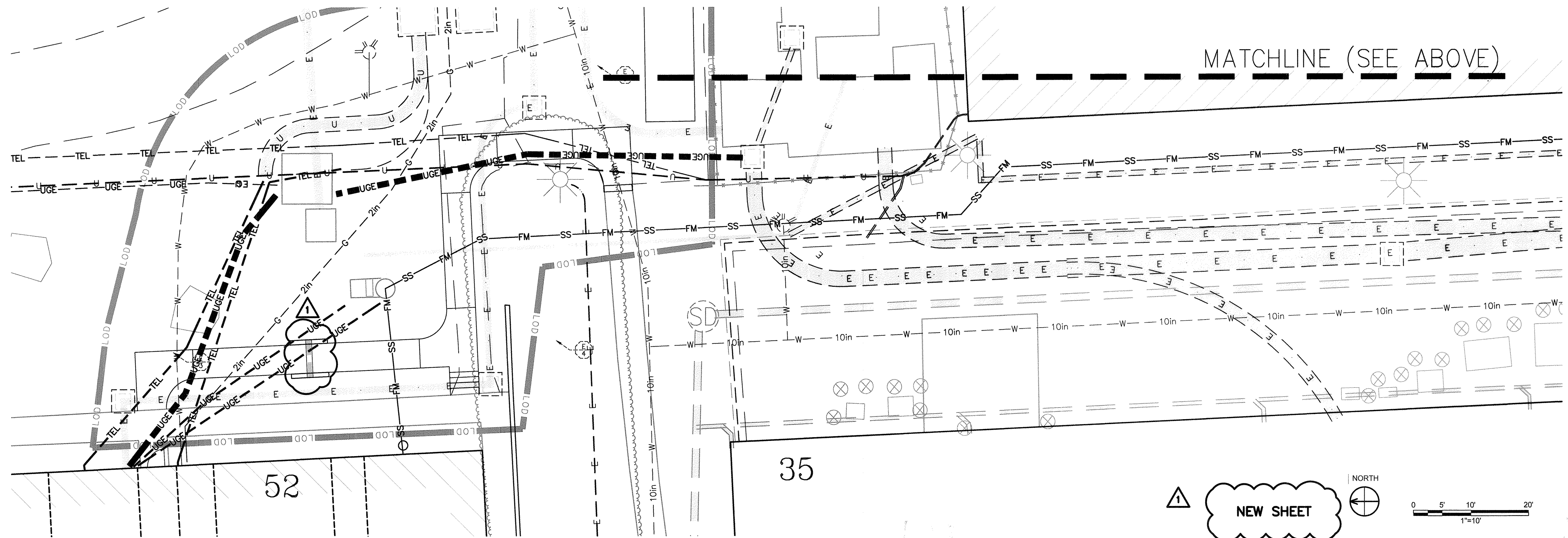
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
 Chief, Development Engineering Division
 10-17-17
 Date

[Signature]
 Chief, Division of Land Development
 11-27-17
 Date

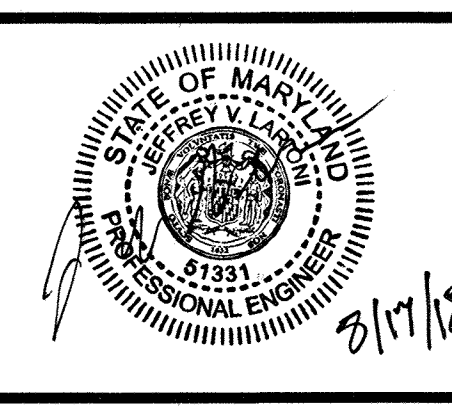
[Signature]
 Director
 11-27-17
 Date



1	KEEP BUILDING 10A	08/28/2017
No	REVISION	DATE

No	REVISION	DATE
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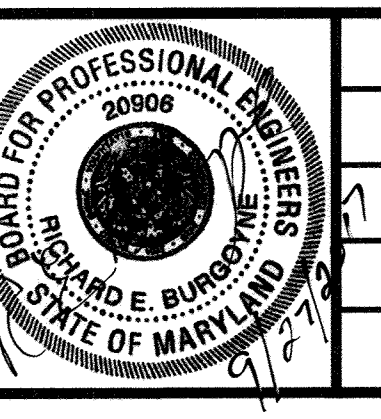
AS-BUILT CERTIFICATION
 Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larson, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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.

Cowen Design Group
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 3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32
 SITE DEVELOPMENT PLAN
 UTILITY PLAN - INTERIM

SCALE: 1"=10'
 SCALE: N/A
 DESIGNED: JM
 DRAWN: JM
 CHECKED: REB

DATE: 03/11/2016
 SDP FILE NUMBER: SDP-16-072
 DRAWING NO.: C-029
 29 OF 35

STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
 - A. 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.
 - C. 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.
2. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
3. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THEREOF.
4. FOLLOWING INITIAL EARTH DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROL, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH 2:1 OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.
7. SITE ANALYSIS:
 - Total Area of Site: 359.98 Acres
 - Area Disturbed: 2.70 Acres
 - Area to be seeded or paved: 1.11 Acres
 - Area to be vegetatively stabilized: 1.59 Acres
 - Total Cut: 4,400 Cu. Yds.
 - Total Fill: 497 Cu. Yds.
 - Offsite waste/borrow area location: WILL BE DISPOSED OF ON-SITE.
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF RESTORANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT 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 PRECIPITATION)
 - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
 - EVIDENCE OF SEDIMENT DISCHARGES
 - IDENTIFICATION OF PLAN DEFICIENCIES
 - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
 - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
 - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
 - PHOTOGRAPHS
 - MONITORING/SAMPLING
 - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
 - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE)
10. FRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY MAJOR CHANGES TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
12. DISTURBANCE SHALL BE LIMITED TO ONE GRADING UNIT AT A TIME. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE HSCD, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
13. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER STRUCTURE.
14. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
15. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-COUNTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2" IN ELEVATION.
16. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
 - USE I AND IP MARCH 1 - JUNE 15
 - USE II AND IIP OCTOBER 1 - APRIL 30
 - USE IV MARCH 1 - MAY 31
17. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.
18. STANDARD SILT FENCE IS TO BE REPLACED BY "SUPER" SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

OWNERS/DEVELOPER CERTIFICATION:
 I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Glenn M. Carey 9/27/17
 OWNER'S/DEVELOPER'S SIGNATURE DATE

Glenn M. Carey FAC. MGMT. CHIEF ENGINEER
 PRINTED NAME & TITLE

DESIGN CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

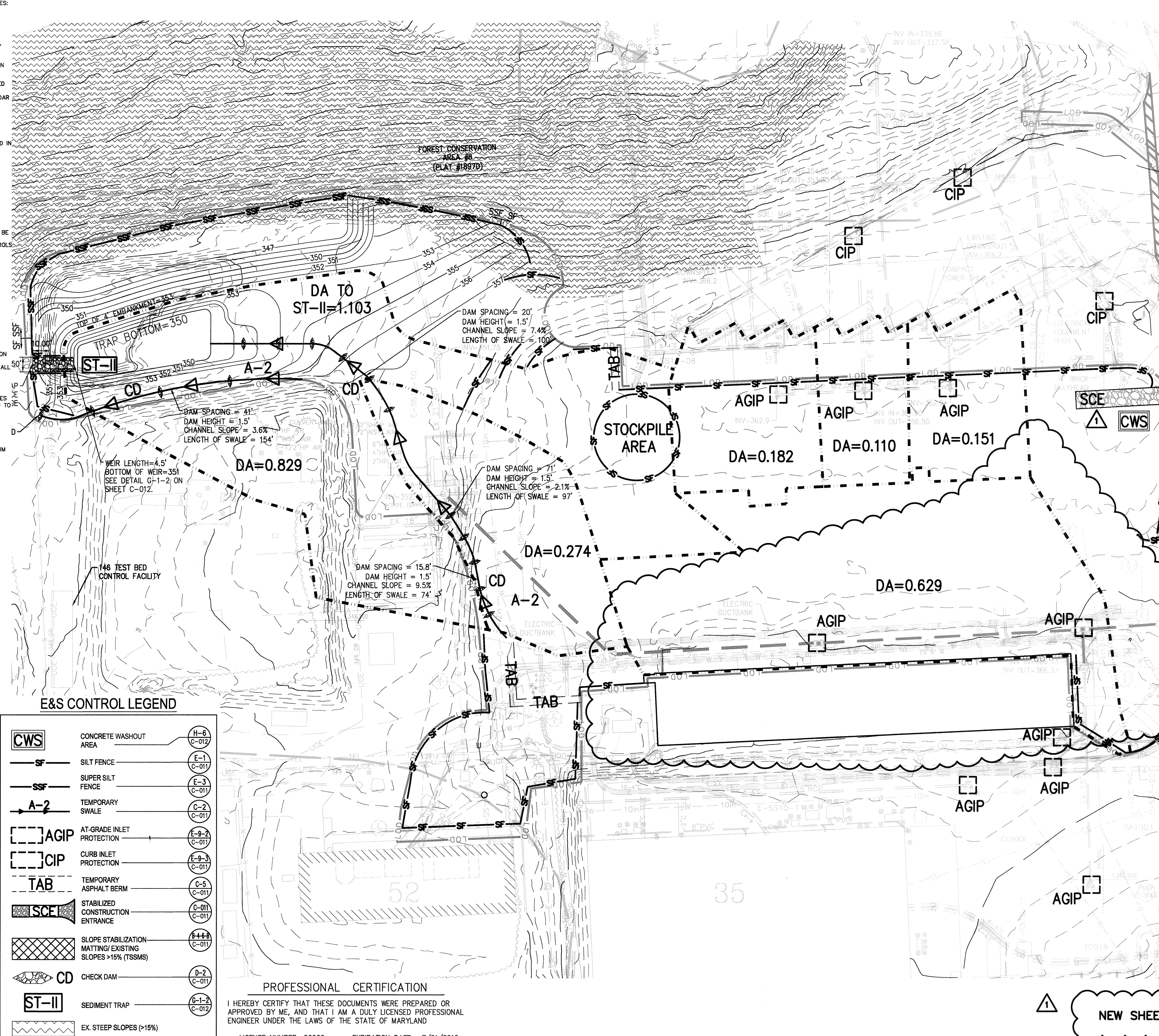
R.E. Burgoine 9/27/2017
 DESIGNER'S SIGNATURE DATE

R.E. Burgoine MD REGISTRATION NO. 20906
 PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

HOWARD SCD SIGNATURE BLOCK:
 THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John L. Robertson 10/5/17
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Brown 10-17-17 Date
 Chief, Development Engineering Division
Kurt Schuchert 11-27-17 Date
 Chief, Division of Land Development
Nathan Taylor 11-27-17 Date
 Director



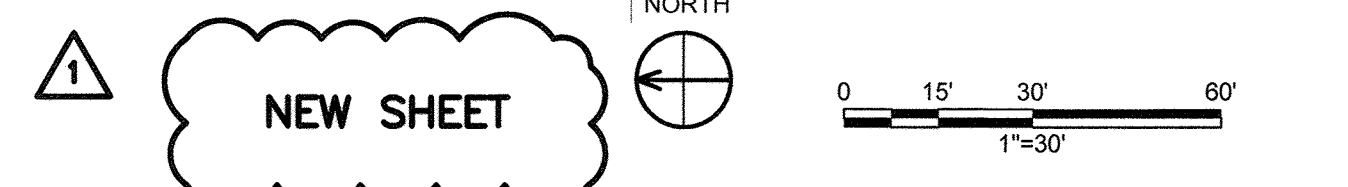
E&S CONTROL LEGEND

	CONCRETE WASHOUT AREA	(H-6 C-012)
	SILT FENCE	(E-1 C-011)
	SUPER SILT FENCE	(E-3 C-011)
	TEMPORARY SWALE	(C-2 C-011)
	AT-GRADE INLET PROTECTION	(E-9-2 C-011)
	CURB INLET PROTECTION	(E-9-3 C-011)
	TEMPORARY ASPHALT BERM	(C-5 C-011)
	STABILIZED CONSTRUCTION ENTRANCE	(C-011 C-011)
	SLOPE STABILIZATION MATTING/EXISTING SLOPES >15% (TSSMS)	(E-11 C-011)
	CHECK DAM	(D-2 C-011)
	SEDIMENT TRAP	(E-1-2 C-012)
	EX. STEEP SLOPES (>15%)	

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

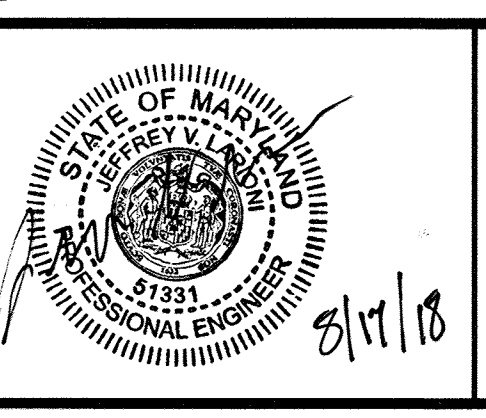
GENERAL NOTE
 TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES PROVIDED IN THE 2011 MARYLAND STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL WHICHEVER IS MORE STRINGENT.

UTILITY TRENCH EXCAVATION SPOIL SHALL BE TRUCKED AWAY FROM THIS AREA. STOCKPILING IS NOT ALLOWED OUTSIDE OF THE MAIN DISTURBED AREA.



1	KEEP BUILDING 10A	08/28/2017		
No	REVISION	DATE	No	REVISION

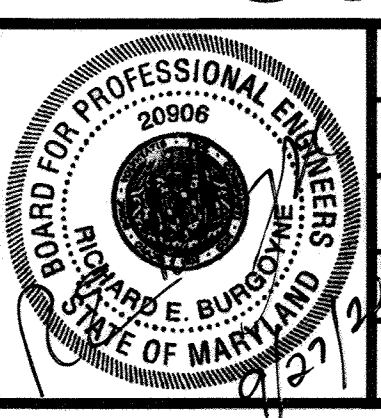
AS-BUILT CERTIFICATION
 Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larioni, License Number, 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
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 HOWARD COUNTY, MARYLAND

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Cowen Design Group
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 3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



SCALE: H	1"=30'	SCALE: V	N/A
DESIGNED	JM	DRAWN	JM
CHECKED	REB	DATE	03/11/2016
SDP FILE NUMBER	SDP-16-072	DRAWING NO.	C-030
			30 of 35

STANDARD SEDIMENT CONTROL NOTES

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 - 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.
 - PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
- OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERE TO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DICES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2); PERMANENT SEEDING (SEC. B-4-3); TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5); TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH 3/4" OF CLAY AND/OR SILT. STOCKPILES (SEC. B-4-6) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-8).
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.
- SITE ANALYSIS:
 - Total Area of Site: 358.98 Acres
 - Area Disturbed: 2.70 Acres
 - Area to be roofed or paved: 1.11 Acres
 - Area to be vegetatively stabilized: 1.59 Acres
 - Total Cut: 4,400 Cu. Yds.
 - Total Fill: 497 Cu. Yds.
 - Offsite waste/borrow area location: WILL BE DISPOSED OF ON-SITE.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE OD, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT 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 PRECIPITATION)
 - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
 - EVIDENCE OF SEDIMENT DISCHARGES
 - IDENTIFICATION OF PLAN DEFICIENCIES
 - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
 - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
 - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
 - PHOTOGRAPHS
 - MONITORING/SAMPLING
 - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
 - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSDO-APPROVED FIELD CHANGES.
- DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE HSDO. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSDO, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
- WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
- ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER LEGS UPRIGHT BY 2" IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
 - USE I AND II: OCTOBER 1 - APRIL 30
 - USE III: MARCH 1 - MAY 31
- A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.
- STANDARD SILT FENCE IS TO BE REPLACED BY "SUPER" SILT FENCE IN THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

OWNERS/DEVELOPER CERTIFICATION:

I, ME HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Glenn M. Carey 9/27/17
OWNER'S/DEVELOPER'S SIGNATURE DATE

Glenn M. Carey FAC. MGMT. CHIEF ENGINEER
PRINTED NAME & TITLE

DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

R.E. Boyle 9/27/2017
DESIGNER'S SIGNATURE DATE

R.E. Boyle MD REGISTRATION NO. 20906
PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

HOWARD SCD SIGNATURE BLOCK:

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

John R. Blunt 10/5/17
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Paul Chinn 10-17-17
Chief, Development Engineering Division Date

Keith D. Dore 11-27-17
Chief, Division of Land Development Date

Nadine Zepin 11-27-17
Director Date

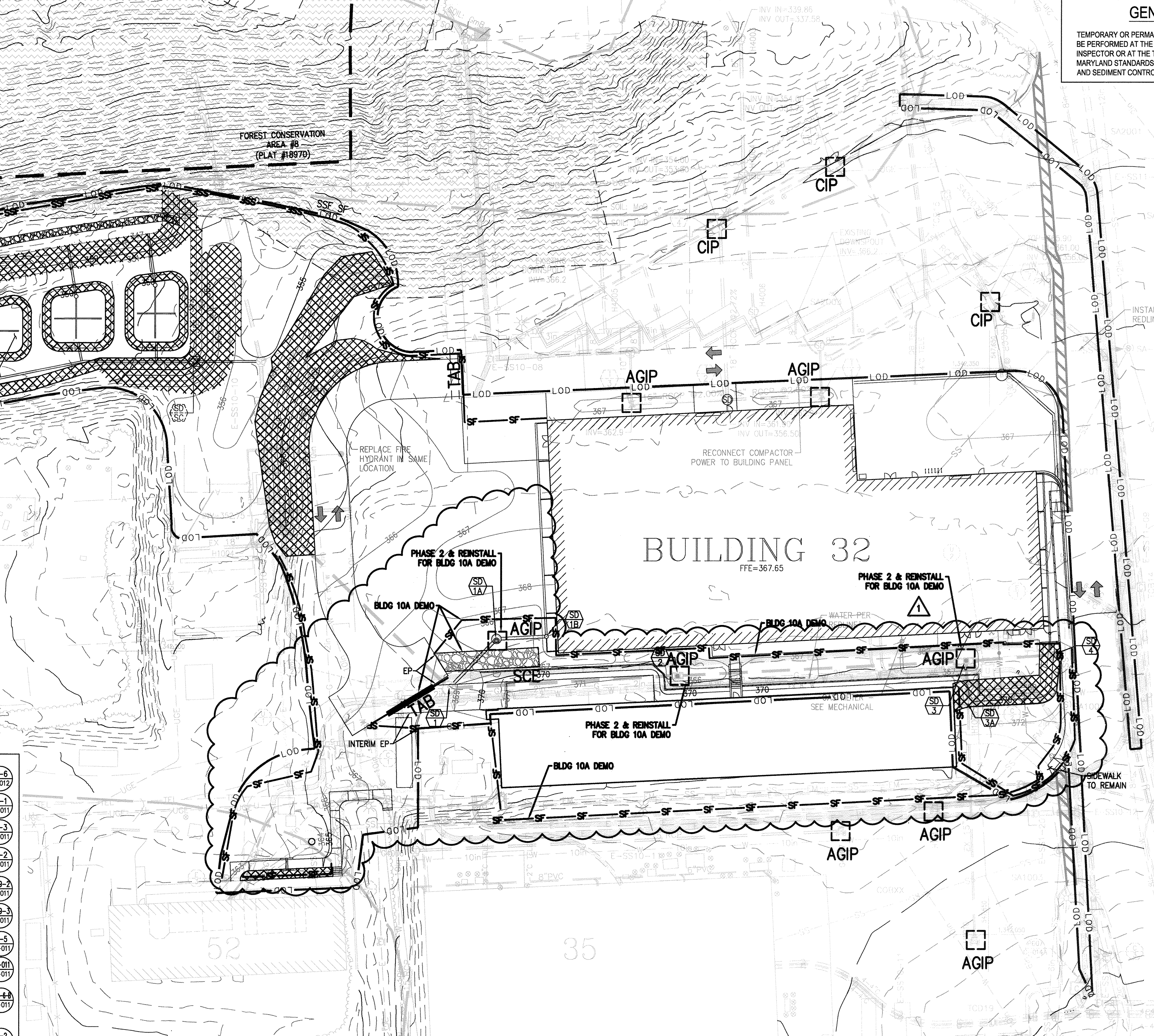
E&S CONTROL LEGEND

CWS	CONCRETE WASHOUT AREA	(H-6) (C-07)
SF	SILT FENCE	(E-1) (C-01)
SSF	SUPER SILT FENCE	(E-3) (C-01)
A-2	TEMPORARY SWALE	(C-2) (C-01)
AGIP	AT-GRADE INLET PROTECTION	(E-9-2) (C-01)
CIP	CURB INLET PROTECTION	(E-9-3) (C-01)
TAB	TEMPORARY ASPHALT BERM	(C-5) (C-01)
SCE	STABILIZED CONSTRUCTION ENTRANCE	(C-01) (C-01)
CD	CHECK DAM	(D-2) (C-01)
ST-II	SEDIMENT TRAP	(E-1-2) (C-07)
EX	EX. STEEP SLOPES (>15%)	

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

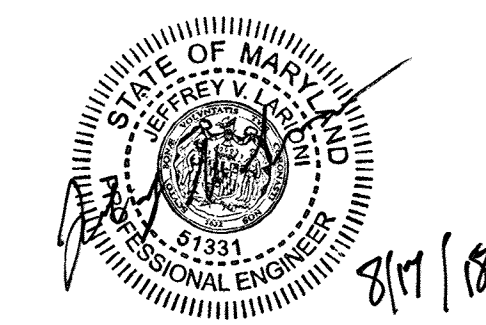
LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019



GENERAL NOTE

TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES PROVIDED IN THE 2011 MARYLAND STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL WHICHEVER IS MORE STRINGENT.

AS-BUILT CERTIFICATION
Note, there is no "As-Built" information provided on this sheet.
PE: Jeffrey Larion, License Number: 51331, Date of As-Built: 06/08/2008



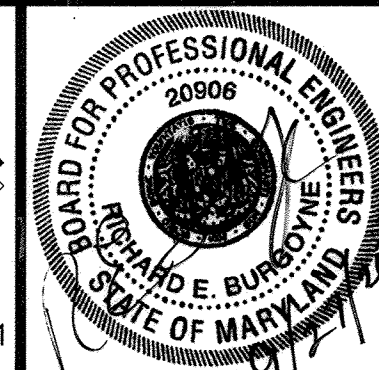
THE JOHNS HOPKINS UNIVERSITY
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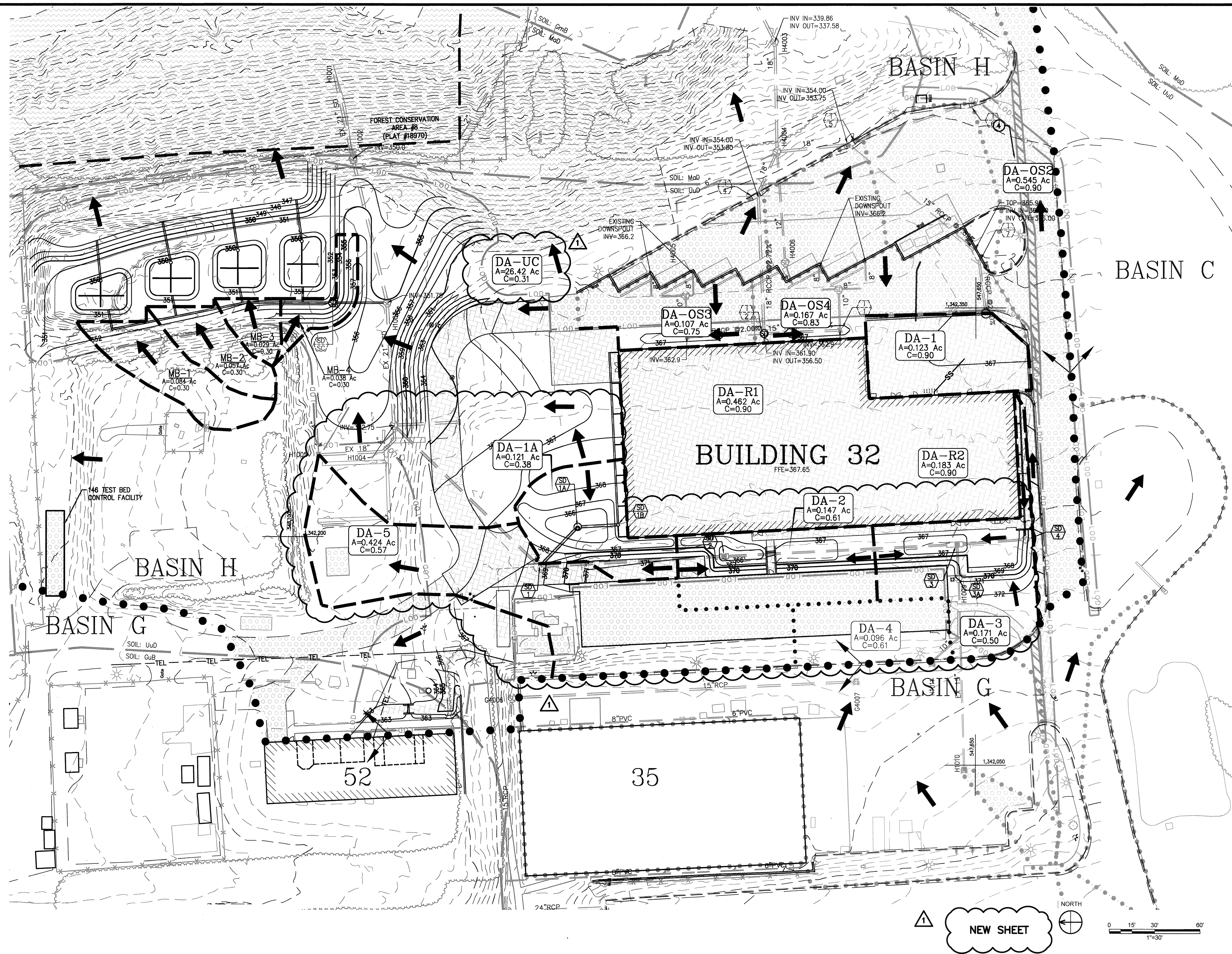


SCALE: H 1"=30'	SCALE: V N/A	DESIGNED JM	DRAWN JM	CHECKED REB	DATE 03/11/2016	SDP FILE NUMBER SDP-16-072	DRAWING NO. C-031	31 OF 35
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THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 32
SITE DEVELOPMENT PLAN
SEDIMENT CONTROL PHASE II
- INTERIM

AS-BUILT

SDP-16-072



LEGEND

- MINOR EXISTING DRAINAGE DIVIDE
- MAJOR EXISTING DRAINAGE DIVIDE
- MINOR PROPOSED DRAINAGE DIVIDE
- MINOR ULTIMATE DRAINAGE DIVIDE
- ← RUNOFF DIRECTION
- LIMITS OF DISTURBANCE
- LOD
- SOIL DIVIDE
- ▨ EX. IMPERVIOUS AREA WITHIN BASIN H
- ▨ PROP. IMPERVIOUS AREA WITHIN THE LOD
- ▨ FUTURE IMPERVIOUS AREA WITHIN THE LOD

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10-17-17
 Chief, Development Engineering Division Date

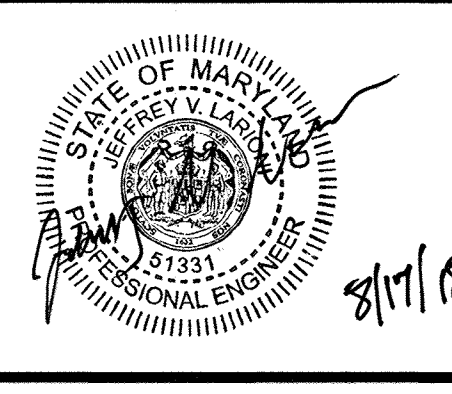
[Signature] 11-27-17
 Chief, Division of Land Development Date

[Signature] 11-27-17
 Director Date

1	KEEP BUILDING 10A	08/28/2017
No	REVISION	DATE

No	REVISION	DATE

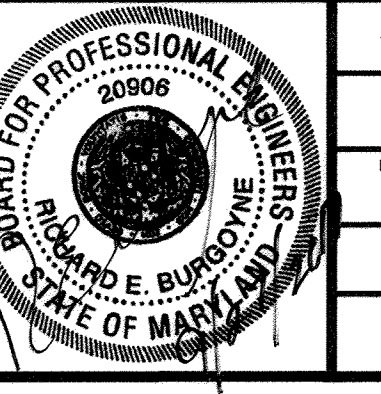
AS-BUILT CERTIFICATION
 Note: there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Lariani; License Number: 51331; Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED SCIENCE LABORATORY
 11100 JOHN HOPKINS RD
 LAUREL, MD 20723
 TAX MAP 41 GRID 16 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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.

Cowen Design Group
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 3330 WASHINGTON BLVD
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SCALE: H 1"=30'	SCALE: V N/A	DESIGNED JM	DRAWN JM	CHECKED REB	DATE 03/11/2016	SDP FILE NUMBER SDP-16-072	DRAWING NO. C-032	32 OF 35
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Subarea	Area (ac)	Impervious (ac)	Pervious (ac)	C Value	Q-2YR (cfs)	Q-10YR (cfs)	Comments
INTERIM							
R1	0.462	0.462	0.000	0.90	2.45	3.53	To ESD
R2	0.183	0.183	0.000	0.90	0.97	1.40	To ESD
1A	0.121	0.016	0.105	0.38	0.27	0.39	To ESD
1	0.123	0.123	0.000	0.90	0.65	0.94	To ESD
2	0.147	0.083	0.064	0.64	0.55	0.80	To ESD
3	0.182	0.081	0.121	0.50	0.54	0.78	To ESD
3A	0.096	0.050	0.046	0.61	0.35	0.50	To ESD
5	0.408	0.181	0.227	0.57	1.36	1.96	To ESD
MB-1	0.084	0.000	0.084	0.30	0.15	0.21	To ESD
MB-2	0.057	0.000	0.057	0.30	0.10	0.15	To ESD
MB-3	0.029	0.000	0.029	0.30	0.05	0.07	To ESD
MB-4	0.038	0.000	0.038	0.30	0.07	0.10	To ESD
OS2	0.545	0.545	0.000	0.90	2.89	4.17	To ESD
OS3	0.107	0.080	0.027	0.75	0.47	0.68	To ESD
OS4	0.167	0.148	0.019	0.83	0.82	1.18	To ESD
UC	26.278	0.432	25.846	0.31	48.04	69.21	Uncontrolled Runoff
Total	29.027	2.364	26.663	0.349	59.75	86.08	
EXISTING							
X1	0.404	0.080	0.324	0.42	1.00	1.44	
X2	0.763	0.273	0.490	0.51	2.32	3.34	
X3	0.516	0.361	0.155	0.72	2.19	3.16	
XR1	0.122	0.122	0.000	0.90	0.65	0.93	
XR2	0.135	0.135	0.000	0.90	0.72	1.03	
XR3	0.234	0.234	0.000	0.90	1.24	1.79	
OS2	0.592	0.592	0.000	0.90	3.14	4.53	
Total	2.766	1.797	0.969	0.690	11.26	16.22	
OFFSITE							
OS1	0.039	0.016	0.023	0.55	0.13	0.18	Off-Site inflow into storm sewer
EX4	0.074	0.074	0.000	0.90	0.39	0.57	
EX5	0.121	0.121	0.000	0.90	0.64	0.93	
EX6	0.158	0.158	0.000	0.90	0.84	1.21	
Total	0.392	0.369	0.023	0.865	2.00	2.88	

ESD _v Computations														
Type	HSG	Disturbed Area (Ac)	Impervious Area (Ac)	% Impervious	Net Change (Ac)	Required Treatment (%)	Required Treatment (Ac)	Target P _e (in)	R _v	ESD _v ⁴ (cf)	ESD _v ⁴ (ac-ft)	Min Surface Area (sf)	Surface Area (A _s) (sf)	Max Ponding (ft)
Interim (New Development)	B	2.70	1.11	41%	0.11	100	1.11	1.8	0.95	4,131	0.095	2352		

1 P_e from Table 5.3
 2 R_v = 0.05 + 0.009(I); I = % Impervious Cover
 3 Q_E = P_e * R_v
 4 ESD_v = $\frac{(P_e)(R_v)(A)}{12}$; A = Treatment Area
 5 2% of contributing drainage area, assumed equal distribution
 $P_e = 15'' \times \frac{A_f}{DA}$; A_f = Bottom surface Area, DA = Treatment Area
 6 Treated area is 50% of the existing impervious plus 100% of the net increase in impervious area (ultimate)

ESD _v Practices Summary (Interim Condition)															
Pool	Bottom			Water Surface				Storage of Gravel Below Underlain		Contributing Area ² (sf)	P _e (in)	Contributing Volume (cf)	ESD _v Provided ³ (cf)		
	Width (ft)	Length (ft)	Elevation (sf)	Depth (ft)	Area (sf)	Elevation (ft)	Storage (cf)	Depth (ft)	Storage (cf)					Required Storage	
MB-1	-	-	673	350.00	1.00	1,004	351.00	839	1.15	310	246	19,981	2.0	3,330	839
MB-2	-	-	684	350.00	1.00	1,008	351.00	846	1.15	315	250	19,193	2.0	3,199	846
MB-3	-	-	751	350.00	1.00	1,088	351.00	920	1.15	345	275	19,598	2.0	3,266	920
MB-4	-	-	764	350.00	1.00	1,106	351.00	935	1.15	351	280	19,941	2.0	3,324	935
Totals:						2,872	4,206	3,539		1,321				Required ESD _v = 4,131 ft ³	4,860
														Surface Storage Requirement ⁴ = 3,098 ft ³	

Storm Drain Computations																	
Structure ID	Contributing Area				Runoff Calculations				Pipe Data				Full-Flow Capacity (cfs)	Full Flow Velocity (ft/s)	Actual Velocity (ft/s)	Time in Pipe (s)	
	From	To	DA (Ac)	C	C _A Incr.	C _A Cumul.	T _c (min)	Q (in/hr)	Slope (ft/ft)	Diameter (in)	Manning's "n"	Inw High (ft)					Inv Low (ft)
RDA	4A	0.183	0.90	0.165	0.165	5	8.50	1.40	0.0165	12	0.013	365.09	363.50	96.56	4.58	5.83	19.09
4A	4			0.165	0.165	5	8.50	1.40	0.0165	12	0.013	363.50	361.16	5.65	22.93	29.19	15.71
4	3			0.165	0.165	5	8.50	1.40	0.0355	15	0.013	359.63	358.03	45.22	12.17	9.92	6.46
3	2	0.182	0.50	0.091	0.315	5	8.50	2.67	0.0050	15	0.013	356.23	355.46	153.10	4.57	3.72	3.84
2	1	0.147	0.64	0.094	0.409	5	8.50	3.47	0.0050	18	0.013	355.21	354.60	122.46	7.43	4.70	4.13
RDB	1B	0.462	0.90	0.416	0.416	5	8.50	3.53	0.0200	12	0.013	365.00	362.74	113.18	5.04	6.42	6.92
1B	1A			0.416	0.416	5	8.50	3.53	0.0200	15	0.013	362.49	361.95	26.60	9.14	7.44	6.95
1A	1			0.416	0.416	5	8.50	3.53	0.1967	15	0.013	361.95	354.85	36.12	28.65	23.35	15.60
1	H1004	0.123	0.90	0.111	0.935	5	8.50	7.95	0.0112	18	0.013	354.49	353.00	133.47	11.12	6.29	6.82
H1005	H1004	0.408	0.57	0.231	0.231	5	8.50	1.96	0.0112	18	0.013	354.49	353.00	133.47	11.12	6.29	4.70
H1004	H1003			1.166	1.166	5	8.50	9.91	0.0331	18	0.013	352.75	350.09	80.42	19.11	10.81	10.90
H1003	H1002			1.166	1.166	5	8.50	9.91	0.0243	21	0.013	349.88	347.52	96.95	24.70	10.27	9.69
H1002	H1001			1.166	1.166	5	8.50	9.91	0.3443	24	0.012	345.15	306.70	111.66	143.8	45.8	25.5

STORMWATER MANAGEMENT NARRATIVE

THE PREVIOUSLY APPROVED SDP-16-072 ASSUMED THAT BUILDING 10A WOULD BE REMOVED PRIOR TO THE COMPLETION OF BUILDING 32. IN THE INTERIM CONDITION, BUILDING 10A WILL REMAIN IN PLACE. THIS CHANGE HAS ALTERED THE STORMWATER MANAGEMENT FOR THE SITE FROM THE PROPOSED CONDITION. SINCE BUILDING 10A WILL REMAIN, THE EXISTING IMPERVIOUSNESS FOR THE SITE (BASED ON THE INTERIM CONDITION LOD) WILL BE BELOW 40%, CLASSIFYING IT AS A NEW DEVELOPMENT. THE ESD VOLUME REQUIREMENTS WERE CALCULATED BASED ON INTERIM SITE CHARACTERISTICS, WHICH WHEN TREATED WILL BRING THE SITE TO THE EQUIVALENT OF WOODS IN GOOD CONDITION. SINCE THE ULTIMATE CONDITION REQUIRES MORE EQUIVALENT WATER QUALITY TREATMENT THAN THE INTERIM CONDITION, THE ULTIMATE CONDITION WILL GOVERN THE DESIGN FOR THE MICRO-BIORETENTION BASINS.

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10-17-17
Chief, Development Engineering Division Date

[Signature] 11-27-17
Chief, Division of Land Development Date

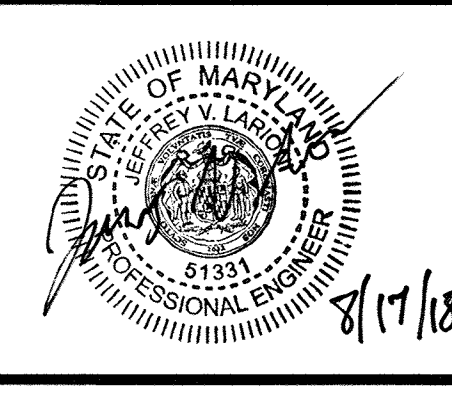
[Signature] 11-27-17
Director Date

NEW SHEET

No	REVISION	DATE	No	REVISION	DATE
1	KEEP BUILDING 10A	08/28/2017			

AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
PE: Jeffrey Larioni, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
LAUREL, MD 20723

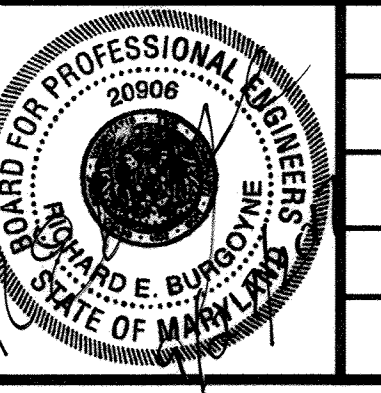
TAX MAP 41 GRID 16 PARCEL 123
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

JHU/APL INTERNAL USE

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Cowen Design Group
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3330 WASHINGTON BLVD
SUITE 430, ARLINGTON, VA 22201



SCALE: H
N/A

SCALE: V
N/A

DESIGNED: JM

DRAWN: JM

CHECKED: REB

DATE: 03/11/2016

SDP FILE NUMBER: SDP-16-072

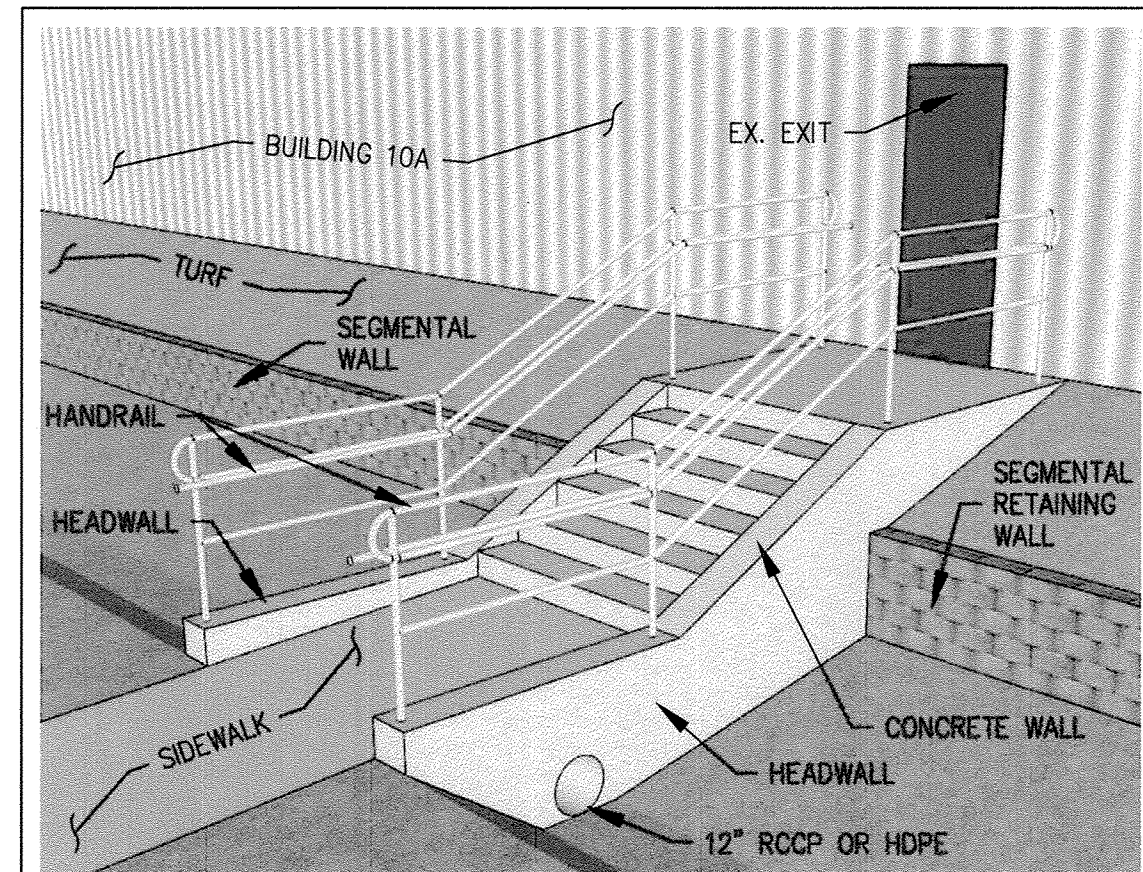
DRAWING NO: C-033

33 of 35

THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 32

SITE DEVELOPMENT PLAN
**STORM DRAIN AND SWM
COMPS - INTERIM**

AS-BUILT SDP-16-072



80 BUILDING 10A STAIRS SCHEMATIC
C-05A/C-034 NTS

NOTES:

1. CONCRETE: MIX NO.2
2. CHAMFERS: 3/4"x3/4"
3. EXPOSED SURFACES: CLASS 1 SURFACE FINISH.
4. REINFORCING STEEL: A-15 WITH A-305 DEFORMATIONS.
5. ALL REINFORCING BARS SHALL BE NO.4 BARS EXCEPT NOSING BARS.
6. A, B, AND C BARS SHALL BE USED IN THE INSTALLATIONS OF SIX OR MORE STEPS.
7. NOSING BARS SHALL BE NO.2 BARS AND PLACED IN ALL STEPS REGARDLESS OF STAIR LENGTH. MINIMUM COVER 2 INCHES.
8. UNLESS OTHERWISE NOTED, ALL TREADS SHALL BE FINISHED WITH A LIGHTLY BROOMED SURFACE. PROVIDE MAXIMUM 2% WASH AT EXTERIOR LOCATIONS.
9. FOR RAILING DETAILS, SEE G-7.02 AND C-7.03.
10. THE STAIRS SHALL BE PAID FOR ON THE UNIT PRICE BID PER CUBIC YARD FOR "MIX NO.2 CONCRETE FOR MISCELLANEOUS STRUCTURES", COMPLETE IN PLACE OR ON A LUMP SUM BID FOR EACH "CONCRETE STAIRS", COMPLETE IN PLACE.

NUMBER OF BARS A									
N=1-5	N=6	N=7	N=8	N=9	N=10	N=11	N=12	N=13-25	
W=3'	4	5	5	6	6	7	7	8	
W=4'	5	6	7	7	8	8	9	10	
W=5'	6	7	8	9	9	10	11	12	

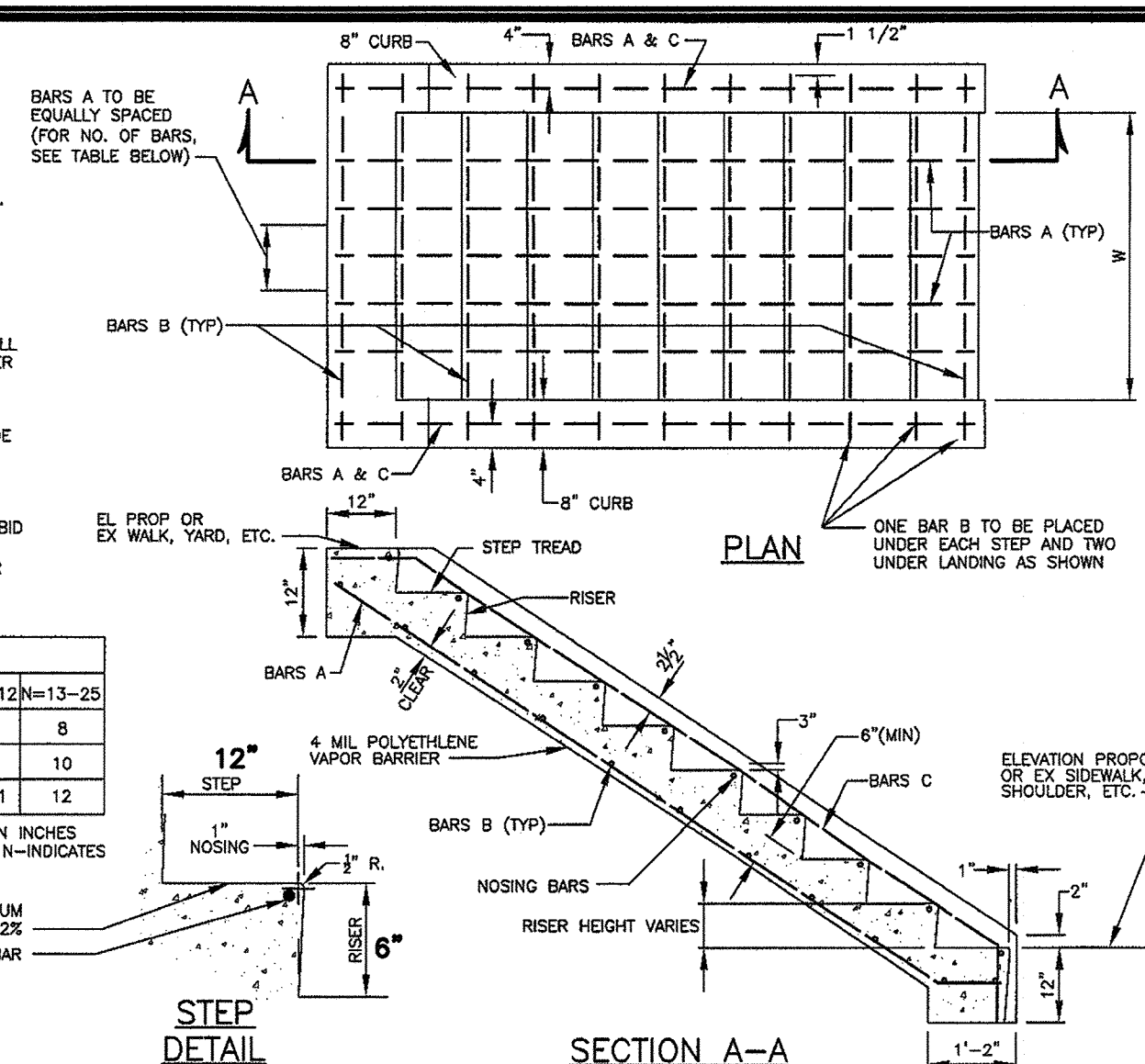
FOR OTHER WIDTHS, THE APPROX. SPACING OF BARS A IN INCHES WILL BE EQUAL TO 80/W WITH A MIN SPACING OF 6 IN. N-INDICATES NUMBER OF STEPS EXCLUSIVE OF LANDING.

STAIRWAYS	
SLOPE	RISE/STEP
1:1-1.5	7" MAX. 4-6"
2:1-4	6" 12"
4:1	4" MIN. 4-6"

Howard County, Maryland
Department of Public Works
Approved: [Signature]
Chief, Bureau of Engineering

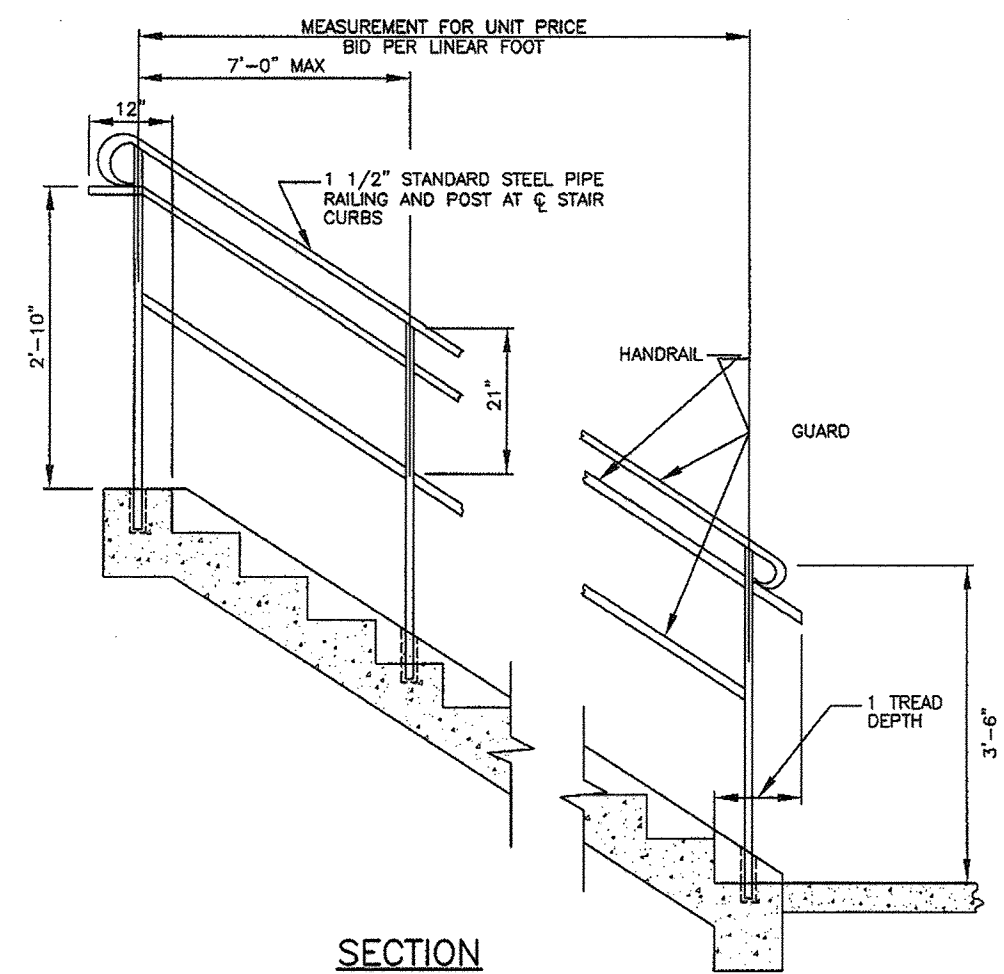
Concrete Stairs

Detail G-7.01



NOTES:

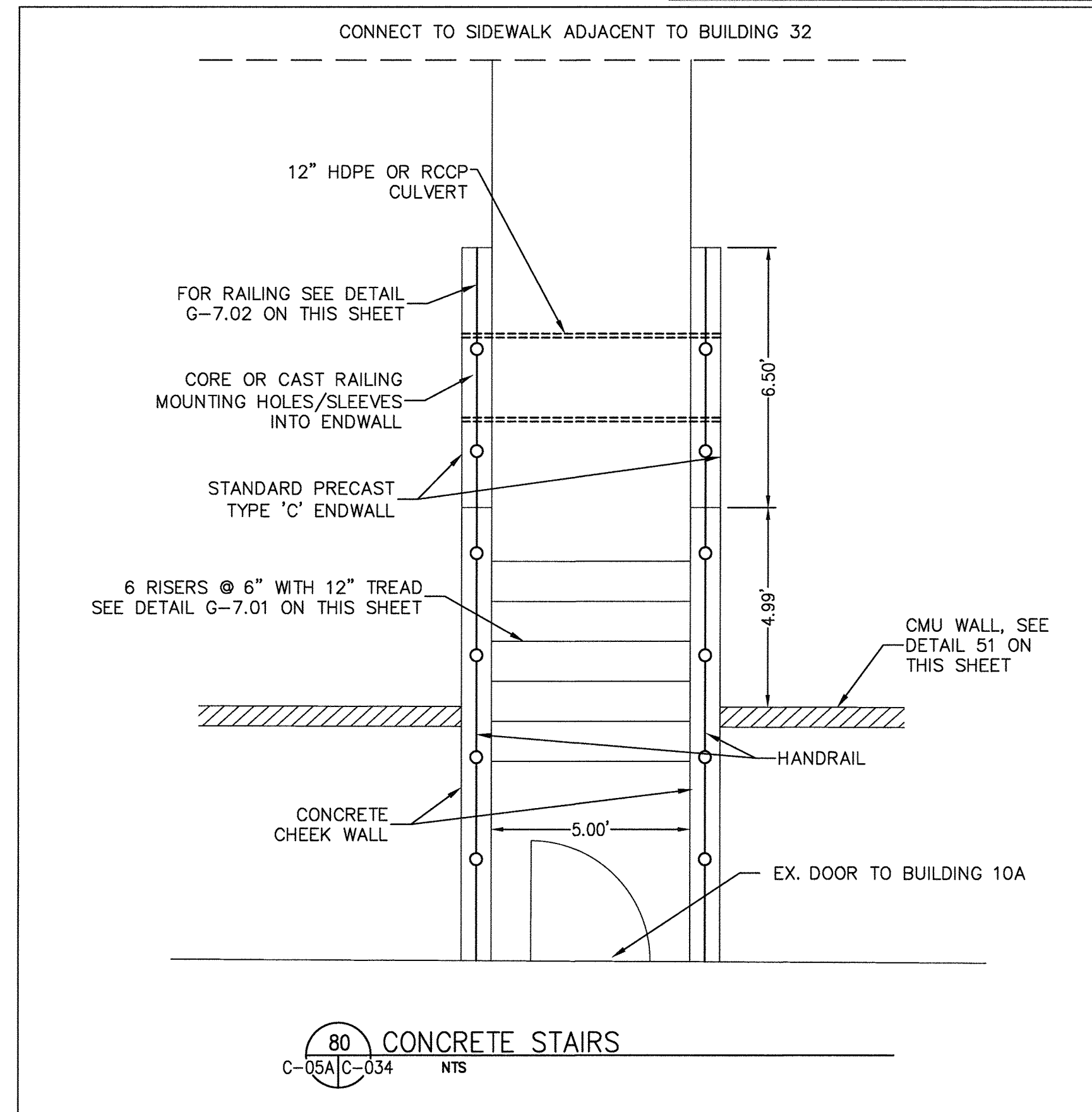
1. UNLESS OTHERWISE NOTED, PAINTED RAILINGS SHALL BE FURNISHED.
2. RAILING AND POSTS TO BE PAINTED SHALL CONFORM TO ASTM A120 STANDARD SPECIFICATIONS.
3. RAILING AND POSTS TO BE GALVANIZED SHALL CONFORM TO ASTM A441 SEE SPECIFICATIONS.
4. UNLESS OTHERWISE NOTED, RAILINGS SHALL BE FURNISHED FOR BOTH SIDES OF STAIRS AND ON ALL STAIRS HAVING 4 RISERS AND OVER.
5. RAILING SHALL BE ALL WELDED WITH ITS JOINTS GROUND SMOOTH AND FREE OF BURRS.
6. RAILING POSTS SHALL BE SET IN METAL SLEEVES, 6" DEEP AND FILLED WITH HOT POURED LEAD OR HOT POURED SULFUR OR AN EQUIVALENT EPOXY COMPOUND.
7. GALVANIZED RAILINGS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
8. PAINTED RAILINGS SHALL BE PAINTED IN ACCORDANCE WITH SECTION 912 OF THE SPECIFICATIONS.
9. THIS HANDRAIL IS TO BE USED ONLY AS A PROTECTION FOR PEDESTRIANS AND SHOULD NOT BE PLACED IN ANY LOCATION WHERE IT MIGHT BE SUBJECT TO VEHICULAR IMPACT. FOR VEHICULAR PROTECTION, STANDARD GUARD RAIL SHOULD BE USED.
10. THE RAILING SHALL BE PAID FOR AT THE UNIT PRICE BID PER LINEAR FOOT, MEASURED HORIZONTALLY, FOR "CONCRETE STAIRS PIPE RAILING" COMPLETE IN PLACE OR ITS COST SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "CONCRETE STAIRS", COMPLETE IN PLACE.
11. THIS DETAIL IS APPLICABLE ONLY IN INDUSTRIAL SETTINGS WITH NO PUBLIC ACCESS. (EXAMPLE: PUMP STATIONS)



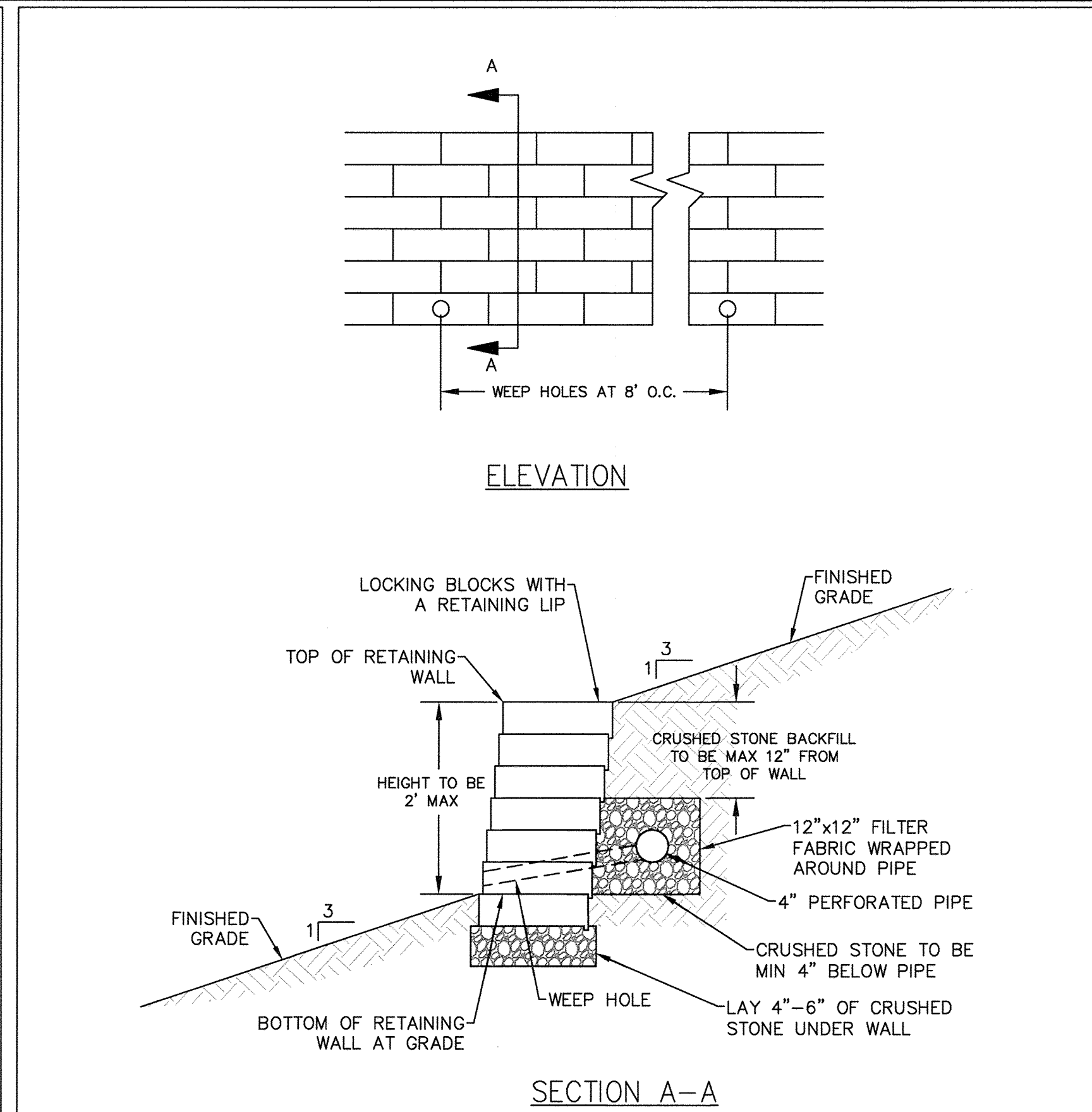
Concrete Stairs Pipe Railing

Detail G-7.02

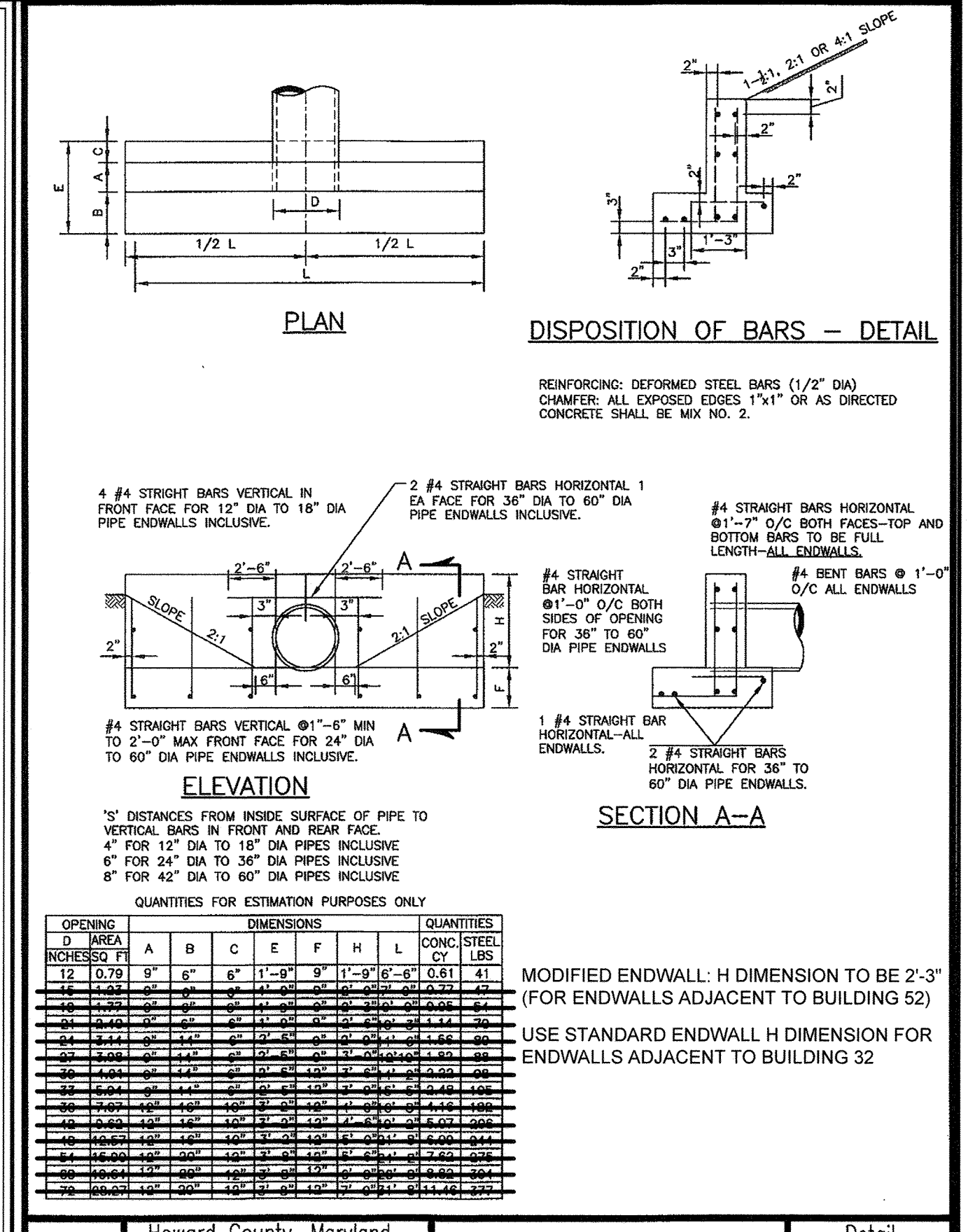
Howard County, Maryland
Department of Public Works
Approved: [Signature]
Chief, Bureau of Engineering



80 CONCRETE STAIRS
C-05A/C-034 NTS



51 SEGMENTAL RETAINING WALL
C-05A/C-034 NTS



OPENING DIMENSIONS	DIMENSIONS						QUANTITIES			
	D	A	B	C	E	F	H	L	CONC.	STEEL
12	0.70	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	0.61	41
18	1.00	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	0.81	42
24	1.30	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	1.01	43
30	1.60	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	1.21	44
36	1.90	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	1.41	45
42	2.20	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	1.61	46
48	2.50	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	1.81	47
54	2.80	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	2.01	48
60	3.10	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	2.21	49
66	3.40	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	2.41	50
72	3.70	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	2.61	51
78	4.00	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	2.81	52
84	4.30	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	3.01	53
90	4.60	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	3.21	54
96	4.90	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	3.41	55
102	5.20	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	3.61	56
108	5.50	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	3.81	57
114	5.80	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	4.01	58
120	6.10	6"	6"	6"	11'-0"	36"	11'-0"	6'-0"	4.21	59

Howard County, Maryland
Department of Public Works
Approved: [Signature]
Chief, Bureau of Engineering

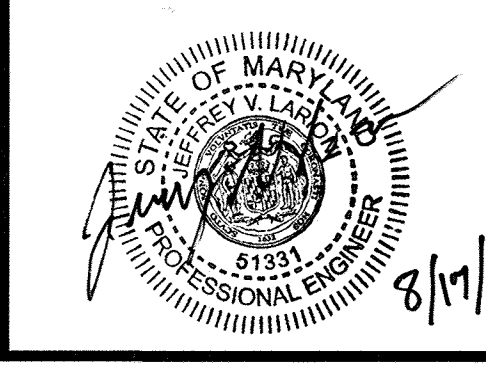
Type 'C' Endwall Circular Pipe
Detail D-5.21

PROFESSIONAL CERTIFICATION
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LICENSE NUMBER: 20906 EXPIRATION DATE: 7/21/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signatures and Dates]
Date: 10-17-17
Date: 11-27-17
Date: 11-27-17

No	REVISION	DATE	No	REVISION	DATE
1	KEEP BUILDING 10A	08/28/2017			

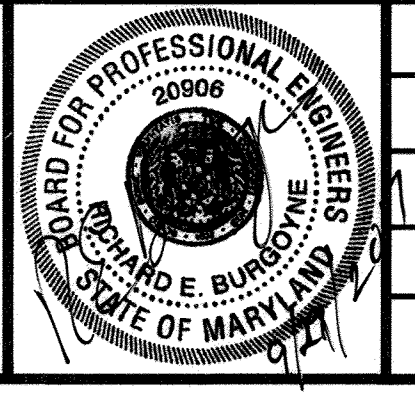
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Note, there is no "As-Built" information provided on this sheet.
PE: Jeffrey Lantoni License Number 51331. Date of As-Built: 06/08/2018



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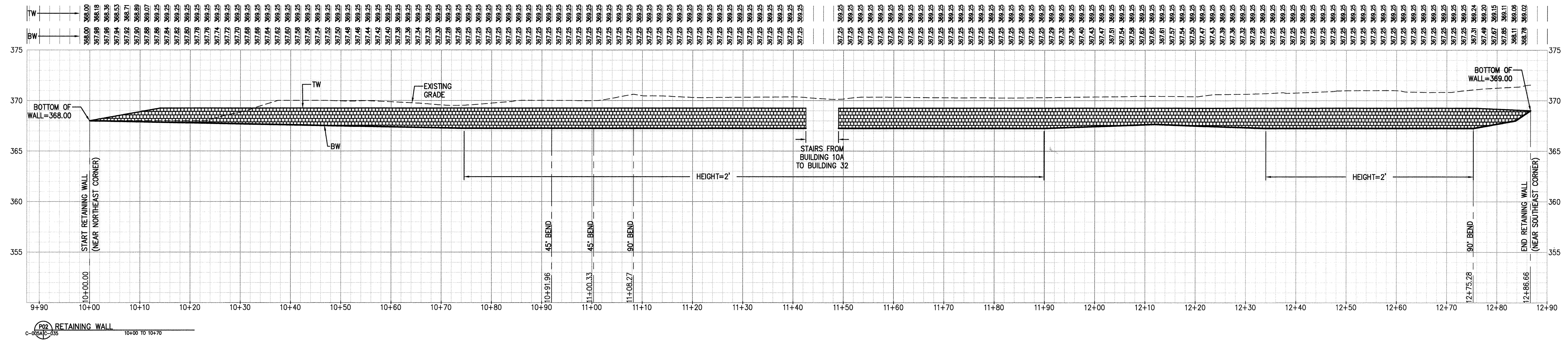
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SUITE 430, ARLINGTON, VA 22201



THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 32
SITE DEVELOPMENT PLAN
DETAILS
DATE: 03/11/2016 SDP FILE NUMBER: SDP-16-072 DRAWING NO: C-034 34 OF 35

NEW SHEET



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clark
 Chief, Development Engineering Division
 Date: 10-17-17

Kurt Schaefer
 Chief, Division of Land Development
 Date: 10-27-17

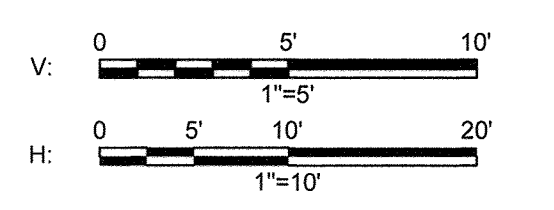
Valerie Zolner
 Director
 Date: 11-27-17

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 NUMBER: 20906 EXPIRATION DATE: 7/21/2019

NEW SHEET

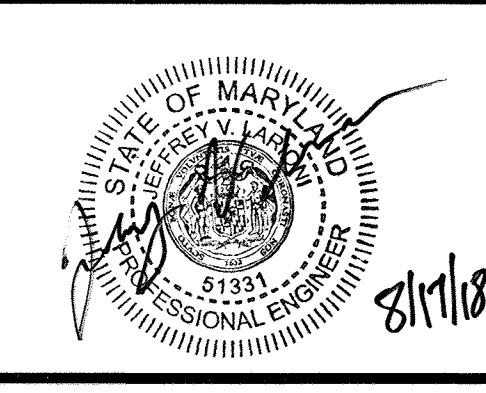


1	KEEP BUILDING 10A	08/28/2017
No	REVISION	DATE

No	REVISION	DATE
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AS-BUILT CERTIFICATION

Note, there is no "As-Built" information provided on this sheet.
 PE: Jeffrey Larioni, License Number: 51331, Date of As-Built: 06/08/2018



THE JOHNS HOPKINS UNIVERSITY
 APPLIED SCIENCE LABORATORY

11100 JOHN HOPKINS RD
 LAUREL, MD 20723

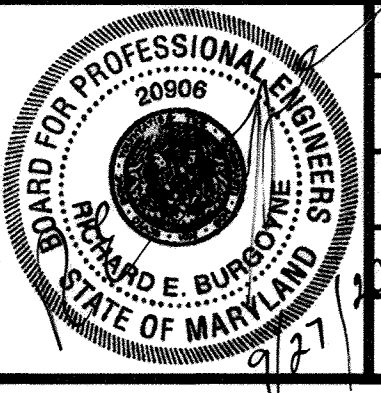
TAX MAP 41 GRID 18 PARCEL 123
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

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.

Cowen Design Group
 Planning - Landscape Architecture - Civil Engineering

3330 WASHINGTON BLVD
 SUITE 430, ARLINGTON, VA 22201



SCALE-H	1"=10'
SCALE-V	1"=5'
DESIGNED	JM
DRAWN	JM
CHECKED	REB
DATE	03/11/2016
SDP FILE NUMBER	SDP-16-072
DRAWING NO.	C-035

THE JOHNS HOPKINS UNIVERSITY
 APPLIED PHYSICS LABORATORY
 BUILDING 32

SITE DEVELOPMENT PLAN
 DETAILS

35 OF 35