JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

SITE ANALYSIS DATA CHART

TOTAL PROJECT AREA: 357.976 AC.
AREA OF PLAN SUBMISSION: 10.4 AC.
LIMIT OF DISTURBANCE: 10.4 AC.
PRESENT ZONING: PEC
PROPOSED USE: OFFICE & LAB SPACE
EXISTING NUMBER OF JHU/APL EMPLOYEES: 4,600
EXISTING MAXIMUM NUMBER OF PARKING SPACES REQUIRED BY ZONING: 2,850 (SDP-05-133)
EXISTING ONSITE PARKING SPACES: 4,798 (SDP 05-133)
NO PARKING PROPOSED AS PART OF THIS SUBMISSION

ASSIGNABLE OFFICE SPACE: 61,248 GSF
LAB SPACE: 83,671 GSF
NO ADDITIONAL JHU/APL EMPLOYEES ARE PROPOSED AS PART OF THIS SUBMISSION
PROPOSED BUILDING GROSS FT²: 210,500 GSF

EXISTING OPEN SPACE AREA: 281.09 ACRES (78.5% OF TOTAL LOT AREA)

PROPOSED OPEN SPACE AREA: 278.89 ACRES (77.9% OF TOTAL LOT AREA)

NATURAL STEEP SLOPES (>15%) = NONE

NO HIGHLY ERODIBLE SOILS FOUND TO BE PRESENT WITHIN THE LIMITS OF DISTURBANCE

CASE NUMBERS APPLICABLE:
F-04-188, SDP-04-133, F-078-035

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

EXISTING BUILDING COVERAGE:
23.37 ACRES (6.5%)

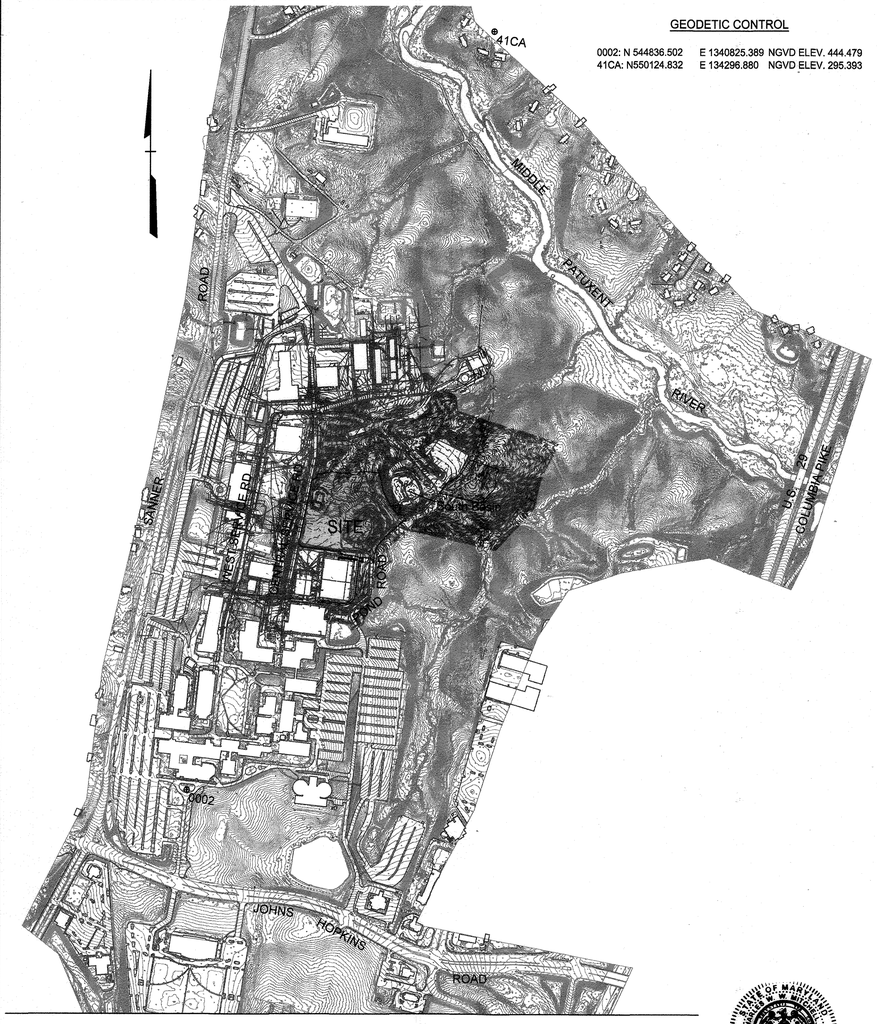
PROPOSED BUILDING COVERAGE:
2.2 ACRES (95,831 FT²)

TOTAL PROPOSED BUILDING COVERAGE:
25.57 ACRES (7.1%)

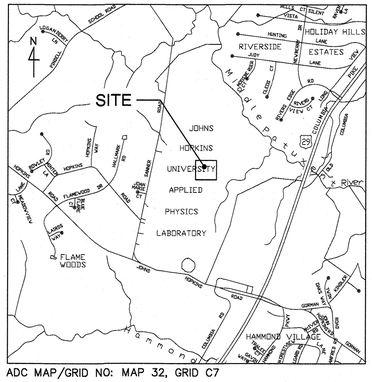
NO FLOODPLAINS OR FOREST CONSERVATION EASEMENTS PRESENT WITHIN THE LIMITS OF DISTURBANCE.

GEODETIC CONTROL

0002: N 544836.502 E 1340825.389 NGVD ELEV. 444.479
41CA: N550124.832 E 134296.880 NGVD ELEV. 295.393



CAMPUS SITE PLAN
SCALE: 1"=500'



ADC MAP/GRID NO: MAP 32, GRID C7

VICINITY MAP
SCALE: 1"=2000'

LEGEND

- 676 — EXISTING MINOR CONTOUR
- 670 — EXISTING MAJOR CONTOUR
- EXISTING EDGE OF ROAD
- EX. 15" D. SD — EXISTING STORM DRAIN AND INLET
- EX. 12" W. W — EXISTING WATER AND FIRE HYDRANT
- EX. 8" S. S — EXISTING SEWER
- E — EXISTING ELECTRIC
- C — EXISTING COMMUNICATION
- D S U C E — EXISTING UTILITY MANHOLE
- EXISTING LIGHTING
- EXISTING CURB AND GUTTER EXISTING
- TREE LINE
- EXISTING DRIVE
- EXISTING BUILDING
- + 348.2 — SPOT ELEVATIONS
- ⊕41CA — GEODETIC CONTROL POINT

NOTE:
There are no 100 Year Flood plains in the project area

GENERAL NOTES

1. THE SUBJECT PROPERTY ZONED PEC (PLANNED EMPLOYMENT CENTER) PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON REAL TIME KINEMATIC (RTK) OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
4. NO CEMETERIES EXIST ON THIS SITE BASED ON A SITE VISIT AND ON AN EXAMINATION OF THE HOWARD COUNTY CEMETERY INVENTORY MAP.
5. NO HISTORIC STRUCTURES EXIST ON THE SUBJECT PROPERTY.
6. THERE ARE NO EXISTING DWELLINGS ON THIS SITE.
7. PREVIOUS DEPARTMENT OF PLANNING AND ZONING FILE NUMBERS:
   SDP-04-76: SERVICES AREA COMPLEX
   F-02-40: SWM BASIN 'A', APFO, FOREST CONSERVATION
   SDP-99-63: B52
   SDP-04-133: BASIN 'C' SWM FACILITIES AND LAYDOWN AREA
   SDP-05-042: JHU/LIBRARIES SERVICES CENTER (FOREST CONSERVATION & WETLANDS UPDATES)
   SDP-03-043: SANNER ROAD IMPROVEMENTS (NEW APFO NUMBER: 4,600)
   F-04-188: FOREST CONSERVATION EASEMENTS RE-PLAT
   F-07-035: FOREST CONSERVATION, RE-PLAT EASEMENT
   SDP-08-084: SERVICES AND SUPPORT AREA INFRASTRUCTURE FACILITY PHASE I
8. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
9. THE PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
10. EXISTING WATER IS PUBLIC; WATER DISTRIBUTED WITHIN THE PROPERTY BOUNDARIES IS PRIVATE.
11. EXISTING SEWER IS PUBLIC; SEWER COLLECTION WITHIN THE PROPERTY BOUNDARIES IS PRIVATE.
12. SOILS INFORMATION TAKEN FROM NRCS WEB SOIL SURVEY DATED APRIL 28, 2017.
13. STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH THE 2010 MDE, CHAPTER 5 REGULATIONS (ESD TO MEP)AND THE LATEST HOWARD COUNTY DESIGN MANUAL, VOL. 1, CHAPTER 5, ADOPTED ON OR ABOUT MAY 4, 2010. RECHARGE VOLUME WILL BE PROVIDED THROUGH THE USE OF A STONE RESERVOIRS. STORMWATER MANAGEMENT FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY JOHNS HOPKINS UNIVERSITY.
14. THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY F-02-40, F-04-188, AND F-07-035.
15. HEALTH DEPARTMENT APPROVAL OF THIS DEVELOPMENT PLAN DOES NOT ENSURE APPROVAL OF BUILDING PERMIT APPLICATIONS ASSOCIATED WITH THIS PLAN. PLANS FOR CERTAIN FACILITIES TO BE CONSTRUCTED WITHIN THE LIMITS DESCRIBED BY THIS PLAN WILL REQUIRE REVIEW AND APPROVAL BY THE HEALTH DEPARTMENT. SUCH FACILITIES MAY INCLUDE, BUT ARE NOT LIMITED TO, THOSE WHICH HAVE SWIMMING POOLS, OR THAT SELL PREPARED OR PACKAGED FOODS, OR THAT MAY HAVE EQUIPMENT THAT EMITS RADIATION.
16. TRAFFIC CONTROLS DEVICES:
   a) THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETE.
   b) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   c) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).
   d) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
17. NO WORK IS PROPOSED IN THE COUNTY RIGHT-OF-WAY. ALL PROPOSED WORK IS INTERIOR TO THE SITE.
18. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
19. THIRTEEN (13) ESD PRACTICES SHALL BE USED TO ADDRESS THE SITE PE AND ESDV.
20. THE USE OF RC-6 FOR AGGREGATE BASE MATERIAL SHALL BE APPROVED BY THE GEO-TECHNICAL ENGINEER.
21. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
22. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST (5) WORKING DAYS PRIOR TO START OF WORK.
23. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
24. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
25. THERE IS NO FLOODPLAIN ,WETLANDS, STREAMS OR NATURAL STEEP SLOPES ON THIS SITE.
26. TRASH PICK UP WILL BE PRIVATELY MAINTAINED.
27. NO OFF-SITE ACTIVITIES ARE PROPOSED FOR THIS PROJECT.
28. THE SITE IS NOT IN THE AIRPORT ZONE.
29. FOREST CONSERVATION OBLIGATION WAS FULFILLED UNDER F-04-188 AND F-07-035.
30. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS.
31. REFER TO ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS.
32. ALL GRADING AND EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S REPORT AND INSPECTED BY A GEOTECHNICAL ENGINEER.
33. CONSTRUCTION OF SUBGRADE, UNDERDRAINS, AND PAVING SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER.
34. EXISTING UTILITIES WHICH ARE NOT TO BE REMOVED OR ABANDONED SHALL REMAIN OPERATIONAL AT ALL TIMES. APPROPRIATE EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL REPLACEMENT/RELOCATED UTILITIES ARE OPERATIONAL.
35. ALL DISTURBED AREAS NOT STABILIZED WITH STRUCTURES, PAVING, AND/OR PLANTINGS SHALL BE STABILIZED WITH FOUR INCHES OF TOPSOIL, SEED, MULCH AND WATERED TO ESTABLISH AN ADEQUATE GROWTH OF GRASS AS SPECIFIED ON THE EROSION AND SEDIMENT CONTROL PLANS.
36. NUMERICAL DIMENSIONS AND ELEVATIONS SHOWN SHALL SUPERSEDE ANY DISCREPANCY IN THE SCALING ON THE DRAWINGS.
37. LIMIT OF DISTURBANCE AS SHOWN ON ALL CIVIL DRAWINGS IS APPROXIMATE AND SHALL NOT PREVENT THE CONTRACTOR FROM EXTENDING BEYOND THESE LIMITS FOR COMPLETE INSTALLATION OF PROJECT ELEMENTS.
38. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL EXISTING AND PROPOSED BUILDING ENTRANCES DURING ALL PHASES OF CONSTRUCTION, UNLESS OTHERWISE NOTED IN THESE DOCUMENTS. CONTRACTOR SHALL NOTIFY ENGINEER / OWNER IF EXISTING OR PROPOSED CONDITIONS RESTRICT ABILITY TO ACHIEVE POSITIVE DRAINAGE FROM BUILDINGS PRIOR TO THE START OF CONSTRUCTION.
39. FOR EXTERIOR BUILDING ELEVATIONS SEE SHEET A-101 & A-102. FOR PROPOSED BUILDING FOOTPRINT DIMENSIONS SEE SHEET C-201 & C-203.
40. THE LEED REGISTRATION, APPLICATION & PAYMENT WAS SUBMITTED TO GBCI ON 1/19/2017 BY HDR, INC.
41. PERIMETER LANDSCAPING IS NOT REQUIRED WITH THIS SDP BECAUSE THE PROPOSED BUILDING IS LOCATED INTERNAL TO THE SITE.

Sheet List Table

Sheet Number	Sheet Title	Sheet Description
01	C-001	SDP Cover Sheet
02	C-002	Civil Key Sheet
03	A-101	North/South Building Elevations
04	A-102	East/West Building Elevations
05	C-101	Ex. Conditions & Demolition Plan (North)
06	C-102	Ex. Conditions & Demolition Plan (South)
07	C-103	Ex. Conditions & Demolition Plan (East)
08	C-201	Site Plan (North)
09	C-202	Site Plan (South)
10	C-203	Layout Plan
11	C-204	Layout Plan
12	C-205	Layout Profiles
13	C-210	Site Details
14	C-211	Site Details
15	C-212	Site Details
16	C-301	Grading Plan
17	C-302	Retaining Wall Plan
18	C-320	Upper Retaining Wall RW-1 Plan & Elevation
19	C-321	Upper Retaining Wall RW-1 Plan & Elevation
20	C-322	Lower Retaining Wall RW-2 Plan & Elevation
21	C-323	Retaining Wall Cross Sections - 1
22	C-324	Retaining Wall Cross Sections - 2
23	C-401	Utility Plan (North)
24	C-402	Utility Plan (South)
25	C-410	Utility Details
26	C-411	Utility Details
27	C-412	Utility Details
28	C-413	Utility Details
29	C-415	Utility Details
30	C-420	Storm Drain Profiles
31	C-421	Storm Drain Profiles
32	C-422	Storm Drain Profiles
33	C-423	Storm Drain Profiles
34	C-424	Storm Drain Profiles
35	C-425	Water Profiles
36	C-426	Sewer Profiles
37	C-501	Stormwater Management Plan
38	C-502	West Basin Pond Plan
39	C-510	Stormwater Management Details
40	C-511	Stormwater Management Details
41	C-512	West Basin Profile and Details
42	C-513	West Basin Details
43	C-520	Exsiting Drainage Area Plan
44	C-521	Proposed Drainage Area Plan
45	C-522	Proposed Drainage Area Plan (SWM)
46	C-523	Proposed Storm Drain Drainage Area Plan
47	C-530	Stormwater Management Notes
48	C-531	Stormwater Management Notes
49	C-532	West Basin Pond Notes
50	C-533	West Basin Pond Boring Information
51	C-601	Erosion Sediment Control Plan - General Limits
52	C-602	Erosion Sediment Control Stockpile Plan - All Phases
53	C-603	Erosion Sediment Control Plan - Phase I (North)
54	C-604	Erosion Sediment Control Plan - Phase I (South)
55	C-605	Erosion Sediment Control Plan - Phase II
56	C-606	Erosion Sediment Control - Phase III
57	C-607	Erosion Sediment Control Notes & Details
58	C-608	Erosion Sediment Control Details
59	C-609	Erosion Sediment Control Details
60	C-610	Erosion Sediment Control Stabilization Notes
61	C-611	Erosion Sediment Control Stabilization Notes & Details
62	L-000	Site Key Plan
63	L-101	North Hardscape Plan
64	L-102	South Hardscape Plan
65	L-201	Hardscape Details
66	L-202	Hardscape Details
67	L-211	Site Amenities
68	L-301	North Landscape Planting Plan
69	L-302	South Landscape Planting Plan
70	L-303	Landscape Planting Enlargements
71	L-304	Landscape Planting Enlargements
72	L-400	Landscape Planting Details

ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS
1/123	11100 JOHNS HOPKINS ROAD

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL NO.
N/A			N/A		1/123
PLAT # or L/F.	GRID #	ZONING	TAX MAP NO.	ELECT DISTRICT	CENSUS TRACT
18968	16	PEC	41	5	605102
WATER CODE			SEWER CODE		
E21			8480000		

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 19432 — REGISTERED PROFESSIONAL ENGINEER — 5/20/22

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE#19432, 5/20/22

HOWARD SCD SIGNATURE BLOCK:

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

Howard Soil Conservation District _____ Date _____

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE

Director for Maura Rossman — 4/16/2018
County Health Officer, Howard County Health Department — Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — 4.11.18 Date
Chief, Division of Land Development — 4-19-18 Date
Director — 4-19-18 Date

RK&K — RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE + CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 19432 — REGISTERED PROFESSIONAL ENGINEER

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SDP COVER SHEET AS-BUILT

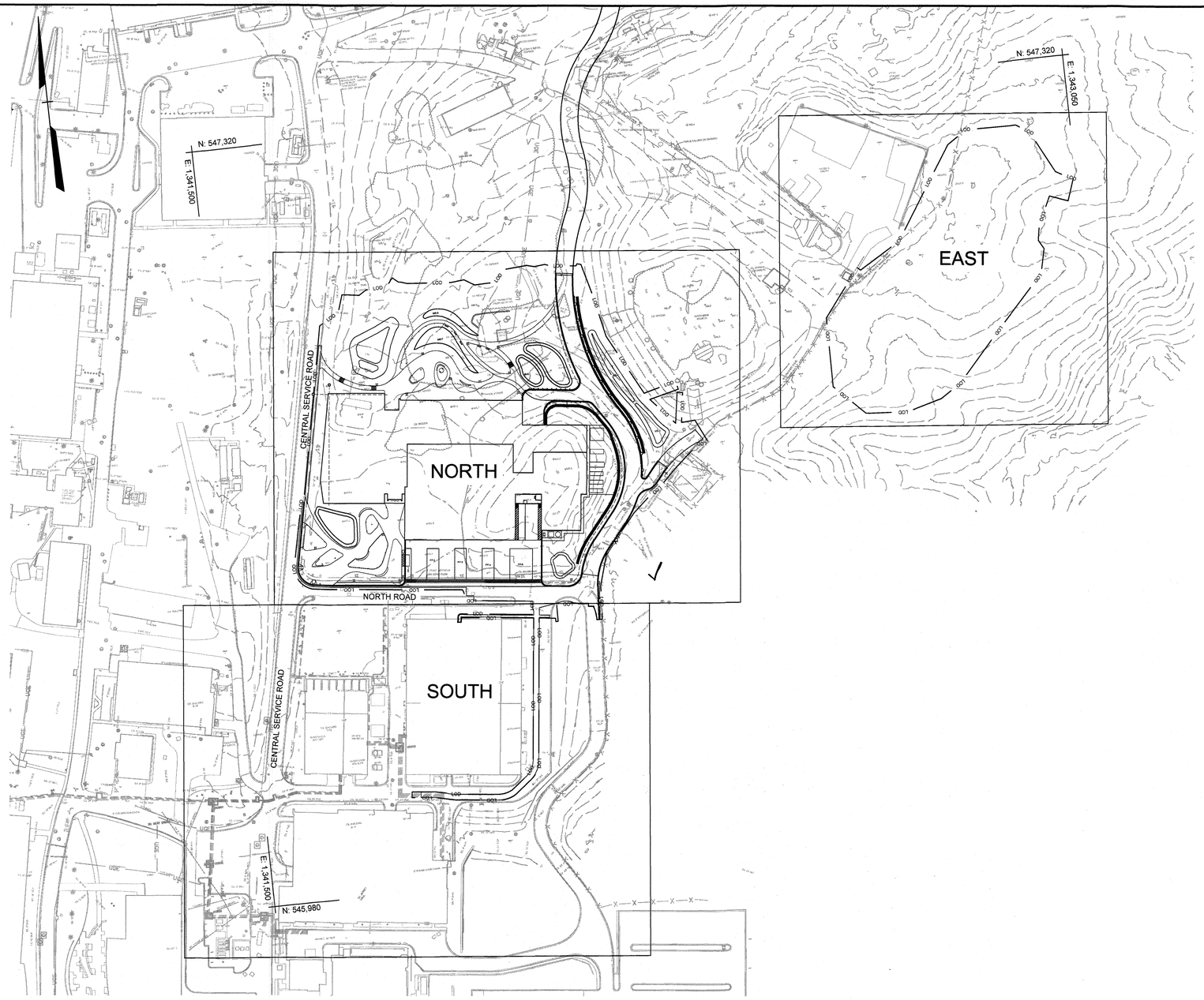
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 01 OF 72
GREEN BUILDING
SDP-18-035

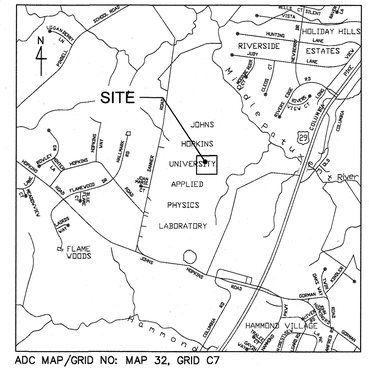
C-001

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\celserv05\2017\2017\17206_APL14\CADD\Plans\C-001 SDP Cover Sheet.dwg Mar 27, 2018 11:55am cmitchell





ADC MAP/GRID NO: MAP 32, GRID C7

VICINITY MAP
SCALE: 1"=2000'

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE # 49432, 5/20/22

100 50 0 100 200
SCALE: 1" = 100'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

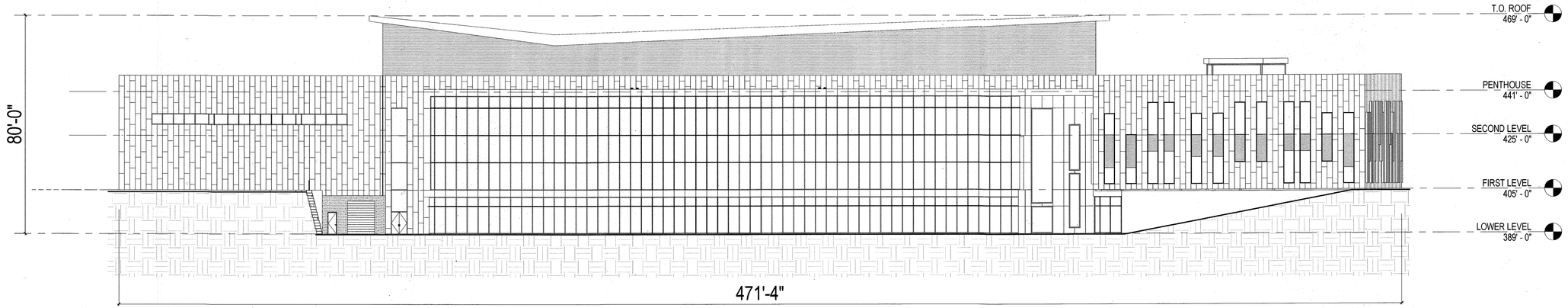
CIVIL KEY SHEET AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 02 OF 72
GREEN BUILDING
SDP-18-035

C-002

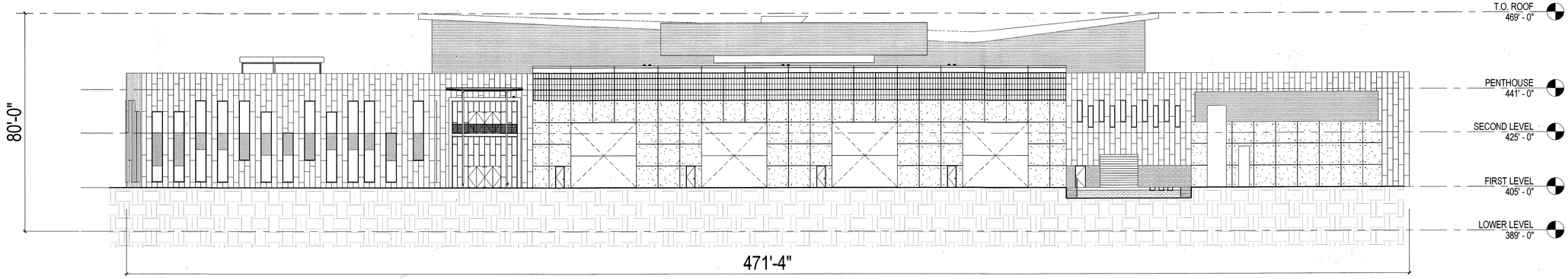
RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\V2017\17206_APL14\CADD\Plans\C-002 Civil Key Sheet.dwg Mar 27, 2018 11:55am cmitchell



1 NORTH ELEVATION
1" = 20'-0"



2 SOUTH ELEVATION
1" = 20'-0"

PROFESSIONAL CERTIFICATION

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

LICENSE No.: 15468 EXPIRATION DATE: 30 JUN 2018

No As-Built Information in this sheet 5/20/2022

20 10 0 20 40
SCALE: 1" = 20'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4/19/18

HDR
3301 Washington Blvd. Suite 200
Arlington, VA 22201

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15468, EXPIRATION DATE: 30 JUNE 2018.

STATE OF MARYLAND — TIMOTHY GRAHAM — REGISTERED ARCHITECT
30 Mar 18

DESIGN BY:	BY	NO.	REVISION	DATE
KB				
DRAWN BY: KC				
CHECKED BY: TG				
DATE: 3/30/2018				

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

NORTH/SOUTH BUILDING ELEVATIONS **AS-BUILT**

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

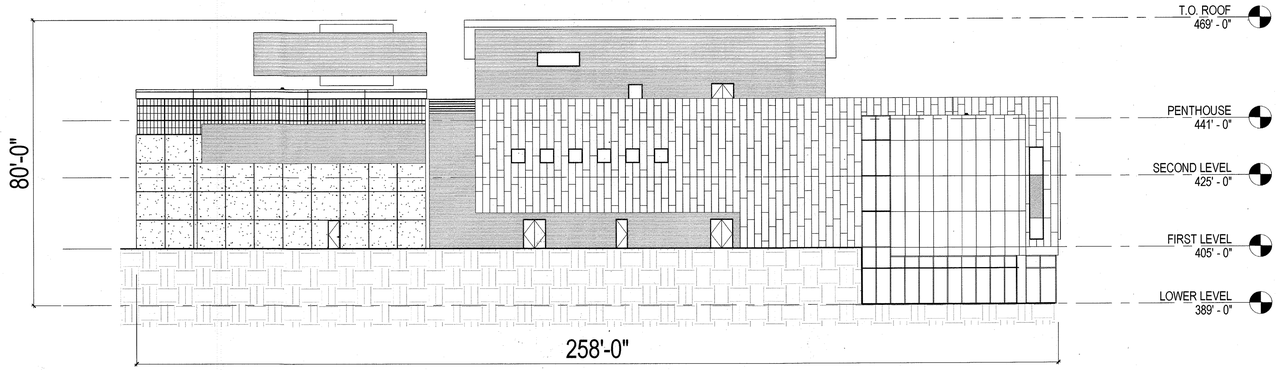
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 03 OF 72

GREEN BUILDING
SDP-18-035

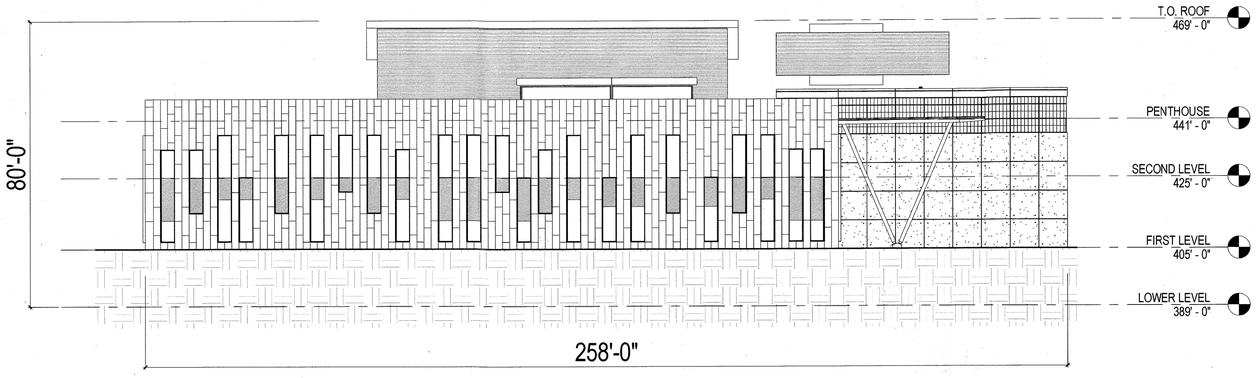
A-101

RK&K PROJECT NUMBER
17206

SCALE:
1" = 20'



1 EAST ELEVATION
1" = 20'-0"



2 WEST ELEVATION
1" = 20'-0"

PROFESSIONAL CERTIFICATION

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

LICENSE No.: 15468 EXPIRATION DATE: 30 JUN 2018

No As-Built Information in this sheet 5/2012022

20 10 0 20 40
SCALE: 1" = 20'

A-102

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

HDR
3301 Washington Blvd. Suite 200
Arlington, VA 22201

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15468, EXPIRATION DATE: 30 JUNE 2018.

STATE OF MARYLAND — THOMAS J. GOSS — 15468 — REGISTERED ARCHITECT

30 MAR 18

DESIGN BY:	KB
DRAWN BY:	KC
CHECKED BY:	TG
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EAST/WEST BUILDING ELEVATIONS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 04 OF 72

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER
17206

SCALE:
1" = 20'

MATCH LINE, SEE SHEET C-102

GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES.
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.

LEGEND

Symbol	Description
676	EXISTING MINOR CONTOUR
670	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
E	EXISTING ELECTRIC
C	EXISTING COMMUNICATION
S U C E	EXISTING UTILITY MANHOLE
	EXISTING LIGHTING
	EXISTING CURB AND GUTTER
	EXISTING TREE LINE
	EXISTING DRIVE
	EXISTING BUILDING
	EXISTING CONCRETE TO BE REMOVED
	EXISTING ASPHALT TO BE REMOVED
	EXISTING STRUCTURE TO BE REMOVED
	EXISTING CURB AND GUTTER TO BE REMOVED
	EXISTING UTILITY LINE TO BE REMOVED
LOD	LIMITS OF DISTURBANCE

DEMOLITION NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
3. ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO INLETS, MANHOLES, HAND HOLES, MECHANICAL LIDS, FIRE HYDRANTS, VALVE BOXES, ETC. WITHIN THE LIMITS OF DISTURBANCE TO BE ADJUSTED TO FINISHED GRADE UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO REMOVE ALL EXISTING RIP-RAP, GRAVEL, DEBRIS, TREES (UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLANS), BRUSH, FENCES, POSTS, AND GABION BASKETS/STONE WITHIN THE LOD TO FACILITATE THE WORK TO BE COMPLETED. CONTRACTOR SHALL SALVAGE MATERIALS WHICH MAY BE RE-USED AND USE THEM ON SITE SUCH AS GABION STONE AND RIP-RAP.
5. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
6. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.
7. ALL EXISTING FEATURES OUTSIDE OF THE LIMITS OF DISTURBANCE ARE TO REMAIN, UNLESS OTHERWISE NOTED.
8. UTILITIES MARKED FOR DEMOLITION WILL BE REMOVED. SEE PROJECT SPECIFICATIONS FOR UTILITY ABANDONMENT DISPOSITION.
9. COORDINATE REMOVAL OF EXISTING UTILITIES WITH INSTALLATION OF NEW UTILITIES TO MINIMIZE OUTAGE DURATION. ANY OUTAGE MUST BE COORDINATED IN ADVANCE WITH APPROPRIATE FACILITIES MANAGEMENT.
10. ALL CUTS OF EXISTING PAVEMENT SHALL BE NEAT AND IN A STRAIGHT LINE TO FACILITATE NEW PAVING. CONTRACTOR SHALL REMOVE TWO FEET OF THE SURFACE COURSE OF PAVEMENT (2" DEPTH) BEYOND ANY SAW CUTS TO OVERLAP PAVEMENT PATCHES.
11. CONTRACTOR TO TEST EXISTING SANITARY PIPES TO BE REMOVED FOR ASBESTOS. SHOULD PIPE TEST POSITIVE, CONTRACTOR IS REQUIRED TO NOTIFY THE OWNER & ENGINEER AND PROPERLY REMOVE & DISPOSE OF THE PIPING.
12. SEE UTILITY SITE PLAN FOR ADDITIONAL INFORMATION.
13. CONTRACTOR TO PROTECT EXITING UTILITIES TO REMAIN WITHIN LOD DURING CONSTRUCTION .

DEMOLITION NOTES

KEY D-1

1. EXISTING UTILITY STRUCTURE TO REMAIN. ADJUST TOP TO FINISHED GRADE, WHERE APPLICABLE.
2. EXISTING LIGHT TO BE RELOCATED. COMPLETELY REMOVE LIGHT POLE BASE. SEE SHEET C-414 FOR PROPOSED LIGHT POLE BASE.
3. REMOVE, SALVAGE AND RETURN EXISTING LIGHT TO OWNER FOR FUTURE USE. COMPLETELY REMOVE LIGHT POLE BASE.
4. EXISTING UTILITY STRUCTURE TO BE REMOVED.
5. HYDRANT & VALVE BOX TO BE ADJUSTED TO FINISHED GRADE.
6. EXISTING STORM DRAIN MANHOLE TO REMAIN. ADJUST RIM TO FINISHED GRADE. ENLARGE OPENINGS TO ACCEPT LARGER DIAMETER PROPOSED PIPE. SEE SHEET C-422.
7. EXISTING STORM DRAIN INLET TO BE CONVERTED TO MANHOLE.
8. EXISTING SHED TO BE RELOCATED BY OTHERS.
9. CUT & CAP ABANDONED CONDUIT.
10. REMOVE JERSEY BARRIER AND RELOCATE ON OWNER'S PROPERTY IN COORDINATION WITH OWNER.
11. REMOVE AND RETURN TO OWNER.
12. SECURE NON-OPERATIONAL WELL IN COORDINATION WITH OWNER. ADJUST TO 12" ABOVE FINISHED GRADE & CAP PIPE. STENCIL "ABANDONED WELL" ON PIPE CAP.
13. REMOVE STOP SIGN. SALVAGE AND REINSTALL AT PROPOSED LOCATION ON A NEW POLE. DISPOSE OF EXISTING POLE.
14. PROTECT EXISTING STORM DRAIN INLET TO REMAIN.

No As-Built Information in this sheet
5/20/2022

30 15 0 30 60
SCALE: 1" = 30'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

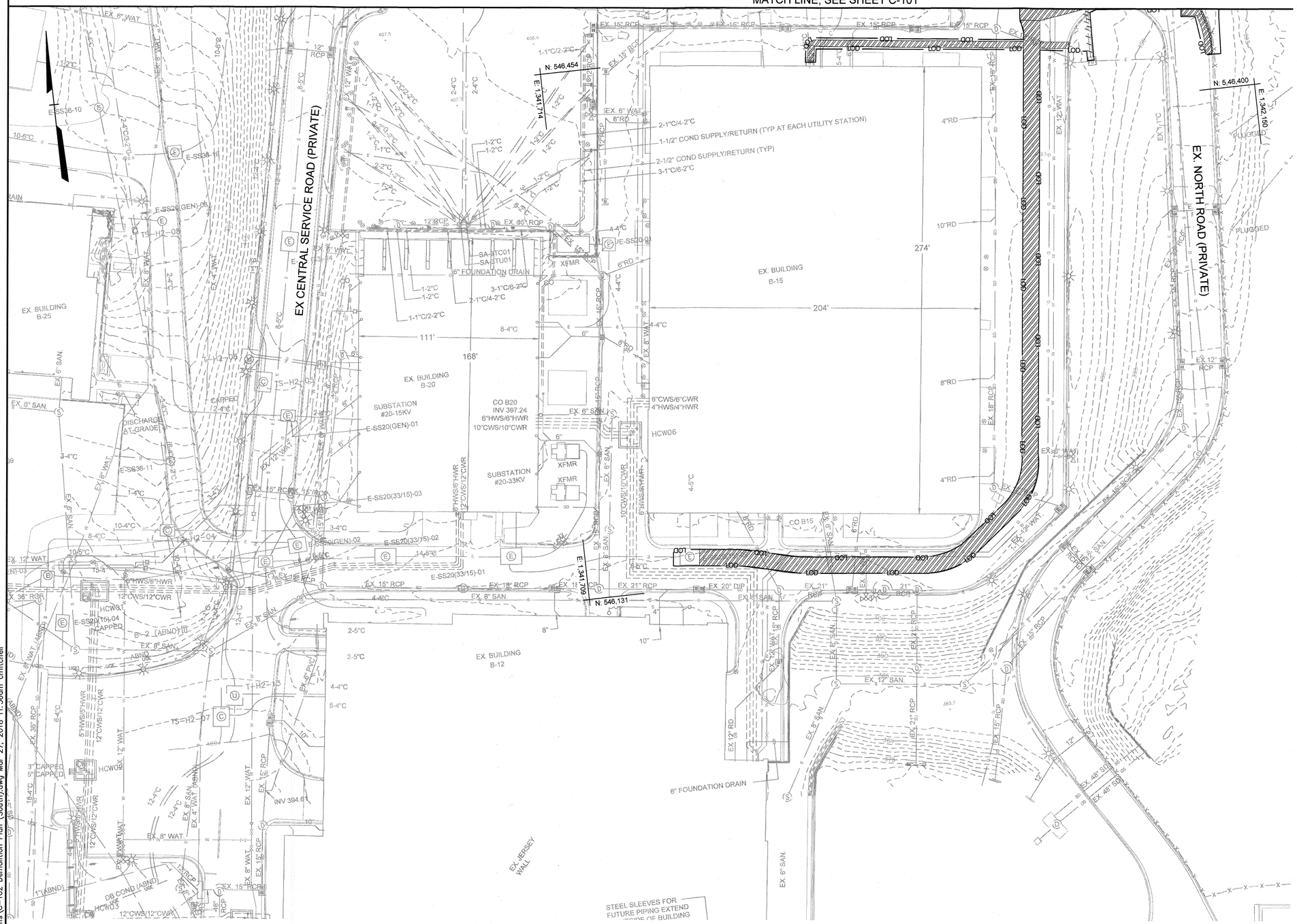
BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EX. CONDITIONS & DEMOLITION PLAN (NORTH)
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 05 OF 72
GREEN BUILDING
SDP-18-035

C-101
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-101 Demolition Plan (North).dwg Mar 27, 2018 11:56am cmitchell



GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES.
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.

DEMOLITION NOTES

1. SEE SHEET C-101 FOR ALL NOTES RELATED TO THIS PAGE.
2. CONTRACTOR TO PROTECT EXISTING UTILITIES WITHIN LOD AT ALL TIMES DURING CONSTRUCTION.

LEGEND

- 676 — EXISTING MINOR CONTOUR
- 670 — EXISTING MAJOR CONTOUR
- EXISTING EDGE OF ROAD
- EX. 15" D. — EXISTING STORM DRAIN AND INLET
- EX. 12" W. — EXISTING WATER AND FIRE HYDRANT
- EX. 8" S. — EXISTING SEWER
- E — EXISTING ELECTRIC
- C — EXISTING COMMUNICATION
- EXISTING UTILITY MANHOLE
- EXISTING LIGHTING
- EXISTING CURB AND GUTTER
- EXISTING TREE LINE
- EXISTING DRIVE
- EXISTING BUILDING
- EXISTING ASPHALT TO BE REMOVED
- LOD — LIMITS OF DISTURBANCE

No As-Built Information in this Sheet
5/20/2022

SCALE: 1" = 30'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 29112, EXPIRATION DATE: 9/6/2019.

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

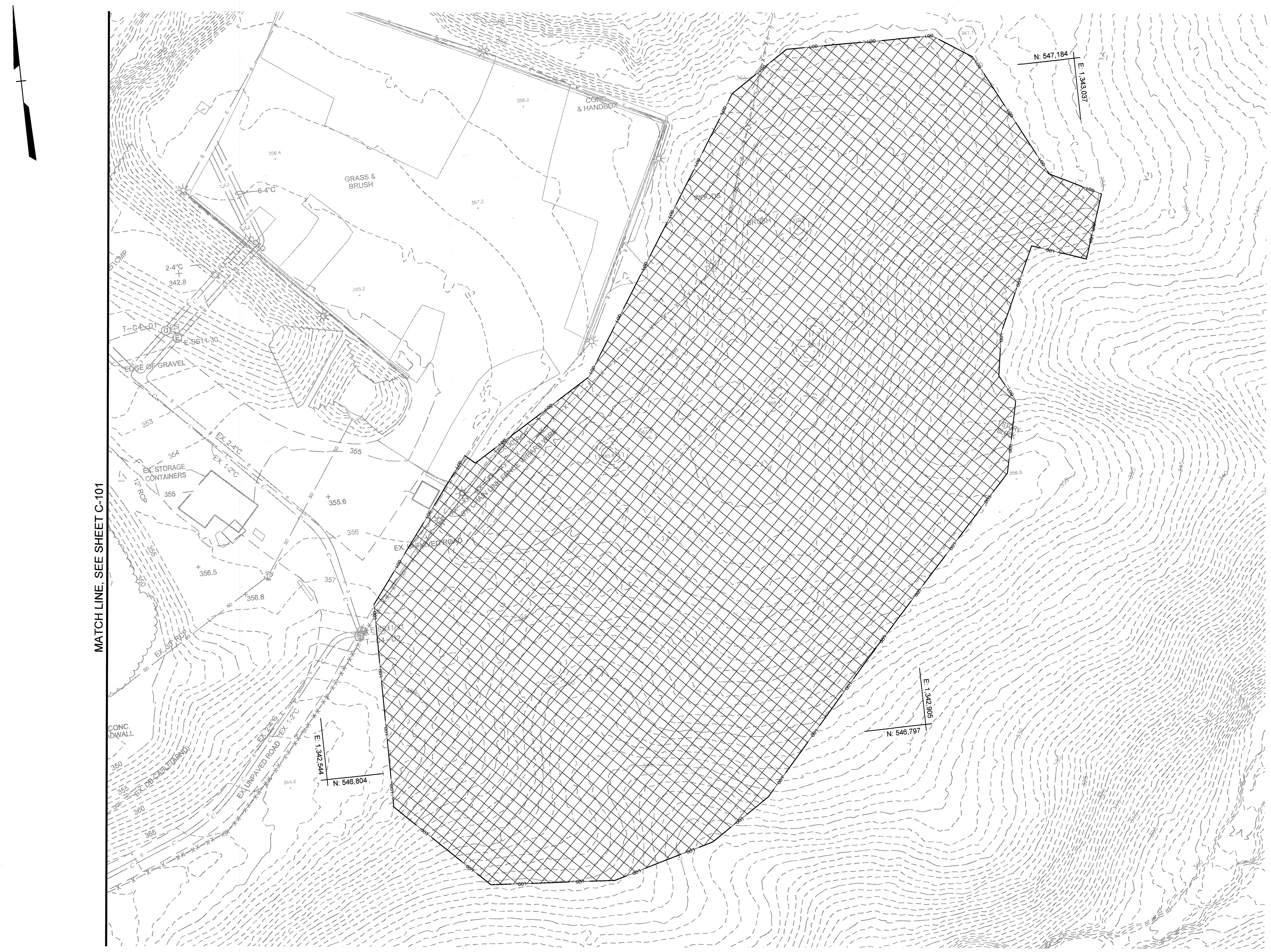
EX. CONDITIONS & DEMOLITION PLAN (SOUTH)
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 06 OF 72
GREEN BUILDING
SDP-18-035

C-102

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\eslerv05\2017\2017\7206_APL14\CADD\Plans\C-102 Demolition Plan (South).dwg Mar 27, 2018 11:56am cmitchell



GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES.
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.

DEMOLITION NOTES

1. SEE SHEET C-101 FOR ALL NOTES RELATED TO THIS PAGE.
2. CLEAR AND GRUB LIMITS OF STOCKPILE AREA TO PREPARE AREA TO RECEIVE PROJECT SPOILS.

LEGEND

676	EXISTING MINOR CONTOUR
670	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
E	EXISTING ELECTRIC
C	EXISTING COMMUNICATION
S U C E	EXISTING UTILITY MANHOLE
	EXISTING LIGHTING
	EXISTING CURB AND GUTTER
	EXISTING TREE LINE
	EXISTING DRIVE
	EXISTING BUILDING
	CLEAR AND GRUB
LOD	LIMITS OF DISTURBANCE

30 15 0 30 60

SCALE: 1" = 30'

No As-Built Information in this sheet.
5/20/2022

C-103

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

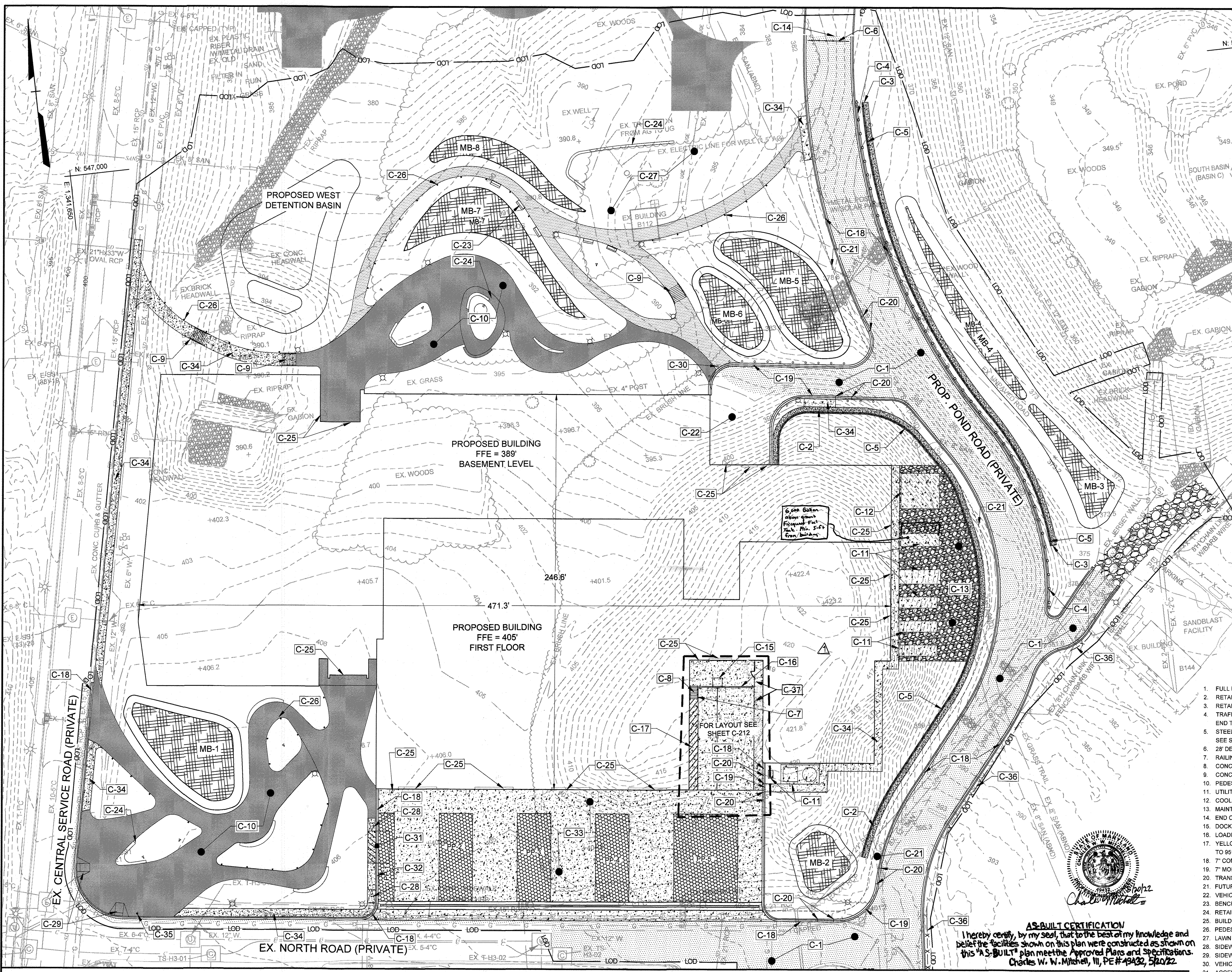
EX. CONDITIONS & DEMOLITION PLAN (EAST)
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 07 OF 72

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-103 Demolition Plan (East).dwg Mar 27, 2018 11:57am cmitchell



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications. Charles W. W. Mitchell, III, PE#49432, 5/20/22

MATCH LINE, SEE SHEET C-202

30 15 0 30 60

SCALE: 1" = 30'

LEGEND

676	EXISTING MINOR CONTOUR
670	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
E	EXISTING ELECTRIC
C	EXISTING COMMUNICATION
S U C E	EXISTING UTILITY MANHOLE
	EXISTING LIGHTING
	EXISTING CURB AND GUTTER
	EXISTING TREE LINE
	EXISTING DRIVE
	EXISTING BUILDING
	PROPOSED BUILDING
	PROPOSED CONCRETE. SEE SITE PLAN NOTES
	PROPOSED GRAVEL DRIVE. SEE DETAIL G-6.01 ON SHEET C-608
	PROPOSED MAINTENANCE YARD STONE. SEE DETAIL ON SHEET C-212
	PROPOSED PERMEABLE ARTICULATING CONCRETE BLOCK/MAT. SEE DETAIL ON SHEET C-511
	PROPOSED ASPHALT DRIVE
	PROPOSED ASPHALT WALK. SEE DETAIL 6 ON SHEET L-201
	PROPOSED BIORETENTION FACILITY
	PROPOSED HARDSCAPE - SEE LANDSCAPE PLANS
	PROPOSED RETAINING WALL AND FENCE
	FUTURE CONCRETE WALK
	PROPOSED CURB & GUTTER
—X—X—X—	RELOCATED EXISTING FENCE
LOD	LIMITS OF DISTURBANCE
	PROPOSED LIGHT POLE AND FIXTURE

GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
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4. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
5. THE CONTRACTOR SHALL PROVIDE A TWO-FOOT AREA AT 1/2-INCH PER FOOT SLOPE BEHIND ALL PROPOSED CURB, UNLESS OTHERWISE INDICATED.
6. FINISHED GRADES SHALL FALL AWAY FROM EXISTING AND PROPOSED BUILDINGS AT A MINIMUM OF 1/4-INCH PER FOOT FOR VEGETATED AREAS AND A MINIMUM OF 1/8-INCH PER FOOT FOR PAVED AREAS UNLESS OTHERWISE INDICATED.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
8. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
9. ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO INLETS, MANHOLES, HAND HOLES, MECHANICAL LIDS, FIRE HYDRANTS, VALVE BOXES, ETC. WITHIN THE LIMITS OF DISTURBANCE TO BE ADJUSTED TO FINISHED GRADE UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
11. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.

SITE PLAN NOTES

KEY C-1

1. FULL DEPTH ASPHALT PAVEMENT. HOWARD COUNTY SECTION NUMBER P-3. SEE SHEET C-210.
2. RETAINING WALL #1 (UPPER RETAINING WALL) PROPOSED SEGMENTAL BLOCK RETAINING WALL. SEE RETAINING WALL PLAN, SECTION & DETAIL SHEETS.
3. RETAINING WALL #2 (LOWER RETAINING WALL) PROPOSED SEGMENTAL BLOCK RETAINING WALL. SEE RETAINING WALL PLAN, SECTION & DETAIL SHEETS.
4. TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK (MD SHA 605.21), SINGLE FACE (MD SHA 605.22). INSTALLED AT FACE OF CURB PER MD SHA 605.31. TYPE C END TREATMENTS AT BOTH ENDS OF GUARDRAIL PER MD SHA 605.03. FLARE END SECTION AT 50:1.
5. STEEL FENCE PER DETAIL ON SHEET C-212. USE SLEEVE-IT FOR CONCRETE FOOTERS BEHIND RETAINING WALL. INSTALL MAINTENANCE STRIP AT TOP OF WALL. SEE SHEET C-212 FOR DETAIL.
6. 28' DEAD END BARRICADE, TYPE C PER HC R-5.11, INSTALL 3 POSTS AT 12'-6" O.C. SEE DETAIL SHEET C-210.
7. RAILING PER HC G-7.02, SHEET C-211. SEE LANDSCAPE PLANS AND SPECS FOR MATERIALS AND FINISHES.
8. CONCRETE STAIRS PER HC G-7.01, SEE SHEET C-211.
9. CONCRETE STAIRS, PER DETAIL HC G-7.01, SEE SHEET C-211, & PIPE RAILING PER DETAIL ON SHEET C-212. SEE LANDSCAPE PLANS AND SPECS FOR MATERIALS.
10. PEDESTRIAN AREA PAVING, SEE SHEET L-101 AND L-102 FOR LAYOUT AND DETAILS ON SHEET L-201.
11. UTILITY SLAB. COORDINATE FOUNDATION WITH RETAINING WALL INSTALLER. FOR DETAIL, SEE SHEET S-301.
12. COOLING TOWER PAD. SEE MEP SHEETS FOR DETAILS. COORDINATE FOUNDATION WITH RETAINING WALL INSTALLER.
13. MAINTENANCE YARD STONE. SEE SHEET C-212.
14. END OF ROADWAY. FUTURE ROAD SHOWN FOR REFERENCE ONLY BEYOND THIS POINT.
15. DOCK LEVELER. SEE ARCH PLANS AND DETAILS IN FUTURE GMP.
16. LOADING DOCK RETAINING WALL. SEE STRUCTURAL PLANS AND DETAILS IN FUTURE GMP.
17. YELLOW WATERBORNE PAVEMENT MARKING PAINT. YELLOW LINES TO BE YELLOW NON-TOXIC LEAD-FREE WATERBORNE PAVEMENT MARKINGS WHICH CONFORM TO 951.01 AND SECTION 549 OF MD SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
18. 7" COMBINATION CURB AND GUTTER PER HC R-3.01, SEE SHEET C-211.
19. 7" MODIFIED COMBINATION CURB AND GUTTER PER HC R-3.01, SEE SHEET C-211.
20. TRANSITION BETWEEN CURB TYPES PER HC R-3.02, SEE SHEET C-212.
21. FUTURE CONCRETE SIDEWALK.
22. VEHICULAR CONCRETE UNIT PAVER WITH CONCRETE BASE PER DETAIL 2 ON SHEET L-201
23. BENCHES TYP. SEE LANDSCAPE PLAN AND DETAILS.
24. RETAINING WALL AND SEAT WALL TYP. SEE LANDSCAPE PLAN AND DETAILS.
25. BUILDING ENTRANCE. SEE ARCHITECTURAL PLANS.
26. PEDESTRIAN LIGHT BOLLARD TYPE XB, SEE ELECTRICAL AND LANDSCAPE PLANS FOR DETAILS, TYP.
27. LAWN AREA - SEE LANDSCAPE PLANS
28. SIDEWALK RAMP PARALLEL TO CURB PER HC R-4.06. SEE SHEET C-211.
29. SIDEWALK RAMP TYPE B PER HC R-4.03. SEE SHEET C-211.
30. VEHICULAR BOLLARD TYP. PER SPECIFICATION 32 33 00, FOR FOUNDATION SEE SHEET C-211.
31. ACCESSIBLE LOADING ZONE. SEE SHEET C-301 FOR GRADES AND SLOPES, AND SHEET C-212 FOR LAYOUT.
32. FLUSH RAMP, NO LIP AT FLOWLINE. SEE HC R-4.06 & R-3.07, SHEET C-211.
33. CONCRETE APRON. SEE DETAIL SHEET C-212.
34. CONCRETE SIDEWALK PER HC R-3.05, SEE SHEET C-210.
35. STOP SIGN. R1-1 30"x30". SEE NOTE 16 C & D ON SHEET C-001 FOR MOUNTING DETAILS.
36. RELOCATE EXISTING FENCE .
37. GUARD RAIL AT LOADING DOCK. SEE DETAIL 8 SHEET A-470 (revision 1)

Purpose Statement (8/23/19): . This red line submission adjusts the configuration at the loading dock to remove one set of stairs and replace them with a flat (1% cross slope) walkway

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
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Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE
RK&K	1	LOADING DOCK REVISIONS	8/23/19

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE PLAN (NORTH) AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 08 OF 72

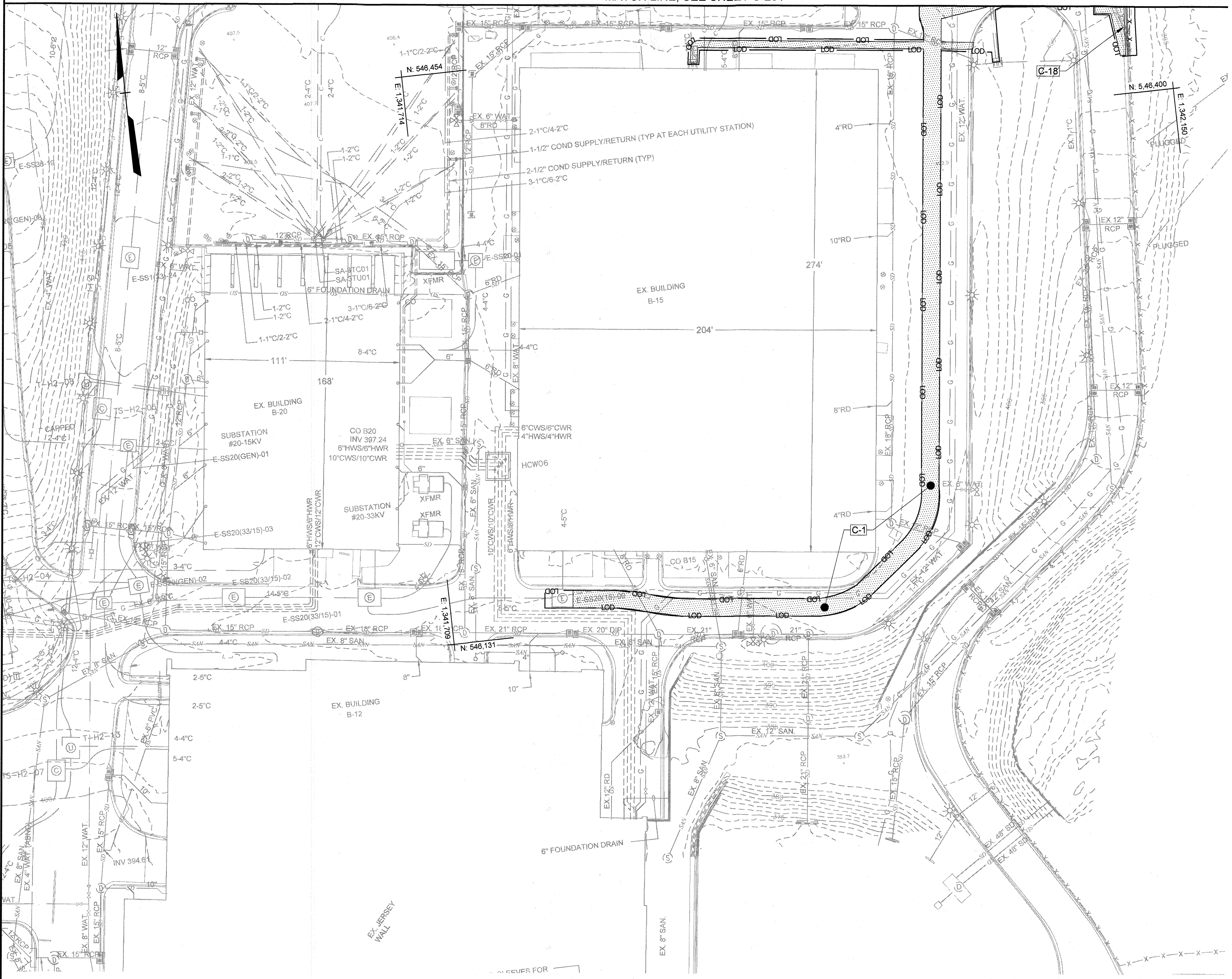
GREEN BUILDING
SDP-18-035

C-201

RK&K PROJECT NUMBER 17206

SCALE: As Shown

MATCH LINE, SEE SHEET C-201



LEGEND

676	EXISTING MINOR CONTOUR
670	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
E	EXISTING ELECTRIC
C	EXISTING COMMUNICATION
○ Ⓢ Ⓤ Ⓒ Ⓔ	EXISTING UTILITY MANHOLE
	EXISTING LIGHTING
	EXISTING CURB AND GUTTER
	EXISTING TREE LINE
	EXISTING DRIVE
	EXISTING BUILDING
	PROPOSED ASPHALT DRIVE
	PROPOSED CURB & GUTTER
—X—X—X—	RELOCATED EXISTING FENCE
LOD	LIMITS OF DISTURBANCE

GENERAL NOTES:

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
4. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
5. THE CONTRACTOR SHALL PROVIDE A TWO-FOOT AREA AT 1/2-INCH PER FOOT SLOPE BEHIND ALL PROPOSED CURB, UNLESS OTHERWISE INDICATED.
6. FINISHED GRADES SHALL FALL AWAY FROM EXISTING AND PROPOSED BUILDINGS AT A MINIMUM OF 1/4-INCH PER FOOT FOR VEGETATED AREAS AND A MINIMUM OF 1/8-INCH PER FOOT FOR PAVED AREAS UNLESS OTHERWISE INDICATED.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
8. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
9. ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO INLETS, MANHOLES, HAND HOLES, MECHANICAL LIDS, FIRE HYDRANTS, VALVE BOXES, ETC. WITHIN THE LIMITS OF DISTURBANCE TO BE ADJUSTED TO FINISHED GRADE UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
11. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.

SITE PLAN NOTES

KEY C-1

SEE SHEET C-201 FOR NOTES.

No As-Built Information in this sheet.
5/20/2022

30 15 0 30 60
SCALE: 1" = 30'

C-202

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER DEAN — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

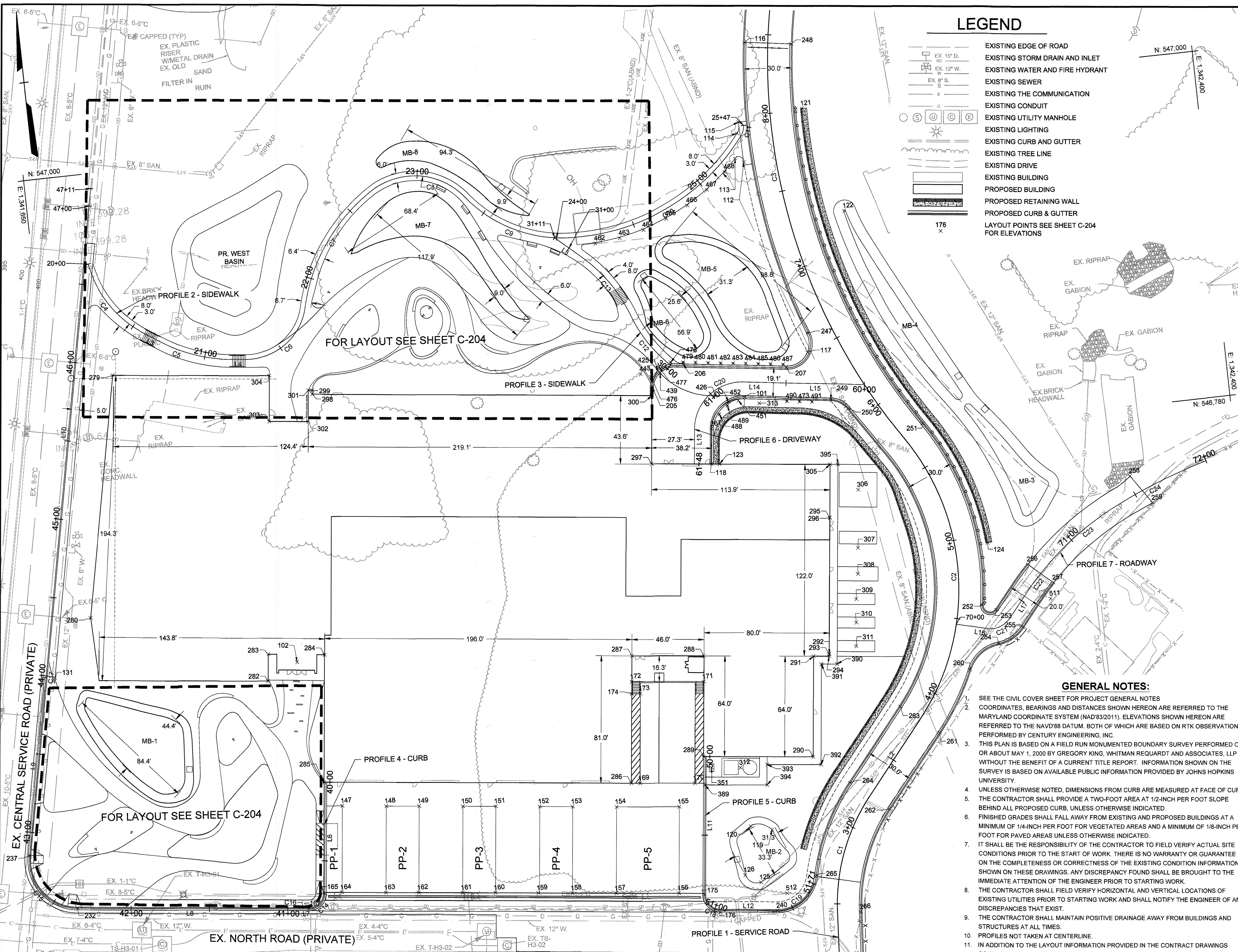
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE PLAN (SOUTH) AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 09 OF 72
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-202 Site Plan (South).dwg Mar 27, 2018 11:57am cmitchell



LEGEND

- EXISTING EDGE OF ROAD
- EXISTING STORM DRAIN AND INLET
- EXISTING WATER AND FIRE HYDRANT
- EXISTING SEWER
- EXISTING THE COMMUNICATION
- EXISTING CONDUIT
- EXISTING UTILITY MANHOLE
- EXISTING LIGHTING
- EXISTING CURB AND GUTTER
- EXISTING TREE LINE
- EXISTING DRIVE
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED RETAINING WALL
- PROPOSED CURB & GUTTER
- LAYOUT POINTS SEE SHEET C-204 FOR ELEVATIONS

LINE TABLE: PROFILE 1 - SERVICE ROAD			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
L1	144.37'		N03° 47' 52.27"E
C1	78.35'	125.00'	N21° 45' 14.13"E
L2	58.15'		N39° 42' 35.99"E
C2	191.95'	150.00'	N03° 03' 00.33"E
C3	373.62'	375.00'	N05° 04' 03.48"W

POINT OF BEGINNING: N 546,336.29, E 1,342,105.79

LINE TABLE: PROFILE 2 - SIDEWALK			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
C4	56.92'	70.46'	S32° 07' 33.01"E
L3	15.13'		S56° 42' 37.74"E
C5	44.47'	95.09'	S70° 07' 19.07"E
L4	9.87'		S83° 32' 02.10"E
C6	54.77'	38.00'	N55° 10' 32.38"E
C7	91.82'	113.90'	N36° 58' 46.57"E
C8	61.56'	44.94'	S77° 01' 44.22"E
C9	70.86'	85.00'	S61° 40' 19.54"E
C10	134.68'	137.19'	N66° 19' 11.14"E
C11	7.02'	11.02'	N19° 52' 44.12"E

POINT OF BEGINNING: N 546,942.82, E 1,341,685.25

LINE TABLE: PROFILE 3 - SIDEWALK			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
C12	41.15'	93.00'	N32° 13' 25.66"W
C13	48.92'	97.59'	N33° 54' 25.73"W
L5	21.10'		N48° 16' 03.23"W

POINT OF BEGINNING: N 546,838.15, E 1,342,047.38

LINE TABLE: PROFILE 4 - CURB			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
L6	70.86'		S06° 29' 07.85"W
C14	15.73'	10.00'	S51° 33' 33.84"W
L7	3.36'		N83° 22' 00.18"W
C16	0.54'	200.00'	N83° 26' 39.26"W
L8	143.84'		N83° 31' 18.35"W
C15	50.88'	30.67'	N35° 59' 46.73"W
L9	113.88'		N11° 31' 44.88"E
C17	0.18'	200.00'	N11° 30' 12.18"E
L10	311.90'		N11° 28' 39.47"E

POINT OF BEGINNING: N 546,598.94, E 1,341,799.54

LINE TABLE: PROFILE 5 - CURB			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
L11	87.83'		S06° 29' 24.00"W
C18	15.66'	9.99'	S38° 24' 51.04"E
L12	35.98'		S83° 16' 16.72"E
C19	31.44'	24.99'	N60° 38' 28.94"E

POINT OF BEGINNING: N 546,588.45, E 1,342,042.20

LINE TABLE: PROFILE 6 - DRIVEWAY			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
L15	62.51'		N82° 29' 19.81"W
L14	15.29'		N82° 29' 19.81"W
C20	47.66'	30.00'	S52° 00' 01.51"W
L13	22.19'		S06° 29' 20.49"W

POINT OF BEGINNING: N 546,812.33, E 1,342,169.06

LINE TABLE: PROFILE 7 - ROADWAY			
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION
L16	19.37'		S75° 28' 13.45"E
C21	16.96'	15.00'	N72° 08' 40.19"E
L17	21.58'		N39° 48' 44.54"E
C22	13.70'	129.89'	N42° 54' 33.79"E
C23	59.88'	190.00'	N53° 59' 48.90"E
C24	68.59'	370.40'	N69° 17' 20.62"E

POINT OF BEGINNING: N 546,654.51, E 1,342,210.79

Point Table				
Point #	Raw Description	Elevation	Northing	Easting
101	SPOT	387.127	546812.8411	1342091.9957
102	SPOT	404.976	546676.5659	1341790.1212
103	SPOT	381.250	546950.2325	1341882.5603
104	SPOT	399.762	546897.9053	1341717.1216
105	SPOT	388.304	546873.2185	1341840.4828
106	SPOT	388.206	546880.2296	1341837.9768
107	SPOT	388.126	546887.1156	1341842.9241
108	SPOT	387.723	546924.7732	1341889.0939
109	SPOT	388.072	546904.1308	1341919.0983
110	SPOT	388.041	546874.0814	1341985.4617
111	SPOT	388.414	546866.0247	1341981.5870
112	SPOT	381.104	546961.3886	1342107.9936
113	SPOT	380.821	546964.3532	1342102.6645
114	SPOT	380.246	546979.9184	1342105.6018
115	SPOT	379.972	546986.9920	1342107.2581
116	SPOT	377.000	547036.9124	1342116.6438
117	SPOT	385.857	546836.8312	1342135.2749
118	SPOT	396.073	546772.8566	1342066.5148
119	SPOT	397.750	546537.4072	1342079.5962
120	SPOT	397.750	546541.0988	1342066.3686
121	SPOT	379.001	546991.2817	1342148.6451
122	SPOT	371.100	546923.5881	1342168.3811
123	SPOT	405.000	546772.3032	1342071.5892
124	SPOT	380.159	546703.8579	1342236.0761
125	SPOT	398.140	546504.9182	1342068.9684
126	SPOT	397.948	546510.6351	1342059.4202
127	SPOT	404.469	546612.2933	1341720.8865
128	SPOT	404.613	546653.3938	1341754.0361
129	SPOT	404.154	546644.5718	1341723.4809
130	SPOT	405.247	546597.4809	1341689.0880
131	SPOT	403.960	546683.5507	1341635.3819
132	SPOT	405.085	546609.7676	1341659.7044
133	SPOT	405.309	546601.4665	1341656.4754
134	SPOT	405.447	546582.1509	1341686.0985
135	SPOT	405.364	546574.2455	1341706.6872
136	SPOT	405.616	546567.7807	1341696.1455
137	SPOT	405.762	546561.9150	1341697.9716
138	SPOT	406.143	546553.9593	1341735.6510
139	SPOT	405.743	546563.5907	1341755.5407
140	SPOT	405.277	546591.7224	1341768.1001
141	SPOT	405.132	546596.7757	1341768.5071
142	SPOT	404.860	546612.2688	1341764.6267
143	SPOT	404.858	546613.6929	1341759.8609
144	SPOT	404.693	546644.5051	1341774.5287
145	SPOT	404.618	546641.4508	1341763.8516
146	SPOT	404.913	546631.8800	1341793.7914
147	SPOT	404.702	546582.7334	1341808.7659
148	SPOT	404.597	546579.5708	1341836.5867
149	SPOT	404.561	546577.1988	1341857.4523
150	SPOT	404.582	546574.0361	1341885.2731
151	SPOT	404.598	546571.6641	1341906.1388
152	SPOT	404.620	546568.5015	1341933.9596
153	SPOT	404.636	546566.1295	1341954.8252
154	SPOT	404.621	546562.9668	1341982.6460
155	SPOT	404.333	546558.4487	1342022.3900
156	SPOT	401.996	546503.8007	1342016.1776
157	SPOT	402.507	546508.3188	1341976.4336
158	SPOT	402.926	546511.4814	1341948.6128
159	SPOT	403.157	546513.9404	1341926.9820
160	SPOT	403.445	546517.0161	1341899.9264
161	SPOT	403.656	546519.3881	1341879.0608
162	SPOT	403.943	546522.5507	1341851.2400
163	SPOT	404.048	546524.9227	1341830.3744
164	SPOT	404.278	546528.0854	1341802.5536
165	SPOT	404.440	546528.5364	1341791.5340
166	SPOT	405.099	546529.1768	1341785.9003
167	SPOT	404.362	546519.7328	1341780.4428
168	SPOT	405.851	546554.2532	1341762.7482
169	SPOT	404.942	546576.2428	1341999.0807
170	SPOT	404.758	546572.2895	1342033.8567
171	SPOT	404.776	546635.9193	1342046.6306
172	SPOT	404.817	546641.1163	1342000.9251
173	SPOT	401.833	546632.8774	1342005.5240
174	SPOT	404.863	546633.4987	1342000.0586
175	SPOT	402.000	546501.1791	1342032.2585
176	SPOT	401.576	546489.1243	1342040.9144
177	SPOT	388.034	546900.8265	1341816.9102
178	SPOT	387.825	[illegible]	[illegible]
179	SPOT	387.931	[illegible]	[illegible]

GENERAL NOTES:

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
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4. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
5. THE CONTRACTOR SHALL PROVIDE A TWO-FOOT AREA AT 1/2-INCH PER FOOT SLOPE BEHIND ALL PROPOSED CURB, UNLESS OTHERWISE INDICATED.
6. FINISHED GRADES SHALL FALL AWAY FROM EXISTING AND PROPOSED BUILDINGS AT A MINIMUM OF 1/4-INCH PER FOOT FOR VEGETATED AREAS AND A MINIMUM OF 1/8-INCH PER FOOT FOR PAVED AREAS UNLESS OTHERWISE INDICATED.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
8. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
9. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
10. PROFILES NOT TAKEN AT CENTERLINE.
11. IN ADDITION TO THE LAYOUT INFORMATION PROVIDED IN THE CONTRACT DRAWINGS CONTRACTOR MAY UTILIZE THE DESIGN CADD FILES FOR THE DETAILED LAYOUT OF THE LANDSCAPE AND HARDSCAPE FEATURES. CONTRACTOR SHALL ENSURE THE ALIGNMENT OF THE SITE FEATURES IN THE CADD FILES MATCHES THE LAYOUT POINTS SHOWN IN THE CONTRACT DOCUMENTS. CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES FOUND PRIOR TO INSTALLATION.

Note: Spot elevations provided for construction layout only. They have not been updated as part of this as-built package.

Note: For Detailed as-built grading, see the KCI Survey Sheet dated 3/14/22

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE# 49432, 5/20/22

C-203

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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Ph: 410.728.2900 Contact: John d'Epagnier
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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 NO. 23012, EXPIRATION DATE: 3/8/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

LAYOUT PLAN AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206
SCALE: As Shown

Point Table

Point #	Raw Description	Elevation	Northing	Easting
180	SPOT	384.404	546974.1904	1341872.1041
181	SPOT	383.500	546960.6188	1341931.2978
182	SPOT	381.670	546929.1104	1341989.7471
183	SPOT	394.500	546892.9584	1341724.6858
184	SPOT	394.260	546875.7066	1341768.4518
185	SPOT	388.999	546874.5391	1341778.5345
186	SPOT	400.021	546943.2930	1341688.2159
187	SPOT	388.307	546882.1164	1341929.4043
188	SPOT	383.650	546929.3961	1341946.8527
189	SPOT	383.576	546932.2843	1341949.2738
190	SPOT	388.246	546875.3972	1341994.1880
191	SPOT	388.313	546871.8396	1342002.6315
192	SPOT	388.322	546869.9867	1342013.9042
193	SPOT	388.250	546873.9460	1342017.9040
194	SPOT	382.903	546888.1814	1342013.7178
195	SPOT	381.500	546917.2277	1341999.6863
196	SPOT	381.427	546920.7807	1342001.3219
197	SPOT	388.694	546851.2828	1341959.8050
198	SPOT	388.531	546859.4406	1341988.4539
199	SPOT	388.475	546872.5599	1341913.6984
200	SPOT	388.649	546868.7266	1341884.0437
201	SPOT	388.429	546875.1805	1341909.2763
202	SPOT	388.695	546847.4259	1341818.1933
203	SPOT	388.540	546856.0569	1341831.6442
204	SPOT	388.758	546865.0908	1341872.1640
205	SPOT	388.999	546825.9101	1342034.1774
206	SPOT	388.504	546838.0698	1342055.4571
207	SPOT	385.736	546828.7896	1342120.7163
208	SPOT	405.343	546587.3230	1341686.3053
209	SPOT	405.254	546595.4369	1341675.0150
210	SPOT	405.329	546596.2643	1341665.5314
211	SPOT	406.321	546568.9388	1341634.1625
212	SPOT	405.822	546571.8881	1341665.5723
213	SPOT	405.982	546569.0853	1341653.8770
214	SPOT	406.135	546573.2439	1341632.7152
215	SPOT	405.304	546574.7816	1341710.7064
216	SPOT	405.018	546586.2291	1341732.6211
217	SPOT	404.929	546593.5957	1341737.3301
218	SPOT	404.600	546617.0796	1341741.8398
219	SPOT	404.560	546621.5467	1341733.8140
220	SPOT	404.440	546634.2825	1341733.6276
221	SPOT	404.422	546648.6224	1341742.2901
222	SPOT	404.514	546647.2041	1341749.3255
223	SPOT	404.503	546636.1141	1341755.2467
224	SPOT	404.600	546626.1462	1341752.8064
225	SPOT	405.195	546599.0772	1341778.3092
226	SPOT	405.226	546599.1047	1341786.8208
227	SPOT	406.175	546543.5856	1341737.5896
228	SPOT	406.106	546550.9554	1341713.7782
229	SPOT	406.117	546546.7236	1341684.1383
230	SPOT	406.357	546537.9011	1341670.7830
231	SPOT	406.790	546537.2528	1341632.4814
232	SPOT	406.149	546536.4124	1341633.6390
233	SPOT	406.864	546538.4522	1341627.6469
234	SPOT	406.704	546546.1956	1341629.5094
235	SPOT	406.685	546545.0310	1341634.3519
236	SPOT	406.470	546568.1126	1341607.1288
237	SPOT	405.749	546573.0165	1341607.0482
238	SPOT	406.72 ~~406.274~~	546572.0659	1341615.6832
239	SPOT	406.73 ~~406.364~~	546567.1235	1341615.0674
240	SPOT	400.943	546485.9225	1342077.5230
241	SPOT	405.776	546598.6687	1341625.2430
242	SPOT	405.725	546605.8654	1341619.5355
243	SPOT	404.844	546641.0204	1341626.7065
244	SPOT	404.731	546642.5481	1341631.7613
245	SPOT	405.291	546591.5477	1341791.1005
246	SPOT	405.338	546585.5393	1341792.3075
247	SPOT	384.732	546848.8255	1342136.7600
248	SPOT	377.000	547032.7734	1342146.3569
249	SPOT	384.608	546805.1885	1342146.7150
250	SPOT	384.068	546798.6203	1342157.2466
251	SPOT	382.964	546783.8332	1342203.0966
252	SPOT	381.000	546665.0042	1342228.3731
253	SPOT	380.045	546660.9757	1342237.1491
254	SPOT	380.782	546639.3315	1342236.1025
255	SPOT	378.986	546648.1897	1342252.5239
256	SPOT	376.000	546687.5187	1342260.1715
257	SPOT	375.726	546674.1223	1342275.0547
258	SPOT	370.800	546735.9131	1342331.0993

Point Table

Point #	Raw Description	Elevation	Northing	Easting
259	SPOT	371.188	546717.4992	1342343.5992
260	SPOT	383.000	546624.7298	1342216.0941
261	SPOT	387.201	546587.0812	1342192.6128
262	SPOT	392.874	546542.3445	1342155.4584
263	SPOT	387.039	546606.2483	1342169.5341
264	SPOT	392.852	546561.5115	1342132.3798
265	SPOT	398.624	546504.8779	1342103.9694
266	SPOT	399.395	546479.3513	1342130.3217
267	SPOT	388.378	546795.0659	1342069.0420
268	SPOT	387.295	546916.4166	1341829.4136
269	SPOT	384.513	546967.3981	1341872.3416
270	SPOT	383.643	546949.9102	1341930.3810
271	SPOT	383.745	546925.5315	1341942.1643
272	SPOT	382.661	546925.4151	1341968.4197
273	SPOT	400.293	546913.1975	1341682.0942
274	SPOT	400.250	546914.8417	1341689.1823
275	SPOT	399.765	546891.3079	1341712.7233
276	SPOT	394.499	546886.2115	1341720.3816
277	SPOT	388.770	546865.2025	1341789.9581
278	SPOT	388.698	546862.2216	1341792.6202
279	SPOT	401.320	546870.7832	1341693.0479
280	SPOT	404.243	546719.0829	1341662.2117
282	SPOT	405.000	546666.6076	1341770.3916
283	SPOT	388.000	546683.5608	1341772.3202
284	SPOT	405.000	546679.4988	1341808.0274
285	SPOT	405.450	546599.0178	1341798.8725
286	SPOT	405.000	546576.8640	1341993.6159
287	SPOT	✓ 405.000	546657.3449	1342002.7713
288	SPOT	✓ 405.000	546652.1456	1342048.4765
289	SPOT	✓ 405.000	546588.5557	1342041.2426
290	SPOT	405.000	546580.6436	1342110.7940
291	SPOT	405.000	546644.2335	1342118.0279
292	SPOT	405.000	546644.3762	1342128.1087
293	SPOT	404.593	546644.3880	1342128.0052
294	SPOT	404.999	546643.1032	1342127.9639
295	SPOT	388.000	546730.5510	1342137.8070
296	SPOT	393.052	546730.5392	1342137.9105
297	SPOT	388.000	546777.1997	1342028.5461
298	SPOT	388.000	546844.9610	1341818.2953
299	SPOT	388.693	546847.3829	1341818.5708
300	SPOT	388.000	546820.4830	1342033.4700
301	SPOT	388.696	546847.6655	1341816.0869
302	SPOT	389.000	546827.7937	1341813.8263
303	SPOT	389.000	546830.6123	1341789.0486
304	SPOT	388.724	546859.4886	1341792.3335
305	SPOT	405.000	546764.3214	1342141.7535
306	SPOT	404.500	546746.3934	1342157.8520
307	SPOT	404.699	546709.6322	1342153.6997
308	SPOT	404.725	546693.2362	1342151.8505
309	SPOT	404.751	546677.4490	1342149.0636
310	SPOT	404.773	546662.5435	1342147.3826
311	SPOT	404.800	546647.6405	1342145.7373
312	SPOT	405.062	546578.8378	1342063.8123
313	SPOT	387.473	546807.8586	1342100.9840
314	SPOT	388.985	546891.6495	1341789.4957
315	SPOT	389.000	546888.0087	1341770.7417
316	SPOT	389.000	546899.7060	1341747.9383
317	SPOT	389.000	546942.7944	1341738.8718
318	SPOT	385.014	546954.4093	1341758.7867
319	SPOT	389.000	546965.4481	1341754.1765
320	SPOT	389.000	546990.7991	1341814.0294
321	SPOT	389.000	546986.5543	1341827.1211
322	SPOT	385.094	546974.7213	1341812.2871
323	SPOT	389.000	546972.4271	1341827.6546
324	SPOT	388.972	546941.5067	1341811.6804
325	SPOT	388.157	546886.8680	1341844.7932
326	SPOT	388.647	546877.5112	1341797.5663
327	SPOT	388.143	546897.4412	1341859.7771
328	SPOT	388.190	546895.3544	1341864.2620
329	SPOT	389.000	546828.5894	1341806.8315
330	SPOT	388.706	546867.4516	1341874.0586
331	SPOT	388.461	546880.2470	1341864.3029
332	SPOT	388.474	546878.9727	1341863.1598
333	SPOT	388.083	546899.4179	1341897.2067
334	SPOT	388.389	546874.4583	1341852.0501
335	SPOT	388.536	546873.8148	1341890.6392
336	SPOT	388.498	546871.6656	1341900.2965
337	SPOT	388.447	546875.3619	1341903.4544
338	SPOT	388.252	546887.8506	1341905.6063

Point Table

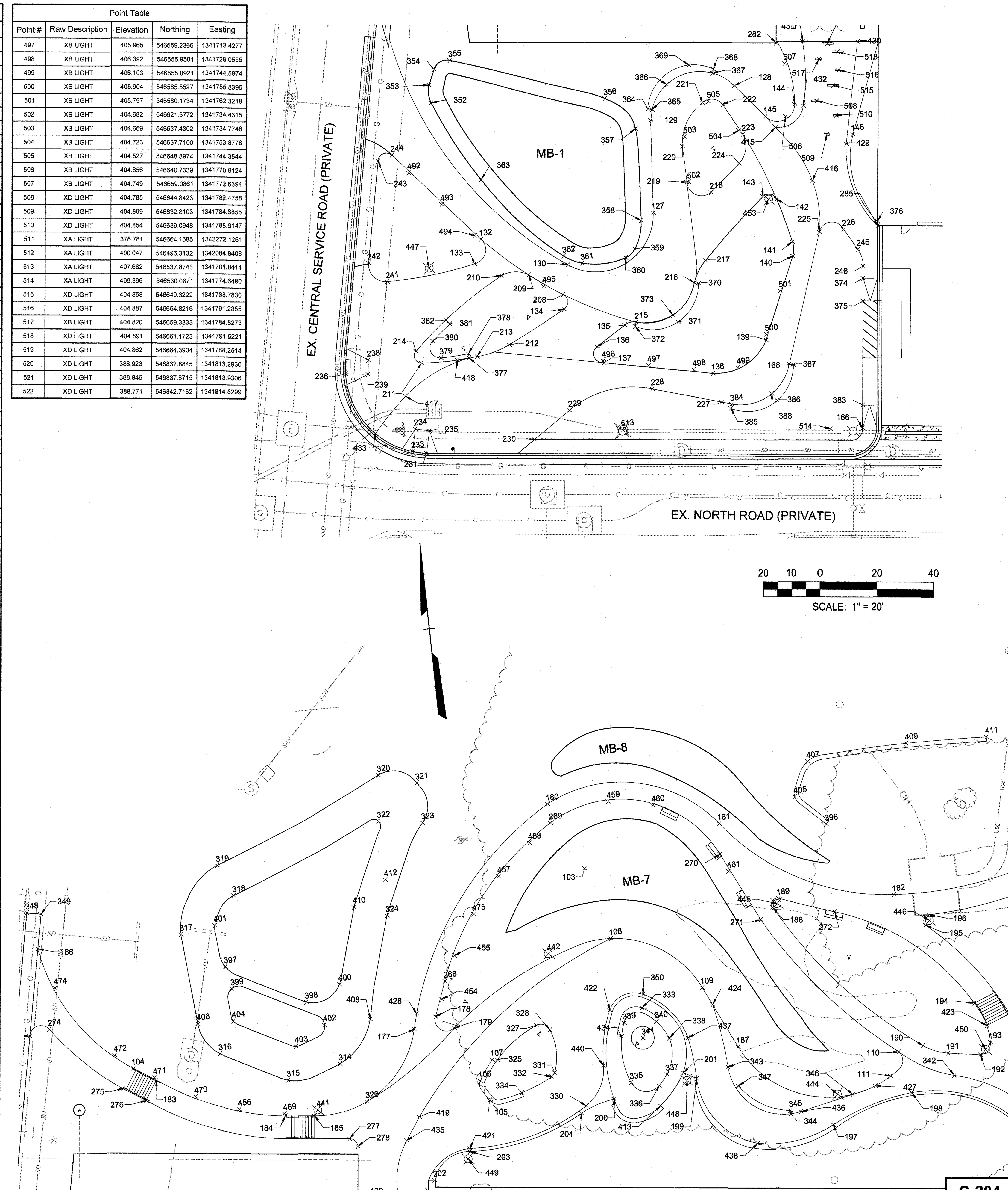
Point #	Raw Description	Elevation	Northing	Easting
339	SPOT	388.191	546894.8716	1341890.4526
340	SPOT	388.148	546894.1043	1341901.6928
341	SPOT	388.259	546888.9169	1341896.4278
342	SPOT	388.445	546863.8194	1342003.9670
343	SPOT	388.399	546875.4793	1341925.0906
344	SPOT	388.601	546856.7089	1341945.2857
345	SPOT	388.581	546857.8833	1341945.3032
346	SPOT	388.513	546861.1248	1341967.7783
347	SPOT	388.460	546868.5030	1341928.0280
348	SPOT	399.662	546956.2502	1341685.7491
349	SPOT	400.018	546955.2546	1341690.6490
350	SPOT	388.002	546904.0898	1341898.1009
351	SPOT	405.262	546580.9660	1342045.5255
352	SPOT	402.864	546659.2189	1341647.4752
353	SPOT	403.703	546665.4570	1341647.4514
354	SPOT	403.800	546670.7373	1341649.7856
355	SPOT	403.924	546673.3160	1341655.6213
356	SPOT	404.773	546653.9099	1341708.4099
357	SPOT	403.258	546642.2203	1341717.8927
358	SPOT	403.208	546610.0260	1341716.3551
359	SPOT	404.063	546600.3920	1341713.1423
360	SPOT	404.219	546597.6629	1341709.6048
361	SPOT	404.306	546597.4771	1341694.1134
362	SPOT	404.406	546600.6784	1341687.9660
363	SPOT	403.170	546630.4850	1341661.9860
364	SPOT	404.236	546648.7219	1341722.9735
365	SPOT	404.131	546648.2110	1341724.3838
366	SPOT	404.288	546656.3576	1341730.5037
367	SPOT	404.531	546658.5289	1341746.8667
368	SPOT	404.547	546659.9139	1341747.3940
369	SPOT	404.461	546662.2718	1341738.9721
370	SPOT	405.046	546585.7917	1341734.0559
371	SPOT	406.648	546573.2557	1341725.4507
372	SPOT	405.339	546573.3540	1341710.2458
373	SPOT	405.292	546575.8058	1341723.8502
374	SPOT	405.370	546581.3518	1341791.8315
375	SPOT	404.830	546573.4030	1341790.9278
376	SPOT	405.420	546600.5707	1341799.0486
377	SPOT	407.017	546568.9312	1341650.9930
378	SPOT	406.989	546570.4289	1341650.9372
379	SPOT	407.105	546569.9931	1341641.1647
380	SPOT	407.010	546576.1518	1341638.9452
381	SPOT	406.836	546581.4417	1341645.5213
382	SPOT	405.819	546583.0376	1341644.3158
383	SPOT	404.600	546537.1256	1341786.8039
384	SPOT	406.260	546542.5355	1341740.9776
385	SPOT	406.919	546541.1076	1341740.5332
386	SPOT	407.183	546542.0659	1341757.1761
387	SPOT	406.333	546553.8531	1341764.1208
388	SPOT	406.323	546544.6918	1341755.5617
389	SPOT	404.752	546570.5065	1342040.1552
390	SPOT	404.920	546637.5701	1342132.3667
391	SPOT	404.920	546638.7004	1342122.4308
392	SPOT	404.920	546575.1105	1342115.1968
393	SPOT	404.920	546578.9972	1342081.0310
394	SPOT	404.670	546566.0265	1342079.5555
395	SPOT	404.920	546763.7562	1342146.7214
396	SPOT	383.500	546956.3053	1341968.7832
397	SPOT	385.000	546929.8909	1341753.1207
398	SPOT	385.000	546914.5082	1341780.0856
399	SPOT	385.000	546922.0178	1341754.5635
400	SPOT	385.303	546919.3565	1341792.3997
401	SPOT	385.138	546944.5738	1341751.0649
402	SPOT	385.124	546905.8063	1341785.5249
403	SPOT	385.091	546899.5390	1341774.7969
404	SPOT	385.180	546910.6627	1341753.8331
405	SPOT	383.100	546967.0702	1341958.8816
406	SPOT	388.983	546910.9825	1341741.3853
407	SPOT	383.502	546978.8508	1341964.7066
408	SPOT	389.000	546906.1144	1341801.8769
409	SPOT	383.501	546981.3972	1341999.8104
410	SPOT	385.000	546945.7284	1341800.3675
411	SPOT	383.500	546980.5032	1342028.1008
412	SPOT	387.519	546954.0889	1341812.4384
413	SPOT	389.472	546864.5791	1341900.0265
414	SPOT	388.000	546843.4596	1341690.0839
415	SPOT	404.604	546637.2751	1341766.9550
416	SPOT	404.898	546617.2070	1341777.8396
417	SPOT	406.500	546557.9824	1341627.3274

Point Table

Point #	Raw Description	Elevation	Northing	Easting
418	SPOT	406.235	546568.5888	1341646.8786
419	SPOT	388.503	546870.0552	1341815.3036
420	SPOT	388.813	546841.3632	1341805.1040
421	SPOT	388.526	546857.1345	1341831.7313
422	SPOT	388.128	546899.8829	1341885.9457
423	SPOT	388.150	546879.8785	1342017.2387
424	SPOT	388.140	546897.7666	1341922.0795
425	SPOT	388.774	546835.5776	1342038.9438
426	SPOT	387.935	546815.8449	1342073.5437
427	SPOT	388.462	546863.1589	1341975.9891
428	SPOT	387.874	546906.1910	1341818.3019
429	SPOT	404.882	546628.8057	1341791.0947
430	SPOT	404.977	546663.9244	1341798.9551
431	SPOT	404.860	546666.1101	1341779.7419
432	SPOT	404.728	546643.6979	1341777.5632
433	SPOT	406.849	546546.1969	1341615.3753
434	SPOT	388.274	546890.2116	1341889.1092
435	SPOT	388.623	546862.3149	1341810.0320
436	SPOT	388.588	546857.1370	1341949.0199
437	SPOT	388.278	546887.1618	1341912.2088
438	SPOT	388.780	546847.7670	1341932.6414
439	SPOT	388.795	546833.9095	1342040.3404
440	SPOT	388.461	546880.7698	1341881.6687
441	XA LIGHT	388.980	546876.4612	1341779.9673
442	XA LIGHT	387.285	546921.9452	1341866.6412
443	XA LIGHT	388.880	546834.7844	1342027.8356
444	XA LIGHT	388.485	546861.7951	1341962.3279
445	XA LIGHT	383.635	546930.4942	1341948.5509
446	XA LIGHT	381.471	546918.7828	1342001.1916
447	XA LIGHT	406.713	546601.6739	1341640.4467
448	XA LIGHT	388.584	546872.3170	1341910.1960
449	XA LIGHT	388.582	546853.5291	1341830.7814
450	XA LIGHT	388.289	546871.5896	1342015.8633
451	XA LIGHT	387.589	546811.1253	1342087.9362
452	XA LIGHT	387.636	546810.9756	1342081.6512
453	XA LIGHT	404.869	546612.5088	1341761.8167
454	XB LIGHT	387.558	546910.2044	1341827.6654
455	XB LIGHT	386.899	546924.9569	1341833.7426
456	XB LIGHT	394.200	546879.7290	1341752.5814
457	XB LIGHT	385.585	546950.7973	1341852.2095
458	XB LIGHT	384.928	546961.2797	1341864.2380
459	XB LIGHT	383.616	546972.6513	1341893.3178
460	XB LIGHT	383.602	546969.6064	1341908.7368
461	XB LIGHT	383.676	546943.6445	1341932.7029
462	XB LIGHT	381.408	546920.4407	1342008.1369
463	XB LIGHT	381.439	546922.2179	1342024.0458
464	XB LIGHT	381.463	546925.7220	1342039.6396
465	XB LIGHT	381.391	546931.0269	1342054.6964
466	XB LIGHT	381.156	546937.9348	1342069.1387
467	XB LIGHT	380.970	546946.4897	1342082.6027
468	XB LIGHT	380.910	546956.5129	1342095.1730
469	XB LIGHT	394.048	546876.4751	1341768.1884
470	XB LIGHT	394.318	546885.7183	1341737.8056
471	XB LIGHT	394.948	546894.0066	1341724.1148
472	XB LIGHT	399.690	546903.2275	1341711.1214
473	XB LIGHT	386.241	546806.2069	1342126.7301
474	XB LIGHT	400.253	546928.9712	1341692.7932
475	XB LIGHT	386.242	546938.6252	1341842.0015
476	BOLLARD	388.889	546832.2199	1342034.3467
477	BOLLARD	388.717	546837.6969	1342040.0961
478	BOLLARD	388.556	546839.9186	1342047.6746
479	BOLLARD	388.258	546839.1533	1342055.6228
480	BOLLARD	387.955	546838.1089	1342063.4714
481	BOLLARD	388.197	546837.0632	1342071.4028
482	BOLLARD	388.042	546836.0174	1342079.3341
483	BOLLARD	387.707	546834.9716	1342087.2655
484	BOLLARD	387.372	546833.9259	1342095.1969
485	BOLLARD	387.020	546832.8801	1342103.1282
486	BOLLARD	386.736	546831.8344	1342111.0596
487	BOLLARD	386.484	546830.7886	1342118.9909
488	BOLLARD	388.400	546803.7575	1342074.9265
489	BOLLARD	388.039	546808.6324	1342080.6587
490	BOLLARD	386.557	546807.2694	1342118.7918
491	BOLLARD	385.874	546805.1436	1342134.6739
492	XB LIGHT	405.030	546635.6409	1341636.9439
493	XB LIGHT	405.182	546623.4292	1341647.2839
494	XB LIGHT	405.327	546611.2602	1341657.6775
495	XB LIGHT	405.631	546590.9342	1341679.8571
496	XB LIGHT	405.741	546562.5566	1341697.7510

Point Table

Point #	Raw Description	Elevation	Northing	Easting
497	XB LIGHT	405.965	546559.2366	1341713.4277
498	XB LIGHT	406.392	546555.9581	1341729.0555
499	XB LIGHT	406.103	546555.0921	1341744.5874
500	XB LIGHT	405.904	546565.5527	1341755.8396
501	XB LIGHT	405.797	546580.1734	1341762.3218
502	XB LIGHT	404.682	546621.5772	1341734.4315
503	XB LIGHT	404.659	546637.4302	1341734.7748
504	XB LIGHT	404.723	546637.7100	1341753.8778
505	XB LIGHT	404.527	546648.8974	1341744.3544
506	XB LIGHT	404.656	546640.7339	1341770.9124
507	XB LIGHT	404.749	546659.0861	1341772.6394
508	XD LIGHT	404.785	546644.8423	1341782.4758
509	XD LIGHT	404.809	546632.8103	1341784.6855
510	XD LIGHT	404.854	546639.0948	1341788.6147
511	XA LIGHT	376.781	546664.1585	1342272.1261
512	XA LIGHT	400.047	546496.3132	1342084.8408
513	XA LIGHT	407.682	546537.8743	1341701.8414
514	XA LIGHT	406.366	546530.0871	1341774.6490
515	XD LIGHT	404.858	546649.6222	1341788.7830
516	XD LIGHT	404.887	546654.8216	1341791.2355
517	XB LIGHT	404.820	546659.3333	1341784.8273
518	XD LIGHT	404.891	546661.1723	1341791.5221
519	XD LIGHT	404.862	546664.3904	1341788.2514
520	XD LIGHT	388.923	546832.8845	1341813.2930
521	XD LIGHT	388.846	546837.8715	1341813.9306
522	XD LIGHT	388.771	546842.7162	1341814.5299



Note: Spot elevations provided for construction layout only. They have not been updated as part of this as-built package.

Note: For Detailed as-built grading, see the KCI Survey Sheet dated 3/14/22

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

LAYOUT PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND

GREEN BUILDING

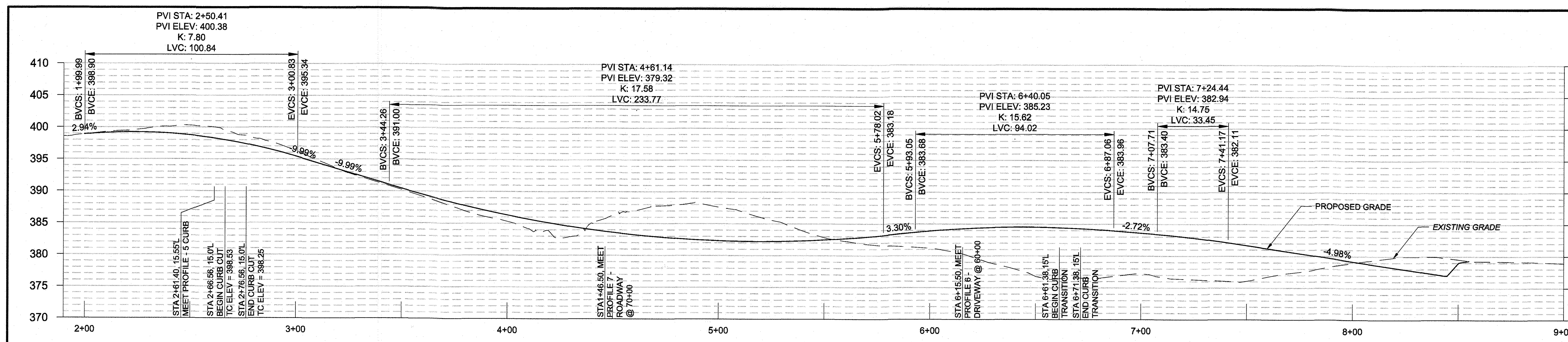
C-204

RK&K PROJECT NUMBER 17206

SCALE: As Shown

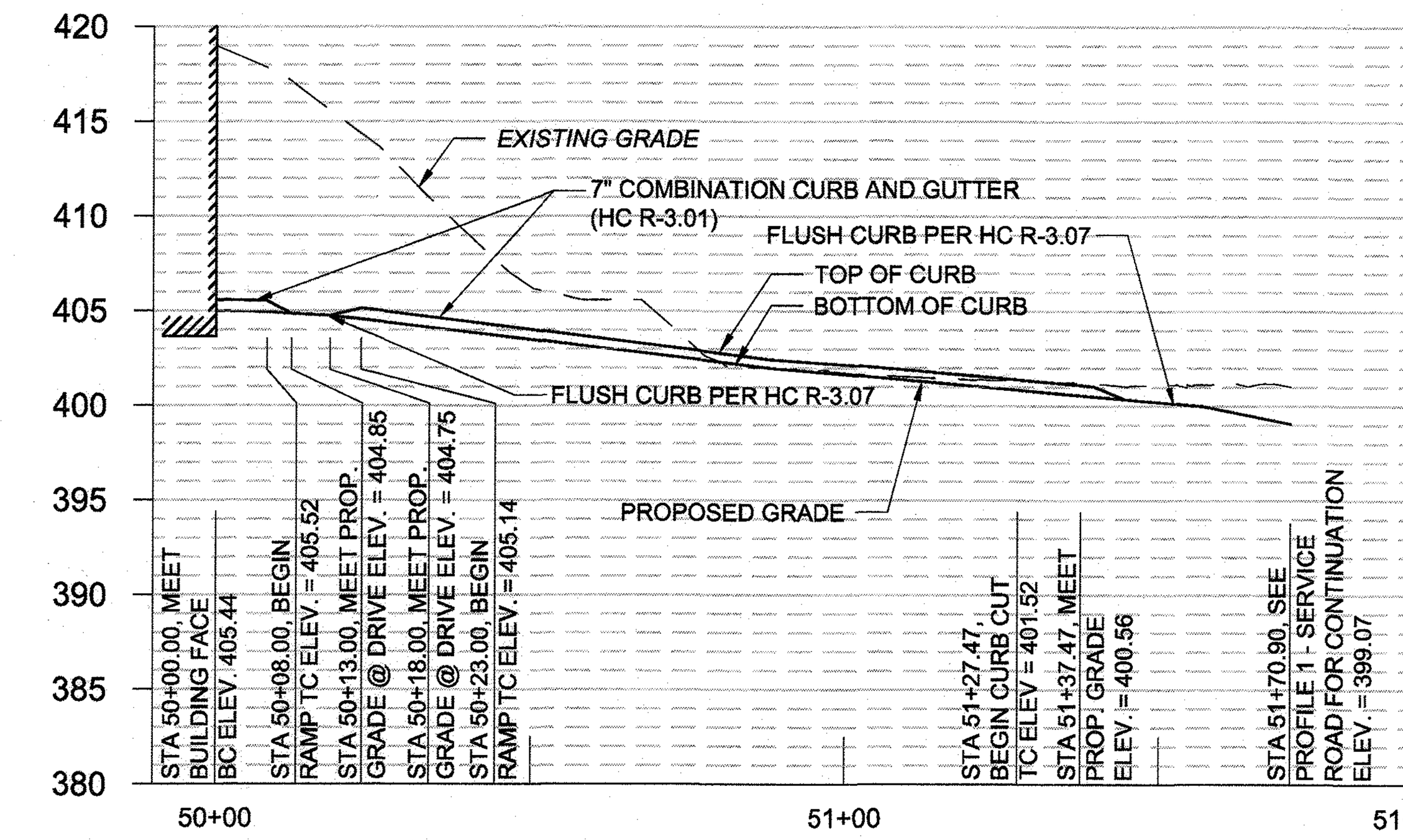
SDP-18-035

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-204 Layout Plan.dwg Mar 27, 2018 11:59am cmitchell



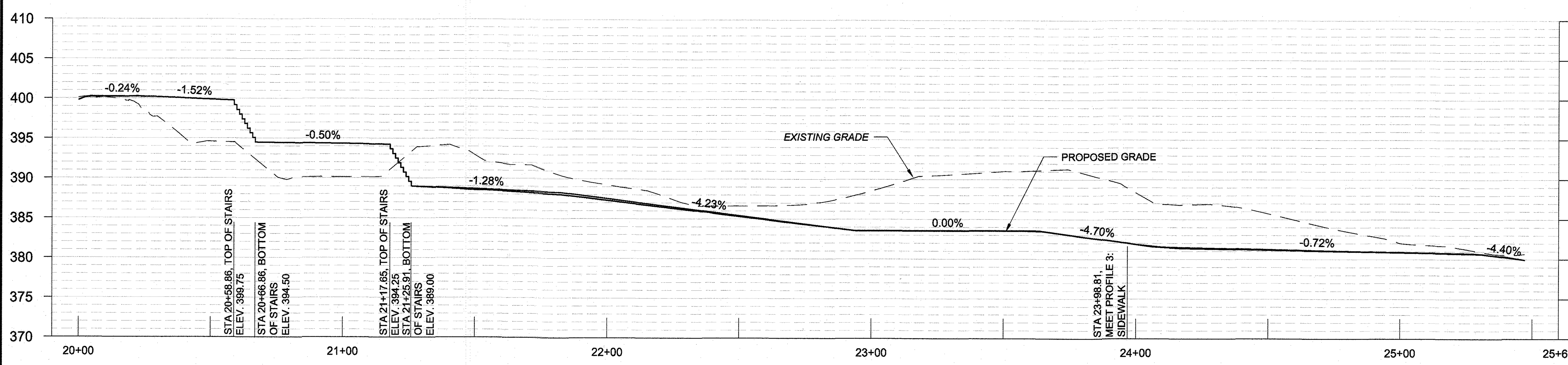
PROFILE 1 - SERVICE ROAD

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



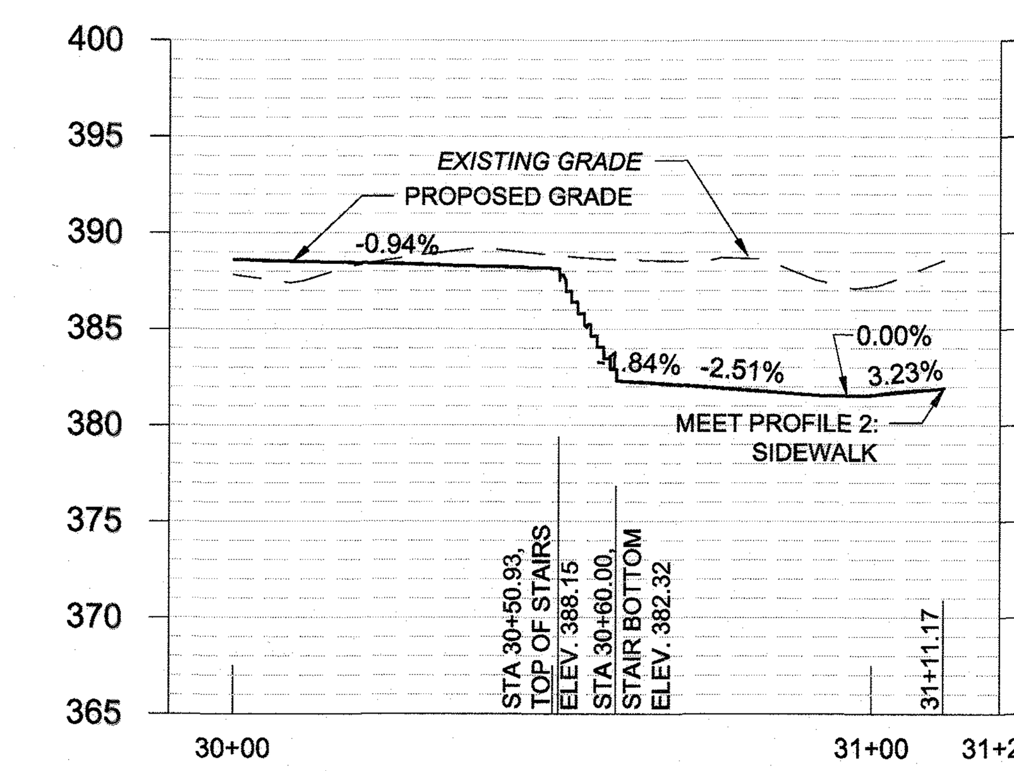
PROFILE 5 - CURB

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



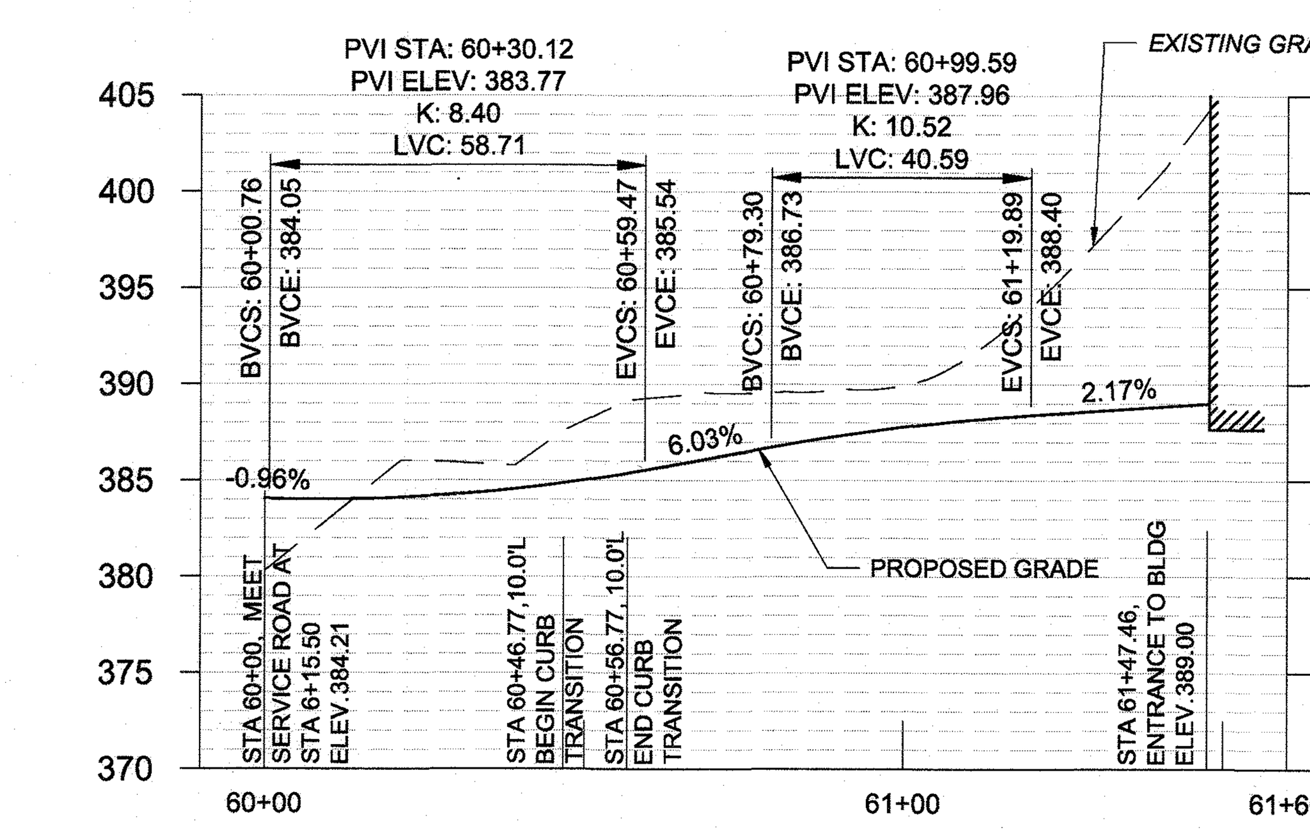
PROFILE 2 - SIDEWALK

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



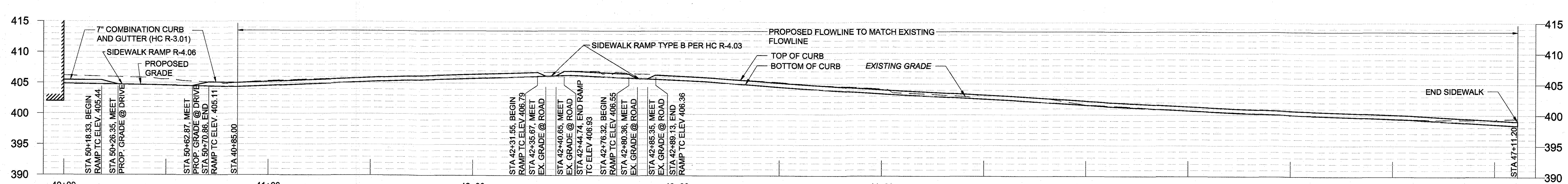
PROFILE 3 - SIDEWALK

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



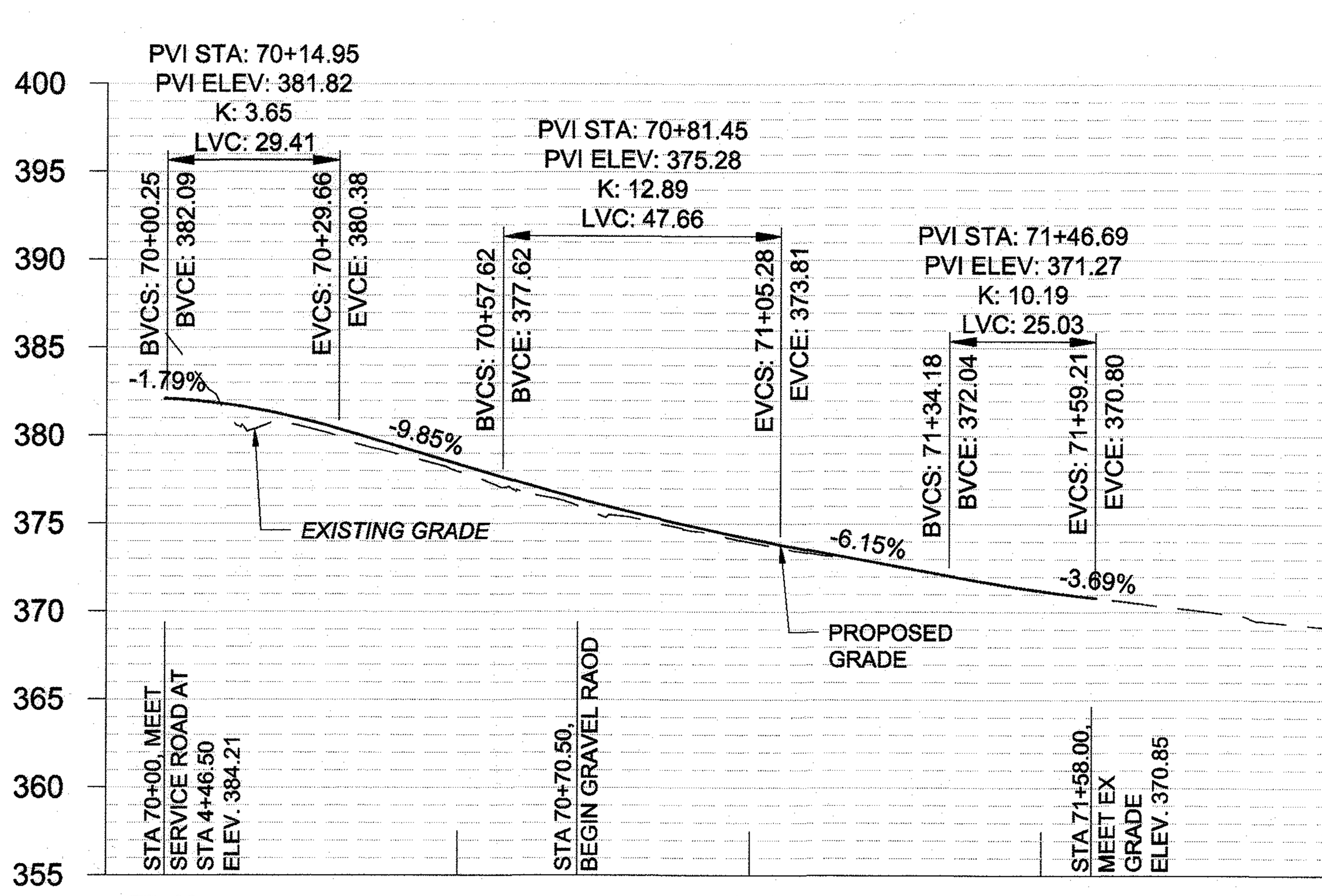
PROFILE 6 - DRIVEWAY

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



PROFILE 4 - CURB

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'



PROFILE 7 - ROADWAY

SCALE: HORIZ. 1" = 30'
VERT. 1" = 10'

HORIZ. SCALE: 1" = 30' (30 15 0 30 60)

VERT. SCALE: 1" = 10' (10 5 0 10 20)

NOTE:
REFER TO SHEET C 203 FOR LAYOUT AND CENTERLINE ALIGNMENT

No As-Built Information in this Sheet
5/20/2022

C-205

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS/CONSTRUCTION MANAGERS/PLANNERS/SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/8/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

LAYOUT PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SHEET 12 OF 72

SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

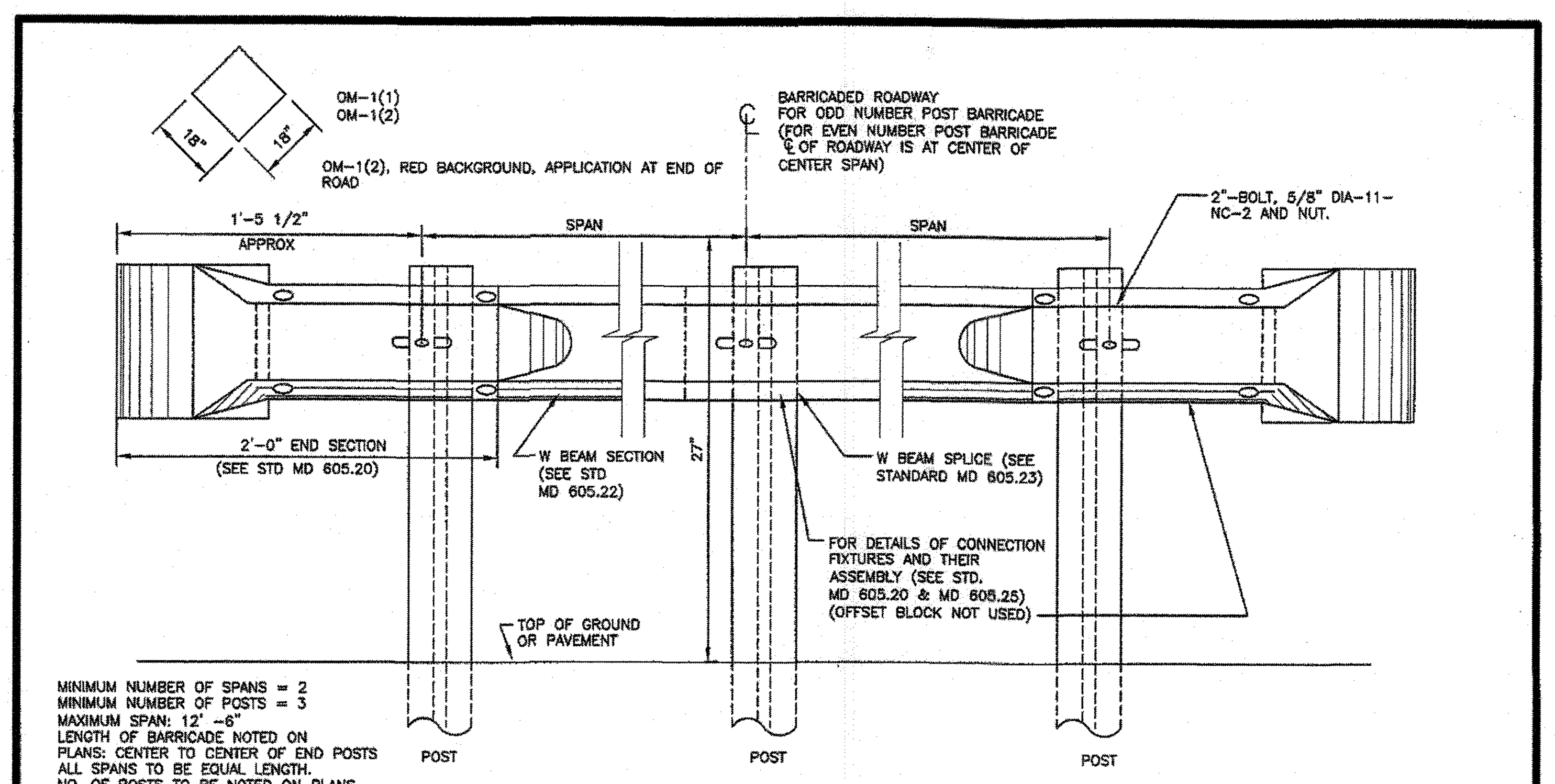
\\balsrv05\2017\17206_APL14\CADD\Plans\C-205 Layout Profiles.dwg Mar 27, 2018 12:00pm cmitchell

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR) / PAVEMENT MATERIAL (INCHES)	3 TO <5	5 TO <7	≥ 7	3 TO <5	5 TO <7	≥ 7
			MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-1	PARKING BAYS: RESIDENTIAL AND NON-RESIDENTIAL; PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE (NA)	NA	NA	NA	NA	NA	NA
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	3.0	2.5
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.0	4.0	4.0	4.0
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY; LOCAL ROADS: ACESS PLACE, ACCESS STREET; CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0
P-3	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY; LOCAL ROADS: ACCESS PLACE, ACCESS STREET; CUL-DE-SACS: NON-RESIDENTIAL; MINOR COLLECTORS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	3.0	3.0	3.0	4.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	10.0	6.0	3.0	6.0	6.0	6.0
P-4	MINOR COLLECTORS: NON-RESIDENTIAL; MAJOR COLLECTORS	HMA SUPERPAVE FINAL SURFACE 12.5 MM, PG 64-22, LEVEL 2 (LOW ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		HMA SUPERPAVE INTERMEDIATE SURFACE 12.5 MM, PG 64-22, LEVEL 2 (LOW ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 2 (LOW ESAL)	4.0	4.0	3.0	6.0	5.0	3.0
		GRADED AGGREGATE BASE (GAB)	13.0	7.0	4.0	6.0	6.0	6.0

Notes:
1) HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
2) HMA SUPERPAVE LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0" MIN TO 4.0" MAX), 12.5 MM SURFACE (1.5" MIN TO 3.0" MAX), AND 9.5 MM SURFACE (1.0" MIN TO 2.0" MAX)
3) GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 6" MAX COMPACTED THICKNESS LAYERS.
4) THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSTANTIAL COMPLETION INSPECTION AND BOND REDUCTION.
5) IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APRONS WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE ASPHALT LAYER.
6) THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CRB VALUE FOR EACH ROADWAY

HMA SUPERPAVE FINAL SURFACE
HMA SUPERPAVE INTERMEDIATE SURFACE
HMA SUPERPAVE BASE
GRADED AGGREGATE BASE (GAB)

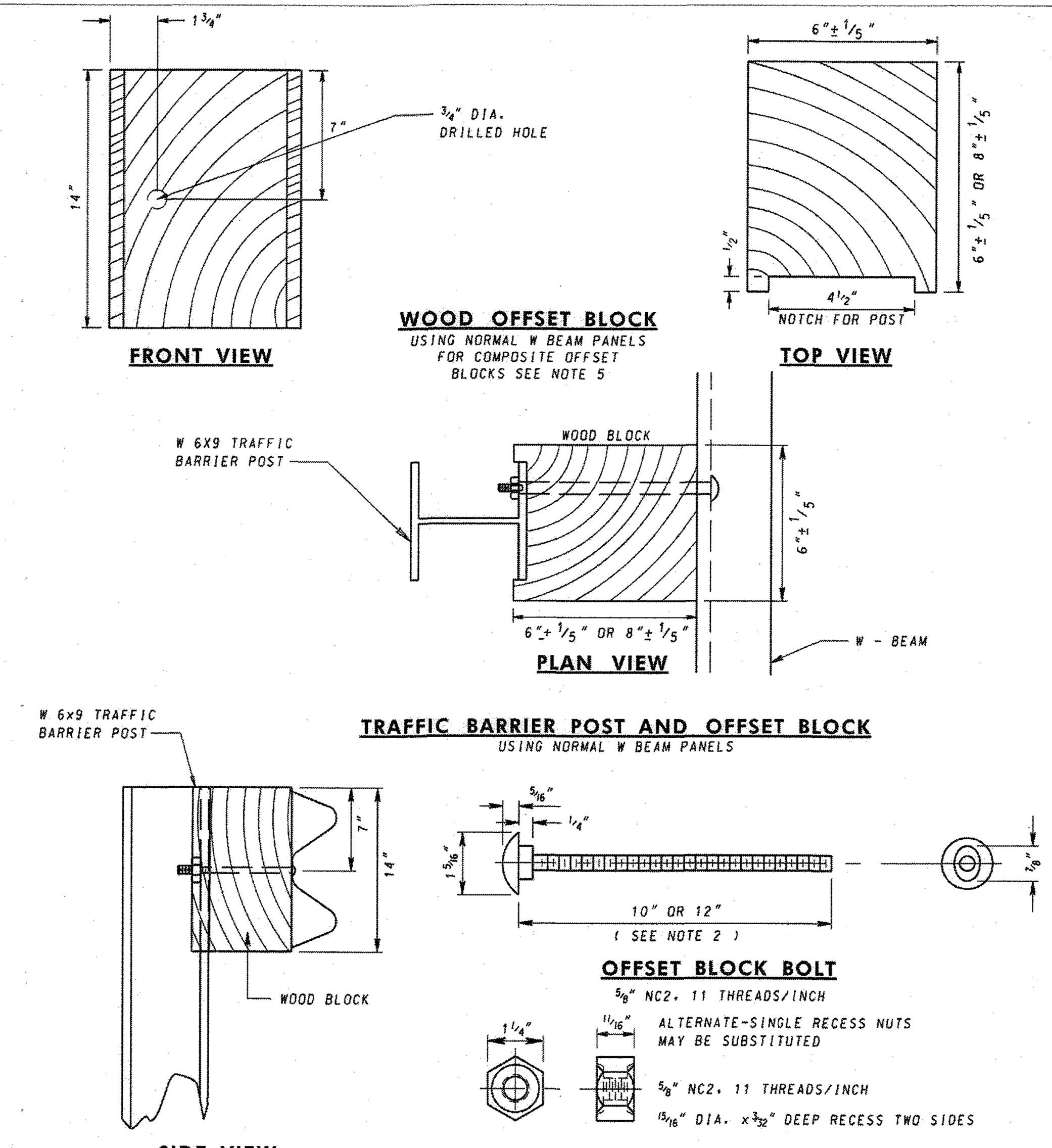
Revised / Revised 5/7/2007 / Approved — Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering — PAVING SECTIONS P-1 to P-4 — Detail R-2.01



MINIMUM NUMBER OF SPANS = 2
MINIMUM NUMBER OF POSTS = 3
MAXIMUM SPAN: 12' -6"
LENGTH OF BARRICADE NOTED ON PLANS: CENTER TO CENTER OF END POSTS
ALL SPANS TO BE EQUAL LENGTH.
NO. OF POSTS TO BE NOTED ON PLANS.
ALL POSTS W6X9. 6'-0" LONG (SEE STD MD 605.10)

NOTE:
1. INSTALL SIGNS OM-1(2) " END OF ROAD MARKER" BEHIND BARRICADE. SIGNS TO BE INSTALLED 12' APART. MINIMUM 2 SIGNS PER LOCATION

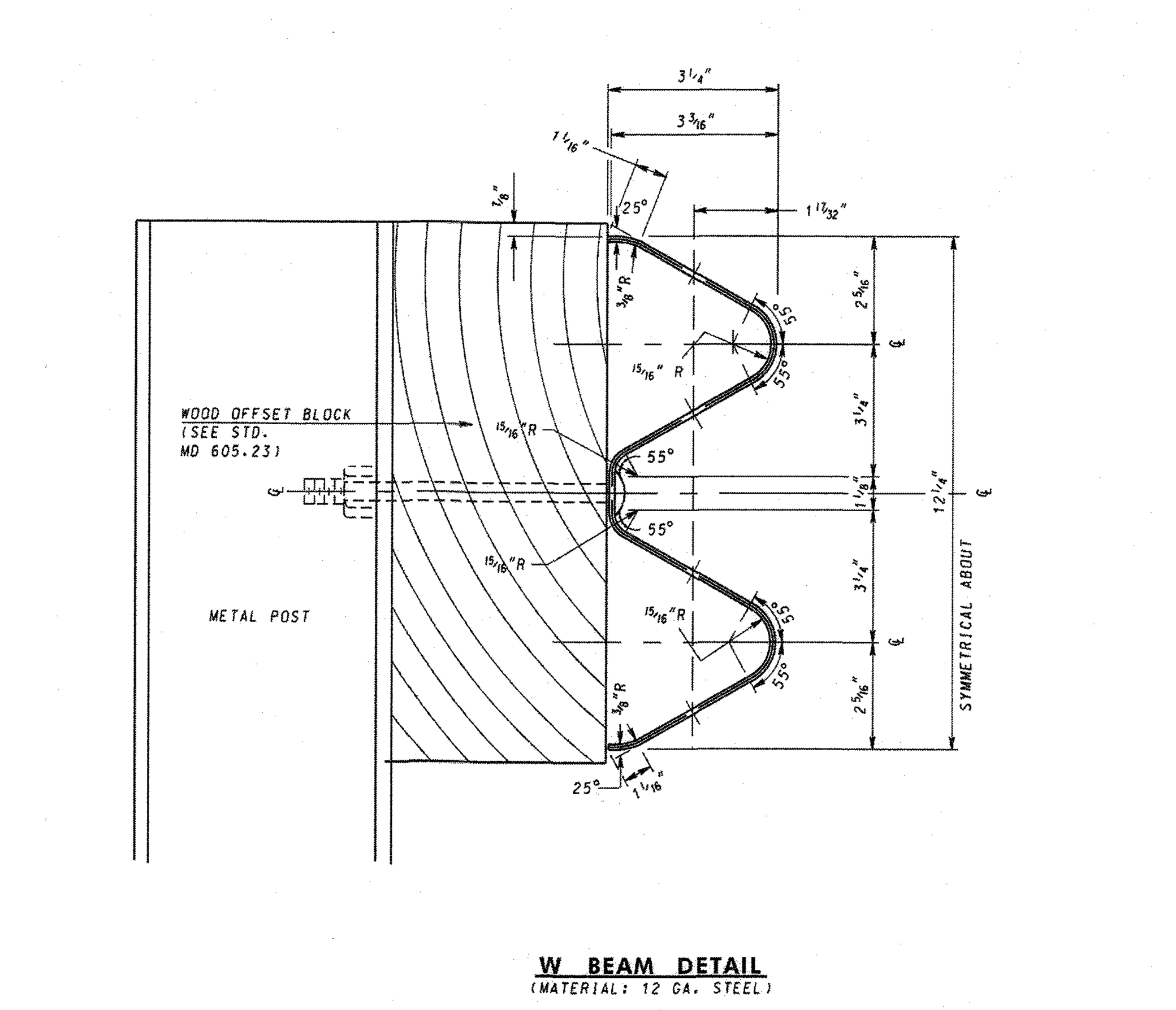
Revised / Revised 5/7/2007 / Approved — Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering — DEAD END BARRICADE Type C — Detail R-5.11



NOTES
1. WOOD OFFSET BLOCKS 8x6x14 INCHES TO BE USED ON ALL NEW CONSTRUCTION AND WHEN THE EXISTING TRAFFIC BARRIER WITH METAL OFFSET BLOCKS IS TO BE REMOVED AND RESET.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF 1/2" PROTRUSION BEYOND NUT.
3. WOOD BLOCKS FOR THRIE BEAM PANELS SHALL BE 8x6x22 1/2 INCHES AND NOTCHED AS SHOWN IN THE TOP VIEW. TWO BOLTS ARE REQUIRED FOR ATTACHMENT TO THE POSTS.
4. THE 6x6x14 INCH WOOD OFFSET BLOCKS ARE TO BE USED FOR REPAIR WORK ONLY.
5. WHEN DIRECTED BY THE ENGINEER OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS, COMPOSITE OFFSET BLOCKS THAT ARE APPROVED BY THE ADMINISTRATION CAN BE USED IN LIEU OF THE WOOD BLOCKS. FOR THE APPROVED SUBSTITUTES LIST SEE SHEET 1 OF 1 APPROVED SUBSTITUTES FOR WOOD OFFSET BLOCKS.

SPECIFICATION 605 — CATEGORY CODE ITEMS — APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
APPROVAL • SHA REVISIONS: APPROVAL 11-10-99, REVISED 4-17-06 — APPROVAL • FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 7-2-99, REVISED 4-5-06

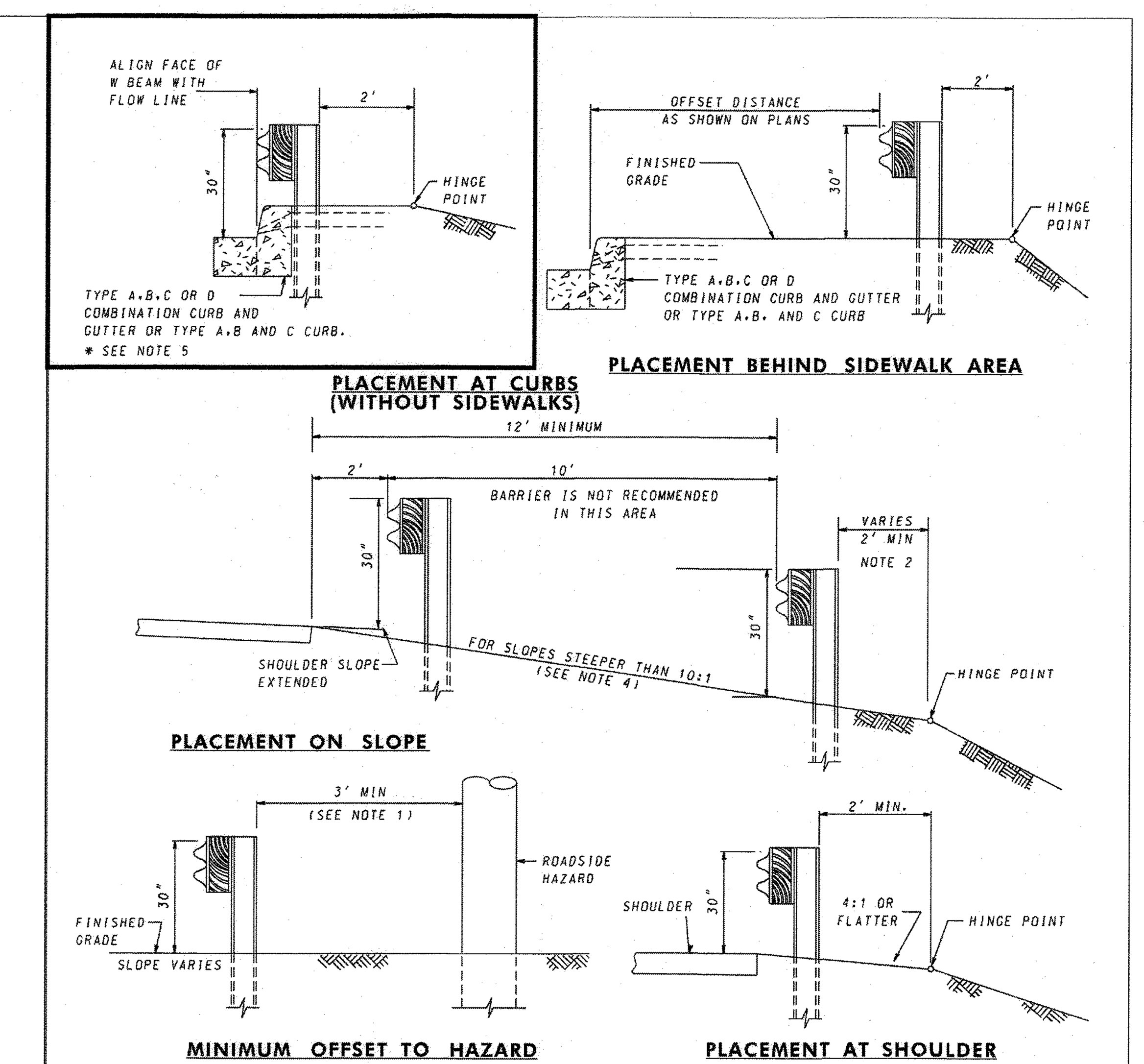
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK
STANDARD NO. MD 605.21



NOTES
1. RAIL ELEMENTS ARE FURNISHED SHOP CURVED, CONCAVE OR CONVEX TO RADII BETWEEN 20 FT. & 150 FT.
2. BARRIER SECTIONS SHALL BE 12'-6" OR 25'-0" LENGTHS.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

SPECIFICATION 605 — CATEGORY CODE ITEMS — APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
APPROVAL • SHA REVISIONS: APPROVAL 3-24-69, REVISED 4-17-06 — APPROVAL • FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 3-4-69, REVISED 4-5-06

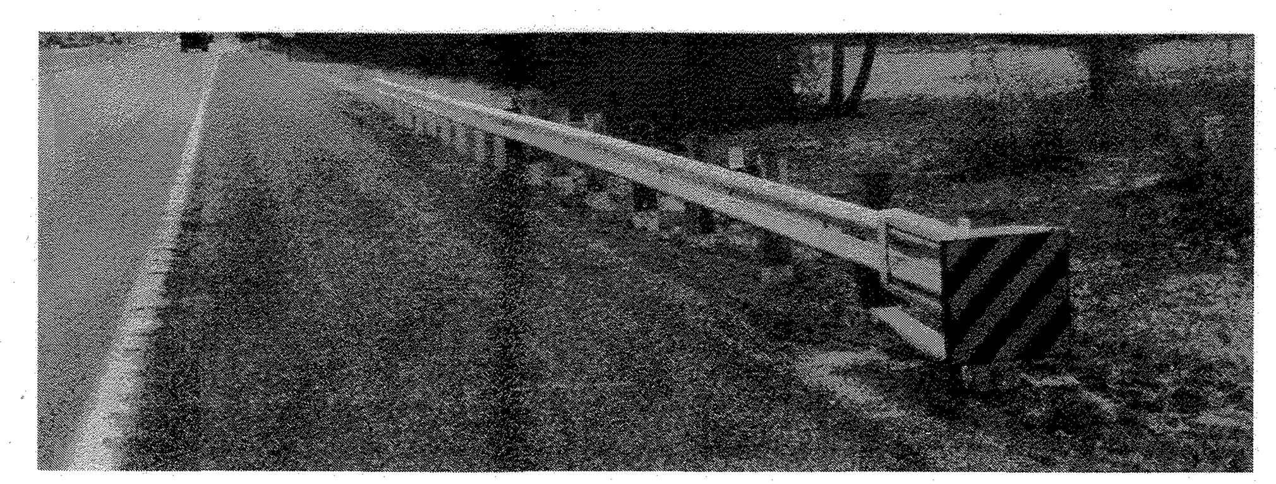
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM SINGLE FACE
STANDARD NO. MD 605.22

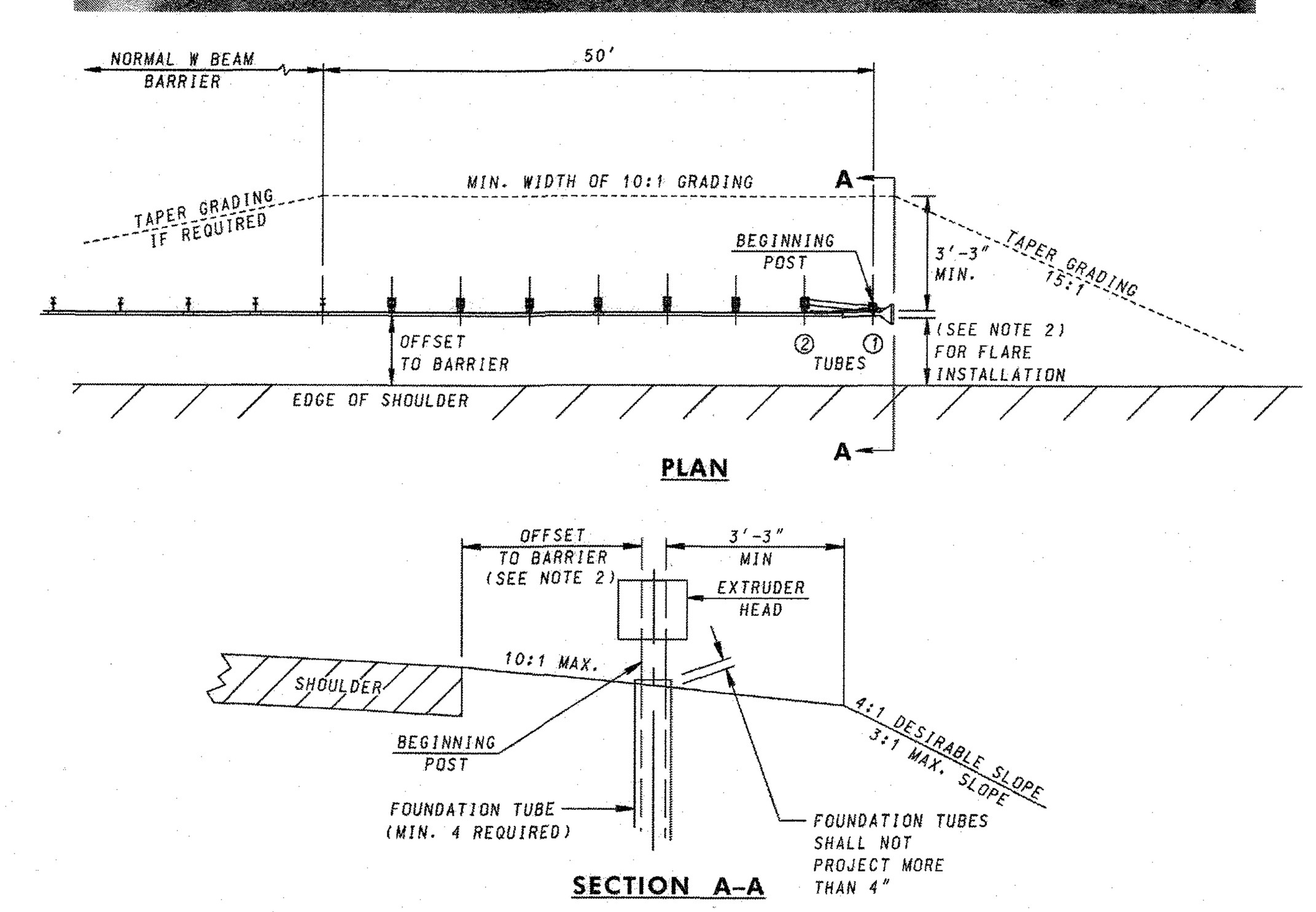


NOTES
1. THE MINIMUM DIMENSION SHOWN CAN BE REDUCED BY STIFFENING THE TRAFFIC BARRIER SYSTEM.
2. 8'-0" POSTS ARE REQUIRED.
3. WHEN THE FACE OF THE TRAFFIC BARRIER IS MORE THAN 2' FROM THE SHOULDER EDGE THE HEIGHT MEASURED FROM THE EXISTING GROUND SHALL BE 30".
4. WHEN SLOPE IS STEEPER THAN 6:1, THE FACE OF THE BARRIER MUST BE ALIGNED WITH THE EDGE OF SHOULDER.
5. STIFFEN THE TRAFFIC BARRIER W BEAM WHEN TYPE 'A' or 'B' COMBINATION CURB/GUTTER OR TYPE 'A' or 'B' CURB IS USED AT POSTED SPEEDS 45 MPH OR GREATER.

SPECIFICATION 605 — CATEGORY CODE ITEMS — APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
APPROVAL • SHA REVISIONS: APPROVAL 6-4-84, REVISED 4-5-13 — APPROVAL • FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 8-1-94, REVISED 11-17-10

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM PLACEMENT DETAILS
STANDARD NO. MD 605.31

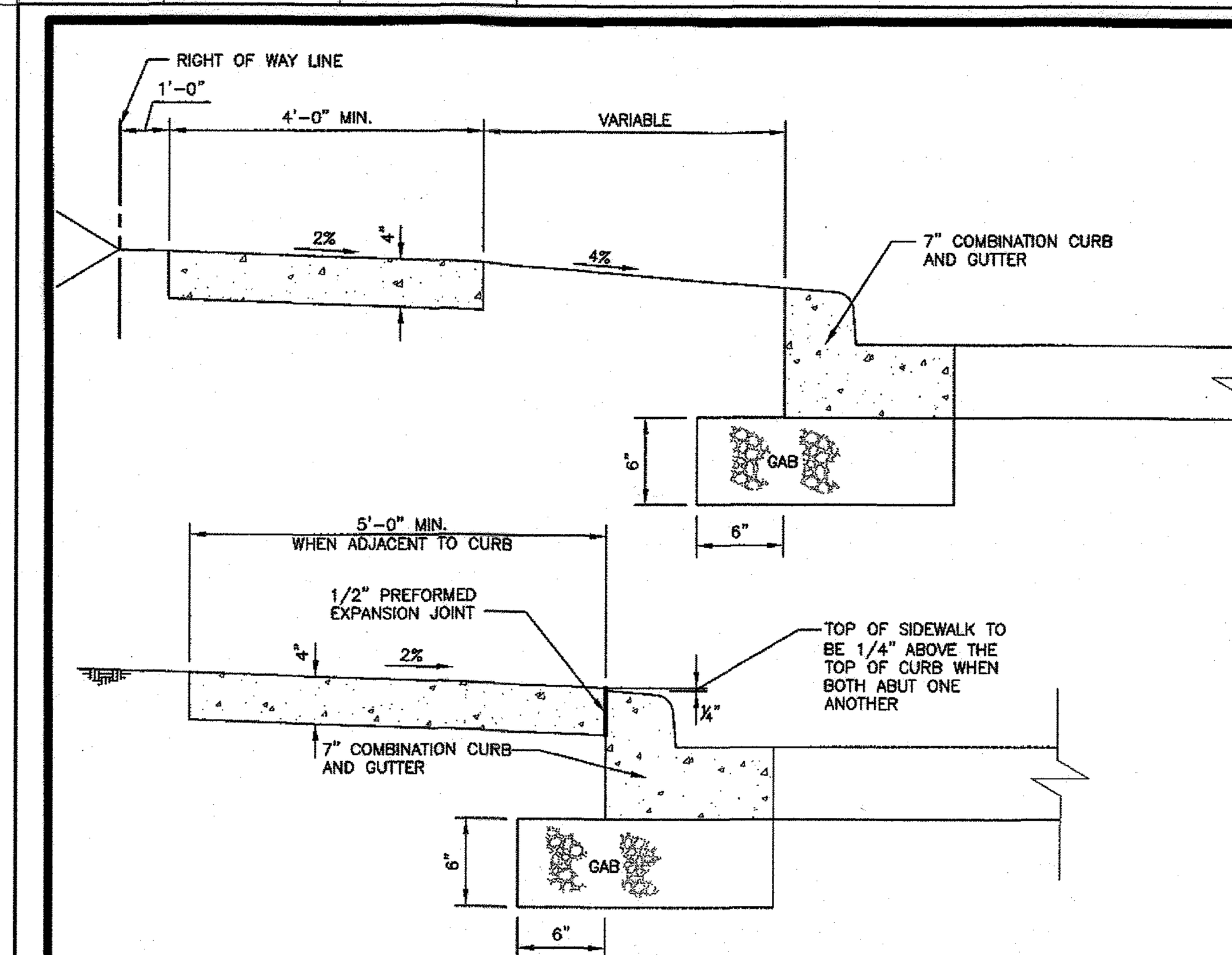




NOTES APPLICABLE TO ALL TYPE C TERMINALS
1. 6:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12 FT. OR MORE FROM THE OUTSIDE EDGE OF SHOULDER.
2. WHEN THE TRAFFIC BARRIER POST IS PLACED LESS THAN 4' FROM THE EDGE OF SHOULDER/PAVEMENT THE END TREATMENT SHALL BE FLARED AT A RATE OF 50:1
3. GRADING SHALL BE AS SHOWN ABOVE.
4. SYSTEM MUST BE INSTALLED AT 30 INCHES.
5. END TREATMENT DELINEATION SHALL BE PLACED IN ACCORDANCE WITH STD. MD 605.02-01.

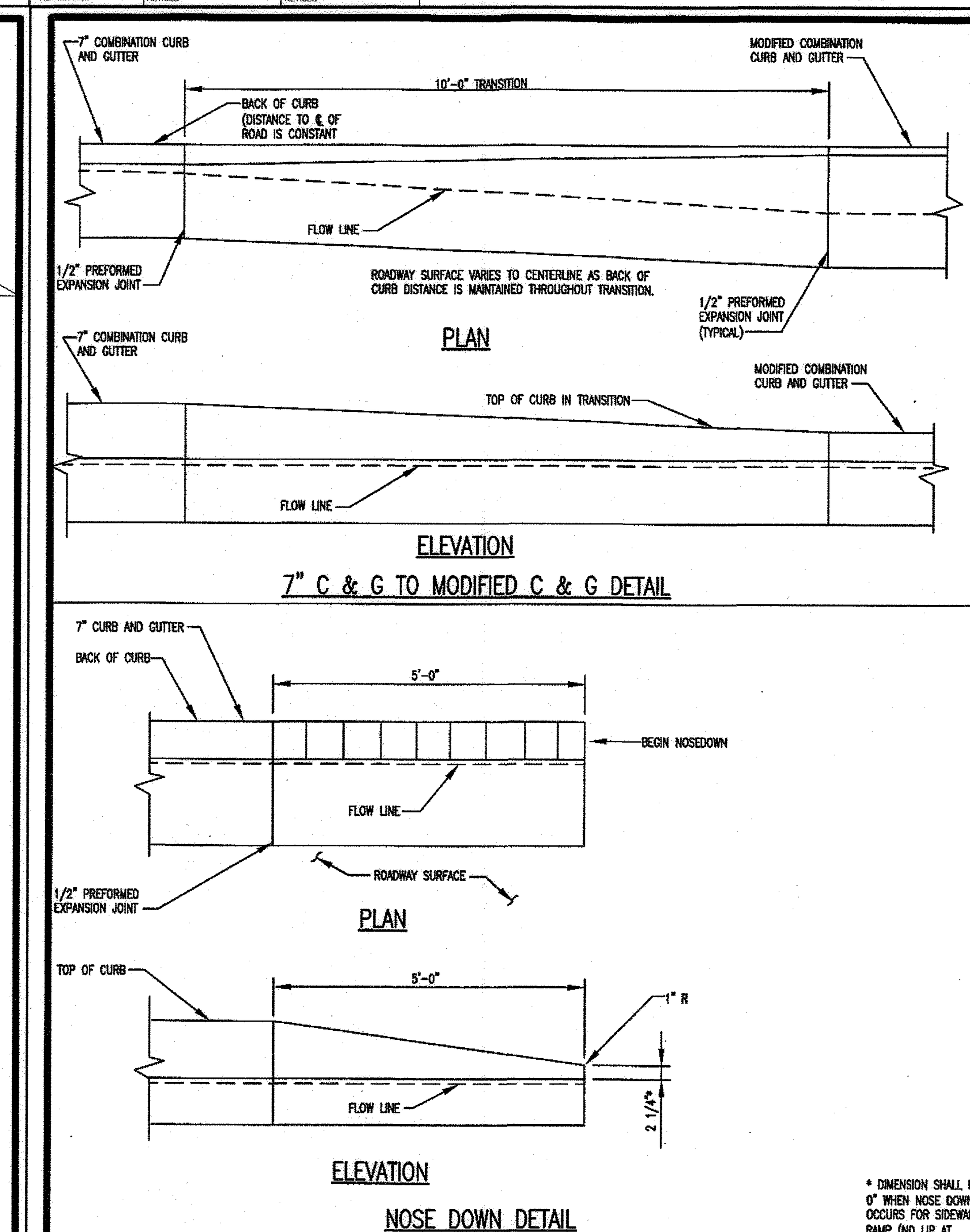
SPECIFICATION 605 — CATEGORY CODE ITEMS — APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
APPROVAL • SHA REVISIONS: APPROVAL 11-10-99, REVISED 12-17-12, REVISED 1-10-17 — APPROVAL • FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 7-2-99, REVISED 10-25-06, REVISED 12-1-16

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE C TRAFFIC BARRIER END TREATMENT
STANDARD NO. MD 605.03



NOTES:
1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. CONCRETE TO BE MIX NO.3.
5. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
6. ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
7. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5'-0" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS MAY BE 4'-0" WIDE.
8. SIDEWALK LOCATED 2' OR MORE FROM CURB MAY BE 4'-0" IN WIDTH WITH A 5'x5' PAVED SECTION PLACED 200' APART.
9. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).
10. CONCRETE SIDEWALK TO BE INSTALLED ON 3" GAB,

Revised / Revised 5/7/2007 / Approved — Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering — Concrete Sidewalk — Detail R-3.05



Revised / Revised 5/7/2007 / Approved — Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering — CURB AND GUTTER 7" Transition to Modified & Nose Down — Detail R-3.02

No As-Built Information in this sheet. 5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE DETAILS AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 13 OF 72
GREEN BUILDING
SDP-18-035

C-210
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-210 Site Details.dwg Mar 27, 2018 12:00pm cmitchell

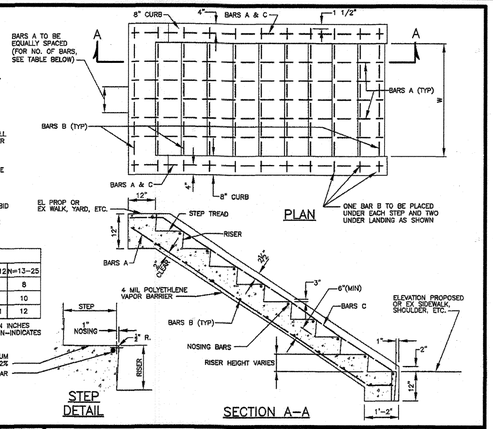
NOTES:

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 G-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 60/N WITH A MIN SPACING OF 6 IN. N=INDICATES NUMBER OF STEPS EXCLUSIVE OF LANDING.

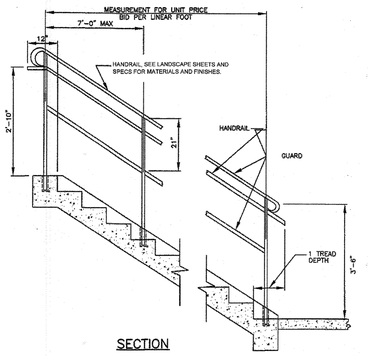
STAIRWAYS		
SLOPE	RISER	STEP
1:1.57	7" MAX	11"
2:1	6"	12"
4:1	4" MIN	16"



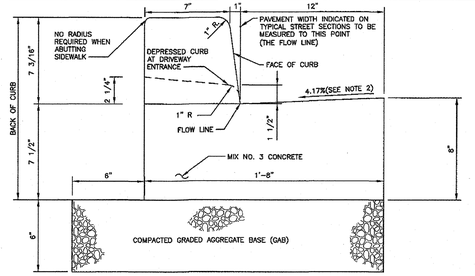
Revised	Howard County, Maryland Department of Public Works	Concrete Stairs	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		G-7.01

NOTES:

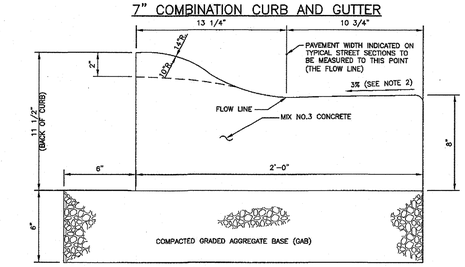
1. UNLESS OTHERWISE NOTED, PAINTED RAILINGS SHALL BE FURNISHED.
2. RAILING AND POSTS TO BE PAINTED SHALL CONFORM TO ASTM A120 STANDARD WEIGHT.
3. RAILING AND POSTS TO BE GALVANIZED SHALL CONFORM TO ASTM A441 SEE SPECIFICATIONS.
4. UNLESS OTHERWISE NOTED, RAILINGS SHALL BE FURNISHED FOR BOTH SIDES OF 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)



Revised	Howard County, Maryland Department of Public Works	Concrete Stairs Pipe Railing	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		G-7.02



7" COMBINATION CURB AND GUTTER

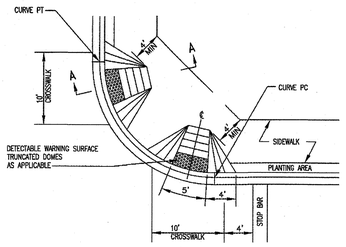


MODIFIED COMBINATION CURB AND GUTTER

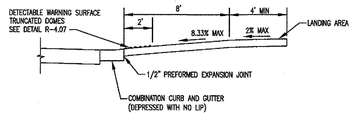
NOTE:

1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND 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.
3. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
4. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

Revised	Howard County, Maryland Department of Public Works	CURB AND GUTTER 7" & Modified	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		R-3.01

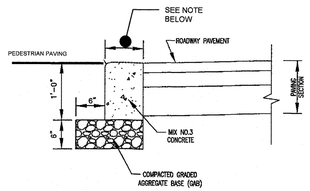


PLAN



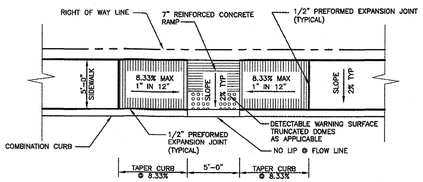
SECTION A-A

Revised	Howard County, Maryland Department of Public Works	SIDEWALK RAMP Type B Dual Ramp	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		R-4.03

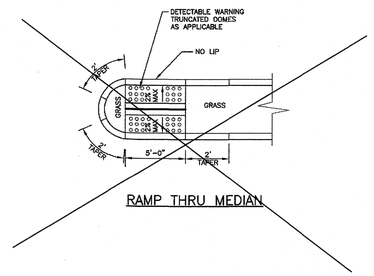


NOTES:
MATCH WIDTH OF ADJACENT CURBING AT EACH LOCATION

Revised	Howard County, Maryland Department of Public Works	Curb Flush	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		R-3.07



RAMP PARALLEL TO CURB



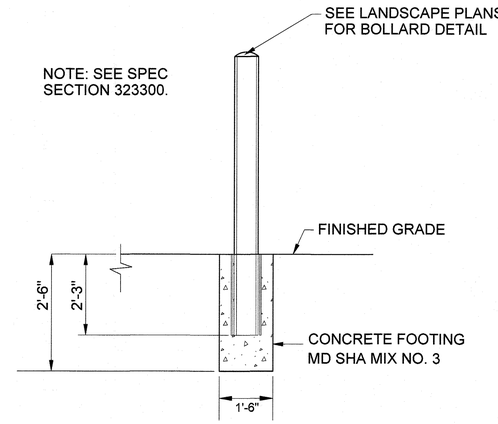
RAMP THRU MEDIAN

NOTES:

1. ALL RAMPS SHALL HAVE DETECTABLE WARNING SURFACES. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.

Revised	Howard County, Maryland Department of Public Works	SIDEWALK RAMP Layout & Grading Parallel to Curb & Thru Median	Detail
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		R-4.06

NOTE: SEE SPEC SECTION 323300.



VEHICULAR BOLLARD FOUNDATION

NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2800 Contact: John d'Epagnier
www.rkk.com

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. 22012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN D'EPAGNIER — REG. NO. 22012 — PROFESSIONAL ENGINEER — 3/29/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 14 OF 72
GREEN BUILDING
SDP-18-035

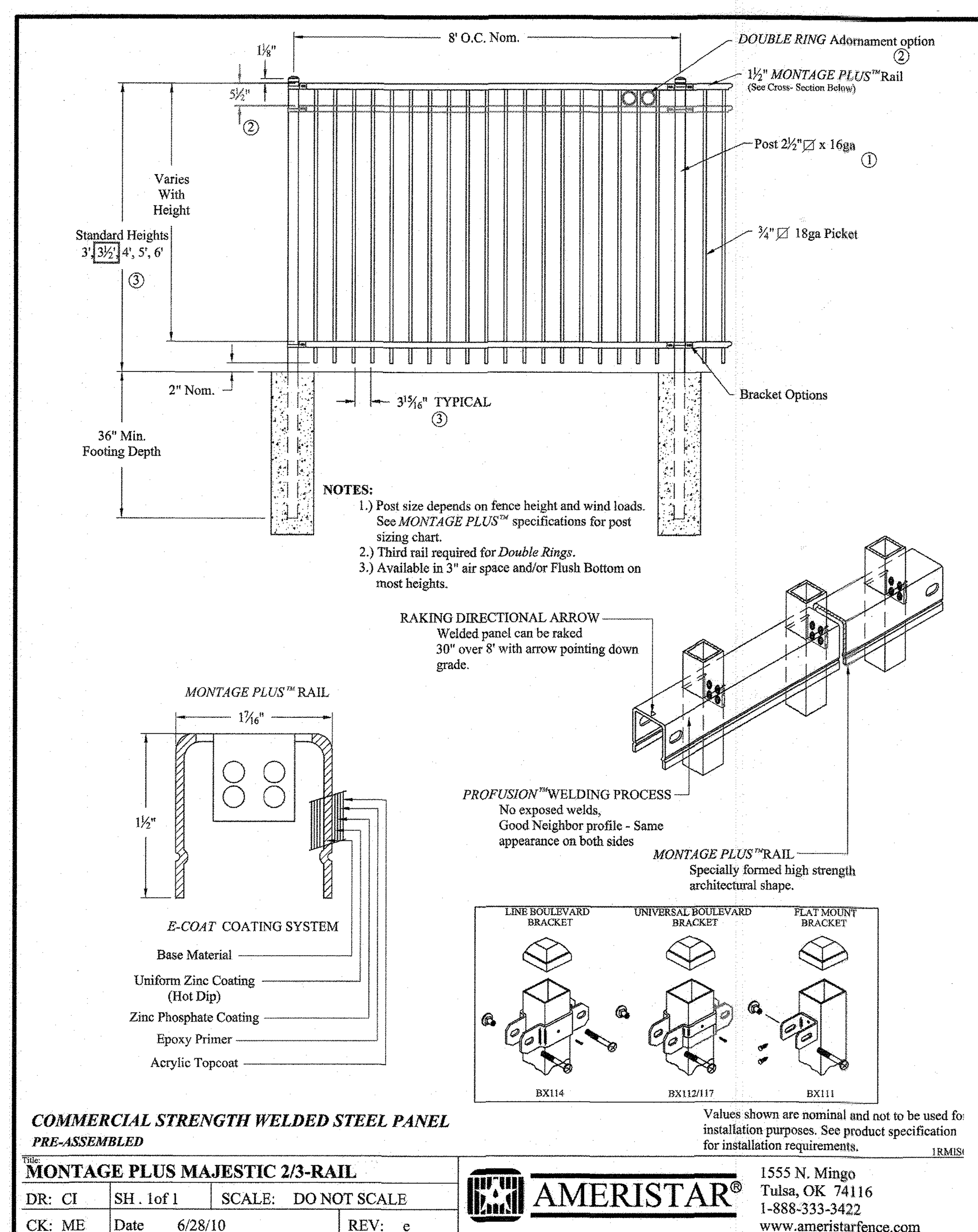
No As-Built Information in this sheet
5/20/2022

C-211

RK&K PROJECT NUMBER 17206

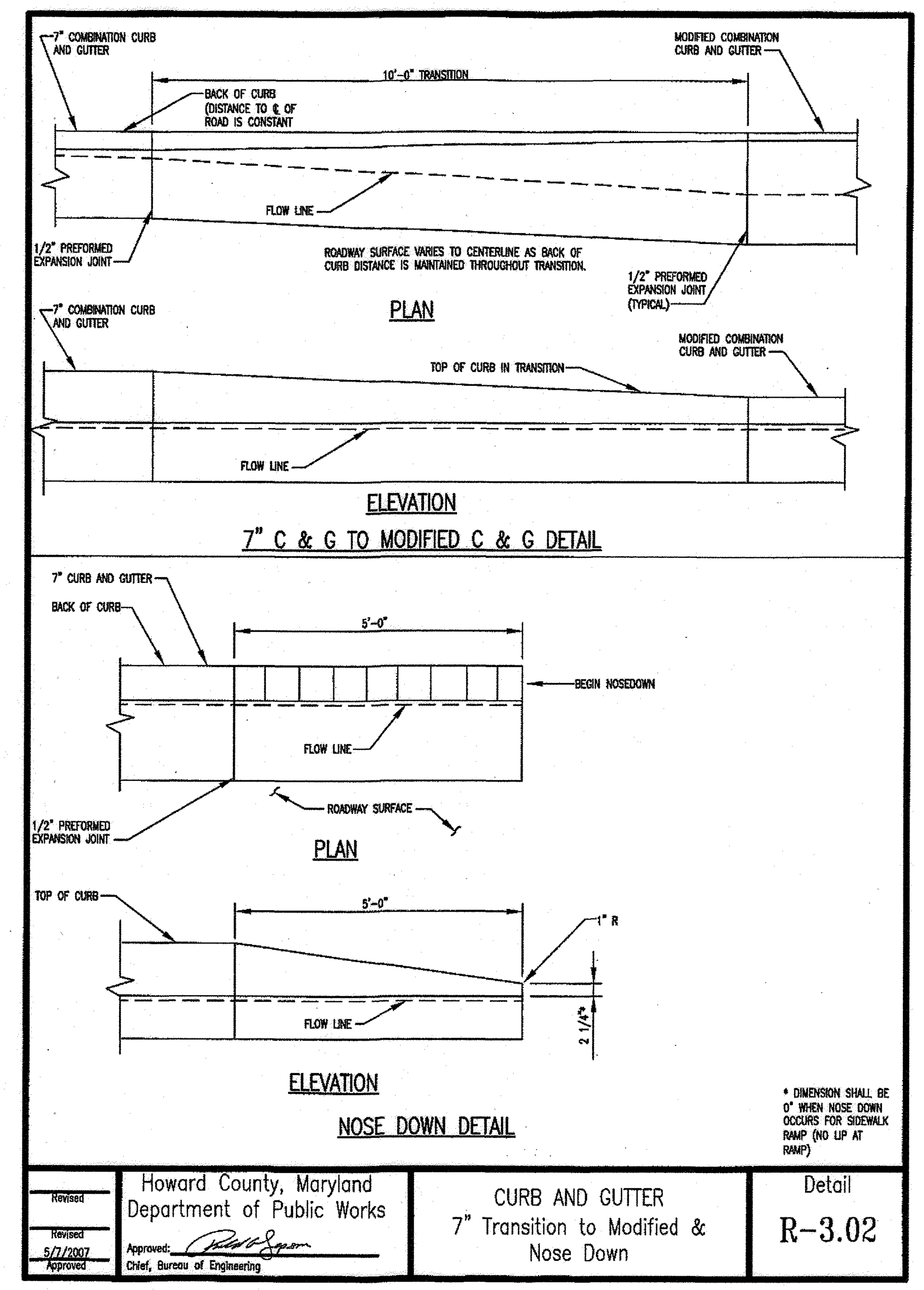
SCALE: As Shown

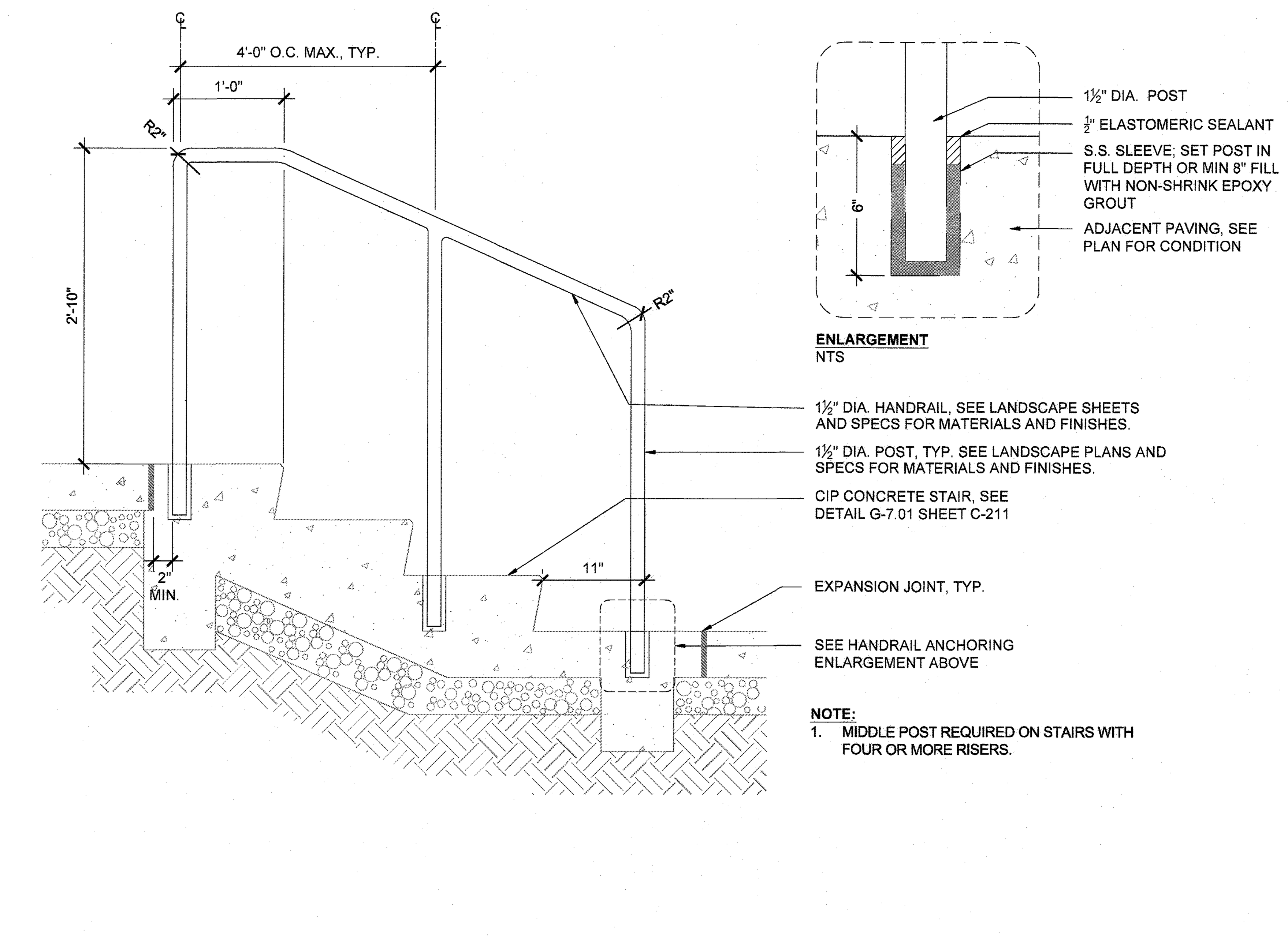
\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-211 Site Details.dwg Mar 27, 2018 12:00pm cmitchell



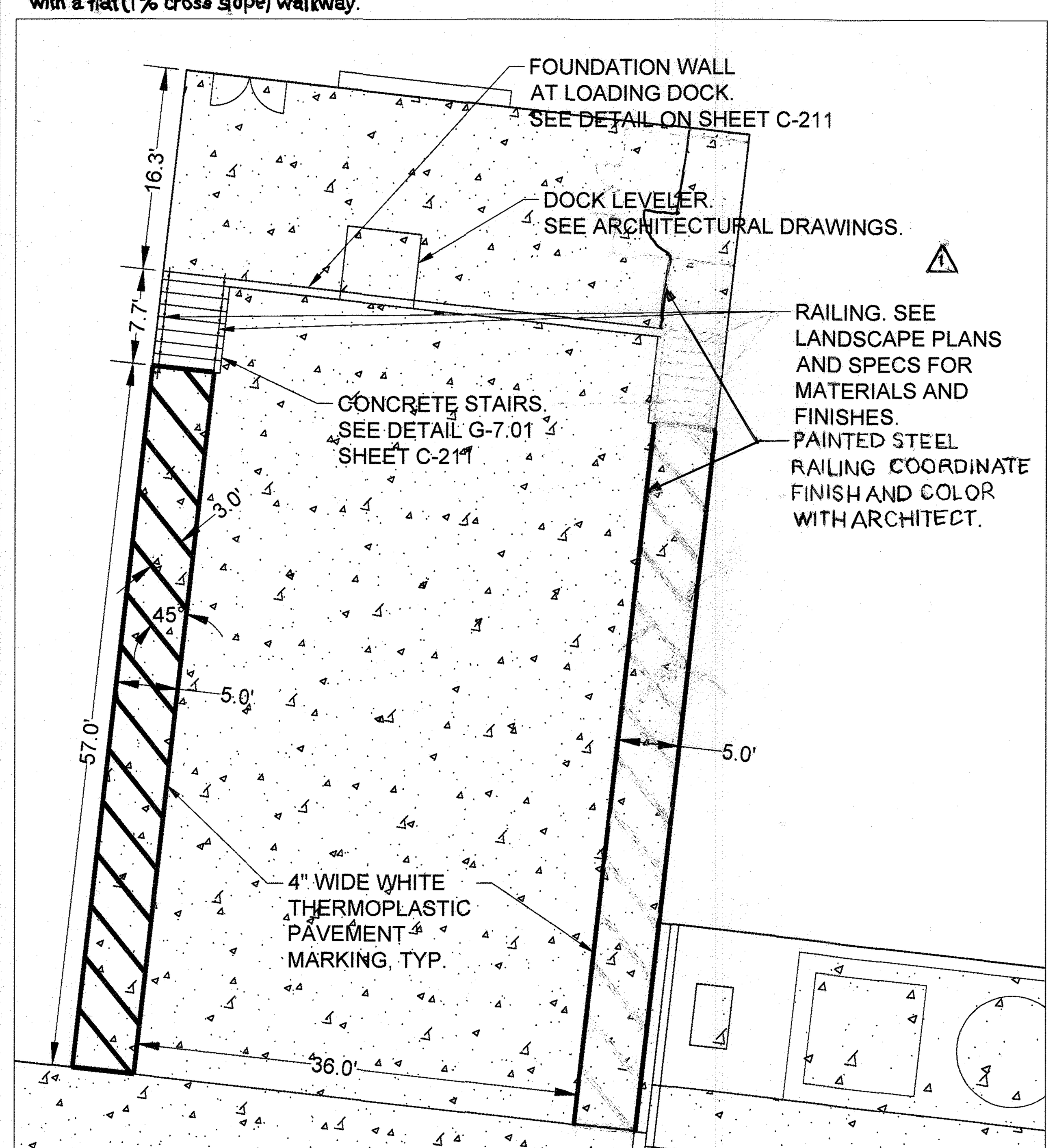
RETAINING WALL STEEL FENCE

Purpose Statement (8/23/19): This red line submission adjusts the configuration at the loading dock to remove one set of stairs and replace them with a flat (1% cross slope) walkway.



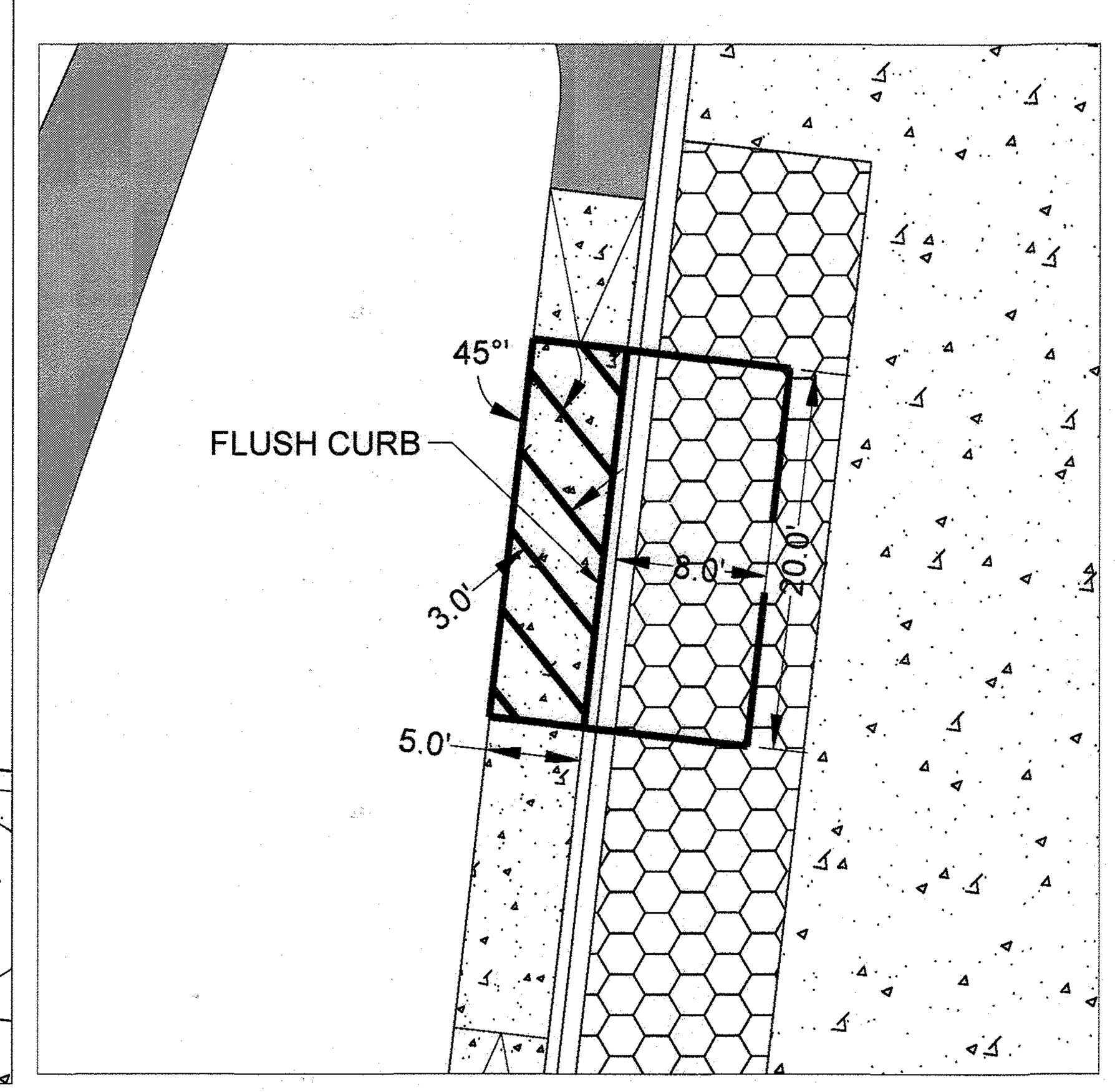


ORNAMENTAL RAILING



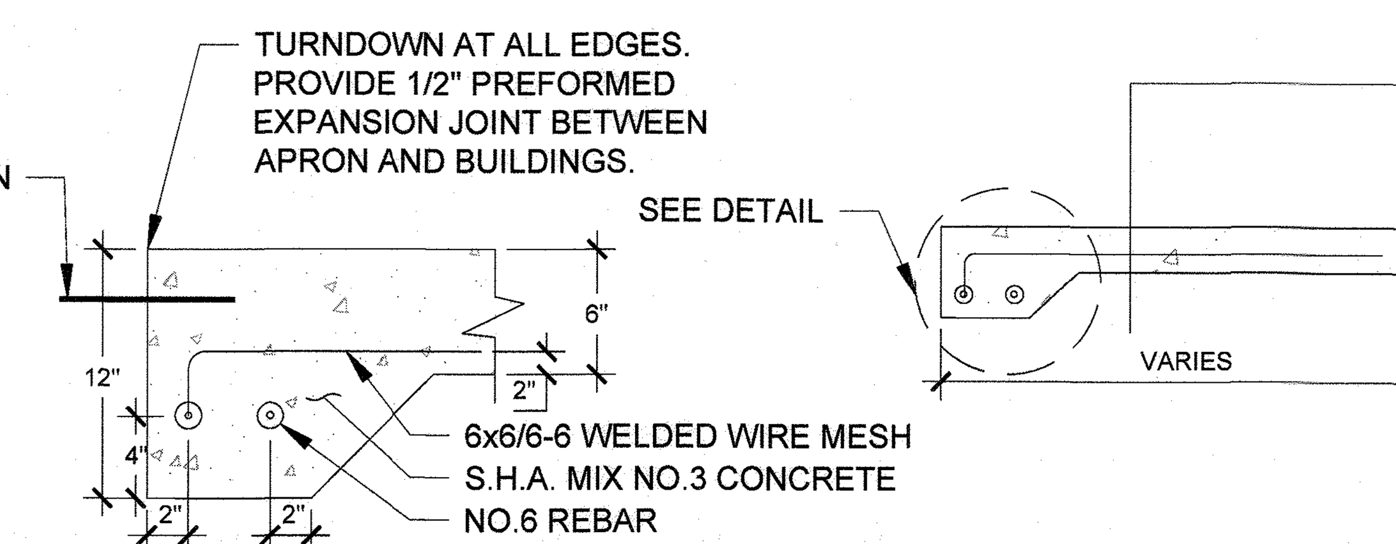
DEPRESSED LOADING DOCK LAYOUT

SCALE: 1" = 10'



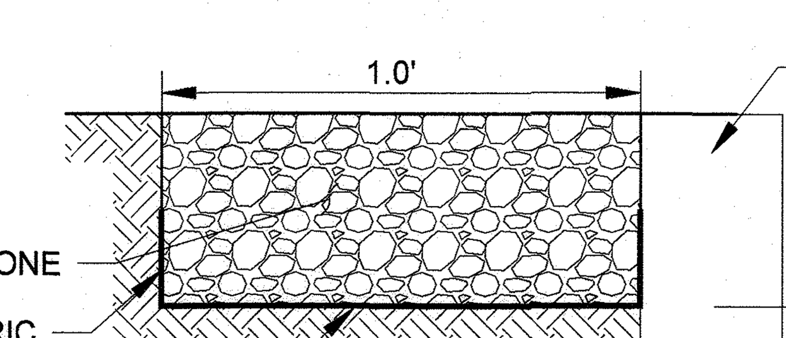
ACCESSIBLE LOADING ZONE LAYOUT

SCALE: 1" = 10'



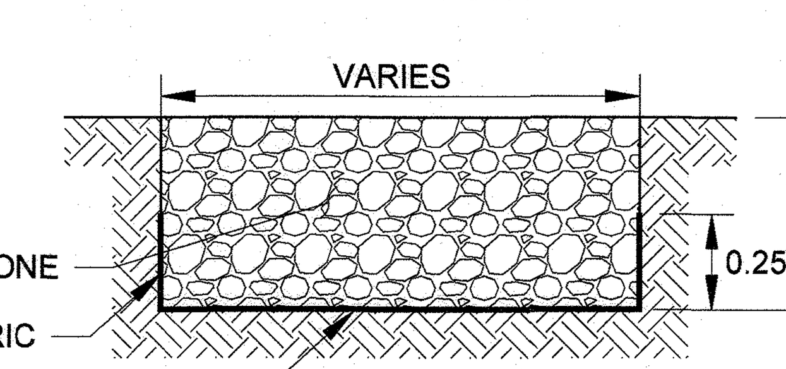
CONCRETE APRON - TYPICAL SECTION

NOT TO SCALE



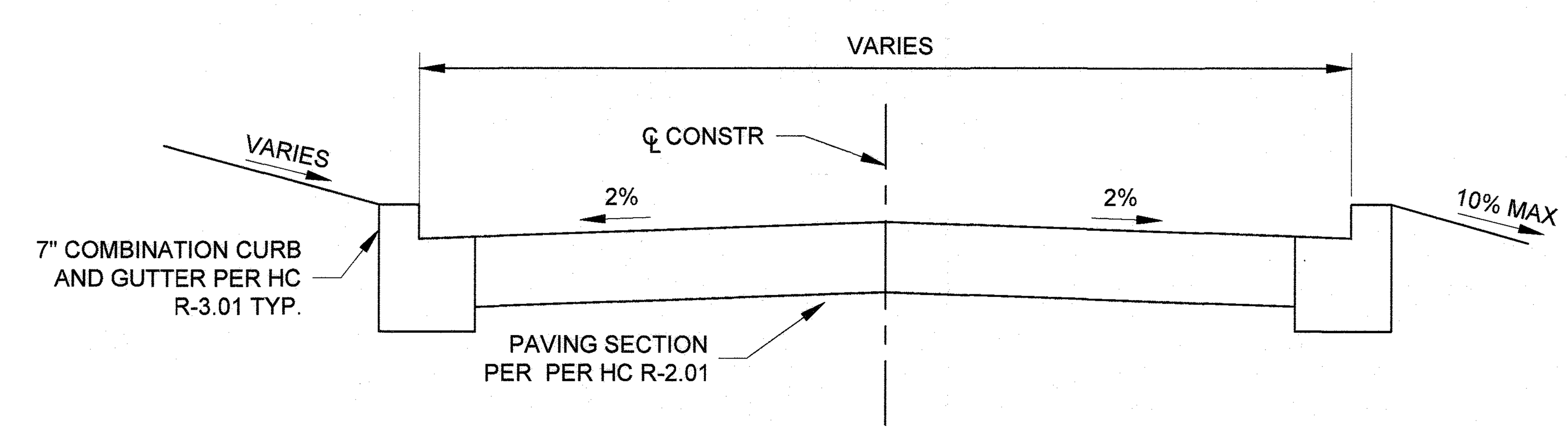
MAINTENANCE STRIP AT RETAINING WALL

NOT TO SCALE



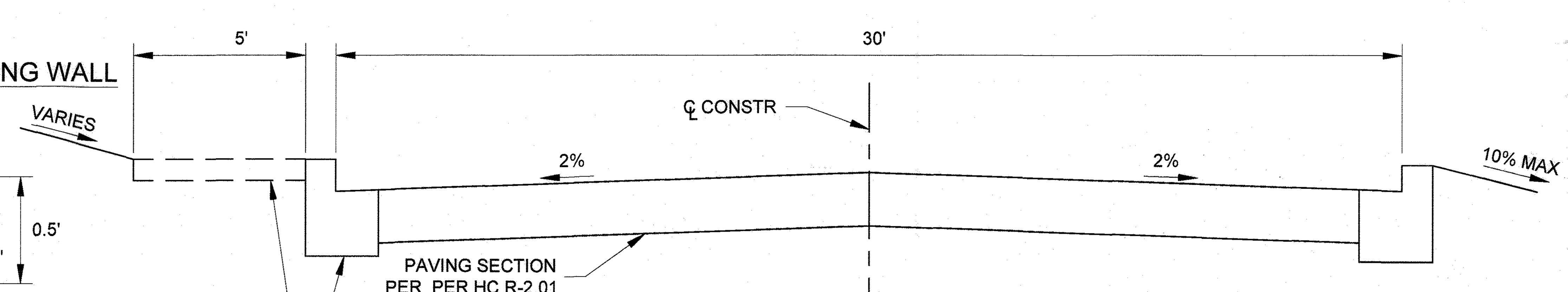
MAINTENANCE YARD STONE

NOT TO SCALE



ACCESS ROAD - TYPICAL SECTION

NOT TO SCALE



POND ROAD - TYPICAL SECTION

NOT TO SCALE

No As-Built Information in this sheet 5/20/2022

C-212

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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www.rkk.com

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DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

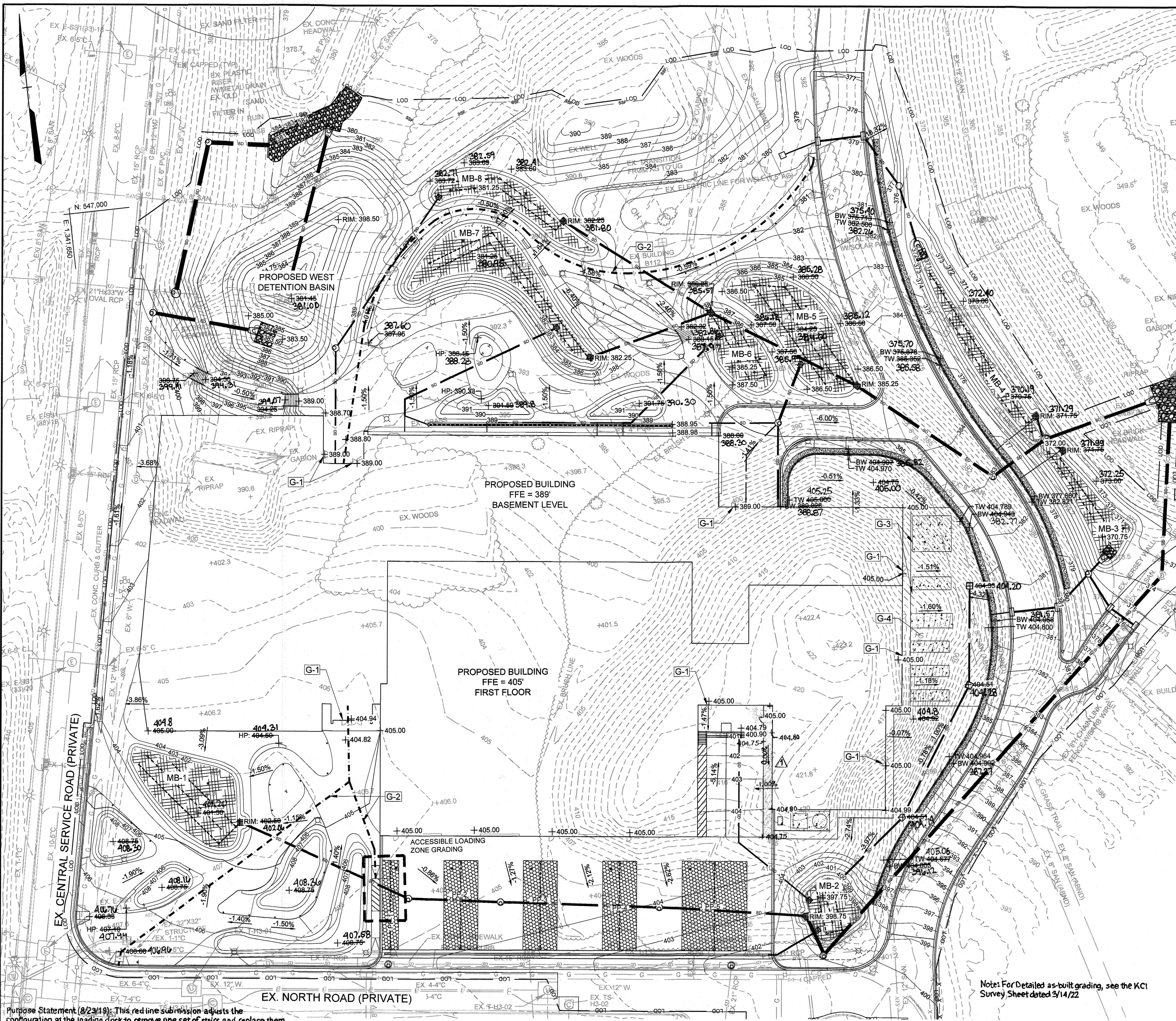
BY	NO.	REVISION	DATE
RK&K	1	LOADING DOCK REVISIONS	8/23/19

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE DETAILS AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 15 OF 72
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\bdsrv05\2017\2017\17206_APL14\CADD\Plans\C-212 Site Details.dwg Mar 27, 2018 12:01pm cmitchell

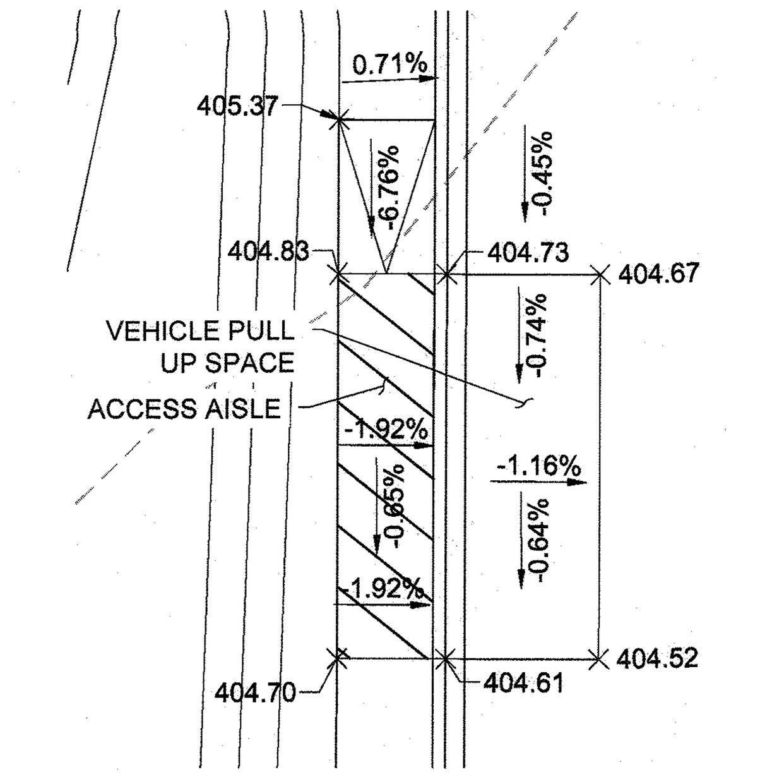


LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING EDGE OF ROAD
- EXISTING STORM DRAIN AND INLET
- EXISTING WATER AND FIRE HYDRANT
- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING COMMUNICATION
- EXISTING UTILITY MANHOLE
- EXISTING LIGHTING
- EXISTING CURB AND GUTTER
- EXISTING TREE LINE
- EXISTING DRIVE
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED PERMEABLE ARTICULATING CONCRETE BLOCK/MAT.
- PROPOSED BIORETENTION FACILITY
- ADA EGRESS PATH
- LIMITS OF DISTURBANCE
- SUPER SILT FENCE
- PROPOSED STORMDRAIN PIPE AND INLET
- STONE ENERGY DISSIPATOR. SEE DETAIL ON SHEET C-510.
- ROCK OUTLET PROTECTION. SEE DETAIL D-4-1-C ON SHEET C-609.
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- +388.00 PROPOSED SPOT ELEVATION
- -1.50% PROPOSED SLOPE

GENERAL NOTES:

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
4. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
5. THE CONTRACTOR SHALL PROVIDE A TWO-FOOT AREA AT 1/2-INCH PER FOOT SLOPE BEHIND ALL PROPOSED CURB, UNLESS OTHERWISE INDICATED.
6. FINISHED GRADES SHALL FALL AWAY FROM EXISTING AND PROPOSED BUILDINGS AT A MINIMUM OF 1/4-INCH PER FOOT FOR VEGETATED AREAS AND A MINIMUM OF 1/8-INCH PER FOOT FOR PAVED AREAS UNLESS OTHERWISE INDICATED.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
8. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
9. ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO INLETS, MANHOLES, HAND HOLES, MECHANICAL LIDS, FIRE HYDRANTS, VALVE BOXES, ETC. WITHIN THE LIMITS OF DISTURBANCE TO BE ADJUSTED TO FINISHED GRADE UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
11. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.



ACCESSIBLE LOADING ZONE GRADING
SCALE: 1" = 10'

GRADING PLAN NOTES

KEY G-1

1. BUILDING ENTRANCE. SEE ARCHITECTURAL PLANS.
2. ADA EGRESS PATH.
3. CONCRETE PAD TYP.
4. MAINTENANCE YARD STONE (GRAVEL AREA). SEE SHEET C-212.

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 49432 — PROFESSIONAL ENGINEER — 5/20/22

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

30 15 0 30 60
SCALE: 1" = 30'

C-301

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE
RK&K	1	LOADING DOCK REVISIONS	8/23/19

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

GRADING PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

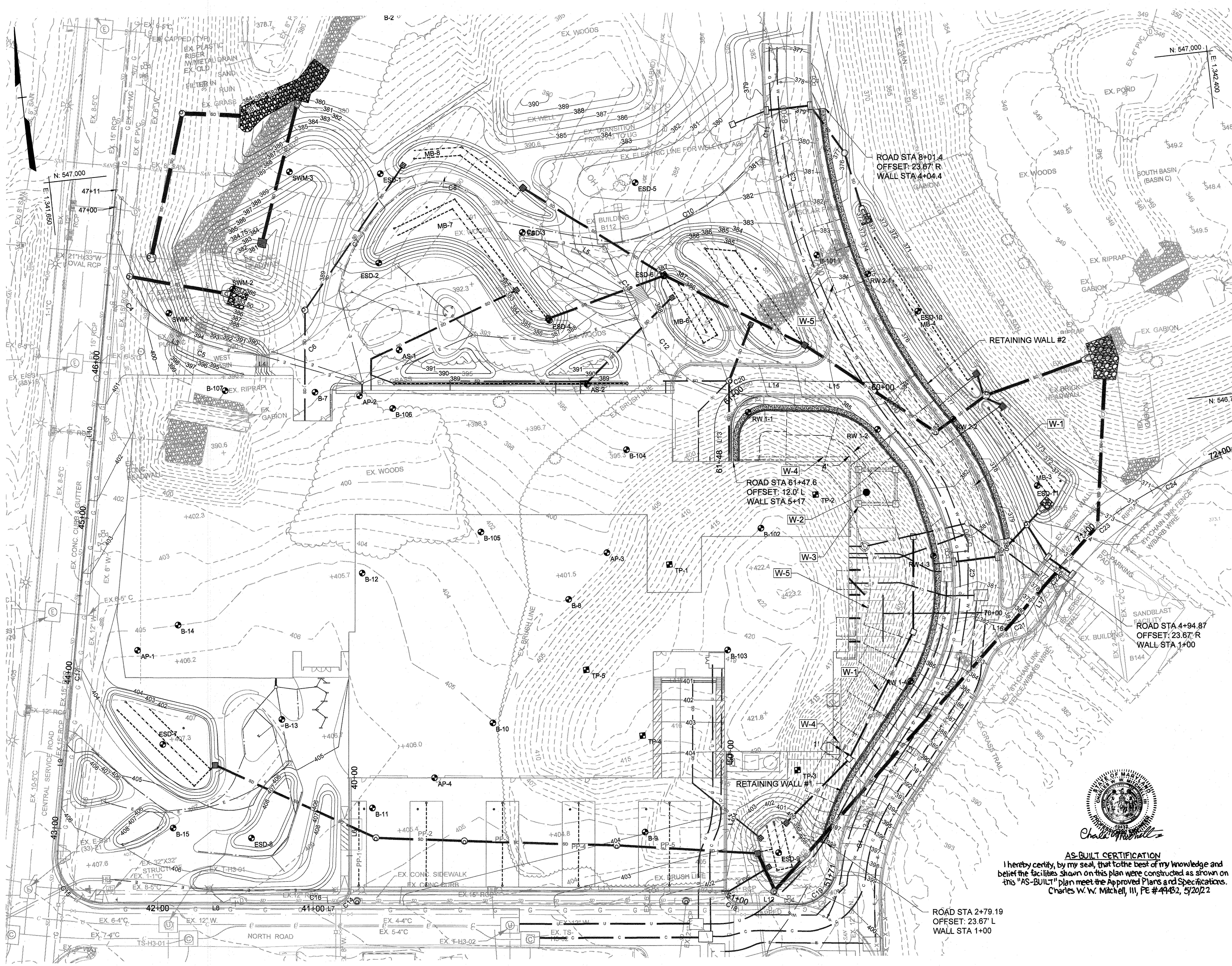
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-301 Grading Plan.dwg Mar 27, 2018 12:02pm cmitchell



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

LEGEND

Symbol	Description
AP-3	BORING
TP-1	TEST PIT
	PROPOSED RETAINING WALL AND FENCE
	MINIMUM LENGTH OF GEO-GRID
	MAINTENANCE SETBACK
	BUILDING FOUNDATION
SD	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN MH & INLETS
S	PROPOSED SANITARY
	PROPOSED SANITARY MH
W	PROPOSED WATER AND VALVE
	PROPOSED FIRE HYDRANT
G	PROPOSED GAS AND VALVE
E	PROPOSED CONDUIT
U	PROPOSED UNCLASSIFIED COMM.
C	PROPOSED CLASSIFIED COMM.

RETAINING WALL NOTES

1. FOR RETAINING WALL NOTES, SEE SHEET C-323.
2. FOR THE UTILITY LEGEND & NOTES, SEE THE UTILITY PLAN, C-401.

GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES.
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
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7. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
8. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.

PLAN NOTES

KEY W-1

1. MINIMUM LIMIT LENGTH (L) OF GEO-GRID. LENGTHS GIVEN ARE MINIMUMS, SEE TYPICAL SECTIONS FOR DETAILS.
2. COOLING TOWER. 100,000 LB. LOAD. SEE MECHANICAL AND STRUCTURAL SHEETS FOR DETAILS. CONTRACTOR TO COORDINATE INSTALLATION WITH RETAINING WALL INSTALLER.
3. LIMITS OF COOLING TOWER FOUNDATION FOR COORDINATION. SEE STRUCTURAL PLANS FOR DETAILS. CONTRACTOR TO COORDINATE FOUNDATION LOCATION WITH PROPRIETARY WALL DESIGNER & INSTALLER.
4. LIMITS OF BUILDING FOUNDATION. SEE STRUCTURAL PLANS FOR DETAILS.
5. LIMIT OF MAINTENANCE SETBACK. DESIGN MANUAL WAIVER SUBMITTED FOR STRUCTURES WITHIN THE SETBACK.

30 15 0 30 60

SCALE: 1" = 30'

C-302

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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RUMMEL, KLEPPER & KAHL, LLP
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DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

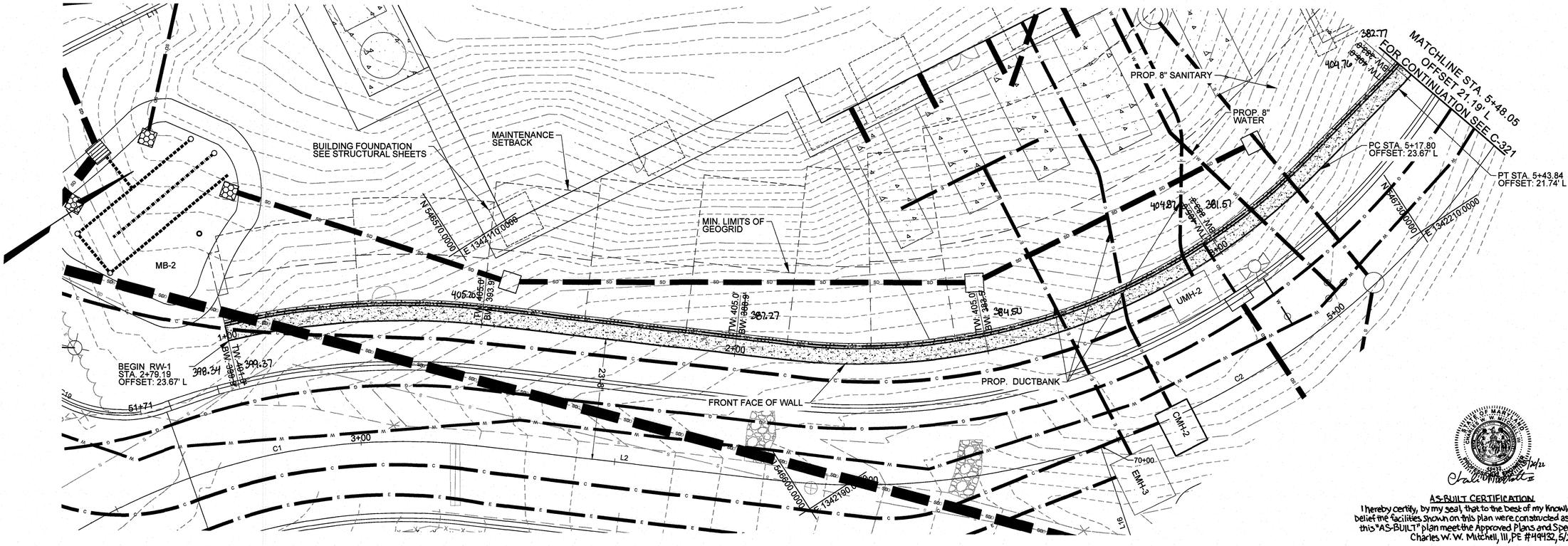
RETAINING WALL PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 17 OF 72
GREEN BUILDING
SDP-18-035

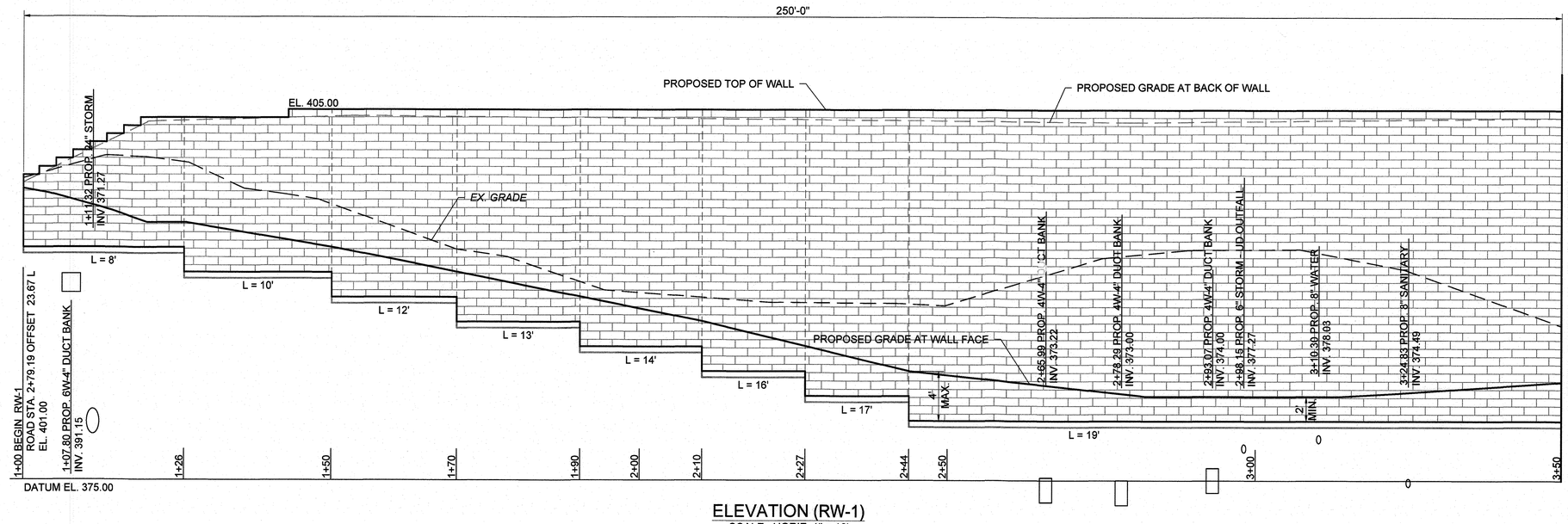
RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-302 Retaining Wall Plan.dwg Mar 27, 2018 12:02pm cmitchell



PLAN (RW-1)
SCALE: 1" = 10'



ELEVATION (RW-1)
SCALE: HORIZ. 1" = 10'
VERT. 1" = 5'

NOTE:
1. FOR WALL SECTIONS, SEE SHEET C-323.
2. LENGTHS FOR GEO-GRID (L) GIVEN ARE MINIMUMS. SEE TYPICAL SECTION FOR DETAILS.

HORIZ. SCALE: 1" = 10'
10 5 0 10 20

VERT. SCALE: 1" = 5'
5 2.5 0 5 10

STATE OF MARYLAND
CHARLES W. W. MITCHELL III
No. 49432
REGISTERED PROFESSIONAL ENGINEER
5/20/22

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications
Charles W. W. Mitchell, III, PE #49432, 5/20/22

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND
JOHN D'EPAGNIER
No. 23012
REGISTERED PROFESSIONAL ENGINEER
3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UPPER RETAINING WALL RW-1
PLAN AND ELEVATION AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

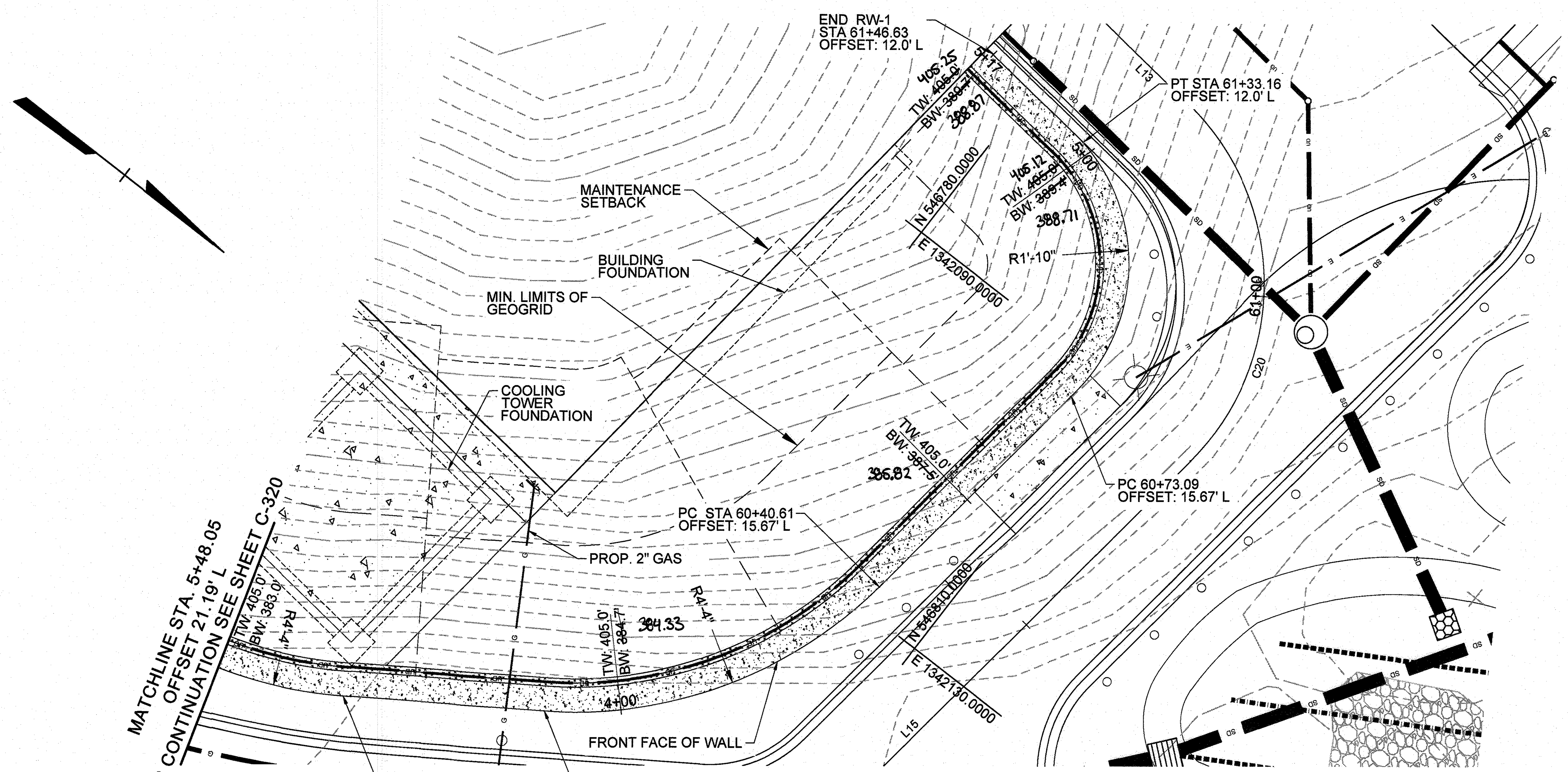
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 18 OF 72

GREEN BUILDING
SDP-18-035

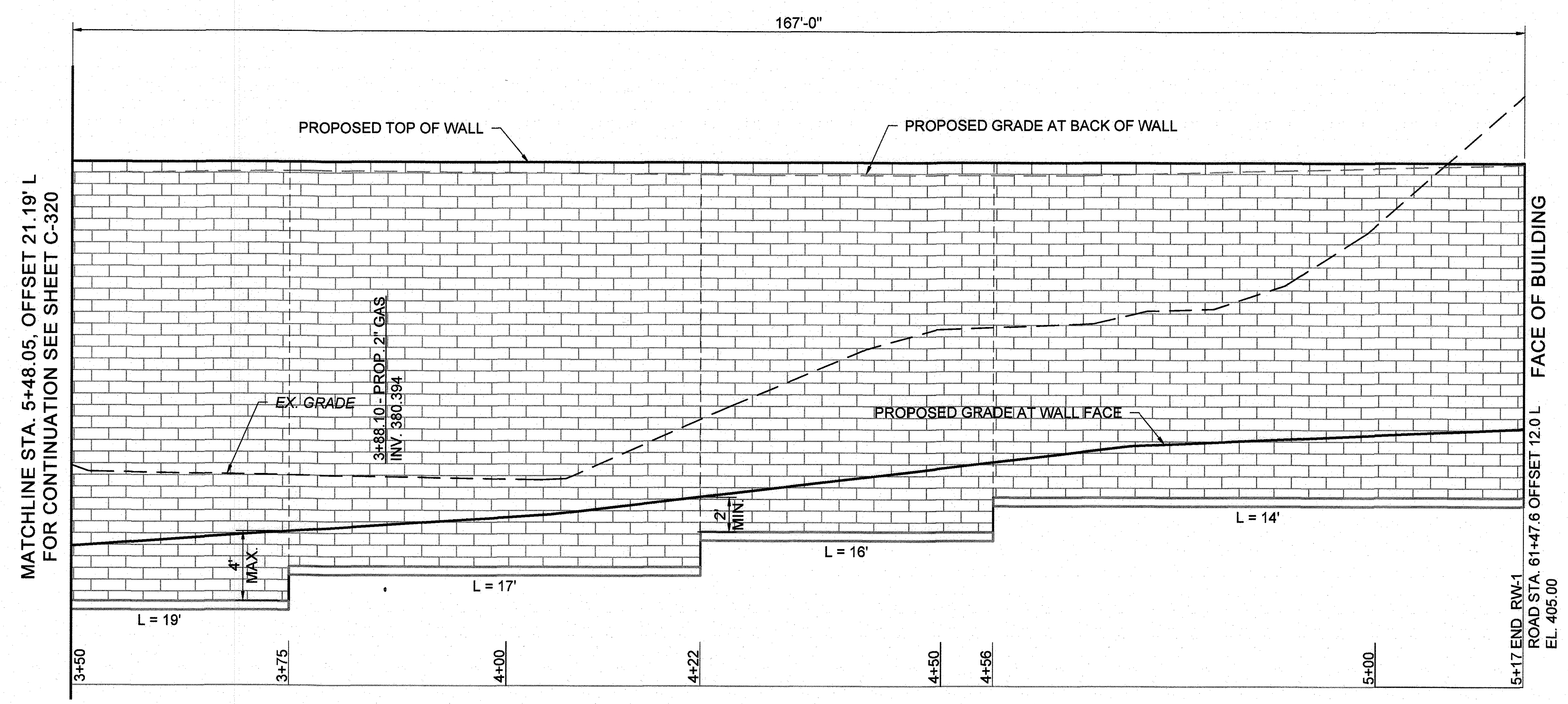
C-320

RK&K PROJECT NUMBER
17206

SCALE:
As Shown



PLAN (RW-1)
SCALE: 1" = 10'



ELEVATION (RW-1)
SCALE: HORIZ. 1" = 10'
VERT. 1" = 5'

NOTE:
1. FOR WALL SECTIONS, SEE SHEET C-323 AND C-324.
2. FOR COOLING TOWER FOUNDATION SEE STRUCTURAL DRAWINGS.
3. LENGTHS FOR GEO-GRID (L) GIVEN ARE MINIMUMS. SEE TYPICAL SECTION FOR DETAILS.

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE# 49432, 5/20/24

HORIZ. SCALE: 1" = 10' (10 5 0 10 20)
VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS • CONSTRUCTION MANAGERS • PLANNERS • SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/8/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

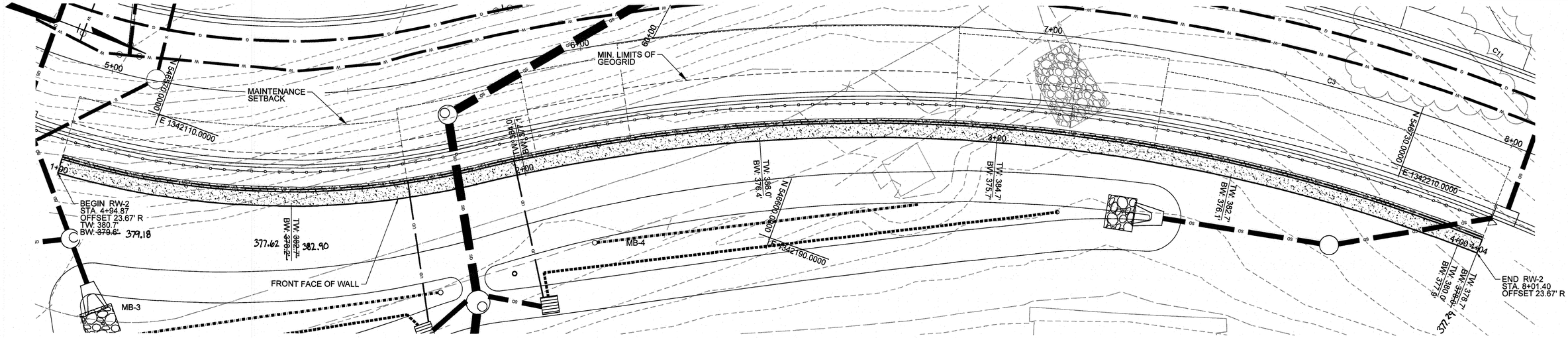
C-321

UPPER RETAINING WALL RW-1
PLAN AND ELEVATION AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 19 OF 72
GREEN BUILDING
SDP-18-035

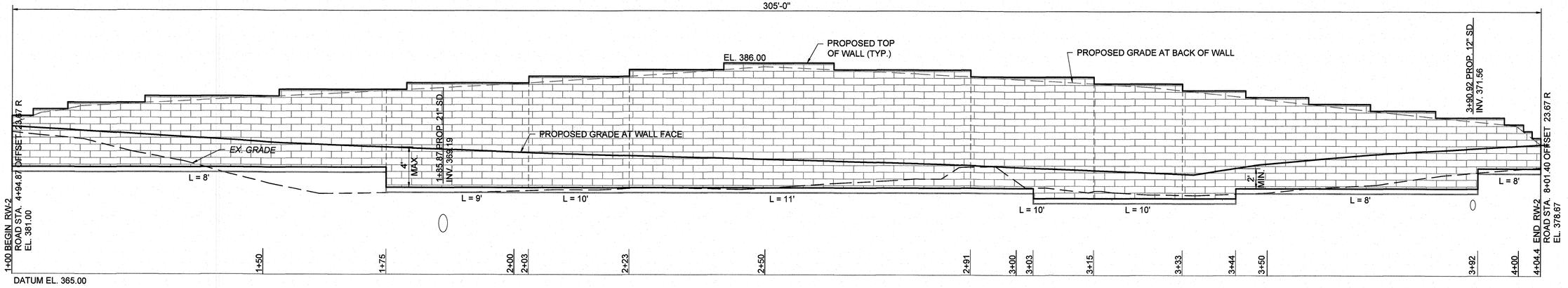
RK&K PROJECT NUMBER
17206

SCALE:
As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-321 Retaining Wall Elevation.dwg Mar 27, 2018 12:04pm cmitchell



PLAN (RW-2)
SCALE: 1" = 10'



ELEVATION (RW-2)
SCALE: HORIZ. 1" = 10'
VERT. 1" = 5'

NOTE:
1. FOR WALL SECTIONS, SEE SHEET C-323.
2. LENGTHS FOR GEO-GRID (L) GIVEN ARE MINIMUMS. SEE TYPICAL SECTION FOR DETAILS.

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 4932 — PROFESSIONAL ENGINEER
5/20/22

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #44932, 5/20/22

HORIZ. SCALE: 1" = 10' (10 5 0 10 20)
VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Eagnier
www.rkk.com

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. 29012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER D. KEARNEY — 29012 — PROFESSIONAL ENGINEER
3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

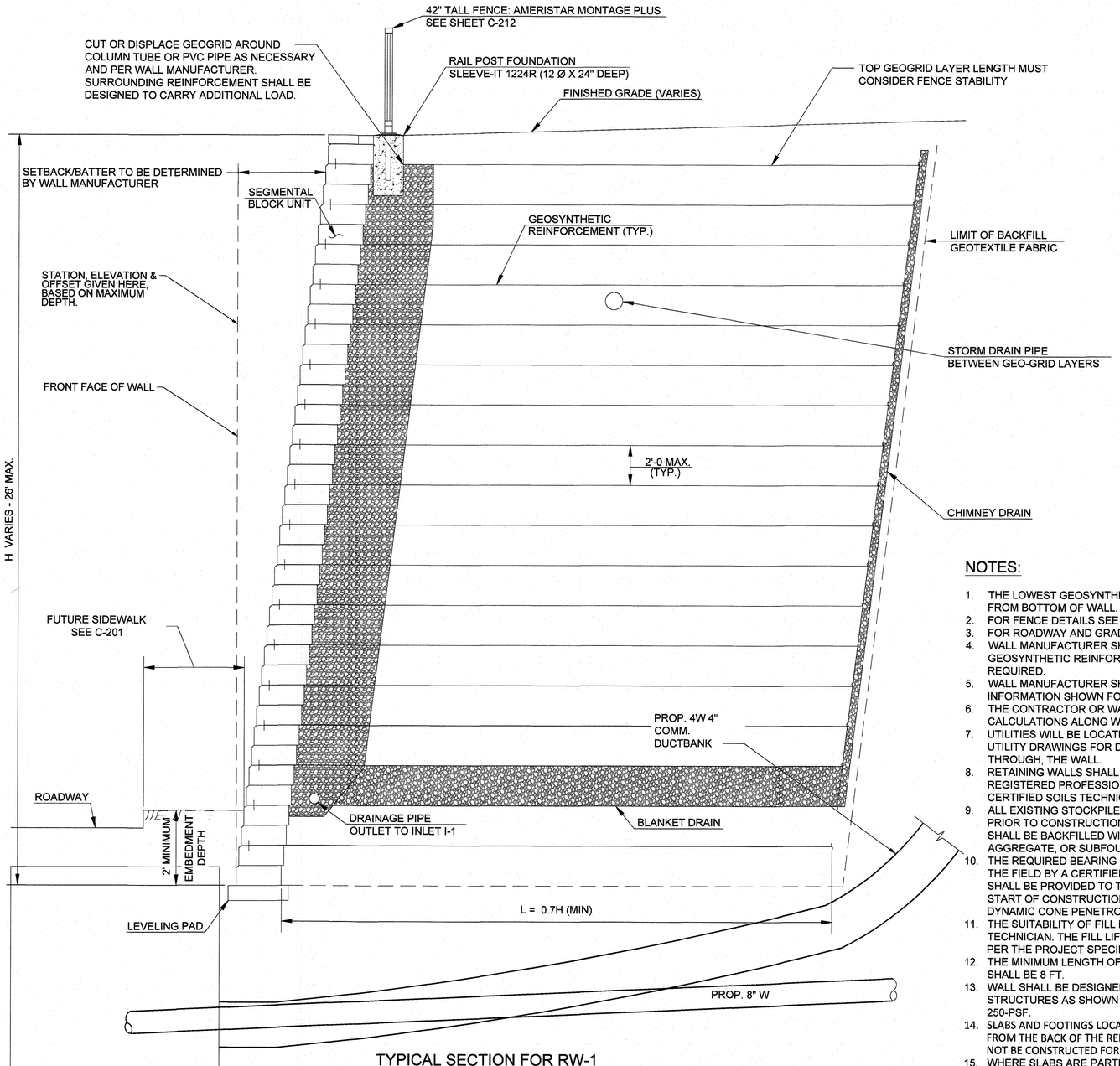
LOWER RETAINING WALL RW-2
PLAN AND ELEVATION AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 20 OF 72
GREEN BUILDING
SDP-18-035

C-322

RK&K PROJECT NUMBER 17206

SCALE: As Shown

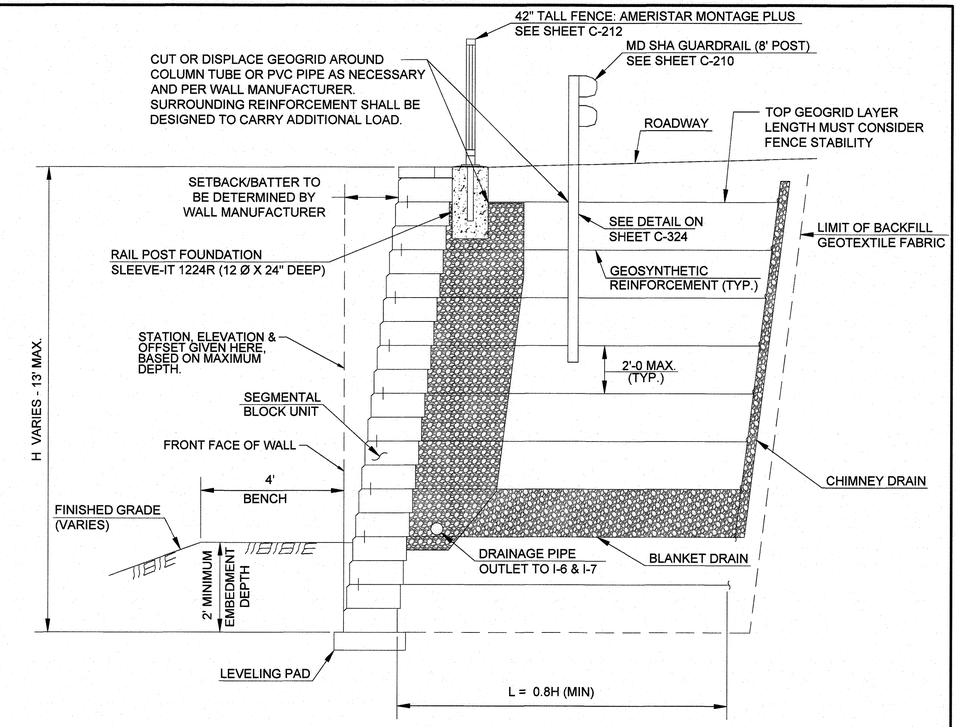
\\balsrv05\2017\2017\17206_APL14\CADD\Plans\C-322 Retaining Wall Elevation.dwg Mar 27, 2018 12:05pm cmitchell



TYPICAL SECTION FOR RW-1

SCALE: 1/2" = 1'-0"

RETAINING WALL DESIGN PARAMETERS		
MATERIAL	DESIGN UNIT WEIGHT - γ (pcf)	DRAINED ANGLE OF FRICTION - Φ (deg)
RETAINED SOIL	125	29
FOUNDATION SOIL	125	30



TYPICAL SECTION FOR RW-2

SCALE: 1/2" = 1'-0"

NOTES:

1. THE LOWEST GEOSYNTHETIC REINFORCEMENT SHALL NOT BE MORE THAN 12" FROM BOTTOM OF WALL.
2. FOR FENCE DETAILS SEE SHEET C-212.
3. FOR ROADWAY AND GRADING DETAILS SEE SHEETS C-201 AND C-301.
4. WALL MANUFACTURER SHALL DESIGN SIZE, LENGTH AND QUANTITY OF GEOSYNTHETIC REINFORCEMENT. PROVIDED STRAP INFORMATION IS MINIMUM REQUIRED.
5. WALL MANUFACTURER SHALL DESIGN DRAINAGE SYSTEM. DRAINAGE INFORMATION SHOWN FOR CLARITY.
6. THE CONTRACTOR OR WALL MANUFACTURER SHALL SUBMIT GLOBAL STABILITY CALCULATIONS ALONG WITH THE SHOP DRAWINGS FOR REVIEW.
7. UTILITIES WILL BE LOCATED WITHIN THE GEOSYNTHETIC REINFORCEMENT - SEE UTILITY DRAWINGS FOR DETAILS. UTILITIES WILL CROSS UNDERNEATH, BUT NOT THROUGH, THE WALL.
8. RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, WACEL OR EQUIVALENT) CERTIFIED SOILS TECHNICIAN.
9. ALL EXISTING STOCKPILE MATERIAL AND EXISTING FILL SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE WALLS. AREAS REQUIRING UNDERCUTTING SHALL BE BACKFILLED WITH COMPACTED CRUSHER RUN, DENSE GRADED AGGREGATE, OR SUBFOUNDATION CONCRETE.
10. THE REQUIRED BEARING PRESSURE BENEATH 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.
11. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ONSITE SOILS TECHNICIAN. THE FILL LIFTS SHALL BE PLACED, COMPACTED AND REPORTED AS PER THE PROJECT SPECIFICATIONS.
12. THE MINIMUM LENGTH OF REINFORCEMENT REGARDLESS OF WALL HEIGHT SHALL BE 8 FT.
13. WALL SHALL BE DESIGNED USING SURCHARGE LOADS FROM THE PROPOSED STRUCTURES AS SHOWN IN THE PLANS AND WITH A MINIMUM LIVE LOAD OF 250-PSF.
14. SLABS AND FOOTINGS LOCATED WITHIN A DISTANCE OF ONE WALL HEIGHT MEASURED FROM THE BACK OF THE REINFORCED SOIL ZONE AWAY FROM THE WALL FACE SHALL NOT BE CONSTRUCTED FOR AT LEAST 30-DAYS AFTER THE COMPLETION OF RW-1.
15. WHERE SLABS ARE PARTIALLY SUPPORTED DIRECTLY OVER THE REINFORCEMENT ZONE AND PARTIALLY OVER THE RETAINED ZONE, THE PORTION OF THE SLAB SUPPORTED OVER THE RETAINED ZONE SHALL BE DIRECTLY SUPPORTED BY A 3-FT THICK LAYER OF CR-6, AND CONSTRUCTION JOINTS SHALL BE USED TO CONTROL CRACKING.
16. SLOPE GEO-GRID DOWN AT A MINIMUM OF 15°, IF NECESSARY, TO AVOID OBSTRUCTIONS. NO KINKS IN THE GEO-GRID WILL BE PERMITTED.
17. PRIOR TO PLACING TOP ROW(S) OF REINFORCING THE CONTRACTOR MUST LOCATE ALL PROPOSED GUARD RAIL POSTS AND COLUMN TUBE OR PVC PIPE TO BE INSTALLED DURING WALL CONSTRUCTION (POST-WALL CONSTRUCTION POST FOUNDATION WILL REQUIRE HAND EXCAVATION AS TO NOT DAMAGE REINFORCEMENT).

GENERAL NOTES:

SPECIFICATIONS:	SEE PROVIDED SPECIFICATIONS. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2014 INCLUDING ALL INTERIM SPECIFICATIONS THRU 2016.
CONCRETE:	ALL CONCRETE SHALL BE MIX No.3 (3500 PSI).
WALL SYSTEM:	CONTRACTOR HAS THE OPTION TO SELECT A PROPRIETARY WALL. ONCE SELECTED, THIS TYPE OF WALL MUST BE USED THROUGHOUT THE PROJECT. THE CONTRACTOR CAN ADJUST THE STEPS IN THE LEVELING PAD TO ACCOMMODATE THE WALL TYPE SELECTED.
SERVICE LIFE:	ALL RETAINING WALL COMPONENTS SHALL BE DESIGNED FOR A MINIMUM SERVICE LIFE OF 75 YEARS.
BACK FILL:	ALL BACKFILL MATERIAL WITHIN THE REINFORCING ZONE FOR THE SEGMENTAL WALL SHALL BE AS PER THE PROVIDED SPECIFICATIONS.
TEMPORARY SUPPORT OF EXCAVATION:	THE CONTRACTOR SHALL DETERMINE THE NEED FOR ANY TEMPORARY SUPPORT OF EXCAVATION FOR EXCAVATION OF THE RETAINING WALLS, THE LOCATION AND LIMITS OF THE SUPPORT OF EXCAVATION AND THE TYPE USED IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL ENSURE THAT THE TEMPORARY SUPPORT OF EXCAVATION EXTENDS TO THE TOP OF THE PROPOSED GRADE. ALL CALCULATIONS SHALL BE SUBMITTED WITH SHOP DRAWINGS. IF REQUIRED, TEMPORARY SUPPORT OF EXCAVATION SHALL BE INCIDENTAL TO THE LUMP SUM RETAINING WALL ITEM.
UTILITY SEQUENCING:	UTILITIES WITHIN A DISTANCE OF ONE WALL HEIGHT MEASURED FROM THE BACK OF THE REINFORCED ZONE AWAY FROM THE WALL FACE AND 5' IN FRONT OF THE WALL FACE SHALL BE CONSTRUCTED IN CONJUNCTION WITH THE RETAINING WALL AND CAPPED OUTSIDE OF THIS ZONE FOR AT LEAST 30 DAYS PRIOR TO CONNECTION TO ANY MANHOLE OR STRUCTURE.
COLOR:	CHARCOAL GRAY. PROVIDE WALL COLOR SAMPLES TO ARCHITECT & OWNER FOR APPROVAL.

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 20012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER W. PREAS — PROFESSIONAL ENGINEER — 3/7/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

RETAINING WALL CROSS SECTIONS - 1
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 21 OF 72

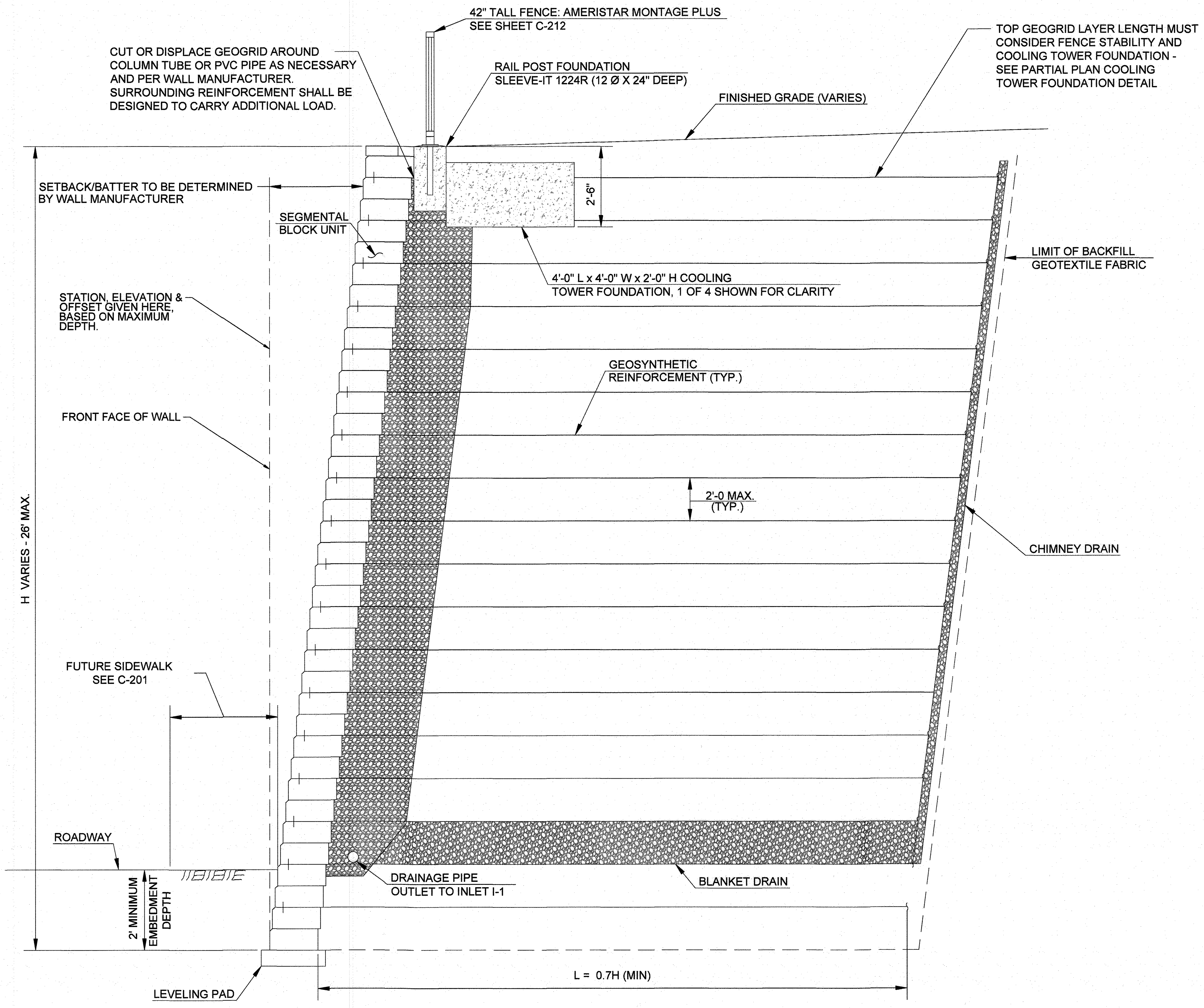
GREEN BUILDING
SDP-18-035

C-323

RK&K PROJECT NUMBER
17206

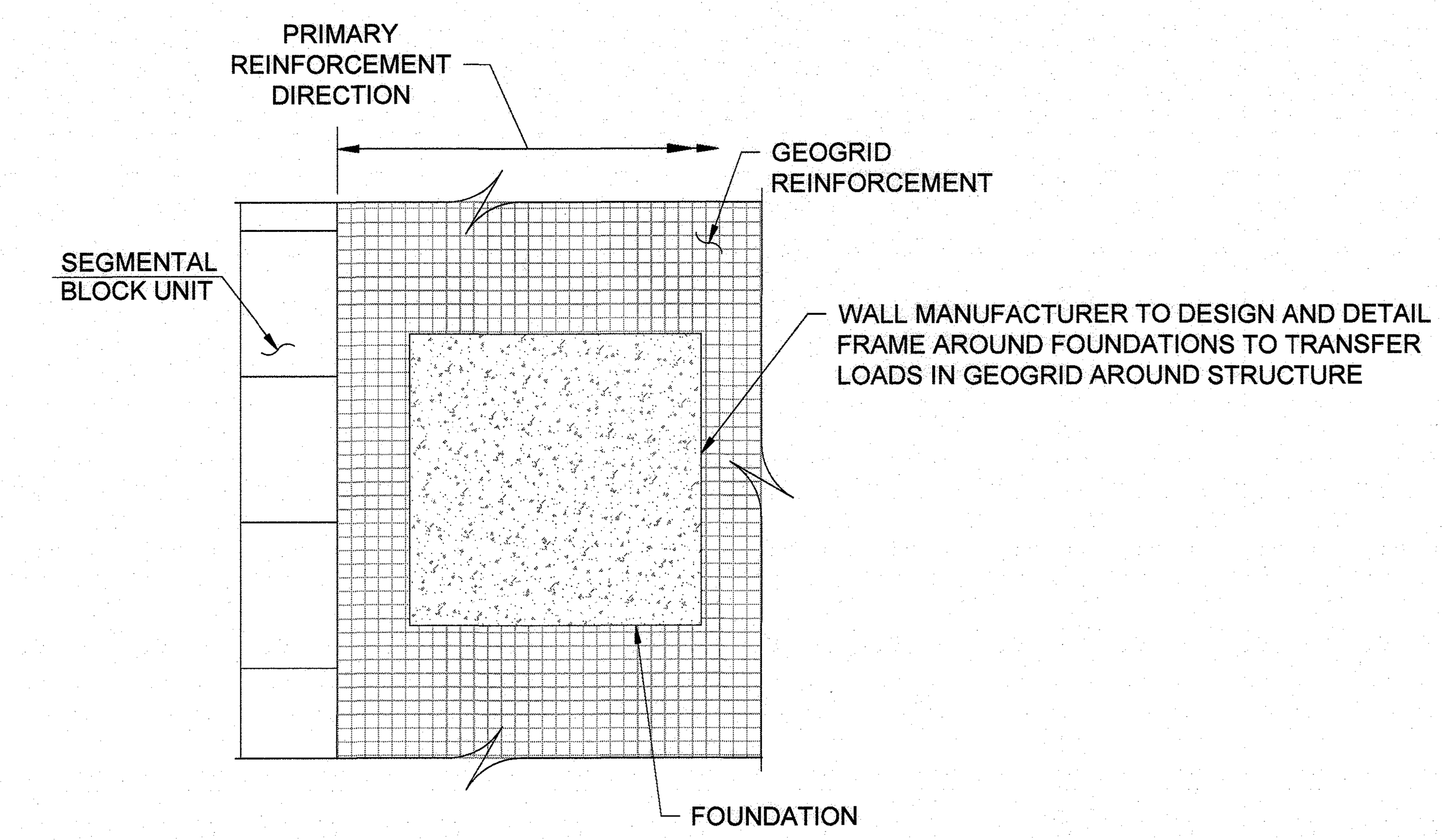
SCALE:
As Shown

\\balarv05\V2017\2017\17206_APL14\CADD\Plans\C-323 Retaining Wall Cross Sections_01.dwg Mar 27, 2018 12:05pm cmitchell



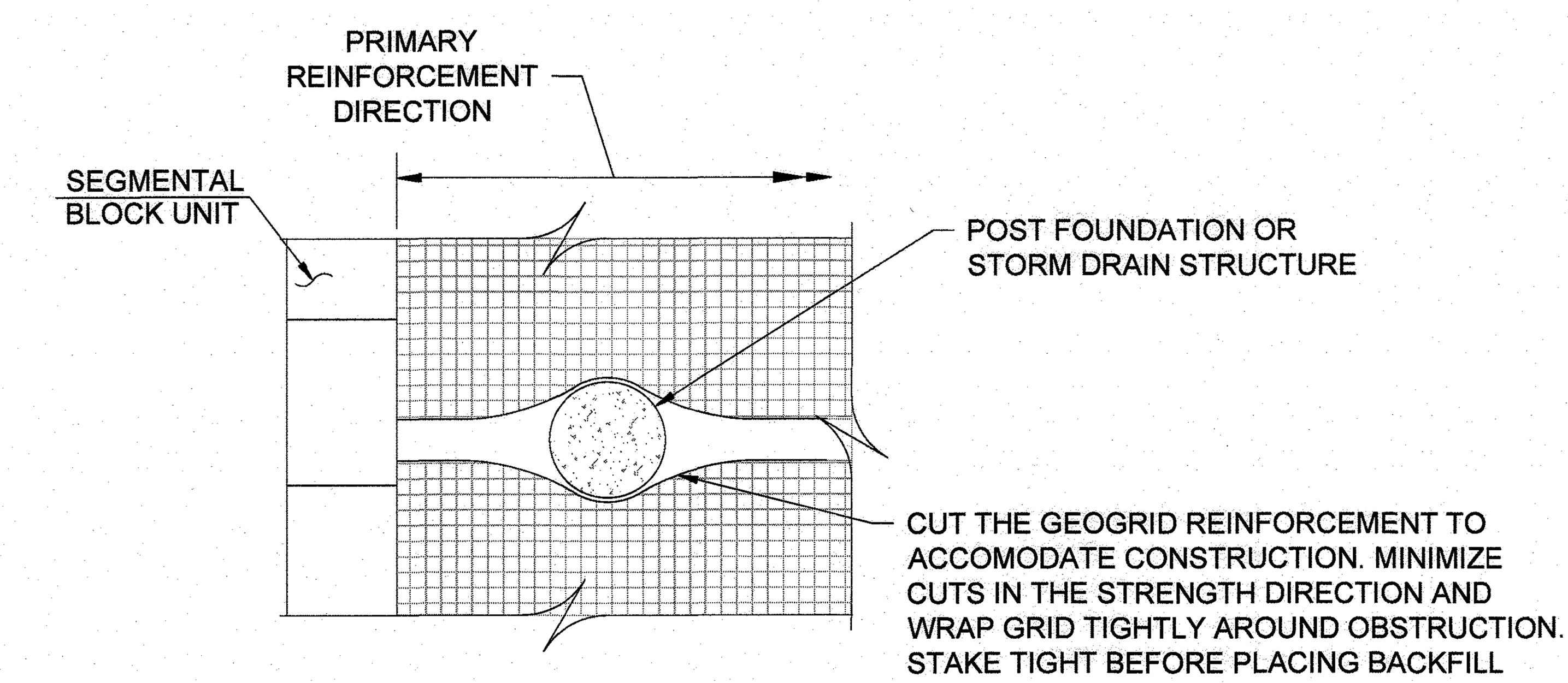
TYPICAL SECTION FOR RW-1 AT COOLING TOWER FOUNDATION

SCALE: 1/2" = 1'-0"



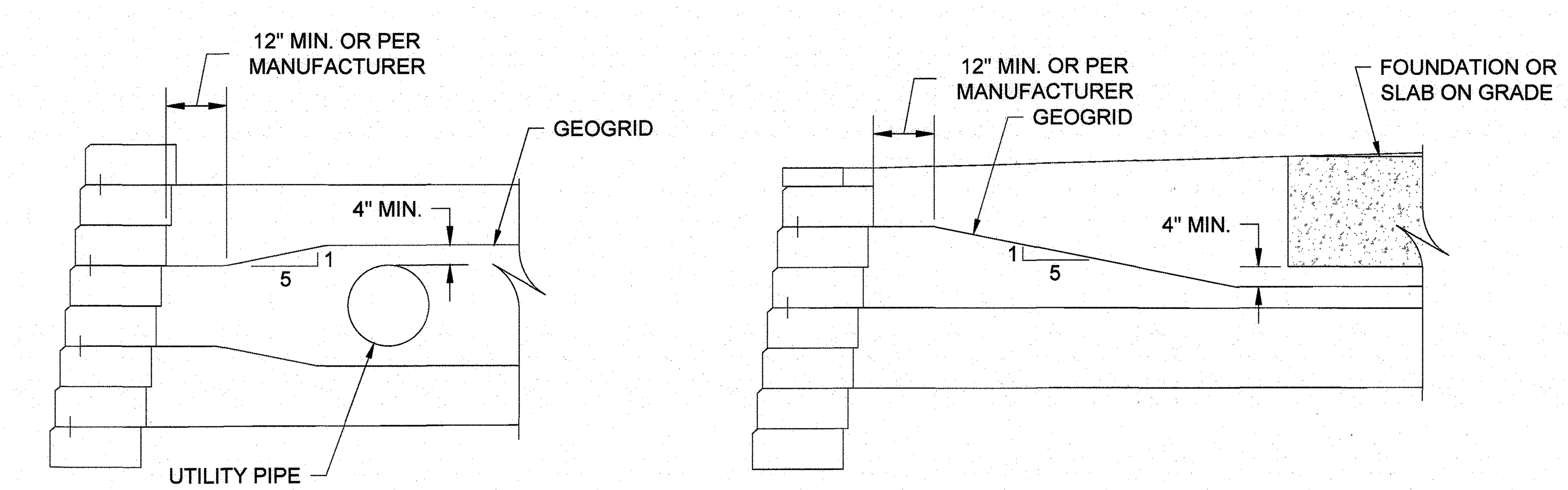
COOLING TOWER FOUNDATION DETAIL

SCALE: 1/2" = 1'-0"



OBSTRUCTIONS IN REINFORCED FILL

SCALE: 1/2" = 1'-0"



GEOGRID SPLAY DETAIL

SCALE: 1/2" = 1'-0"

NOTES:

1. PRIOR TO PLACING TOP ROW(S) OF REINFORCING THE CONTRACTOR MUST LOCATE ALL PROPOSED GUARD RAIL POSTS AND COLUMN TUBE OR PVC PIPE TO BE INSTALLED DURING WALL CONSTRUCTION (POST-WALL CONSTRUCTION POST FOUNDATION WILL REQUIRE HAND EXCAVATION AS TO NOT DAMAGE REINFORCEMENT).
2. SEE ADDITIONAL NOTES ON SHEET C-323.
3. ACTUAL SPLAY REQUIREMENTS TO BE DETERMINED BY WALL MANUFACTURER.

No As-Built Information in this sheet.
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature	Date
Chief, Development Engineering Division	4/1/18
Chief, Division of Land Development	4-19-18
Director	4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
700 East Pratt Street, Suite 500
Baltimore, MD 21202
www.rkk.com

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

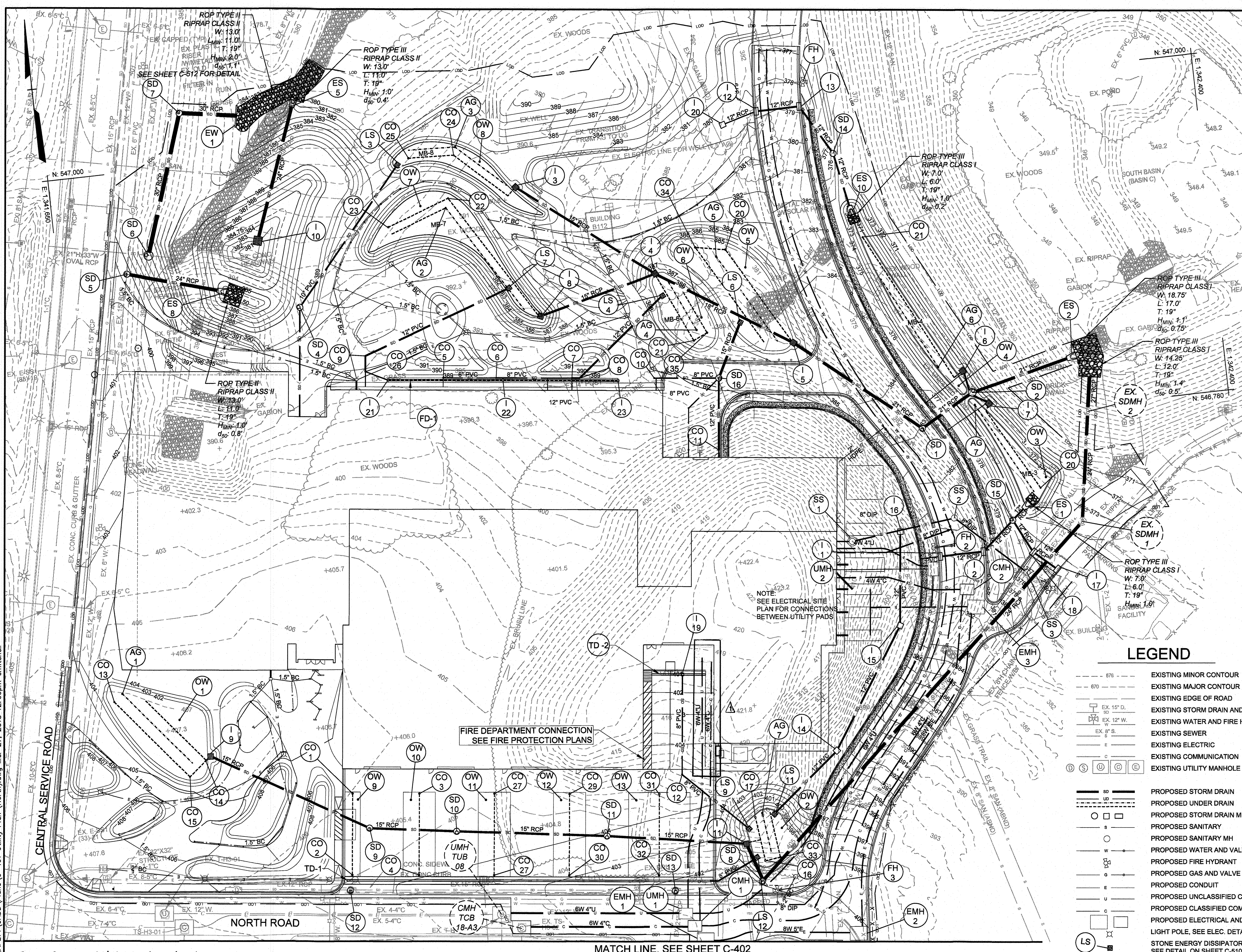
BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

RETAINING WALL CROSS SECTIONS - 2
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035

C-324
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-324 Retaining Wall Cross Sections_02.dwg Mar 27, 2018 12:05pm cmitchell



UTILITY NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE HOWARD COUNTY, STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS AND HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS.
2. EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ARE FOR THE CONVENIENCE OF THE CONTRACTOR AND ARE NOT WARRANTED OR GUARANTEED BY THE OWNER OR THE ENGINEER TO BE COMPLETE OR CORRECT. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS OWN SATISFACTION.
3. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, TO PROVIDE ALL SITE SUB-CONTRACTORS/BIDDERS WITH FULL AND COMPLETE SETS OF ALL CIVIL DRAWINGS AND SPECIFICATIONS FOR THEIR USE IN PREPARING BIDS. THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR ANY AND ALL DELAYS AND COSTS ARISING DURING CONSTRUCTION FROM BIDS BASED UPON INCOMPLETE SETS OF SITE DOCUMENTS.
4. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "MISS UTILITY" AT 1-800-257-7777 THREE DAYS PRIOR TO THE START OF ANY EXCAVATION WORK.
6. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY INVERTS AND CLEARANCES FROM NEW WORK PRIOR TO START OF ANY WORK.
7. SEE MECHANICAL/ ELECTRICAL/ PLUMBING (MEP) PLANS AND COORDINATE UTILITY SERVICE CONNECTION LOCATIONS AND ELEVATIONS. FURNISH AND INSTALL ADAPTERS AND/OR CONNECTIONS AS REQUIRED TO TIE INTO MEP SYSTEMS.
8. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO SUPPORT AND PROTECT ALL EXISTING UTILITIES WHEN WORKING ADJACENT TO OR CROSSING EXISTING UTILITIES. ANY DAMAGES TO EXISTING FACILITIES SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
9. THE TOPS OF ALL FRAMES, GRATES, AND COVERS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF CONTRACT AND/OR DISTURBANCE SHALL BE ADJUSTED TO THE NEW GRADES.
10. THE CONTRACTOR SHALL DISCHARGE CHLORINATED FLUSH WATER INTO AN OPERATIONAL SANITARY SEWER MANHOLE.

GENERAL NOTES

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
4. THE TOPS OF ALL FRAMES, GRATES, AND COVERS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF CONTRACT AND/OR DISTURBANCE SHALL BE ADJUSTED TO THE NEW GRADES.
5. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
6. THE CONTRACTOR SHALL PROVIDE A TWO-FOOT AREA AT 1/2-INCH PER FOOT SLOPE BEHIND ALL PROPOSED CURB, UNLESS OTHERWISE INDICATED.
7. FINISHED GRADES SHALL FALL AWAY FROM EXISTING AND PROPOSED BUILDINGS AT A MINIMUM OF 1/4-INCH PER FOOT FOR VEGETATED AREAS AND A MINIMUM OF 1/8-INCH PER FOOT FOR PAVED AREAS UNLESS OTHERWISE INDICATED.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS.
9. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
10. FOR STRUCTURE TABLE SEE SHEET C-402.
11. ALL PIPES MATERIALS, SIZES, TYPES AND QUANTITIES TO BE BACK CHECKED WITH THE PLANS AND PROFILES PRIOR TO ORDERING. NOTIFY ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND.
12. FOR STORM DRAIN STRUCTURE SCHEDULE TABLES SEE SHEET C-404.
13. SEE FUTURE GMP PACKAGE FOR ADDITIONAL ELECTRICAL DETAILS INCLUDING LIGHT POLE BASES.

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING EDGE OF ROAD
- EXISTING STORM DRAIN AND INLET
- EXISTING WATER AND FIRE HYDRANT
- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING COMMUNICATION
- EXISTING UTILITY MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED UNDER DRAIN
- PROPOSED STORM DRAIN MH & INLETS
- PROPOSED SANITARY
- PROPOSED SANITARY MH
- PROPOSED WATER AND VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED GAS AND VALVE
- PROPOSED CONDUIT
- PROPOSED UNCLASSIFIED COMM.
- PROPOSED CLASSIFIED COMM.
- PROPOSED ELECTRICAL AND COMM. MH
- LIGHT POLE, SEE ELEC. DETAIL FOR BASE
- STONE ENERGY DISSIPATOR. SEE DETAIL ON SHEET C-510.
- ROCK OUTLET PROTECTION. SEE DETAIL D-4-1-C ON SHEET C-609.

PIPE SCHEDULE (ALL SHEETS)

TYPE	SIZE	MATERIAL	TOTAL LENGTH
GAS	2"	HDPE	60'
GAS	6"	HDPE	608'
SANITARY	8"	DIP CL 54	125'
STORM	6"	PVC SCH 40	197'
STORM	6"	PVC SCH 40 PERFORATED	1,681'
STORM	8"	PVC SCH 40	242'
STORM	10"	PVC SCH 40	181'
STORM	12"	PVC SCH 40	458'
STORM	12"	RCP CL. IV	203'
STORM	15"	RCP CL. IV	588'
STORM	18"	RCP CL. IV	89'
STORM	21"	RCP CL. IV	216'
STORM	24"	RCP CL. IV	563'
STORM	27"	RCP CL. IV	23'
STORM	30"	RCP CL. IV	130'
WATER	8"	DIP CL 54	741'

No As-Built Information in this sheet
5/20/2022

30 15 0 30 60
SCALE: 1" = 30'

Purpose Statement (8/23/19): This red line submission adjusts the configuration at the loading dock to remove one set of stairs and replace them with a flat (1% cross slope) walkway.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER DEAN KRUPA — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE
RK&K	1	LOADING DOCK REVISIONS	8/23/19

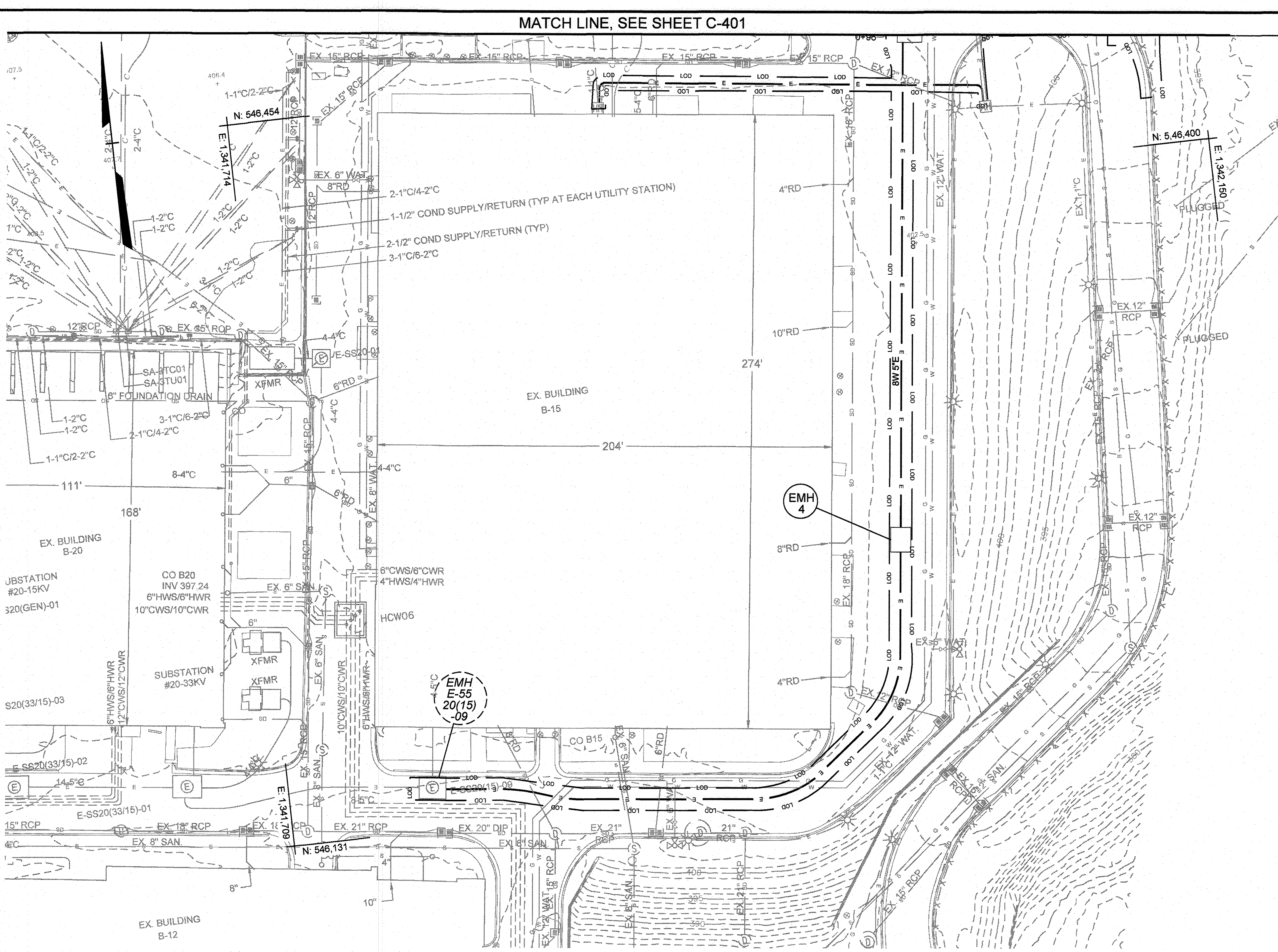
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY PLAN (NORTH) AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 23 OF 72
GREEN BUILDING
SDP-18-035

C-401
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-401 Utility Plan (North).dwg Mar 27, 2018 12:06pm cmitchell



LEGEND

— 676 —	EXISTING MINOR CONTOUR
— 670 —	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
— E —	EXISTING ELECTRIC
— C —	EXISTING COMMUNICATION
D S U C E	EXISTING UTILITY MANHOLE
— E —	PROPOSED CONDUIT
☐	PROPOSED ELECTRICAL MH

FOR UTILITY NOTES, GENERAL NOTES AND PIPE SCHEDULE SEE SHEET C-401.

STRUCTURE TABLE

STRUCTURE NAME	NORTHING	EASTING	DESCRIPTION
AG-1	546663.23	1341661.73	ATRIUM GRATE SEE SHEET C-510
AG-2	546954.07	1341906.00	ATRIUM GRATE SEE SHEET C-510
AG-3	546992.74	1341916.39	ATRIUM GRATE SEE SHEET C-510
AG-4	546857.08	1342059.71	ATRIUM GRATE SEE SHEET C-510
AG-5	546903.12	1342077.67	ATRIUM GRATE SEE SHEET C-510
AG-6	546815.64	1342213.69	ATRIUM GRATE SEE SHEET C-510
AG-7	546788.69	1342234.70	ATRIUM GRATE SEE SHEET C-510
AG-8	546540.00	1342067.85	ATRIUM GRATE SEE SHEET C-510
CMH-1	546471.86	1342016.03	6' x 8' x 7' VAULT PRECAST. SEE C-413
CMH-2	546669.78	1342216.41	6' x 8' x 7' VAULT PRECAST. SEE C-413
CO-1	546582.30	1341803.68	CLEANOUT S-3.21
CO-2	546529.64	1341797.70	CLEANOUT S-3.21
CO-3	546577.39	1341846.91	CLEANOUT S-3.21
CO-4	546524.73	1341840.92	CLEANOUT S-3.21
CO-5	546844.54	1341892.22	CLEANOUT S-3.21
CO-6	546840.64	1341926.50	CLEANOUT S-3.21
CO-7	546835.05	1341975.60	CLEANOUT S-3.21
CO-8	546834.49	1341980.57	CLEANOUT S-3.21
CO-9	546864.37	1341843.33	CLEANOUT S-3.21
CO-10	546828.99	1342028.90	CLEANOUT S-3.21
CO-11	546778.03	1342065.48	CLEANOUT S-3.21
CO-12	546570.65	1342018.57	CLEANOUT S-3.21
CO-13	546658.56	1341655.86	CLEANOUT S-3.21
CO-14	546614.14	1341711.21	CLEANOUT S-3.21
CO-15	546604.69	1341699.56	CLEANOUT S-3.21
CO-16	546508.90	1342066.45	CLEANOUT S-3.21
CO-17	546537.64	1342063.05	CLEANOUT S-3.21
CO-18	546730.27	1342271.36	CLEANOUT S-3.21
CO-19	546905.05	1342174.07	CLEANOUT S-3.21
CO-20	546906.81	1342084.20	CLEANOUT S-3.21
CO-21	546844.10	1342060.06	CLEANOUT S-3.21
CO-22	546960.12	1341908.16	CLEANOUT S-3.21
CO-23	546945.88	1341867.43	CLEANOUT S-3.21
CO-24	546987.63	1341914.83	CLEANOUT S-3.21
CO-25	546988.95	1341885.24	CLEANOUT S-3.21
CO-26	546854.16	1341842.16	CLEANOUT S-3.21
CO-27	546571.86	1341895.59	CLEANOUT S-3.21
CO-28	546519.20	1341889.61	CLEANOUT S-3.21
CO-29	546566.32	1341944.28	CLEANOUT S-3.21
CO-30	546513.66	1341938.29	CLEANOUT S-3.21
CO-31	546559.71	1342002.41	CLEANOUT S-3.21
CO-32	546507.05	1341996.42	CLEANOUT S-3.21
CO-33	546510.08	1342076.36	CLEANOUT S-3.21
CO-34	546910.56	1342064.77	CLEANOUT S-3.21
CO-35	546854.57	1342066.32	CLEANOUT S-3.21
CO-36	546780.25	1342045.97	CLEANOUT S-3.21
CO-37	546807.17	1342049.03	CLEANOUT S-3.21
EMH-1	546462.11	1342021.94	8' x 10' x 7' VAULT PRECAST. SEE C-413
EMH-2	546455.24	1342121.59	8' x 10' x 7' VAULT PRECAST. SEE C-413

STRUCTURE TABLE

STRUCTURE NAME	NORTHING	EASTING	DESCRIPTION
EMH-3	546657.87	1342220.95	8'x10'x7' VAULT PRECAST. SEE C-413
ES-1	546720.04	1342261.08	END SECTION D-5.51
ES-2	546811.97	1342297.62	END SECTION D-5.51
ES-5	547030.58	1341813.40	END SECTION D-5.51
ES-8	546916.23	1341755.10	END SECTION D-5.51
ES-10	546922.84	1342168.38	END SECTION D-5.51
EW-1	547028.67	1341776.71	ENDWALL D-5.21
FH-1	547009.65	1342146.42	FIRE HYDRANT
FH-2	546699.05	1342197.83	FIRE HYDRANT
FH-3	546488.97	1342072.09	FIRE HYDRANT
I-1	546693.06	1342201.45	TYPE WR INLET D-4.35
I-2	546693.19	1342229.79	TYPE A-5 INLET D-4.02
I-3	546962.43	1341952.60	TYPE 'S' INLET D-4.22
I-4	546896.52	1342036.75	TYPE 'S' INLET D-4.22
I-5	546841.75	1342121.74	TYPE 'S' INLET D-4.22
I-6	546811.25	1342229.21	TYPE 'S' INLET D-4.22
I-7	546788.49	1342243.68	TYPE 'S' INLET D-4.22
I-8	546877.36	1341959.82	TYPE 'S' INLET D-4.22
I-9	546616.34	1341714.39	TYPE 'S' INLET D-4.22
I-10	546946.25	1341781.78	OUTFALL STRUCTURE OUTLET CONTROL STRUCTURE #1 C-512
I-11	546521.08	1342055.24	TYPE 'S' INLET D-4.22
I-12	546994.06	1342113.91	TYPE A-5 INLET D-4.02
I-13	546994.13	1342142.23	TYPE A-5 INLET D-4.02
I-14	546574.90	1342120.61	YARD INLET D-4.14
I-15	546651.18	1342170.56	YARD INLET D-4.14
I-16	546711.91	1342177.43	YARD INLET D-4.14
I-17	546676.47	1342276.35	TYPE A-5 INLET D-4.02
I-18	546689.21	1342261.99	TYPE A-5 INLET D-4.02
I-19	546635.35	1342025.93	TRENCH DRAIN D-4.15
I-20	546987.75	1342091.26	TYPE 'S' INLET D-4.22
I-21	546847.12	1341856.25	BEEHIVE INLET SEE SHEET C-413
I-22	546838.64	1341930.77	BEEHIVE INLET SEE SHEET C-413
I-23	546830.17	1342005.29	BEEHIVE INLET SEE SHEET C-413
OW-1	546642.43	1341696.92	OW PER C-510
OW-2	546528.94	1342079.49	OW PER C-510
OW-3	546736.81	1342275.61	OW PER C-510
OW-4	546802.00	1342225.63	OW PER C-510
OW-5	546893.94	1342095.81	OW PER C-510
OW-6	546864.79	1342063.88	OW PER C-510
OW-7	546957.10	1341889.64	OW PER C-510
OW-8	546981.60	1341931.32	OW PER C-510
OW-9	546578.04	1341806.70	OW PER C-510
OW-10	546574.04	1341840.99	OW PER C-510
OW-11	546568.50	1341889.68	OW PER C-510
OW-12	546562.97	1341938.36	OW PER C-510
OW-13	546557.43	1341987.05	OW PER C-510
SD-1	546777.20	1342199.11	48" PRECAST MH G-5.12
SD-2	546796.84	1342233.95	60" PRECAST MH G-5.13
SD-4	546900.28	1341804.38	48" PRECAST MH G-5.12

STRUCTURE TABLE

STRUCTURE NAME	NORTHING	EASTING	DESCRIPTION
SD-5	546934.13	1341694.61	48" PRECAST MH G-5.12 W/ GRANITE BLOCKING ALONG BOTTOM
SD-6	546944.71	1341709.99	60" PRECAST MH G-5.13
SD-7	547034.35	1341739.97	60" PRECAST MH G-5.13
SD-8	546495.73	1342063.04	48" PRECAST MH G-5.12
SD-9	546558.70	1341812.20	48" PRECAST MH G-5.12
SD-10	546550.32	1341868.52	48" PRECAST MH G-5.12
SD-11	546536.42	1341965.54	48" PRECAST MH G-5.12
SD-12	546519.78	1341795.40	48" PRECAST MH G-5.12
SD-13	546495.92	1342005.86	48" PRECAST MH G-5.12
SD-14	546961.28	1342160.87	48" PRECAST MH G-5.12
SD-15	546711.42	1342251.03	48" PRECAST MH G-5.12
SD-16	546824.46	1342070.74	48" PRECAST MH G-5.12
SS-1	546709.18	1342145.58	48" PRECAST MH G 5.12 & G-5.16
SS-2	546716.87	1342213.32	48" PRECAST MH G 5.12
SS-3	546676.62	1342256.47	48" PRECAST DOGHOUSE MH G 5.14 & G-5.16
UMH-1	546480.50	1342011.00	6' x 8' x 7' VAULT PRECAST. SEE C-413
UMH-2	546685.49	1342196.14	6' x 8' x 7' VAULT PRECAST. SEE C-413

No As-Built Information in this sheet
5/20/2022

30 15 0 30 60
SCALE: 1" = 30'

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-402 Utility Plan (South).dwg Mar 27, 2018 12:51pm cmitchell

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4/1/18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

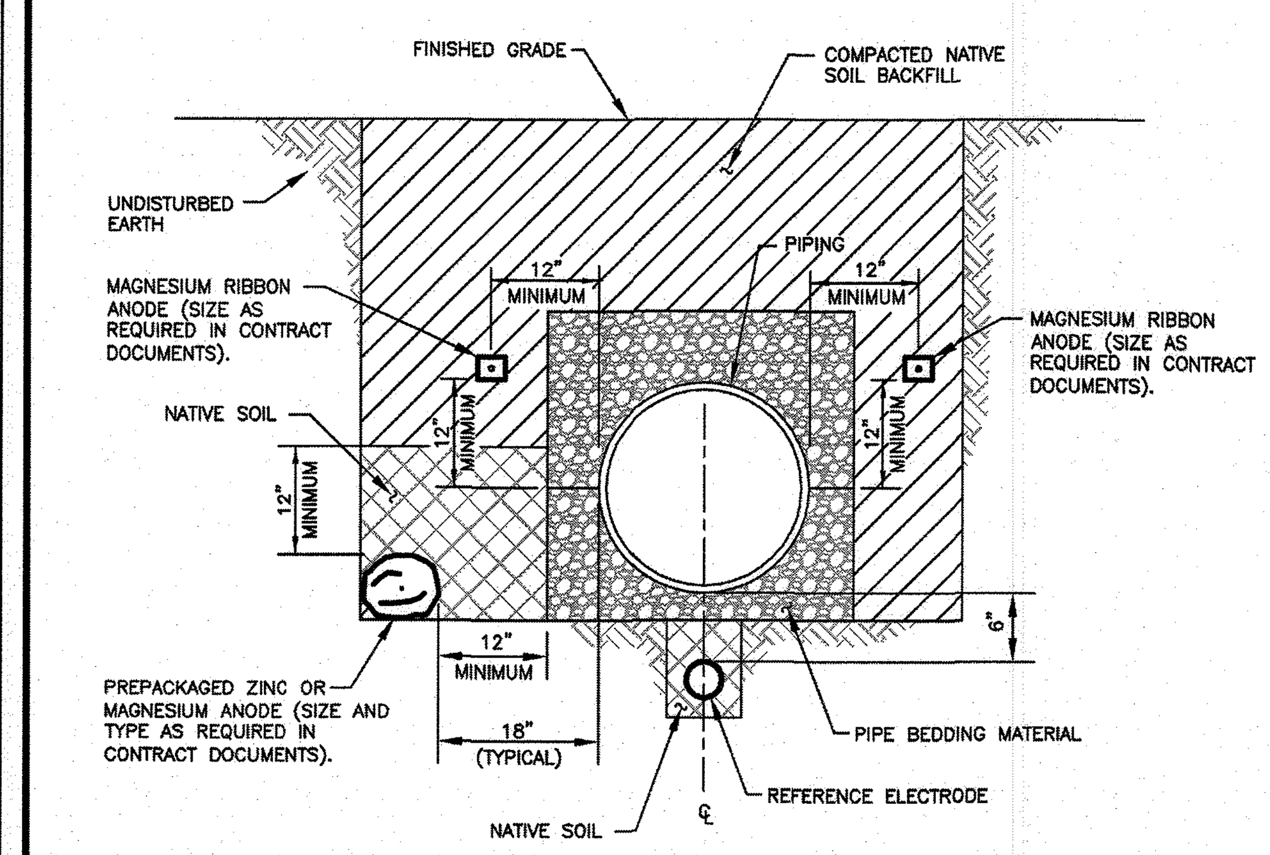
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY PLAN (SOUTH) AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035

C-402
RK&K PROJECT NUMBER 17206
SCALE: As Shown

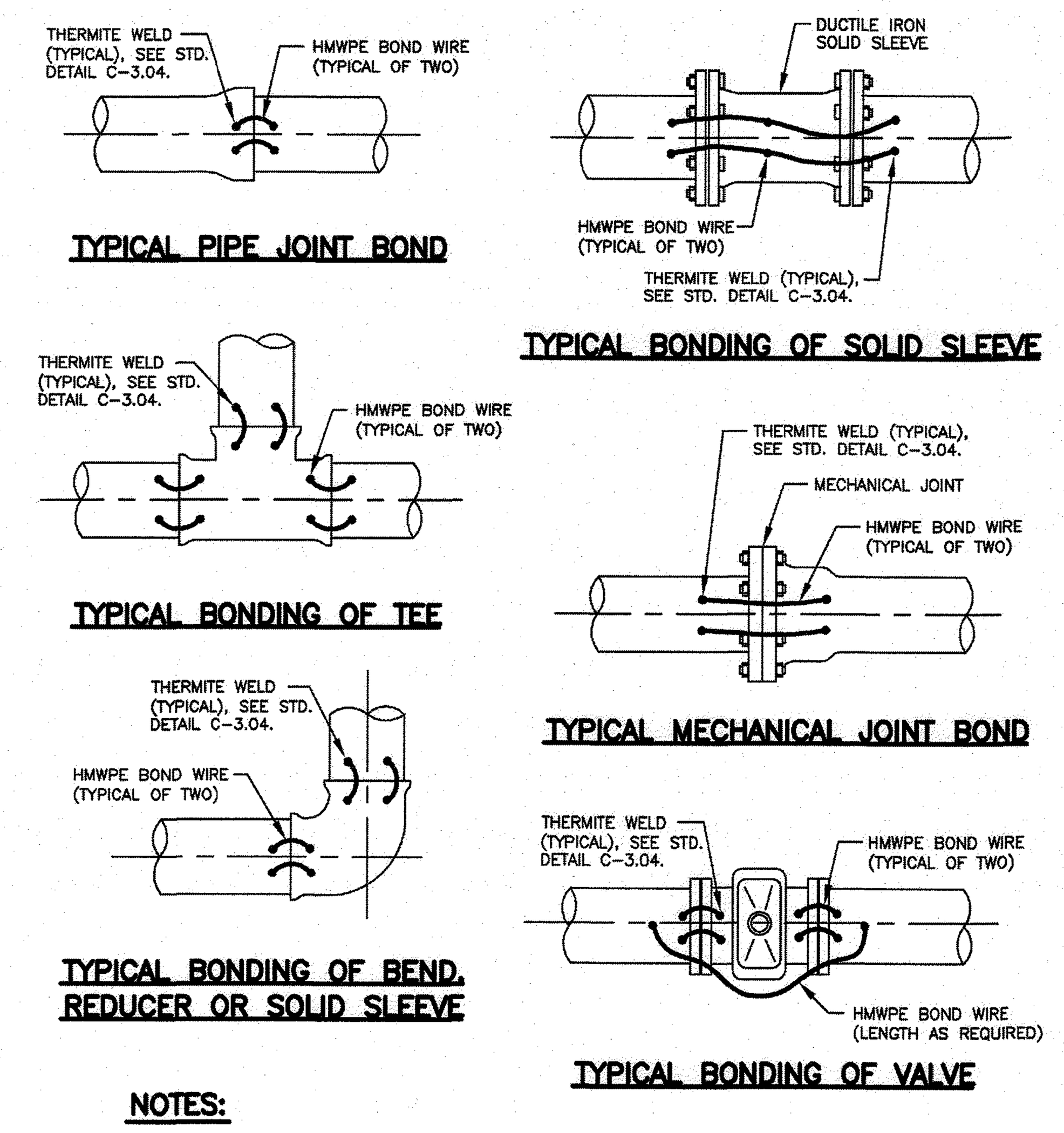
No As-Built Information in this sheet
5/20/2022



NOTES:

1. INSTALL ANODES AND REFERENCE ELECTRODE IN NATIVE SOIL. DO NOT BACKFILL PREPACKAGED OR RIBBON ANODES OR REFERENCE ELECTRODE WITH SAND OR STONE.
2. POSITION MAGNESIUM RIBBON ANODES SO THAT THEY ARE LOCATED IN NATIVE SOIL 12 INCHES ABOVE STONE BACKFILL OF PIPELINE.
3. BACKFILL PREPACKAGED MAGNESIUM ANODES WITH A MINIMUM OF 12 INCHES NATIVE SOIL ON ALL SIDES.

Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PIPE TRENCH Anode and Reference Electrode Placement	Detail C-1.01



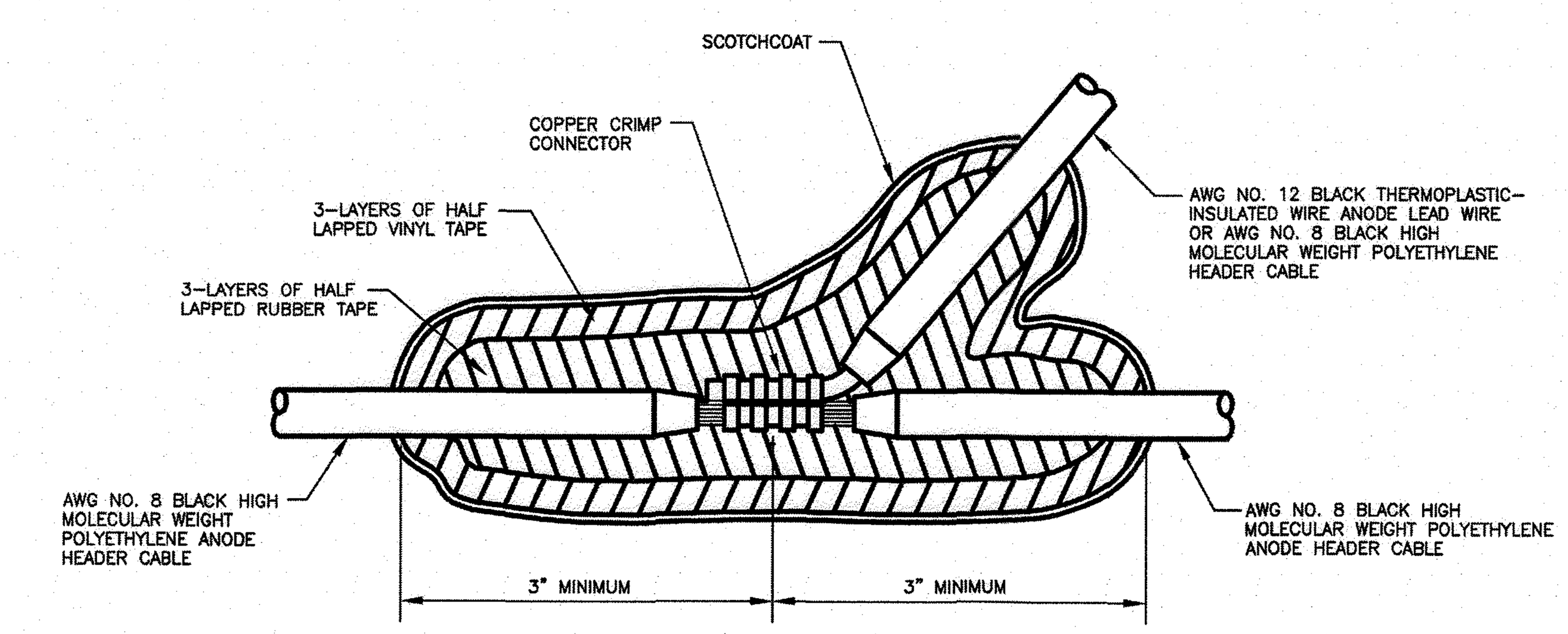
NOTES:

1. BOND ALL JOINTS ON UNDERGROUND DUCTILE IRON PIPING ASSOCIATED WITH THE WATER MAIN.
2. THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE STD. DETAIL C-3.04.
3. WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:

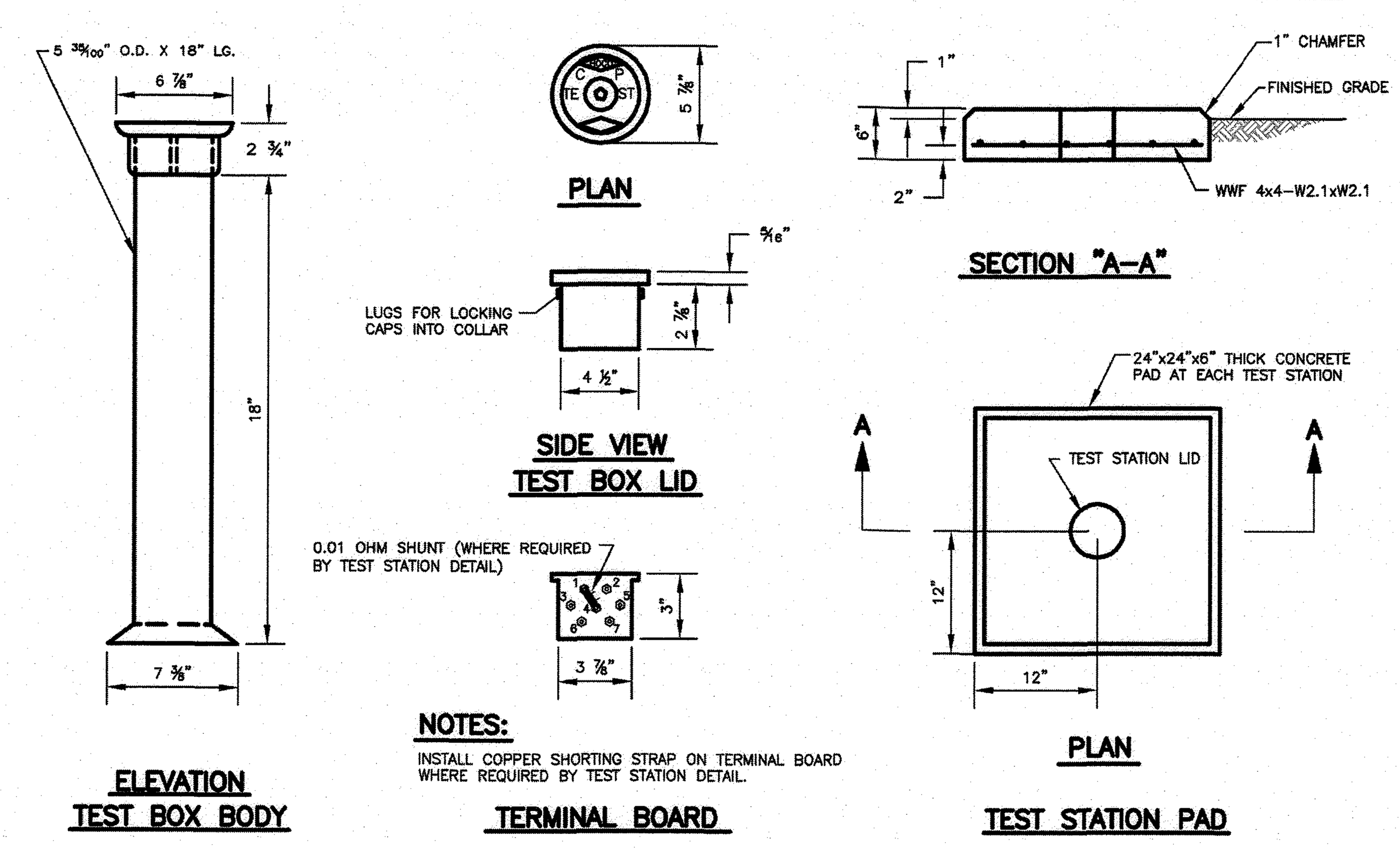
PIPE SIZE	WIRE SIZE
LARGER THAN 36"	AWG NO. 2 HMWPE
16" TO 36"	AWG NO. 4 HMWPE
12" AND SMALLER	AWG NO. 6 HMWPE

4. DO NOT THERMITE WELD TO PVC PIPE.
5. EACH BOND WIRE SHALL BE A MAXIMUM OF 18" IN LENGTH.

Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	BONDING Joints	Detail C-3.01

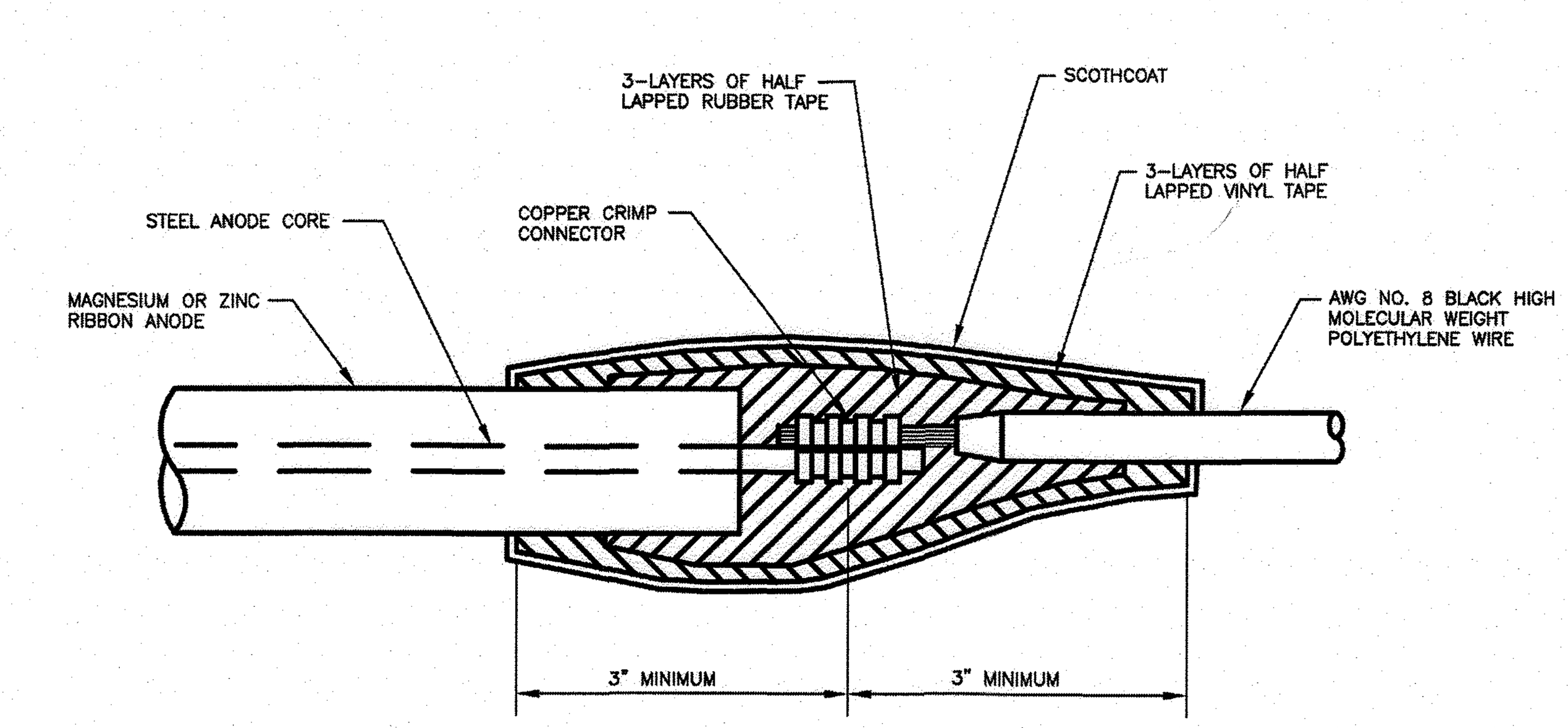


Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	SPLICE Header Cable	Detail C-1.03

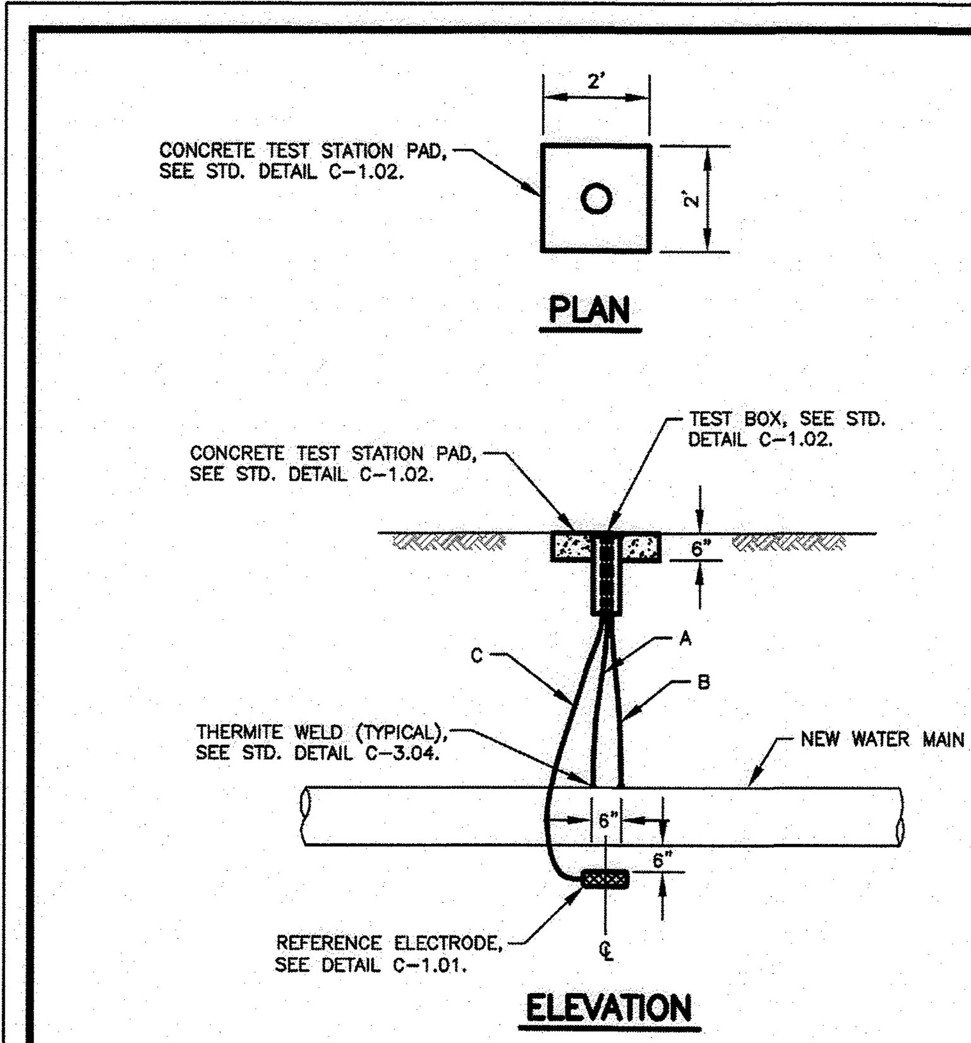


NOTES:
INSTALL COPPER SHORTING STRAP ON TERMINAL BOARD WHERE REQUIRED BY TEST STATION DETAIL.

Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	TEST STATION Flush to Grade Test Box and Pad	Detail C-1.02



Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	SPLICE Ribbon Anode to Header Cable	Detail C-1.04

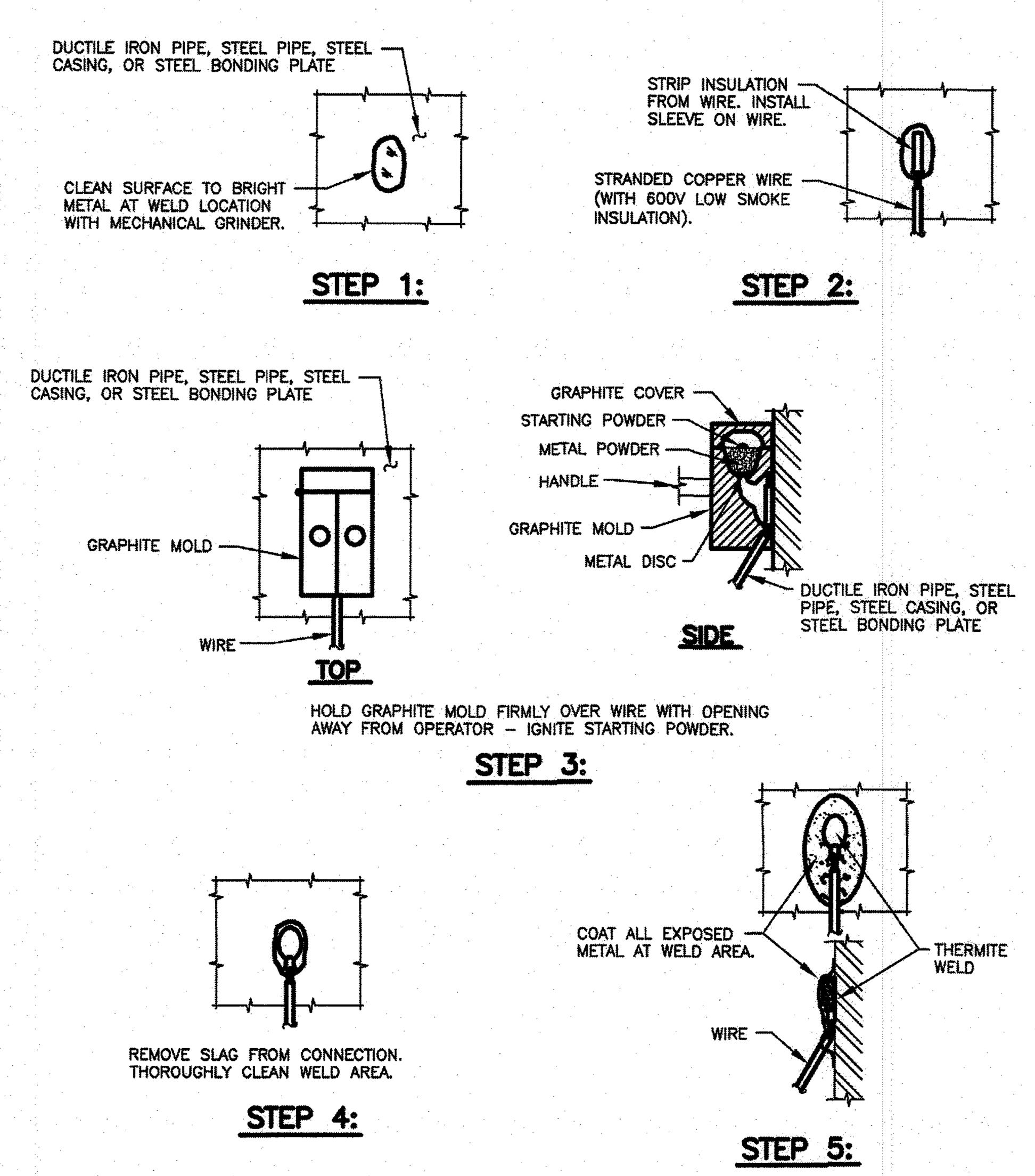


WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK

NOTES:

1. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN NON-METALLIC SCHEDULE 40 PVC CONDUIT TO FINAL TEST BOX LOCATION IF NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
2. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18 INCHES FROM THE TEST BOX.
3. TERMINATE WIRES IN TEST BOX WITH RING TERMINALS, SEE STD. DETAIL C-1.02 FOR TERMINAL BOARD CONFIGURATION.
4. ALL THERMITE WELDS TO PCCP ARE TO BE PERFORMED AT STEEL BONDING PLATES, SEE STD. DETAIL C-3.03.

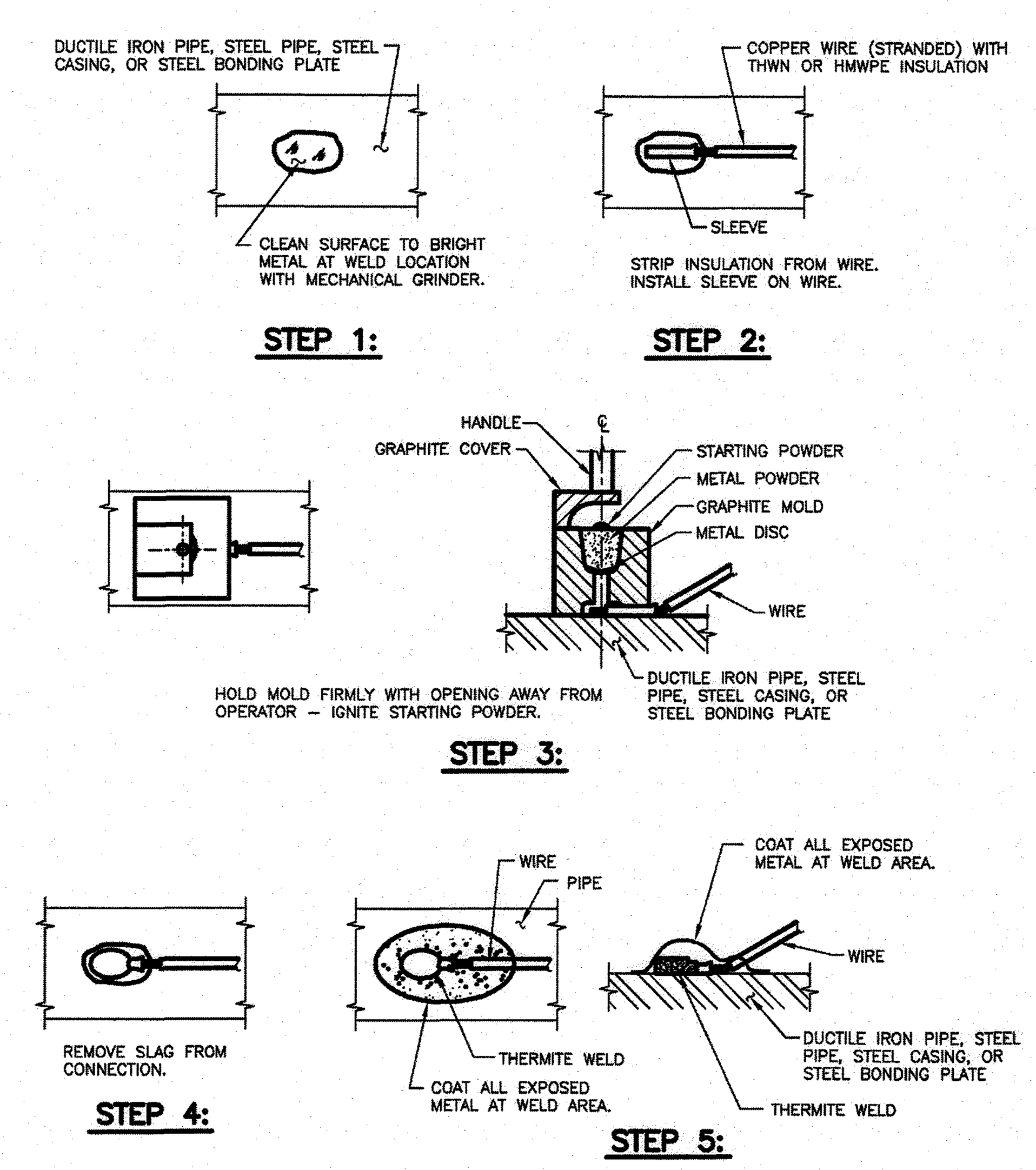
Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	TEST STATION Monitoring	Detail C-2.01 C-410



NOTES:

1. THERMITE WELDS MADE TO DUCTILE IRON PIPE, STEEL PIPE, OR STEEL CASING SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL.
2. THERMITE WELDS MADE TO THE STEEL BONDING PLATES OF PCCP PIPING SHALL BE COATED WITH BRUSH APPLIED MASTIC (10 MILS MINIMUM THICKNESS). MASTIC SHALL BE DRY BEFORE THERMITE WELDS ARE COVERED OVER WITH GROUT.

Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	BONDING Vertical Thermite Weld	Detail C-3.05



NOTES:

1. THERMITE WELDS MADE TO DUCTILE IRON PIPE, STEEL PIPE, OR STEEL CASING SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL.
2. THERMITE WELDS MADE TO THE STEEL BONDING PLATES OF PCCP PIPING SHALL BE COATED WITH BRUSH APPLIED MASTIC (10 MILS MINIMUM THICKNESS). MASTIC SHALL BE DRY BEFORE THERMITE WELDS ARE COVERED OVER WITH GROUT.

Revised ⚠ 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	BONDING Horizontal Thermite Weld	Detail C-3.04

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
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STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

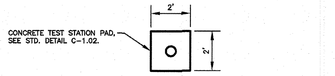
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 25 OF 72

GREEN BUILDING
SDP-18-035

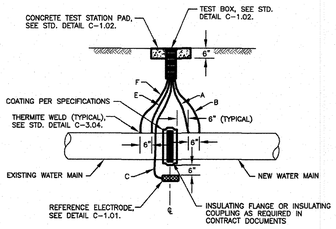
RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-410 Utility Details.dwg Mar 27, 2018 12:08pm cmitchell



PLAN



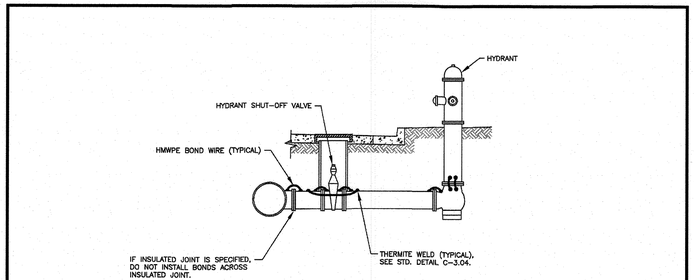
ELEVATION

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
EXISTING WATER MAIN	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

1. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN NON-METALLIC SCHEDULE 40 PVC CONDUIT TO FINAL TEST BOX LOCATION IF NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
2. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18 INCHES FROM THE TEST BOX.
3. TERMINATE WIRES IN TEST BOX WITH RING TERMINALS, SEE STD. DETAIL C-1.02 FOR TERMINAL BOARD CONFIGURATION.
4. ALL THERMITE WELDS TO PCCP ARE TO BE PERFORMED AT STEEL BONDING PLATES, SEE STD. DETAIL C-3.03.

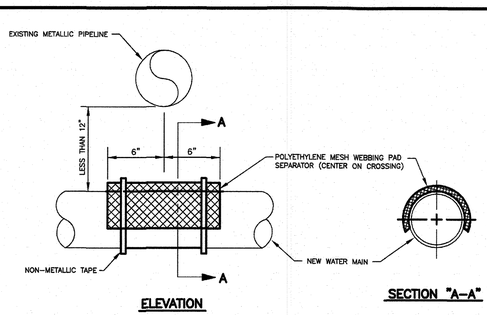
Revised 4/20/2011 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	TEST STATION Insulating Joint	Detail C-2.03



NOTES:

1. BOND ALL DUCTILE IRON COMPONENTS TOGETHER WITH AWG NO. 6 HMWPE WIRES.
2. INSTALL BOND WIRES ON TOP OF PIPE OR FITTING WHERE POSSIBLE.
3. INSTALL A MINIMUM OF TWO BOND CABLES ACROSS EACH PIPE JOINT.
4. SEE STD. DETAIL C-3.01 FOR BONDING OF JOINTS.

Revised 4/20/2011 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	BONDING Fire Hydrant Piping	Detail C-3.02



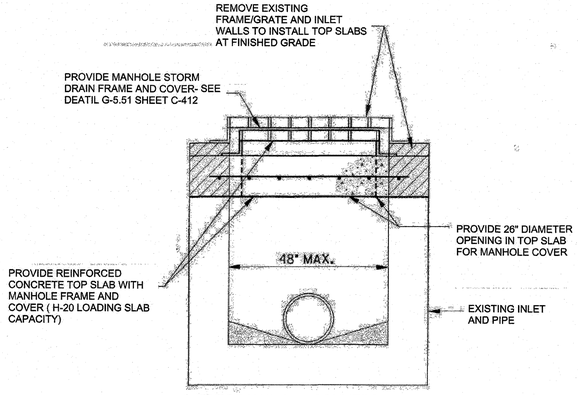
ELEVATION

SECTION "A-A"

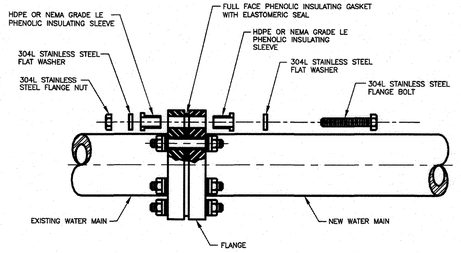
NOTES:

1. INSTALL SEPARATOR WHEN PIPES ARE LESS THAN 12" APART.
2. INSTALL SEPARATOR BETWEEN NEW AND EXISTING PIPE IF EXISTING PIPE IS WITHIN 12" OF NEW MAIN IN ANY DIRECTION.

Revised 4/20/2011 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	INSULATOR Separator Mesh	Detail C-4.06



INLET TO MANHOLE CONVERSION DETAIL
NOT TO SCALE



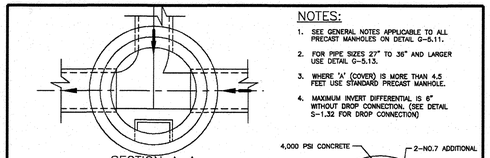
NOTE:

FOR EXTERNAL COATING OF INSULATING FLANGE, SEE INSULATING FLANGE STD. DETAIL C-4.02 AND AS REQUIRED IN CONTRACT DOCUMENTS.

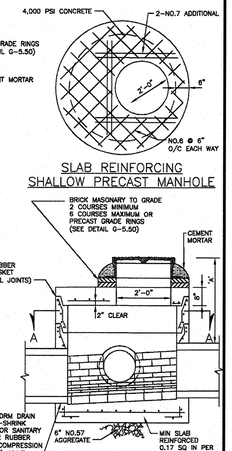
Revised 4/20/2011 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	INSULATOR Flange	Detail C-4.01

NOTES:

1. SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.
2. FOR PIPE SIZES 27" TO 36" AND LARGER USE DETAIL G-5.13.
3. WHERE 'A' (COVER) IS MORE THAN 4.5 FEET USE STANDARD PRECAST MANHOLE.
4. MAXIMUM INVERT DIFFERENTIAL IS 6" WITHOUT DROP CONNECTION. (SEE DETAIL S-1.32 FOR DROP CONNECTION)

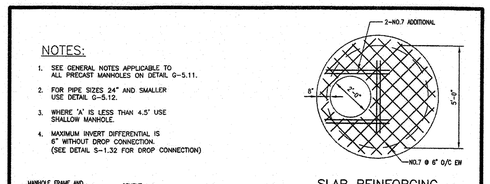


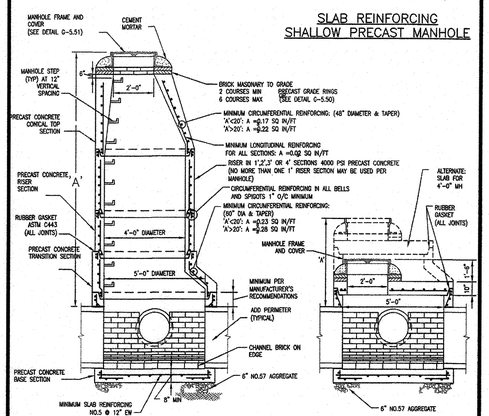
STANDARD PRECAST MANHOLE



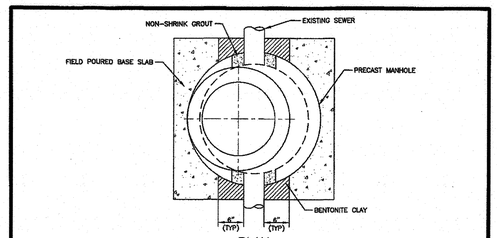
SHALLOW PRECAST MANHOLE

Revised 5/1/2014 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRECAST MANHOLE Standard and Shallow 4'-0" for 24" Pipe and smaller	Detail G-5.12





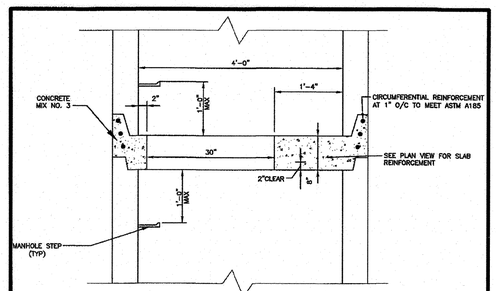
Revised Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRECAST MANHOLE Standard and Shallow 5'-0" for 27" to 36" Pipe	Detail G-5.13



NOTES:

1. SEE DETAIL G-5.11 FOR GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES.
2. SEE DETAIL G-5.13 FOR MANHOLE DETAILS FOR PIPES 27 INCHES TO 36 INCHES.

Revised Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRECAST MANHOLE Doghouse Over Existing Sewer 24" Pipe and smaller	Detail G-5.14



NOTES:

1. INTERMEDIATE LANDING TO BE USED WHEN MANHOLE DEPTH EXCEEDS 18', WHEN DEPTH EXCEEDS 20', SPACE AT MAX 10' INTERVALS. IN ANY CASE, MIN 6.5' CLEAR OF PIPE INVERT OR CLEAR OF PIPE CROWN, WHICHEVER IS GREATER.
2. SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.

Revised Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRECAST MANHOLE Intermediate Landing	Detail G-5.16

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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Ph: 410.728.2900 Contact: John d'Spagnier
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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN DAVID D'SPAGNIER — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 26 OF 72
GREEN BUILDING
SDP-18-035

C-411
RK&K PROJECT NUMBER 17206
SCALE: As Shown

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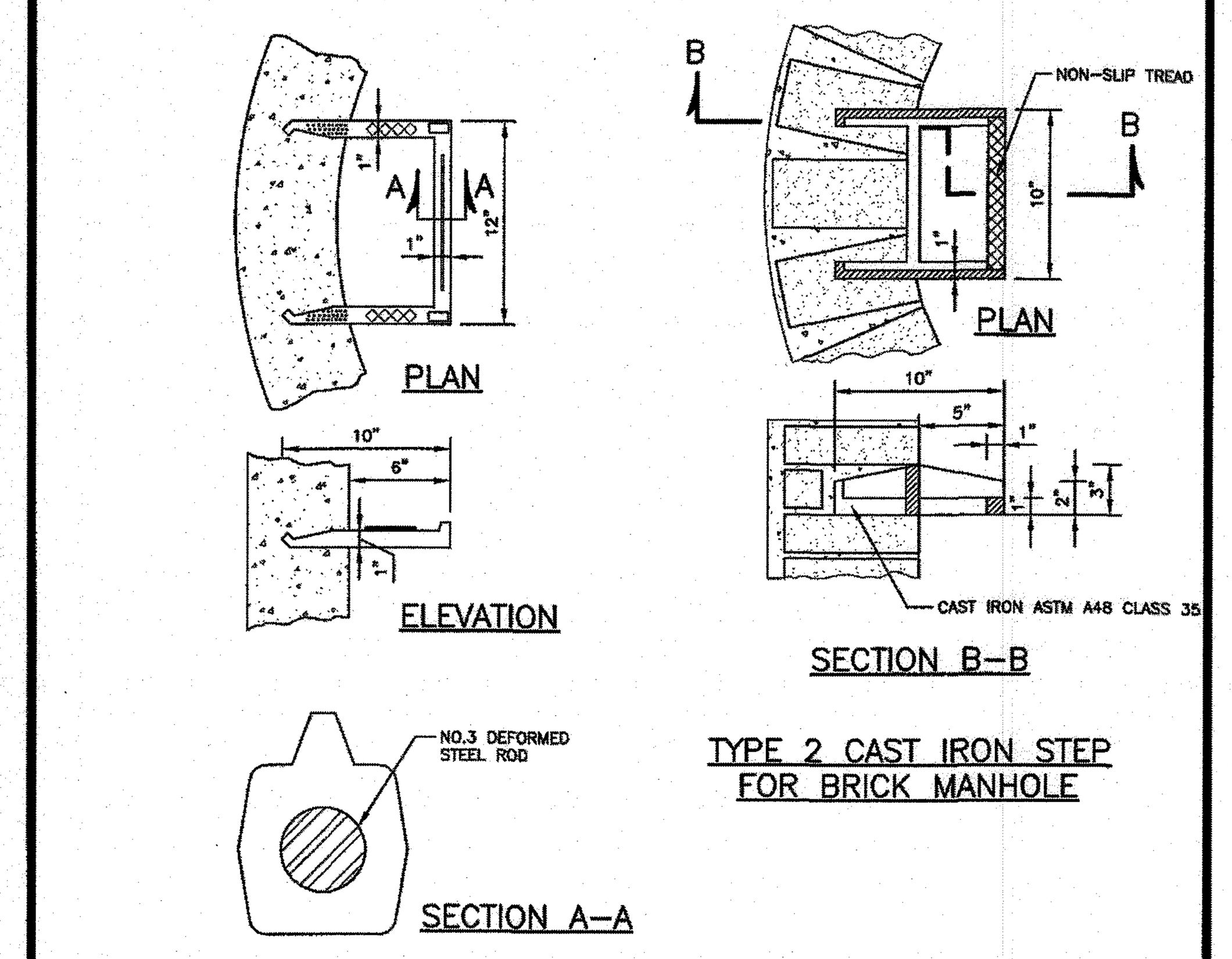


PLAN

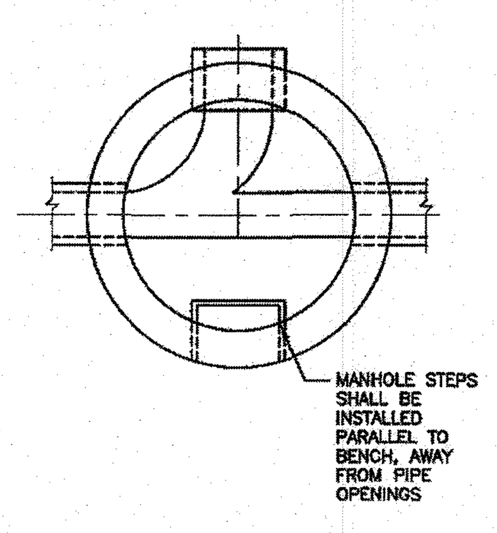
ELEVATION

PLAN

SECTION B–B

TYPE 2 CAST IRON STEP FOR BRICK MANHOLE

SECTION A–A

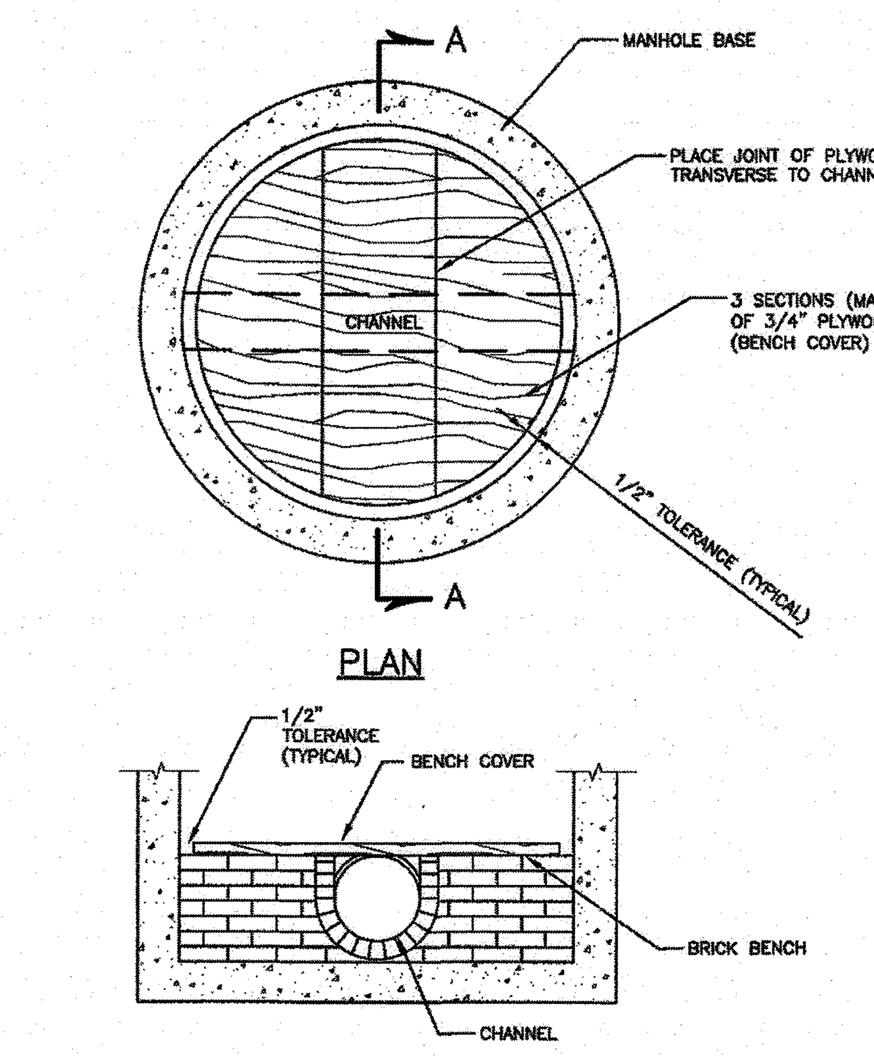


TYPE 1 POLYPROPYLENE PLASTIC COATED STEEL STEP & INLET FOR PRECAST MANHOLE

NOTES:

1. STEPS SHALL BE DESIGNED SO THAT FEET CANNOT SLIP OFF THE END.
2. STEPS SHALL BE ALIGNED TO FORM A CONTINUOUS LADDER WITH STEPS EQUALLY SPACED VERTICALLY AT A DISTANCE OF 12" APART.
3. BOTTOM STEP SHALL BE A MAXIMUM 12" ABOVE THE TOP OF BENCH.
4. THE TOP STEP SHALL BE 2'–0" BELOW THE TOP OF MANHOLE FRAME AND COVER FOR BRICK MANHOLES AND 6" BELOW TOP OF THE PRECAST SECTION OF THE MANHOLE.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole & Inlet Steps	Detail G–5.21



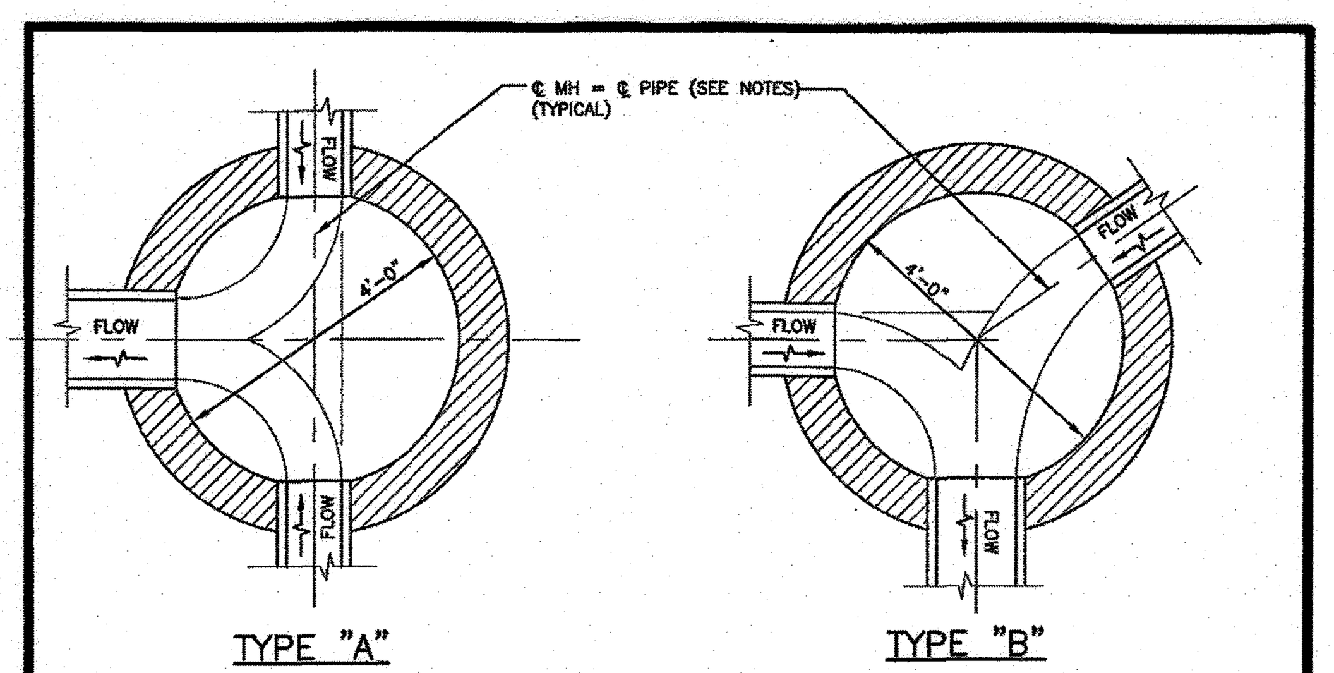
PLAN

SECTION A–A

NOTES:

1. PIPE LINES AND APPURTENANCES SHALL BE KEPT CLEAN DURING CONSTRUCTION AND UNTIL FINAL ACCEPTANCE.
2. THE TEMPORARY PROTECTIVE CHANNEL COVER SHALL BE PLACED AT TIME OF IN–SERVICE, REMOVED AND/OR REPLACED, AS REQUIRED FOR TELEVISION INSPECTION, AND REMOVED AT THE TIME OF FINAL INSPECTION.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Temporary Protective Bench Cover	Detail G–5.22

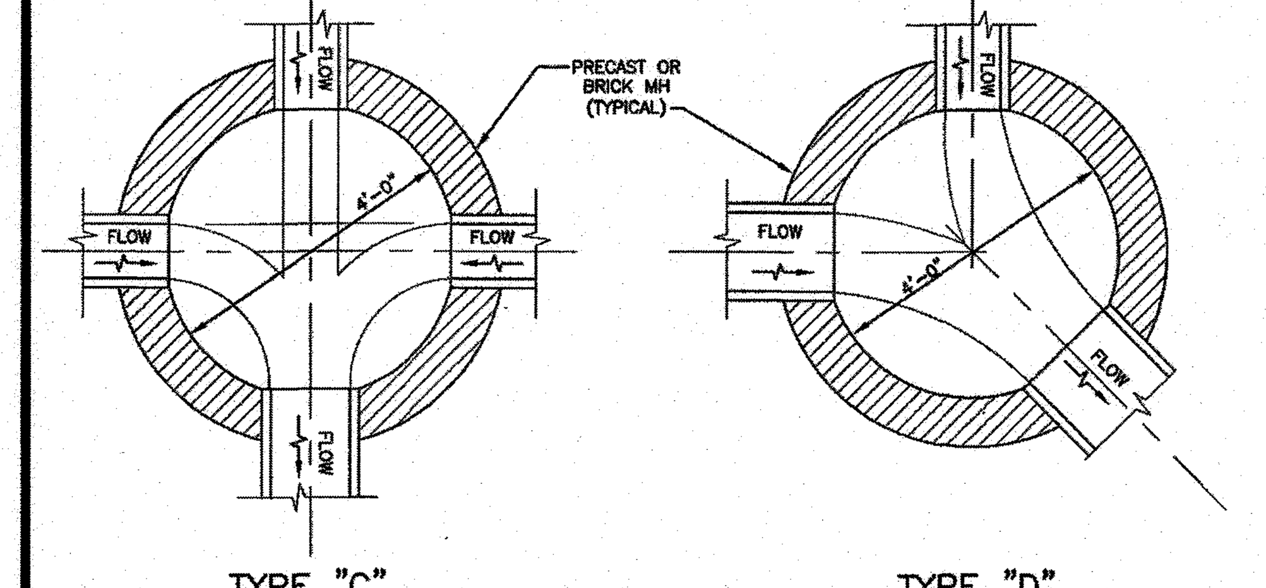


TYPE "A"

TYPE "B"

CHANNEL LINING NOTES

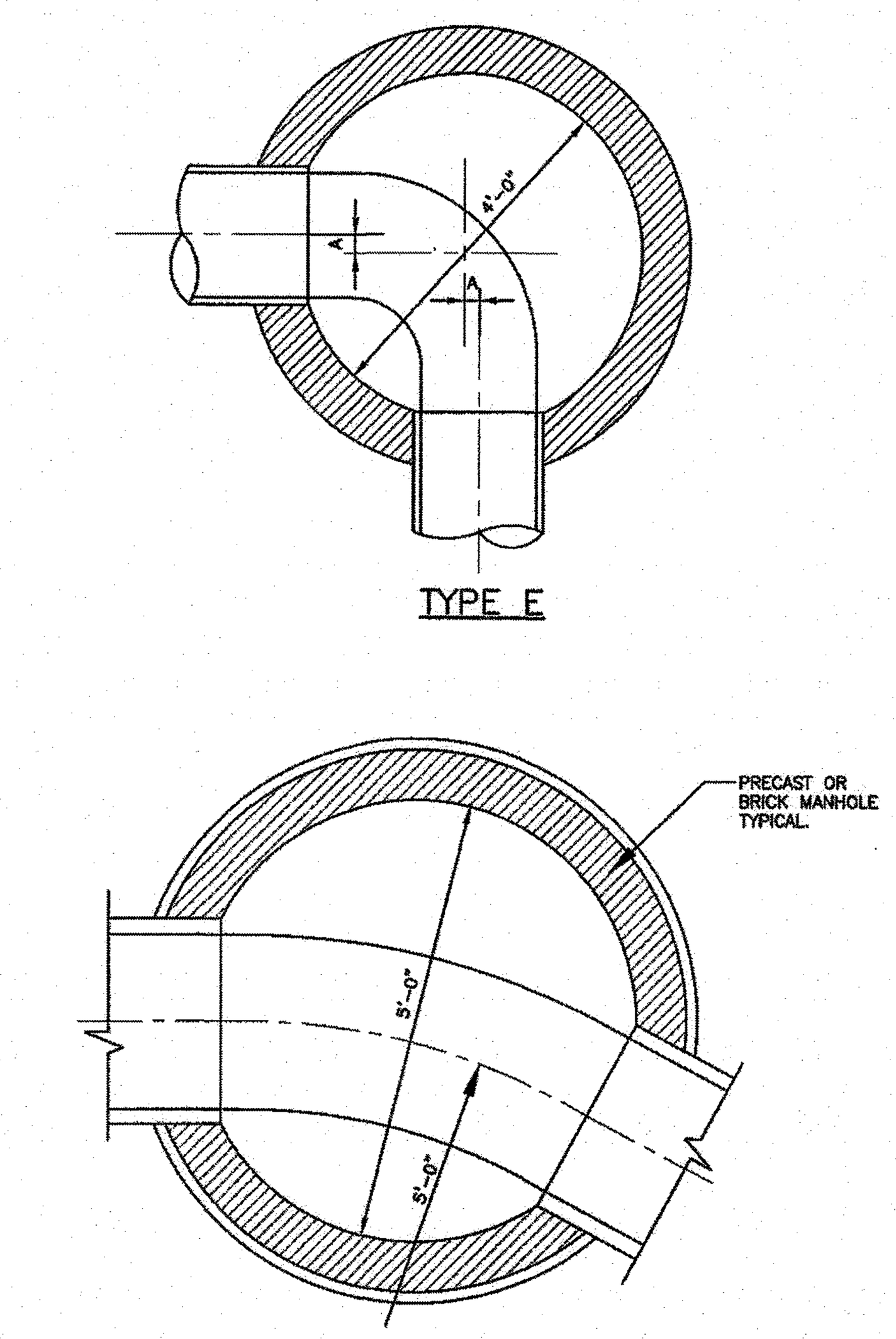
1. CHANNEL LININGS SHALL BE FORMED USING SEWER BRICK (ASTM C32, GRADE SM, SIZE NO.1) OR PRECAST CONCRETE BY MANHOLE MANUFACTURER. USE NON–REINFORCED 3500 PSI CONCRETE FOR PRECAST CHANNEL.
2. CHANNEL SHALL PROVIDE SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES, INCLUDING MATCHING INSIDE DIAMETER OF PIPES.
3. MINIMUM CENTERLINE CHANNEL RADIUS SHALL BE 2.5 TIMES OUTLET PIPE DIAMETER.
4. MAXIMUM ALLOWABLE NUMBER OF CHANNELS IS FOUR (4) – SEE TYPE "C".
5. THE CENTERLINE OF ALL PIPES ENTERING A MANHOLE SHALL INTERSECT WITHIN 11" OF THE LOGITUDINAL AXIS OF THE MANHOLE BARREL (CENTER) AND SHALL BE AS DETAILED ON THE CONTRACT DRAWINGS.
6. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C478 EXCEPT AS SHOWN.



TYPE "C"

TYPE "D"

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole Channel Configuration Types A, B, C & D	Detail G–5.31



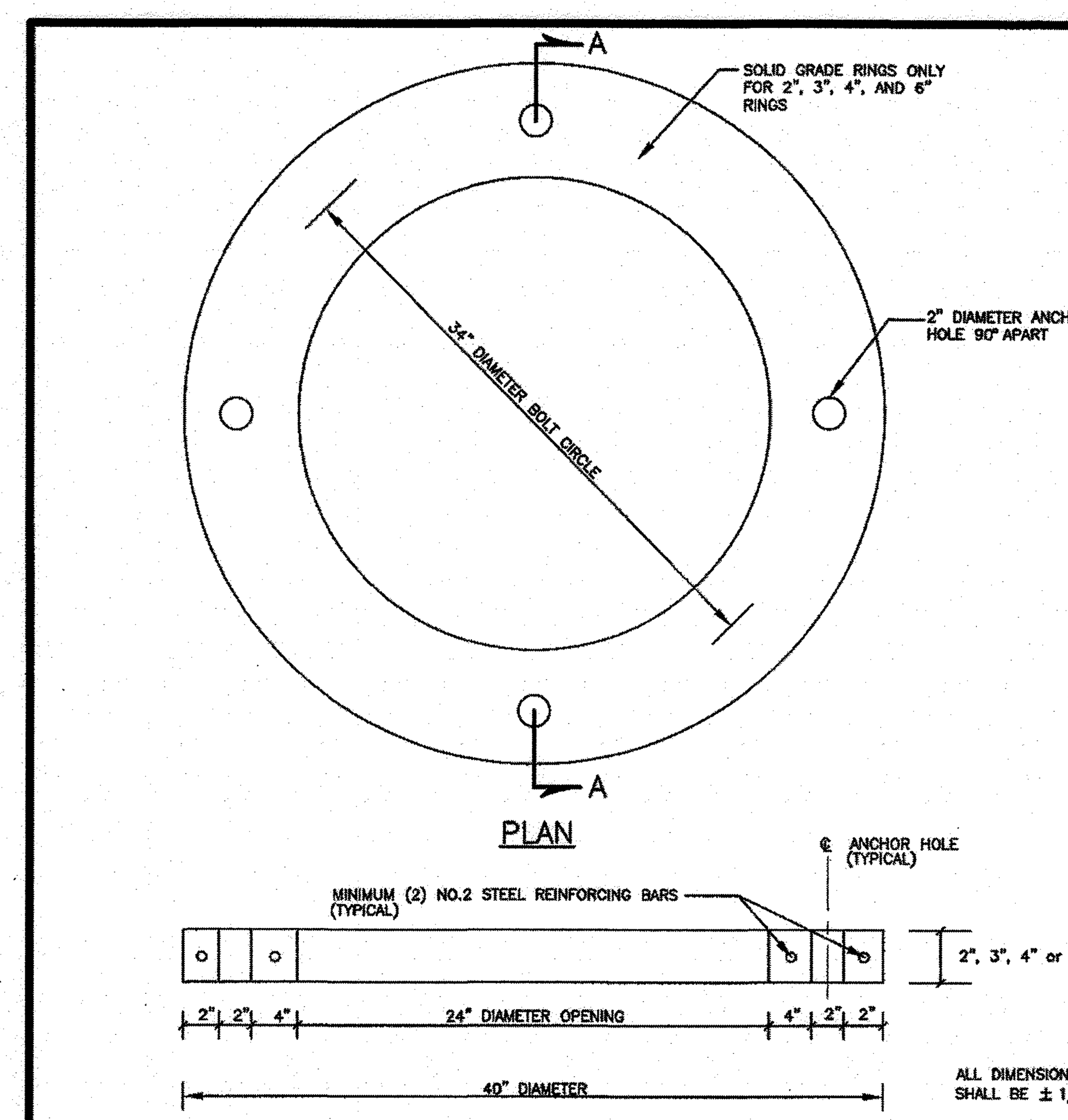
TYPE E

TYPE G

NOTES:

1. ALL NOTES ON DETAIL G–5.31 APPLY HERE.
2. THE "A" DIMENSIONS SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.
3. TYPE "G" CHANNELS ARE APPLICABLE TO 18, 21, AND 24–INCH DIAMETER SEWERS.
4. ℄ CHANNEL RADIUS SHALL BE MIN 2.5 TIMES OUTLET PIPE DIAMETER

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole Channel Configuration Types E & G	Detail G–5.32



PLAN

SECTION A–A

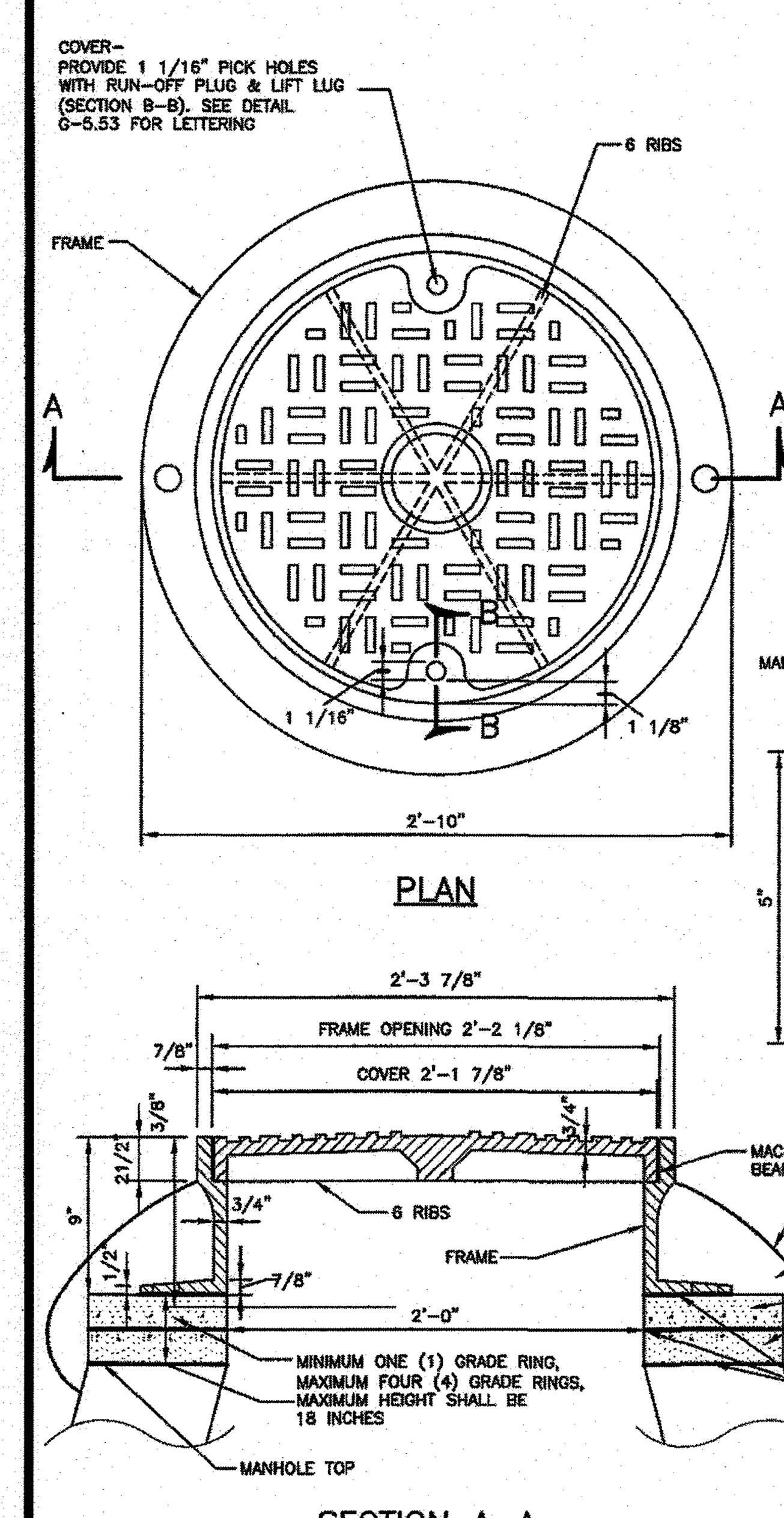
NOTES:

1. PRECAST CONCRETE, f'c= 5,000 PSI AT 28 DAYS.
2. REINFORCEMENT SHALL CONFORM TO ASTM C478.
3. CAST LIFT LUGS REQUIRED FOR 4" AND 6" RINGS.
4. GRADE RINGS SHALL BE FLAT AND TRUE WITHIN 1/4".
5. USE BEVELED GRADE RINGS TO ACCOMODATE ROAD SLOPE.
6. NUMBER OF GRADE RINGS SHALL NOT EXCEED FOUR, REGARDLESS OF SIZE. A MINIMUM OF ONE GRADE RING SHALL BE USED IN THE ABSENCE OF THE MINIMUM 2 BRICK COURSES.
7. TWO FLEXIBLE GASKETS OF BUTYL ROPE, TYPE B, 3/4 INCH MINIMUM DIAMETER, CONFORMING TO AASHTO M198 SHALL BE USED BETWEEN RINGS, FRAME, AND MANHOLE TOP. GASKETS SHALL BE PLACED BOTH INSIDE AND OUTSIDE THE BOLT CIRCLE, AND MINIMUM OF 2" OVERLAP SHALL BE USED AT THE JOINTS.
8. THE DISTANCE BETWEEN THE MANHOLE FRAME AND MANHOLE PRECAST TOP SHALL NOT EXCEED 18 INCHES.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole Precast Adjustable Grade Rings	Detail G–5.50

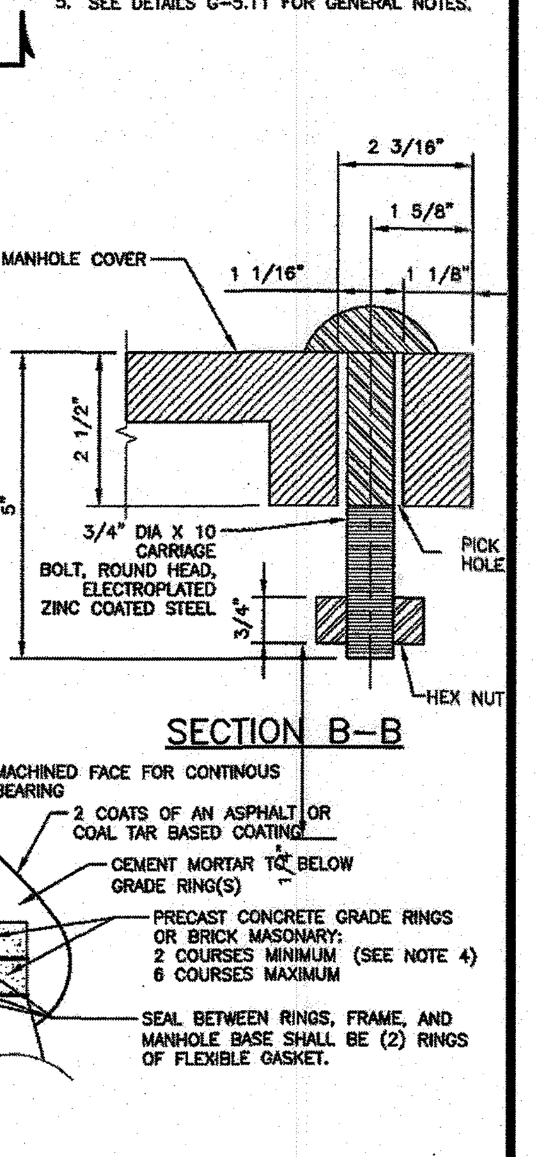
NOTES:

1. WEIGHT OF FRAME SHALL NOT BE LESS THAN 250 POUNDS.
2. WEIGHT OF COVER SHALL NOT BE LESS THAN 170 POUNDS.
3. MANHOLE FRAME AND COVER SHALL BE HEAVY DUTY AND BE CAST IRON MEETING ASTMA–48 CLASS 35B
4. PRECAST CONCRETE RINGS MAY BE USED IN PLACE OF BRICK MASONRY COURSES. A MINIMUM OF ONE GRADE RING AND MAXIMUM OF FOUR GRADE RINGS SHALL BE PROVIDED, WITH A MAX. TOTAL HIEGHT OF 18 INCHES FROM THE TOP OF THE MANHOLE TO BOTTOM OF FRAME, SEE DETAIL G–5.50. GRADE RINGS SHALL BE BEVELED WHEN NECESSARY TO ACCOMODATE ROAD SLOPE.
5. SEE DETAILS G–5.11 FOR GENERAL NOTES.



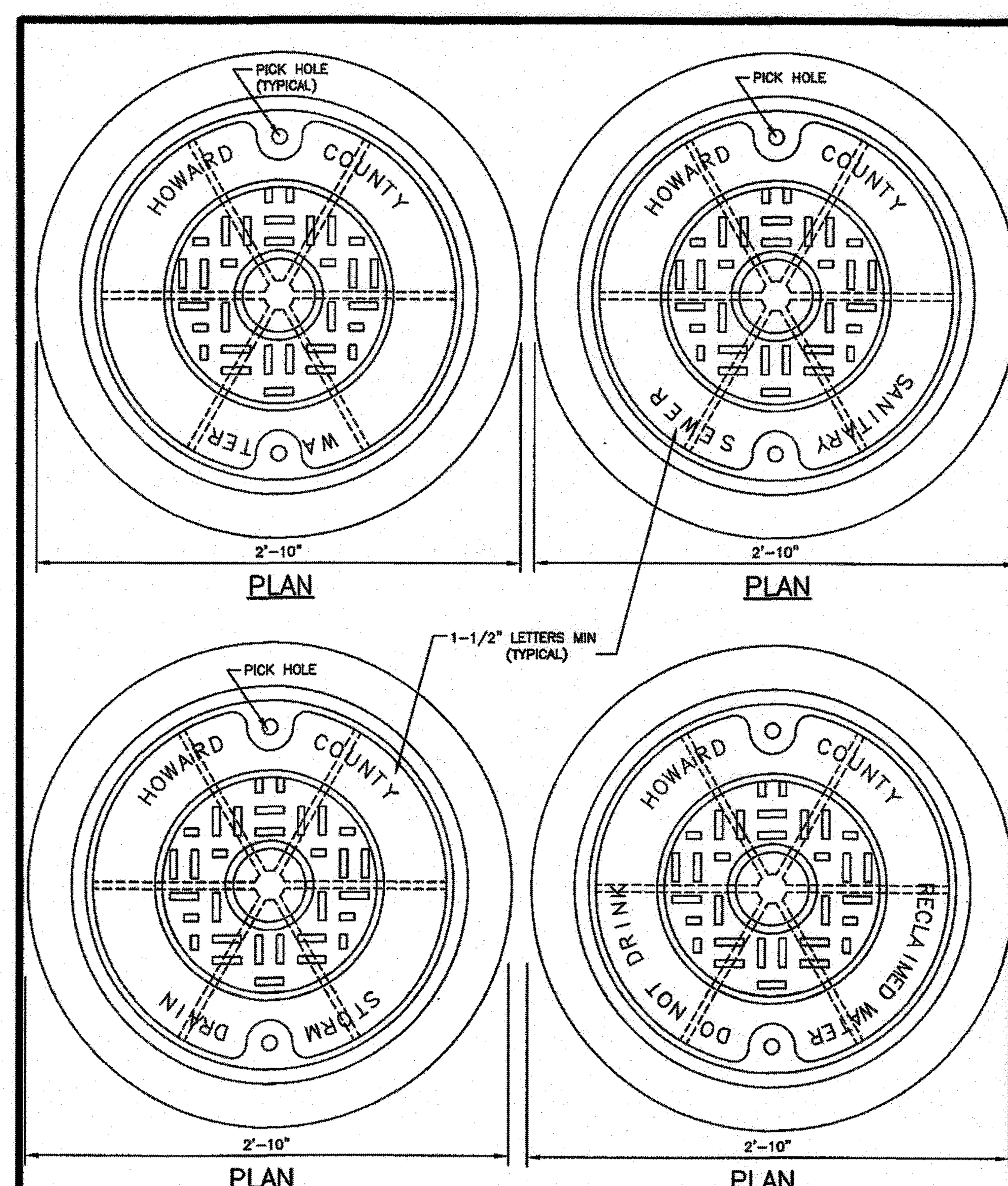
PLAN

SECTION A–A



SECTION B–B

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole Heavy Traffic Frame and Cover	Detail G–5.51



PLAN

PLAN

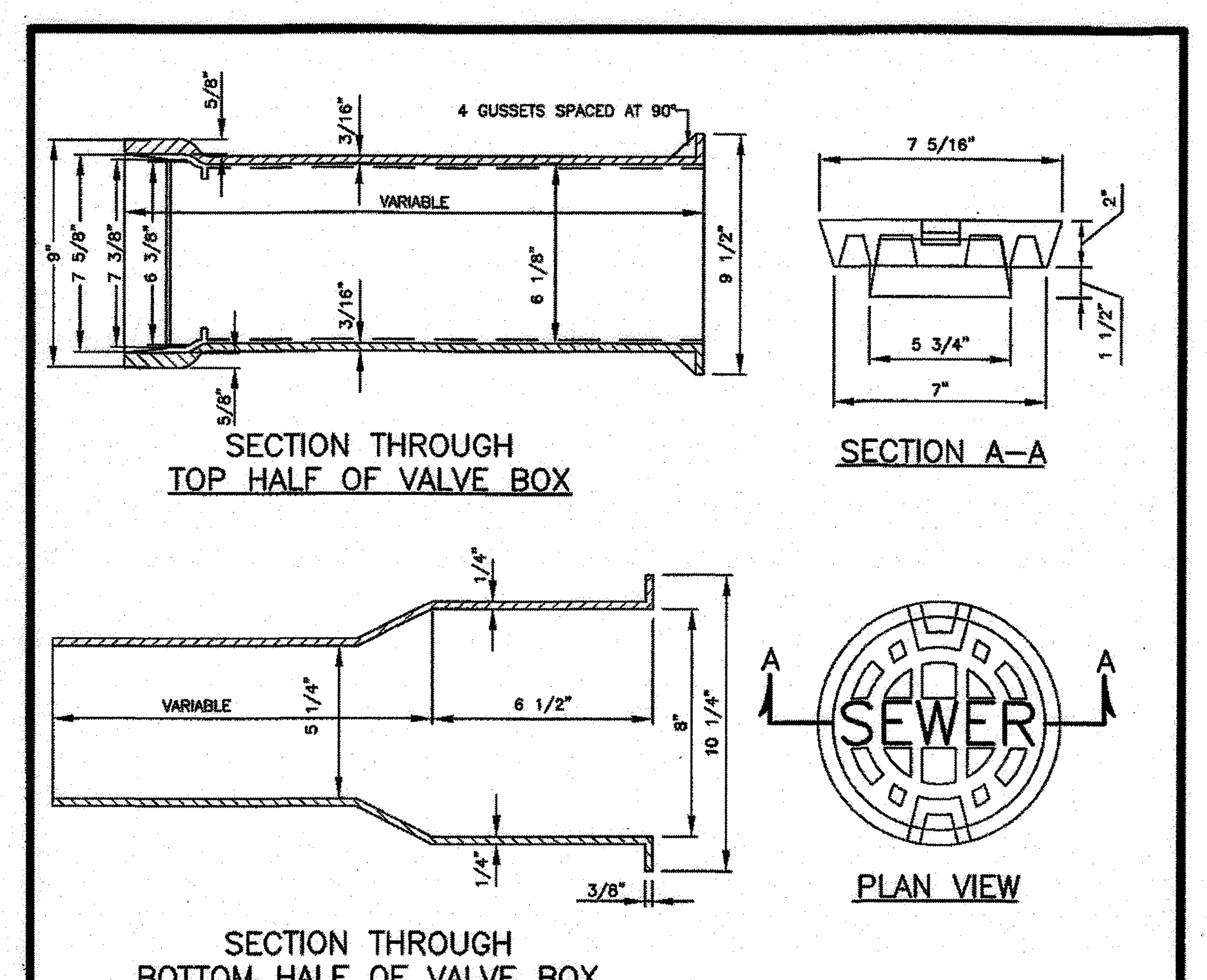
PLAN

PLAN

NOTES:

1. FOR FRAME AND COVER ASSEMBLY, AND NOTES SEE DETAIL G–5.51.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Manhole Cover Lettering	Detail G–5.53

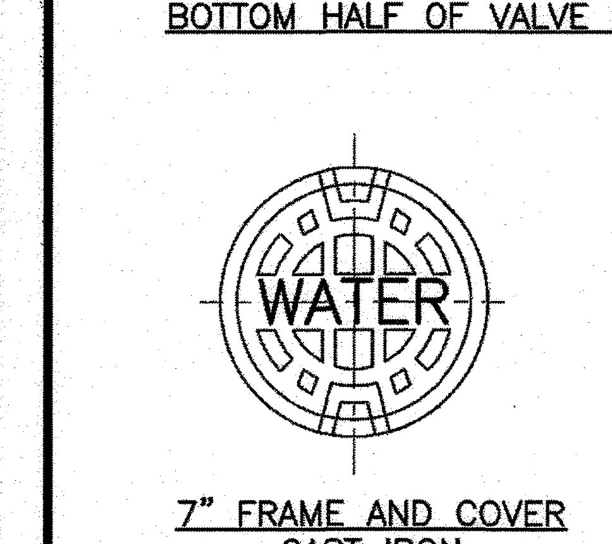


SECTION THROUGH TOP HALF OF VALVE BOX

SECTION A–A

SECTION THROUGH BOTTOM HALF OF VALVE BOX

PLAN VIEW

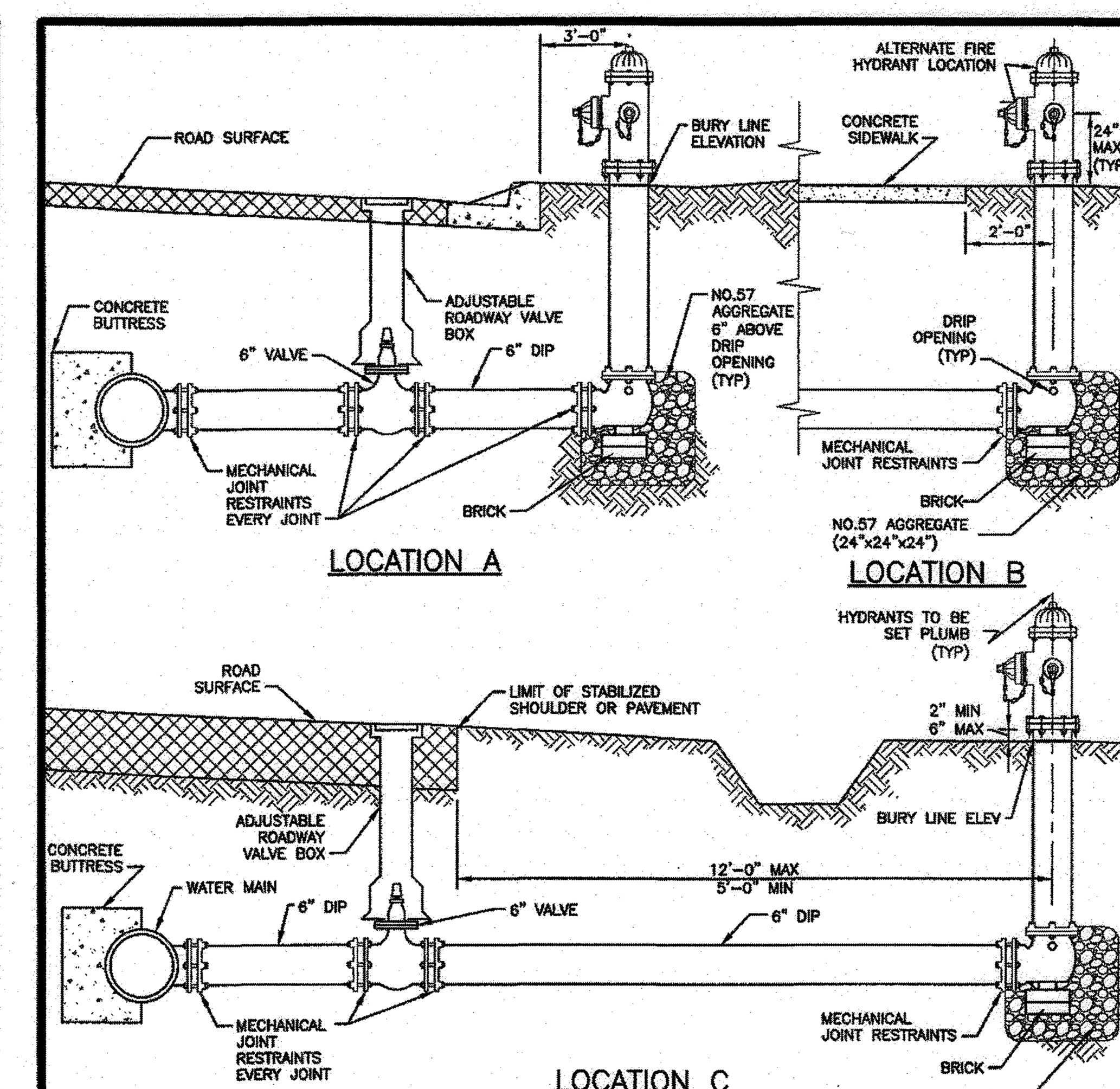


7" FRAME AND COVER CAST IRON

NOTES:

1. ALL VALVES BOXES SHALL BE THE SLIDING TYPE IN PAVED AREAS. USE SCREW TYPE VALVE BOXES IN LAWN AREAS.
2. ALL WATER VALVES SHALL BE MARKED "WATER" AND ALL SEWER VALVES SHALL BE MARKED "SEWER".
3. ENTIRE VALVE BOX AND ASSEMBLY SHALL BE CAST FROM CLASS 35 GREY IRON. ALL PARTS SHALL BE SUPPLIED BY THE SAME MANUFACTURER.
4. INSTALLATION SHALL BE PLUMB.
5. FOR BOXES ADJUSTABLE 23" TO 34" TOP SECTION–16" BOTTOM SECTION–18"
6. FOR BOXES ADJUSTABLE 34" TO 46" TOP SECTION–16" BOTTOM SECTION–30"
7. MINIMUM WEIGHT PER BOX– 100 LBS
8. BOTTOM SECTION SHALL REST ON VALVE BONNET.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	Valve Box Adjustable Round Head	Detail G–8.01



LOCATION A

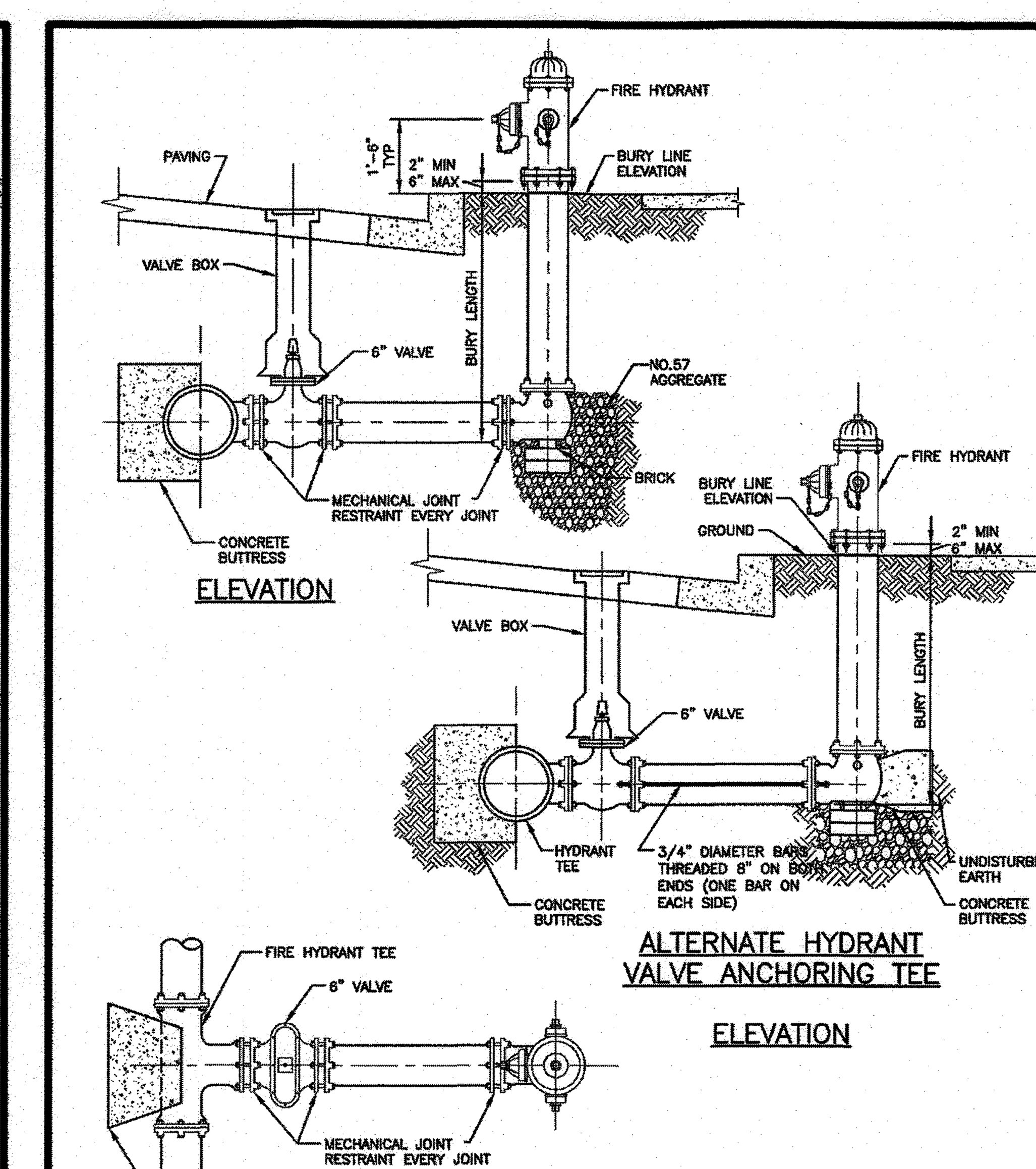
LOCATION B

LOCATION C

NOTES:

1. PLACE MINIMUM OF 1/3 CY OF NO.57 AGGREGATE FULL WIDTH OF TRENCH FOR DRAIN SUMP.
2. WHEN LOCATION 'B' IS USED, PROVIDE 10'x10' R/W FOR FIRE HYDRANTS, (SEE DETAIL W–1.13).
3. ALL FIRE HYDRANTS SHALL BE RESTRAINED (SEE DETAIL W–2.11).
4. USE PLAIN CONCRETE 3000 PSI FOR ALL CONCRETE BUTTRESSES.
5. SEE DETAIL W–1.12 FOR GRADING AROUND FIRE HYDRANT.
6. HYDRANTS AND VALVE BOXES ARE TO BE INSTALLED PLUMB.
7. KEEP DRIP OPENING CLEAR AND FREE TO DRAIN.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	FIRE HYDRANT Settings	Detail W–1.11



ELEVATION

ALTERNATE HYDRANT VALVE ANCHORING TEE

ELEVATION

PLAN

NOTES:

1. APPLY BITUMINOUS MATERIAL PROTECTIVE COATING TO ALL EXPOSED STEEL PER AWWA C203.
2. BURY LENGTH = BURY LINE ELEV (–) FIRE HYDRANT INVERT.
3. SEE DETAIL W–1.11 FOR HYDRANT SETTINGS.

Revised / Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	FIRE HYDRANT Restraining Hydrant to Main	Detail W–2.11

No As-Built Information in this sheet
5/20/2022

C-412

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SHEET 27 OF 72
SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\bdsrv05\2017\2017\17206_APL14\CADD\Plans\C-412 Utility Details.dwg Mar 27, 2018 12:08pm cmitchell

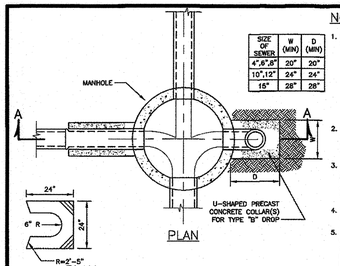
NOTES:

1. HEIGHT CRITERIA FOR DROP CONNECTIONS SHALL BE AS FOLLOWS.

SIZE OF SEWER	TYPE A MAX DROP	TYPE A MIN DROP	TYPE B MIN DROP
4",8",8"	3'-0"	2'-2"	3'-0"
10"	4'-0"	2'-2"	4'-0"
12"	6'-0"	2'-6"	6'-0"
15"	6'-0"	2'-6"	6'-0"

2. SEE GENERAL NOTES APPLICABLE TO ALL BRICK MANHOLES ON DETAIL G-5.01 AND ALL PRECAST MANHOLES ON DETAIL G-5.12.
3. U-SHAPED PRECAST CONCRETE COLLARS SHALL BE 1'-0", 2'-0", OR 3'-0" IN HEIGHT. PLACE #57 AGGREGATE BETWEEN COLLAR AND UNDISTURBED EARTH AND/OR SAND BETWEEN COLLAR AND PIPE.
4. TYPE "A" AND "B" DROP CONNECTION MAY BE PRECAST BY MANHOLE MANUFACTURER.
5. FOR BRICK MANHOLE OR TYPE 'A' DROP, USE CAST-IN-PLACE CONCRETE (MIX NO. 1) FROM MANHOLE WALL TO UNDISTURBED EARTH AND MINIMUM 6" PIPE ENCASEMENT IN ALL OTHER DIRECTIONS.

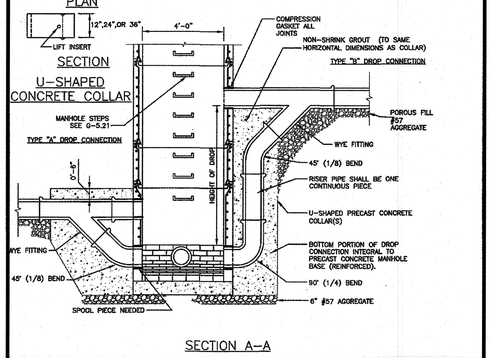
SIZE OF SEWER	W (MIN)	D (MIN)
4",8",8"	20"	20"
10",12"	24"	24"
15"	28"	28"



PLAN

U-SHAPED PRECAST CONCRETE COLLAR(S) FOR TYPE "B" DROP

PLAN

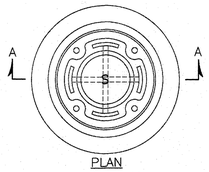


SECTION

U-SHAPED CONCRETE COLLAR

SECTION A–A

Revised	Howard County, Maryland Department of Public Works	MANHOLE Drop Connection Types "A" and "B"	Detail S-1.32
Revised 5/1/2007	Approved: Chief, Bureau of Engineering		
Approved			

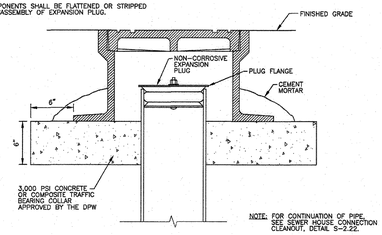


SECTION A–A

CAST IRON FRAME & COVER

EXPANSION PLUG NOTES:

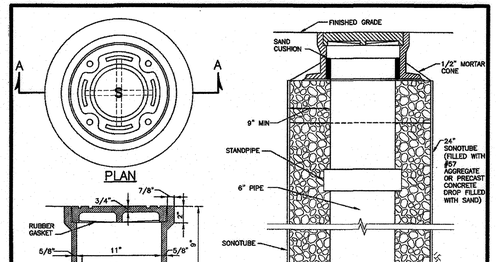
1. EXPANSION PLUG SHALL NOT INTERFERE WITH LID.
2. PLUG FLANGE SHALL BE LARGER THAN PIPE ID.
3. THREADED COMPONENTS SHALL BE FLATTENED OR STRIPPED TO PREVENT DISASSEMBLY OF EXPANSION PLUG.



NOTE: FOR CONTINUATION OF PIPE, SEE SEWER HOUSE CONNECTION CLEANOUT, DETAIL S-2.22.

ELEVATION

Revised	Howard County, Maryland Department of Public Works	Cleanout Cover Assembly For All Paved Areas	Detail S-2.23
Revised 6/30/2011	Approved: Chief, Bureau of Engineering		
Approved			



SECTION A–A

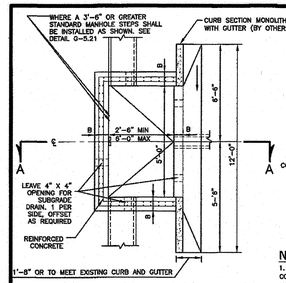
CAST IRON LAMPHOLE FRAME & COVER

NOTES:

1. STANDPIPE SHALL BE THE SAME TYPE OF PIPE AS SEWER MAIN.

ELEVATION

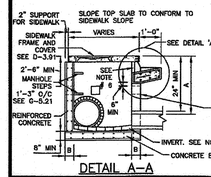
Revised	Howard County, Maryland Department of Public Works	Main Line Cleanout Lamphole	Detail S-3.21
Revised 5/1/2007	Approved: Chief, Bureau of Engineering		
Approved			



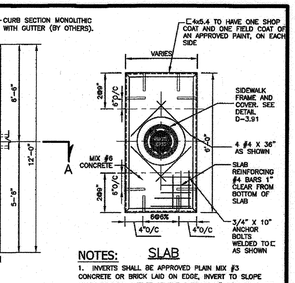
PLAN BELOW SLAB

REPLACE REINFORCING CUT OUT FOR PIPE PENETRATIONS PROVIDE THE SAME AS ON EACH SIDE OF HOLE

PIPE PENETRATION DETAIL



DETAIL A–A

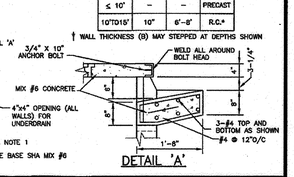


NOTES: SLAB

1. INVERTS SHALL BE APPROVED PLAIN MIX #3 CONCRETE OR BRICK LAID ON EDGE, INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF 2" PER FOOT, OR AS SHOWN ON PLAN OR AS DIRECTED. INVERT BRICK SHALL BE ASTM C32-91 GRADE SS.
2. BASE AND WALLS SHALL BE REINFORCED CONCRETE MIX #6. SEE TABLE FOR DIMENSIONS AND REINFORCING.
3. *REINFORCING = REINFORCING CONTINUOUS AT CORNERS, ALL LAPS 1'-4".
4. TOP 4" OF WALLS SHALL BE BRICK MASONRY. ADDITIONAL BRICK SHALL BE USED TO BRING MH COVER TO EXIST. GROUND IF REQUIRED.
5. UNDERDRAINS SHALL BE GROUTED INTO THE PROVIDED 4" X 4" OPENINGS.

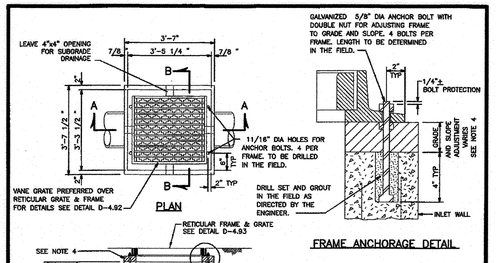
A	B †	C	WALLS
≤ 10'	–	–	PRECAST
10'TO15'	10"	6'-8"	R.C.*

† WALL THICKNESS (B) MAY STEPPED AT DEPTHS SHOWN



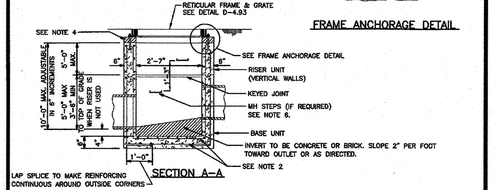
DETAIL 'A'

Revised	Howard County, Maryland Department of Public Works	Type A-5 Inlet Cast-in-place	Detail D-4.02
Revised 5/1/2007	Approved: Chief, Bureau of Engineering		
Approved			

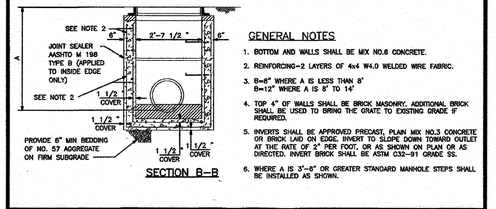


PLAN

FRAME ANCHORAGE DETAIL



SECTION A–A



SECTION B–B

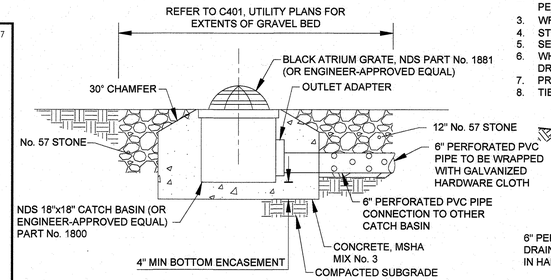
GENERAL NOTES

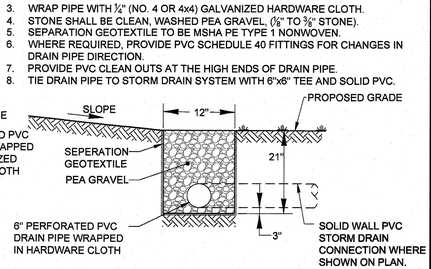
1. BOTTOM AND WALLS SHALL BE MIX NO.6 CONCRETE.
2. REINFORCING-2 LAYERS OF 4x4 W4.0 WELDED WIRE FABRIC.
3. B=8" WHERE A IS LESS THAN 8' B=12" WHERE A IS 8' TO 14'
4. TOP 4" OF WALLS SHALL BE BRICK MASONRY. ADDITIONAL BRICK SHALL BE USED TO BRING THE GRATE TO EXISTING GRADE IF REQUIRED.
5. INVERTS SHALL BE APPROVED PRECAST, PLAIN MIX NO.3 CONCRETE OR BRICK LAID ON EDGE. INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF 2" PER FOOT, OR AS SHOWN ON PLAN OR AS DIRECTED. INVERT BRICK SHALL BE ASTM C32-91 GRADE SS.
6. WHERE A IS 3'-6" OR GREATER STANDARD MANHOLE STEPS SHALL BE INSTALLED AS SHOWN.

Revised	Howard County, Maryland Department of Public Works	Type 'S' Inlet	Detail D-4.22
Revised 5/1/2007	Approved: Chief, Bureau of Engineering		
Approved			

NOTES:

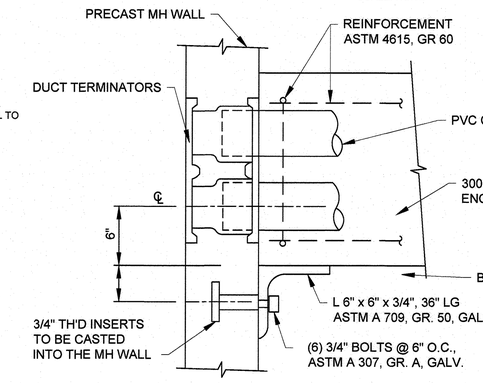
1. PVC SHALL BE SCHEDULE 40.
2. PIPE PERFORATIONS SHALL BE ⅜" DIAMETER, LOCATED 6" ON CENTER, 4 HOLES PER ROW.
3. WRAP PIPE WITH ½" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
4. STONE SHALL BE CLEAN, WASHED PEA GRAVEL, (⅛" TO ⅜" STONE).
5. SEPARATION GEOTEXTILE TO BE MSHA PE TYPE 1 NONWOVEN.
6. WHERE REQUIRED, PROVIDE PVC SCHEDULE 40 FITTINGS FOR CHANGES IN DRAIN PIPE DIRECTION.
7. PROVIDE PVC CLEAN OUTS AT THE HIGH ENDS OF DRAIN PIPE.
8. TIE DRAIN PIPE TO STORM DRAIN SYSTEM WITH 6"x6" TEE AND SOLID PVC.





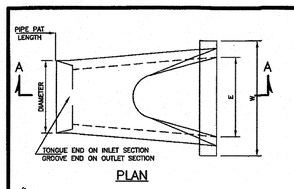
BEEHIVE INLET FOR FRENCH DRAIN & FRENCH DRAIN DETAIL

SCALE: NONE



SETTLEMENT WALL BENCH

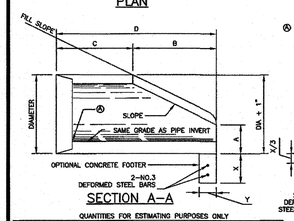
SCALE: NONE



PLAN

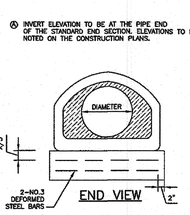
NOTES

1. END SECTIONS MUST BE REINFORCED TO CONFORM WITH CLASS IV PIPE.
2. CONCRETE FOOTER SHALL BE USED WHEN SPECIFIED ON THE PLANS. COST OF CONCRETE FOOTER TO BE INCLUDED IN PRICE OF END SECTION. CONCRETE TO BE MIX NO. 2. REINFORCEMENT TO BE NO. 3 BARS.



SECTION A–A

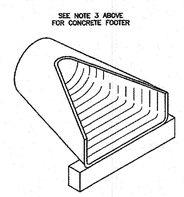
Ⓐ INVERT ELEVATION TO BE AT THE PIPE END OF THE STANDARD END SECTION. ELEVATIONS TO BE NOTED ON THE CONSTRUCTION PLANS.



END VIEW

QUANTITIES FOR ESTIMATING PURPOSES ONLY

DIMENSIONS										QUANTITIES		
CONCRETE END SECTION							CONCRETE FOOTER					
DIA	SLOPE	A	B	C	D	E	W	X	Y	CONC CY	STEEL LBS
12"	3:1	4"	2'-0"	4'-0⅝"	6'-0⅝"	2'-0"	3'-0"	12"	9"	0.08	24.00
15"	3:1	6⅜"	2'-4"	3'-10"	6'-2"	2'-8"	3'-6"	12"	9"	0.10	28.50
18"	3:1	10⅜"	2'-2"	4'-0"	6'-2"	3'-0"	4'-0"	12"	9"	0.11	33.00
21"	3:1	9"	3'-0"	3'-1⅝"	6'-1⅝"	3'-6"	4'-6"	12"	9"	0.13	37.50
24"	3:1	11"	3'-0"	2'-8"	6'-3"	4'-0"	5'-0"	12"	9"	0.17	42.00
27"	3:1	10⅜"	4'-0"	1'-5⅞"	6'-1⅝"	4'-6"	5'-6"	15"	9"	0.19	46.50
30"	3:1	1'-1"	4'-0"	1'-10"	6'-3"	5'-0"	6'-0"	15"	9"	0.21	51.00
33"	3:1	1'-2"	4'-7"	2'-2"	6'-9"	5'-6"	6'-6"	15"	9"	0.23	55.50
36"	3:1	1'-3⅝"	5'-3"	2'-1"	8'-1⅝"	6'-0"	7'-3"	15"	9"	0.25	62.25
42"	3:1	1'-6⅛"	5'-8"	2'-10"	8'-3"	6'-6"	7'-9"	15"	9"	0.27	66.75
48"	3:1	2'-1"	6'-0"	2'-2"	8'-2"	7'-0"	8'-6"	18"	12"	0.47	73.50
54"	2.4:1	2'-5"	5'-2"	2'-10"	8'-0"	7'-6"	9'-0"	18"	12"	0.50	78.00
60"	3:1	2'-7"	6'-11⅝"	3'-9⅞"	8'-7⅝"	8'-0"	9'-6"	18"	12"	0.53	82.50
66"	3:1	2'-4"	6'-6"	1'-9"	8'-3"	8'-6"	10'-0"	18"	12"	0.56	87.00
72"	3:1	2'-10"	6'-6"	1'-9"	8'-3"	9'-0"	10'-9"	18"	12"	0.60	93.75

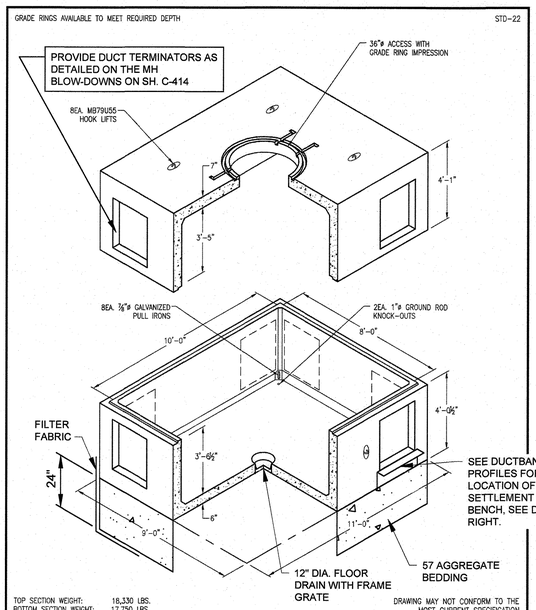


ISOMETRIC VIEW

Revised	Howard County, Maryland Department of Public Works	Concrete End Section Circular Concrete Pipe	Detail D-5.51
Revised 5/1/2007	Approved: Chief, Bureau of Engineering		
Approved			

GRADE RINGS AVAILABLE TO MEET REQUIRED DEPTH — STD-22

PROVIDE DUCT TERMINATORS AS DETAILED ON THE MH BLOW-DOWNS ON SH. C-414



SEE DUCTBANK PROFILES FOR LOCATION OF SETTLEMENT WALL BENCH, SEE DETAIL TO RIGHT.

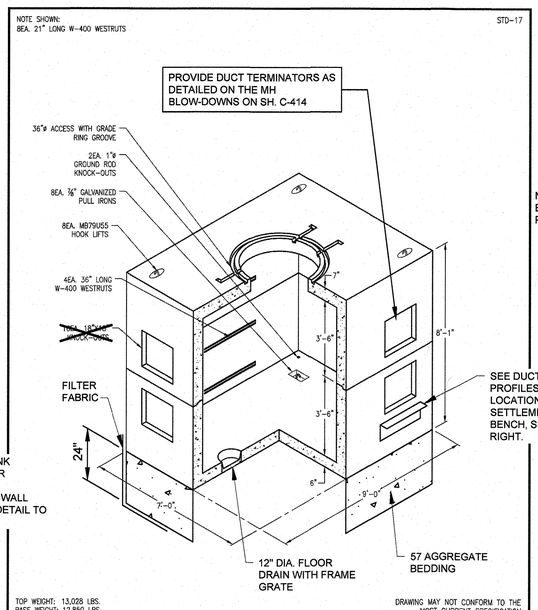
TOP SECTION WEIGHT: 18,330 LBS.
BOTTOM SECTION WEIGHT: 17,750 LBS.

DRAWING MAY NOT CONFORM TO THE MOST CURRENT SPECIFICATION

Oldcastle Precast® Northern California Madera • Morgan Hill • Pleasanton • Santa Rosa • Stockton • Tulare Phone: 925-750-6650 Fax: 925-750-6660 www.oldcastleprecast.com	STD-810 FILE NAME: STD-22.DWG REVISED: MARCH 2016	8'-0" X 10'-0" X 7'-0" (I.D.) UTILITY VAULT STANDARD LAYOUT
		Copyright © 2016 Oldcastle Precast, Inc.

NOTE SHOWN: 8EA. 21" LONG W-400 WESTRUTS — STD-17

PROVIDE DUCT TERMINATORS AS DETAILED ON THE MH BLOW-DOWNS ON SH. C-414



SEE DUCTBANK PROFILES FOR LOCATION OF SETTLEMENT WALL BENCH, SEE DETAIL TO RIGHT.

TOP WEIGHT: 13,028 LBS.
BASE WEIGHT: 12,850 LBS.

DRAWING MAY NOT CONFORM TO THE MOST CURRENT SPECIFICATION

Oldcastle Precast® Northern California Madera • Morgan Hill • Pleasanton • Santa Rosa • Stockton • Tulare Phone: 925-750-6650 Fax: 925-750-6660 www.oldcastleprecast.com	STD-687 FILE NAME: STD-17.DWG REVISED: MARCH 2016	6'-0" X 8'-0" X 7'-0" (I.D.) UTILITY VAULT STANDARD LAYOUT
		Copyright © 2016 Oldcastle Precast, Inc.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS/CONSTRUCTION MANAGERS/PLANNERS/SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 20012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER WILLIAM MAY — 20012 — REGISTERED PROFESSIONAL ENGINEER — 3/3/18

DESIGN BY:	CWMM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER

JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 28 OF 72

GREEN BUILDING SDP-18-035

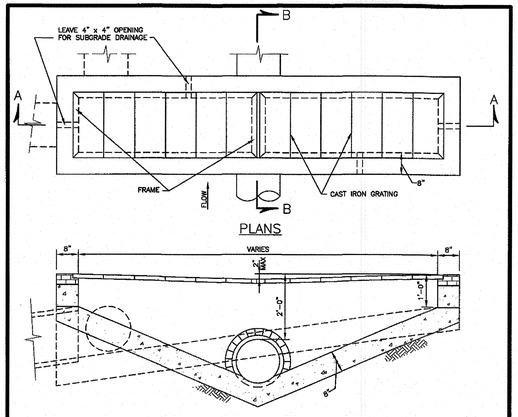
RK&K PROJECT NUMBER 17206

SCALE: As Shown

C-413

No As-Built Information in this sheet
5/20/2022

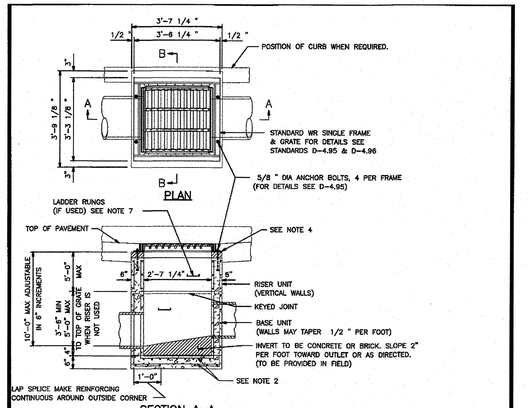
\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-413 Utility Details.dwg Mar 27, 2018 12:09pm cmitchell



NOTES:

1. INVERTS SHALL BE CONCRETE MIX NO. 3 OR BRICK, GRADE SM (ASTM C32).
2. WALLS CAN BE GRADE MS BRICK, OR MIX NO. 3 CONCRETE.
3. TOP 4" OF WALL SHALL BE BRICK MASONARY.
4. BOTTOMS SHALL BE MIX NO. 3 CONCRETE.
5. MAXIMUM DEPTH OF WALL SHALL BE 3'-6", WHERE OUTLET PIPE REQUIRES GREATER DEPTH, DROP SECTION SHALL BE FORMED AROUND PIPE.
6. WALL AND SLAB REIFORCEMENT SHALL BE #4@12" EW IN CENTER.
7. PROVIDE HEAVY DUTY TRENCH GRATING AND FRAME SYSTEM FROM SAME MANUFACTURER TO SUIT WIDTH OF TRENCH. GRATING SHALL BE BICYCLE SAFE AND CAPABLE OF VEHICULAR LOADING.

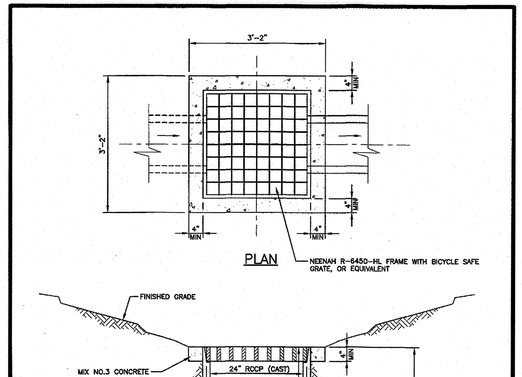
Revised	Howard County, Maryland Department of Public Works	Type 'C' Inlet Trench Drain	Detail D-4.15
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		



NOTES

1. CONCRETE TO BE MIX NO. 6 (4500 PSI).
2. REINFORCING-2 LAYERS OF 4x4-W4.0xW4.0 WELDED WIRE FABRIC.
3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO.6.
5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED, FOR SIZE, LOCATION, AND INVERT ELEVATIONS REFER TO CONSTRUCTION PLANS.
6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE AS DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH G-5.21 OR AS DIRECTED BY THE ENGINEER.
8. MINIMUM DEPTH PAVEMENT PER "EACH" INLET INCLUDES DEPTHS UP TO 3'-6". VERTICAL DEPTH PAVMENT PER LINEAR FOOT FOR DEPTHS IN EXCESS OF 3'-6".

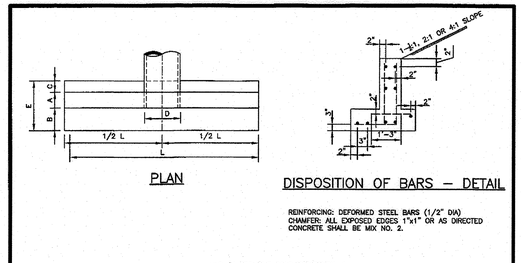
Revised	Howard County, Maryland Department of Public Works	Single WR Inlet Precast	Detail D-4.37
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		



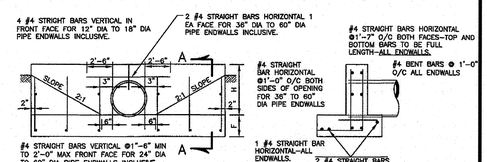
NOTE:

1. INLET TO BE USED IN A SWALE OR SUMP. MAX. CAPACITY UNDER .25"=3 C.F.S. TO BE USED WITH 15" CONN. OR SMALLER, NOT TO BE USED IN ROADWAY OR PARKING AREA.
2. TO BE USED ONLY WHEN APPROVED BY COUNTY.

Revised	Howard County, Maryland Department of Public Works	Yard Inlet	Detail D-4.14
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		



REINFORCING: DEFORMED STEEL BARS (1/2" DIA)
CHAMFER: ALL EXPOSED EDGES 1"x1" OR AS DIRECTED
CONCRETE SHALL BE MIX NO. 2.



'S' DISTANCES FROM INSIDE SURFACE OF PIPE TO VERTICAL BARS IN FRONT AND REAR FACE.
4" FOR 12" DIA TO 18" DIA PIPES INCLUSIVE
6" FOR 24" DIA TO 36" DIA PIPES INCLUSIVE
8" FOR 42" DIA TO 60" DIA PIPES INCLUSIVE

QUANTITIES FOR ESTIMATION PURPOSES ONLY

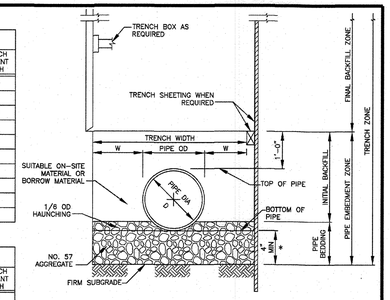
OPENING	DIMENSIONS							QUANTITIES	
D AREA	A	B	C	E	F	H	L	CONC CY	STEEL LBS
INCHES SQ FT									
12 0.79	9"	6"	6"	1'-6"	9"	1'-9"	6'-8"	0.61	41
15 1.23	9"	6"	6"	1'-9"	9"	2'-0"	7'-4"	0.77	47
18 1.77	9"	6"	6"	1'-9"	9"	2'-3"	9'-0"	0.95	54
21 2.40	9"	6"	6"	1'-9"	9"	2'-5"	10'-3"	1.14	70
24 3.14	9"	14"	6"	2'-5"	9"	2'-9"	11'-8"	1.56	80
27 3.98	9"	14"	6"	2'-5"	9"	3'-0"	12'10"	1.82	88
30 4.91	9"	14"	6"	2'-5"	12"	3'-3"	14'-2"	2.22	98
33 5.94	9"	14"	6"	2'-5"	12"	3'-6"	15'-5"	2.48	105
36 7.07	12"	16"	10"	3'-2"	12"	4'-0"	16'-8"	4.16	182
42 9.62	12"	16"	10"	3'-2"	12"	4'-6"	19'-2"	5.07	205
48 12.57	12"	16"	10"	3'-2"	12"	5'-0"	21'-8"	6.09	244
54 15.90	12"	20"	12"	3'-8"	12"	5'-6"	24'-2"	7.62	275
60 19.64	12"	20"	12"	3'-8"	12"	6'-0"	26'-8"	8.62	324
72 28.27	12"	20"	12"	3'-8"	12"	7'-0"	31'-8"	11.46	377

Revised	Howard County, Maryland Department of Public Works	Type 'C' Endwall Circular Pipe	Detail D-5.21
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		

DIP		
PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
8	10	28
10	9	28
12	8	28
14	8	30
16	8	32
18	8	34
20	8	36
24	12	48

RCP		
PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
12	8	28
15	8	31
18	8	34
21	8	37
24	12	48
27	12	51
30	12	54
33	15	63
36	15	66
42	15	72
48	18	84
54	18	90
60	18	96
66	18	102
72	18	108
78	18	114
84	18	120
90	18	126
96	18	132
102	18	138
108	18	144

ALL DIMENSIONS IN INCHES



* FOR TRENCHES IN ROCK, MINIMUM BEDDING DEPTH IS 6 INCHES. FOR RCP 96 INCHES AND GREATER, MINIMUM BEDDING DEPTH IS 12 INCHES.

NOTES:

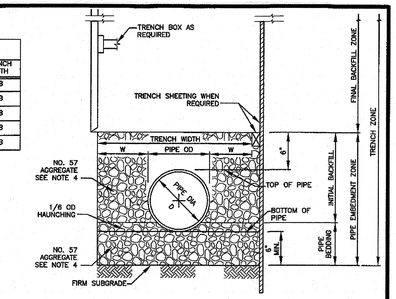
1. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
2. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS NOT REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN.
3. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN PLUS 24 INCHES.
4. THE MAXIMUM WIDTH OF THE TRENCH EXCAVATED ON-SITE FOR RCP, SHALL NOT EXCEED THE TRENCH PAYMENT WIDTH PLUS 12 INCHES.
5. MINIMUM SPACING BETWEEN PARALLEL CULVERT PIPES SHALL BE TWICE THE "W" DIMENSION.
6. SPECIAL DESIGN IS REQUIRED AND SHALL BE SPECIFIED OR DETAILED IN THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIPES:
   RCP STORM DRAINS LARGER THAN 108 INCHES
   RCP GRAVITY SANITARY SEWERS LARGER THAN 48 INCHES
   DIP LARGER THAN 24 INCHES
   STREAM CROSSINGS SEE S-3.11 AND S-3.12
7. WATERMAIN SHALL BE SPECIAL THICKNESS CLASS 54 DIP MINIMUM.

ALL DIMENSIONS IN INCHES

Revised	Howard County, Maryland Department of Public Works	Pipe Trench DIP & RCP	Detail G-2.11
Revised 6/30/2011 Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		

PLASTIC		
PIPE DIA "D"	"W"	TRENCH WIDTH
4	12	28
6	11	28
8	10	28
10	9	28
12	8	28

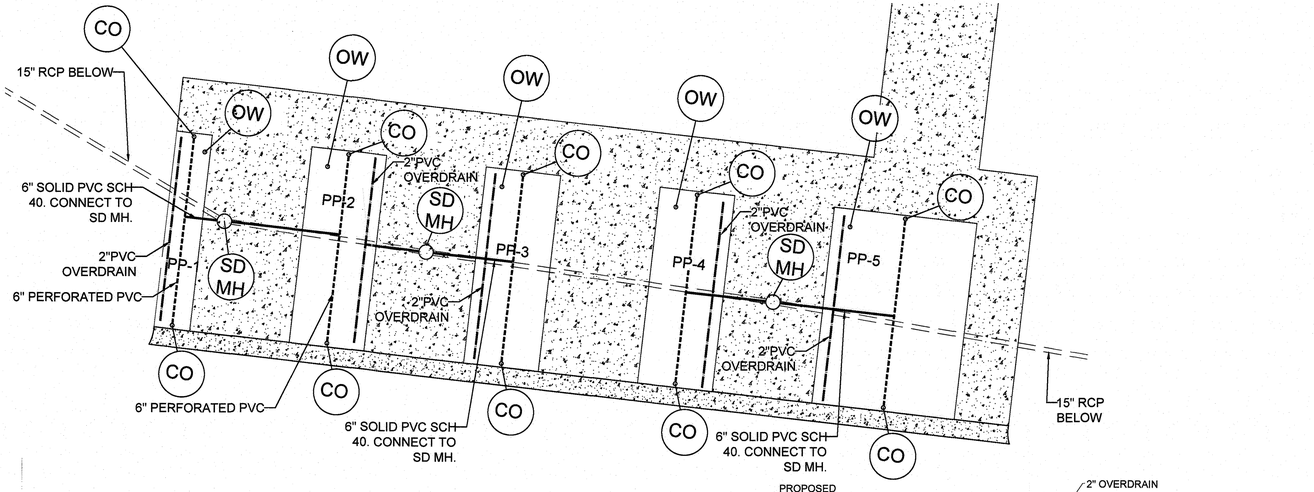
ALL DIMENSIONS IN INCHES



NOTES:

1. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
2. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS NOT REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN.
3. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN PLUS 24 INCHES.
4. FOR COPPER, PVC AND HDPE PIPE, 3 INCHES OR SMALLER:
   PIPE EMBEDMENT ZONE MATERIAL IS FINE AGGREGATE (SAND)
   "W" DIMENSION IS 6 INCHES MINIMUM AND BEDDING THICKNESS UNDER PIPE IS 4" MINIMUM.
   FOR TRENCHES IN ROCK, MINIMUM BEDDING THICKNESS IS 6 INCHES.
5. SPECIAL DESIGN IS REQUIRED AND SHALL BE SPECIFIED OR DETAILED IN THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIPES:
   PVC AWWA C-905 LARGER THAN 12 INCHES
   PVC GRAVITY SANITARY SEWERS LARGER THAN 12 INCHES
   HDPE CORRESIATED DRAIN PIPE
   STREAM CROSSINGS SEE DETAILS S-3.11 AND S-3.12

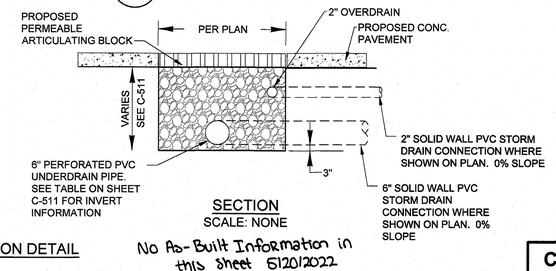
Revised	Howard County, Maryland Department of Public Works	Pipe Trench Plastic & Copper	Detail G-2.12
Revised 5/1/2007 Approved	Approved: Chief, Bureau of Engineering		



NOTE:

1. ALL UNDERDRAIN, OVERDRAIN AND CONNECTION PIPES TO BE CONSTRUCTED AT 0% SLOPE.
2. TIE UNDERDRAIN PIPE TO STORM DRAIN SYSTEM WITH 6"x6" TEE AND SOLID PVC PIPE, SCHEDULE 40.
3. TIE OVERDRAIN PIPE TO STORM DRAIN SYSTEM WITH 2"x2" TEE AND SOLID PVC PIPE, SCHEDULE 40.

PLAN VIEW
SCALE 1"=20'



SECTION
SCALE: NONE

PERVIOUS PAVERS UNDERDRAIN CONNECTION DETAIL

No As-Built Information in this Sheet 5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN WILLIAM D'EPAGNIER — 23012 — PROFESSIONAL ENGINEER — 3/7/18

DESIGN BY:				
CWWM				
DRAWN BY:				
CP				
CHECKED BY:				
CDK				
DATE:				
3/30/2018	BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

UTILITY DETAILS AS-BUILT

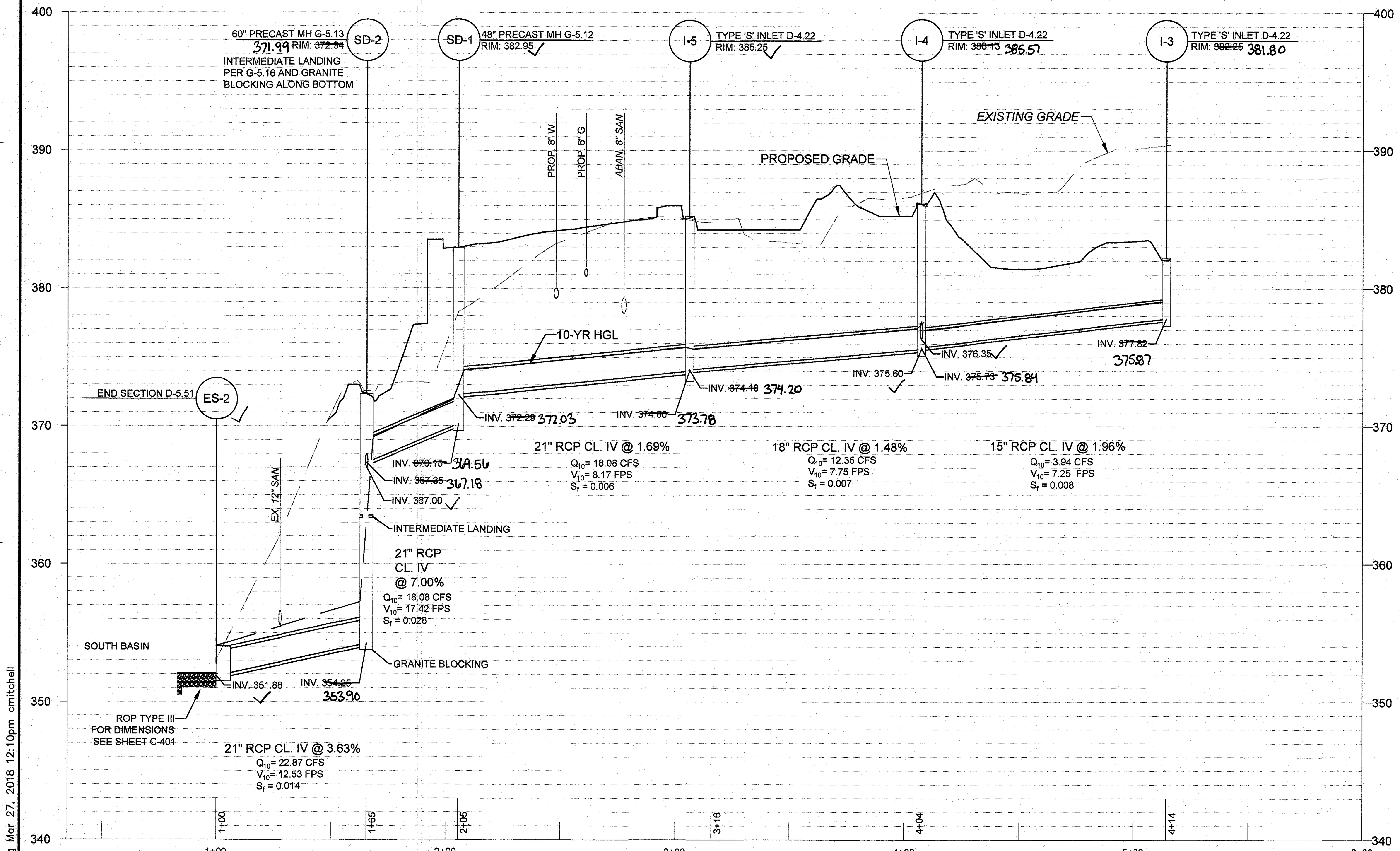
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 29 OF 72
GREEN BUILDING
SDP-18-035

C-415

RK&K PROJECT NUMBER 17206

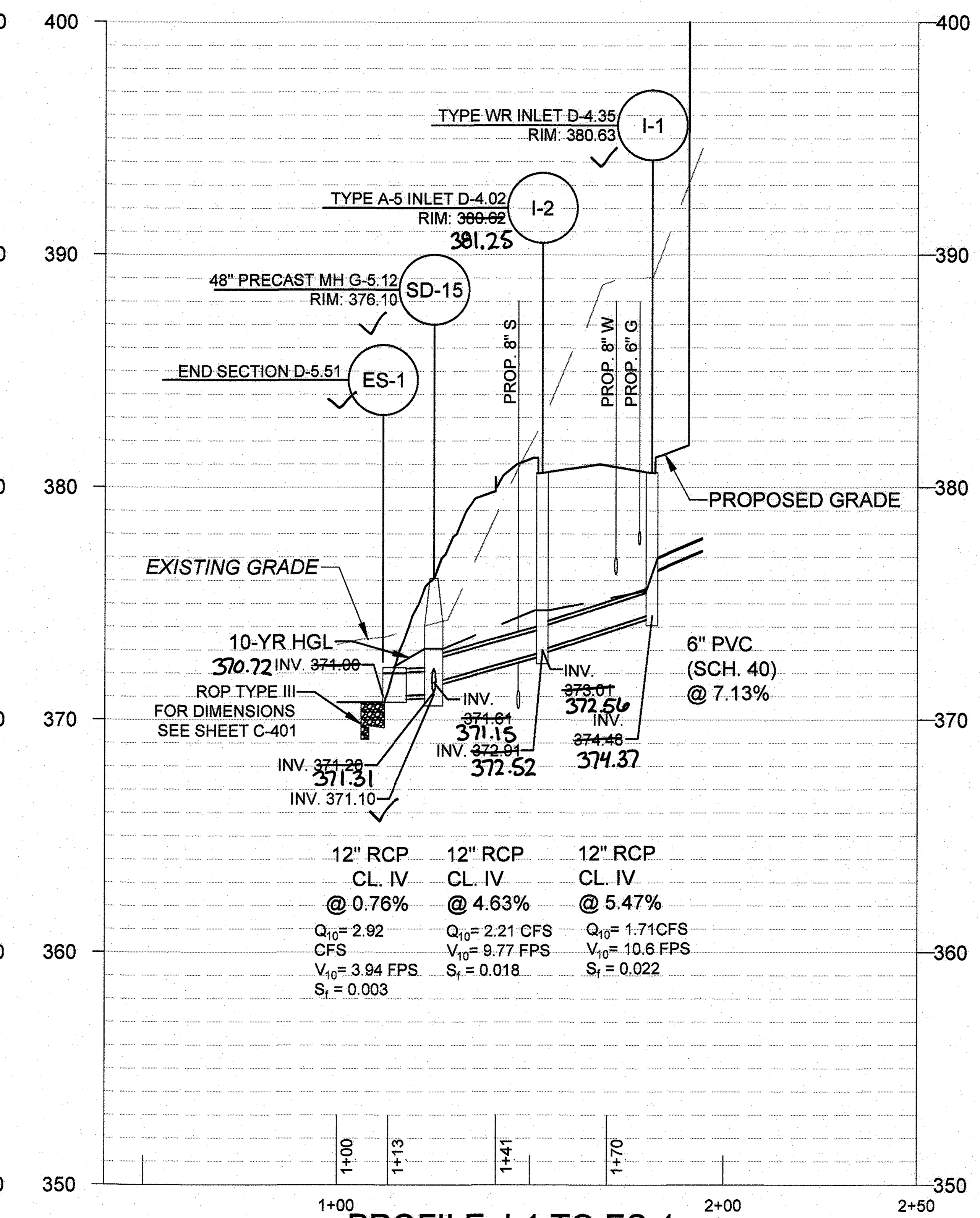
SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-415 Utility Details.dwg Mar 27, 2018 12:09pm cmitchell



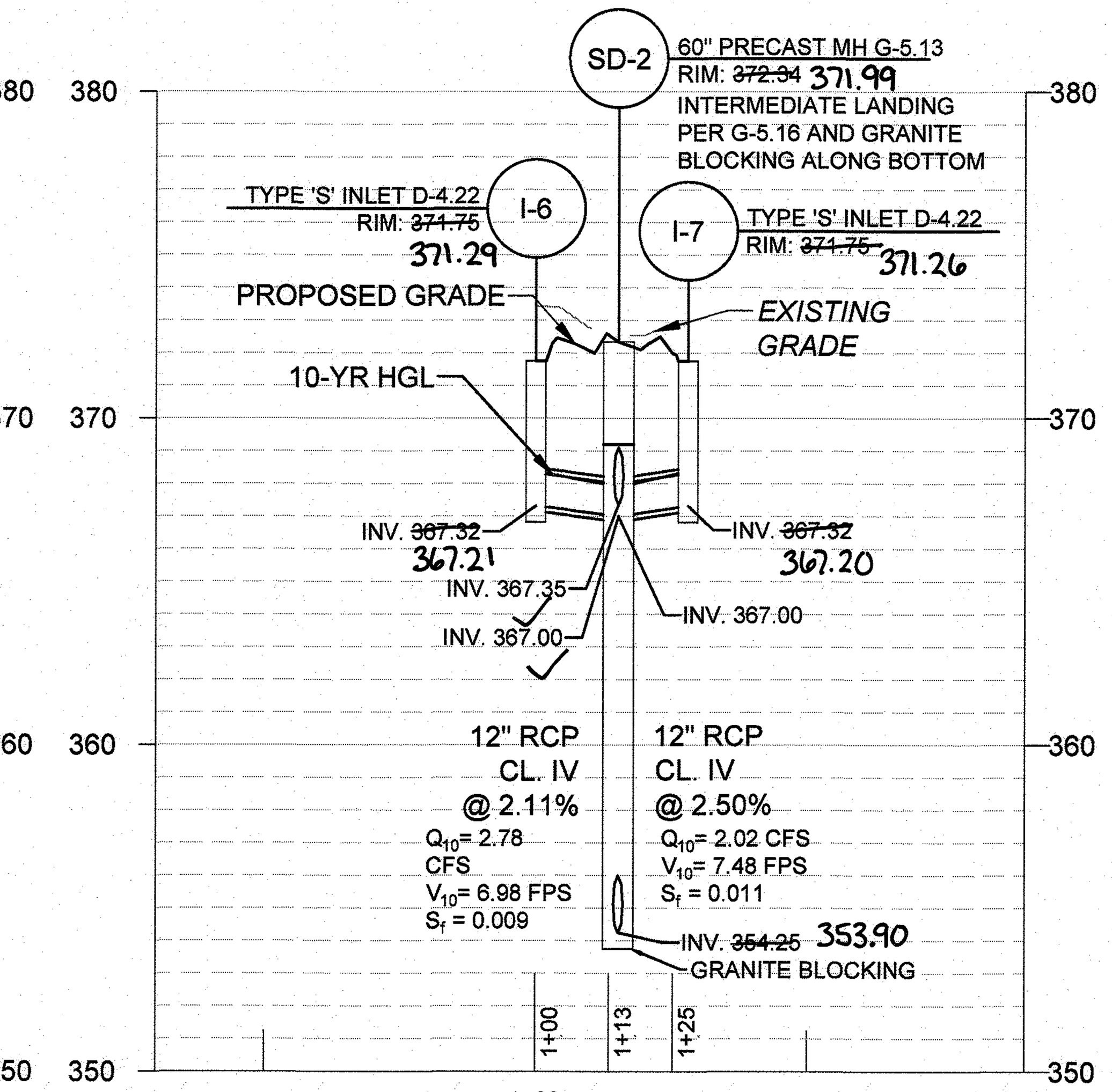
PROFILE: I-3 TO ES-2

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: I-1 TO ES-1

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: I-6 TO I-7

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications. Charles W. W. Mitchell, III, PE #49932, 5/20/22

HORIZ. SCALE: 1" = 30' 30 5 0 30 60

VERT. SCALE: 1" = 5' 5 2.5 0 5 10

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORM DRAIN PROFILES AS-BUILT

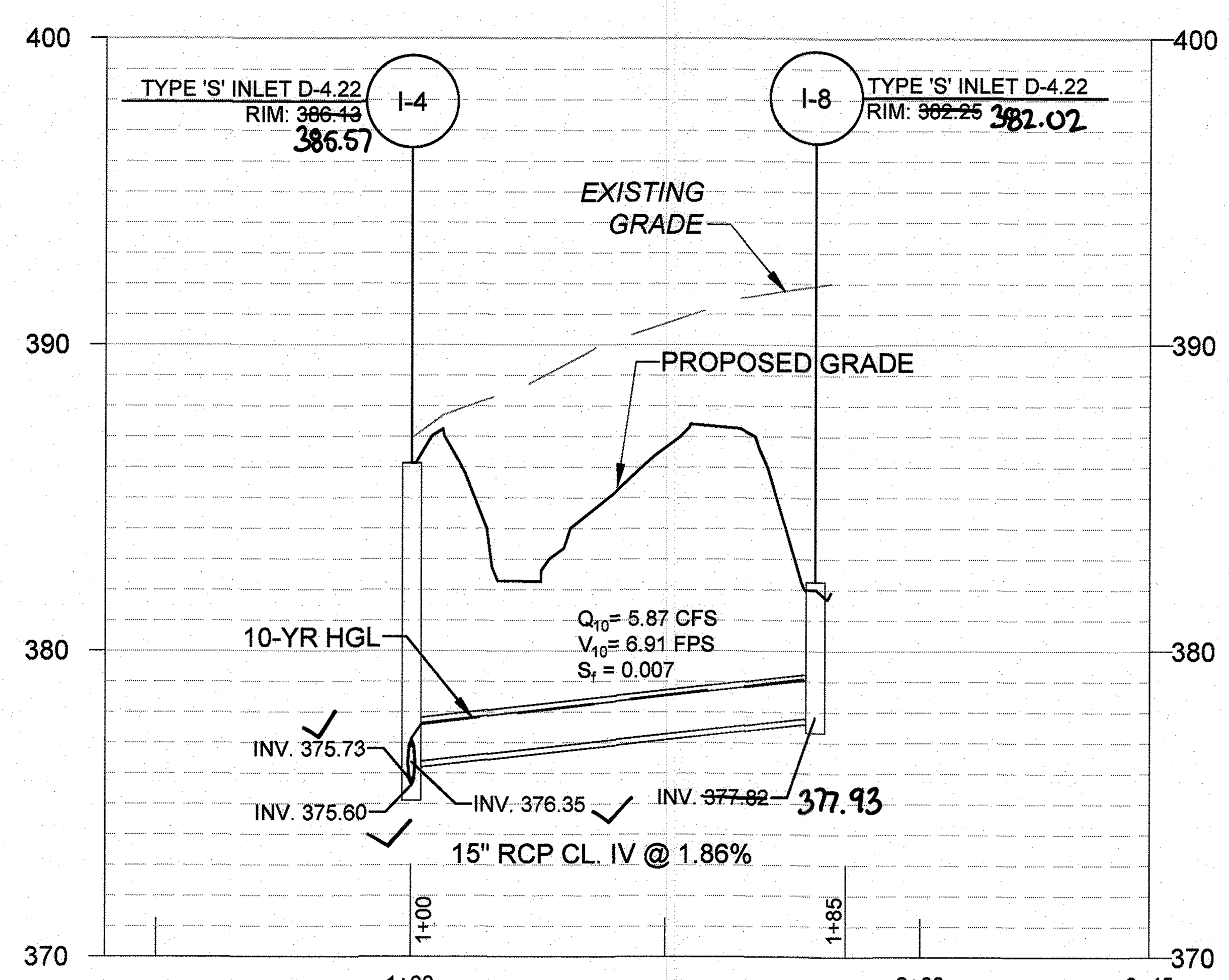
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 30 OF 72

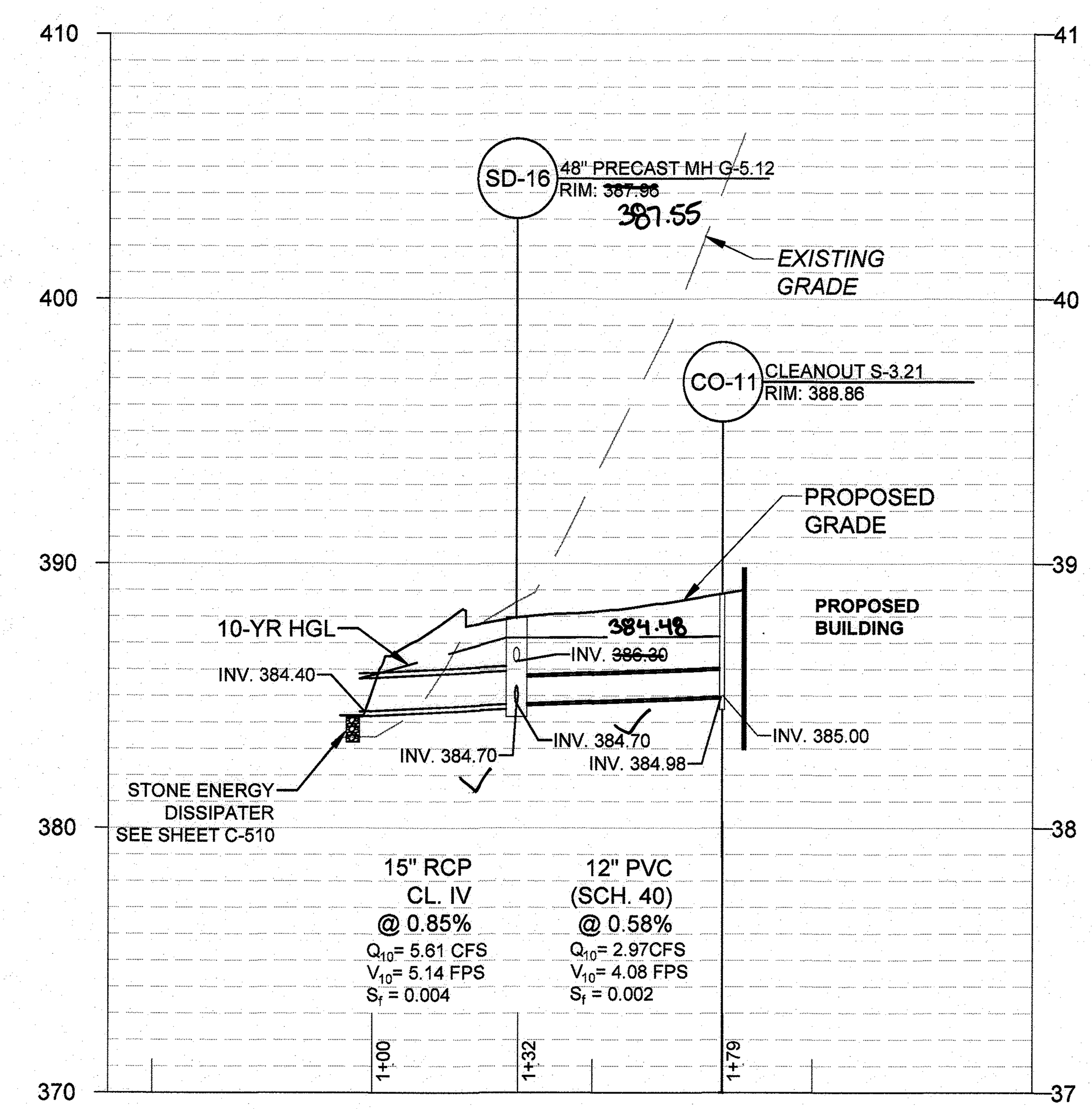
GREEN BUILDING
SDP-18-035

C-420
RK&K PROJECT NUMBER 17206
SCALE: As Shown



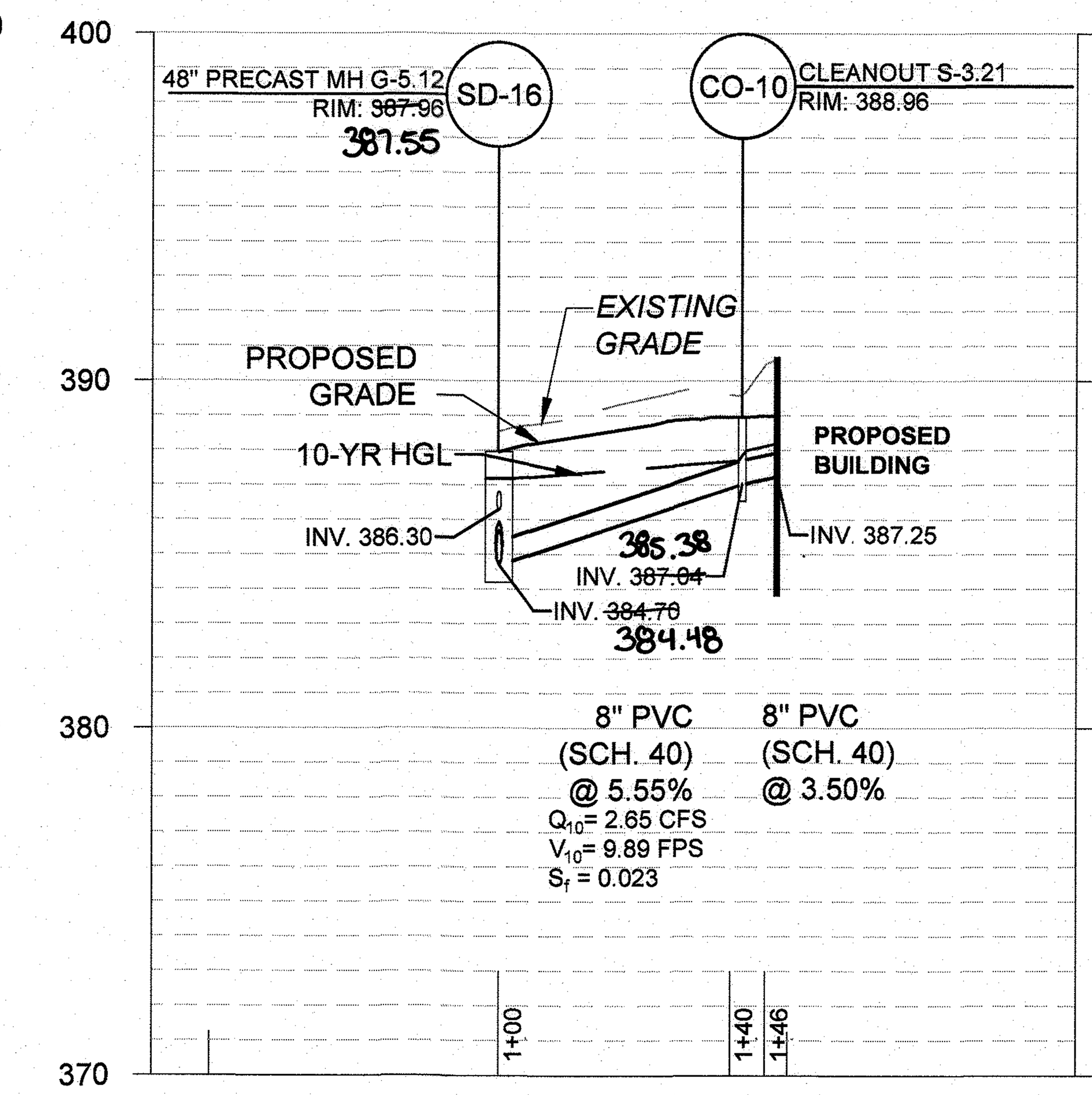
PROFILE: I-8 TO I-4

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



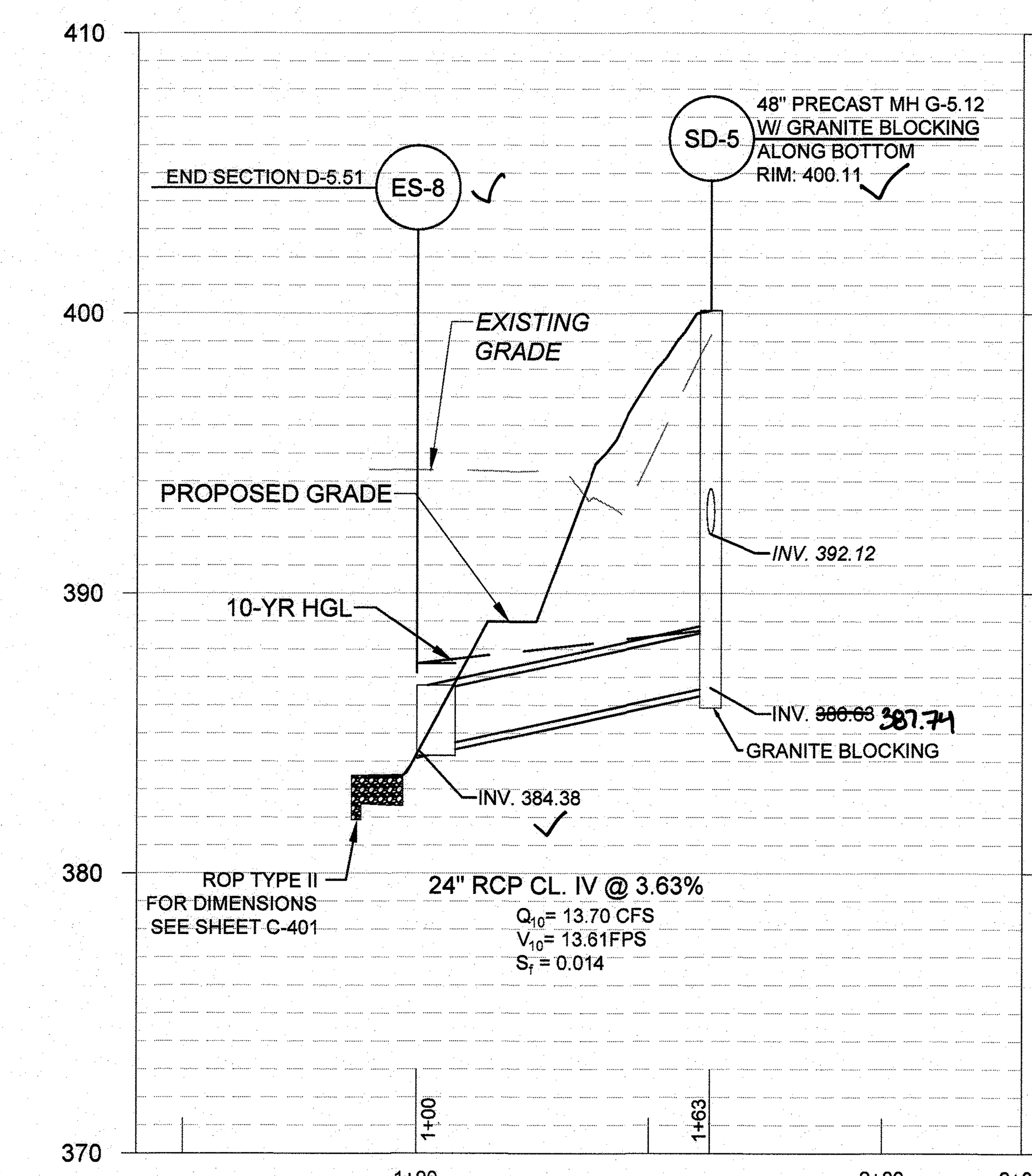
PROFILE: BLDG TO LS-6

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



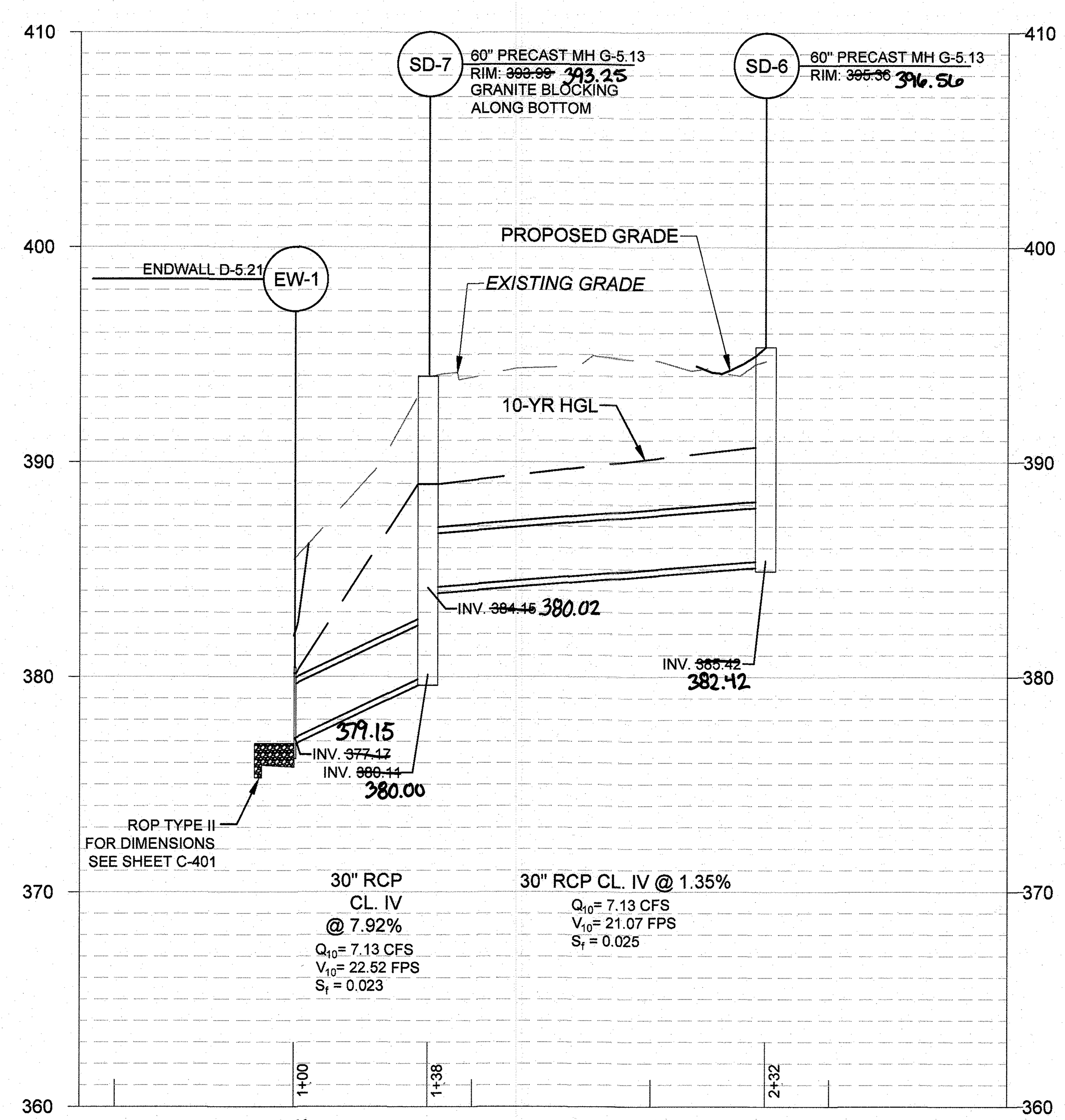
PROFILE: BLDG TO SD-16

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



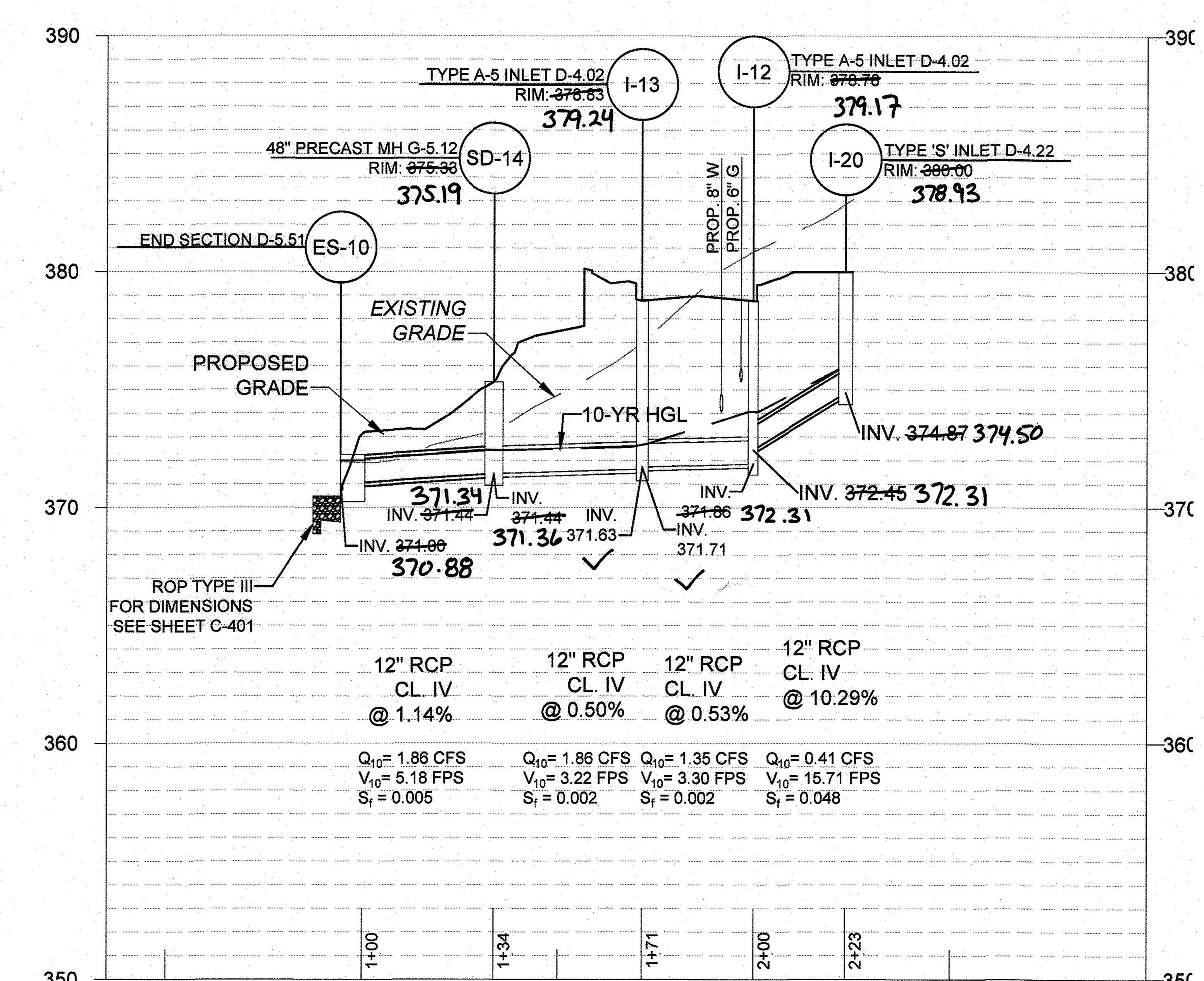
PROFILE: SD-5 TO ES-8

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



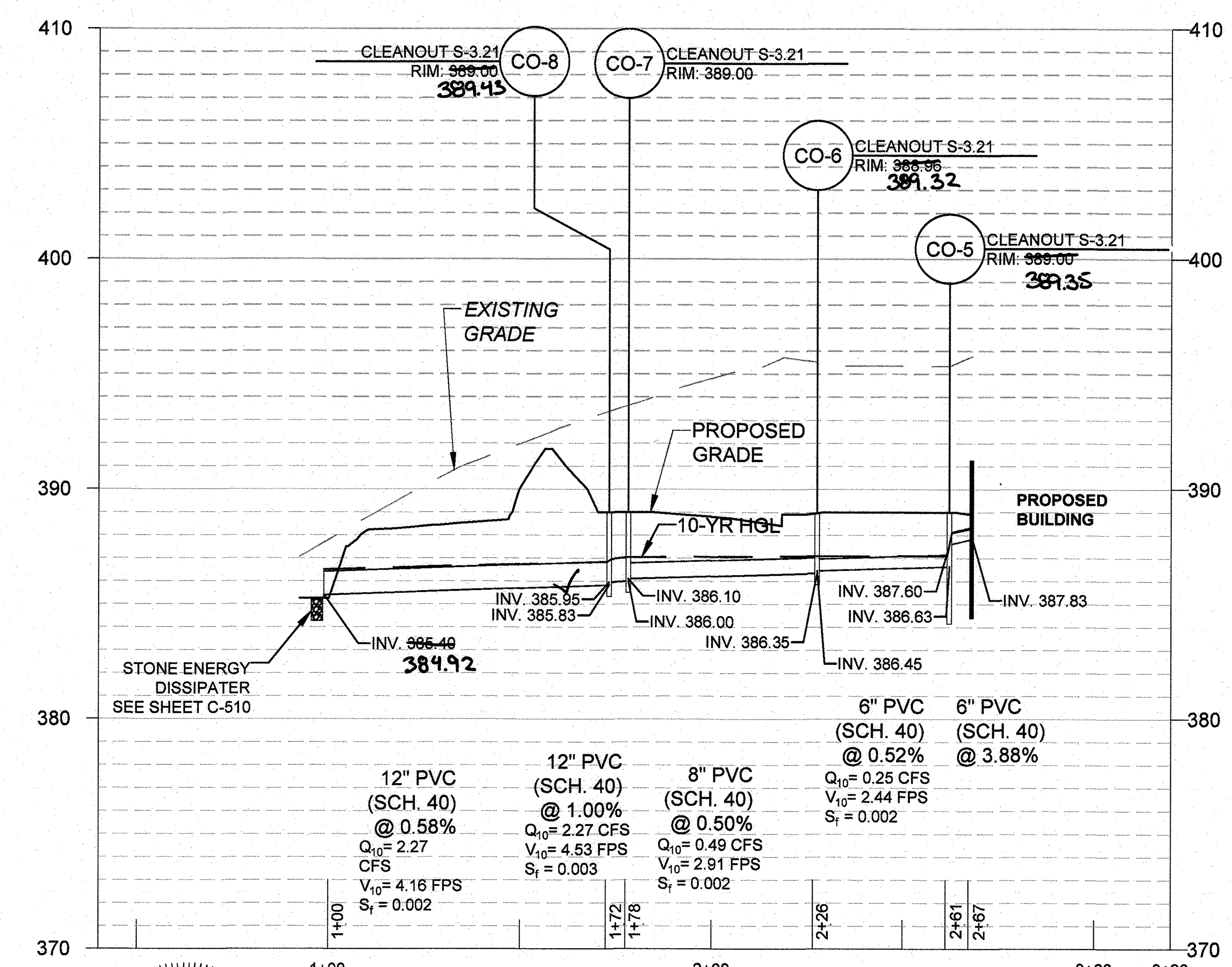
PROFILE: SD-6 TO EW-1

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



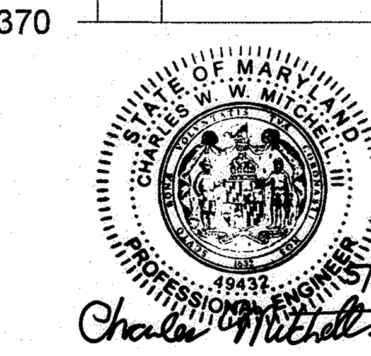
PROFILE: I-20 TO ES-10

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: BLDG TO LS-4

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #19432, 5/20/22

HORIZ. SCALE: 1" = 30' (30 5 0 30 60)

VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

C-421

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4/11/18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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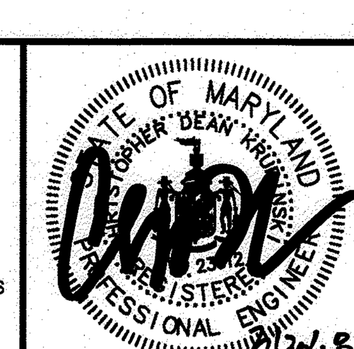


DESIGN BY:	BY	NO.	REVISION	DATE
CWWM				
DRAWN BY: CP				
CHECKED BY: CDK				
DATE: 3/30/2018				

OWNER/DEVELOPER

JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORM DRAIN PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 31 OF 72

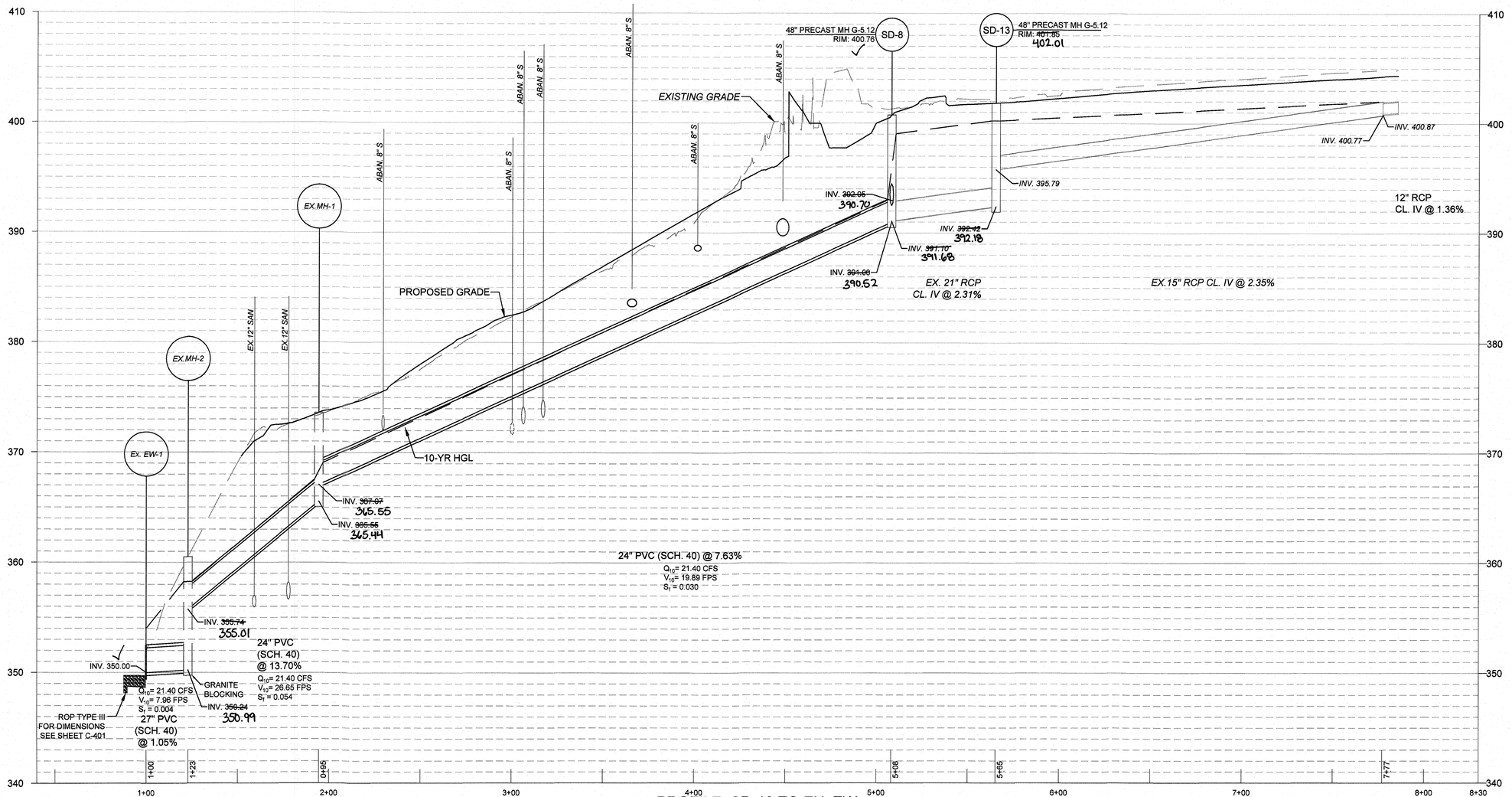
GREEN BUILDING

SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\bdsrv05\2017\2017\17206_APL14\CADD\Plans\C-421 Storm Drain Profiles.dwg Mar 27, 2018 12:11pm cmitchell



PROFILE: SD-12 TO EX. EW

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 19432 — PROFESSIONAL ENGINEER — 5/20/22

Charles W. Mitchell III

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #19432, 5/20/22

HORIZ. SCALE: 1" = 30' (30 5 0 30 60)

VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

C-422

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4/19/18

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www.rkk.com

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STATE OF MARYLAND — CHARLES WILLIAM MITCHELL — 23012 — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

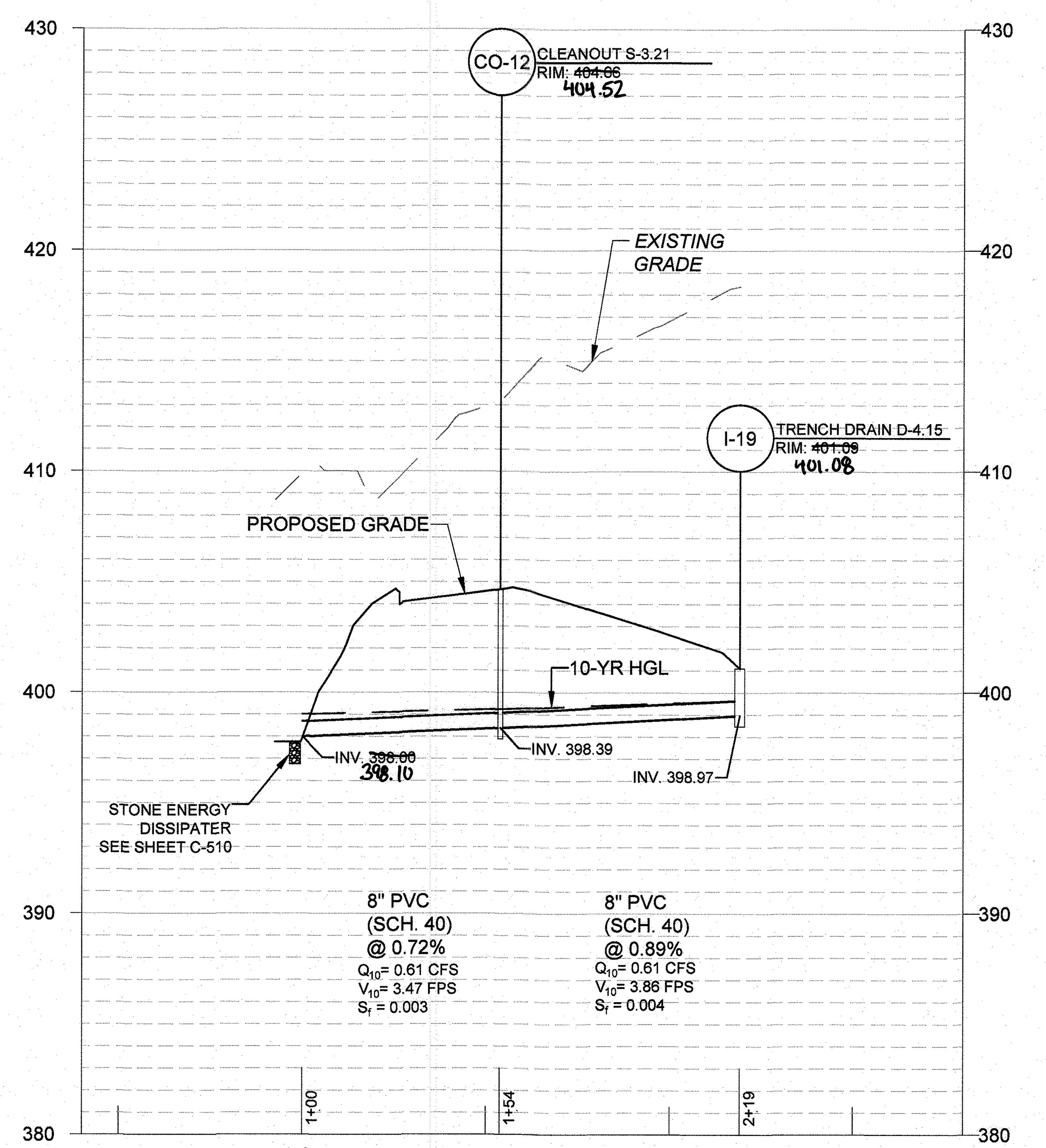
STORM DRAIN PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 32 OF 72
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

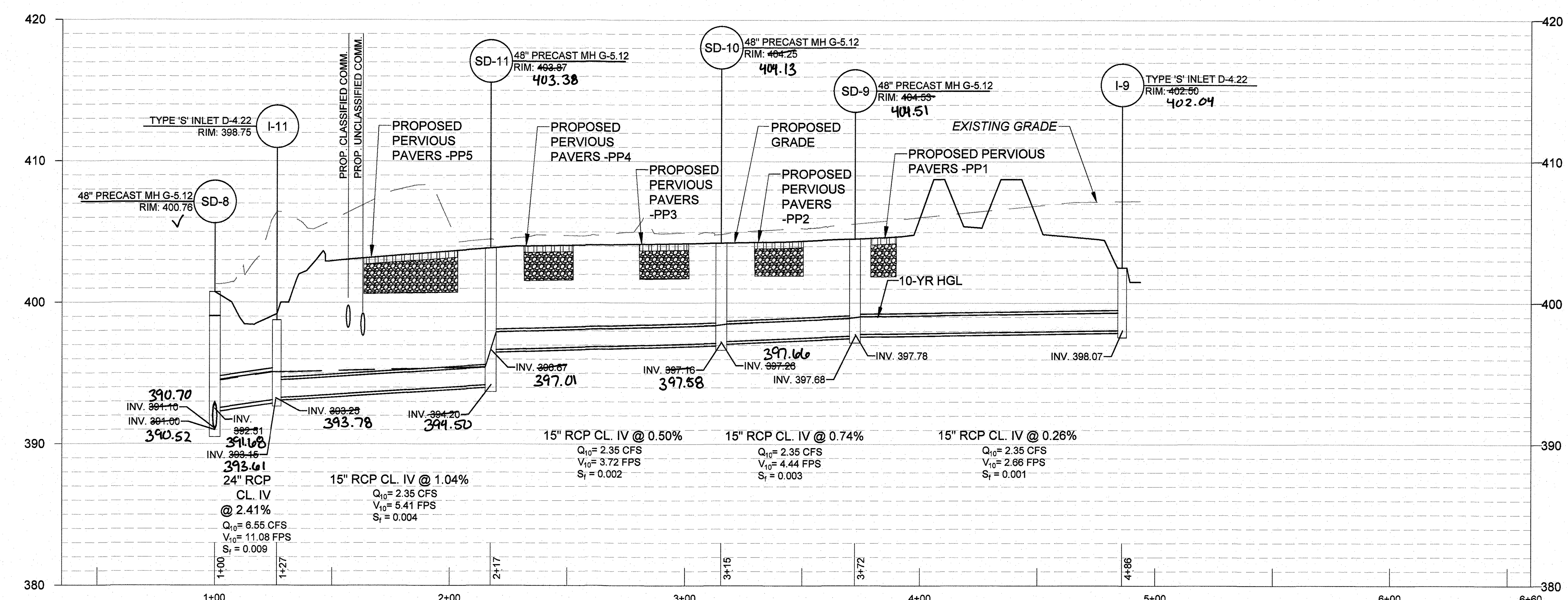
SCALE: As Shown

\\balsrv05\V2017\2017\17206_APL14\CADD\Plans\C-422 Storm Drain Profiles.dwg Mar 27, 2018 12:12pm cmitchell



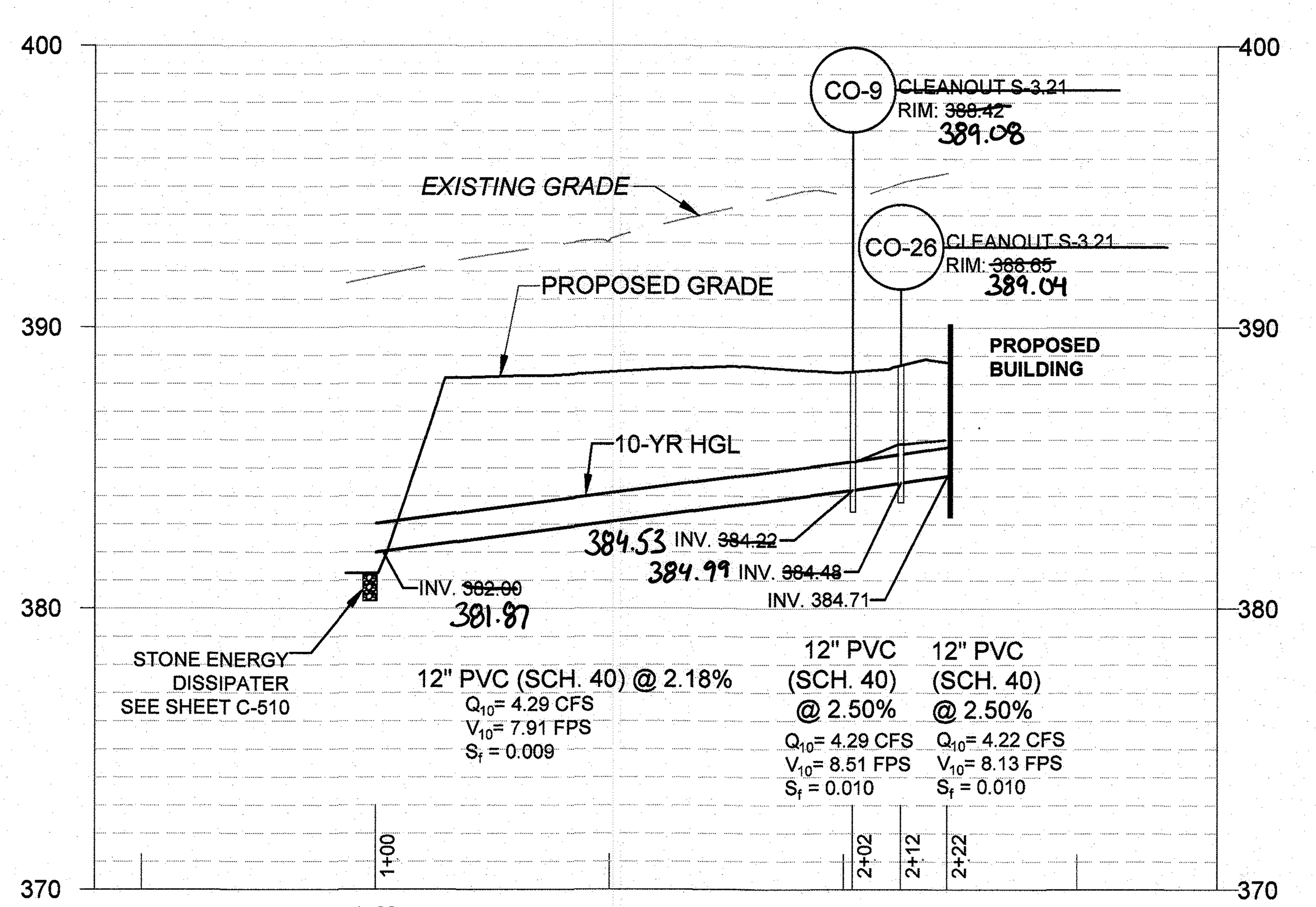
PROFILE: I-19 TO LS-9

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



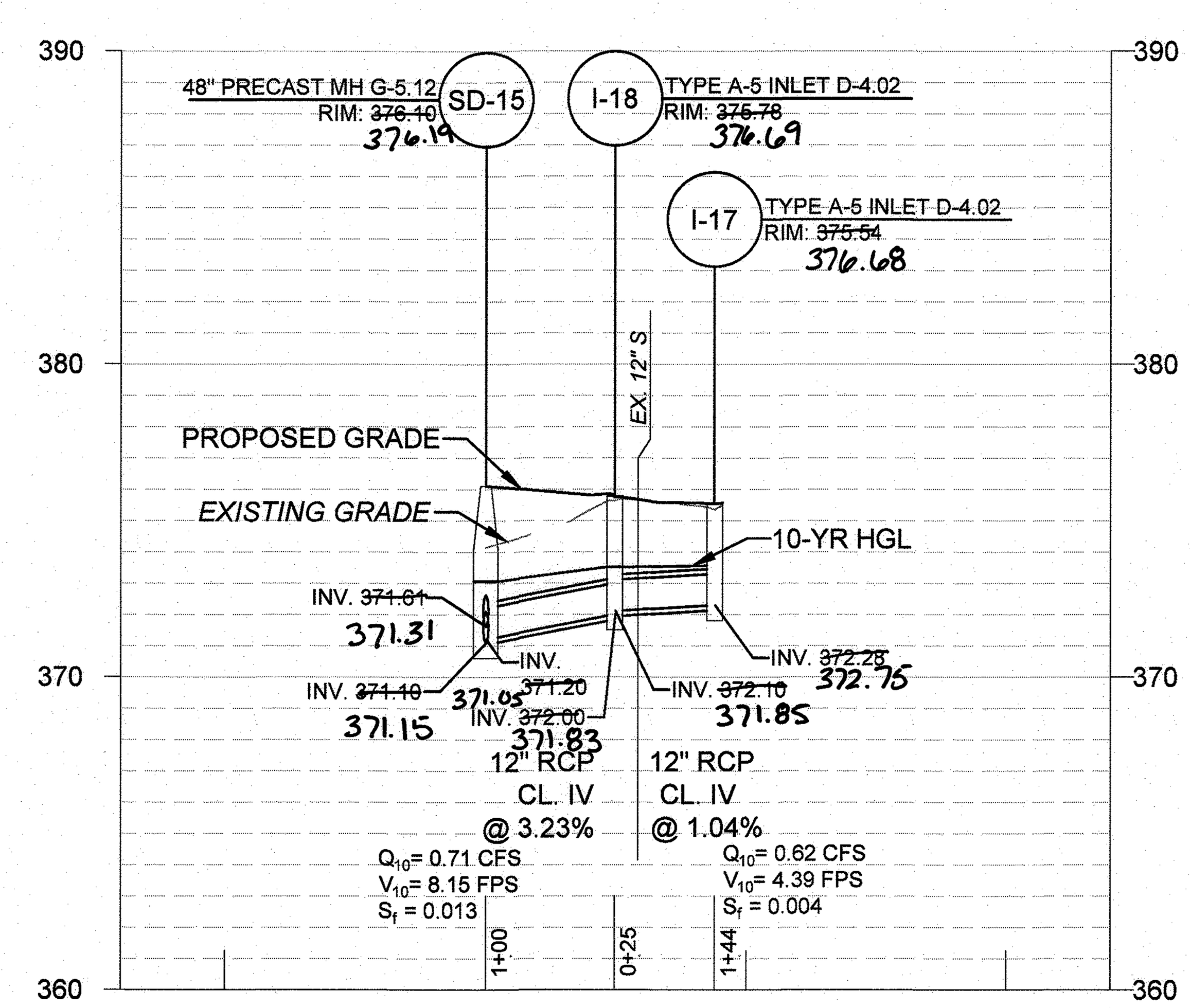
PROFILE: I-9 TO SD-8

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: BLDG TO LS-7

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: I-17 TO SD-15

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

Charles Mitchell 5/20/22

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE, #49132, 5/20/22

HORIZ. SCALE: 1" = 30' (30 5 0 30 60)

VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

C-423

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/8/2019.

3/30/18

DESIGN BY: CWWM			
DRAWN BY: CP			
CHECKED BY: CDK			
DATE: 3/30/2018	BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORM DRAIN PROFILES AS-BUILT

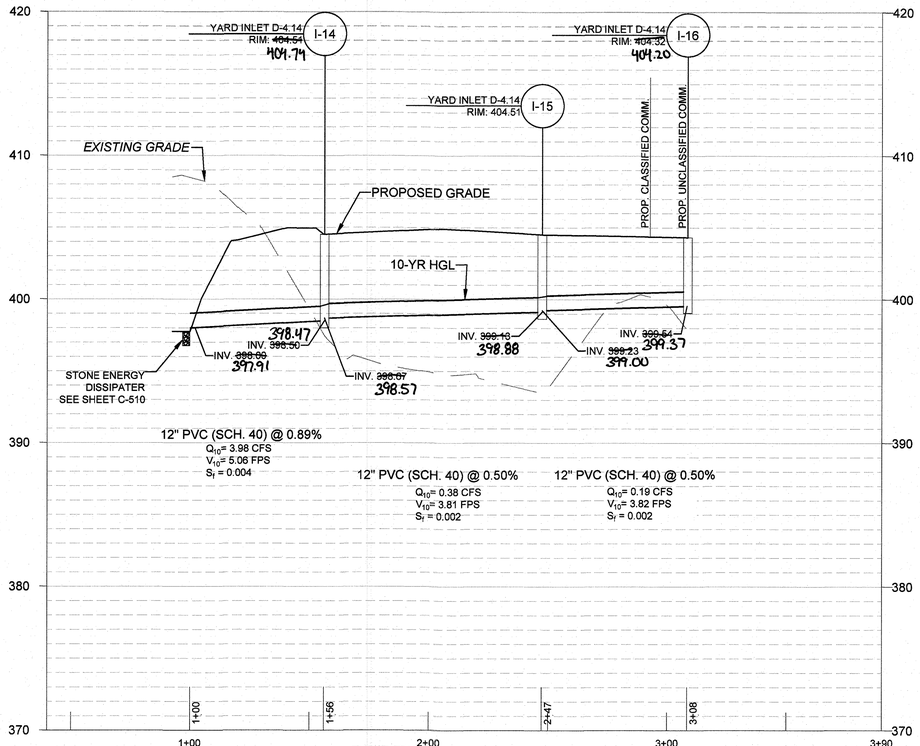
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 33 OF 72

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

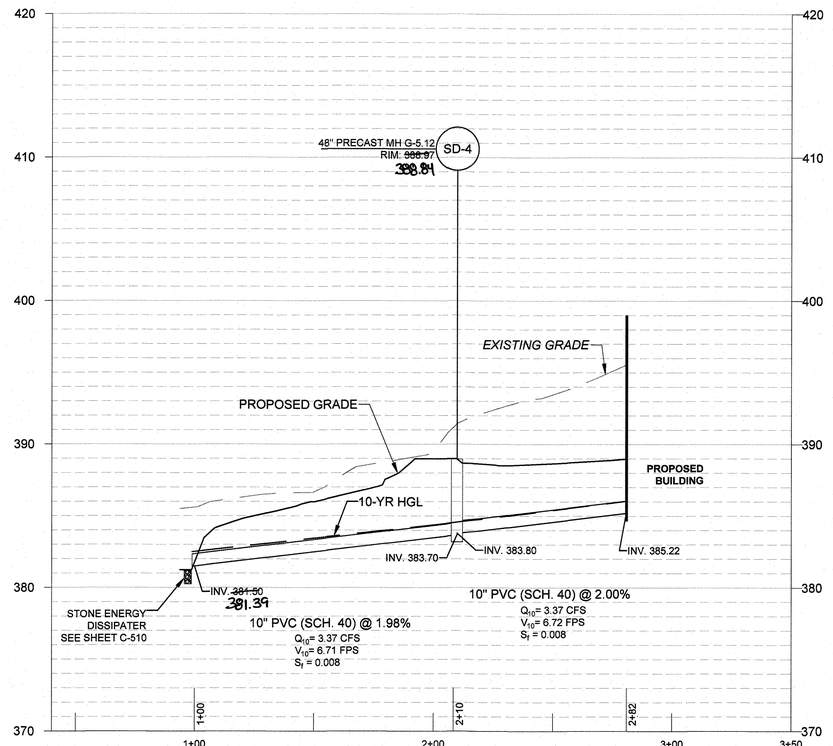
SCALE: As Shown

\\bdsrv05\v2017\2017\17206_APL14\CADD\Plans\C-423 Storm Drain Profiles.dwg Mar 27, 2018 12:12pm cmitchell



PROFILE: I-16 TO LS- 11

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: BLDG TO LS-3

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

STATE OF MARYLAND
CHARLES W.W. MITCHELL III
49432
PROFESSIONAL ENGINEER

Charles W.W. Mitchell III 6/20/22

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W.W. Mitchell, III, PE #99432, 6/20/22

HORIZ. SCALE: 1" = 30' 30 5 0 30 60
VERT. SCALE: 1" = 5' 5 2.5 0 5 10

C-424

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4/11/18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND
CHARLES W.W. MITCHELL III
23012
PROFESSIONAL ENGINEER
5/2/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

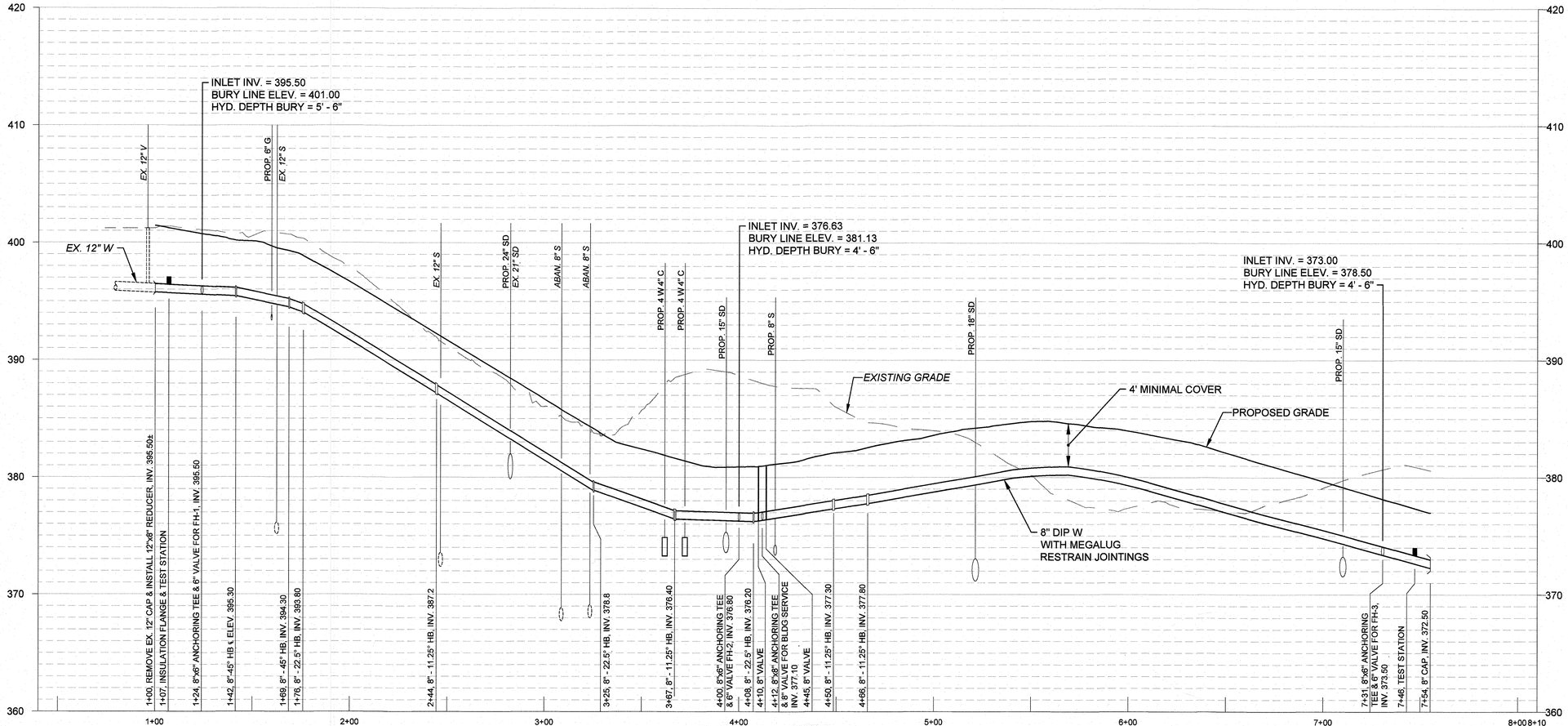
STORM DRAIN PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 34 OF 72
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

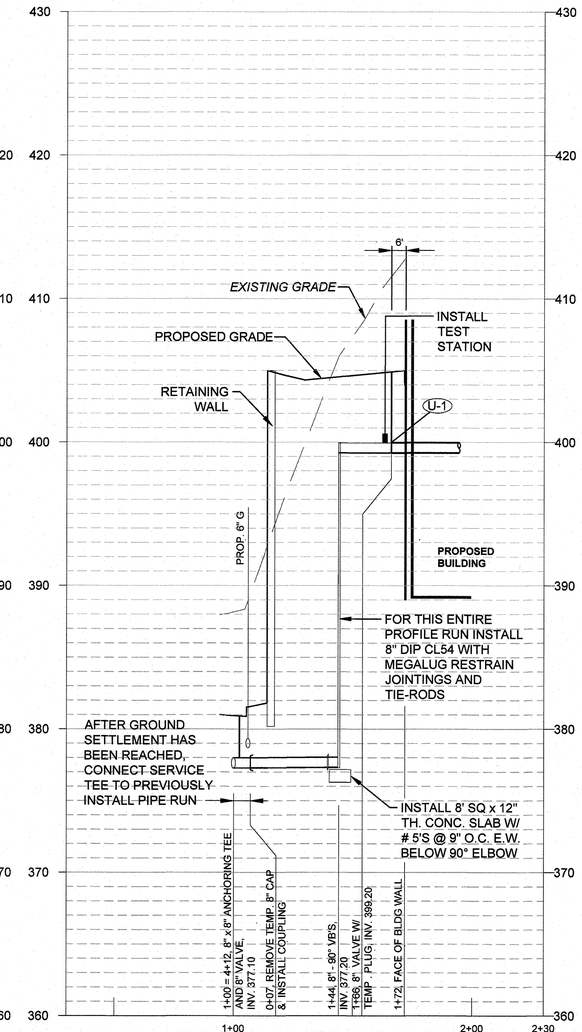
SCALE: As Shown

\\balsrv05\V2017\2017\17206_APL14\CADD\Plans\C-424 Storm Drain Profiles.dwg Mar 27, 2018 12:13pm cmitchell



PROFILE: WATER MAIN

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE: WATER SERVICE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

(U-1) REFER TO PLUMBING DRAWINGS FOR BUILDING WATER SERVICE LOCATIONS AND REQUIRED PIPE AND FITTINGS LAYOUT EXTENSIONS FROM TEMP. 8" PLUG. AFTER GROUND SETTLEMENT HAS BEEN REACHED, EXTEND SERVICE PIPE THROUGH BUILDING WALL.

ALL PIPE AND FITTINGS JOINTINGS FOR THESE PROFILES AND FIT PIPING SHALL HAVE THERMITE WELD BOLDED WIRES PER SHEETS C-410 & C-411

No As-Built Information in this sheet
5/20/2022

HORIZ. SCALE: 1" = 30' (30 5 0 30 60)
VERT. SCALE: 1" = 5' (5 2.5 0 5 10)

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN DAVID d'EPAGNIER — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

WATER PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 35 OF 72
GREEN BUILDING
SDP-18-035

C-425

RK&K PROJECT NUMBER
17206

SCALE:
As Shown

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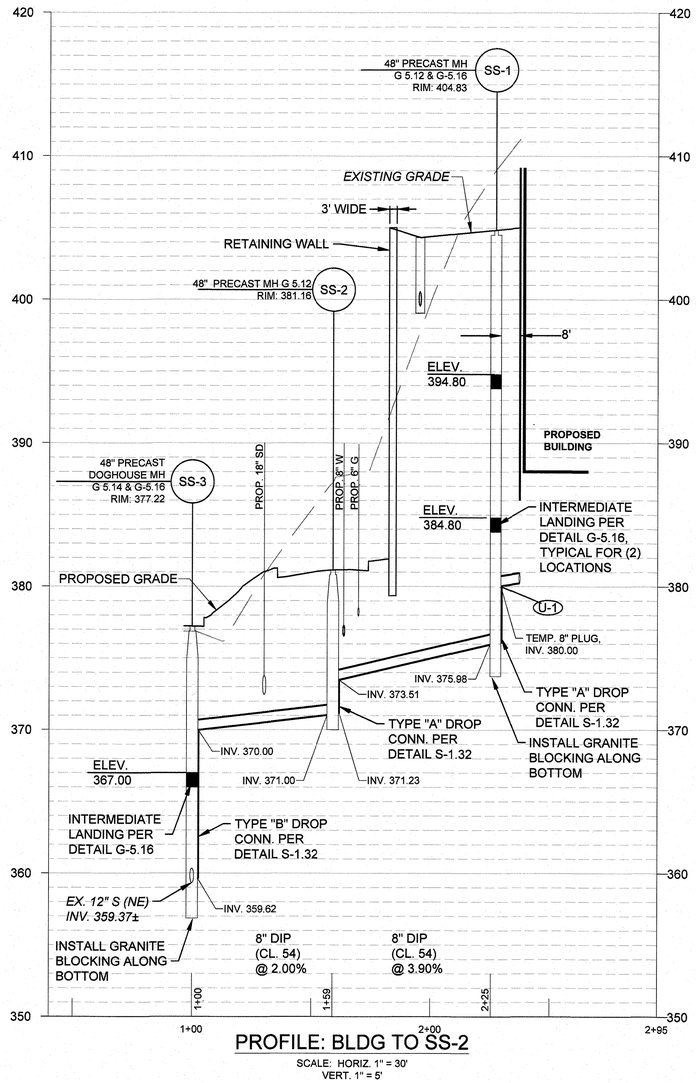

PROFILE: BLDG TO SS-2

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

(U-1) REFER TO PLUMBING DRAWINGS FOR BUILDING SANITARY SERVICE LOCATION AND REQUIRED PIPE LAYOUT EXTENSION FROM TEMP. 8" PLUG AT MANHOLE WALL.

No As-Built Information in this sheet
5/20/2022

HORIZ. SCALE: 1" = 30' 30 5 0 30 60
VERT. SCALE: 1" = 5' 5 2.5 0 5 10

C-426

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
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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 NO. 29912, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER DEAN WHITE — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SEWER PROFILES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 36 OF 72

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER
17206

SCALE:
As Shown

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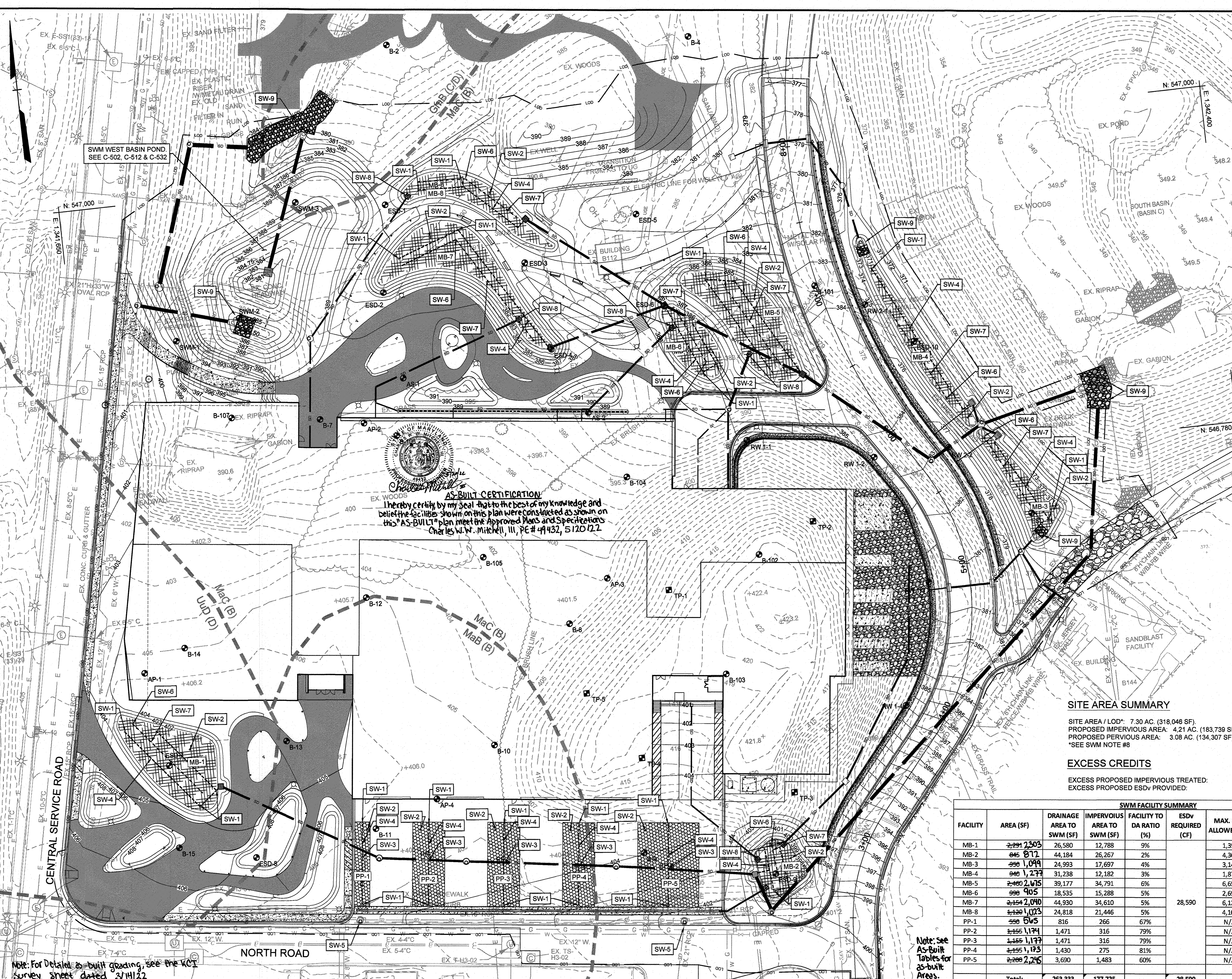

AS-BUILT CERTIFICATION

I hereby certify, by my seal that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications
Charles W.W. Mitchell, III, PE # 49432, 5120122

SWM NOTE:

1. THIS PROJECT IS CONSIDERED "NEW DEVELOPMENT" FOR STORMWATER MANAGEMENT PURPOSES.
2. ON-SITE SWM FACILITIES ARE PROVIDED TO MEET 100% OF SWM REQUIREMENTS. THESE ARE COMPRISED OF EIGHT MICROBIORETENTION FACILITIES WITHIN THE VICINITY OF THE SITE, PERVIOUS PAVEMENT IN THE LOADING DOCK AREA OF THE PROPOSED BUILDING, AND RELOCATED WEST BASIN POND.
3. MICROBIORETENTION: THE MICROBIORETENTION FACILITIES ARE LOCATED WITHIN THE JOHN HOPKINS PROPERTY. THE DRAINAGE AREA TO THE FACILITIES ARE COMPRISED OF IMPERVIOUS RUNOFF FROM EXISTING RUNOFF FROM NORTH ROAD AND PROPOSED ON-SITE SIDEWALK, PROPOSED ROADWAY AND ROOF RUNOFF. THE ON-SITE FACILITIES PROVIDE SWM TREATMENT FOR THE PRIVATE DEVELOPMENT.
4. PERVIOUS PAVEMENT: PERVIOUS PAVEMENT AREAS ARE LOCATED WITHIN THE LOADING AREA OF THE PROPOSED BUILDING. THE DRAINAGE AREAS TO THE FACILITIES ARE COMPRISED OF IMPERVIOUS RUNOFF FROM THE PAVED LOADING AREA.
5. FOR EXISTING AND PROPOSED DRAINAGE AREAS, SEE SHEETS C-520 AND C-521.
6. FOR SWM COMPUTATIONS AND ADDITIONAL INFORMATION, SEE THE SWM REPORT.
7. ALL SWM FACILITIES WILL BE MAINTAINED BY JOHNS HOPKINS APPLIED PHYSICS LABORATORY.
8. LIMIT OF DISTURBANCE NOTE: THE LIMIT OF DISTURBANCE SHOWN REPRESENTS ONLY THOSE AREAS DEEMED DISTURBED FOR THE CALCULATION OF SWM REQUIREMENTS. FOR GROSS LIMIT OF DISTURBANCE, SEE EROSION AND SEDIMENT CONTROL PLAN. THE PROJECT WORK AREAS EXCLUDED FROM THE SWM LOD ARE:
   - LINEAR TRENCHING AREA FOR UTILITY CONNECTION IN THE ROADWAY (SWM WAIVER).
   - TEMPORARY STAGING AND STOCKPILE AREA.
9. SEE SHEET C-510 FOR PROFILES OF THE MICROBIORETENTION FACILITIES.
10. LICENSED GEOTECHNICAL ENGINEER TO EVALUATE GROUNDWATER CONDITIONS DURING CONSTRUCTION TO DETERMINE GROUNDWATER ELEVATION. IF GROUND WATER IS ENCOUNTERED WITHIN 4' OF THE BOTTOM OF A SWM FACILITY AN IMPERMEABLE LINER WILL BE INSTALLED. SEE SHEET C-510 & C-511 FOR LINER DETAIL AND SPECIFICATION.

LEGEND

- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED GRAVEL DRIVE. SEE DETAIL G-6.01 ON SHEET C-608
- PROPOSED GRAVEL
- PROPOSED PERMEABLE - ARTICULATING CONCRETE BLOCK/MAT. SEE SHEET C-511
- PROPOSED ASPHALT DRIVE
- PROPOSED ASPHALT WALK SEE DETAIL 8 ON SHEET L-201
- PROPOSED BIORETENTION FACILITY
- PROPOSED PAVERS OR COLOR CONCRETE, SEE LANDSCAPE
- PROPOSED RETAINING WALL
- PROPOSED CURB & GUTTER
- SD — PROPOSED STORM DRAIN
- PROPOSED SD MANHOLE
- PROPOSED SD INLET
- STONE ENERGY DISSIPATOR.
- ROCK OUTLET PROTECTION.
- ESD-1 — BORING LOCATION

STORMWATER MANAGEMENT PLAN NOTES

KEY SW-1

1. 6" CLEANOUT, SEE STRUCTURE TABLE C-402.
2. 6" OBSERVATION WELL, SEE STRUCTURE TABLE C-402.
3. PERVIOUS PAVERS UNDERDRAIN CONNECTION TO STORM DRAIN SYSTEM. SEE SHEET C-415 .
4. 6" UNDERDRAIN PIPE. SEE MICROBIORETENTION AND PERVIOUS PAVER DETAILS FOR PIPE SPECIFICATIONS AND INVERT ELEVATIONS, SHEET C-510 AND C-511.
5. CONVERT EXISTING INLET TO MANHOLE. ADJUST STRUCTURE TO PROPOSED GRADE. SEE SHEET C-411.
6. 6" OVERFLOW DISTRIBUTION PIPE. SEE DETAIL ON C-510.
7. 6" PERFORATED PIPE THROUGH STONE RESERVOIR. SEE DETAIL ON C-510.
8. STONE ENERGY DISSIPATOR. SEE DETAIL ON C-510.
9. ROCK OUTLET PROTECTION. SEE DETAIL ON C-609 AND DIMENSIONS ON C-401.

SITE AREA SUMMARY

SITE AREA / LOD*: 7.30 AC. (318,046 SF).
PROPOSED IMPERVIOUS AREA: 4,21 AC. (183,739 SF)
PROPOSED PERVIOUS AREA: 3.08 AC. (134,307 SF)
*SEE SWM NOTE #8

EXCESS CREDITS

EXCESS PROPOSED IMPERVIOUS TREATED: 201 SF
EXCESS PROPOSED ESDv PROVIDED: N/A

New Development Area Calculations
ESDv Compliance Summary

ESDv Required: 28,590 CF IART: 183,739 SF
ESDv Provided: 17,570 CF IAT: 183,940 SF
ESDv Provided > ESDv Required

Site Pe Achieved = 1.16 IN
Site Pe Target = 1.89 IN

SWM FACILITY SUMMARY

FACILITY	AREA (SF)	DRAINAGE AREA TO SWM (SF)	IMPERVOIUS AREA TO SWM (SF)	FACILITY TO DA RATIO (%)	ESDv REQUIRED (CF)	MAX. ESDv ALLOWED (CF)	ESDv PROVIDED (CF)	IART (SF)	IAT (SF)	Pe TARGET (IN)	Pe PROVIDED(IN)
MB-1	~~2,291~~ 2,303	26,580	12,788	9%		1,391	1,391		12,788	1.30	1.30
MB-2	~~845~~ 872	44,184	26,267	2%		4,308	1,239		26,267	2.00	1.06
MB-3	~~950~~ 1,099	24,993	17,697	4%		3,149	1,582		17,697	2.20	1.56
MB-4	~~940~~ 1,277	31,238	12,182	3%		1,879	1,743		12,182	1.80	1.80
MB-5	~~2,460~~ 2,675	39,177	34,791	6%		6,654	3,508		34,791	2.40	1.92
MB-6	~~990~~ 905	18,535	15,288	5%		2,692	1,453		15,288	2.20	1.78
MB-7	~~2,154~~ 2,040	44,930	34,610	5%	28,590	6,123	3,185	183,739	34,610	2.20	1.86
MB-8	~~1,120~~ 1,023	24,818	21,446	5%		4,108	1,726		21,446	2.40	1.93
PP-1	~~550~~ 565	816	266	67%		N/A	160		816	2.5	2.5
PP-2	~~1,155~~ 1,174	1,471	316	79%		N/A	289		1,471	2.5	2.5
PP-3	~~1,155~~ 1,177	1,471	316	79%		N/A	289		1,471	2.5	2.5
PP-4	~~1,155~~ 1,173	1,430	275	81%		N/A	281		1,430	2.5	2.5
PP-5	~~2,200~~ 2,245	3,690	1,483	60%		N/A	725		3,683	2.5	2.5
	Total:	263,333	177,725		28,590		17,570	183,739	183,940	1.89	1.16

30 15 0 30 60
SCALE: 1" = 30'

C-501

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORMWATER MANAGEMENT PLAN AS-BUILT

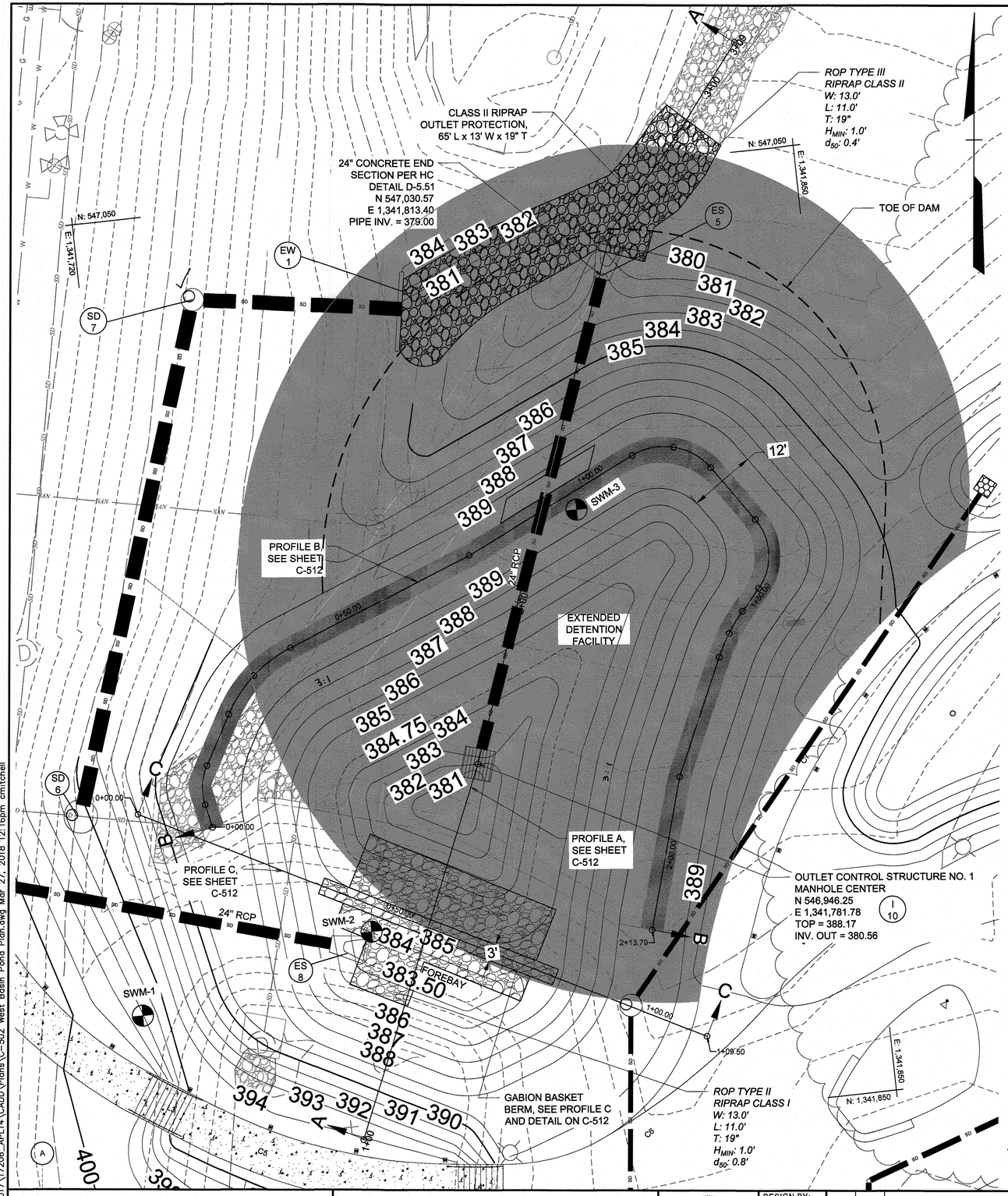
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206
SCALE: As Shown



WEST BASIN DESIGN SUMMARY

RELOCATED WEST BASIN
Extended Detention Hazard Class 'A'
Total Drainage Area : 2.38 Acres
Impervious Area (CN 98): 1.00 Acres
Pervious Area (CN 61): 1.38 Acres

DESIGN STORM - NOAA C	WATER SURFACE ELEVATION (feet)	STORAGE VOLUME (acre feet)	Qin (cfs)	Qout (clogged) (cfs)
Permanent Pool Elevation	384.00			
2-year	~~380.44~~ ~~380.51~~		10.02	~~0.78~~ 9.82
10-year	~~380.72~~ ~~380.86~~		13.48	~~13.25~~ 13.28
100-year	~~380.90~~ ~~380.94~~		17.78	17.54
Forebay Sediment Volume		0.008*		
Recharge Volume (Rev)	n/a	n/a	n/a	n/a
Water Quality Volume (WQv)	n/a	n/a	n/a	n/a
Channel Protection Volume (Cpv) (1-year)	~~386.14~~ 386.02			
Overbank Flood Protection (Qp)	n/a	n/a	n/a	n/a
Extreme Flood Protection (Qf)	n/a	n/a	n/a	n/a
Top of Dam Elevation	389.00	0.439	n/a	n/a

Note: Qp and Qf are not required for this project as determined by HCDRS.
*Forebay Volume sized for 363 cft per acre of impervious cover within the DA

Riser: Precast Reinforced Concrete Box
Principal Spillway: 24 inch RCP
Emergency Spillway: n/a
Maintenance: Private. Responsibility of the Owner (JHU - APL)

LEGEND

- GABION BASKET BERM
- NO TREE / SHRUB BUFFER ZONE
- IMPERVIOUS CORE / CUT-OFF TRENCH
- FILTER DRAINAGE DIAPHRAGM
- TOE OF DAM
- SOIL BORING LOCATION

GENERAL NOTES:

1. SEE THE CIVIL COVER SHEET FOR PROJECT GENERAL NOTES
2. COORDINATES, BEARINGS AND DISTANCES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD'83/2011). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NAVD'88 DATUM. BOTH OF WHICH ARE BASED ON RTK OBSERVATIONS PERFORMED BY CENTURY ENGINEERING, INC.
3. THIS PLAN IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT MAY 1, 2000 BY GREGORY KING, WHITMAN REQUARDT AND ASSOCIATES, LLP WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. INFORMATION SHOWN ON THE SURVEY IS BASED ON AVAILABLE PUBLIC INFORMATION PROVIDED BY JOHNS HOPKINS UNIVERSITY.
4. THE TOPS OF ALL FRAMES, GRATES, AND COVERS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF CONTRACT AND/OR DISTURBANCE SHALL BE ADJUSTED TO THE NEW GRADES.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION SHOWN ON THESE DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER PRIOR TO STARTING WORK.
6. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT EXIST.
7. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES AT ALL TIMES.
8. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING ANY DEMOLITION, UTILITY, OR EXCAVATION ACTIVITY.
9. FOR WEST BASIN POND PROFILES & DETAILS SEE SHEET C-512 AND C-513.
10. FOR WEST BASIN POND EXISTING AND PROPOSED DRAINAGE AREAS SEE SHEETS C-520 & C-521.
11. FOR CONSTRUCTION SPECIFICATIONS & MAINTENANCE REQUIREMENTS SEE SHEET C-532.
12. FOR SOIL BORING DATA SHEETS (SWM-1, SWM-2 & SWM-3) SEE SHEET C-533.

AS-BUILT CERTIFICATION
I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets the approved plans and specifications.
P.E. No: 42679
Date: 7/13/22

13 JUL 2022

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE — P.E. NO. 42679 — DATE 7/18/22

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 7/19/18

OPERATION, MAINTENANCE AND INSPECTION

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

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF ENGINEER — DATE 12/1/17
(PRINT NAME BELOW SIGNATURE)
CHRISTOPHER D. KRUPINSKI

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT".

GLENN M. CAREY
SIGNATURE OF DEVELOPER — DATE 12/1/17
(PRINT NAME BELOW SIGNATURE)

DAM CLASSIFICATION

THE STORAGE HEIGHT PRODUCT FOR THE WEST BASIN IS (10-FT X 0.439 AC-FT) 4.39. THE HEIGHT TO THE COMBINED PRINCIPLE AND EMERGENCY SPILLWAY IS LESS THAN 15-FEET AND THE NORMAL SURFACE AREA IS LESS THAN 12 ACRES. THE COMBINED SPILLWAY IS SIZED FOR THE 100 YEAR STORM AND THERE IS 2-FT OF FREEBOARD ABOVE THE 100 YEAR STORM. THEREFORE THE STRUCTURE CLASS OF THIS FACILITY IS CLASS A.

DANGER REACH LENGTH

THE DANGER REACH LENGTH WAS CALCULATED USING THE METHODOLOGY PROVIDED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT, REPRODUCED FROM THE "STORM WATER MANAGEMENT POND DESIGN MANUAL", MD. ASSOCIATION OF SCDS, 12/1987.

THE AVERAGE VALLEY WIDTH OF THE VALLEY WITH THE BREECH IS APPROXIMATELY 100', WITH A DAM HEIGHT OF 10'. THE MAXIMUM AVAILABLE STORAGE WITHIN THE POND IS 19,121 CF (0.439 ACRE FEET). BASED ON THE CHART REFERENCED ABOVE, THIS RESULTS IN A DANGER REACH OF 1080 FEET PER ACRE FOOT OF STORAGE. THE DANGER REACH FOR THE PROPOSED WEST BASIN IS 475 FEET AND IS SHOWN ON SHEET C-521 OF THE DRAWINGS. THE AREA WITHIN THE BREECH ZONE IS PRESENTLY AN EXISTING CHANNEL SURROUNDED BY FOREST WITH NO STRUCTURES OR ROADWAYS. A FAILURE WOULD NOT HAVE A SIGNIFICANT IMPACT ON ANY IMPROVED LAND, THEREFORE A DETAILED BREECH ANALYSIS IS NOT REQUIRED.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900
Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN W. D'EPAGNIER — PROFESSIONAL ENGINEER — 3/29/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

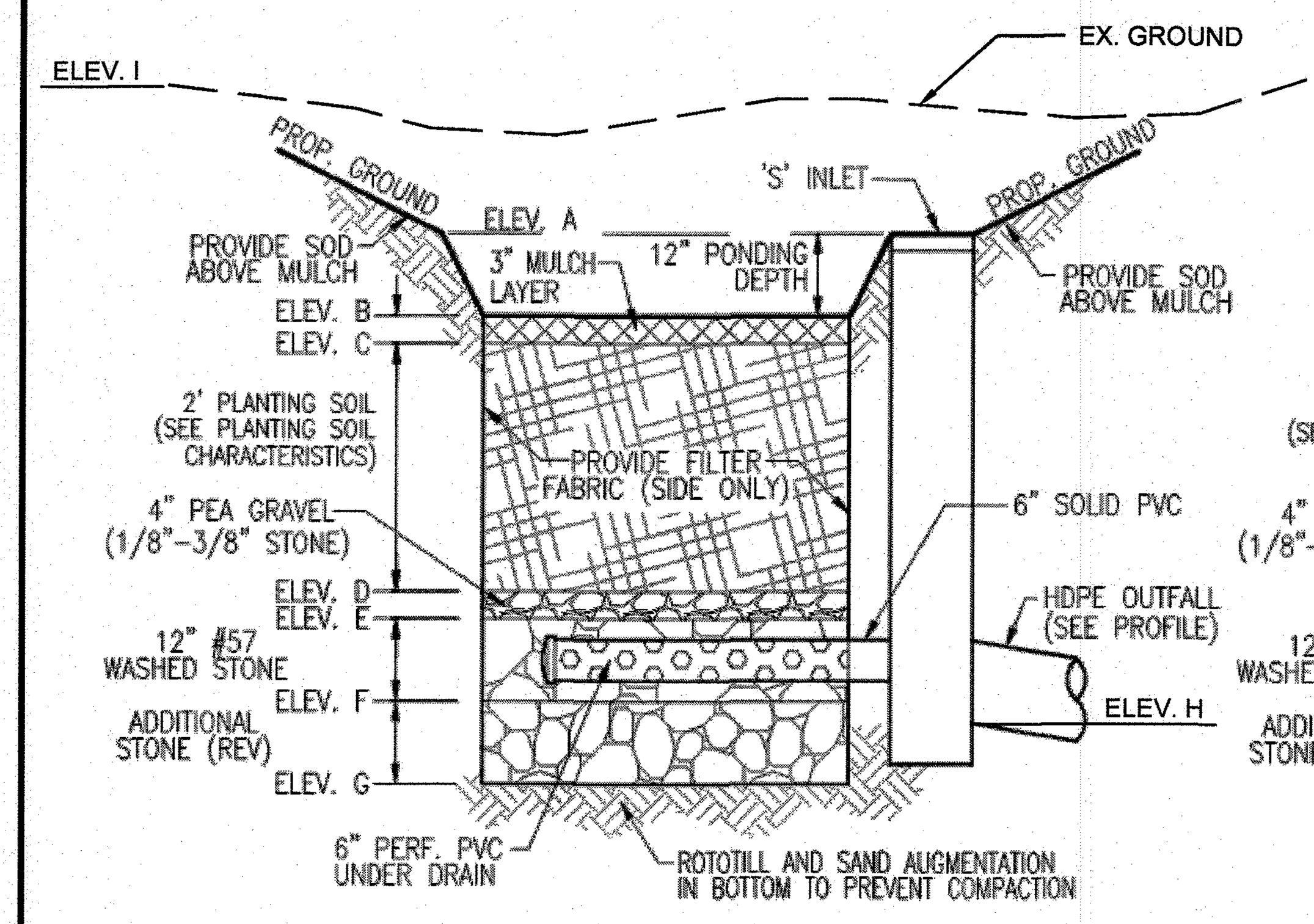
WEST BASIN POND PLAN AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 38 OF 72
GREEN BUILDING
SDP-18-035

C-502

RK&K PROJECT NUMBER 17206

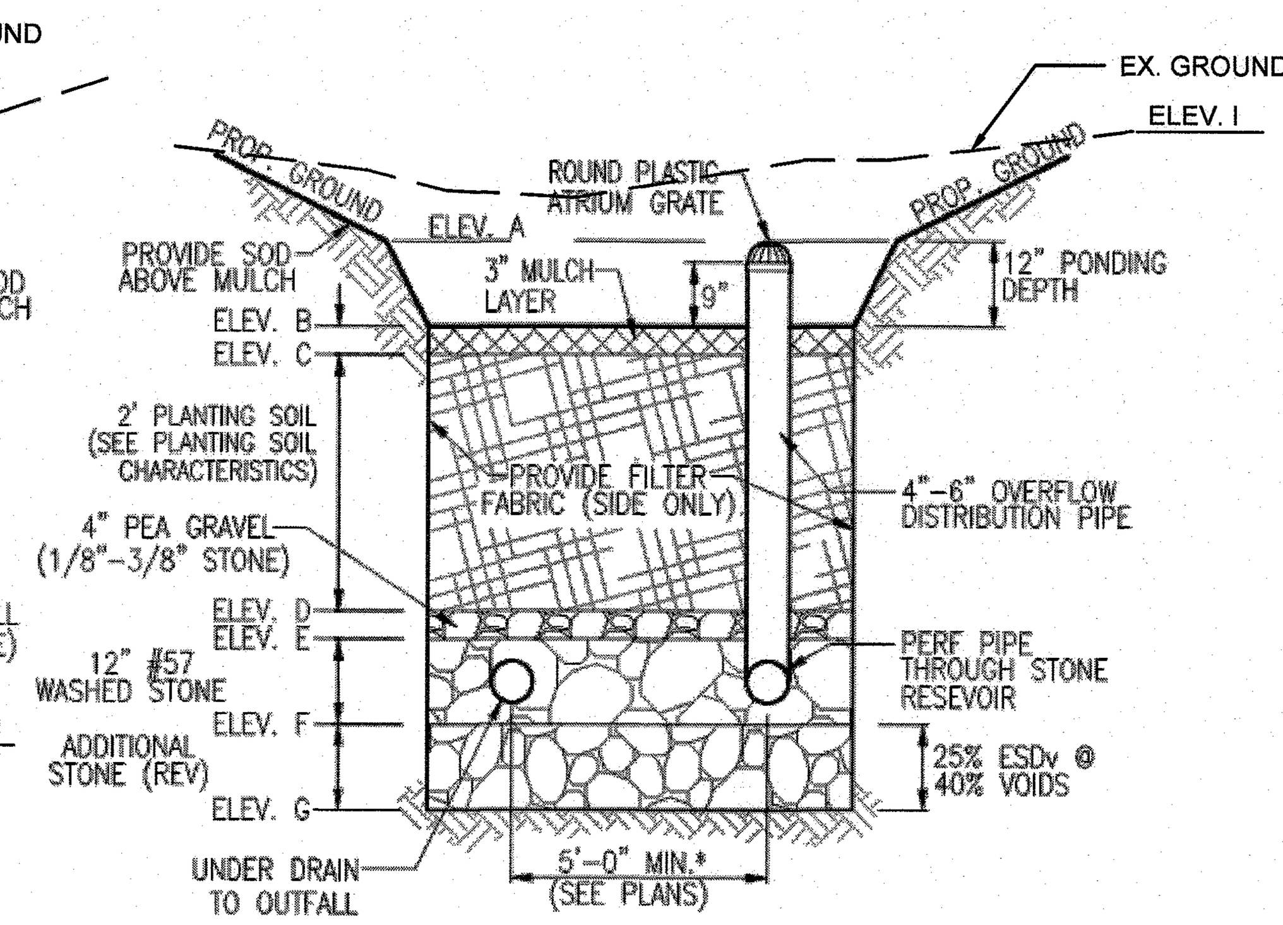
SCALE: As Shown

\\balsrv05\V2017\17206_APL14\CADD\Plans\C-502 West Basin Pond Plan.dwg Mar 27, 2018 12:16pm cmitchell



MICRO-BIORETENTION (UNDERDRAIN)

NOT TO SCALE



MICRO-BIORETENTION (OVERFLOW)

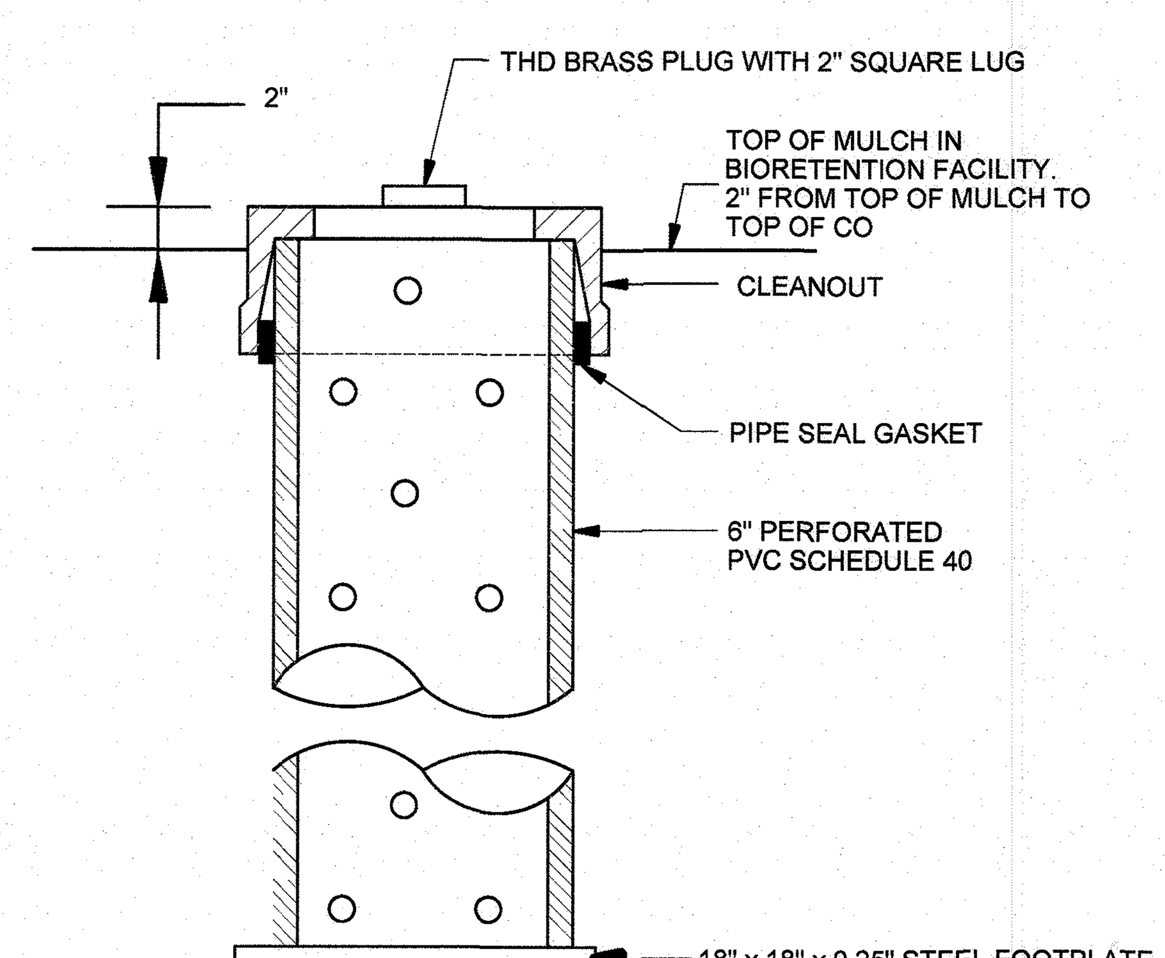
NOT TO SCALE

MICROBIORETENTION DATA										
FACILITY	PONDING (ELEV A)	TOP OF MULCH LAYER (ELE. B)	TOP OF BIORETENTION SOIL (BSM)- (ELEV. C)	BOTTOM OF BSM/ TOP OF CHOKER LAYER (ELEV.D)	BOTTOM OF CHOKER LAYER/ TOP OF RESERVOIR LAYER (ELEV.E)	12" #57 STONE ELEV. (ELEV.F)	BOTTOM OF MICRO-BIORETENTION FACILITY (ELEV. G)	OUTLET PIPE INV. ELEV (ELEV. H)	EXISTING GRADE (ELEV. I)	GROUNDWATER ELEV.
MB-1	402.5	401.50	401.25	399.25	398.92	397.92	396.92	398.07	MIN. 406.90 MAX.407.24	NONE
MB-2	398.75	397.75	397.50	395.50	395.17	394.17	393.17	393.15	MIN. 401.42 MAX.411.99	NONE
MB-3	371.75	370.75	370.50	368.50	368.17	367.17	366.17	367.32	MIN. 371.83 MAX.372.61	NONE
MB-4	371.75	370.75	370.50	368.50	368.17	367.17	366.17	367.32	MIN. 372.84 MAX.373.59	NONE
MB-5	385.25	384.25	384.00	382.00	381.67	380.67	379.67	374.46	MIN. 381.21 MAX.385.29	NONE
MB-6	386.25	385.25	385.00	383.00	382.67	381.67	380.67	375.85	MIN.385.22 MAX.387.15	NONE
MB-7	382.25	381.25	381.00	379.00	378.67	377.67	376.67	377.82	MIN. 388.15 MAX.393.08	NONE
MB-8	382.25	381.25	381.00	379.00	378.67	377.67	376.67	377.82	MIN. 385.30 MAX.390.56	NONE

Note: See As-Built Tables for as-built data.

MICRO-BIORETENTION NOTES

1. BIORETENTION MATERIALS AND CONSTRUCTION SHALL MEET HOWARD COUNTY CONSTRUCTION SPECIFICATION FOR SHALLOW FACILITY.
2. TREES AND PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH LANDSCAPE PLANS. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL.
3. THE UNDERDRAIN SHALL BE 6-INCH DIAMETER SCHEDULE 40 OR STRONGER PERFORATED PVC PIPE AT 0.00% SLOPE. PERFORATIONS MUST BE 3/8 INCH IN DIAMETER AND MUST BE LOCATED 4 INCHES ON CENTER, EVERY 90 DEGREES AROUND THE PIPE.
4. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
5. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL MICRO-BIORETENTIONS.
6. BOTTOM OF FACILITY SHALL BE AT LEAST 2' ABOVE SEASONAL HIGH WATER TABLE AND BEDROCK AS DETERMINED BY GEOTECHNICAL INVESTIGATION.
7. THE GRAVEL LAYER/ STONE RESERVOIR LAYER SURROUNDING THE UNDERDRAIN PIPE(S) MUST MEET AASHTO M-43, AND MUST PROVIDE A MINIMUM OF 6 INCHES COVER OVER THE PIPE(S), AND MINIMUM 3 INCHES UNDER THE PIPE.
8. NO GEOTEXTILE OR FILTER FABRIC IS ALLOWED TO BE PLACED HORIZONTALLY ANYWHERE WITHIN THE FILTER MEDIA.
9. SEE TABLE B.4.1 MATERIALS SPECIFICATIONS FOR MICRO-BIORETENTION ON SHEET C-530.

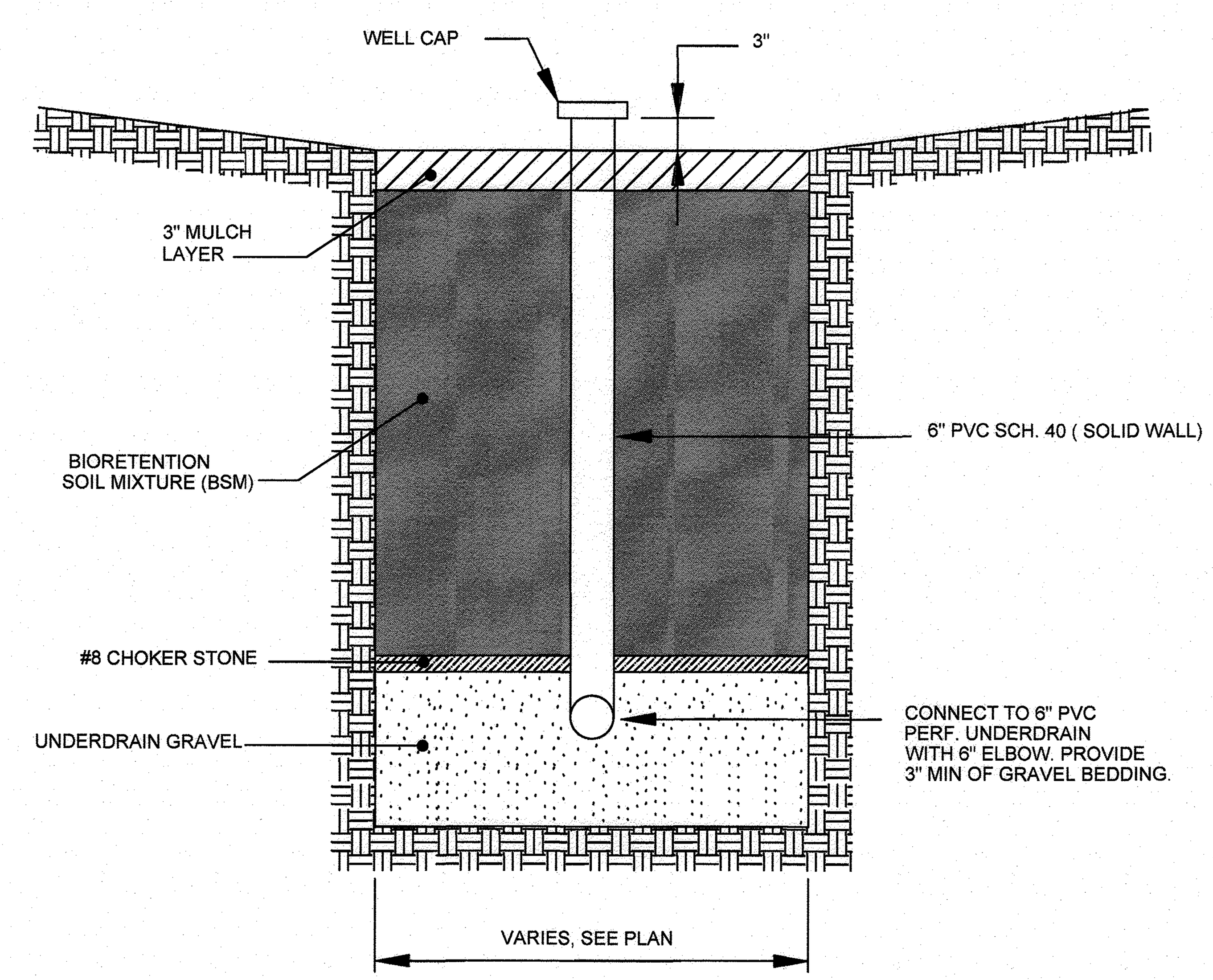


NOTES:

1. OBSERVATION WELLS (6" PVC SCH. 40 PIPE) SHALL BE PLACED IN THE FACILITY AT THE LOCATIONS INDICATED ON THE PLAN SHEETS.
2. THE WELL IS TO BE CAPPED USING A THREADED PVC FITTING AND SEWER CAP WITH A 2 INCH SQUARE LUG. THE DEPTH OF THE FACILITY IS TO BE MARKED ON THE CAP.
3. THE BOTTOM OF THE BIORETENTION FACILITY SHALL BE GRADED FLAT.
4. ENTIRE BARREL OF OBSERVATION WELL IS TO BE ENTIRELY WRAPPED IN GEOTEXTILE.
5. Pipe to be perforated only where located in stone.

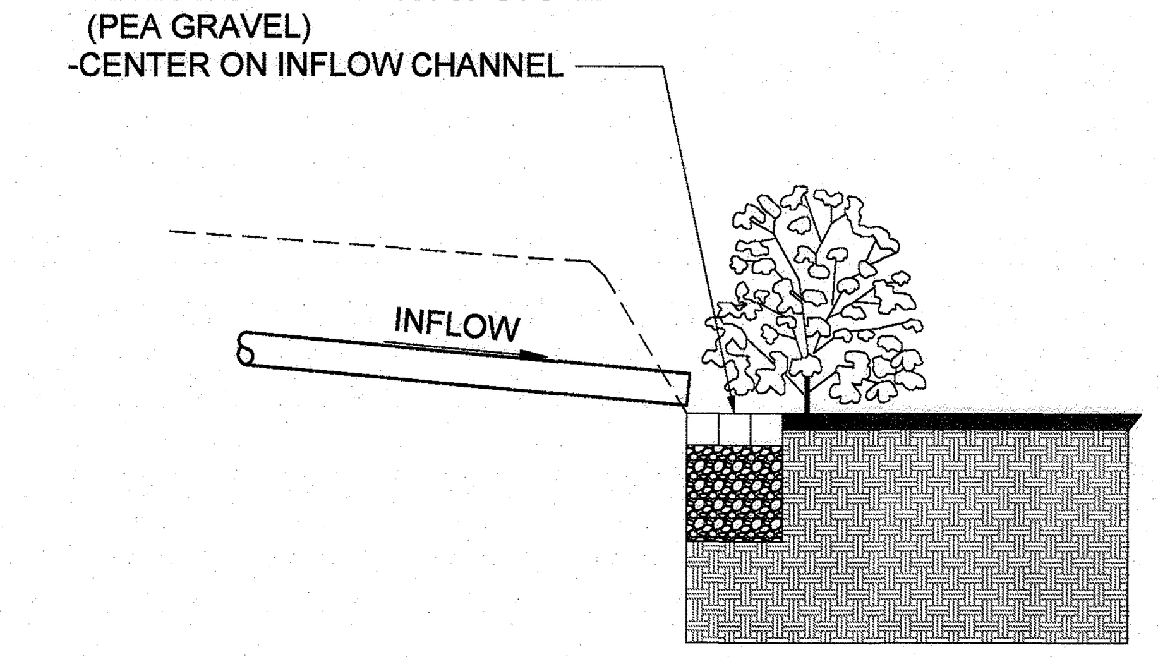
DETAIL - OBSERVATION WELL

SCALE: N.T.S.



MICROBIORETENTION CLEANOUT DETAIL

N.T.S.



STONE ENERGY DISSIPATER DETAIL

NOT TO SCALE

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE# 49432, 5/20/22

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

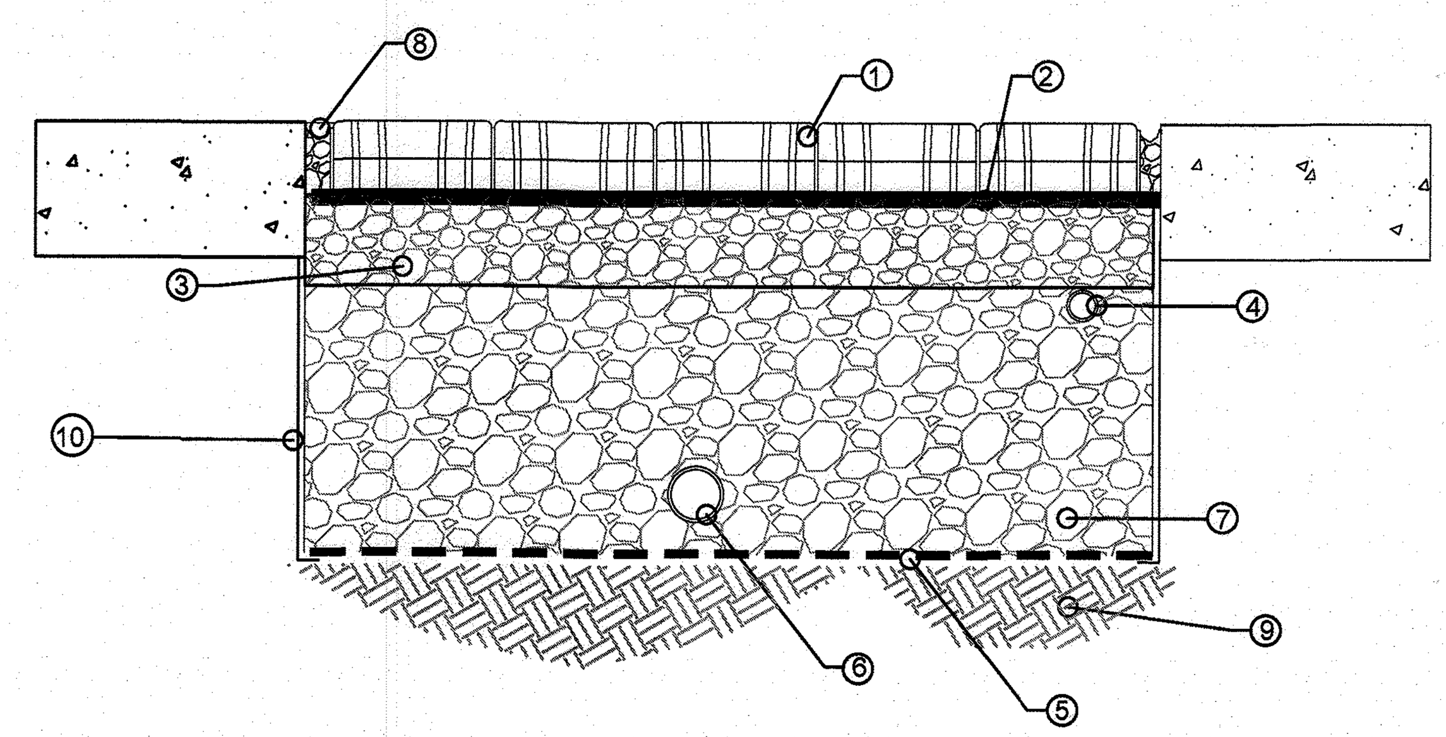
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

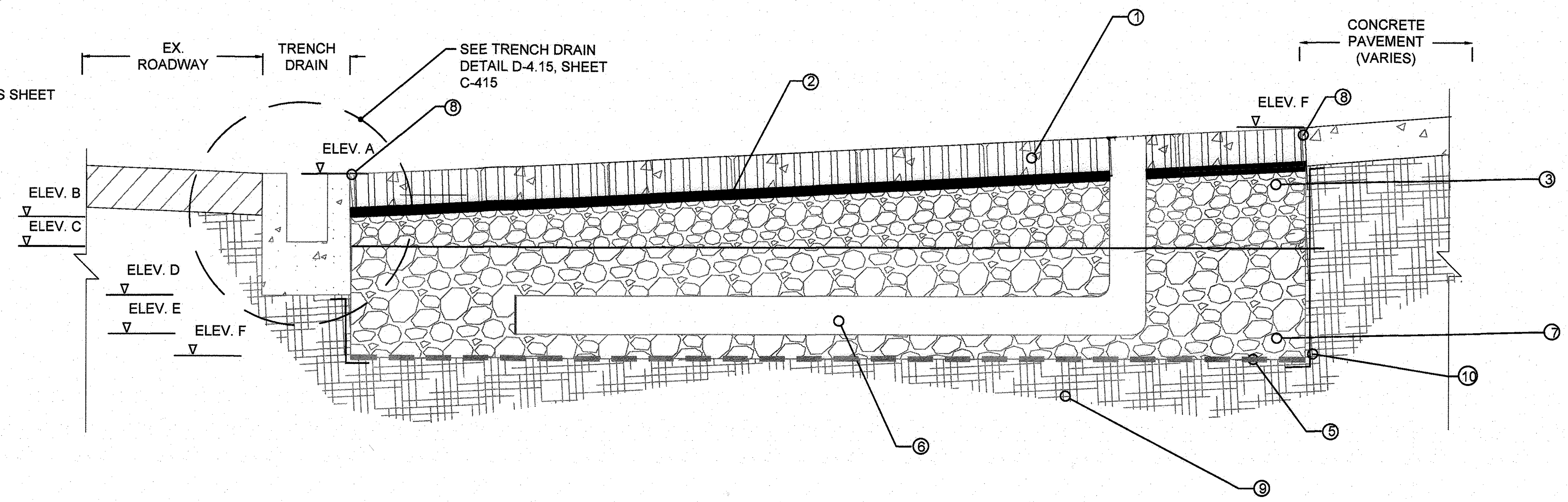
STORMWATER MANAGEMENT DETAILS
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 39 OF 72
GREEN BUILDING
SDP-18-035

C-510
RK&K PROJECT NUMBER 17206
SCALE: As Shown

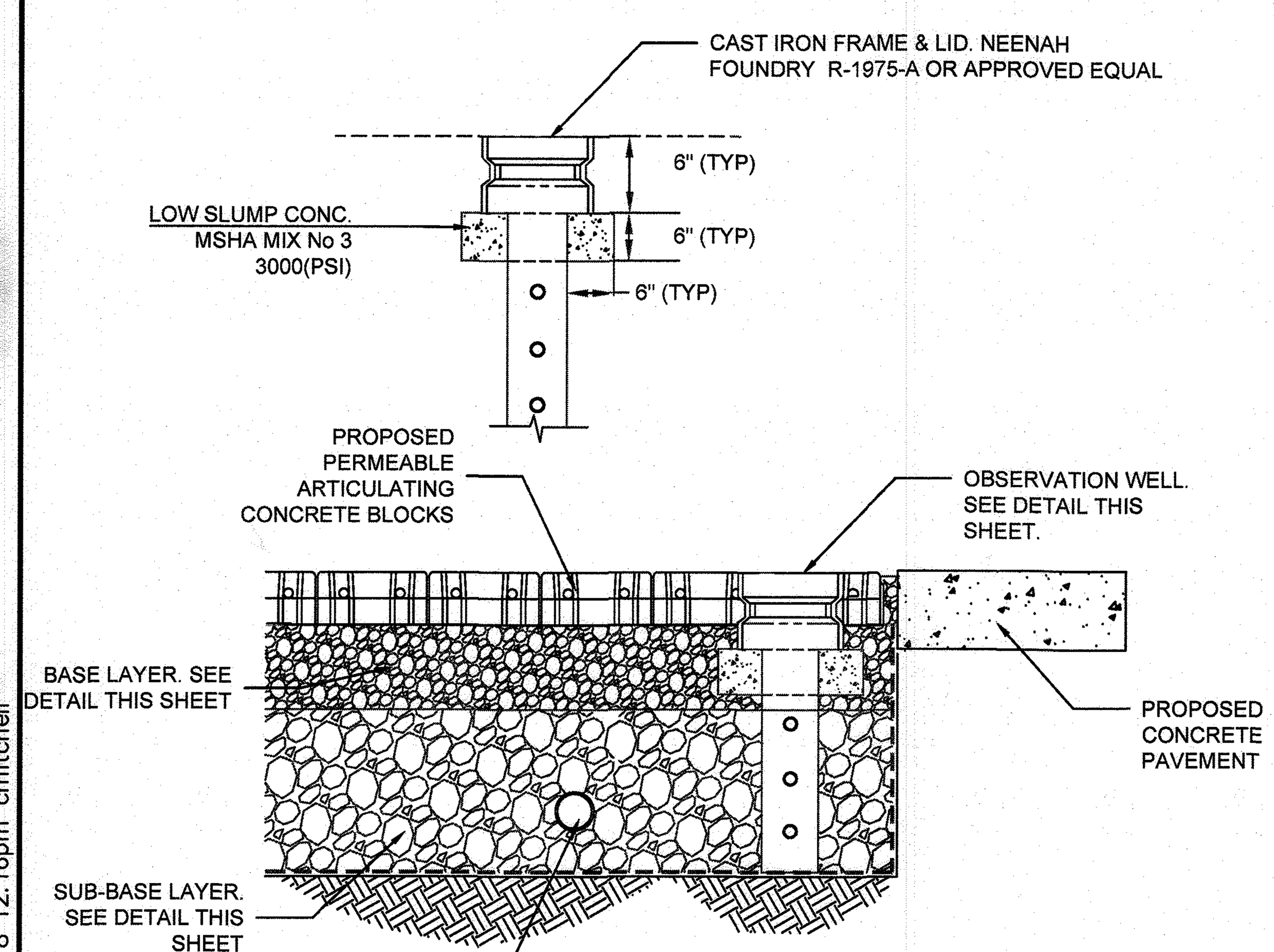
\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-510 Stormwater Management Details.dwg Mar 27, 2018 12:16pm cmitchell

1. PAVEDRAIN SOLID UNIT BLOCK
2. GEOGRID, TENSAR BX-1100
3. BASE LAYER. SEE NOTES THIS SHEET
4. 2" OVERDRAIN. SEE NOTES THIS SHEET
5. MIRAFI RS380I WOVEN GEOTEXTILE
6. 6" SCH 40. UNDERDRAIN WITH 90° SCH. 40 BEND
7. SUB-BASE LAYER (THICKNESS VARIES). SEE NOTES THIS SHEET
8. EXPANSION JOINT
9. UNDISTURBED SUBGRADE
10. IMPERMEABLE LINER, SIDES ONLY





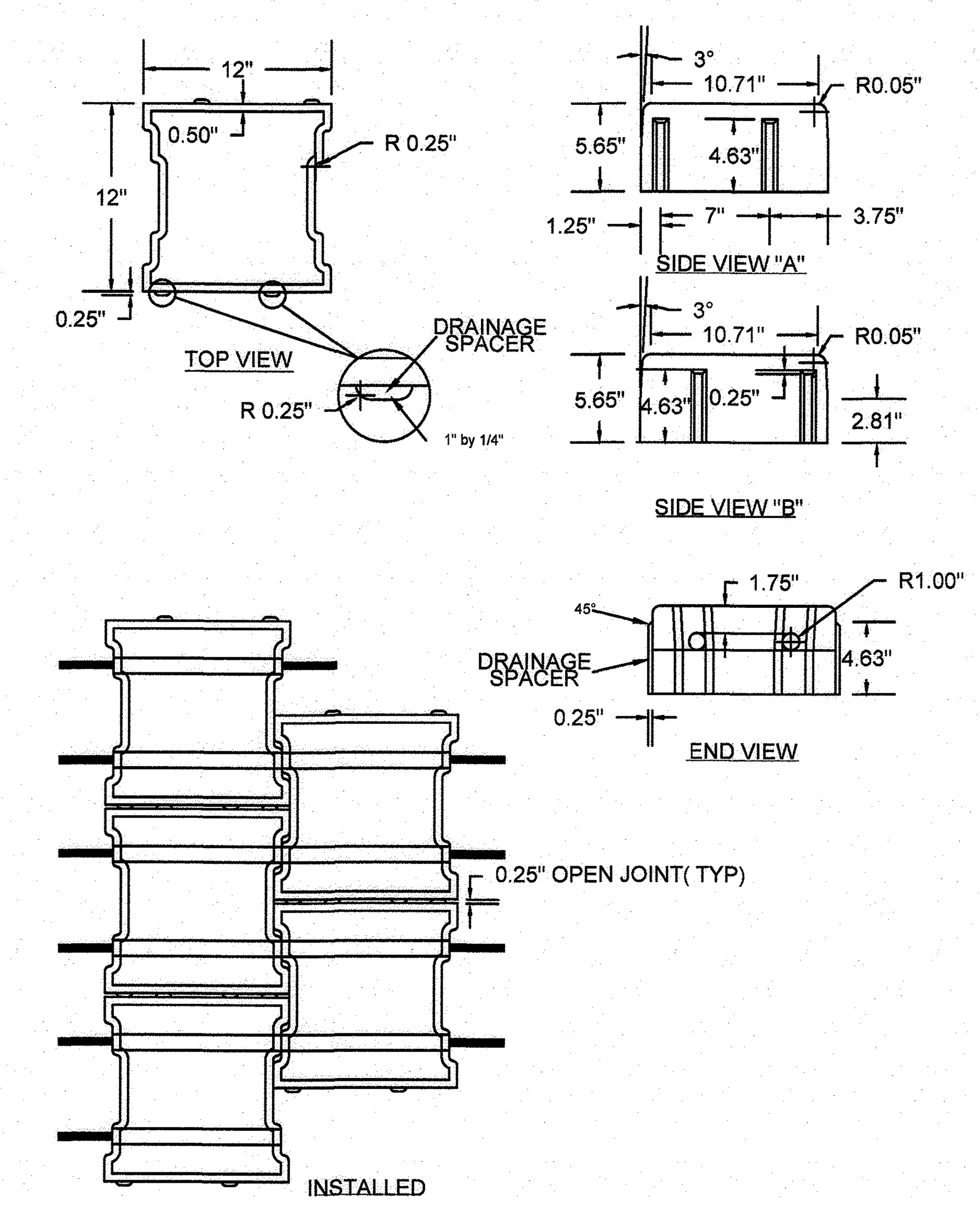
PERMEABLE - ARTICULATING CONCRETE BLOCK/MAT TYPICAL SECTION



OBSERVATION WELL DETAIL
NOT TO SCALE

PERMEABLE ARTICULATING CONCRETE BLOCK/MAT DATA										
FACILITY	FREEBOARD (IN)	TOTAL DEPTH OF STONE STORAGE (IN)	SURFACE ELEVATION (ELEV A)	GEOGRID ELEVATION (ELEV. B)	BASE ELEVATION (ELEV.C)	BOTTOM OF SUB-BASE LAYER (ELEV. D)	UNDERDRAIN INV @ TRENCH DRAIN (ELE. E)	BOTTOM OF FACILITY (ELEV.F)	SURFACE ELEVATION (ELEV G)	GOUNDWATER ELEV.
PP-1	4.16	16	404.34	403.87	403.54	402.54	402.04	401.79	404.72	NONE
PP-2	4.16	15	403.89	403.42	403.09	402.17	401.65	401.40	404.57	NONE
PP-3	4.16	15	403.45	402.98	402.65	401.73	401.23	400.98	404.60	NONE
PP-4	4.16	14	403.00	402.53	402.20	401.36	400.86	400.61	404.65	NONE
PP-5	4.16	18	402.13	401.66	401.33	400.16	399.66	399.41	404.32	NONE

Note: See As-Built Tables for as-built data.



INSTALLATION DETAIL
NOT TO SCALE

INSPECTION NOTES:

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

1. DURING EXCAVATION TO SUBGRADE.
2. DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
3. DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
4. DURING PLACEMENT OF THE SURFACE MATERIAL.
5. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE:

1. PAVEMENT SURFACES SHOULD BE SWEPT AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
2. DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
3. TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
4. DEICERS SHOULD BE USED IN MODERATION. WHEN USED, DEICERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL, OR USE A RUBBER TIPPED BLADE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

PERMEABLE ARTICULATING CONCRETE BLOCK/MAT INSTALLATION NOTES

1. PAVEDRAIN UNIT BLOCK WILL BE HAND PLACED . THIS METHOD OF INSTALLATION TYPICALLY REQUIRES (1) FOREMAN (WITH MINIMAL EXPERIENCE AND/OR MINIMAL TRAINING OF THE PAVEDRAIN SYSTEM) AND (3) GENERAL LABORERS.
2. USE A PLATE COMPACTOR TO LEVEL AND FLATTEN THE BASE ROCK BEFORE AND DURING INSTALLATION. PLACE THE STONE ON THE APPROPRIATE GEOSYNTHETIC IN 6-8" LIFTS AND COMPACT WITH A VIBRATORY ROLLER.
3. USE THE VIBRATORY PLATE COMPACTOR IN BOTH DIRECTIONS FOR FINAL COMPACTION OF THE BEDDING LAYER OF AASHTO #57 STONE. THERE SHOULD BE NO VISIBLE MOVEMENT OF THE MATERIAL ONCE COMPACTED AND THE BASE SHOULD BE SMOOTH WHEN COMPLETED.
4. INDICATE STARTING POINT OF PAVEDRAIN UNIT BLOCK INSTALLATION AND RUN STRING LINES. SEE DRAINPAVE INSTALLATION MANUAL FOR MORE DETAILS.
5. KEEP THE UNITS TIGHT DURING INSTALLATION AND FOLLOW THE STRING LINES. USE RUBBER MALLET TO SEAL THE UNITS AFTER INSTALLATION.

PERMEABLE ARTICULATING CONCRETE BLOCK/MAT NOTES

1. BOTTOM OF FACILITY SHALL BE AT LEAST 2' ABOVE SEASONAL HIGH WATER TABLE AND BEDROCK AS DETERMINED BY GEOTECHNICAL INVESTIGATION.
2. 4" - BASE LAYER, AASHTO # 57 (CLEAN, ANGULAR ON ALL SIDES, NO FINES). LAYER COMPACTED TO NO MOVEMENT.
3. SUB-BASE LAYER, ASTM GRADE #2. THICKNESS AS INDICATED BY CROSS SECTION. SEE DATA TABLE THIS SHEET
4. INSTALL TENSAR BX-1100 (OR APPROVED EQUAL) DIRECTLY ON TOP OF PROPERLY PREPARED AND LEVELED FINAL AGGREGATE BASE.
5. OPEN JOINT BETWEEN BLOCKS TO HAVE ½" INCH MAXIMUM GAP AND TO BE FILLED WITH AASHTO # 8 OR APPROVED EQUAL. MINIMUM GAP SHALL BE ¼" OR PER MANUFACTURERS RECOMMENDATIONS FOR INTERLOCKING CONCRETE PAVERS.
6. THE UNDERDRAIN SHALL BE 6-INCH DIAMETER SCHEDULE 40 OR STRONGER PERFORATED PVC PIPE AT 0.00% SLOPE. PERFORATIONS MUST BE 3/8 INCH IN DIAMETER AND MUST BE LOCATED 4 INCHES ON CENTER, EVERY 90 DEGREES AROUND THE PIPE.
7. OVERDRAIN 2" PVC PERFORATED OR SLOTTED PIPE WITHIN THE BASE LAYER.
8. PLACE MIRAFI RS380I (OR APPROVED EQUAL) WOVEN MONOFILAMENT OR MULTIFILAMENT GEOTEXTILE FLAT ON SUBGRADE AND VERTICAL SECTIONS OF BASE AGGREGATE FREE OF WRINKLES AND OVERLAPPING A MINIMUM OF TWELVE (12) INCHES.

STATE OF MARYLAND — CHARLES W. W. MITCHELL, III — 49432 — PROFESSIONAL ENGINEER

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE # 49432,

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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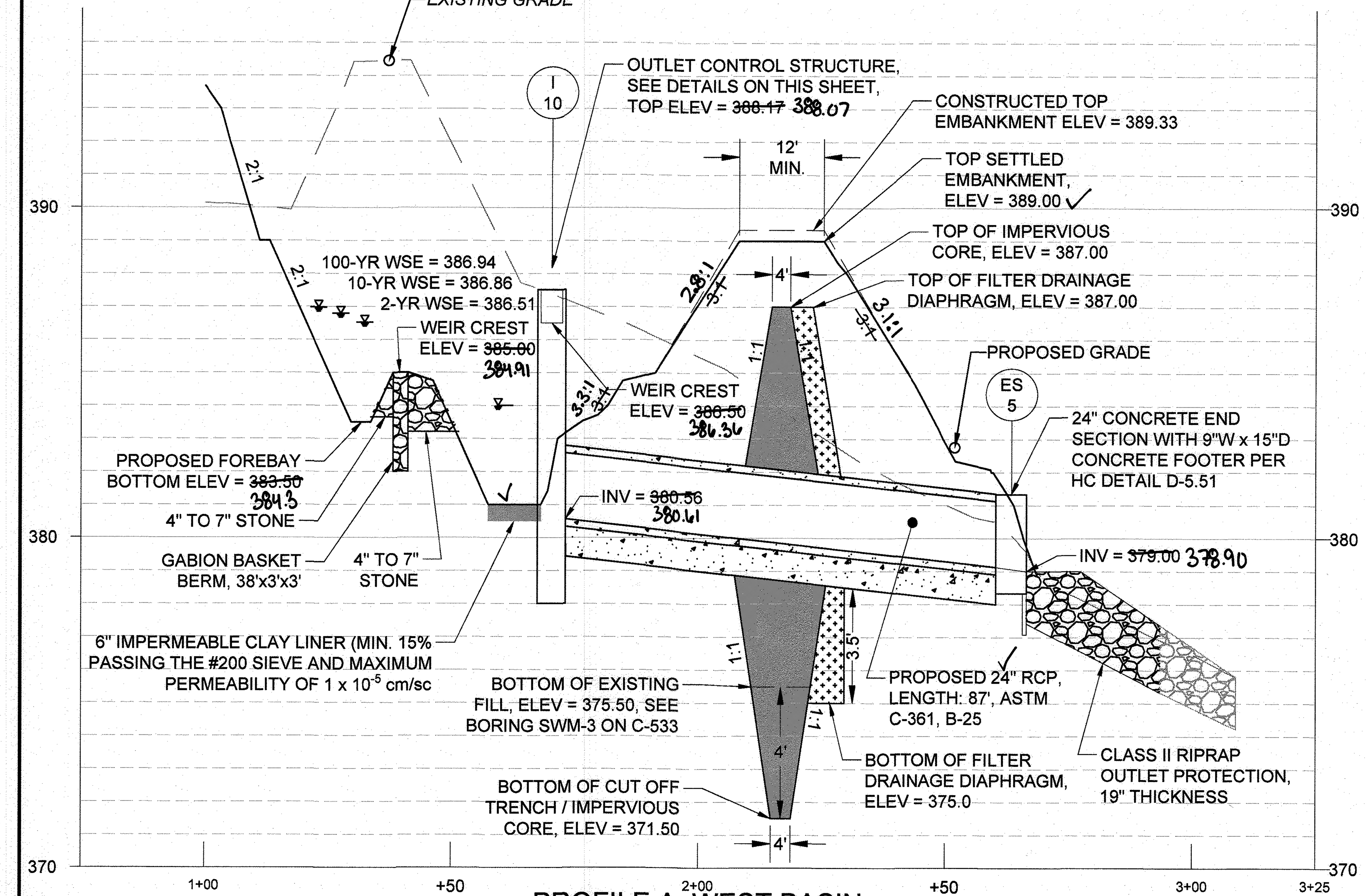
DESIGN BY: CWWM				
DRAWN BY: CP				
CHECKED BY: CDK				
DATE: 3/30/2018	BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORMWATER MANAGEMENT DETAILS
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND

GREEN BUILDING
SDP-18-035

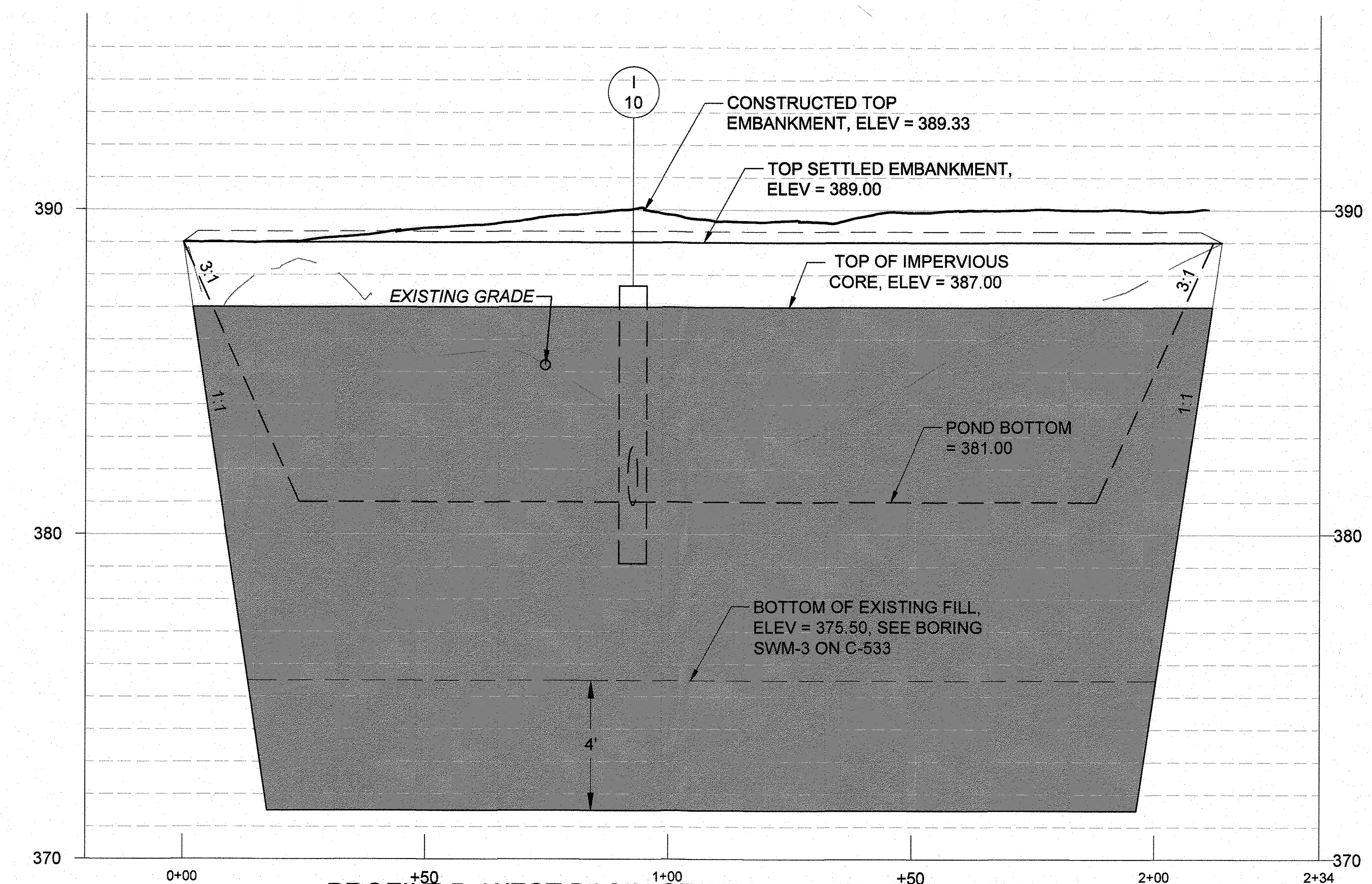
C-511
RK&K PROJECT NUMBER 17206
SCALE: As Shown



PROFILE A: WEST BASIN

SCALE: HORIZ. 1" = 20'
VERT. 1" = 3'

Impervious Core & Filter Diaphragm were constructed per the approved plan and specifications.



PROFILE B: WEST BASIN CENTERLINE OF EMBANKMENT

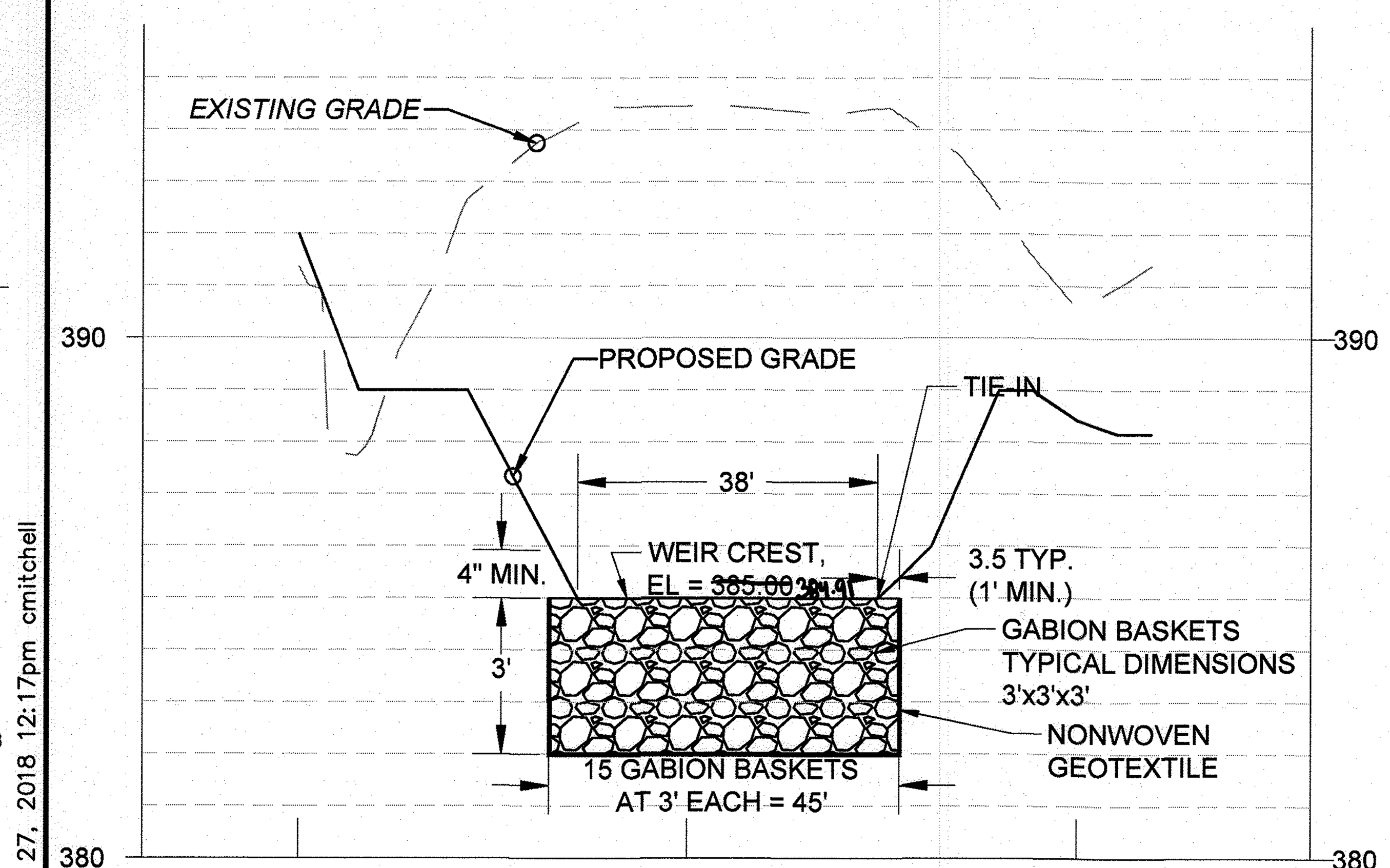
SCALE: HORIZ. 1" = 20'
VERT. 1" = 3'

FILTER DRAINAGE DIAPHRAGM NOTES

THE FILTER DRAINAGE DIAPHRAGM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THIS SECTION AND AS SHOWN ON THE PLANS. THE MATERIAL SHALL BE PLACED IN CONTINUOUS, APPROXIMATELY HORIZONTAL LAYERS NOT MORE THAN 12 INCHES IN LOOSE THICKNESS. EACH LAYER SHALL BE THOROUGHLY WETTED IMMEDIATELY PRIOR TO THE COMPACTION. AFTER WETTING, EACH LAYER SHALL BE COMPACTED BY A MINIMUM OF TWO PASSES OF A VIBRATORY PLATE COMPACTOR WEIGHING AT LEAST 160 POUNDS WITH A MINIMUM CENTRIFUGAL FORCE OF 2,450 POUNDS AT A VIBRATORY FREQUENCY OF NO LESS THAN 5,000 CYCLES PER MINUTE. THE WATER CONTENT OF THE DRAINAGE MATERIAL BEFORE AND DURING COMPACTION SHALL BE UNIFORM THROUGHOUT EACH LAYER OF THE MATERIAL. THE WATER CONTENT SHALL BE SUFFICIENT TO ATTAIN THE REQUIRED DENSITY OF THE MATERIAL IN PLACE WHEN COMPACTED. THE MATERIAL SHALL BE COMPACTED AS SPECIFIED IN "EARTH FILL". THE DIAPHRAGM SHALL BE THOROUGHLY FLOODED UPON COMPLETION AND THE OUTLET DRAIN OBSERVED FOR PROPER FUNCTION. CARE SHALL BE TAKEN SO THAT THE DRAINAGE MATERIAL DOES NOT BECOME CONTAMINATED. CONTAMINATED DRAINAGE MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL. DURING PERIODS OF SHUTDOWN AND AT ALL EQUIPMENT CROSSINGS, THE DRAINAGE MATERIAL SHALL BE PROTECTED BY PROTECTIVE COVERING MATERIAL SUCH AS POLYETHYLENE SHEETING, PVC SHEETING OR EQUAL. AT EQUIPMENT CROSSINGS, THE SHEETING MATERIAL SHALL BE COVERED WITH A SUFFICIENT DEPTH OF EMBANKMENT MATERIAL TO PREVENT DAMAGE TO THE SHEETING BY THE EQUIPMENT, OR A MINIMUM OF 12 INCHES, WHICHEVER PROVIDES GREATER PROTECTION. PRIOR TO PLACING ADDITIONAL DRAINAGE MATERIAL AFTER SHUTDOWN AT EQUIPMENT CROSSINGS, THE CONTRACTOR SHALL REMOVE ANY TEMPORARY PROTECTIVE COVERINGS AND REPLACE ANY MATERIAL THAT MAY HAVE BECOME CONTAMINATED. 4 INCH PVC OUTLET DRAIN TO PROJECT A MINIMUM OF 4 INCHES FROM THE FACE OF ENDWALL OR INTERIOR WALL OF INLET / MANHOLE. A REMOVABLE ANIMAL GUARD (AGRIDRAIN RATGUARD OR EQUAL) IS TO BE ATTACHED TO THE OUTLET END OF THE 4 INCH PVC DRAINS. AN ALTERNATE IS 1/4"x1/4" HARDWARE CLOTH ATTACHED WITH STAINLESS STEEL HOSE CLAMP. A GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING CONSTRUCTION.

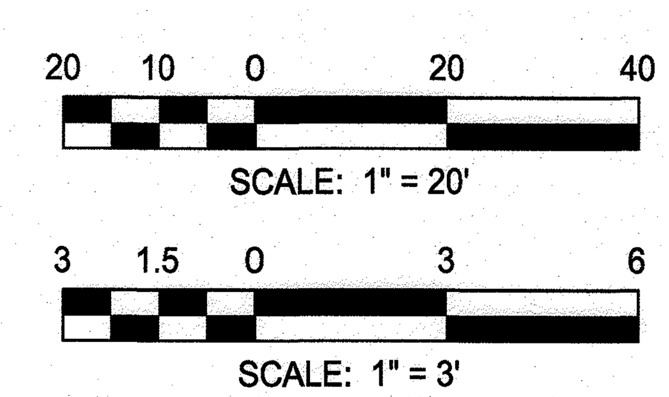
THE FILTER DRAINAGE DIAPHRAGM HAS BEEN DESIGNED IN CONFORMANCE WITH MD 378. SEE APPENDIX J IN THE SWM REPORT.

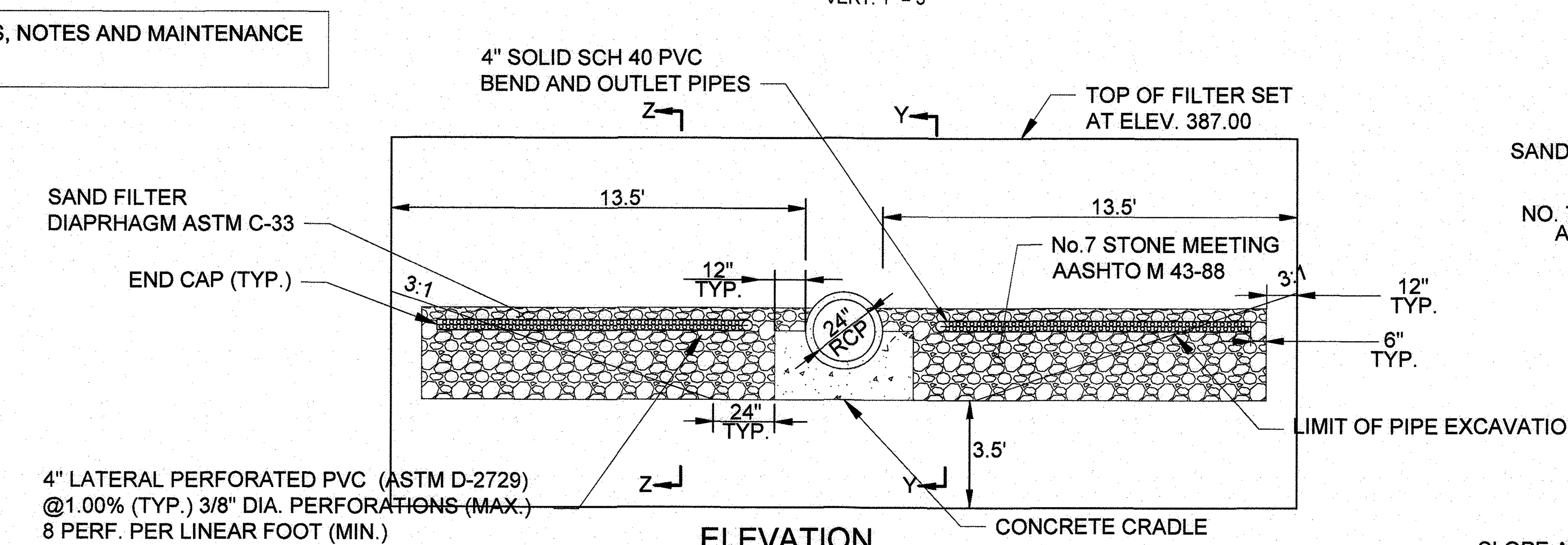
FOR POND CONSTRUCTION SPECIFICATIONS, NOTES AND MAINTENANCE REQUIREMENTS, REFER TO SHEET C-532.



PROFILE C: WEST BASIN GABION BERM

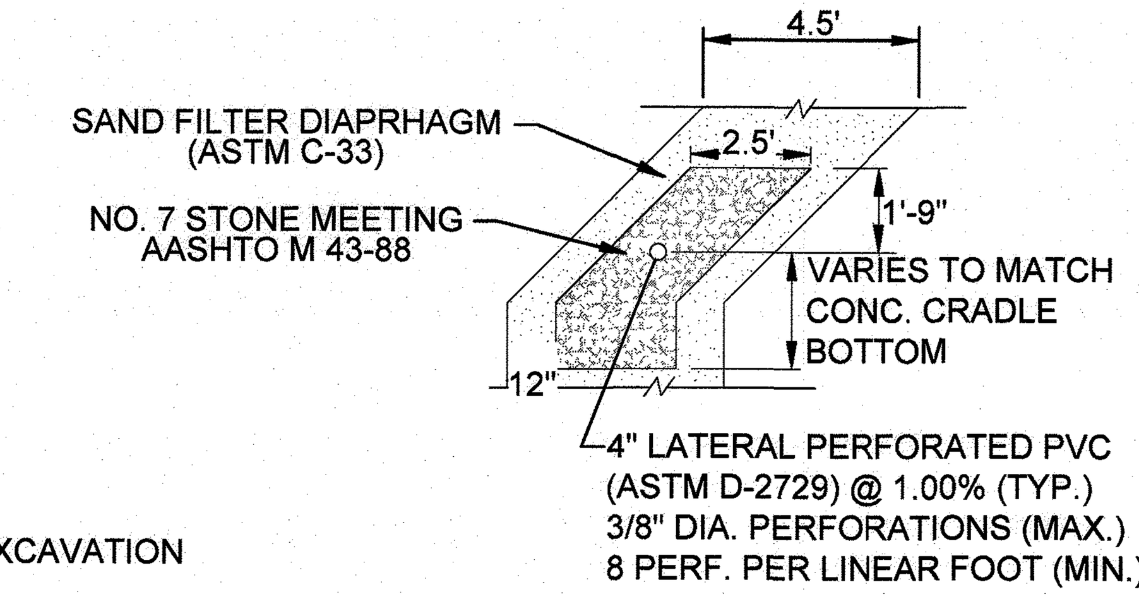
SCALE: HORIZ. 1" = 20'
VERT. 1" = 3'





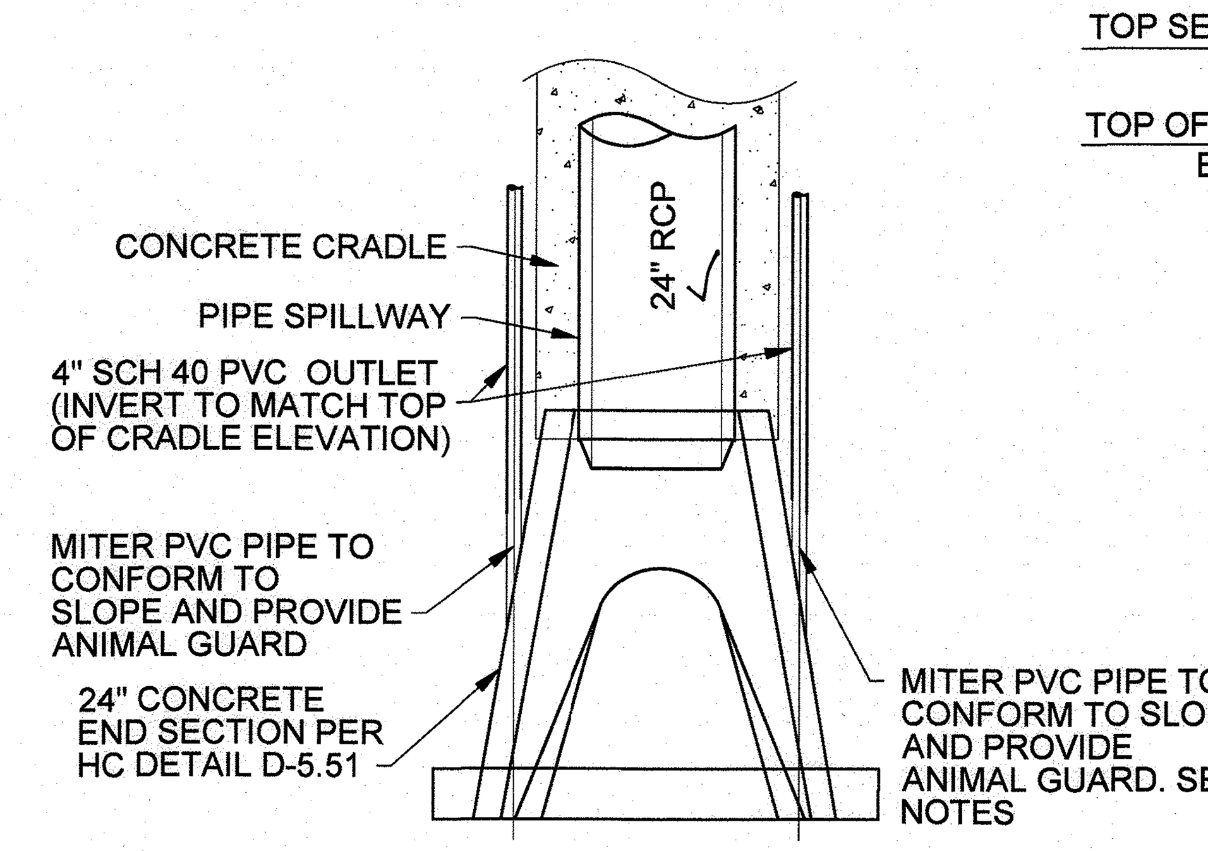
ELEVATION

SCALE: 1/4" = 1'



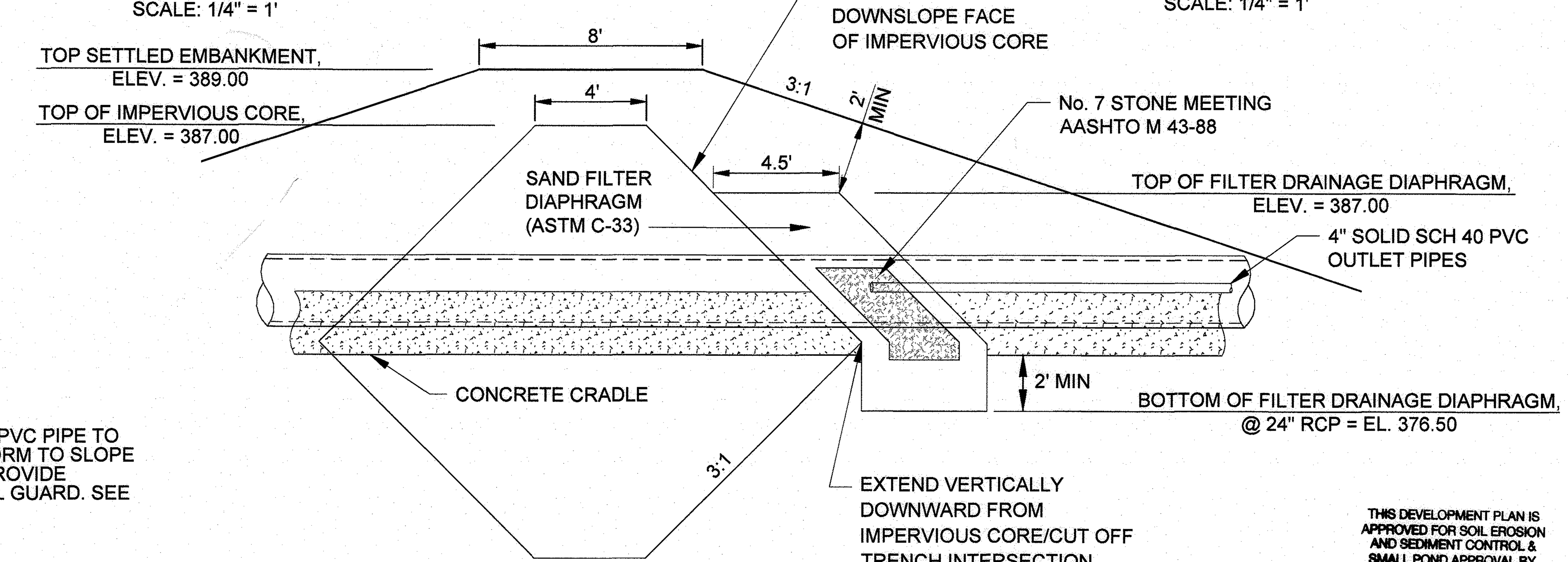
SECTION Z-Z PVC LATERAL

SCALE: 1/4" = 1'



PLAN AT OUTFALL

NO SCALE



SECTION Y-Y

SCALE: 1/4" = 1'

FILTER DRAINAGE DIAPHRAGM DETAILS

Impervious Core & Filter Diaphragm were constructed per the approved plan and specifications.

GABION BERM CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS OF THE MDE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
6. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
7. 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.

AS-BUILT CERTIFICATION
I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets the approved plans and specifications.
P.E. No: 42679
Date: 7/13/22

13 JUL 2022

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED: Howard SCD 4/14/18

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS·CONSTRUCTION MANAGERS·PLANNERS·SCIENTISTS
RESPONSIVE PEOPLE · CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

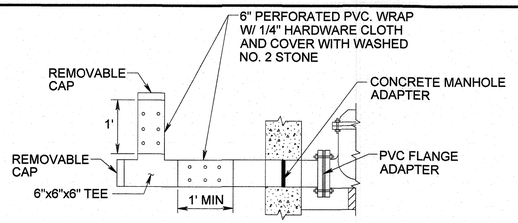
BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

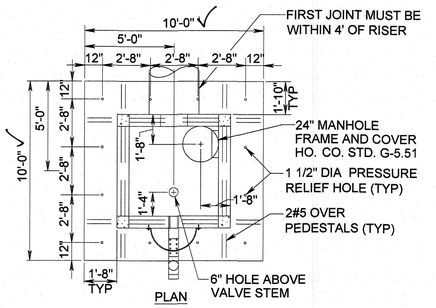
WEST BASIN PROFILE AND DETAILS
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SHEET 41 OF 72
SDP-18-035

C-512
RK&K PROJECT NUMBER 17206
SCALE: As Shown

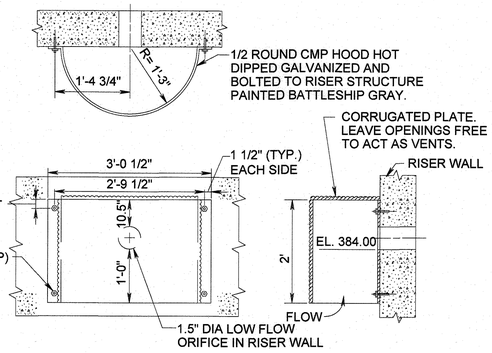
\\balsrv05\2017\2017\17206_APL14\CADD\Plans\C-512 West Basin Pond Details.dwg Mar 27, 2018 12:17pm cmitchell



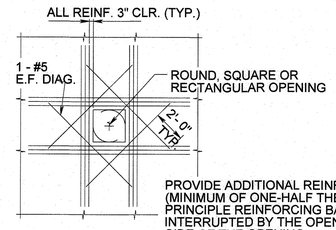
PERMANENT TRASH RACK ORIFICE DETAIL
NOT TO SCALE



NOTE: FOR OPENINGS LESS THAN 12" DIA., NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED NO REINFORCING IS INTERRUPTED BY THE OPENING

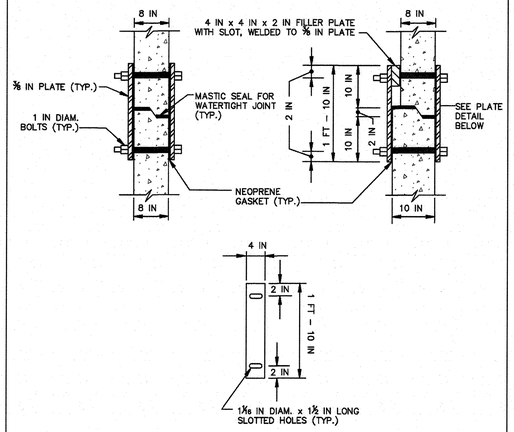


1/2 ROUND CMP PIPE-HOOD
NO SCALE



ADDITIONAL REINFORCING AROUND OPENINGS
NO SCALE

DETAIL G-2-8 PRECAST RISER CONNECTOR
STANDARD SYMBOL



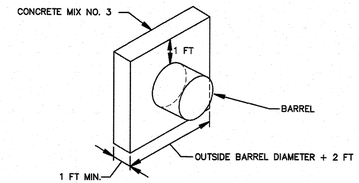
CONSTRUCTION SPECIFICATIONS

1. FABRICATE PLATE CONNECTORS FROM STAINLESS STEEL CONFORMING TO ASTM A666-72, GRADE A OR B.
2. USE TYPE 304 STAINLESS STEEL FOR BOLTS.
3. PROVIDE CONNECTORS AT CENTERLINE OF EACH PRECAST BOX FACE. FOR MANHOLES PROVIDE FOUR PLATES SPACED AT 90°.

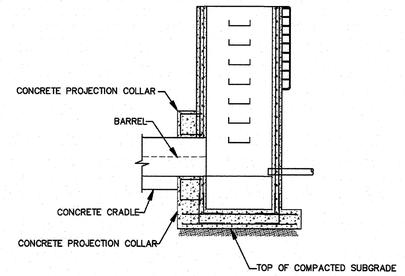
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

G.50

DETAIL G-2-9 PROJECTION COLLAR
STANDARD SYMBOL



CONCRETE COLLAR DETAIL



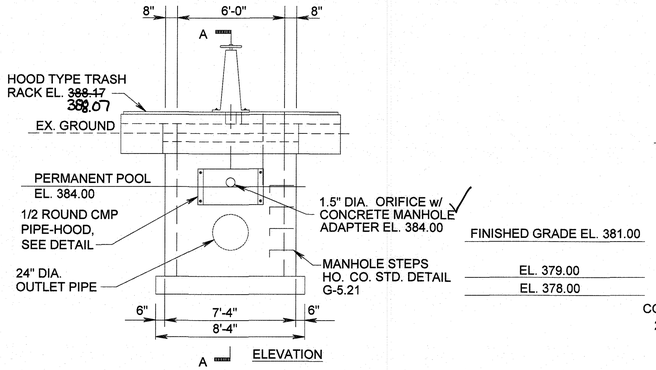
ELEVATION

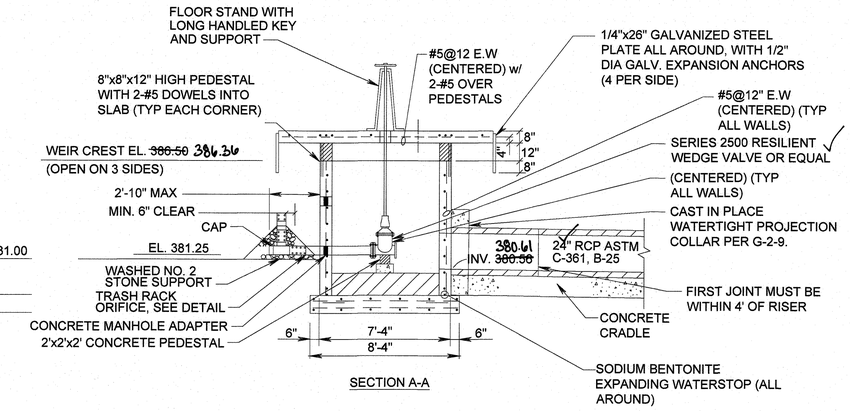
CONSTRUCTION SPECIFICATIONS

1. CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U-SHAPED REBARS.

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

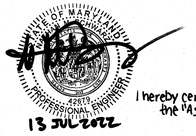
G.51



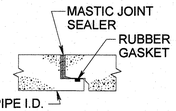


SECTION A-A

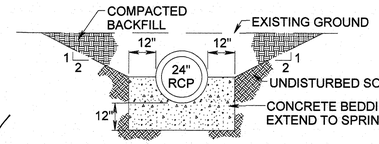
✓ OUTLET CONTROL STRUCTURE NO. 1 AND PIPE SPILLWAY DETAILS
SCALE: 1/4" = 1'



AS-BUILT CERTIFICATION
I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets the approved plans and specifications.
P.E. No: 42679
Date: 7/13/22
13 JUL 2022

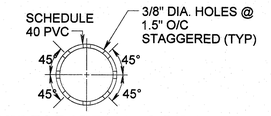


BARREL JOINT SEAL DETAIL
NOT TO SCALE



CONCRETE CRADLE DETAIL
NOT TO SCALE

THE CONCRETE CRADLE HAS BEEN DESIGNED IN CONFORMANCE WITH USDA NRCS POND - 378 CODE, PAGE 17 "REINFORCED CONCRETE PIPE - BEDDING"

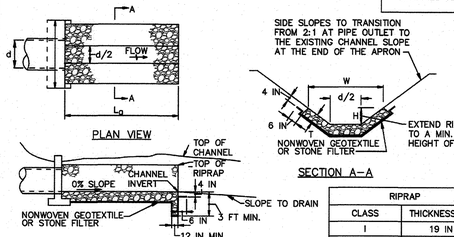


6" PERFORATED PVC PIPE DETAIL
NOT TO SCALE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED Howard SCD
4/4/18

DETAIL D-4-1-B ROCK OUTLET PROTECTION II
STANDARD SYMBOL: ROPII

DISCHARGE TO CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23212, EXPIRATION DATE: 9/6/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

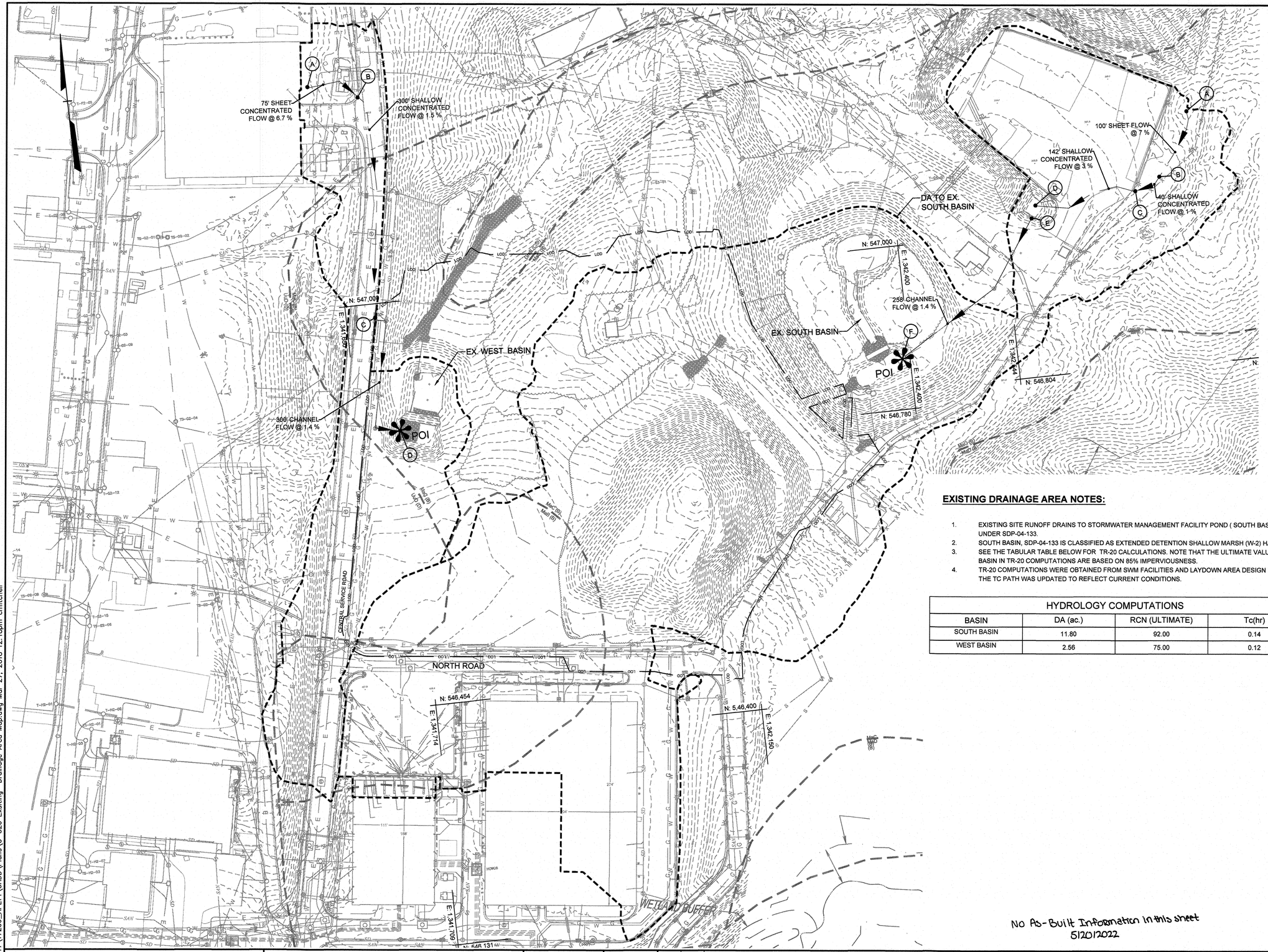
BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

WEST BASIN DETAILS AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035
SHEET 42 OF 72

C-513
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\2017\2017\17206_APL14\CADD\Plans\C-512 West Basin Pond Details.dwg Mar 27, 2018 12:17pm cmitchell



EXISTING DRAINAGE AREA NOTES:

1. EXISTING SITE RUNOFF DRAINS TO STORMWATER MANAGEMENT FACILITY POND (SOUTH BASIN) CONSTRUCTED UNDER SDP-04-133.
2. SOUTH BASIN, SDP-04-133 IS CLASSIFIED AS EXTENDED DETENTION SHALLOW MARSH (W-2) HAZARD CLASS "A".
3. SEE THE TABULAR TABLE BELOW FOR TR-20 CALCULATIONS. NOTE THAT THE ULTIMATE VALUES FOR SOUTH BASIN IN TR-20 COMPUTATIONS ARE BASED ON 85% IMPERVIOUSNESS.
4. TR-20 COMPUTATIONS WERE OBTAINED FROM SWM FACILITIES AND LAYDOWN AREA DESIGN REPORT, SDP-04-133. THE TC PATH WAS UPDATED TO REFLECT CURRENT CONDITIONS.

HYDROLOGY COMPUTATIONS			
BASIN	DA (ac.)	RCN (ULTIMATE)	Tc(hr)
SOUTH BASIN	11.80	92.00	0.14
WEST BASIN	2.56	75.00	0.12

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED: Howard SCD 4/14/18

No As-Built Information in this sheet
5/2012022

60 30 0 60 120
SCALE: 1" = 60'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE-CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 25012, EXPIRATION DATE: 9/6/2019.

STATE OF MARYLAND — CHRISTOPHER W. MITCHELL — REGISTERED PROFESSIONAL ENGINEER — 9/7/18

DESIGN BY:	BY	NO.	REVISION	DATE
CWWM				
DRAWN BY: CP				
CHECKED BY: CDK				
DATE: 3/30/2018				

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EXISTING DRAINAGE AREA PLAN AS-BUILT

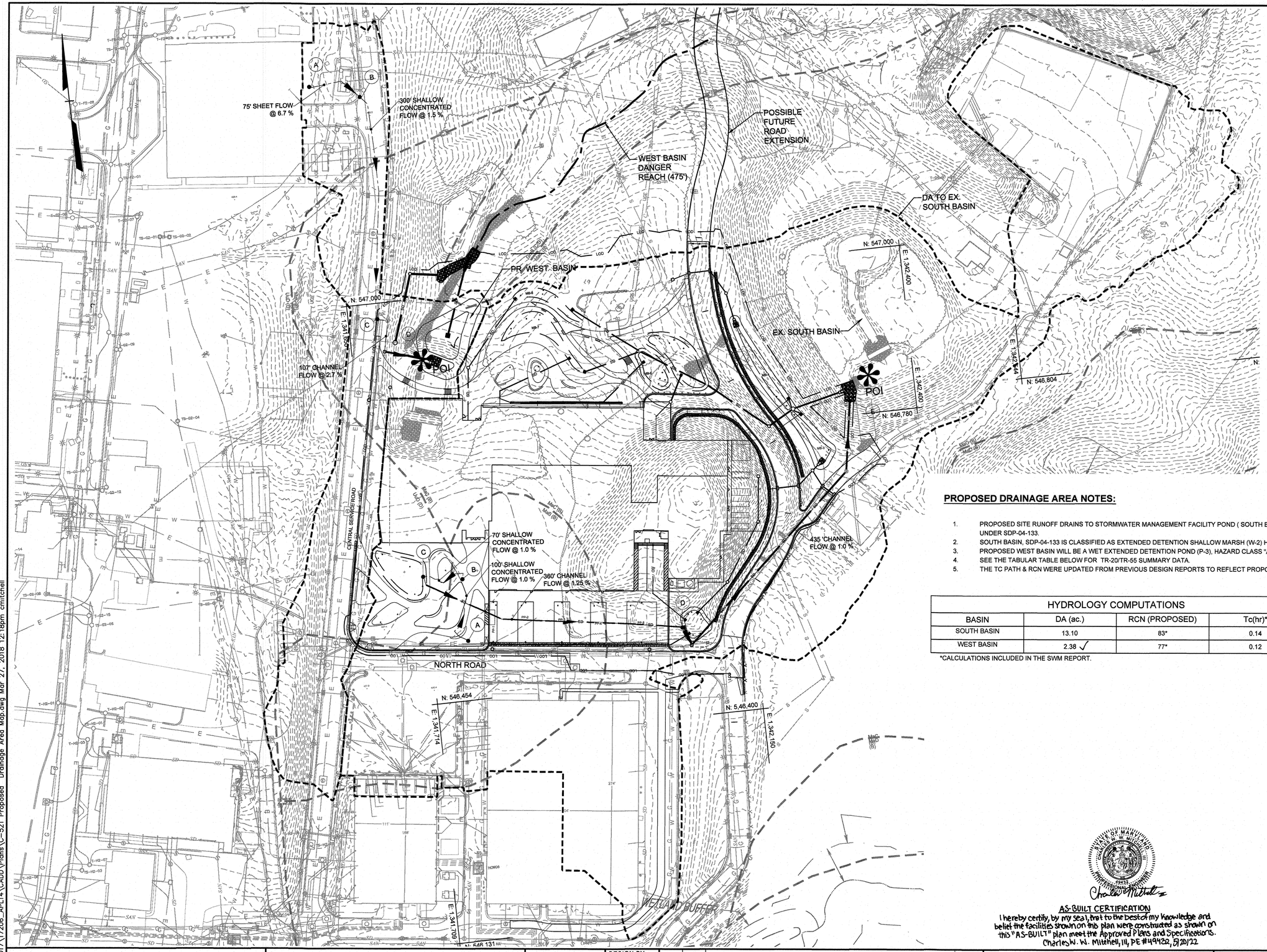
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 43 OF 72
GREEN BUILDING
SDP-18-035

C-520

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balserv05\2017\2017\17206_APL14\CADD\Plans\C-520 Exsiting Drainage Area Map.dwg Mar 27, 2018 12:18pm cmitchell



LEGEND

- LOD — LIMIT OF DISTURBANCE FOR SWM *
- DRAINAGE AREA
- SOIL LIMITS
- (E) — TIME OF CONCENTRATION PATH

* FOR FULL LIMIT OF DISTURBANCE SEE EROSION SEDIMENT CONTROL DRAWINGS.

PROPOSED DRAINAGE AREA NOTES:

1. PROPOSED SITE RUNOFF DRAINS TO STORMWATER MANAGEMENT FACILITY POND (SOUTH BASIN) CONSTRUCTED UNDER SDP-04-133.
2. SOUTH BASIN, SDP-04-133 IS CLASSIFIED AS EXTENDED DETENTION SHALLOW MARSH (W-2) HAZARD CLASS "A".
3. PROPOSED WEST BASIN WILL BE A WET EXTENDED DETENTION POND (P-3), HAZARD CLASS "A".
4. SEE THE TABULAR TABLE BELOW FOR TR-20/TR-55 SUMMARY DATA.
5. THE TC PATH & RCN WERE UPDATED FROM PREVIOUS DESIGN REPORTS TO REFLECT PROPOSED CONDITIONS.

HYDROLOGY COMPUTATIONS			
BASIN	DA (ac.)	RCN (PROPOSED)	Tc(hr)*
SOUTH BASIN	13.10	83*	0.14
WEST BASIN	2.38 ✓	77*	0.12

*CALCULATIONS INCLUDED IN THE SWM REPORT.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED Howard SCD 4/9/18

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — No. 19432 — REGISTERED PROFESSIONAL ENGINEER

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #19432, 5/20/22

60 30 0 60 120
SCALE: 1" = 60'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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700 East Pratt Street, Suite 500
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Ph: 410.728.2800 Contact: John d'Epagnier
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STATE OF MARYLAND — CHRISTOPHER D. KNOPP — No. 23012 — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

PROPOSED DRAINAGE AREA PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 18 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 44 OF 72

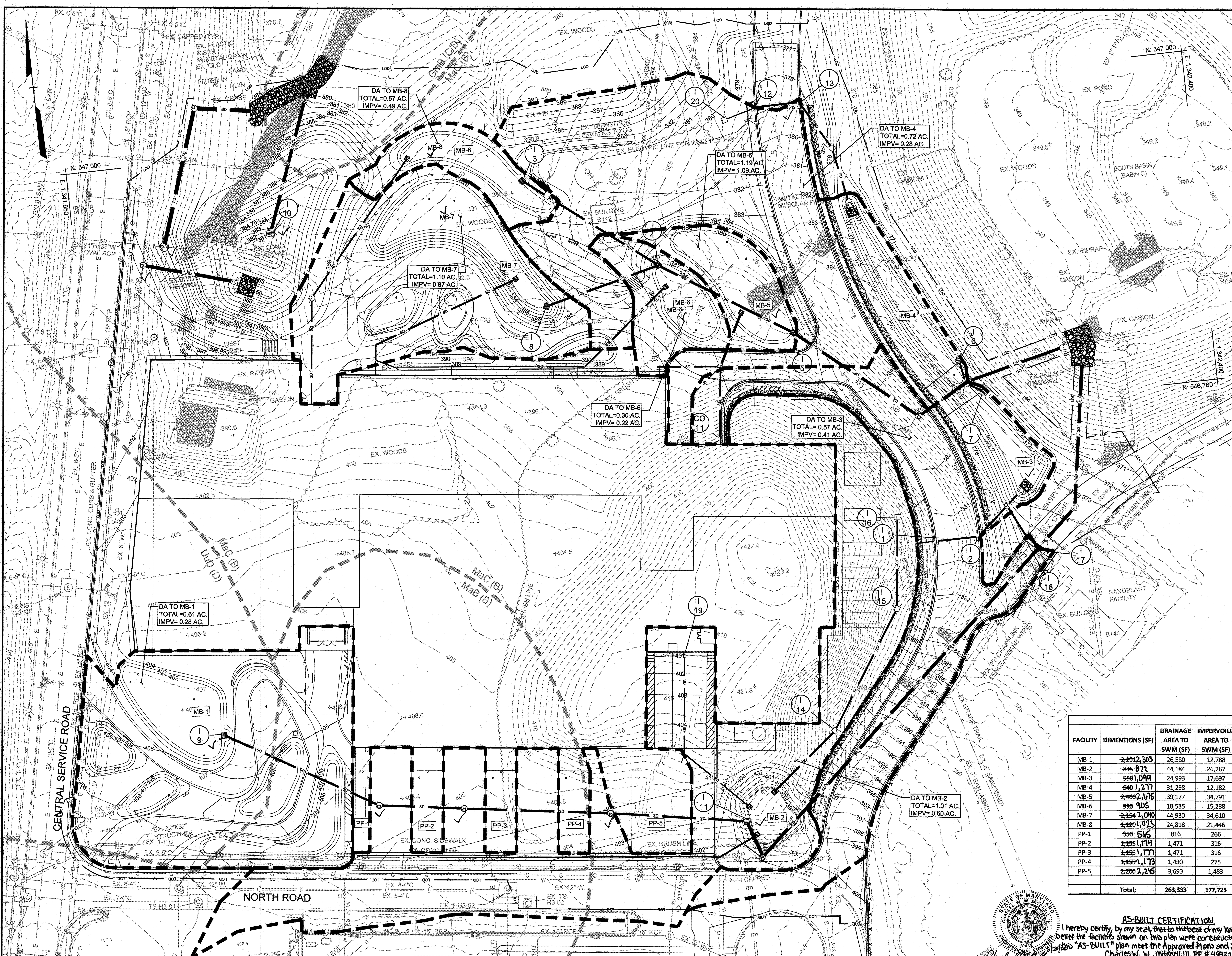
GREEN BUILDING
SDP-18-035

C-521

RK&K PROJECT NUMBER
17206

SCALE:
As Shown

\\balsrv05\v2017\17206_APL14\CADD\Plans\C-521 Proposed Drainage Area Map.dwg Mar 27, 2018 12:18pm cmitchell



LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING EDGE OF ROAD
- EXISTING STORM DRAIN AND INLET
- EXISTING WATER AND FIRE HYDRANT
- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING CONDUIT
- EXISTING UTILITY MANHOLE
- EXISTING LIGHTING
- EXISTING CURB AND GUTTER
- EXISTING TREE LINE
- EXISTING DRIVE
- PROPOSED CURB & GUTTER
- PROPOSED STORM DRAIN
- PROPOSED SD MANHOLE
- PROPOSED SD INLET
- PROPOSED DRAINAGE AREA TO SWM FACILITY

SWM FACILITY SUMMARY

FACILITY	DIMENTIONS (SF)	DRAINAGE AREA TO SWM (SF)	IMPERVOIUS AREA TO SWM (SF)	FACILITY TO DA RATIO (%)	ESDv REQUIRED (CF)	MAX. ESDv ALLOWED (CF)	ESDv PROVIDED (CF)	IART (SF)	IAT (SF)	Pe TARGET (IN)	Pe PROVIDED(IN)
MB-1	~~2,291~~ 2,303	26,580	12,788	9%		1,391	1,391		12,788	1.3	1.3
MB-2	~~845~~ 872	44,184	26,267	2%		4,308	1,239		26,267	2.0	1.1
MB-3	~~950~~ 1,099	24,993	17,697	4%		3,149	1,582		17,697	2.2	1.6
MB-4	~~940~~ 1,277	31,238	12,182	3%		1,879	1,743		12,182	1.8	1.8
MB-5	~~2,480~~ 2,675	39,177	34,791	6%		6,654	3,508		34,791	2.4	1.9
MB-6	~~990~~ 905	18,535	15,288	5%		2,692	1,453		15,288	2.2	1.8
MB-7	~~2,154~~ 2,040	44,930	34,610	5%	28,590	6,123	3,185	183,739	34,610	2.2	1.9
MB-8	~~1,120~~ 1,023	24,818	21,446	5%		4,108	1,726		21,446	2.4	1.9
PP-1	~~550~~ 565	816	266	67%		N/A	160		816	2.5	2.5
PP-2	~~1,155~~ 1,174	1,471	316	79%		N/A	289		1,471	2.5	2.5
PP-3	~~1,155~~ 1,177	1,471	316	79%		N/A	289		1,471	2.5	2.5
PP-4	~~1,155~~ 1,173	1,430	275	81%		N/A	281		1,430	2.5	2.5
PP-5	~~2,200~~ 2,245	3,690	1,483	60%		N/A	725		3,683	2.5	2.5
	Total:	263,333	177,725		28,590		17,570	183,739	183,940	1.9	1.2

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

STATE OF MARYLAND · CHARLES W. W. MITCHELL III · 49432 · PROFESSIONAL ENGINEER · 5/20/22 · Charles Mitchell

30 15 0 30 60
SCALE: 1" = 30'

C-522

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND · STEPHEN DEAN KRENSKY · REGISTERED PROFESSIONAL ENGINEER · 3/30/18

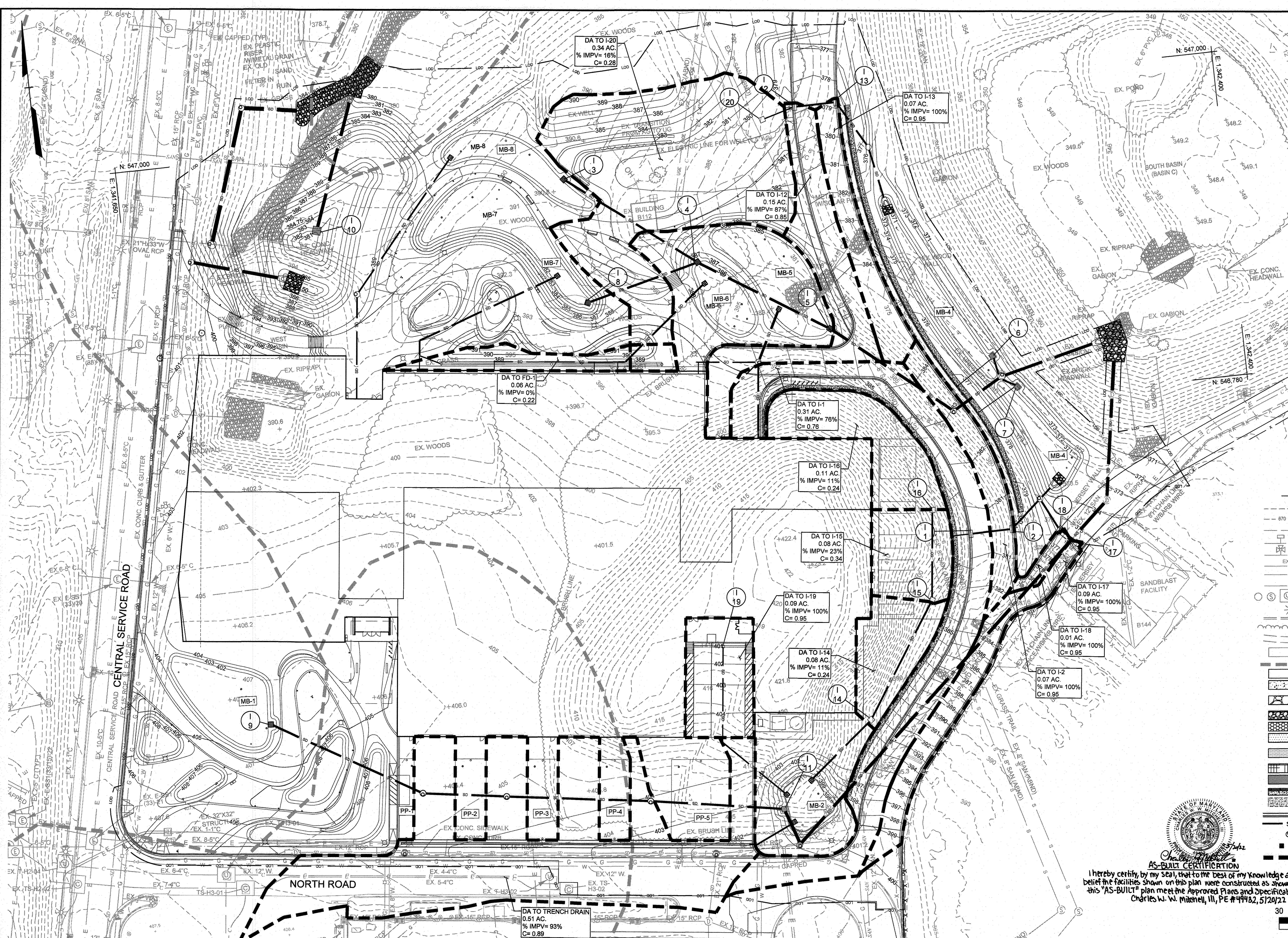
DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

PROPOSED DRAINAGE AREA PLAN (SWM)
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206
SCALE: As Shown



DRAINAGE AREA NOTES:

1. FOR STORM DRAIN STRUCTURES WITHIN SWM FACILITIES DRAINAGE AREAS SEE SHEET C521.

LEGEND

--- 676 ---	EXISTING MINOR CONTOUR
--- 670 ---	EXISTING MAJOR CONTOUR
	EXISTING EDGE OF ROAD
EX. 15" D. SD	EXISTING STORM DRAIN AND INLET
EX. 12" W. W	EXISTING WATER AND FIRE HYDRANT
EX. 8" S. S	EXISTING SEWER
E	EXISTING ELECTRIC
	EXISTING CONDUIT
	EXISTING UTILITY MANHOLE
	EXISTING LIGHTING
	EXISTING CURB AND GUTTER
	EXISTING TREE LINE
	EXISTING DRIVE
	EXISTING BUILDING
	SOIL BOUNDARY
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED GRAVEL DRIVE. SEE DETAIL G-6.01 ON SHEET C-607
	PROPOSED GRAVEL
	PROPOSED PERMEABLE PAVEMENT
	PROPOSED ASPHALT DRIVE
	PROPOSED ASPHALT WALK SEE DETAIL 8 ON SHEET L-201
	PROPOSED BIORETENTION FACILITY
	PROPOSED PAVERS OR COLOR CONCRETE
	PROPOSED RETAINING WALL
	FUTURE CONCRETE WALK
	PROPOSED CURB & GUTTER
SD	PROPOSED STORM DRAIN
	PROPOSED SD MANHOLE
	PROPOSED SD INLET
	PROPOSED DRAINAGE AREA TO SD INLET

STATE OF MARYLAND
CHARLES W. W. MITCHELL III
49432
PROFESSIONAL ENGINEER
5/20/22

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

30 15 0 30 60

SCALE: 1" = 30'

C-523

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
23012
3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER

JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

PROPOSED STORM DRAIN DRAINAGE AREA PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 46 OF 72

GREEN BUILDING
SDP-18-035

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-523 Proposed Storm Drain Drainage Area Map.dwg Mar 27, 2018 12:20pm cmitchell

MICRO-BIORETENTION MAINTENANCE SCHEDULE*

ITEM	METHOD	FREQUENCY	TIME OF YEAR
SOIL			
INSPECT AND REPAIR EROSION	BY HAND	AS NEEDED WEATHER PERMITTING	MONTHLY
PERFORM SOIL TESTS TO DETERMINE IN-SITU PERMEABLE RATE	PER MDE CRITERIA SEE INFILTRATION NOTE BELOW	ONCE EVERY TWO YEARS	IN SPRING
APPLY LIMESTONE	BY HAND	AS REQUIRED BY SOIL TEST RESULTS	IN SPRING
AERATION OF SOIL	MECHANICALLY	ONCE EVERY TWO YEARS	IN SPRING
MULCH			
RE-MULCH ANY VOID AREA AROUND TREES & SHRUBS	BY HAND	WHENEVER NEEDED	WHENEVER NEEDED
REMOVE PREVIOUS MULCH LAYER PRIOR TO APPLYING NEW LAYER (OPTIONAL)		ONCE EVERY TWO TO THREE YEARS	IN SPRING
PLANT MATERIALS			
PRUNING OF DEAD AND DISEASED BRANCHES	BY HAND (MECHANICALLY OVER 3')	WHENEVER NEEDED	MID-OCTOBER TO FIRST WEEK IN MARCH
REMOVE AND REPLACE ANY DEAD PLANTS (25% OR MORE DEAD PARTS) AND ANY DISEASED PLANTS CONSIDERED BEYOND TREATMENT	PER HOWARD COUNTY SPECIFICATIONS	TWICE A YEAR	3/15 TO 4/30 SPRING AND 10/1 TO 11/30 FALL
TREAT ALL DISEASED TREES AND SHRUBS WITH LESS THAN 25% INFECTED AREAS	MECHANICALLY OR BY HAND	N/A	VARIES, DEPENDS ON THE INSECT OR DISEASE INFESTATION
WATERING OF ALL PLANT MATERIALS SHALL BE DONE AT THE END OF EACH DAY FOR FOURTEEN CONSECUTIVE DAYS	BY HAND USING A FINE SPRAY NOZZLE SETTING	IMMEDIATELY AFTER COMPLETION OF THE PROJECT	WITHIN OR IMMEDIATELY FOLLOWING THE RESPECTIVE PLANTING SEASON
ONGOING WATERING OF ALL PLANT MATERIALS	BY HAND USING A FINE SPRAY NOZZLE SETTING	AS NEEDED (MINIMUM ONCE PER WEEK 1ST YEAR, ONCE PER MONTH JULY & AUGUST THEREAFTER)	MAY 15 THROUGH OCTOBER 30
WEEDING	BY HAND OR OTHER MEANS NOT INJURIOUS TO TREES, SHRUBS, OR PERENNIALS	AS NEEDED	ANYTIME FROM EARLY SPRING TO LATE FALL
REPLACEMENT OF TREE STAKES	BY HAND	AS NEEDED WITHIN ONE YEAR AFTER INITIAL PLANTING	ONLY REMOVE AND REPLACE STAKES DURING SPRING SEASON
REPLACEMENT OF DEFICIENT GUY WIRES AND RUBBER HOSE PROTECTION	BY HAND	AS NEEDED	IN CONJUNCTION WITH STAKE REPLACEMENT OR RE-DRIVING
GENERAL			
REMOVAL OF DEBRIS	BY HAND OR OTHER MEANS NOT INJURIOUS TO PLANTS	AS NEEDED WITHIN AND ADJACENT TO BIO-RETENTION AREAS	WHENEVER NEEDED

TABLE B.4.1 MATERIALS SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATION

	SPECIFICATIONS		NOTES
PLANTINGS	SEE LANDSCAPE PLANS	N/A	PLANTINGS ARE SITE-SPECIFIC
BIORETENTION SOIL MIX	SAND 50% FINE AGGREGATE, MSHA 901 MULCH 20% DOUBLE SHREDDED HARDWOOD, AGED 6 MONTHS MIN. BASE SOIL 30% - SEE BELOW PH OF 5.7 - 7.1	2.0-0.50 MM 2" MAX. SEE BELOW	MEET REQUIREMENTS OF MSHA CATEGORY 900 BIORETENTION SOIL MIX (BSM), LATEST EDITION. SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
BASE SOIL	SAND 50 - 85% SILT 5 - 45% CLAY 5 - 10% ORGANIC MATTER 1.0-10% BY WEIGHT PH OF 5.7 - 6.9	2.0-0.50 MM 0.050-0.002 MM LESS THAN 0.002 MM N/A	MEET REQUIREMENTS OF MSHA CATEGORY 900 BIORETENTION SOIL MIX (BSM),LATEST EDITION.
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
GEOTEXTILE	CLASS "C" - APPARENT OPENING SIZE (ASTM-D-4571), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESSISTANCE (ASTM-D-4833)	N/A	PE TYPE 1 NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4-INCH GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3;F'c=3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND -DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H-20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING

CONSTRUCTION OF MICROBIORETENTION AREAS

Construct stormwater filtration facilities only after all contributing drainage areas are permanently stabilized and vegetation including turfgrass and turfgrass sod are established according to contract documents. Do not stockpile materials nor store equipment in these areas. Any areas compacted during construction require tilling 24" below proposed bottom of facility. See paragraph 3.

Use methods of excavation that minimize the compaction of the underlying soil. Use excavators and backhoes operating on the adjacent ground. If the bottom width of the excavated area is greater than 15 ft, wide-track or marsh-track equipment, or light equipment with turf-type tires may be used to excavate, grade, and place fill materials. Do not use equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires.

Till the excavation pit bottom to a minimum depth of 24" to alleviate compaction from excavation activities by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. Substitute methods must be approved by the engineer. Remove any standing water from the excavation pit prior to tilling. Only till soil that is friable. Do not till soil while in a muddy or frozen condition.

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

IN-SITU INFILTRATION TEST

At completion of construction, for each microbioretention facility, the contractor shall perform an in-situ infiltration test on the installed microbioretention soils using MDE spec detailed in "Appendix D.1 Testing Requirements for Infiltration, Bioretention and Sand Filter Subsoils" in the "Maryland Stormwater Design Manual", and supplements, for infiltration test. The microbioretention facility will not be accepted until the contractor has documented via the infiltration tests that the completed facility achieves a minimum infiltration rate of 0.5 in/hr, including during the 2-year warranty period.

SEQUENCE OF CONSTRUCTION FOR STORMWATER MANAGEMENT

1. CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES SHALL BE COORDINATED WITH EROSION AND SEDIMENT CONTROL SEQUENCE OF CONSTRUCTION.
2. THE CONTRACTOR SHALL NOTIFY AS-BUILT CERTIFYING ENGINEER PRIOR TO BEGINNING CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES, CERTIFYING ENGINEER SHALL SUBMIT STORMWATER MANAGEMENT AS-BUILT PLANS WITHIN 30 DAYS OF COMPLETION. AS-BUILT CERTIFYING ENGINEER SHALL BE PROVIDED BY THE CONTRACTOR.
3. PERFORM PRE-CONSTRUCTION INFILTRATION TESTING. THE CONTRACTOR CONFIRM INFILTRATION RATES AT A DEPTH OF 3" BELOW THE PROPOSED BOTTOM ELEVATION OF THE FILTER MEDIA. EXCEPT AS APPENDED BY THIS NOTE, CONTRACTOR SHALL PERFORM THE TESTING USING MDE SPEC DETAILED IN "APPENDIX D.1 TESTING REQUIREMENTS FOR INFILTRATION, BIORETENTION AND SAND FILTER SUBSOILS" IN THE "MARYLAND STORMWATER DESIGN MANUAL". CONTRACTOR SHALL SEND THE RESULTS TO THE ENGINEER FOR APPROVAL 1 WEEK PRIOR TO COMMENCING CONSTRUCTION ON THE SWM FACILITIES. THE MICROBIORETENTION FACILITY WILL NOT BE AUTHORIZED FOR CONSTRUCTION UNTIL THE CONTRACTOR HAS DOCUMENTED VIA THE INFILTRATION TESTS THAT THE COMPLETED FACILITY ACHIEVES A MINIMUM INFILTRATION RATE OF 0.5 IN/HR.
4. WITH ENGINEER'S APPROVAL CONSTRUCT THE MICRO-BIORETENTION FACILITIES.
5. THE CONTRACTOR SHALL FOLLOW THE INSPECTION SCHEDULE, THIS SHEET.
6. PERFORM POST CONSTRUCTION INFILTRATION TEST. AT COMPLETION OF CONSTRUCTION, FOR EACH MICROBIORETENTION FACILITY, THE CONTRACTOR SHALL PERFORM AN IN-SITU INFILTRATION TEST ON THE INSTALLED MICROBIORETENTION SOILS USING MDE SPEC DETAILED IN "APPENDIX D.1 TESTING REQUIREMENTS FOR INFILTRATION, BIORETENTION AND SAND FLTER SUBSOILS" IN THE "MARYLAND STORMWATER DESIGN MANUAL", AND SUPPLEMENTS, FOR INFILTRATION TEST. THE MICROBIORETENTION FACILITY WILL NOT BE ACCEPTED UNTIL THE CONTRACTOR HAS DOCUMENTED VIA THE INFILTRATION TESTS THAT THE COMPLETED FACILITY ACHIEVES A MINIMUM INFILTRATION RATE OF 0.5 IN/HR, INCLUDING DURING THE 2-YEAR WARRANTY PERIOD.
7. PREPARE AND SUBMIT STORMWATER MANAGEMENT AS-BUILTS CERTIFIED BY CONTRACTOR'S MD LICENSED PROFESSIONAL ENGINEER.

CONTRACTOR AS-BUILT NOTE

AS-BUILT PLANS AND CERTIFICATION ARE REQUIRED FOR ALL STORMWATER MANAGEMENT FACILITY ON THESE PLANS. THESE MUST BE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER OR SURVEYOR, OBTAINED BY THE CONTRACTOR. HOWARD COUNTY OR THE OWNER'S ENGINEER WILL NOT PREPARE THE AS-BUILT PLANS OR CERTIFICATION. THE STORMWATER MANAGEMENT PERMIT BOND WILL NOT BE RELEASED UNTIL THE AS-BUILT PLANS AND CERTIFICATION ARE APPROVED BY HOWARD COUNTY.

IN ORDER TO PREPARE THE REQUIRED AS-BUILT PLANS AND CERTIFICATION, THIS STORMWATER MANAGEMENT FACILITY MUST BE INSPECTED BY THE CONTRACTOR'S ENGINEER AT SPECIFIC STAGES DURING CONSTRUCTION AND AS REQUIRED BY THE CURRENT HOWARD COUNTY STORMWATER MANAGEMENT POLICIES AND PROCEDURES. THE CONTRACTOR SHALL NOTIFY THE CONTRACTOR'S ENGINEER AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE PLANS.

INSPECTION NOTES:

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

1. DURING EXCAVATION TO SUBGRADE
2. PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.
3. DURING PLACEMENT OF FILTER MEDIA.
4. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.
5. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE CRITERIA:

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

1. PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT, ADVERSE ALTERATION, AND REMOVAL.
2. THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS ONE INCH.
3. 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.
4. 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.

No As-Built Information in this Sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER W. PHILLIPS — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORMWATER MANAGEMENT NOTES AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 18 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 47 OF 72
GREEN BUILDING
SDP-18-035

C-530

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-530 Stormwater Management Notes.dwg Mar 27, 2018 12:20pm cmitchell

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 1 - MB-1

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	402.50 FT.	402.04 FT
SURFACE AREA	2,291 SF.	2,303 SF
FILTER BED DIMENSIONS (L X W X D)	85' x 27' x 2'	82'x45'x2'
FILTER BED SURFACE ELEVATION	401.50 FT.	401.20 FT.
OUTLET PIPE SIZE / INVERT	15 IN. / 398.07 FT.	15 IN./398.09 FT.
ELEVATION OF BERM	403.75 FT.	404.00 FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 398.17 FT.	6IN./401.96 FT.
THICKNESS OF FILTER MEDIA	2 FT.	8/13/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	8/20/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6618.2798 E: 134,1712.7603	N:546614.8658 E:1341715.1264

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 2 - MB-2

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	398.75 FT.	398.25FT
SURFACE AREA	845 SF.	872 SF
FILTER BED DIMENSIONS (L X W X D)	37' x 23' x 2'	28'x35'x2'
FILTER BED SURFACE ELEVATION	397.75 FT.	397.25 FT.
OUTLET PIPE SIZE / INVERT	24 IN. / 393.15 FT.	24"/393.25'
ELEVATION OF BERM	400 FT.	400.00 FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 394.42 FT.	6IN./393.25FT.
THICKNESS OF FILTER MEDIA	2 FT.	11/3/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	11/6/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6523.0522 E: 134,2056.7893	N:546572.8024 E:1342056.3956

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 3 - MB-3

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	371.75 FT.	371.28FT
SURFACE AREA	950 SF.	1,099SF
FILTER BED DIMENSIONS (L X W X D)	77' x 12' x 2'	80'x14'x2'
FILTER BED SURFACE ELEVATION	370.75 FT.	370.25 FT.
OUTLET PIPE SIZE / INVERT	12 IN. / 367.32 FT.	12"/367.20'
ELEVATION OF BERM	373 FT.	372.25FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 367.12 FT.	6IN./367.19FT.
THICKNESS OF FILTER MEDIA	2 FT.	3/6/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	3/12/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6791.0062 E: 134,2243.9520	N:546788.4896 E:1342241.1691

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 4 - MB-4

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	371.75 FT.	371.29 FT.
SURFACE AREA	940 SF.	1,277SF
FILTER BED DIMENSIONS (L X W X D)	142' x 6.6' x 2'	143'x13'x2'
FILTER BED SURFACE ELEVATION	370.75 FT.	370.50 FT.
OUTLET PIPE SIZE / INVERT	12 IN. / 367.32 FT.	12"/367.18'
ELEVATION OF BERM	373 FT.	372.50 FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 367.42 FT.	6IN./367.19 FT.
THICKNESS OF FILTER MEDIA	2 FT.	3/6/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	3/12/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6811.9770 E: 134,2226.7817	N:546811.6776 E:1342227.4669

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 5 - MB-5

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	385.25 FT.	384.60FT
SURFACE AREA	2,460 SF.	2,675SF
FILTER BED DIMENSIONS (L X W X D)	98' x 25' x 2'	99'x38'x2'
FILTER BED SURFACE ELEVATION	384.25 FT.	384.00'
OUTLET PIPE SIZE / INVERT	21 IN. / 374.46 FT.	21"/373.99FT
ELEVATION OF BERM	386.50 FT.	385.00FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 380.92 FT.	6IN./380.71 FT
THICKNESS OF FILTER MEDIA	2 FT.	3/18/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	3/24/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6841.5272 E: 134,2119.2183	N:546842.1580 E:1342123.1402

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 6 - MB-6

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	386.25 FT.	385.60 FT
SURFACE AREA	990 SF.	905 SF
FILTER BED DIMENSIONS (L X W X D)	95' x 18' x 2'	95'x23'x2'
FILTER BED SURFACE ELEVATION	385.25 FT.	385.00'
OUTLET PIPE SIZE / INVERT	18 IN. / 375.85 FT.	15"/376.36 FT
ELEVATION OF BERM	387.50 FT.	386.27 FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 381.92 FT.	6IN./381.62 FT.
THICKNESS OF FILTER MEDIA	2 FT.	4/10/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	4/10/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6897.1455 E: 134,2034.3282	N:546898.1745 E:1342035.1745

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 7 - MB-7

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	382.25 FT.	381.88FT
SURFACE AREA	2,154 SF.	2,040 SF
FILTER BED DIMENSIONS (L X W X D)	115' x 19' x 2'	151'x22'x2'
FILTER BED SURFACE ELEVATION	381.25 FT.	381.00'
OUTLET PIPE SIZE / INVERT	15 IN. / 377.82 FT.	15"/377.93'
ELEVATION OF BERM	383.50 FT.	386.27FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 377.92 FT.	6IN./377.92FT.
THICKNESS OF FILTER MEDIA	2 FT.	4/6/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	4/23/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEECHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6876.5046 E: 134,1957.4287	N:546878.0019 E:1341959.2577

AS-BUILT DATA FOR MICRO-BIORETENTION

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: MICRO-BIORETENTION FACILITY 8 - MB-8

FEATURE	DESIGN	*AS-BUILT
OVERFLOW INLET ELEVATION	382.25 FT.	381.81 FT
SURFACE AREA	1,120 SF.	1,023 SF
FILTER BED DIMENSIONS (L X W X D)	97' x 11.5' x 2'	95'x13'x2'
FILTER BED SURFACE ELEVATION	381.25 FT.	381.00'
OUTLET PIPE SIZE / INVERT	15 IN. / 377.82 FT.	15"/377.81'
ELEVATION OF BERM	383.50 FT.	382.25 FT
UNDERDRAIN PIPE SIZE / INVERT	6 IN. / 377.92 FT.	6IN./377.81FT.
THICKNESS OF FILTER MEDIA	2 FT.	4/9/2020
WEIR WALL ELEVATION ABOVE BED	N/A	N/A
PLANTINGS	SEE LANDSCAPING DWGS	4/16/2020
GEOTEXTILE	PE TYPE 1 NON-WOVEN, SIDES ONLY	INSTALLED
COMPOSITION OF FILTER MEDIA	SEE CHART, C-530	SEE CHART C-530
OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP	3.58 FT.	
OVERFLOW INLET STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6962.7064 E: 134,1950.0823	N:546964.5572 E:1341952.0119

AS-BUILT DATA FOR PERVIOUS PAVEMENT

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: PERVIOUS PAVEMENT 1 - PP-1

FEATURE	DESIGN	*AS-BUILT
SURFACE AREA	550 SQ- FT.	565 SQ-FT
PERVIOUS PAVEMENT DEPTH/ ELEV.	5.65 IN./ 403.87 FT.	5.65IN./404.27FT.
GEOGRID	TENSAR BX-1000	INSTALLED
BASE LAYER DEPTH	4 IN.	25 IN
RESERVOIR LAYER DEPTH	16 IN.	
UNDERDRAIN PIPE SIZE / INVERT	6IN. / 402.04 FT.	6IN./401.73'
OBSERVATION WELL STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6578.0352 E: 134,1806.7008	N:546577.8210 E:1341806.7600

AS-BUILT DATA FOR PERVIOUS PAVEMENT

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: PERVIOUS PAVEMENT 2 - PP-2

FEATURE	DESIGN	*AS-BUILT
SURFACE AREA	1,155 SQ- FT.	1174 SQ-FT
PERVIOUS PAVEMENT DEPTH/ ELEV.	5.65 IN./ 403.89 FT.	5.65IN./403.7FT.
GEOGRID	TENSAR BX-1000	INSTALLED
BASE LAYER DEPTH	4 IN.	22IN
RESERVOIR LAYER DEPTH	15 IN.	
UNDERDRAIN PIPE SIZE / INVERT	6IN. / 401.65 FT.	6IN/401.37'
CLEANOUT STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6574.0380 E: 134,1840.9900	N:546574.0948 E:1341840.1865

AS-BUILT DATA FOR PERVIOUS PAVEMENT

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: PERVIOUS PAVEMENT 3 - PP-3

FEATURE	DESIGN	*AS-BUILT
SURFACE AREA	1,155 SQ- FT.	1177 SQ-FT
PERVIOUS PAVEMENT DEPTH/ ELEV.	5.65 IN./ 402.98 FT.	5.65IN./403.27FT.
GEOGRID	TENSAR BX-1000	INSTALLED
BASE LAYER DEPTH	4 IN.	22IN
RESERVOIR LAYER DEPTH	15 IN.	
UNDERDRAIN PIPE SIZE / INVERT	6IN. / 401.23 FT.	6IN/400.93'
CLEANOUT STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6568.5033 E: 134,1889.6764	N:546568.2698 E:1341887.9856

AS-BUILT DATA FOR PERVIOUS PAVEMENT

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: PERVIOUS PAVEMENT 4 - PP-4

FEATURE	DESIGN	*AS-BUILT
SURFACE AREA	1,155 SQ- FT.	1173SQ-FT
PERVIOUS PAVEMENT DEPTH/ ELEV.	5.65 IN./ 402.53 FT.	5.65IN./402.73 FT.
GEOGRID	TENSAR BX-1000	INSTALLED
BASE LAYER DEPTH	4 IN.	22IN
RESERVOIR LAYER DEPTH	14 IN.	
UNDERDRAIN PIPE SIZE / INVERT	6IN. / 400.86 FT.	6IN./400.43'
CLEANOUT STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6562.9687 E: 134,1938.3628	N:546563.1553 E:1341936.2405

AS-BUILT DATA FOR PERVIOUS PAVEMENT

*TO BE COMPLETED BY THE CONTRACTOR'S CERTIFYING ENGINEER

FACILITY NAME: PERVIOUS PAVEMENT 5 - PP-5

FEATURE	DESIGN	*AS-BUILT
SURFACE AREA	550 SQ- FT.	2,745 SQ-FT
PERVIOUS PAVEMENT DEPTH/ ELEV.	5.65 IN./ 401.66 FT.	5.65IN/401.92FT.
GEOGRID	TENSAR BX-1000	INSTALLED
BASE LAYER DEPTH	4 IN.	28 IN
RESERVOIR LAYER DEPTH	18 IN.	
UNDERDRAIN PIPE SIZE / INVERT	6IN. / 399.66 FT.	6IN/399.13 SQFT
CLEANOUT STRUCTURE LOCATION: MD STATE PLANE COORDINATES NAD 83	N: 54,6557.4340 E: 134,1987.0492	N:546556.1505 E:1341996.7943

STATE OF MARYLAND — CHARLES W. W. MITCHELL III — 49432 — REGISTERED PROFESSIONAL ENGINEER

5/27/22

Charles W. W. Mitchell III

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
Charles W. W. Mitchell, III, PE #49432, 5/20/22

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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Baltimore, MD 21202
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www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN D'EPAGNIER — 23012 — REGISTERED PROFESSIONAL ENGINEER

5/31/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

STORMWATER MANAGEMENT NOTES
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 48 OF 72
GREEN BUILDING
SDP-18-035

C-531

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\17206_APL14\CADD\Plans\C-531 Stormwater Management Notes.dwg Mar 27, 2018 12:20pm cmitchell

1 2 3 4 5 6

CONSTRUCTION SPECIFICATIONS

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

Site Preparation

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

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

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

Earth Fill

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

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

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

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

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

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

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

Structure Backfill

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

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

Pipe Conduits

All pipes shall be circular in cross section.

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

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

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

with one coat of zinc chromate primer or two coats of asphalt.

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

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

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

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

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

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

5. Backfilling shall conform to "**Structure Backfill**".

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

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

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

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

Supplemental Stormwater Pond and Wetland Specifications (Non-378)

These notes and specifications are in addition to the MD-378 Specifications. If there is any question as to their applicability, the MD-378 Specifications supercede.

1. It is preferred to use the same material in the embankment as is being installed for the core trench. If this is not possible because the appropriate material is not available, a dam core with a shell may be used. The cross-section of the stormwater facility should show the limits of the dam core (up to the 10-year water surface elevation) as well as the acceptable materials for the shell. The shape of the dam core and the material to be used in the shell should be provided by the geotechnical engineer.

2. If the compaction tests for site improvements is using a Modified Proctor (AASHTO T-180), then to maintain on-site consistency, the Modified Proctor may be used in lieu of a Standard Proctor (AASHTO T-99). The minimum required density using the Modified Proctor test method shall be at least 92% of maximum dry density with a moisture content of ±2% of the optimum. The minimum required density using the Standard Proctor test method shall be at least 95% of the maximum dry density with a moisture content of ±2% of the optimum.

3. For all stormwater management facilities, a geotechnical engineer or their representative must be present to verify compaction in accordance with the selected test method. This information needs to be provided in a report to the design engineer, so that certification of the construction of the facility, in accordance with MD-378 specifications, can be made.

4. A 4-inch layer of topsoil shall be placed on all disturbed areas of the dam embankment. Seeding, liming, fertilizing, mulching, etc. shall be in accordance with Maryland Soil Conservation Service MD-342 or the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control "Permanent Seeding," Section in Chapter 20. The purpose of the topsoil is to establish a good growth of grass which is not always possible with some of the materials that may be placed for the embankment fill.

5. Geotextile placed beneath rip-rap shall be Class "C" geotextile or better (see Section 24.0, Material Specifications, 1994 Standards and Specifications for Soil Erosion and Sediment Control (MDE, 1994). Some acceptable geotextiles that meet the Class "C" criteria include:

   Amoco 4552 — Carthage FX-70S
   GEOLON N70 — Mirafi 180-N
   WEBTEC N07

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

4. Backfilling shall conform to "**Structure Backfill**".

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

Plastic Pipe - The following criteria shall apply for plastic pipe:

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

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

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

4. Backfilling shall conform to "**Structure Backfill**".

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

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

Concrete

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

Rock Riprap

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

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

Care of Water during Construction

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

Stabilization

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

Erosion and Sediment Control

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

OPERATION AND MAINTENANCE SCHEDULE

Maintenance is the responsibility of the Owner, JHU - APL.
Inspections shall be performed by the Howard County Department of Public Works (DPW) during the first year of operation and at least once every three years thereafter. The Owner shall perform any maintenance or repairs required by DPW on a schedule to be determined when the maintenance or repair is required.

Inspection Schedule	Responsible Party
a. First year of operation	HCDPW
b. Triennial inspection	HCDPW
c. Annual Inspection - Generate Annual Inspection Report	APL
d. At end of second growing season - Check for vegetation establishment	APL
e. Sixty hours after the end of each significant rainfall event (>2.6 inches of rainfall) Check for ponding water, sediment deposition in the forebay, erosion damage, trash and clogging of the spillway orifices.	APL

Routine Maintenance
a. Mow grass on embankment twice per year or when grass height exceeds 18 inches.
b. Remove any woody vegetation from embankment, within 15 feet of the toe of the embankment and within 25 feet of the principal spillway annually.

Maintenance Requirements
a. Removal of sediment when accumulation exceeds 30% of the design storage volume. In forebays, removal of sediment shall occur when the accumulation exceeds 50% of the forebay volume.
b. Removal of accumulated paper, trash and debris as necessary.
c. Vegetation growing on the embankment top and faces is not allowed to exceed 18 inches in height at any time.
d. Annual inspection and repair of the structure.
e. Corrective maintenance is required any time an extended detention basin does not drain within 60 hours (i.e. no standing water is allowed).
f. Corrective maintenance is required any time the forebay does not drain within 60 hours (i.e. no standing water is allowed). The Dam Inspection Checklist found in Appendix A of USDA NRCS - Maryland - Conservation Practice Standard - POND - Code 378 (MD-378) may be used to document this requirement.
g. Maintenance of pond landscaping shall include replacement of dead or dying vegetation, as necessary.

If a minimum coverage of 50% is not achieved in the planted wetland zones after the second growing season, a reinforcement planting will be required.

This is only a partial listing of available geotextiles based on information provided by the manufacturers to the 1997 Specifier's Guide dated December 1996. It is the responsibility of the engineer to verify the adequacy of the material, as there are changes in the manufacturing process and the type of fabric used, which may affect the continued acceptance.

6. A rule of thumb to determine when an excavated pond may need to be considered an embankment pond is as follows:

   - Provide calculation of 10H + 20 feet = L, where H equals height from pond bottom to top of dam. If the projection of L, downstream in a horizontal line from the upstream toe of slope is below existing ground, the pond can be considered an excavated pond. In addition, the existing ground slope, downstream of the toe, must be less than 10%.

7. The design engineer and geotechnical engineer should make the determination that the settlement of the pond will not cause excessive joint extension. For further information on joint extension analysis, see NRCS Publication TR-18.

8. Fill placement **shall not** exceed a maximum 8-inch. Each lift shall be continuous for the entire length of the embankment.

9. The embankment fill **shall not** be placed higher than the centerline of the principal spillway until after the principal spillway has been installed. If the embankment needs to be excavated to install the principal spillway, the side slope shall be no less than 2:1.

10. The side slopes of a cut to repair a dam, install a principal spillway for an excavated pond, or other repair work, shall be no less than 2:1.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED_____
Howard SCD
4/4/18

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 9/5/2019.

STATE OF MARYLAND — JOHN D'EPAGNIER — REGISTERED PROFESSIONAL ENGINEER — 9/7/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

WEST BASIN POND NOTES
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 6 - HOWARD COUNTY, MARYLAND
SHEET 49 OF 72
GREEN BUILDING
SDP-18-035

C-532
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\bolsrv05\v2017\2017\17206_APL14\CADD\Plans\C-532 West Basin Pond Notes.dwg Mar 27, 2018 12:21pm cmitchell

Froehling & Robertson, Inc.

BORING LOG
Boring: SWM-1 (1 of 1)

Project No: 75V0081
Client: Johns Hopkins University APL
Project: SWM Borings for Building 14, SI-13
City/State: Howard Co., MD
Elevation: 394 ±
Total Depth: 15.0'
Boring Location: See Boring Location Plan
Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 9/1/17
Driller: S. Martin

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
393.8	0.2	Surficial Organic Soil	3-2-4	0.0 / 1.5	6	Subsurface water was not encountered during drilling or upon removal of augers
		Dark Brown, Moist, Medium Stiff, SILT (ML), Trace Gravel **FILL**				
391.5	2.5	Reddish Brown and Brown, Very Moist, Very Loose to Loose, Micaceous Silty SAND (SM) **RESIDUUM**	2-2-2	2.5 / 4.0	4	
			2-2-3	5.0 / 6.5	5	
			3-2-3	8.5 / 10.0	5	
380.5	13.5	Tand and White, Very Moist to Wet, Medium Dense to Loose, Silty SAND (SM), Some Mica **RESIDUUM**	5-5-6	13.5 / 15.0	11	
379.0	15.0	Boring Terminated at 15 Feet				

BORING LOG 75V0081.GPJ F&R.GDT 9/20/17

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: SWM-2 (1 of 1)

Project No: 75V0081
Client: Johns Hopkins University APL
Project: SWM Borings for Building 14, SI-13
City/State: Howard Co., MD
Elevation: 394 ±
Total Depth: 25.0'
Boring Location: See Boring Location Plan
Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 9/5/17
Driller: S. Martin

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
393.8	0.2	Surficial Organic Soil	2-2-3	0.0 / 1.5	5	Subsurface water was not encountered during drilling or upon removal of augers
		Brown, Moist, Medium Stiff, SILT (ML) **FILL**				
391.5	2.5	Dark Brown, Moist, Medium Stiff, Fat CLAY (CH) **FILL**	2-3-5	2.5 / 4.0	8	
			2-4-4	5.0 / 6.5	8	
385.5	8.5	Reddish Brown, Very Moist, Stiff, Sandy Fat Clay (CH) **FILL**	3-6-4	8.5 / 10.0	10	
380.5	13.5	Brown, Very Moist, Medium Stiff, Sandy SILT (ML), Trace Quartz Gravel **RESIDUUM**	3-4-3	13.5 / 15.0	7	
375.5	18.5	Tan and Brown, Moist, Medium Dense to Very Dense, Silty SAND (SM), Some Mica, Little Quartz Gravel **RESIDUUM**	11-10-15	18.5 / 20.0	25	
			18-24-44	23.5 / 25.0	68	
369.0	25.0	Boring Terminated at 25 Feet				

BORING LOG 75V0081.GPJ F&R.GDT 9/20/17

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: SWM-3 (1 of 1)

Project No: 75V0081
Client: Johns Hopkins University APL
Project: SWM Borings for Building 14, SI-13
City/State: Howard Co., MD
Elevation: 384 ±
Total Depth: 25.0'
Boring Location: See Boring Location Plan
Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 9/5/17
Driller: S. Martin

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
383.8	0.2	Surficial Organic Soil	2-2-3	0.0 / 1.5	5	Subsurface water was not encountered during drilling or upon removal of augers
		Brown, Moist, Medium Stiff, SILT (ML) **FILL**				
381.5	2.5	Reddish Brown, Moist, Medium Stiff, Sandy Fat CLAY (CH) **FILL**	2-3-5	2.5 / 4.0	8	
379.0	5.0	Dark Brown, Moist, Medium Stiff, Lean CLAY (CL) **FILL**	2-3-5	5.0 / 6.5	8	
375.5	8.5	Reddish Brown, Moist, Loose, Micaceous Silty SAND (SM) **RESIDUUM**	3-4-4	8.5 / 10.0	8	
			6-4-4	13.5 / 15.0	8	
365.5	18.5	Tan and White, Very Moist, Loose, Silty SAND (SM), Some Mica **RESIDUUM**	3-4-5	18.5 / 20.0	9	
			3-2-7	23.5 / 25.0	9	
359.0	25.0	Boring Terminated at 25 Feet				

BORING LOG 75V0081.GPJ F&R.GDT 9/20/17

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

REFER TO SHEET C-502 FOR BORING LOCATIONS WITHIN WEST BASIN POND

NO AS-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4.11.18
Chief, Division of Land Development	Date 4-14-18
Director	Date 4-19-18

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Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — PROFESSIONAL ENGINEER (seal) 3/29/18

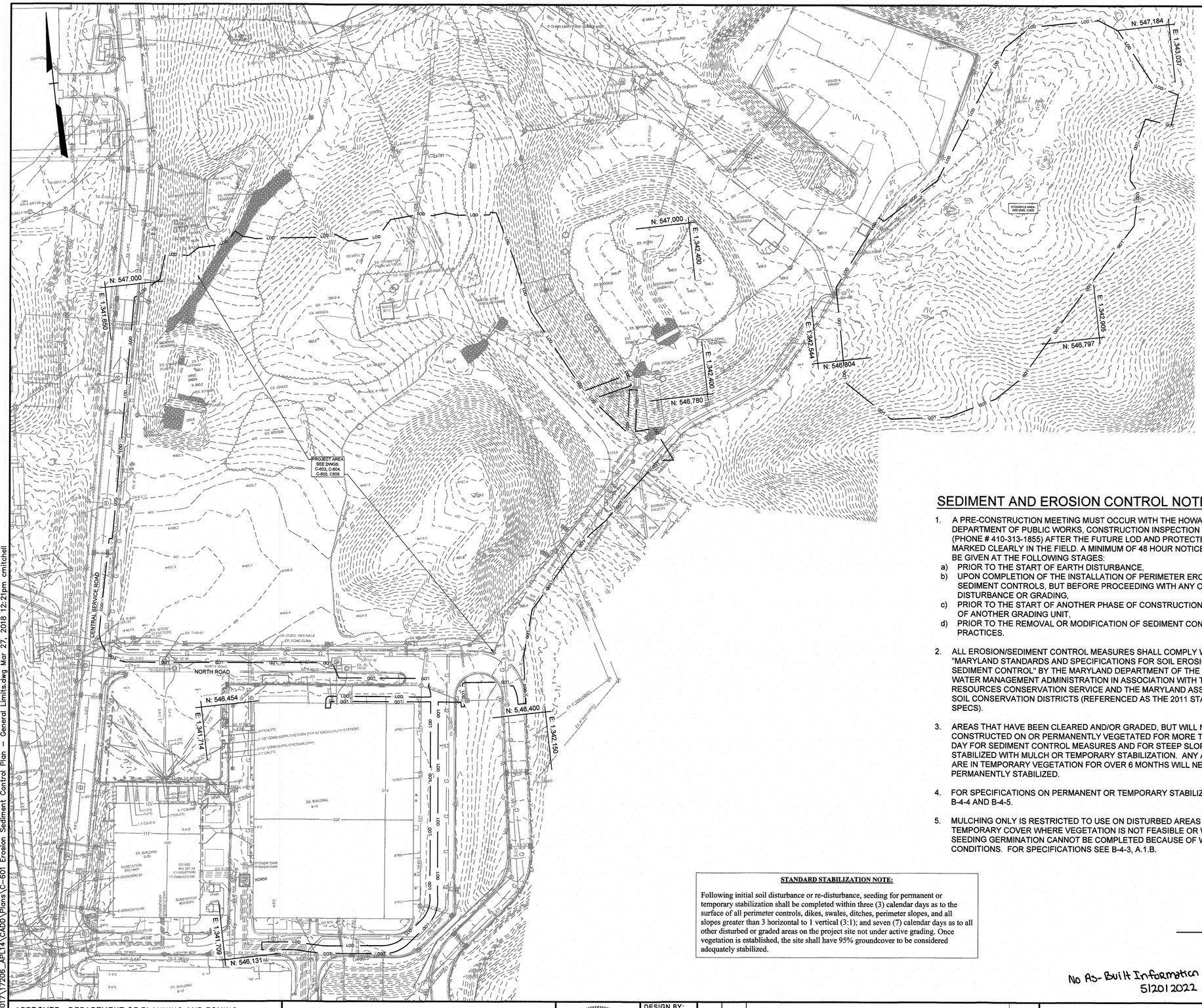
DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

WEST BASIN POND BORING INFORMATION
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SDP-18-035

C-533
RK&K PROJECT NUMBER 17206
SCALE: As Shown



VICINITY MAP

SCALE: 1"=2000'

SEDIMENT AND EROSION CONTROL NOTES:

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), (PHONE # 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. ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION IN ASSOCIATION WITH THE NATURAL RESOURCES CONSERVATION SERVICE AND THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS (REFERENCED AS THE 2011 STANDARDS AND SPECS).
3. AREAS THAT HAVE BEEN CLEARED AND/OR GRADED, BUT WILL NOT BE CONSTRUCTED ON OR PERMANENTLY VEGETATED FOR MORE THAN 5 DAYS (3 DAY FOR SEDIMENT CONTROL MEASURES AND FOR STEEP SLOPES) MUST BE STABILIZED WITH MULCH OR TEMPORARY STABILIZATION. ANY AREAS THAT ARE IN TEMPORARY VEGETATION FOR OVER 6 MONTHS WILL NEED TO BE PERMANENTLY STABILIZED.
4. FOR SPECIFICATIONS ON PERMANENT OR TEMPORARY STABILIZATION, SEE B-4-4 AND B-4-5.
5. MULCHING ONLY IS RESTRICTED TO USE ON DISTURBED AREAS AS A TEMPORARY COVER WHERE VEGETATION IS NOT FEASIBLE OR WHERE SEEDING GERMINATION CANNOT BE COMPLETED BECAUSE OF WEATHER CONDITIONS. FOR SPECIFICATIONS SEE B-4-3, A.1.B.
6. FOR SPECIFICATIONS ON THE STABILIZATION OF CUT AND FILL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL, SEE INCREMENTAL STABILIZATION B-4-1.
7. THE EXISTING TOPSOIL FROM ON OR OFF SITE THAT IS USED MUST MEET THE MINIMUM SPECIFICATION IN B-4-2.
8. THE REQUIRED SEQUENCE OF CONSTRUCTION MUST BE FOLLOWED DURING SITE DEVELOPMENT. ANY CHANGES IN THE SEQUENCE OF CONSTRUCTION MUST BE APPROVED BY THE SOIL CONSERVATION DISTRICT.
9. ANY REVISIONS TO THE SEDIMENT CONTROL PLAN, NOT COVERED UNDER THE LIST OF PLAN MODIFICATIONS THAT CAN BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR, NEED TO BE SUBMITTED TO THE SOIL CONSERVATION DISTRICT FOR APPROVAL.
10. NO PROPOSED SLOPE THAT IS REQUIRED TO BE SEEDED AND/OR MULCHED SHALL BE STEEPER THAN 2:1. SLOPES STEEPER THAN 2:1 SHALL REQUIRE AN ENGINEERED DESIGN FOR STABILIZATION.
11. ALL SEDIMENT CONTROL STRUCTURES ARE TO BE INSPECTED ONCE A WEEK AND AFTER EACH RAINFALL AND ARE TO BE REPAIRED, AS NEEDED, SO THAT THE STRUCTURE MEETS THE MINIMUM SPECIFICATIONS AS SHOWN IN THE 2011 MDE STANDARDS AND SPECS.
12. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT AND EROSION CONTROL MEASURES UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED.
13. THE DISTRICT APPROVAL FOR THIS SEDIMENT CONTROL PLAN IS GOOD FOR 2 YEARS. AT THE END OF THE 2 YEARS, IF CONSTRUCTION OF THE PLAN HAS NOT STARTED, THE PLAN WILL NEED TO BE RESUBMITTED TO THE SOIL CONSERVATION DISTRICT FOR REVIEW AND RE-APPROVAL. ANY PLANS THAT ARE CURRENTLY UNDER CONSTRUCTION AFTER 2 YEARS MAY BE REQUIRED TO BE RESUBMITTED TO THE SOIL CONSERVATION DISTRICT BY THE SEDIMENT CONTROL INSPECTOR.

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

PROPOSED LEGEND

LOD — LIMIT OF DISTURBANCE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: Howard SCD 4/4/18

No As-Built Information in this sheet
5/20/2022

60 30 0 60 120
SCALE: 1" = 60'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4/11/18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900
Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 5/6/2019.

STATE OF MARYLAND — JOHN CHRISTOPHER D'EPAGNIER — 23012 — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL PLAN - GENERAL LIMITS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 51 OF 72

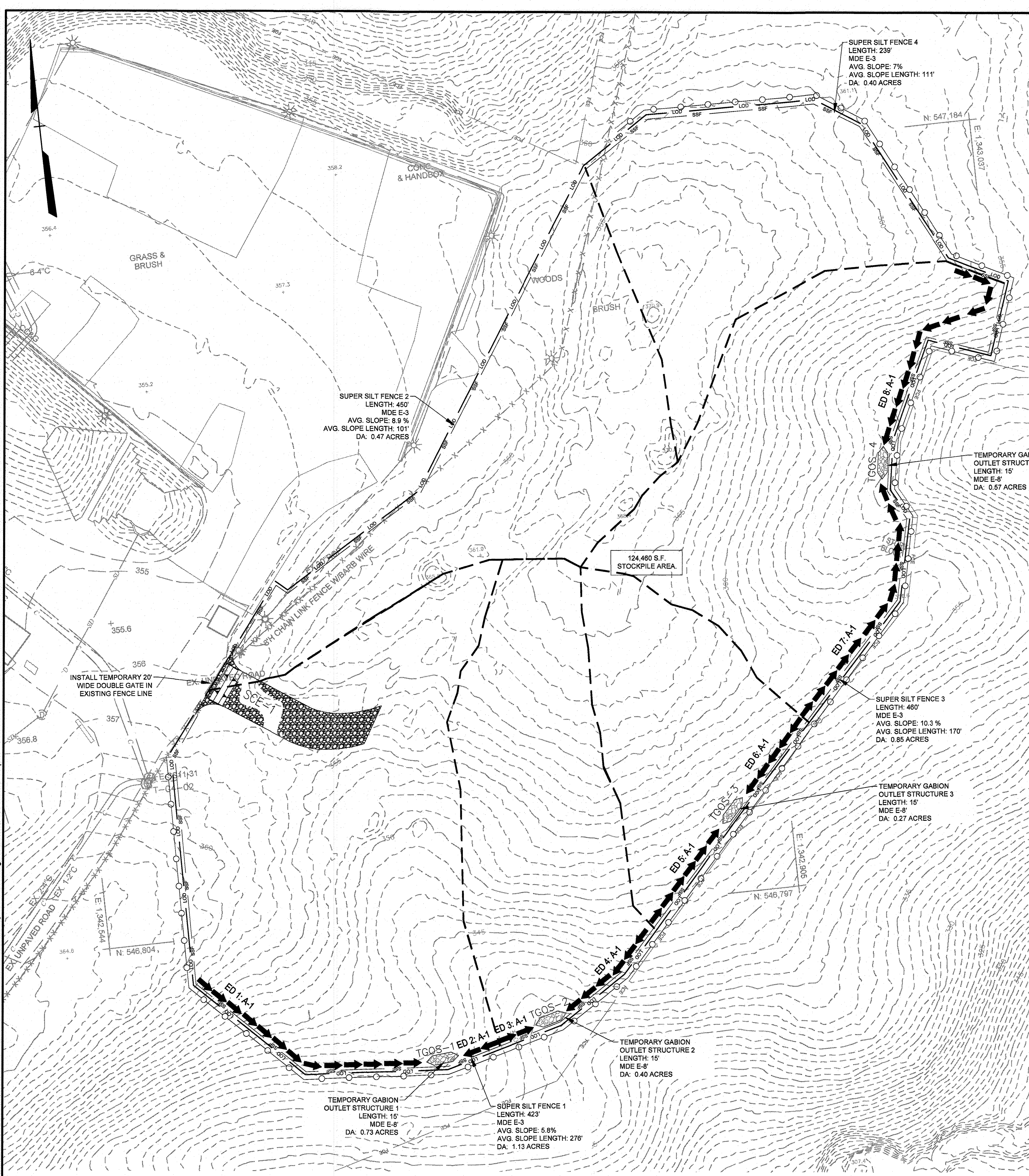
GREEN BUILDING
SDP-18-035

C-601

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206..APL14\CADD\Plans\C-601 Erosion Sediment Control Plan - General Limits.dwg Mar 27, 2018 12:21pm cmitchell



STOCKPILING NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR CLEARING ALL VEGETATION WITHIN THE STOCKPILE LOD.
2. INSTALL STOCKPILE AREA AND MAINTAIN THROUGH ALL THREE PHASES OF CONSTRUCTION.
3. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
4. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
5. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
6. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
7. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
8. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

NOTE

SEE SHEET C-601 FOR STANDARD SEDIMENT AND EROSION CONTROL NOTES.

MAINTENANCE

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4: 1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

PROPOSED LEGEND

LOD	LIMIT OF DISTURBANCE
—○—○—	SECURITY FENCE PER SPEC 32 31 13
➔➔➔	EARTH DIKE
TGOS	TEMPORARY GABION OUTLET STRUCTURE
— — — —	DRAINAGE AREA

SEQUENCE OF CONSTRUCTION - STOCKPILE AREA

1. CLEAR AS NECESSARY FOR INSTALLATION OF THE SEDIMENT CONTROL DEVICES AND MEASURES AS SHOWN ON THE PLAN OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE SCE-1. EXISTING PAVEMENT MUST BE REMOVED PRIOR TO PLACEMENT OF SCE.
3. INSTALL STOCKPILE AREA SEDIMENT CONTROL MEASURES: EARTH DIKES FROM ED 1 TO ED-8, TGOS-1 THRU TGOS-4, SSF-1 THRU SSF-4.
4. SEE SHEET C-603 FOR PHASE 1 MEASURES.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED [signature] Howard SCD
4/4/18

No As-Built Information in this sheet
5/20/2022

30 15 0 30 60
SCALE: 1" = 30'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
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www.rkk.com

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. 23012, EXPIRATION DATE: 3/8/2019.

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

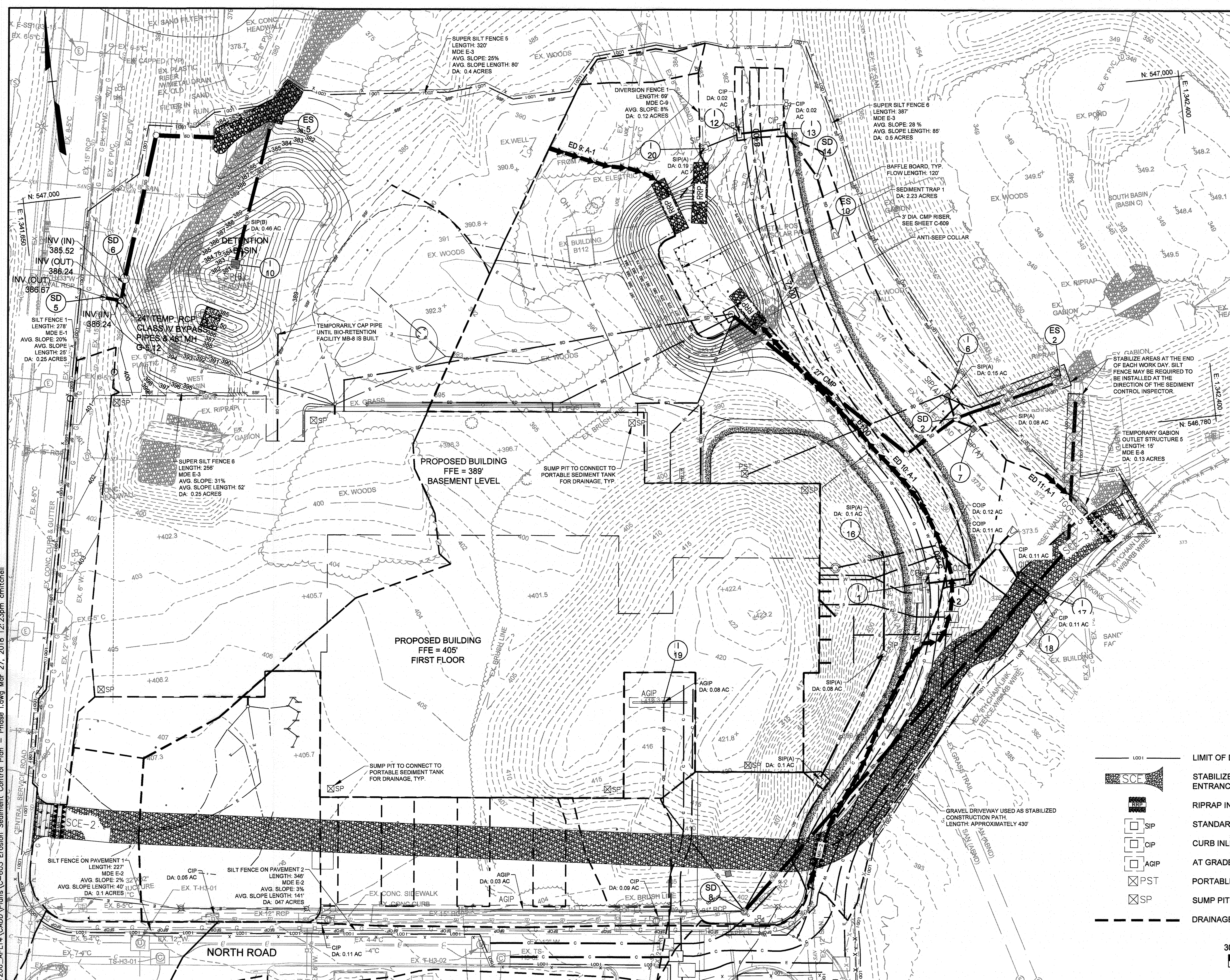
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL
STOCKPILE PLAN - ALL PHASES AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING

SDP-18-035

C-602
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\2017\2017\17206_APL14\CADD\Plans\C-602 Erosion Sediment Control Stockpile Plan.dwg Mar 27, 2018 12:22pm cmitchell



MATCH LINE, SEE SHEET C-604

SEQUENCE OF CONSTRUCTION - PHASE I

1. CLEAR AS NECESSARY FOR INSTALLATION OF THE SEDIMENT CONTROL DEVICES AND MEASURES AS SHOWN ON THE PLAN OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCES SCE-2, AND SCE-3, AND STABILIZED CONSTRUCTION PATH (SEE SHEET C-602). EXISTING PAVEMENT MUST BE REMOVED PRIOR TO PLACEMENT OF SCE.
3. INSTALL PHASE I EROSION AND SEDIMENT CONTROL MEASURES: EARTH DIKES ED-9 THRU ED-11, MOUNTABLE BERMS MB-1, MB-2, AND MB-3, SEDIMENT TRAP 1, DF 1, RRP, SF 1, SFOP 1 AND 2, SSF 5 AND 6, AND TGOS-5.
4. PROVIDE ALL UNDERGROUND DUCTBANK AND UTILITY SERVICE. INSTALL TEMPORARY PIPING DRAINING DIRECTLY TO THE OUTFALL STRUCTURE OF THE SEDIMENT TRAP, INSTEAD OF BIO-RETENTION FACILITIES MB-5, MB-6, AND MB-7, UNTIL THESE FACILITIES ARE CONSTRUCTED. INSTALL MANHOLES SD-5, SD-6, AND TEMPORARY MANHOLE BETWEEN SD-5 AND SD-6 TO ALLOW THE WATER TO DRAIN PROPERLY ONCE THE EXISTING BASIN IS DEMOLISHED AND THE PROPOSED ONE IS NOT YET BUILT.
5. IN HATCHED AREAS, INSTALL SHOWN UTILITY SERVICES, AND STABILIZE AREAS AT THE END OF EACH WORK DAY.
6. TEMPORARILY ROUGH GRADE AND INSTALL ALL INLET PROTECTION SHOWN.
7. CONSTRUCT PERMANENT DETENTION BASIN AND ASSOCIATED GRADING. INSTALL ADDITIONAL SUPER SILT FENCE SSF 6 TO PROTECT POND FROM ANY CONSTRUCTION RUNOFF.
8. INSTALL SUMP PITS AND PORTABLE SEDIMENT TANK AS SHOWN, AND THEN BEGIN MASS EXCAVATION OF SOIL. USE STOCKPILING AREA TO STOCKPILE THE REMOVED SOIL DURING CONSTRUCTION. SEE DEMOLITION PLANS, SHEET C-103 AND C-104 FOR DETAILS AND LIMITS OF DEMOLITION.
9. START FOUNDATION CONSTRUCTION FOR B14 BUILDING.
10. ONCE ALL PHASE I AREAS ARE PERMANENTLY STABILIZED AND WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE EARTH DIKES ED 9 AND 10, AND MOUNTABLE BERM MB-2, AND STABILIZE THOSE AREAS. PROVIDE PERMANENT STABILIZATION TO THOSE AREAS DISTURBED BY THIS OPERATION.

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

NOTE:

SEE SHEET C-601 FOR STANDARD SEDIMENT AND EROSION CONTROL NOTES.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT

APPROVED [signature] 4/4/18 Howard SCD

PROPOSED LEGEND

Symbol	Description	Symbol	Description
LOD 1	LIMIT OF DISTURBANCE PHASE 1	SF	SILT FENCE
SCE	STABILIZED CONSTRUCTION ENTRANCE, WITH WASH RACK	SFOP	SILT FENCE ON PAVEMENT
RRP	RIPRAP INFLOW PROTECTION	SSF	SUPER SILT FENCE
SIP	STANDARD INLET PROTECTION	DF	DIVERSION FENCE
CIP	CURB INLET PROTECTION		EARTH DIKE
AGIP	AT GRADE INLET PROTECTION		MOUNTABLE BERM
PST	PORTABLE SEDIMENT TANK		EQUIPMENT ACCESS AREA
SP	SUMP PIT	TGOS	TEMPORARY GABION OUTLET STRUCTURE
	DRAINAGE AREA		SAME DAY STABILIZATION
		374	TEMPORARY CONTOUR

30 15 0 30 60

SCALE: 1" = 30'

No As-Built Information in this Sheet 5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING	
Chief, Development Engineering Division [signature]	Date 4-11-18
Chief, Division of Land Development [signature]	Date 4-19-18
Director [signature]	Date 4-19-18

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700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

[Seal: STATE OF MARYLAND PROFESSIONAL ENGINEER] [signature] 3/30/18

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL PLAN - PHASE I (NORTH) AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

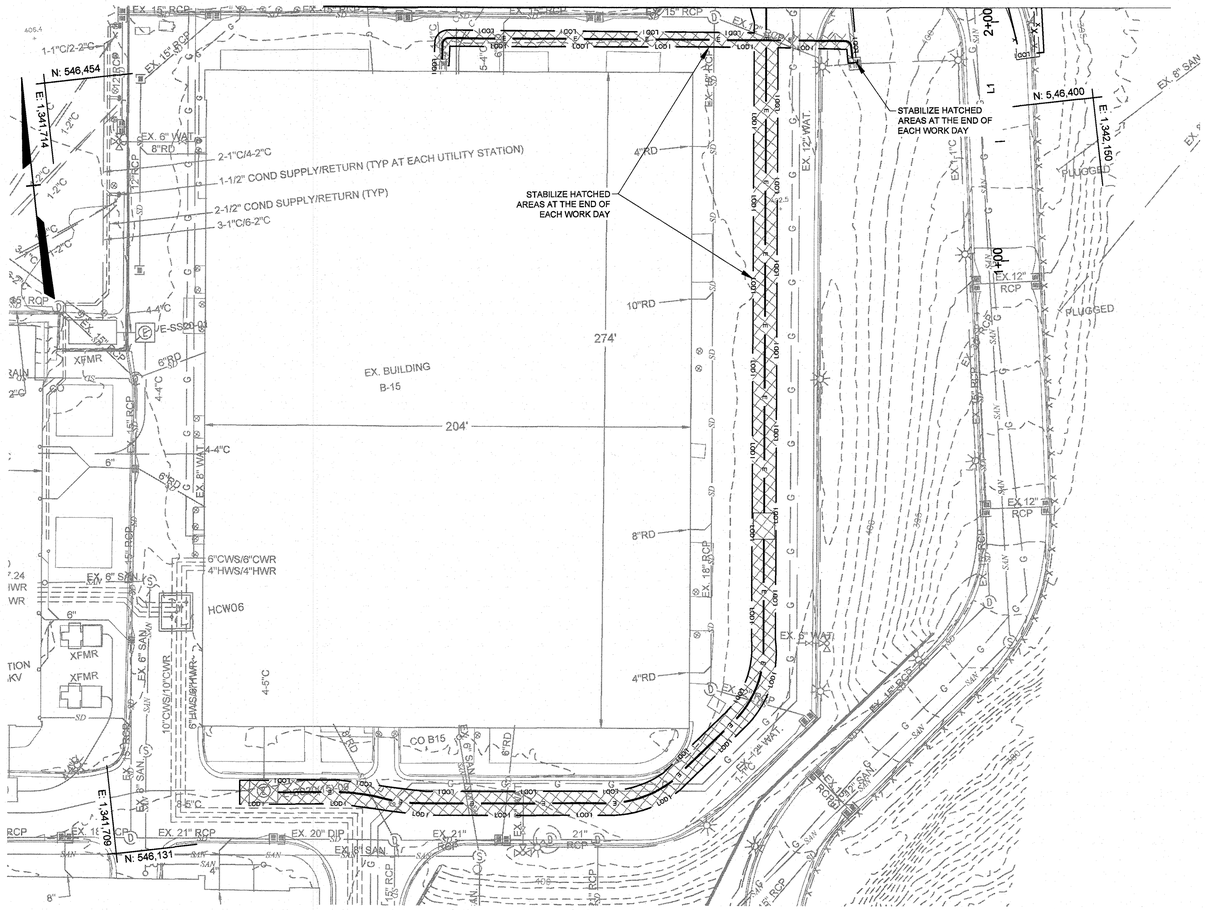
BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 53 OF 72

GREEN BUILDING
SDP-18-035

C-603
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\bdsrv05\v2017\2017\1:206_APL14\CADD\Plans\C-603 Erosion Sediment Control Plan - Phase I.dwg Mar 27, 2018 12:23pm cmitchell



NOTE

SEE SHEET C-603 FOR PHASE 1 SEQUENCE OF CONSTRUCTION.

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

NOTE:

SEE SHEET C-601 FOR STANDARD SEDIMENT AND EROSION CONTROL NOTES.

PROPOSED LEGEND

LOD1	LIMIT OF DISTURBANCE PHASE 1
SCE	STABILIZED CONSTRUCTION ENTRANCE, WITH WASH RACK
RRP	RIPRAP INFLOW PROTECTION
SIP	STANDARD INLET PROTECTION
CIP	CURB INLET PROTECTION
AGIP	AT GRADE INLET PROTECTION
PST	PORTABLE SEDIMENT TANK
SP	SUMP PIT
	DRAINAGE AREA
SF	SILT FENCE
SFOP	SILT FENCE ON PAVEMENT
SSF	SUPER SILT FENCE
DF	DIVERSION FENCE
	EARTH DIKE
MB	MOUNTABLE BERM
	EQUIPMENT ACCESS AREA
TGOS	TEMPORARY GABION OUTLET STRUCTUR
	SAME DAY STABILIZATION
374	TEMPORARY CONTOUR

30 15 0 30 60

SCALE: 1" = 30'

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED
Howard SCD
4/4/18

No As-Built Information in this sheet
5/2/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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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 NO. 23012, EXPIRATION DATE: 5/6/2019.

STATE OF MARYLAND — JOHN D'EPAGNIER — REGISTERED PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL PLAN - PHASE I (SOUTH) AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 54 OF 72

GREEN BUILDING
SDP-18-035

C-604

RK&K PROJECT NUMBER 17206

SCALE: As Shown

SEQUENCE OF CONSTRUCTION - PHASE II

1. COMPLETE SEQUENCE OF CONSTRUCTION - PHASE I (SHEET C-602).
2. LEAVE IN PLACE THE REMAINING PHASE I EROSION AND SEDIMENT CONTROL DEVICES SUCH AS CONSTRUCTION ENTRANCES, STABILIZED CONSTRUCTION PATH, SUPER SILT AND DIVERSION FENCES, EARTH DIKE ED 11, MOUNTABLE BERMs MB1 AND MB3, RIPRAP INFLOW PROTECTION, TEMPORARY GABION OUTLET STRUCTURE, AND SEDIMENT TRAP.
3. INSTALL ADDITIONAL PHASE II EROSION AND SEDIMENT CONTROL MEASURES: CONSTRUCTION ENTRANCE SCE-4, EARTH DIKES ED 12 AND 13, MOUNTABLE BERM MB 4, AND SUPER SILT FENCE SSF-8.
4. MAINTAIN ACCESS TO THE EQUIPMENT ACCESS AREAS AT ALL TIMES DURING THIS PHASE.
5. CONSTRUCT PROPOSED ROAD AND RETAINING WALL, AND ALL ASSOCIATED SITE GRADING.
6. FINALIZE BUILDING CONSTRUCTION.
7. CONSTRUCT BIO-RETENTION FACILITIES MB-3, MB-4, MB-7, AND MB-8, AS SHOWN ON THIS PHASE. INSTALL TEMPORARY PIPING DRAINING DIRECTLY TO THE OUTFALL STRUCTURE OF THE SEDIMENT TRAP INSTEAD OF BIO-RETENTION FACILITIES MB-7 AND MB-8, AND MAINTAIN THE TEMPORARY PIPING FOR MB-5 AND MB-6, UNTIL THE FACILITIES AND PERMANENT PIPING ARE CONSTRUCTED.
8. ONCE ALL PHASE II AREAS ARE PERMANENTLY STABILIZED AND WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL THREE CONSTRUCTION ENTRANCES AND THE STABILIZED CONSTRUCTION PATH, AND STABILIZE THOSE AREAS. PROVIDE PERMANENT STABILIZATION TO THOSE AREAS DISTURBED BY THIS OPERATION. LEAVE IN PLACE ALL OTHER PHASE II EROSION AND SEDIMENT CONTROL DEVICES.

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

NOTE:

SEE SHEET C-601 FOR STANDARD SEDIMENT AND EROSION CONTROL NOTES.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: Howard SCD
4/19/18

PROPOSED LEGEND

LIMIT OF DISTURBANCE PHASE 2	SILT FENCE
STABILIZED CONSTRUCTION ENTRANCE, WITH WASH RACK	SILT FENCE ON PAVEMENT
RIPRAP INFLOW PROTECTION	SUPER SILT FENCE
STANDARD INLET PROTECTION	DIVERSION FENCE
CURB INLET PROTECTION	EARTH DIKE
AT GRADE INLET PROTECTION	MOUNTABLE BERM
PORTABLE SEDIMENT TANK	EQUIPMENT ACCESS AREA
SUMP PIT	TEMPORARY GABION OUTLET STRUCTURE
DRAINAGE AREA	

No As-Built Information in this sheet
5/20/2022

SCALE: 1" = 30'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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Baltimore, MD 21202
Ph: 410.728.2900
Contact: John d'Epagnier
www.rkk.com

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. 29312, EXPIRATION DATE: 3/6/2019.

4/19/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL PLAN - PHASE II AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 55 OF 72
GREEN BUILDING
SDP-18-035

C-605
RK&K PROJECT NUMBER 17206
SCALE: As Shown

SEQUENCE OF CONSTRUCTION - PHASE III

1. COMPLETE SEQUENCE OF CONSTRUCTION - PHASE II (SHEET C-604).
2. INSTALL ADDITIONAL PHASE III EROSION AND SEDIMENT CONTROL MEASURES: CONSTRUCTION ENTRANCES SCE-5 AND SCE-6, SUPER SILT FENCE SSF-9, AND SILT FENCES 1 AND 2.
3. CONSTRUCT ALL SIDEWALKS, FRONT OF BUILDING SITE WORK, AND ALL ASSOCIATED SITE GRADING.
4. CONSTRUCT BIO-RETENTION FACILITIES MB-1 AND MB-2, AND ASSOCIATED SITE GRADING.
5. ONCE ALL THE ABOVE CONSTRUCTION IS FINISHED, REMOVE THE SEDIMENT TRAP, ED 12, ED 12, RRP, DF 1, AND STABILIZE AREA.
6. CONSTRUCT THE BIO-RETENTION FACILITIES MB-5 AND MB-6, ASSOCIATED SITE GRADING, AND REMAINING UTILITIES.
7. ONCE ALL PHASE III AREAS ARE PERMANENTLY STABILIZED AND WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZE THOSE AREAS. PROVIDE PERMANENT STABILIZATION TO THOSE AREAS DISTURBED BY THIS OPERATION.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED: Howard SCD 4/9/18

STANDARD STABILIZATION NOTE:

Following initial soil disturbance or re-disturbance, seeding for permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. Once vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

NOTE:

SEE SHEET C-601 FOR STANDARD SEDIMENT AND EROSION CONTROL NOTES.

SCALE: 1" = 30'

PROPOSED LEGEND

LOD III	LIMIT OF DISTURBANCE PHASE 3	SF	SILT FENCE
SCE	STABILIZED CONSTRUCTION ENTRANCE, WITH WASH RACK	SFOP	SILT FENCE ON PAVEMENT
RRP	RIPRAP INFLOW PROTECTION	SSF	SUPER SILT FENCE
SIP	STANDARD INLET PROTECTION	DF	DIVERSION FENCE
CIP	CURB INLET PROTECTION		EARTH DIKE
AGIP	AT GRADE INLET PROTECTION	MB	MOUNTABLE BERM
PST	PORTABLE SEDIMENT TANK		EQUIPMENT ACCESS AREA
SP	SUMP PIT	TGOS	TEMPORARY GABION OUTLET STRUCTURE
	DRAINAGE AREA		

No As-Built Information in this sheet 5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN R. STERRETT — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL PLAN - PHASE III AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SHEET 56 OF 72
SDP-18-035

C-606
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\balsrv05\2017\17206_APL14\CADD\Plans\C-606 Erosion Sediment Control Plan - Phase III.dwg Mar 27, 2018 12:26pm cmitchell

HOWARD SOIL CONSERVATION DISTRICT (HSCD)
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.

   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.
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization 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.
4. 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-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). 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 >15° 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).
5. 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.
6. Site Analysis:

Total Area of Site:	10.4	Acres
Area Disturbed:	10.4	Acres
Area to be roofed or paved:	4.2	Acres
Area to be vegetatively stabilized:	6.2	Acres
Total Cut:	45,357	Cu. Yds.
Total Fill:	7,987	Cu. Yds.
Offsite waste/borrow area location:	None	

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. 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).
9. 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.
10. 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.
11. 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 CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
   - Use I and IP March 1 - June 15
   - Use III and IIIP October 1 - April 30
   - Use IV March 1 - May 31
16. 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.

Rev. 8.2016

SEDIMENT CONTROL

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."

Owner's/Developer's Signature — Date: 12/1/17

Printed Name & Title: Glenn M. Carey JHAPL Facilities Management Chief Engineer

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."

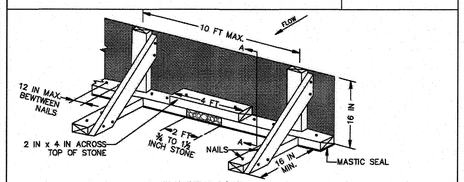
Designer's Signature — Date: 12/1/17

Printed Name: CHRISTOPHER D. KRUPINSKI

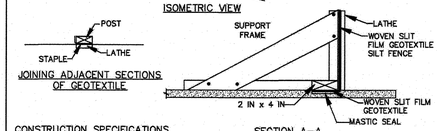
MD Registration No. 23012 (P.E., R.L.S., or R.L.A. (circle one))

DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL: SFOP



ISOMETRIC VIEW



JOINING ADJACENT SECTIONS OF GEOTEXTILE

SECTION A–A

CONSTRUCTION SPECIFICATIONS

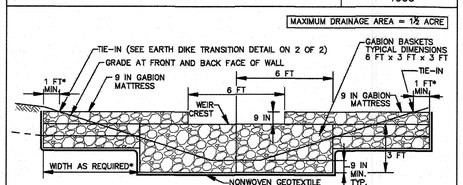
1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT–LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

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

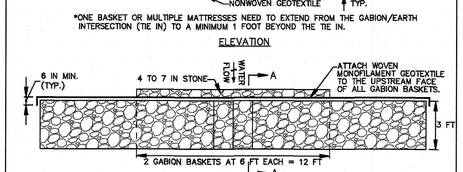
DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

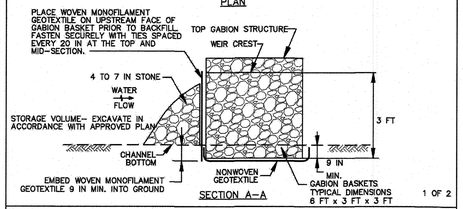


*ONE BASKET OR MULTIPLE MATTRESSES NEED TO EXTEND FROM THE GABION/EARTH INTERSECTION (TIE IN) TO A MINIMUM 1 FOOT BEYOND THE TIE IN.

ELEVATION



PLAN



SECTION A–A

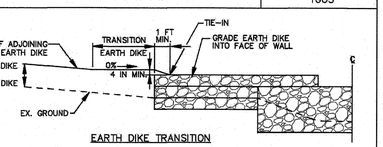
1 OF 2

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

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS



EARTH DIKE TRANSITION

NOTES:
1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H–1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. 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.
11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

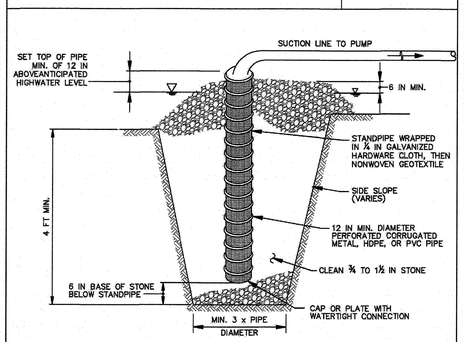
2 OF 2

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

DETAIL F-2 SUMP PIT

STANDARD SYMBOL: ☒SP



ELEVATION

CONSTRUCTION SPECIFICATIONS

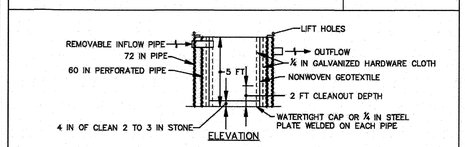
1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

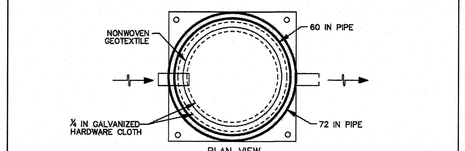
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: ☒PST



ELEVATION



PLAN VIEW

CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE.
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: Howard SCD
4/4/18

No As-Built Information In this sheet
5/2012022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900
Contact: John d'Epagnier
www.rkk.com

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. 22012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — CHRISTOPHER D. KRUPINSKI — PROFESSIONAL ENGINEER — 3/30/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL NOTES & DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 6 - HOWARD COUNTY, MARYLAND
SHEET 57 OF 72

GREEN BUILDING
SDP-18-035

C-607

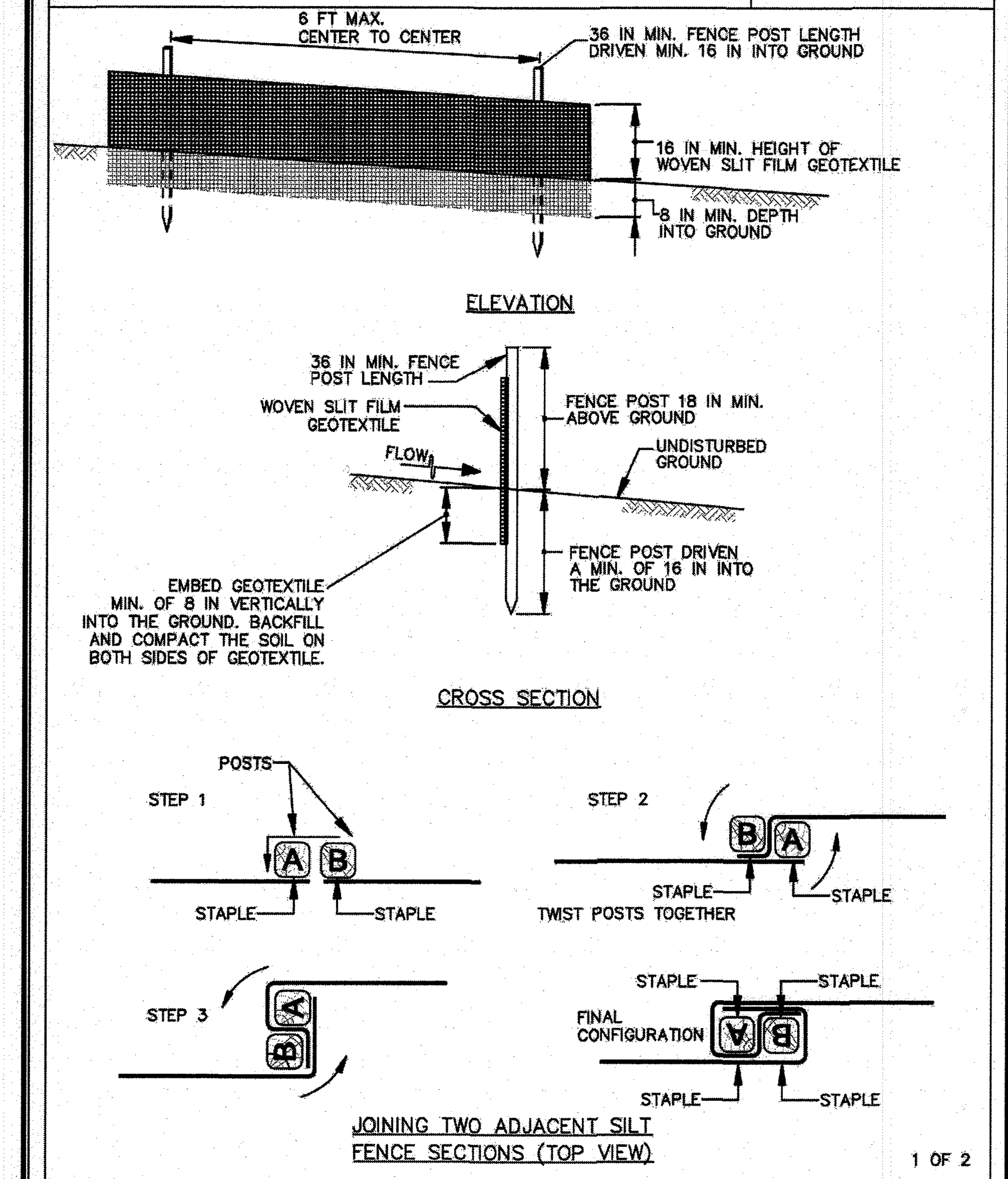
RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\2017\2017\17206_APL14\CADD\Plans\C-607 Erosion Sediment Control Notes.dwg Mar 27, 2018 12:26pm cmitchell

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
SF



1 OF 2

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅛ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

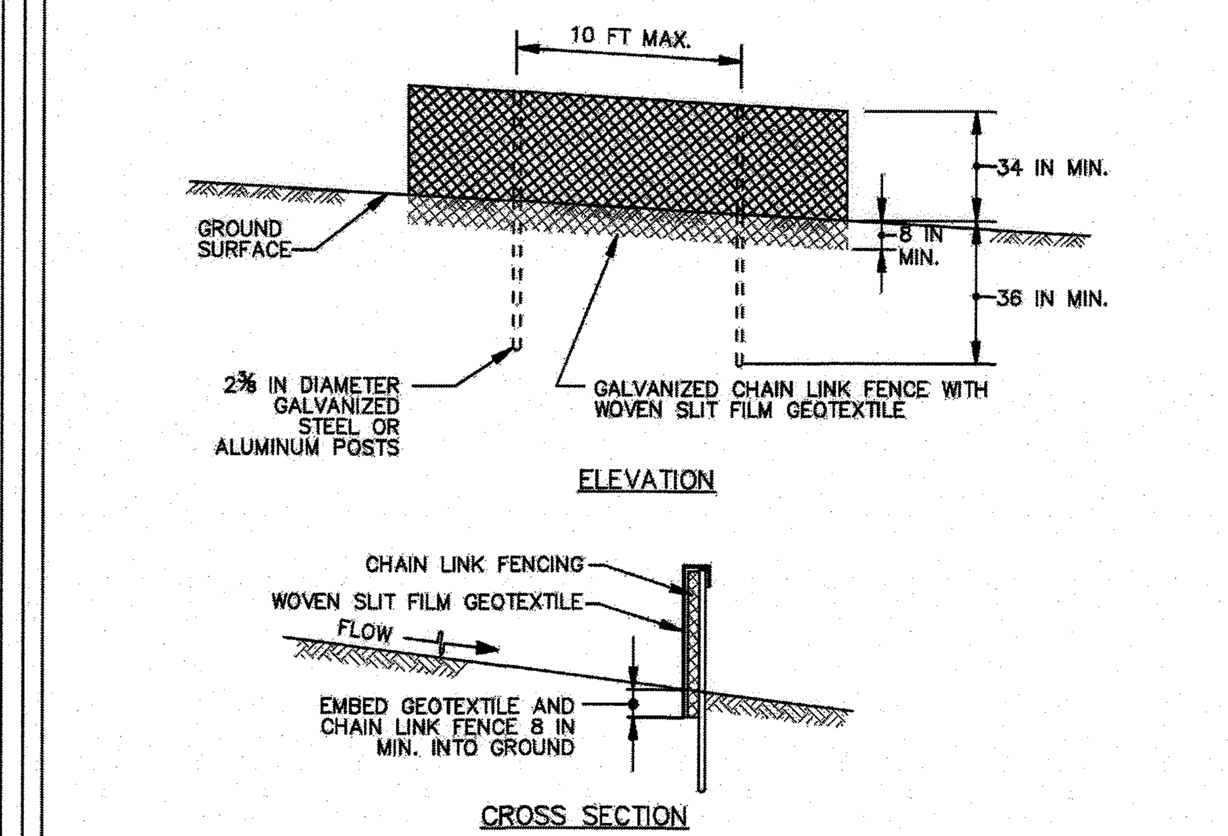
2 OF 2

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL
SSF



CONSTRUCTION SPECIFICATIONS

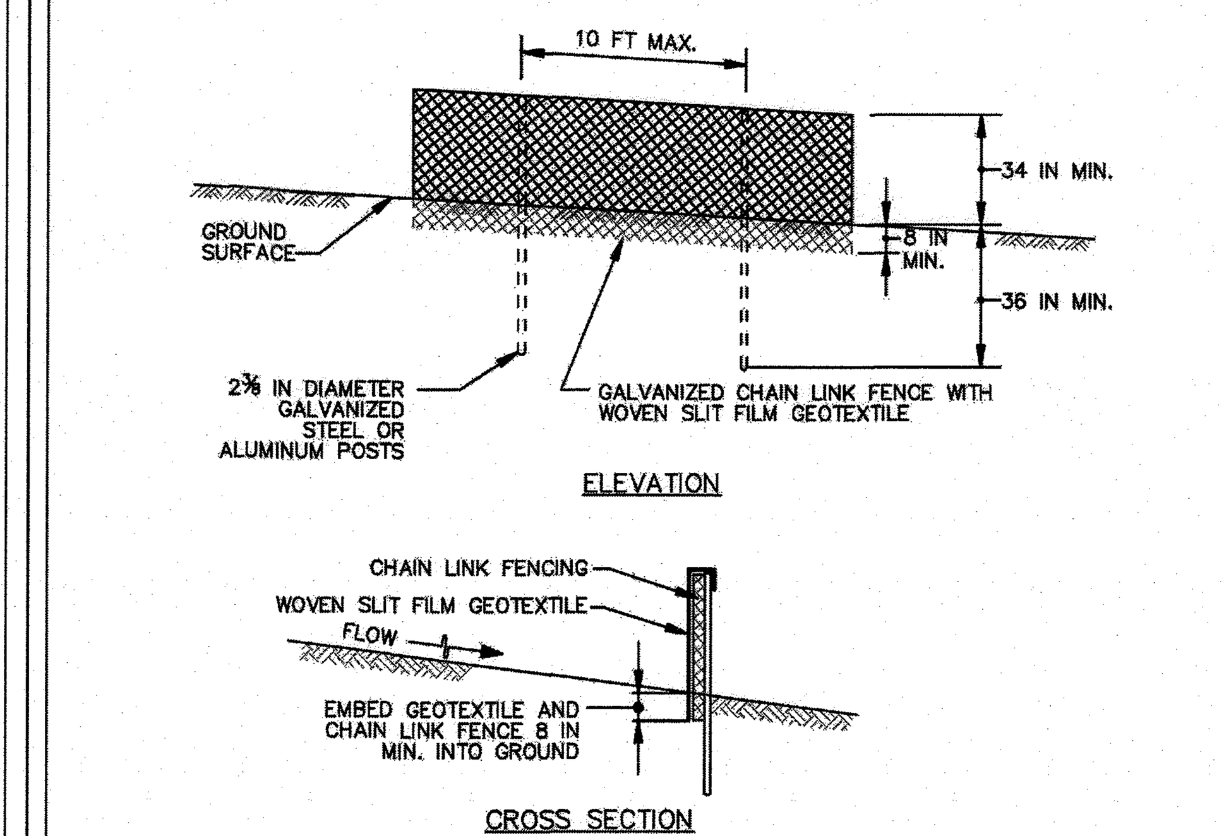
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL
SSF

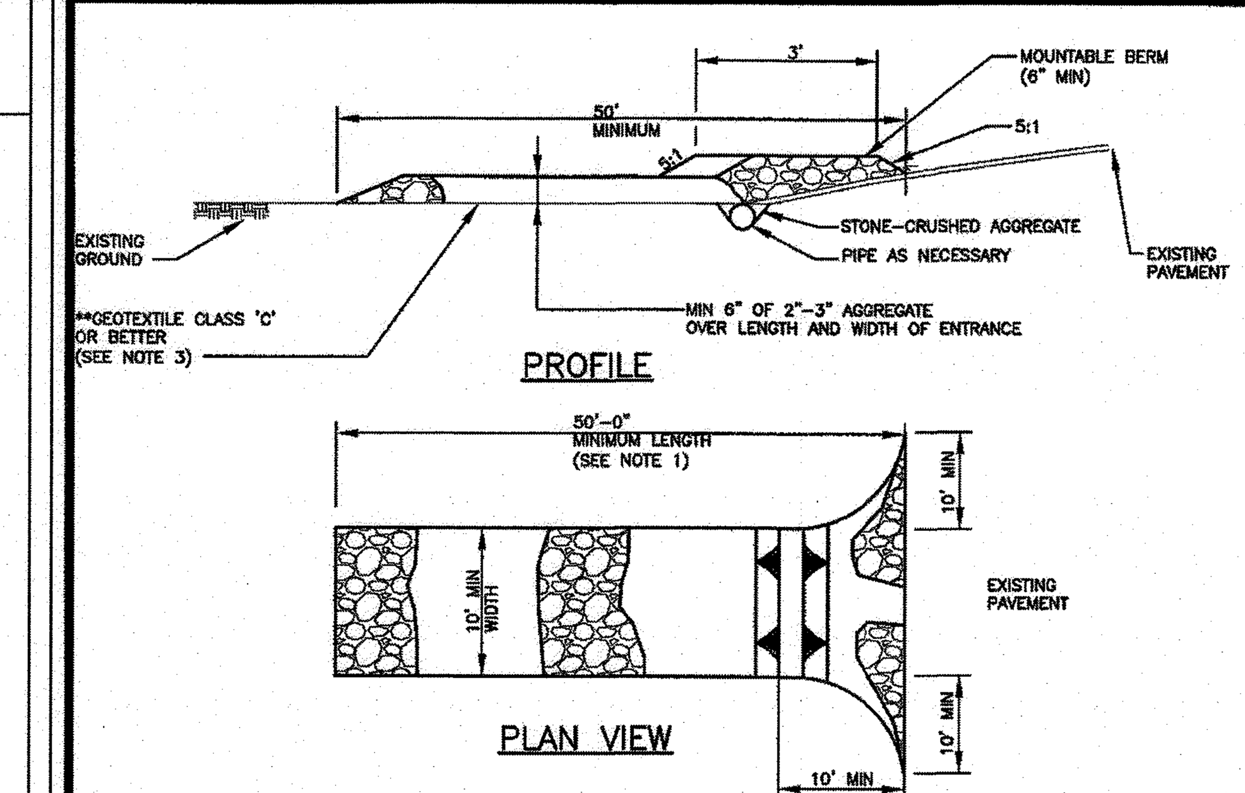


CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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



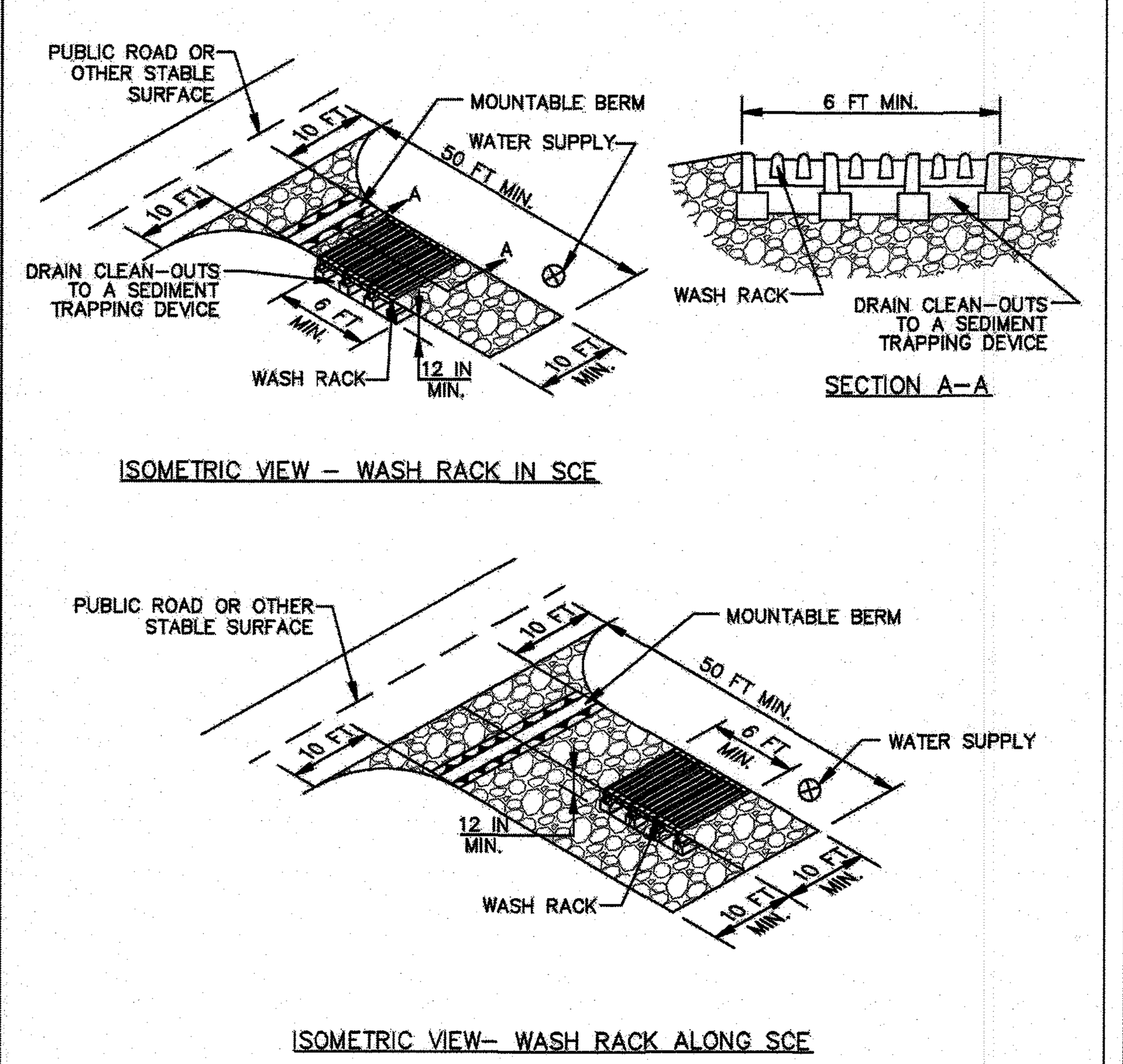
NOTES:

1. LENGTH - MINIMUM OF 50' (30' FOR SINGLE RESIDENCE LOT).
2. WIDTH - 10' MINIMUM SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. ** THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
4. STONE-CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER-ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM DIAMETER IS REQUIRED.
6. LOCATION- A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF STABILIZED CONSTRUCTION ENTRANCE.
7. STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ADDITIONAL ENTRANCES ARE PROHIBITED.

Revised / Revised 1/7/2007 / Approved	Howard County, Maryland Department of Public Works. Approved: Chief, Bureau of Engineering	Stabilized Construction Entrance	Detail G-6.01

DETAIL B-2 WASH RACK OPTION

STANDARD SYMBOL
WR



CONSTRUCTION SPECIFICATIONS

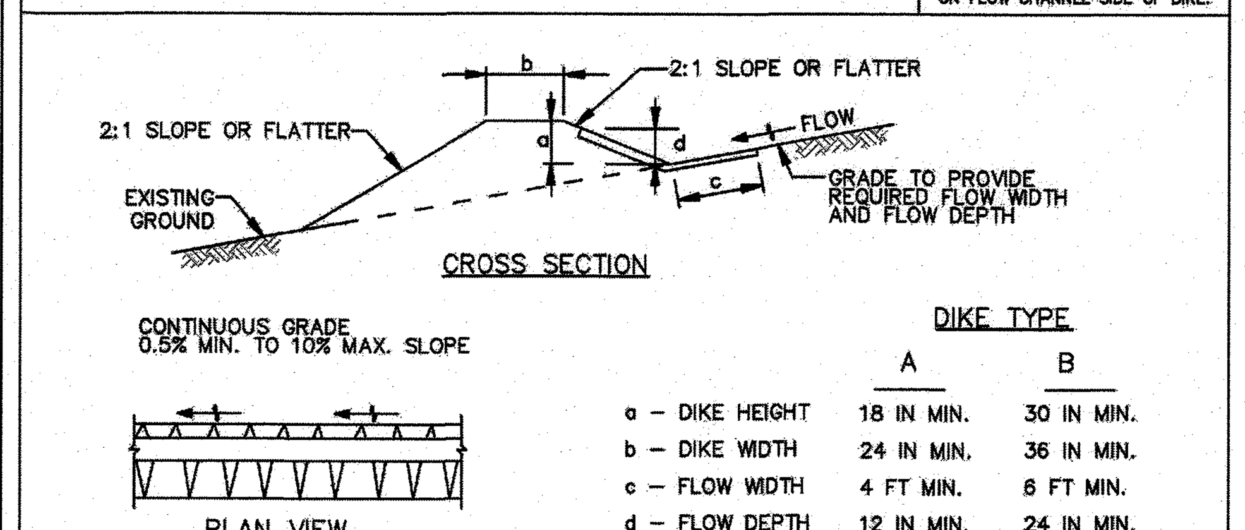
1. USE A WASH RACK DESIGNED AND CONSTRUCTED/MANUFACTURED FOR THE ANTICIPATED TRAFFIC LOADS. CONCRETE, STEEL, OR OTHER MATERIALS ARE ACCEPTABLE. PRE-FABRICATED UNITS SUCH AS CATTLE GUARDS ARE ACCEPTABLE. USE MINIMUM DIMENSION OF 6 FEET x 10 FEET. ORIENT DIRECTION OF RIBS AS SHOWN ON THE DETAIL.
2. INSTALL PRIOR TO, ALONG SIDE OF, OR AS PART OF THE SCE.
3. DIRECT WASH WATER TO AN APPROVED SEDIMENT TRAPPING DEVICE.
4. KEEP AREA UNDER WASH RACK FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, REPAIR OR REPLACE WASH RACK.

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

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL
A-1
PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.



DIKE TYPE

	A	B
a - DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b - DIKE WIDTH	24 IN MIN.	36 IN MIN.
c - FLOW WIDTH	4 FT MIN.	6 FT MIN.
d - FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1	SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A-2/B-2	SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A-3/B-3	4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

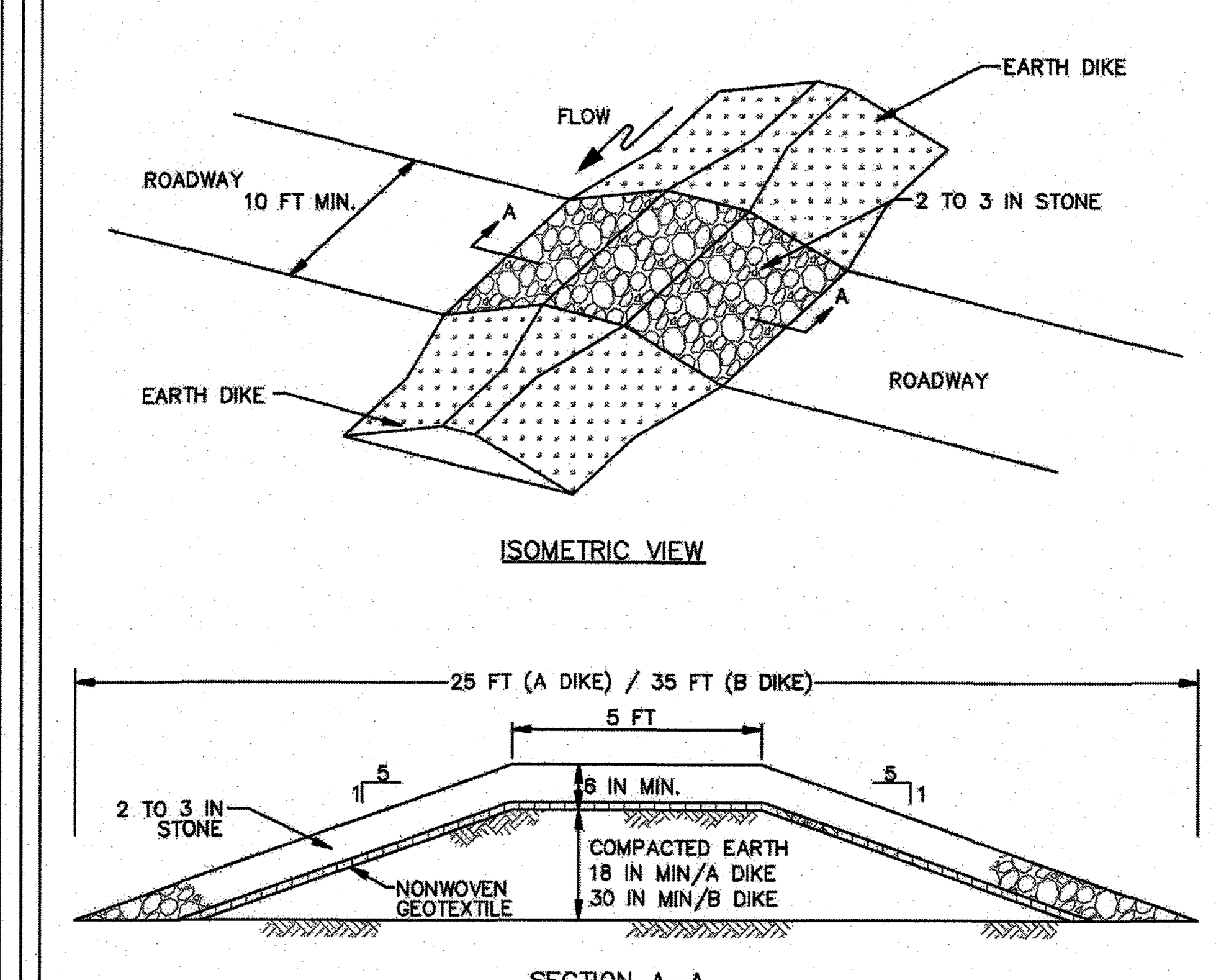
1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL
MB



CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

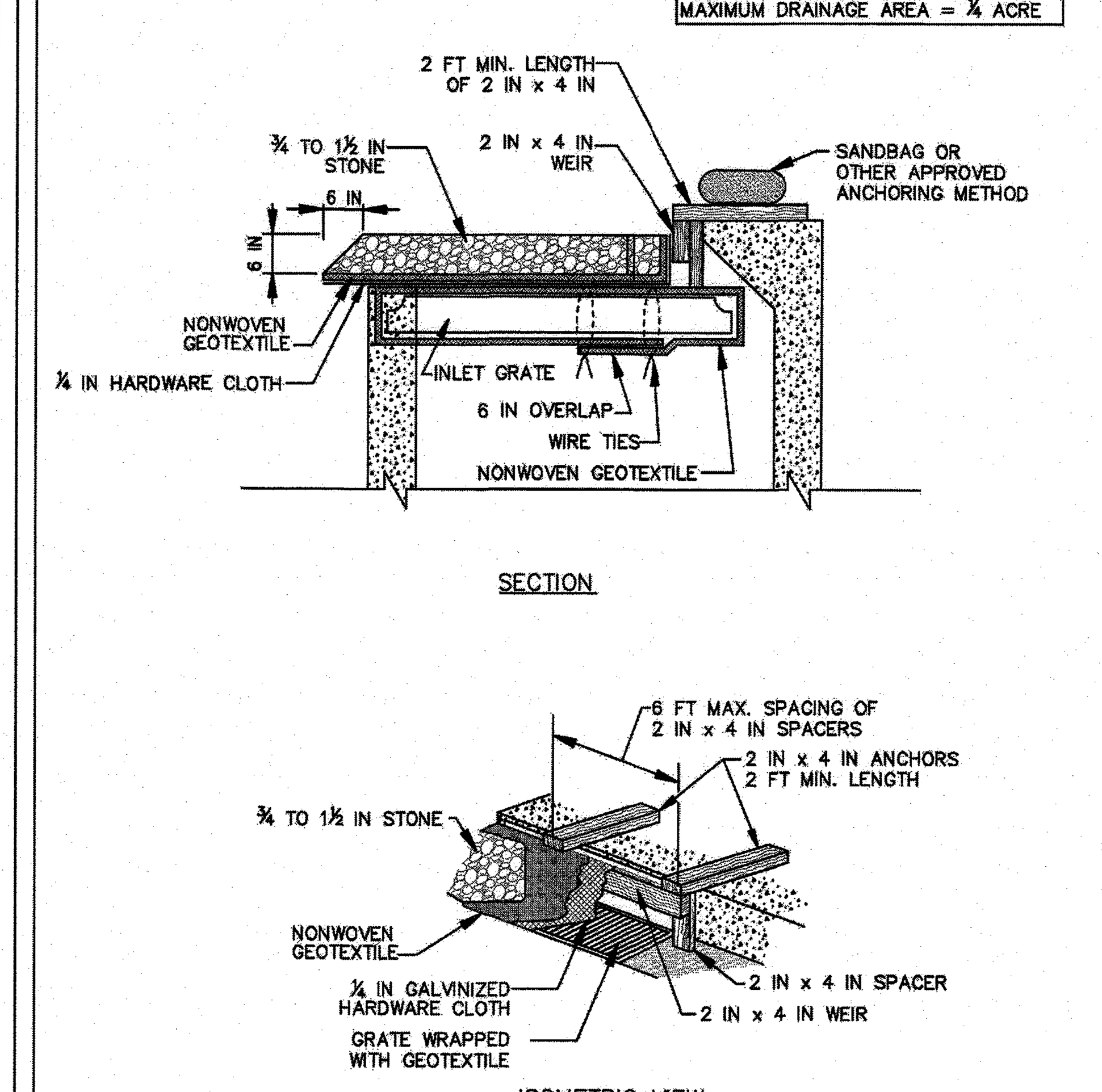
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL
COIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



1 OF 2

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

DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL
COIP

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2X4 WEIR, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
6. NAIL THE 2X4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
7. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2X4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2X4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE ¼ INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED: [signature] Howard SCD 4/4/18

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

	Date
Chief, Development Engineering Division	4-11-18
Chief, Division of Land Development	4-19-18
Director	4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS • CONSTRUCTION MANAGERS • PLANNERS • SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 3/6/2019.

DESIGN BY: CWWM			
DRAWN BY: CP			
CHECKED BY: CDK			
DATE: 3/30/2018	BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL DETAILS

AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY

BUILDING 14 - SYSTEMS INTEGRATION 3

11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
GREEN BUILDING
SHEET 58 OF 72
SDP-18-035

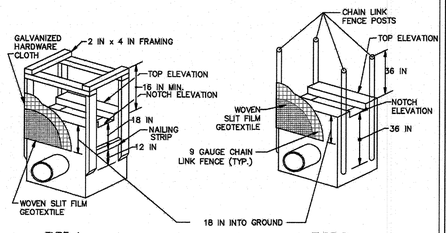
C-608
RK&K PROJECT NUMBER 17206
SCALE: As Shown

\\bdsrv05\2017\2017\17206_APL14\CADD\Plans\C-608 Erosion Sediment Control Details.dwg Mar 27, 2018 12:27pm cmitchell

DETAIL E-9-1 STANDARD INLET PROTECTION

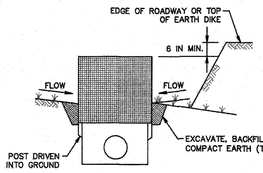
STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¾ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



TYPE A TYPE B

ISOMETRIC VIEW



SECTION FOR TYPE A AND B

1 OF 2

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

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2½ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

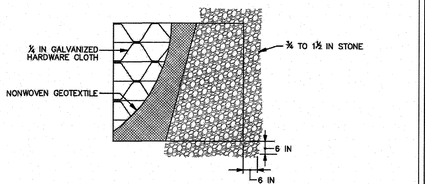
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

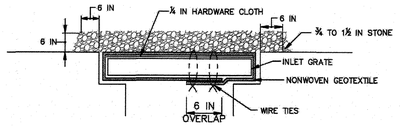
DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



PLAN / CUT AWAY VIEW



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

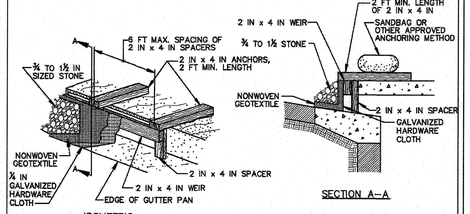
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¾ ACRE



ISOMETRIC SECTION A–A

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

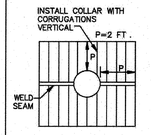
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

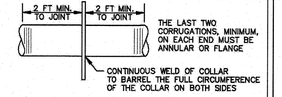
DETAIL G-2-1 TYPICAL ANTI-SEEP COLLARS

STANDARD SYMBOL

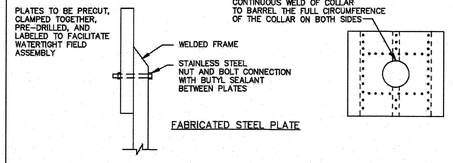
Ls = y(z+4)/(1-4Sp) = 3.78*(2+4)/(1-4*0.02) = 24.7'
P = 0.076Ls = 0.076*24.7 = 1.853
N = P/p = 1.853/2 = 0.93 which rounds up to N = 1

NOTES:
1. PLACE ANTI-SEEP COLLAR A MINIMUM OF TWO FEET FROM PIPE JOINTS.
2. USE ANTI-SEEP COLLARS CONSTRUCTED OF THE SAME MATERIAL AS THE BARREL PIPE.





CORRUGATED COLLAR WELDED IN PLACE ON BARREL SECTION



FABRICATED STEEL PLATE

COLLAR FOR FLANGE JOINT PIPE

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

DETAIL G-2-2 CORRUGATED RISER BASE

STANDARD SYMBOL

USE: 6' X 6'; X 18" BASE

CONSTRUCTION SPECIFICATIONS

1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.
3. ALL CONNECTIONS TO BE PER MDE G-2-5, COUPLERS FOR CORRUGATED STEEL PIPE.
4. THIS DETAIL TO BE USED FOR THE SEDIMENT TRAP ONLY.

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

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR

NOTES

1. DIMENSIONS:
   RISER DIAMETER: 3'
   TRASH RACK DIAMETER: 4.5'
   h = 25"
   RISER GAUGE: 12

1 OF 2

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

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR

RISER DIAM. (IN)	TRASH RACK CYLINDER DIAM. (IN)	THICKNESS (GAUGE)	h (IN)	MINIMUM SIZE SUPPORT BAR	MINIMUM TOP THICKNESS (GAUGE)	STIFFENER
12	18	16	14	#6 REBAR	16	N/A
15	21	16	15	#6 REBAR	16	N/A
18	27	16	16	#6 REBAR	16	N/A
21	30	16	19	#6 REBAR	16	N/A
24	36	16	21	#6 REBAR	14	N/A
27	42	16	21	#6 REBAR	14	N/A
36	54	14	25	#8 REBAR	12	N/A
42	60	14	27	#8 REBAR	12	N/A
48	72	12	29	1½ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
54	78	12	33	1½ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
60	90	12	37	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	8	N/A
66	96	10	41	2 IN PIPE OR 2 x 2 x 5/16 ANGLE	8	2 x 2 x ¼ ANGLE
72	102	10	44	2 IN PIPE OR 2 x 2 x 5/16 ANGLE	8	2½ x 2½ x ¼ ANGLE
78	114	10	47	2½ IN PIPE OR 2 x 2 x ¼ ANGLE	8	2½ x 2½ x ¼ ANGLE
84	120	10	50	2½ IN PIPE OR 2½ x 2½ x ¼ ANGLE	8	2½ x 2½ x 5/16 ANGLE

NOTE:
THE ABOVE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS FOR CORRUGATED METAL PIPE ONLY. CONCRETE RISERS MUST MEET THE REQUIREMENTS OF MD 378.

2 OF 2

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

DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.

PLAN VIEWS

BAFFLE DETAIL

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

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA

PLAN VIEW

SECTION A–A

PROFILE

SECTION B–B

RIPRAP CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED
Howard SCD
4/19/18

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS|CONSTRUCTION MANAGERS|PLANNERS|SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2900
Contact: John d'Epagnier
www.rkk.com

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. 20512, EXPIRATION DATE: 3/5/2018.

STATE OF MARYLAND — CHRISTOPHER DEAN DREW — PROFESSIONAL ENGINEER — 3/9/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 59 OF 72
GREEN BUILDING
SDP-18-035

C-609

RK&K PROJECT NUMBER 17206

SCALE: As Shown

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B-4 STANDARDS AND SPECIFICATIONS

FOR

VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

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

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

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

and seedbed preparation.

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. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

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. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

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. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application
   a. Apply mulch to all seeded areas immediately after seeding.
   b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

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

B-4-1 STANDARDS AND SPECIFICATIONS

FOR

INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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

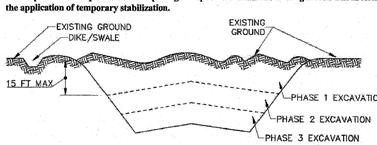

Figure B.1: Incremental Stabilization – Cut

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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

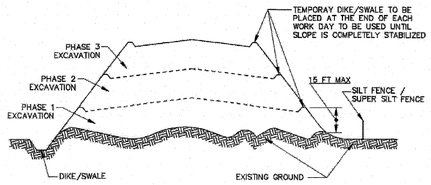

Figure B.2: Incremental Stabilization – Fill

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, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

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. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

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

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

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

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 7a
Seed Mixture (from Table B.1):

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)	Lime Rate
	Foxtail Millet	30	Feb 15–Apr 30 Aug 15–Nov 30	0.5"	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Annual ryegrass	40	May 1 – August 14	0.5"		
				"		

B-4-5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED
Howard SCD
4/4/18

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

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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 NO. 23012, EXPIRATION DATE: 3/6/2019.

STATE OF MARYLAND — JOHN CHRISTOPHER DEPAGNIER — PROFESSIONAL ENGINEER — 4/4/18

DESIGN BY:	CWWM
DRAWN BY:	CP
CHECKED BY:	CDK
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL
STABILIZATION NOTES AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 60 OF 72
GREEN BUILDING
SDP-18-035

C-610

RK&K PROJECT NUMBER 17206

SCALE: As Shown

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

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification programs of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

c. Ideal Times of Seeding for Turf Grass Mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (¼ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 7a Seed Mixture (from Table B.3): 7				Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
7	Creeping Red Fescue	60	2/15–4/30 8/15–10/31	½- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	Kentucky Bluegrass	15	2/15–4/30 8/15–10/31	¼- ½ in				
				½- ½ in				

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications
   a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than ⅓ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B-4-8 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 salvage and store soil for later use.

Criteria

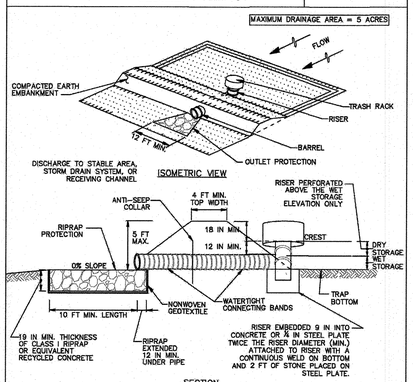
1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST–I



¼ INCH GALVANIZED HARDWARE CLOTH WITH NONWOVEN GEOTEXTILE SECURELY FASTENED TO PERFORATED RISER

NONWOVEN GEOTEXTILE
GALVANIZED HARDWARE CLOTH
RISER

NOTE:
REFER TO DETAIL G–2–1 – TYPICAL ANTI–SEEP COLLARS
REFER TO DETAIL G–2–2 – RISER BASE
REFER TO DETAIL G–2–3 – CONCENTRIC TRASH RACK AND ANTI–VORTEX DEVICE

1 OF 3

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

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST–I

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.
3. PERFORATE THE RISER WITH 1 INCH DIAMETER HOLES SPACED 6 INCHES ON CENTER WITH THE LOWEST PERFORATIONS AT THE WET STORAGE ELEVATION OR PROVIDE A HORIZONTAL OR VERTICAL DRAW–DOWN DEVICE PERFORATED ACCORDING TO APPROVED PLAN. DO NOT PERFORATE THE RISER WITHIN 6 INCHES OF THE TOP OF THE HORIZONTAL BARREL.
4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.
5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.
10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.
11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (60% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.
15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

2 OF 3

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

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST–I

PIPE OUTLET SEDIMENT TRAP ST–I, TRAP NO. 1		
DRAINAGE AREA – INTIAL	2.23	ACRES
DRAINAGE AREA – INTERIM	3.36	ACRES
DRAINAGE AREA – FINAL	3.36	ACRES
TOTAL STORAGE REQUIRED	12,096	CF
TOTAL STORAGE PROVIDED	12,668	CF
WET STORAGE REQUIRED	6,048	CF
WET STORAGE PROVIDED	6,181	CF
DRY STORAGE REQUIRED	6,048	CF
DRY STORAGE PROVIDED	6,487	CF
TRAP BOTTOM ELEVATION	376.00	FT
TRAP BOTTOM DIMENSIONS	81.6x39.7	FT x FT
RISER CREST (DRY STORAGE) ELEVATION	378.25	FT
OUTLET (WET STORAGE) ELEVATION	376.75	FT
CLEANOUT ELEVATION	375	FT
TOP OF EMBANKMENT ELEVATION	380.75	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	11.5	FT
PRINCIPAL SPILLWAY MATERIAL (BARREL, RISER, ANTI–SEEP COLLAR)	RISER W/ OUTFALL PIPE & ANTI-SEEP COLLARS	
RISER DIAMETER	36	IN
BARREL DIAMETER	27	IN
TRASH RACK DIAMETER	54	IN
TRASH RACK HEIGHT	24	IN
ANTI–SEEP COLLAR DIMENSIONS	Ls = 24.7', P = 2', N = 1	FT
OUTLET PROTECTION – LENGTH	NA	FT
OUTLET PROTECTION – WIDTH	NA	FT
OUTLET PROTECTION – DEPTH	NA	IN

3 OF 3

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL & SMALL POND APPROVAL BY THE HOWARD SOIL CONSERVATION DISTRICT
APPROVED Howard SCD 4/4/18

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18
Chief, Division of Land Development — Date 4-12-18
Director — Date 4-19-18

RK&K
RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
700 East Pratt Street, Suite 500
Baltimore, MD 21202
Ph: 410.728.2800 Contact: John d'Epagnier
www.rkk.com

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. 23012, EXPIRATION DATE: 9/6/2019.

STATE OF MARYLAND — JOHN DAVID d'EPAGNIER — PROFESSIONAL ENGINEER — 9/6/19

DESIGN BY: CWWM
DRAWN BY: CP
CHECKED BY: CDK
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

EROSION SEDIMENT CONTROL STABILIZATION NOTES & DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 61 OF 72
GREEN BUILDING
SDP-18-035

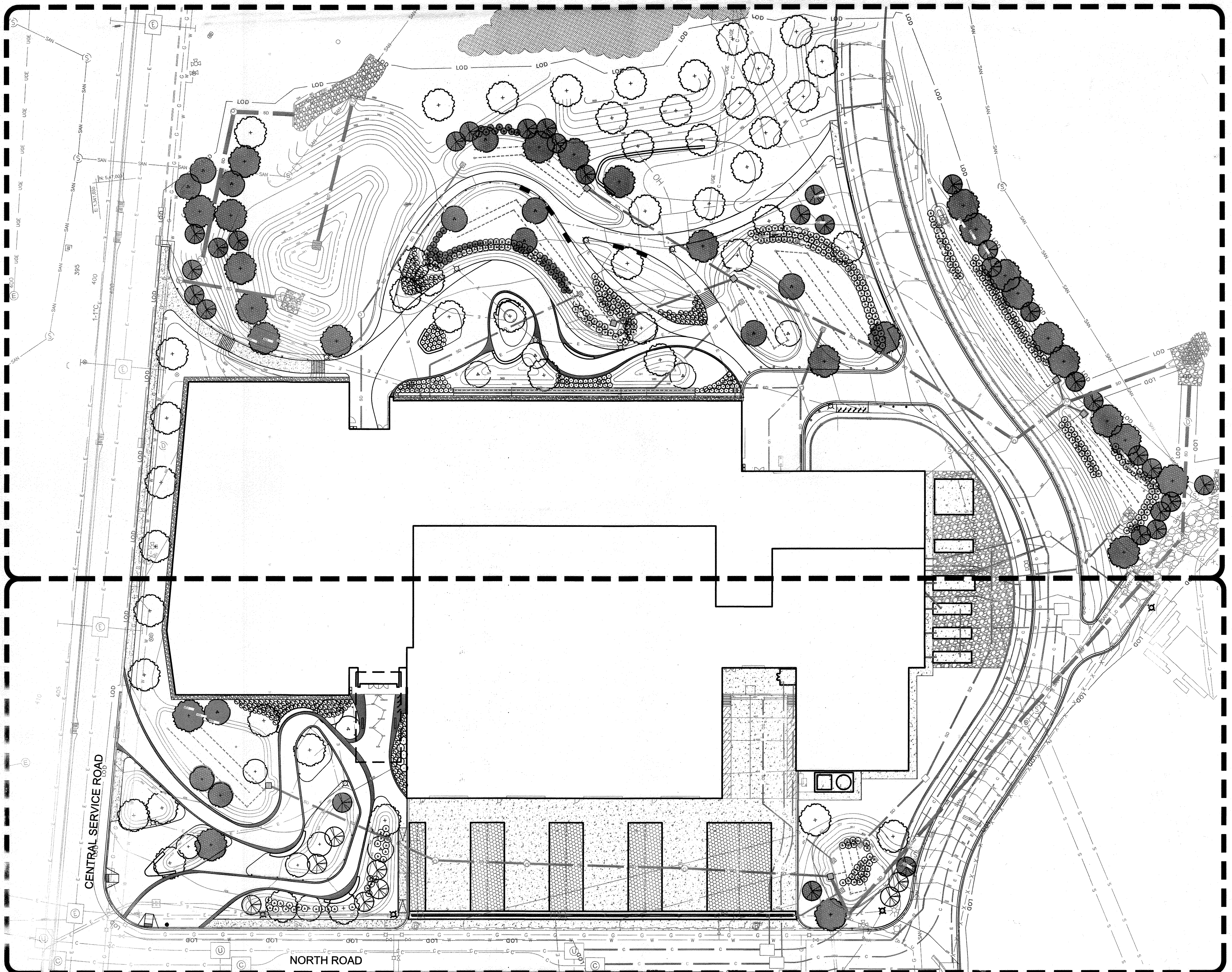
C-611

RK&K PROJECT NUMBER 17206

SCALE: As Shown

\\balsrv05\v2017\2017\17206_APL14\CADD\Plans\C-611 Erosion Sediment Control Stabilization Notes.dwg Mar 27, 2018 12:28pm cmitchell

L-101 NORTH HARDSCAPE PLAN / L-301 NORTH PLANTING PLAN



L-102 SOUTH HARDSCAPE PLAN / L-302 SOUTH PLANTING PLAN

1 SITE KEY PLAN

1" = 30'

0 15' 30' 60'

N

LANDSCAPE SHEET LIST

L-000	KEY PLAN
L-101	NORTH HARDSCAPE PLAN
L-102	SOUTH HARDSCAPE PLAN
L-201	HARDSCAPE DETAILS
L-202	HARDSCAPE DETAILS
L-211	SITE AMENITIES
L-301	NORTH LANDSCAPE PLANTING PLAN
L-302	SOUTH LANDSCAPE PLANTING PLAN
L-303	LANDSCAPE PLANTING ENLARGEMENTS
L-304	LANDSCAPE PLANTING ENLARGEMENTS
L-400	LANDSCAPE PLANTING DETAILS

CERTIFICATION NOTE:

1. I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER'S/OWNER'S NAME

DEVELOPER'S/OWNER'S NAME

No As-Built Information in this sheet
5/20/2022

S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-000 Key Plan.dwg Mar 28, 2018 4:56pm ustum

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4-11-18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3711, EXPIRATION DATE: 3/13/2019.

STATE OF MARYLAND — RICHARD L. JONES, JR. — NO. 3711 — REGISTERED LANDSCAPE ARCHITECT

DESIGN BY: RJ/PG
DRAWN BY: AS
CHECKED BY: RC
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE KEY PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONE: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 62 OF 72

GREEN BUILDING

L-000

MRA PROJECT NUMBER 17056

SCALE: As Shown

SDP-18-035

1 NORTH HARDSCAPE PLAN

1" = 20'

0 10' 20' 40'

N

HARDSCAPE KEY

PAVING

- P1 (A) — 4 / L-201 — 03 30 53 — INTEGRAL COLOR CONCRETE
- P1 (B) — 5 / L-201 — 03 30 53 — INTEGRAL COLOR CONCRETE BAND
- P2 — 2 / L-201 — 32 14 00 — VEHICULAR UNIT PAVER
- P3 — 1 / L-201 — 32 14 00 — UNIT PAVER
- P4 — 6 / L-201 — 32 12 16 — ASPHALT PATH
- P5 — 3 / L-201 — 32 14 00 — COBBLESTONE
- P6 — 7 / L2-01 — 32 17 26 — DETECTABLE WARNING PAVER
- P7 — 3 / L-202 — 32 14 00 — MAINTENANCE STRIP

STRUCTURE

- W1 — 1 / L-202 — PRECAST RETAINING WALL (WALL 1)
- W2 — 1 / L-202 — PRECAST RETAINING WALL (WALL 2)
- W3 — 1 / L-202 — PRECAST RETAINING WALL (WALL 3)
- W4 — 1 / L-202 — PRECAST RETAINING WALL (WALL 4)
- W5 — 1 / L-202 — PRECAST RETAINING WALL (WALL 5)
- W6 — 2 / L-202 — PRECAST SEAT WALL (WALL 6)
- W7 — 2 / L-202 — PRECAST SEAT WALL (WALL 7)
- W8 — 2 / L-202 — PRECAST SEAT WALL (WALL 8)
- W9 — 9 / L-201 — CAST IN PLACE CONCRETE RETAINING WALL (WALL 9)

SITE FURNISHINGS

- B1 — 5 / L-211 — 32 33 00 — BENCH
- BR — 2 / L-211 — 32 33 00 — BIKE RACK
- LR — 3 / L-211 — 32 33 00 — LITTER/RECYCLING RECEPTACLE
- BO — 5 / L-211 — 32 33 00 — SITE BOLLARD, SEE CIVIL DOCUMENTS FOR MOUNTING DETAIL
- L1 — 6 / L-211 — 26 56 00 — PEDESTRIAN LIGHT (XA)
- L2 — 4 / L-211 — 26 56 00 — LIGHT BOLLARD (XB)

NOTES:

1. PA = PLANTING AREA
2. MB= MICROBIORETENTION AREA
3. SEE CIVIL DRAWINGS FOR UTILITIES, DRAINAGE, AND GRADING.
4. SEE CIVIL DRAWINGS FOR VEHICULAR/SERVICE AREAS.
5. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL SITE PLAN AND SITE LIGHTING INFORMATION/SPECS.

No As-Built Information in this sheet 5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

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STATE OF MARYLAND — REGISTERED LANDSCAPE ARCHITECT — NO. 3711

DESIGN BY: RJ/PG
DRAWN BY: AS
CHECKED BY: RC
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

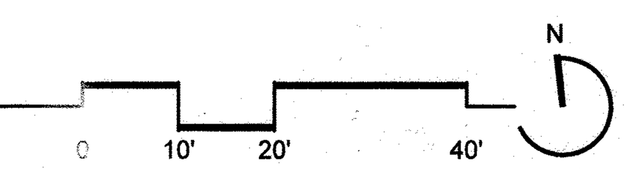
NORTH HARDSCAPE PLAN AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 63 OF 72
GREEN BUILDING

L-101
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035

SEE L-101 - N HARDSCAPE PLAN

1 SOUTH HARDSCAPE PLAN
1" = 20'



HARDSCAPE KEY

PAVING

- P1 (4 / L-201) 03 30 53 — INTEGRAL COLOR CONCRETE
- P1 (5 / L-201) 03 30 53 — INTEGRAL COLOR CONCRETE BAND
- P2 (2 / L-201) 32 14 00 — VEHICULAR UNIT PAVER
- P3 (1 / L-201) 32 14 00 — UNIT PAVER
- P4 (6 / L-201) 32 12 16 — ASPHALT PATH
- P5 (3 / L-201) 32 14 00 — COBBLESTONE
- P6 (7 / L2-01) 32 17 26 — DETECTABLE WARNING PAVER
- P7 (3 / L-202) 32 14 00 — MAINTENANCE STRIP

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- W3 (1 / L-202) — PRECAST RETAINING WALL (WALL 3)
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- W8 (2 / L-202) — PRECAST SEAT WALL (WALL 8)
- W9 (9 / L-201) — CAST IN PLACE CONCRETE RETAINING WALL (WALL 9)

SITE FURNISHINGS

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- BR (2 / L-211) 32 33 00 — BIKE RACK
- LR (3 / L-211) 32 33 00 — LITTER/RECYCLING RECEPTACLE
- BO (5 / L-211) 32 33 00 — SITE BOLLARD, SEE CIVIL DOCUMENTS FOR MOUNTING DETAIL
- L1 (6 / L-211) 26 56 00 — PEDESTRIAN LIGHT (XA)
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4. SEE CIVIL DRAWINGS FOR VEHICULAR/SERVICE AREAS.
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No As-Built Information in this sheet
5/20/2022

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Chief, Division of Land Development — Date 4-19-18
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STATE OF MARYLAND — RICHARD N. JONES JR. — REGISTERED LANDSCAPE ARCHITECT — NO. 3711

DESIGN BY: RJ/PG
DRAWN BY: AS
CHECKED BY: RC
DATE: 3/30/2018

BY	NO.	REVISION	DATE

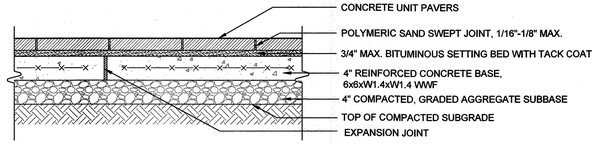
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SOUTH HARDSCAPE PLAN AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 64 OF 72
GREEN BUILDING

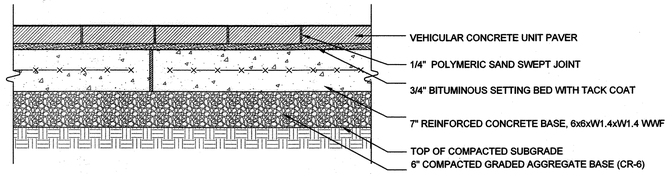
L-102
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035

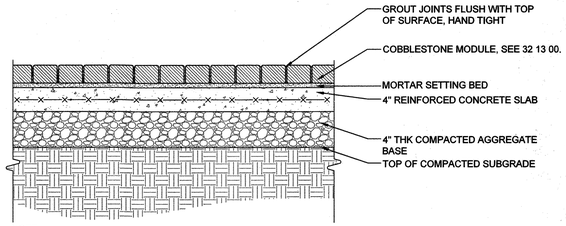
S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-102 S Hardscape Plan.dwg Mar 28, 2018 4:56pm asturm



1 CONCRETE UNIT PAVERS
1"=1'-0"

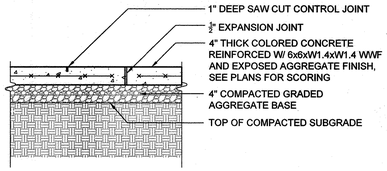


2 VEHICULAR UNIT PAVERS
1"=1'-0"



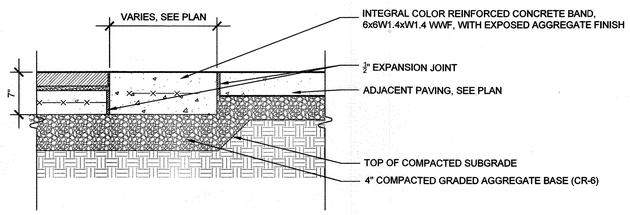
NOTE:
1. PROVIDE EXPANSION JOINT IN CONCRETE BASE OF THE PAVERS @ 20' O.C. MAX.
2. EXPANSION JOINT TO GO THROUGH CONCRETE BASE ONLY

3 COBBLESTONE
1"=1'-0"

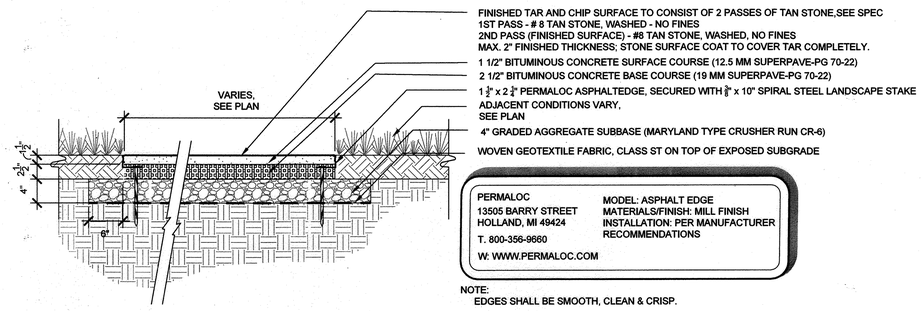


NOTE:
ALL CONCRETE PAVEMENT EDGES SHALL BE SMOOTH AND CLEAN AND NOT BE SEGMENTED.

4 INTEGRAL COLOR CONCRETE
3/4"=1'-0"



5 INTEGRAL COLOR CONCRETE BAND
1"=1'-0"

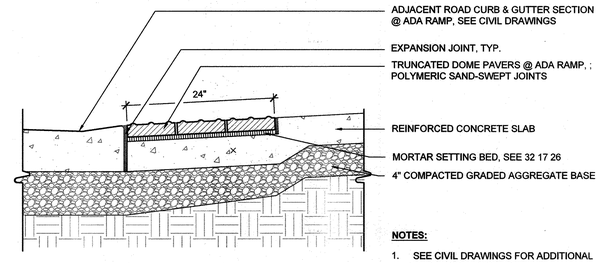


PERMALOC
13505 BARRY STREET
HOLLAND, MI 49424
T. 800-356-9660
W: WWW.PERMALOC.COM

MODEL: ASPHALT EDGE
MATERIALS/FINISH: MILL FINISH
INSTALLATION: PER MANUFACTURER RECOMMENDATIONS

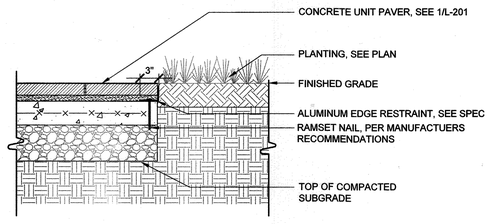
NOTE:
EDGES SHALL BE SMOOTH, CLEAN & CRISP.

6 ASPHALT PATH
1"=1'-0"

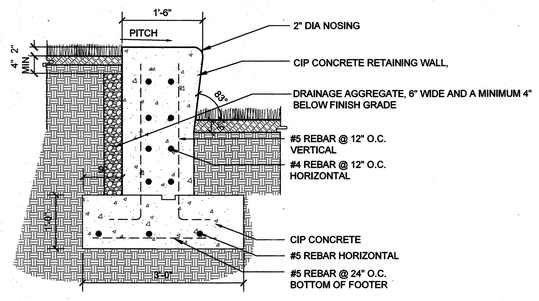


NOTES:
1. SEE CIVIL DRAWINGS FOR ADDITIONAL PEDESTRIAN RAMP DETAILS.

7 DETECTABLE WARNING PAVERS
1"=1'-0"



8 EDGE RESTRAINT @ PAVING
1"=1'-0"



NOTE:
1. REFER TO PLAN L-110 FOR LAYOUT OF WALLS
2. CONTRACTOR SHALL PROVIDE FIELD MOCKUP TO BE REVIEWED BY LANDSCAPE ARCHITECT.
3. FINISHED SURFACES/FACES SHALL NOT HAVE ANY BLEMISHES

9 CAST IN PLACE CONCRETE RETAINING WALL
3/4"=1'-0"

NO As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3711, EXPIRATION DATE: 3/13/2019 .

DESIGN BY:	RJ/PG
DRAWN BY:	AS
CHECKED BY:	RC
DATE:	3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

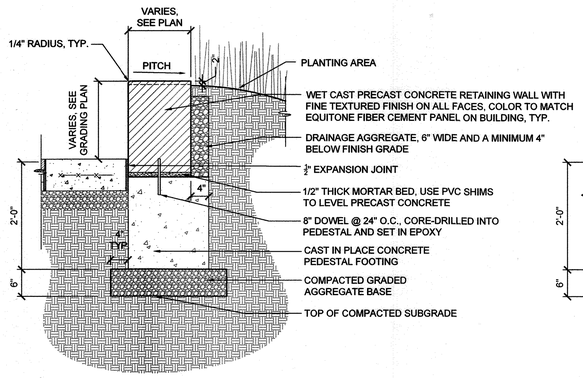
HARDSCAPE DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 65 OF 72 GREEN BUILDING

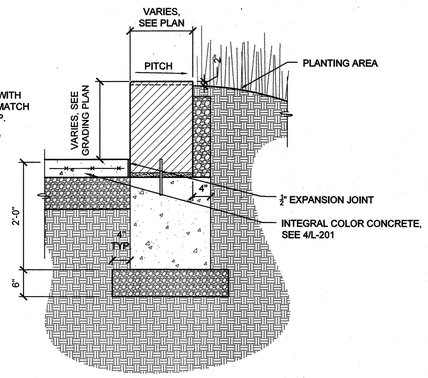
L-201
MRA PROJECT NUMBER 17056
SCALE As Shown

SDP-18-035

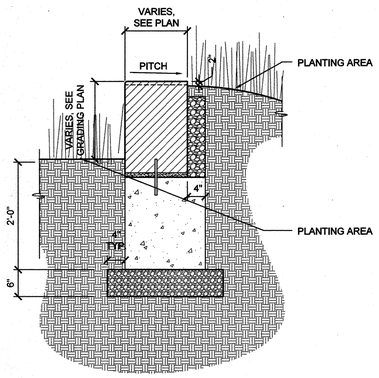
S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-201 Hardscape Details.dwg Mar 28, 2018 4:57pm asturm



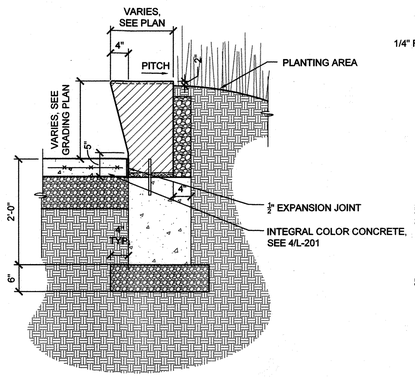
WALL 1



WALL 2



WALL 3



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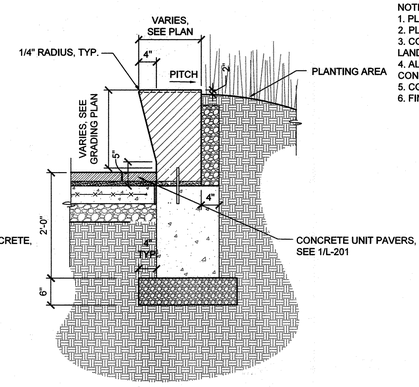
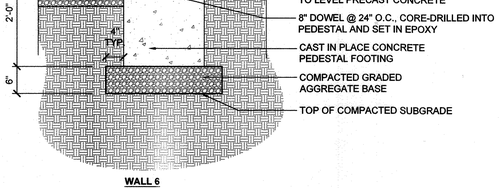


WALL 5

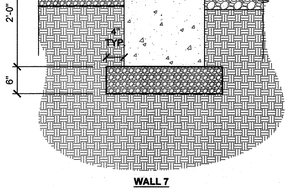
NOTE:
1. PLACE ALL PRECAST BLOCKS WITH TOP LEVEL FLUSHED TO EACH OTHER
2. PLACE PRECAST 4" BELOW FINISHED GRADE
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO BE REVIEWED BY LANDSCAPE ARCHITECT.
4. ALL PIECES TO BE MACHINE SET WITH REINFORCEMENT AND CONSTRUCTION ABLE TO WITHSTAND LIFTING.
5. CONNECTION TO BE MADE BY PRECAST MANUFACTURER.
6. FINISHED SURFACES/FACES SHALL NOT HAVE ANY BLEMISHES

1 PRECAST CONCRETE RETAINING WALL

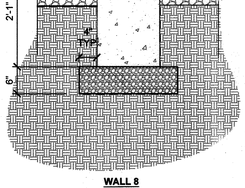
3/4"=1'-0"



WALL 6



WALL 7

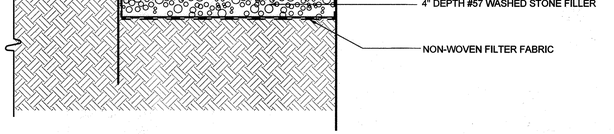


WALL 8

NOTE:
1. PLACE ALL PRECAST BLOCKS WITH TOP LEVEL FLUSHED TO EACH OTHER
2. PLACE PRECAST 4" BELOW FINISHED GRADE
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO BE REVIEWED BY LANDSCAPE ARCHITECT.
4. ALL PIECES TO BE MACHINE SET WITH REINFORCEMENT AND CONSTRUCTION ABLE TO WITHSTAND LIFTING.
5. CONNECTION TO BE MADE BY PRECAST MANUFACTURER.
6. FINISHED SURFACES/FACES SHALL NOT HAVE ANY BLEMISHES

2 PRECAST CONCRETE SEAT WALL

3/4"=1'-0"



3 MAINTENANCE STRIP

1"=1'-0"

No As-Built Information in this Sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

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STATE OF MARYLAND — RICHARD K. JOHNSON — NO. 3711 — REGISTERED LANDSCAPE ARCHITECT

DESIGN BY:	NO.	REVISION	DATE
RJ/PG			
DRAWN BY: AS			
CHECKED BY: RC			
DATE: 3/20/2018			

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

HARDSCAPE DETAILS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 18 ZONED: PEC
ELECTION DISTRICT 5 - - HOWARD COUNTY, MARYLAND
SHEET 66 OF 72
GREEN BUILDING

L-202

MRA PROJECT NUMBER 17056

SCALE: As Shown

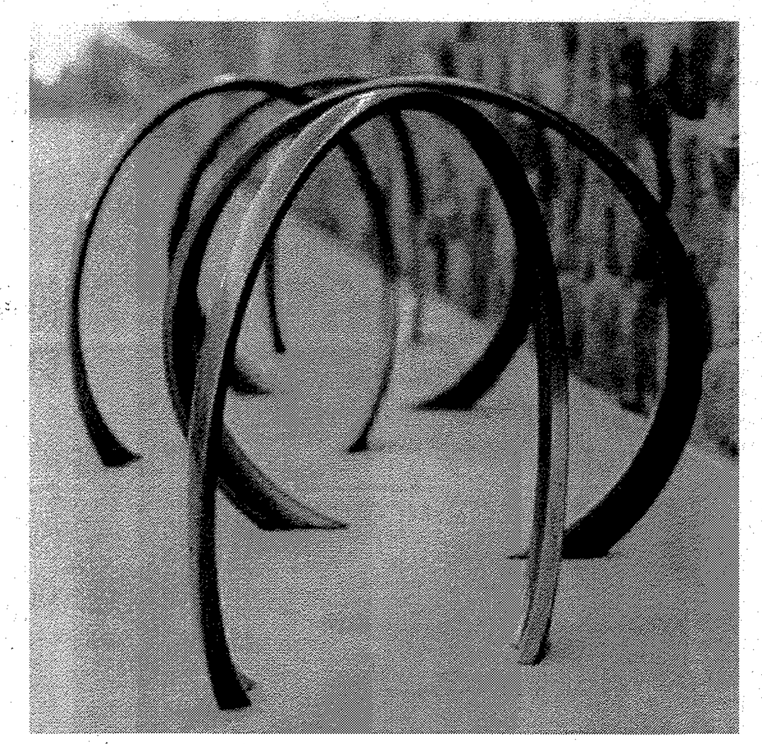
SDP-18-035

S:\17 Projects\17036 Johns Hopkins Applied Physics\CAD\MRA'17 SDP Mylar.dwg Mar 28, 2018 - 4:57pm asturm

MODERN DESIGN & SITE FURNISHINGS
700 GOLDMAN DRIVE
CREAM RIDGE, NJ 08514
P: 609.498.7302
W: WWW.MDSFCO.COM

MODEL: AVIELA (1800 MM)
MATERIALS/FINISH: POWDER COATED GALVANIZED STEEL AND WOOD
QUANTITY:
INSTALLATION: SURFACE MOUNT PER MANUFACTURER RECOMMENDATIONS

1 BENCH
N.T.S.



LANDSCAPE FORMS, INC.
7800 E. MICHIGAN AVENUE
KALAMAZOO, MI 49048
P: 800.430.6209
W: WWW.LANDSCAPEFORMS.COM

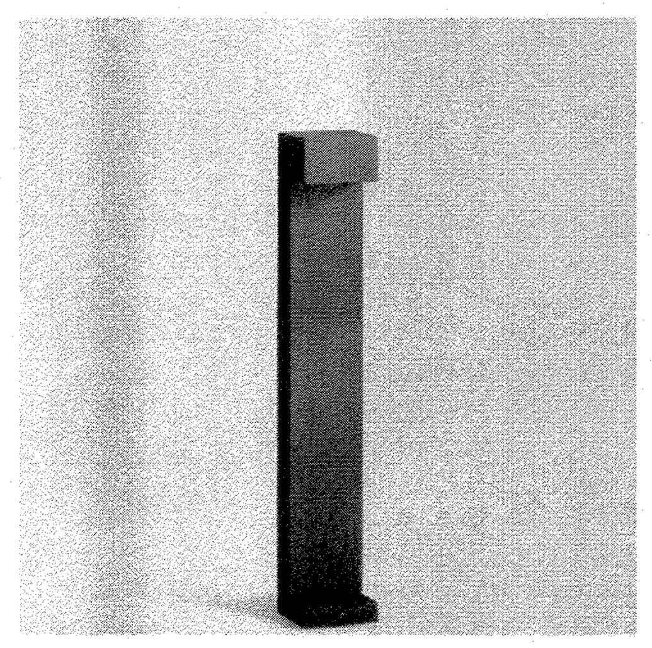
MODEL: LOOP BIKE RACK
MATERIALS/FINISH: POWDERCOATED STEEL, SILVER
QUANTITY:
INSTALLATION: PER MANUFACTURER RECOMMENDATIONS

2 BIKE RACK
N.T.S.

MODERN DESIGN & SITE FURNISHINGS
700 GOLDMAN DRIVE
CREAM RIDGE, NJ 08514
P: 609.498.7302
W: WWW.MDSFCO.COM

MODEL: PRAX 115
MATERIALS/FINISH: STEEL OUTER FRAME, ACACIA WOOD
QUANTITY: 2 PER LOCATION
INSTALLATION: INSTALL PER MANUFACTURER RECOMMENDATIONS

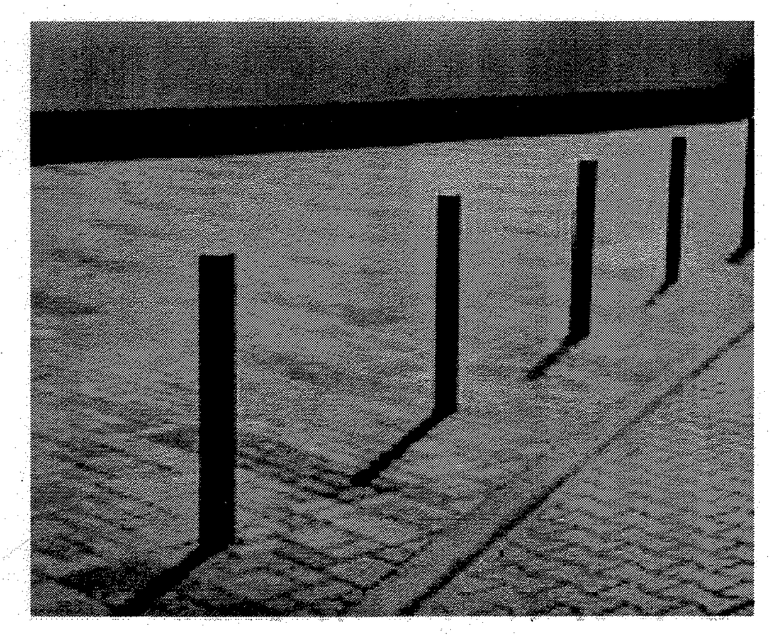
3 LITTER/RECYCLING RECEPTACLE
N.T.S.



BEGA-US
1000 BEGA WAY
CARPINTERIA, CA 93013
805.684.0533
www.bega-us.com

MODEL: 88 659
MATERIALS/FINISH: POWDERCOATED STEEL TO MATCH VALMONT INDUSTRIES POLE

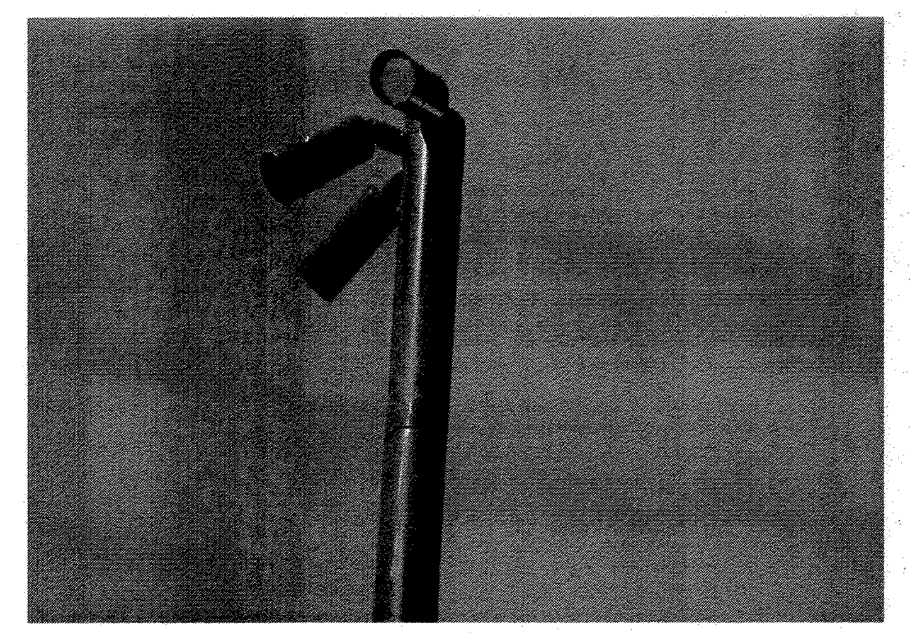
4 LIGHT BOLLARD
NTS



MODERN DESIGN & SITE FURNISHINGS
700 GOLDMAN DRIVE
CREAM RIDGE, NJ 08514
P: 609.498.7302
W: WWW.MDSFCO.COM

MODEL: ELIAS
MATERIALS/FINISH: POWDER COATED
QUANTITY:
INSTALLATION: SURFACE MOUNT PER MANUFACTURER RECOMMENDATIONS

5 SITE BOLLARD
NTS



POLE MODEL: R-150840606T4-D3-DCG-_-DT
HEIGHT: 16'-0" WITH (3) FIXTURES AT 15'-5"

VALMONT INDUSTRIES
28800 IDA STREET
PO BOX 358
VALLEY, NE 68064
800.825.6668
www.valmontstructures.com

FIXTURE MODEL: DE-LED-X59-WFL-SAP-9-11-A
(3) FIXTURES AT 15'-5"

B-K LIGHTING
4029 BRICKYARD DR
MADERA, CA 93636
559.438.5800
www.bklighting.com

6 PEDESTRIAN LIGHT
NTS

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4/11/18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3711, EXPIRATION DATE: 3/13/2019.

STATE OF MARYLAND — RICHARD M. JONES JR. — NO. 3711 — REGISTERED LANDSCAPE ARCHITECT

DESIGN BY: RJ/PG
DRAWN BY: AS
CHECKED BY: RC
DATE: 3/30/2018

BY	NO.	REVISION	DATE

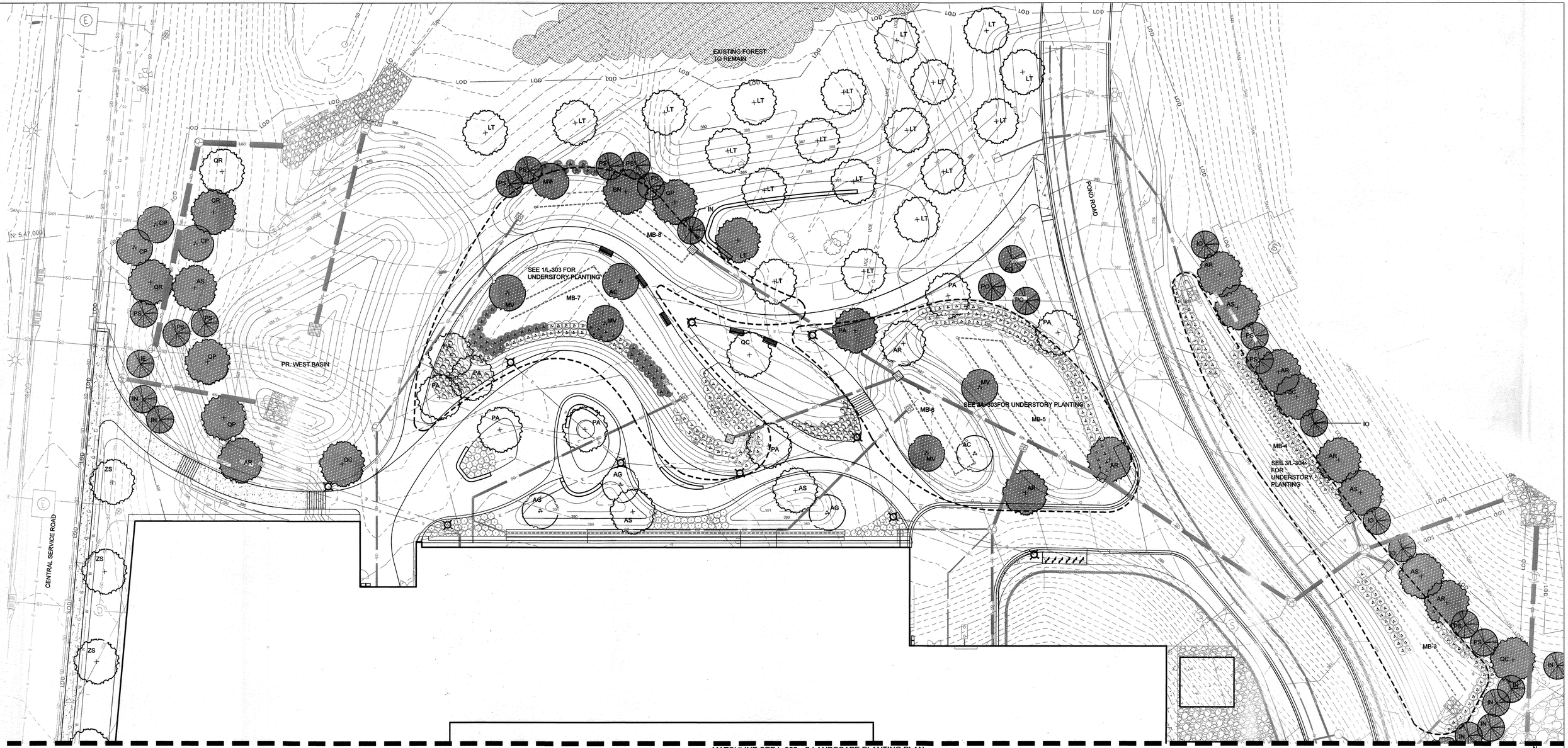
OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SITE AMENITIES AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 67 OF 72
GREEN BUILDING

L-211
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035



1 LANDSCAPE PLANTING PLAN

1" = 20'

PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		SHADE TREES			
8	AR	Acer rubrum 'Red Sunset' Red Sunset Maple	2.5" Cal	B&B	Central Leader Full Crown
6	AS	Acer saccharum 'Green Mountain' Green Mountain Sugar Maple	2.5" Cal	B&B	Central Leader Full Crown
1	BN	Betula nigra 'Dura Heat' Dura Heat River Birch	10'-12' Ht.	B&B	Multi-Stem, 3-5 canes Matched
20	LT	Liriodendron tulipifera Tulip Poplar	2.5"-3" Cal.	B&B	Central Leader Matched
9	PA	Platanus x acerifolia 'Morton Circle' Exclamation Planetree	2.5" Cal	B&B	Central Leader Full Crown
3	QR	Quercus rubra Northern Red Oak	2.5"-3" Cal.	B&B	Centeral Leader Matched
3	QP	Quercus phellos Willow Oak	2.5"-3" Cal.	B&B	Central Leader Matched
3	ZS	Zelkova serrata 'Village Green' Village Green Japanese Zelkova	2.5" Cal	B&B	Central Leader Full Crown
		ORNAMENTAL TREES			
2	AC	Amelanchier canadensis Shadblow Serviceberry	8'-10' Ht.	B&B	Multi-Stem, 3-5 canes Matched
3	AG	Acer grieseum Paperbark Maple	2" Cal.	B&B	Central Leader
3	CP	Carpinus caroliniana American Hornbeam	2" -2 1/2" Cal.	B&B	Central Leader
5	MV	Magnolia virginiana Sweetbay Magnolia	8'-10' Ht.	B&B	Multi-Stem, 3-5 canes Matched
		EVERGREEN TREES			
1	IE	Ilex x 'Edward J. Stevens' Edward J. Stevens Holly	6'-8' Ht.	B&B	Full Matched
8	IN	Ilex x 'Nelly R. Stevens' Nelly R. Stevens Holly	6'-8' Ht.	B&B	Full Matched
4	IO	Ilex opaca American Holly	6'-8' Ht.	B&B	Full Matched
3	PO	Picea omorika Serbian Spruce	6'-8' Ht.	B&B	Full Matched
13	PS	Pinus strobus Eastern White Pine	6'-8' Ht.	B&B	Full Matched

NOTE:
SHADED PLANTS ALONG STORMWATER MANAGEMENT AREAS REPRESENT PLANTS REQUIRED BY HOWARD COUNTY LANDSCAPE MANUAL.

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3711, EXPIRATION DATE: 3/13/2019.

STATE OF MARYLAND — RICHARD KYKIEL — NO. 3711 — LANDSCAPE ARCHITECT

DESIGN BY:	RJ/PG
DRAWN BY:	AS
CHECKED BY:	RC
DATE:	3/28/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

NORTH LANDSCAPE PLANTING PLAN AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONE: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 68 OF 72 GREEN BUILDING

L-301

MRA PROJECT NUMBER 17056

SCALE: As Shown

SDP-18-035

S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-301 N Landscape Planting Plan.dwg Mar 28, 2018 4:57pm osturm

1 LANDSCAPE PLANTING PLAN

1" = 20'

0 10' 20' 40'

N

PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		SHADE TREES			
2	AR	Acer rubrum 'Red Sunset' Red Sunset Maple	2.5" Cal	B&B	Central Leader Full Crown
1	AS	Acer saccharum 'Green Mountain' Green Mountain Sugar Maple	2.5" Cal	B&B	Central Leader Full Crown
3	GT	Gleditsia triacanthos var. inermis 'Shademaster' Shademaster Honeylocust	2.5" Cal	B&B	Central Leader Full Crown
5	PA	Platanus x acerifolia 'Morton Circle' Exclamation Planetree	2.5" Cal	B&B	Central Leader Full Crown
3	ZS	Zelkova serrata 'Village Green' Village Green Japanese Zelkova	2.5" Cal	B&B	Central Leader Full Crown

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		ORNAMENTAL TREES			
5	PR	Prunus serrulata 'Kwanzan' Kwanzan Cherry	2" Cal.	B&B	Single Stem Full Crown

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		EVERGREEN TREES			
6	IN	Ilex x 'Nelly R Stevens' Nelly R Stevens Holly	6'-8' Ht.	B&B	Full Matched
5	PO	Picea omorika Serbian Spruce	6'-8' Ht.	B&B	Full Matched

NOTE:
SHADED PLANTS ALONG STORMWATER MANAGEMENT AREAS REPRESENT PLANTS REQUIRED BY THE HOWARD COUNTY LANDSCAPE MANUAL.

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	Date 4-11-18
Chief, Division of Land Development	Date 4-19-18
Director	Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

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STATE OF MARYLAND — RICHARD W. JONES JR. — NO. 3711 — LICENSED LANDSCAPE ARCHITECT

DESIGN BY: RJ/PG
DRAWN BY: AS
CHECKED BY: RC
DATE: 3/30/2018

BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

SOUTH LANDSCAPE PLANTING PLAN
AS-BUILT
JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 69 OF 72
GREEN BUILDING

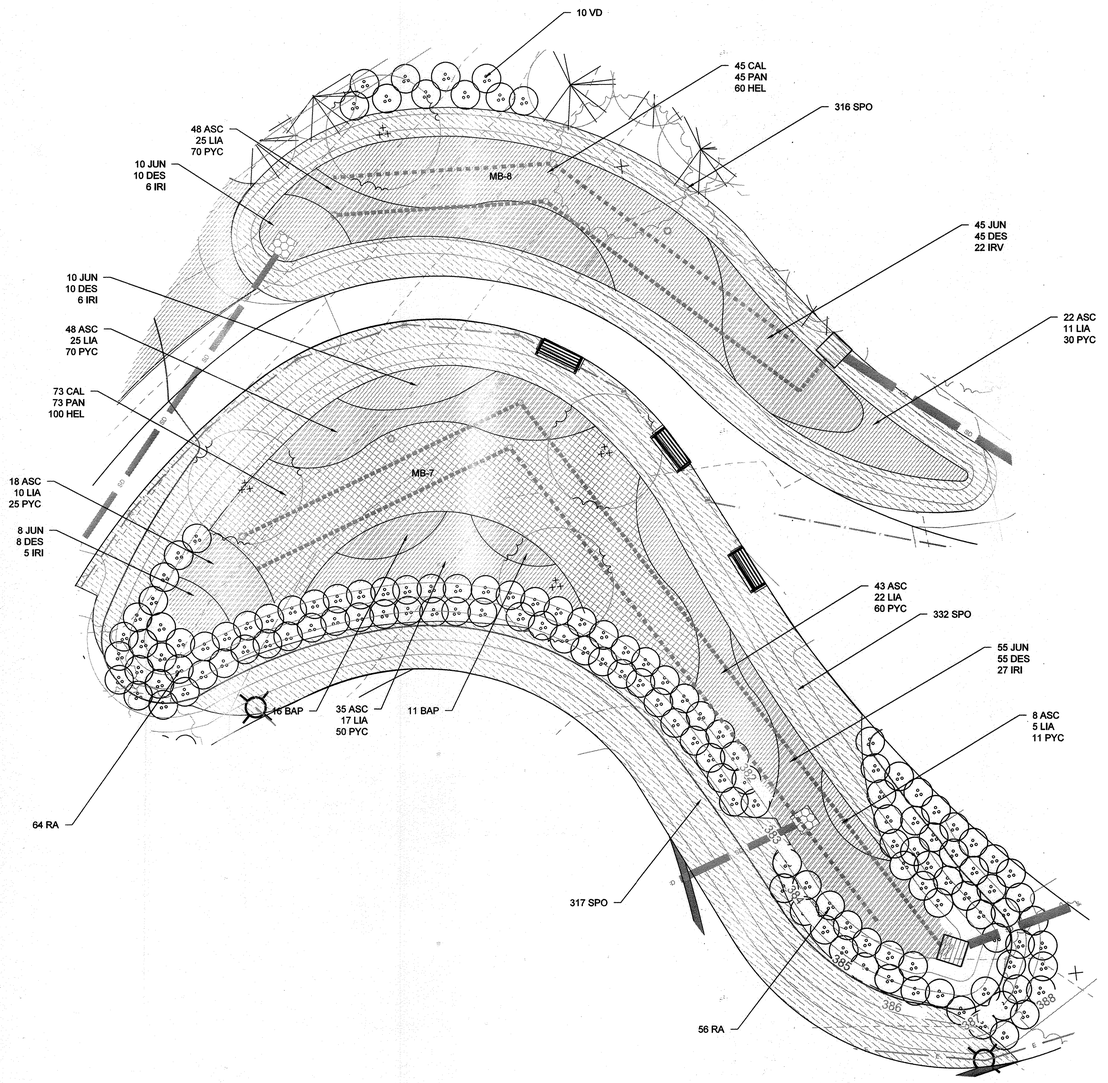
L-302
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-025

S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-302 S Landscape Planting Plan.dwg Mar 28, 2018 4:58pm asturm

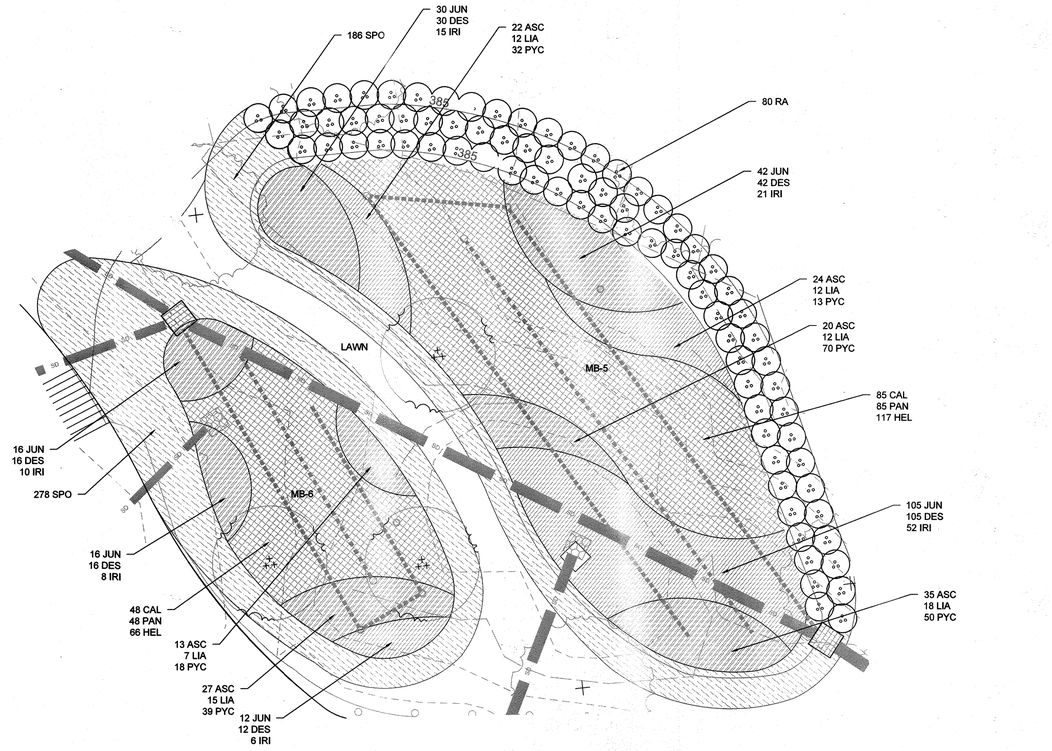
PLANT SCHEDULE: THIS SHEET ONLY

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		SHRUBS			
195	RA	Rhus aromatica 'Gro Low' Dwarf Fragrant Sumac	#3	Cont.	4' O.C.
10	VD	Viburnum dentatum 'Blue Muffin' ARrowood Viburnum	#5	Cont.	24" Ht.
		PERENNIALS / GROUNDCOVERS / GRASSES			
363	ASC	Asclepias tuberosa Butterfly Weed	SP#4	Cont.	18" O.C.
27	BAP	Baptisia australis False Indigo	#1	Cont.	24" O.C.
251	CAL	Calamagrostis canadense Canada Bluejoint	#1	Cont.	30" O.C.
349	DES	Deschampsia cespitosa Tufted Hairgrass	#1	Cont.	18" O.C.
343	HEL	Heliopsis helianthoides 'Summer Sun' False Sunflower	#1	Cont.	18" O.C.
172	IRV	Iris versicolor Blue Flag Iris	#1	Cont.	18" O.C.
349	JUN	Juncus effusus Soft Rush	#1	Cont.	18" O.C.
179	LIA	Liatris spicata Gayfeather	#1	Cont.	18" O.C.
251	PAN	Panicum virgatum Swtichgrass	#1	Cont.	30" O.C.
538	PYC	Pycnanthemum muticum Mountainmint	#1	Cont.	15" O.C.
1429	SPO	Sporobolus heterolepis Prairie Dropseed	#1	Cont.	24" O.C.



1 PLANTING ENLARGEMENT
1" = 10'

0 5' 10' 20' N



2 PLANTING ENLARGEMENT
1" = 10'

0 5' 10' 20' N

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

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DESIGN BY:	BY	NO.	REVISION	DATE
RJ/PG				
DRAWN BY: AS				
CHECKED BY: RC				
DATE: 3/30/2018				

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD
LAUREL, MARYLAND 20723

LANDSCAPE PLANTING ENLARGEMENTS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 70 OF 72
GREEN BUILDING

L-303
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035

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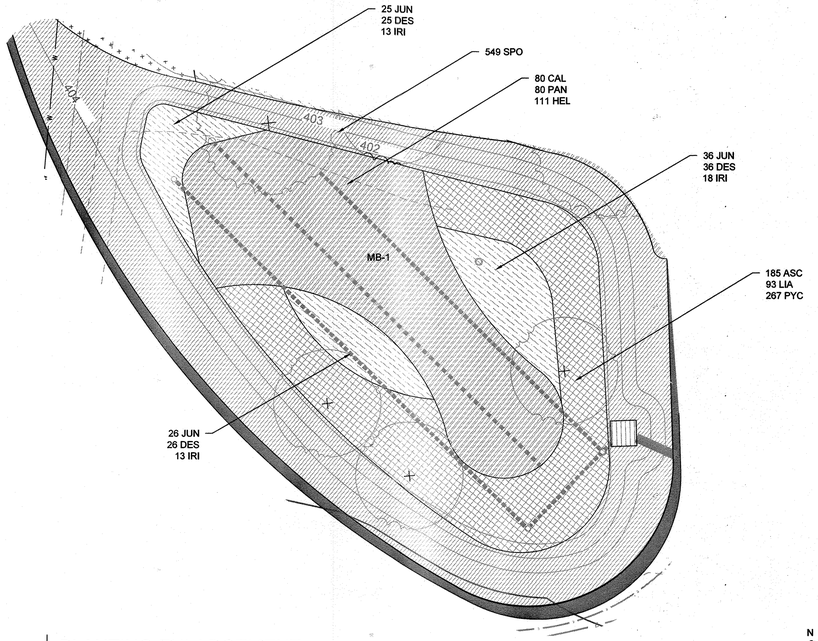
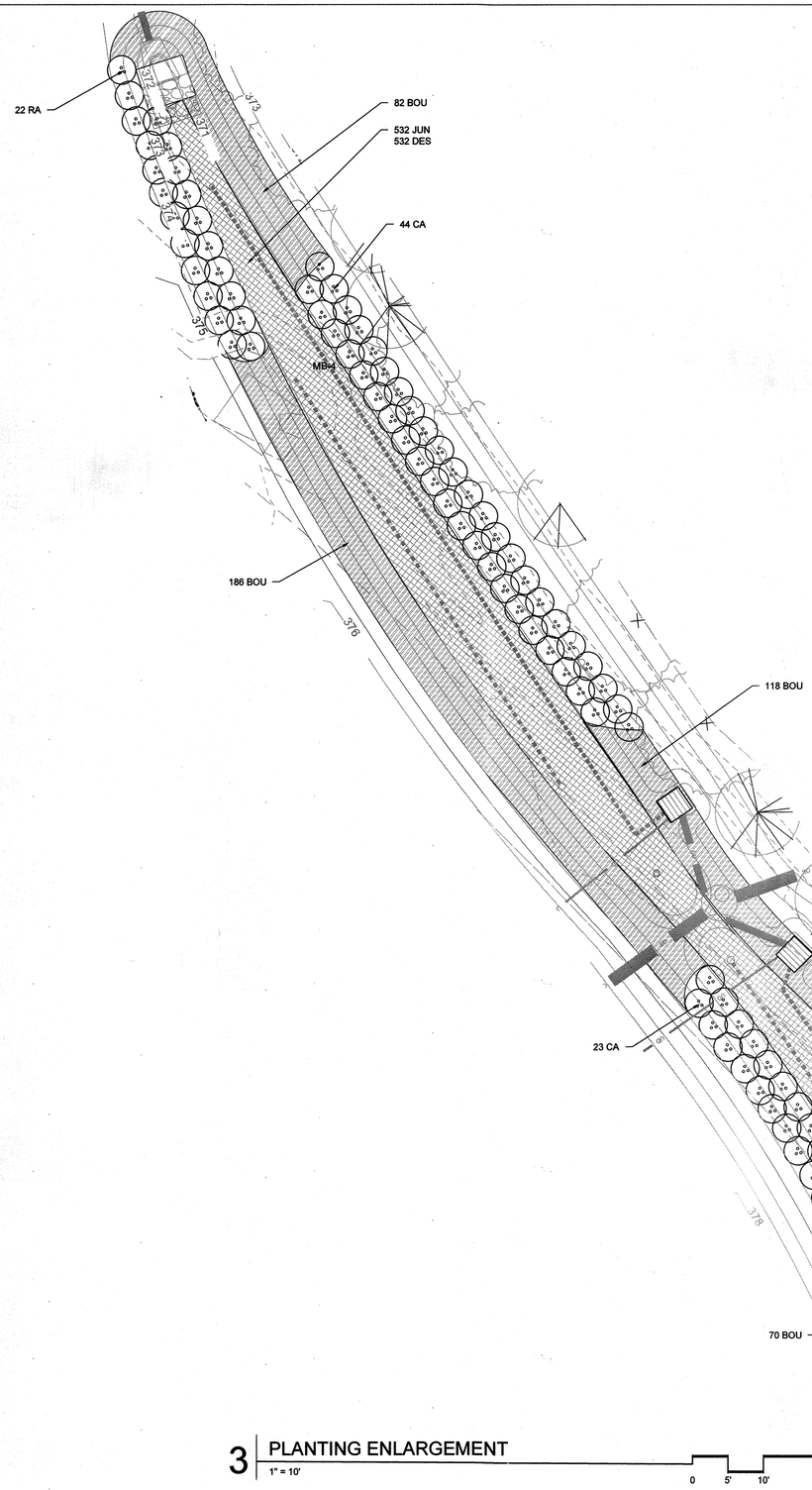
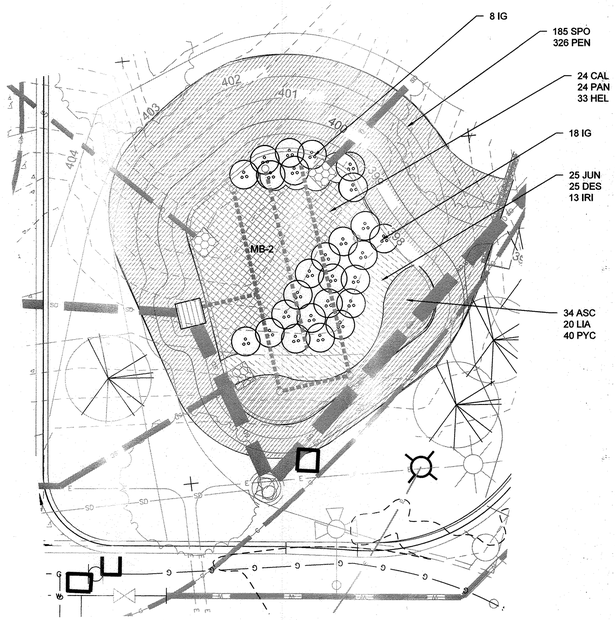


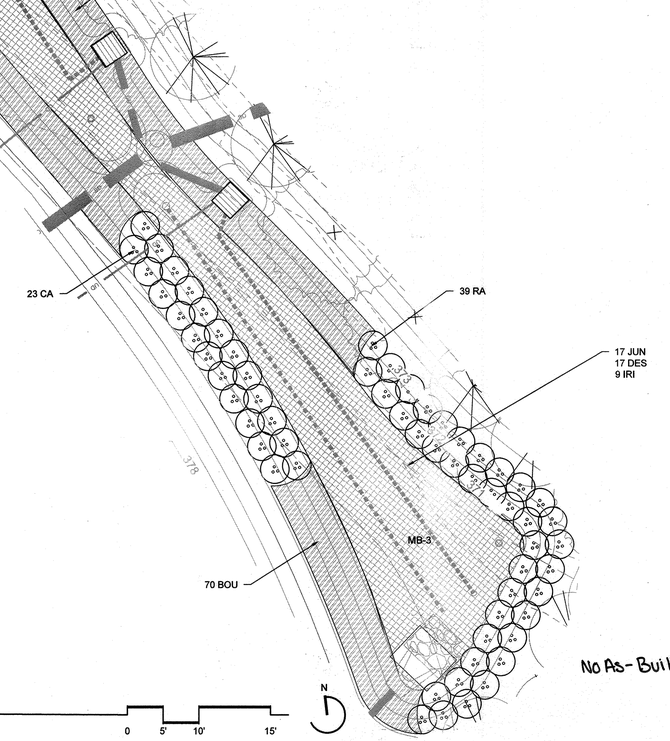
1 PLANTING ENLARGEMENT
1" = 10'
0 5' 10' 15'
N



3 PLANTING ENLARGEMENT
1" = 10'
0 5' 10' 15'
N



2 PLANTING ENLARGEMENT
1" = 10'
0 5' 10' 15'
N



No As-Built Information in this Sheet
5/20/2022

PLANT SCHEDULE: THIS SHEET ONLY

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		SHRUBS			
26	IG	Ilex glabra Inkberry	#5	Cont.	24" Ht.
67	CA	Clethra alnifolia 'Sixteen Candles' Summersweet	#3	Cont.	24" Spd.
61	RA	Rhus aromatica 'Gro Low' Dwarf Fragrant Sumac	#3	Cont.	4' O.C.
		PERENNIALS / GROUNDCOVERS / GRASSES			
219	ASC	Asclepias tuberosa Butterfly Weed	SP#4	Cont.	18" O.C.
456	BOU	Bouteloua curtipendula Side Oats Grama	#1	Cont.	24" O.C.
104	CAL	Calamagrostis canadense Canada Bluejoint	#1	Cont.	30" O.C.
661	DES	Deschampsia cespitosa Tufted Hairgrass	#1	Cont.	18" O.C.
144	HEL	Heliopsis helianthoides 'Summer Sun' False Sunflower	#1	Cont.	18" O.C.
66	IRI	Iris versicolor Blue Flag Iris	#1	Cont.	18" O.C.
661	JUN	Juncus effusus Soft Rush	#1	Cont.	18" O.C.
113	LIA	Liatris spicata Gayfeather	#1	Cont.	18" O.C.
104	PAN	Panicum virgatum Swtichgrass	#1	Cont.	30" O.C.
326	PEN	Penstemon digitalis 'Husker Red' Beardtongue	#1	Cont.	18" O.C.
307	PYC	Pycnanthemum muticum Mountainmint	#1	Cont.	15" O.C.
734	SPO	Sporobolus heterolepis Prairie Dropseed	#1	Cont.	24" O.C.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18

Chief, Division of Land Development — Date 4-19-18

Director — Date 4-19-18

MAHAN RYKIEL ASSOCIATES INC
Whitehall Mill 3300 Clipper Mill Road
Suite 200 Baltimore, MD 21211 410.235.6001

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3711, EXPIRATION DATE: 3/13/2019.

STATE OF MARYLAND — RICHARD N. JONES, JR. — REG. NO. 3711 — LANDSCAPE ARCHITECT

DESIGN BY: RJ/PG				
DRAWN BY: AS				
CHECKED BY: RC				
DATE: 3/30/2018	BY	NO.	REVISION	DATE

OWNER/DEVELOPER
JOHNS HOPKINS
APPLIED PHYSICS LABORATORY
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LAUREL, MARYLAND 20723

LANDSCAPE PLANTING ENLARGEMENTS AS-BUILT

JOHNS HOPKINS UNIVERSITY - APPLIED PHYSICS LABORATORY
BUILDING 14 - SYSTEMS INTEGRATION 3

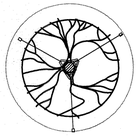
11100 JOHNS HOPKINS ROAD
TAX MAP: 41 PARCEL: 123 GRID: 16 ZONED: PEC
ELECTION DISTRICT 5 - HOWARD COUNTY, MARYLAND
SHEET 71 OF 72 GREEN BUILDING

L-304
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035

S:\17 Projects\17056 JHU Applied Physics Lab\CAD\MRA\07 SDP Mylar Set\L-304 Landscape Planting Enlargements.dwg Mar 28, 2018 5:00pm csturm

NOTES:
1. DO NOT CUT CENTRAL LEADER.
2. FOR PLANTS IN WIRE BASKETS. REFER TO SPECIFICATIONS.
3. DO NOT PLACE MULCH AGAINST TRUNK.
4. TREES TO HAVE SINGLE LEADER.
5. CUT AND REMOVE TOP HALF OF WIRE BASKETS.



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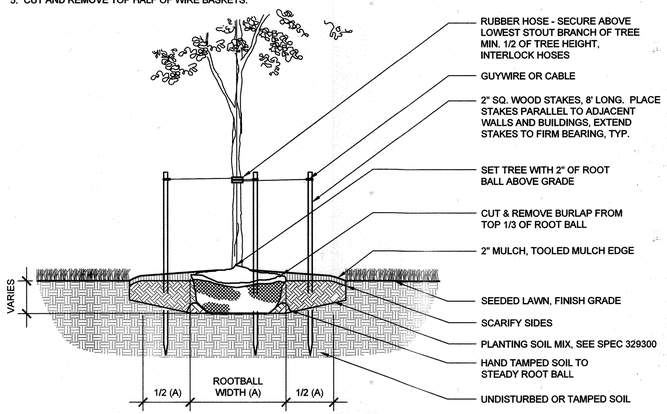
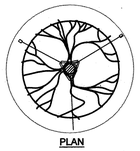


1 TYPICAL DECIDUOUS TREE PLANTING

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

NOTES:
1. NEVER CUT CENTRAL LEADER.
2. FOR PLANTS IN WIRE BASKETS, REFER TO SPECIFICATIONS.
3. TREES TO HAVE SINGLE LEADER.
4. CUT AND REMOVE TOP HALF OF WIRE BASKETS.
5. DO NOT PLACE MULCH AGAINST TRUNK.



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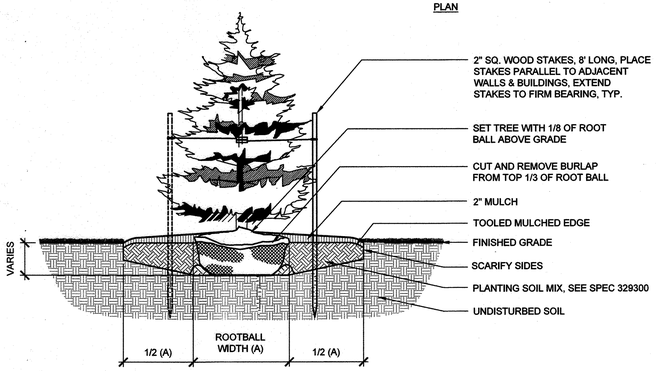
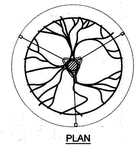


2 TYPICAL EVERGREEN TREE PLANTING

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

NOTES:
1. FOR B&B TREES, REMOVE TOP 1/3 OF BALL WRAP.
2. CUT WIRE BASKET IN AT LEAST FOUR LOCATIONS CIRCLING ROOTBALL.
3. DO NOT PLACE MULCH AGAINST TRUNK.



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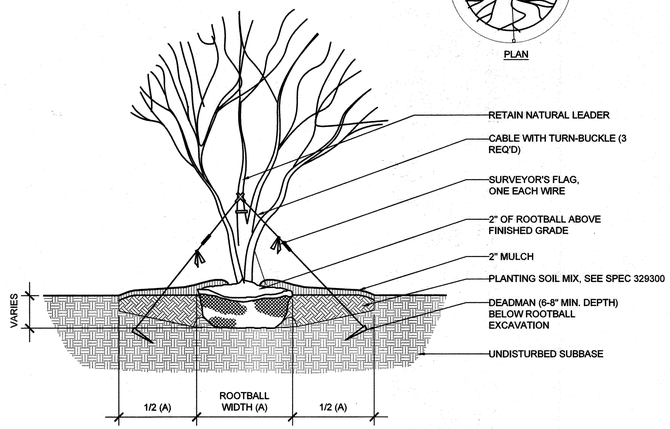
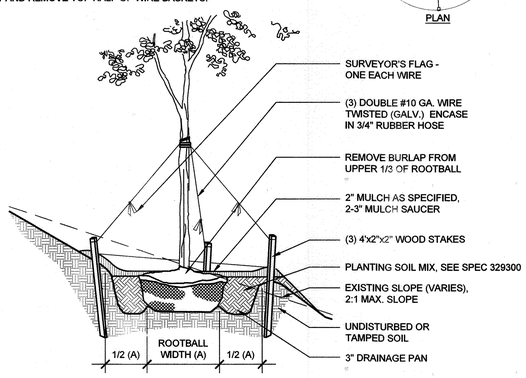


3 TYPICAL MULTI-STEM TREE PLANTING

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

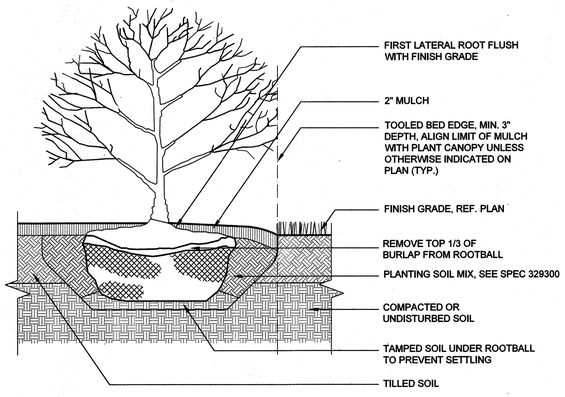
NOTES:
1. DECIDUOUS AND EVERGREEN TREES TO HAVE CENTRAL LEADER. NEVER CUT CENTRAL LEADER.
2. DO NOT PLACE MULCH AGAINST TRUNK.
3. SET TREE WITH 1/8 OF ROOT BALL ABOVE GRADE.
4. STAKES, WIRES, AND HOSES SHALL BE REMOVED AFTER ONE YEAR.
5. SCARIFY SUBSOIL AND SIDES OF TREE PIT TO A MIN. OF 4" DEPTH.
6. TREES UNDER 2-1/2" CAL.: 10' x 2" x 2" STAKES SET VERTICAL, MIN. TWO FEET INTO COMPACTED SUBGRADE.
7. SHADE TREES TO HAVE SINGLE LEADER.
8. CUT AND REMOVE TOP HALF OF WIRE BASKETS.

PLAN



4 TYPICAL TREE PLANTING ON SLOPE

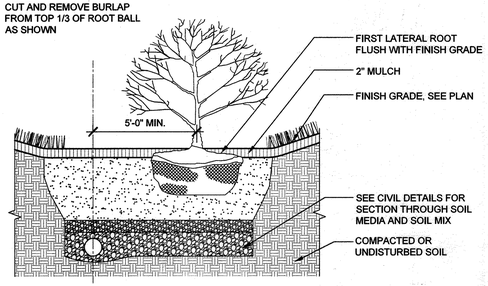
Scale: 1/2" = 1' - 0"



5 TYPICAL SHRUB PLANTING

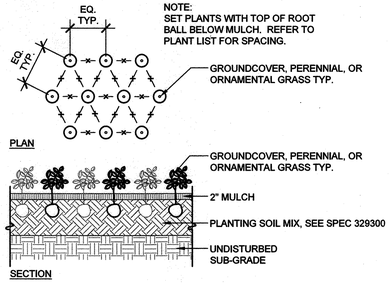
Scale: 1" = 1' - 0"

NOTE:
CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL AS SHOWN



6 BIORETENTION SHRUB PLANTING

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



7 TYPICAL TRIANGULAR SPACING

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

No As-Built Information in this sheet
5/20/2022

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4.11.18
Chief, Division of Land Development — Date 4-19-18
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LANDSCAPE PLANTING DETAILS AS-BUILT
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SHEET 72 OF 72
GREEN BUILDING

L-400
MRA PROJECT NUMBER 17056
SCALE: As Shown

SDP-18-035

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