Worcester County Fire Training Facility Vehicle Storage Project

Addendum 2

CONTENTS

1. DBF – Addendum #2 responses to questions.
2. DBF Addendum #2 drawings: 1 (C-051), 2 (C-101), 3 (C-101), 4 (C-101), 5 (C-102), 6 (C-102), 7 (C-302), 8 (L-101), 9 (C-303), 10 (FC-101), 11 (FC-101), 12 (C-101), 13 (C-102), 14 (C-102)
3. Door Hardware Specification 087100
4. Drawing E-401 – see sequence of operation clouded
5. Bid Form Revised Specification Section 004116
6. Allowance Revised Specification Section 012100
7. Geotechnical Report

This addendum must be recognized as received in the final bid submission in the Office of the County Commissioners, Room 1103 – Worcester County Government Center, One West Market Street, Snow Hill, Maryland 21863-1195. All clarifications, specifications and drawings included with this addendum are to be included with the final proposal.

DAVIS BOWEN & FRIEDEL, INC.

ARCHITECTS • ENGINEERS • PLANNERS • SURVEYORS

Ring W. Lardner, P.E.
W. Zachary Crouch, P.E.
Michael E. Wheedleton, AIA, LEED GA
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Jamie L. Sechler, P.E.

ADDENDUM #2

WORCESTER COUNTY VEHICLE STORAGE FACILITY

DBF #: 0085B049.A01

September 23, 2025

1. Specification Section 087100 – Door Hardware is attached. With regard to the four (4) exterior doors in the Vehicle Storage building, Doors 101-1 and 103-5 will be pass card access doors and will include Hardware Set #1. Doors 101-2 and 103-6 will be exit only; lever handle on the inside only and will include Hardware Set #2. Door 104 at the Fire Pump building will have Hardware Set #1.

2. With regard to all overhead door openers, a 1/2 horsepower chain-driven trolley operator is acceptable.

3. No work shall be done to the interior or exterior of the existing Training Center.

4. With regard to a water source, two (2) hose bibs exist at the exterior of the Training Center which will be available to the Contractor.

5. With regard to temporary power, an electric pedestal exists just north of the Training Center, which will be available to the Contractor. If an emergency arises and the County needs the pedestal, the Contractors' connection may be dropped.

6. On the floor plan, Sheet A-101, disregard the note depicting a 28' area of fire-treated, painted plywood, floor to ceiling.

7. Referring to Sheet E-201, the future fire pump controller will only have conduit provisions provided, no feeder. Please provide two (2) 1-1/4" conduits with pull strings to future fire pump controller as indicated on the Underground Ducts and Raceways Schedule.

8. Wall Section A-302 notes a 4" fine, granular fill. This fill is described as follows: "Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand per ASTM D448, size 10, with 100% passing a #4 sleeve and 10-30% passing a #100 sieve, meeting ASTM 33 deleterious substance limits.

9. Referring to Sheet E-601, Feeder 4W100T shall be as follows: One (1) set of three (3) #1AWG phase, one (1) #1AWG neutral, and one (1) #6AWG ground CU, in 1-1/2"

conduit.

10. Revised Sheet E-401 is attached which shows the revised sequence of operations for lighting control.

11. With regard to the security gate noted on Sheet C-102, the gate post OD is 2.5", not the 4.5" noted.

12. All bollards will include a 1/4" yellow plastic cover. Refer to attached Drawing 5 (C-102) for the bollard detail.

13. Provide an allowance of $60,000.00 for the well and pumps, controls and other materials needed to supply water to the fire storage tank.

14. Provide an allowance of $50,000.00 for the fire pump and required equipment at the Training Tower.

15. All roof, wall, and foundation details related to the pole building are the responsibility of the pole building contractor.

16. The Vehicle Storage and Pump Building floor slab shall have #4 rebar at 12" O.C. each way.

17. With regard to the air barrier, the Contractor shall have a third party inspect the installation. The manufacturer's representative is an acceptable third party.

18. The portable loading dock will be provided by the Owner.

19. The security gate shown on the east side of the site will not be electrically operated.

20. With regard to the in-ground propane tank, the County does not have a vendor. Bidders are reminded that this tank is to meet MDE requirements and the contractor is required to pull the permit required for the tank.

21. The geotechnical report for the project is attached.

22. The P.E. stamp requirement noted in the Specifications for concrete framework is not required.

23. Revised Bid Form is attached.

24. Refer to attached Drawing 2 (C-101) for information regarding new pavement at the old training tower location and pavement extension at the north side of the Vehicle Storage building.

25. Refer to attached Drawing 1 (C-051) for information regarding paving demolition

reduction.

26. The concrete pad for the ERV unit is 30’ x 12’. This will be confirmed. Attached is Drawing 12 (C-101) showing the equipment pad detail for the ERV.

27. Refer to attached Drawing 6 (C-102) for information regarding the site valley gutter detail.

28. Refer to attached Drawing 3 (C-101) for locations of yard inlets between the Vehicle Storage building and the Pump House.

29. Refer to attached Drawing 4 (C-101) for information regarding new and relocated existing fence. The new fence will have barbed wire at the top to match the existing. See attached Drawing 13 (C-102) and 14 (C-102).

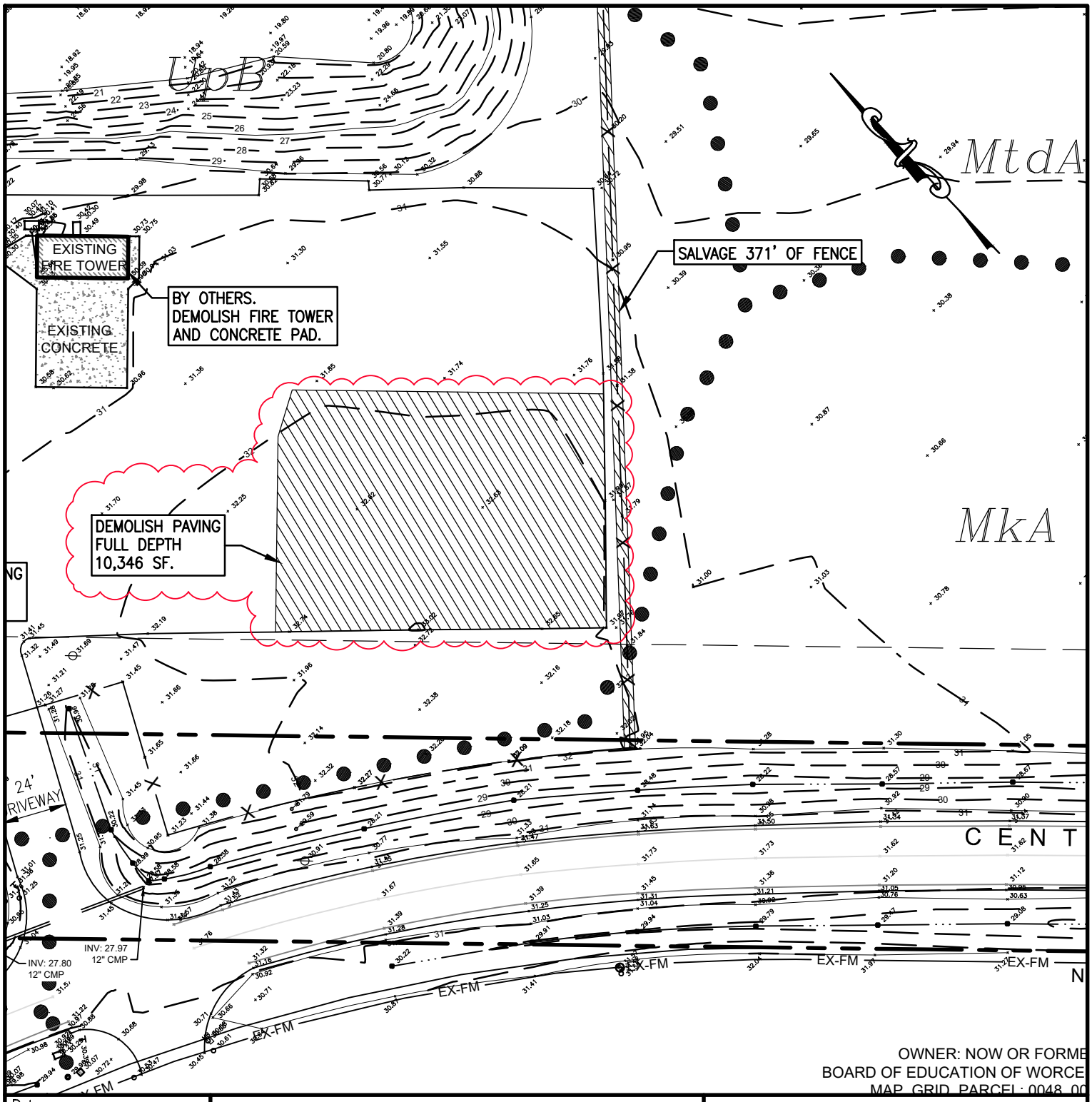
30. The Double Leaf security gate shown on Sheet C-102 will be 12’ wide.

31. Refer to attached Drawing 7 (C-302) for revised schedules that include the three (3) new yard inlets.

32. Refer to attached Drawing 8 (L-101) for the revised plant schedule.

33. Refer to attached Drawing 9 (C-303) for the stone berm forebay detail (Gabon Wall detail).

34. Refer to attached Drawing 10 (FC-101) and 11 (FC-101) for locations of six forest retention area signs and sign detail.



Date:	09/22/2025
Scale:	1" = 50'
Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	1 (C-051)

VEHICLE STORAGE FACILITY

CENTRAL SITE LANE

WORCESTER COUNTY, MARYLAND

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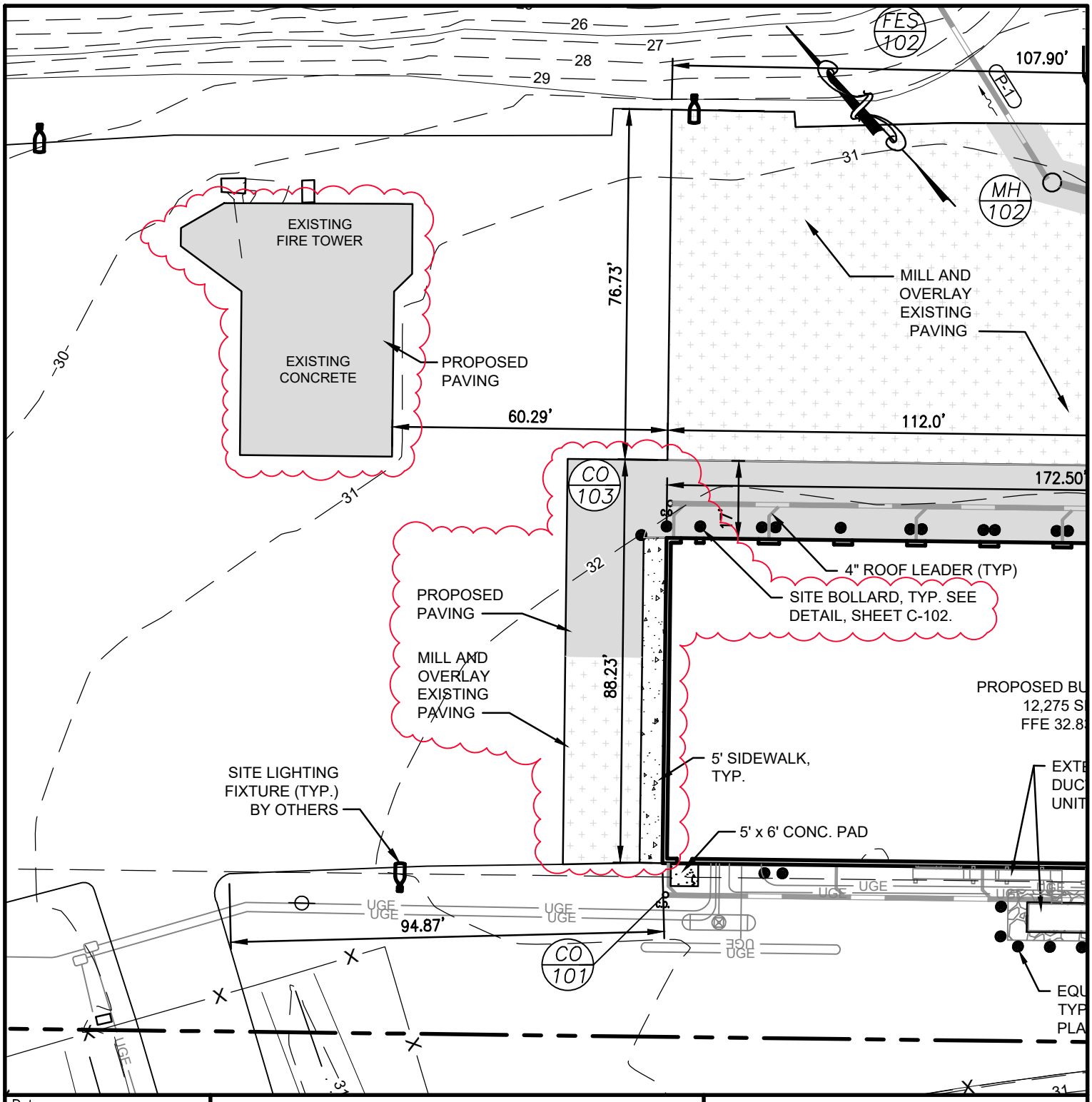

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Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	2 (C-101)

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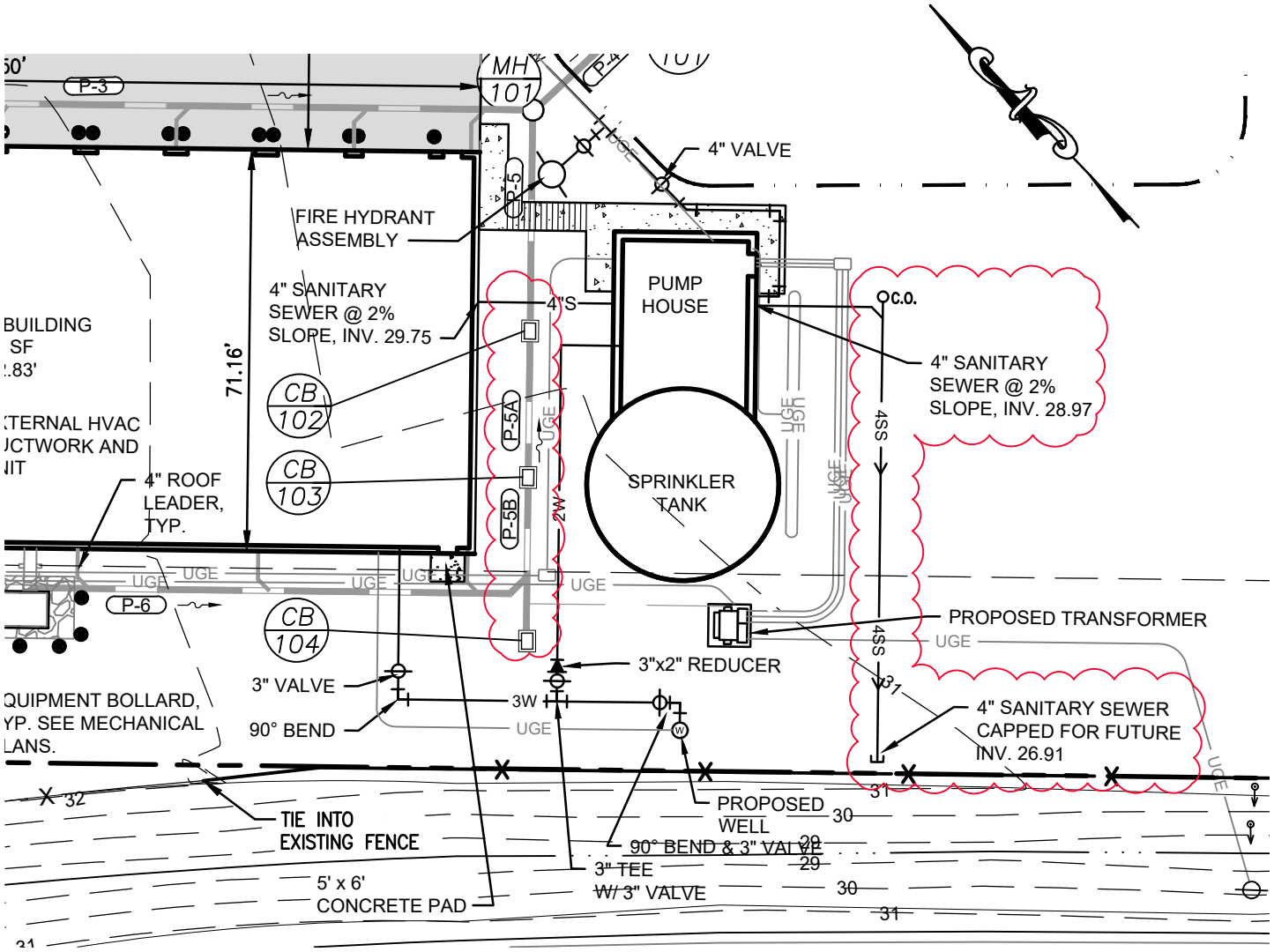

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Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	3 (C-101)

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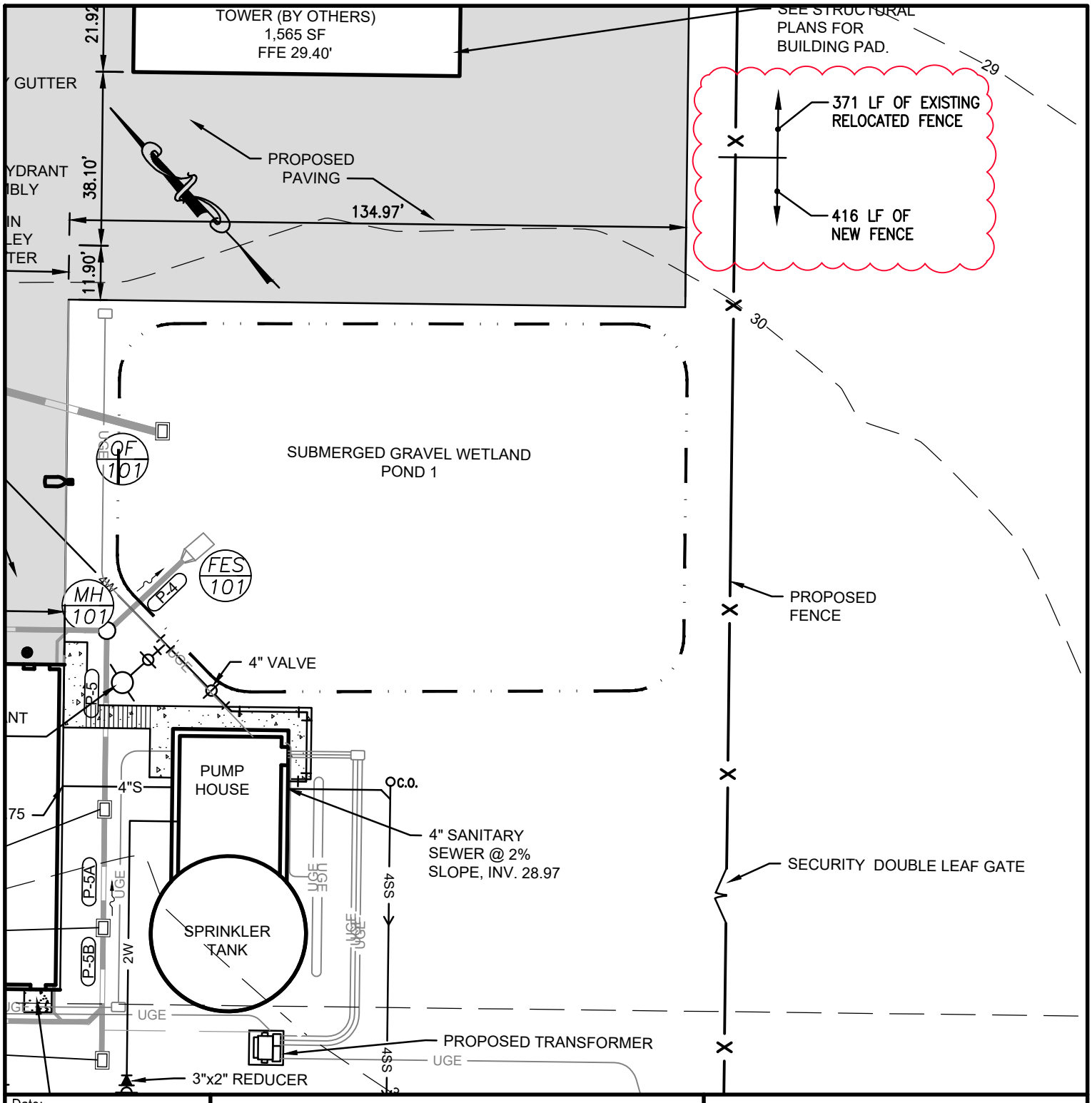

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Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	4 (C-101)

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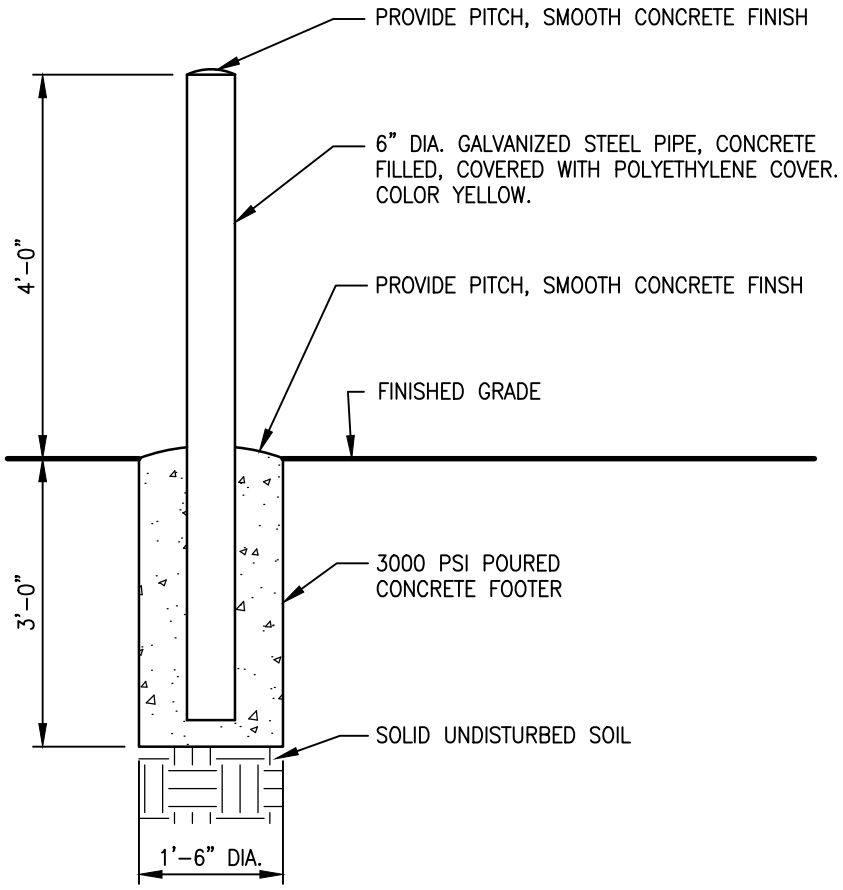

NOTES:
1. ALL CONCRETE USED FOR BOLLARDS SHALL BE PORTLAND CEMENT CONCRETE MIX NO. 2. SEE PORTLAND CEMENT CONCRETE MIXTURES TABLE THIS SHEET.

6" GALVANIZED STEEL PIPE BOLLARD DETAIL

NOT TO SCALE

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	5 (C-102)

VEHICLE STORAGE FACILITY

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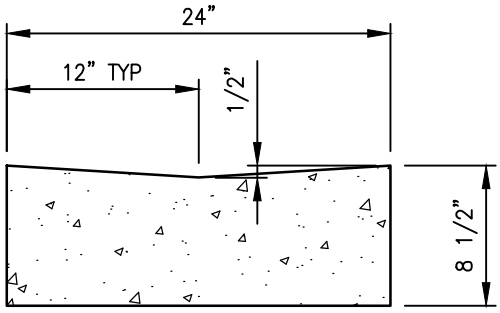

NOTES:

1. ALL CONCRETE USED FOR VALLEY GUTTER SHALL BE PORTLAND CEMENT CONCRETE MIX NO. 7. SEE TABLE THIS SHEET.
2. VALLEY GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS.

24" VALLEY GUTTER DETAIL

NOT TO SCALE

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	6 (C-102)

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STRUCTURE SCHEDULE

	LABEL	DESCRIPTION	T.G. EL.	INVERT ELEVATION			
				IN	IN	IN	OUT
	CB 101	MDOT SHA STANDARD 374.23 - SINGLE WEIR INLET	28.13	----	----	----	25.16
1 ADD	CB 102	8" NYLOPLAST DRAIN BASIN W/ STANDARD GRATE	30.66	----	----	27.75	27.75
1 ADD	CB 103	8" NYLOPLAST DRAIN BASIN W/ STANDARD GRATE	30.66	----	----	27.89	27.89
1 ADD	CB 104	8" NYLOPLAST IN LINE DRAIN W/ STANDARD GRATE	30.10	----	----	----	28.05
	CO 101	4" CLEANOUT	32.36	----	----	----	29.47
	CO 102	4" CLEANOUT	32.43	----	28.00	28.00	28.00
	CO 103	4" CLEANOUT	32.33	----	----	----	29.24
	FES 101	12" HDPE END SECTION	26.00	----	----	----	25.00
	FES 102	18" HDPE END SECTION	26.50	----	----	----	25.00
	FES 103	18" HDPE END SECTION	25.50	----	----	----	24.00
	FES 104	12" HDPE END SECTION	26.00	----	----	----	25.00
	MH 101	MDOT SHA STANDARD 384.03-48" DIAM	31.23	----	28.25	27.53	25.25
	MH 102	MDOT SHA STANDARD 384.03-48" DIAM	30.96	----	----	25.28	25.28
	OF 101	MDOT SHA STANDARD 374.23	29.70	----	----	21.25	25.85
	OF 102	MDOT SHA STANDARD 374.23	27.90	----	----	----	25.00

PIPE SCHEDULE

	LABEL	FROM	TO	SIZE/TYPE		CLASS	LENGTH (ft.)	Slope %	INV. UP	INV. DN
	P1	MH 102	FES 102	18	HDPE	N-12	57	0.50%	25.28	25.00
	P2	OF 101	MH 102	18	HDPE	N-12	113	0.50%	25.85	25.28
	P3	CO 103	MH 101	8	HDPE	N-12	181	0.55%	29.24	28.25
	P4	MH 101	FES 101	12	HDPE	N-12	25	1.00%	25.25	25.00
1 ADD	P5	CB102	MH 101	8	HDPE	N-12	39	0.55%	27.75	27.53
1 ADD	P5A	CB103	CB102	8	HDPE	N-12	26	0.55%	27.89	27.75
1 ADD	P5B	CB104	CB103	8	HDPE	N-12	21	0.55%	28.00	27.89
1 ADD	P5C	CB104	CO102	8	HDPE	N-12	8	0.55%	28.05	28.00
	P6	CO 101	WYE	8	HDPE	N-12	181	0.55%	29.47	28.48
	P7	CB 101	FES 104	12	HDPE	N-12	16	1.00%	25.16	25.00
	P8	OF 102	FES 103	18	HDPE	N-12	33	3.04%	25.00	24.00

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CENTRAL SITE LANE

WORCESTER COUNTY, MARYLAND

Date:	09/22/2025
Scale:	NO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	7 (C-302)

SUBMERGED GRAVEL WETLAND PLANT SCHEDULE

SYMBOL	KEY	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY SGW #1	QUANTITY SGW #2	TOTAL
	AA	ACORUS americanus	SWEET FLAG	2" PLUG, 18" O.C.	400	200	600
	PC	IRIS versicolor	BLUE FLAG IRIS	2" PLUG, 18" O.C.	200	130	330
	JE	JUNCUS effusus	COMMON RUSH	2" PLUG, 18" O.C.	680	220	900
	SA	SCIRPUS atrovirens	GREEN BULRUSH	2" PLUG, 18" O.C.	500	100	600
				TOTAL	1780	650	2,430

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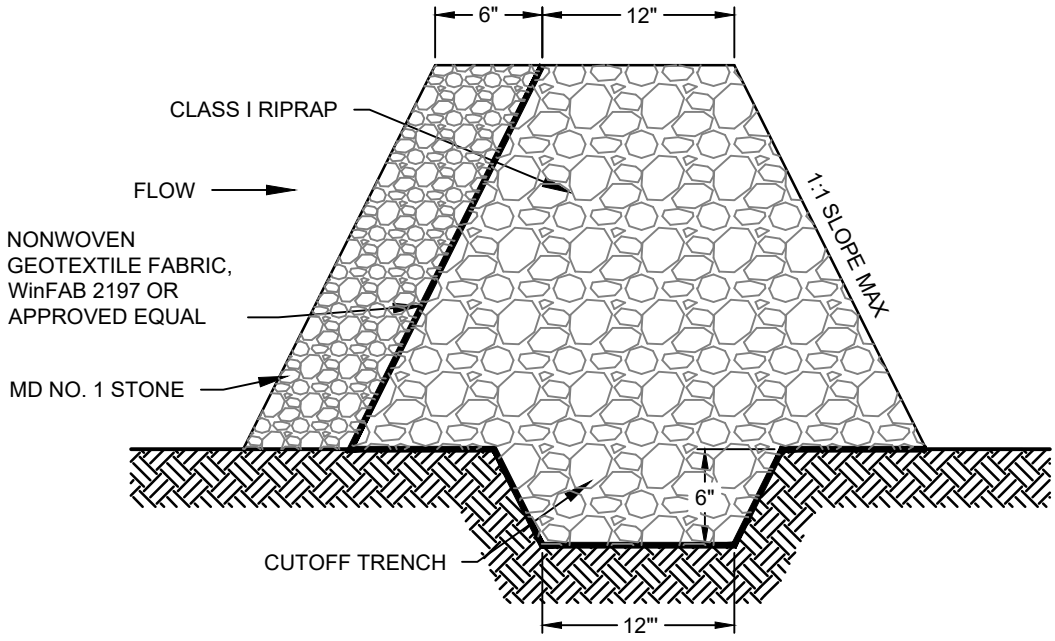
CENTRAL SITE LANE

WORCESTER COUNTY, MARYLAND

Date:	09/22/2025
Scale:	NO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	8 (L-101)



STONE BERM FOREBAY DETAIL

SCALE: NOT TO SCALE

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	9 (C-303)

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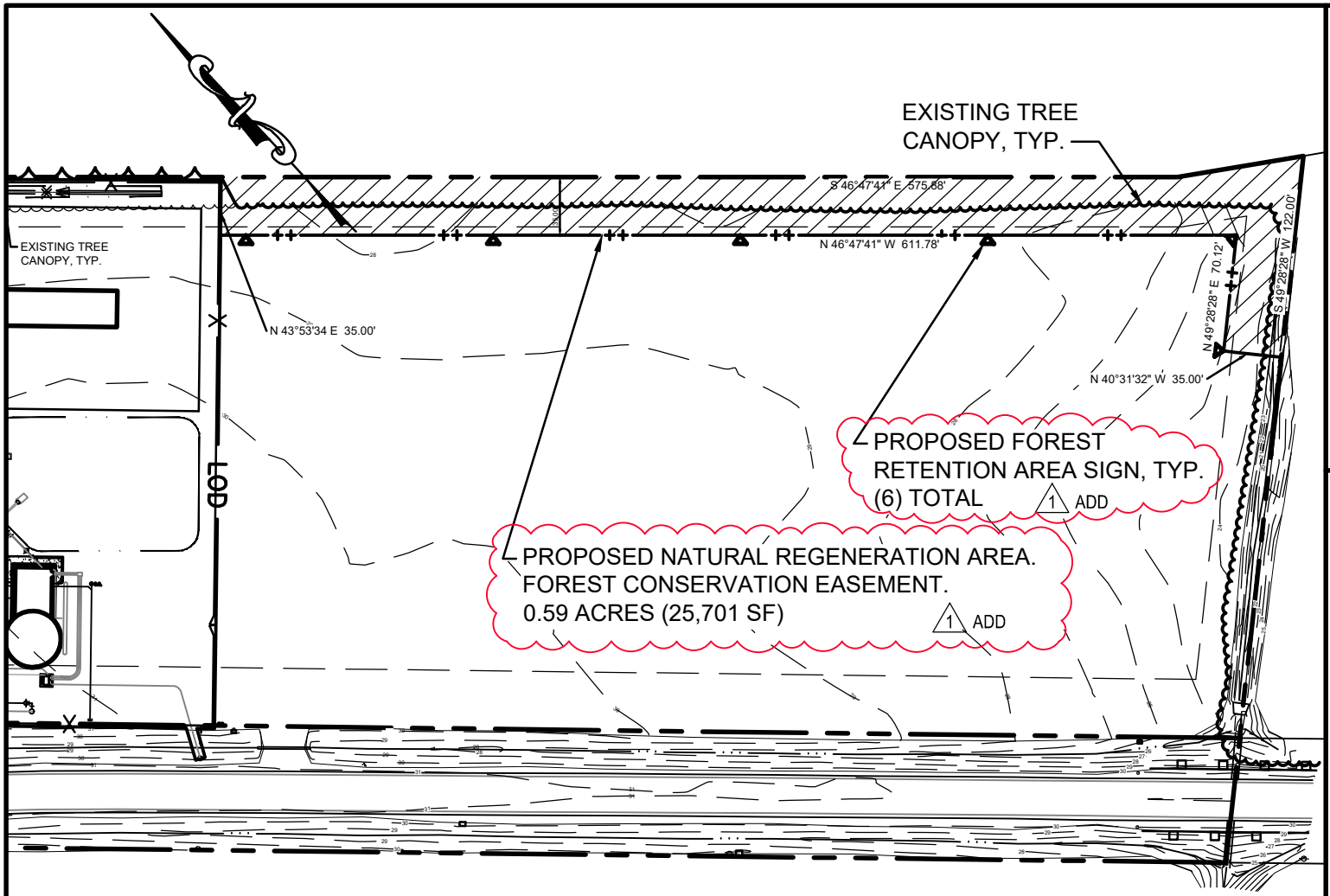

FOREST CONSERVATION PLAN

SCALE: 1" = 100'

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VEHICLE STORAGE FACILITY

CENTRAL SITE LANE

WORCESTER COUNTY, MARYLAND

Date:	09/22/2025
Scale:	1" = 100'
Dwn.By:	DLS
Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	10 (FC-101)

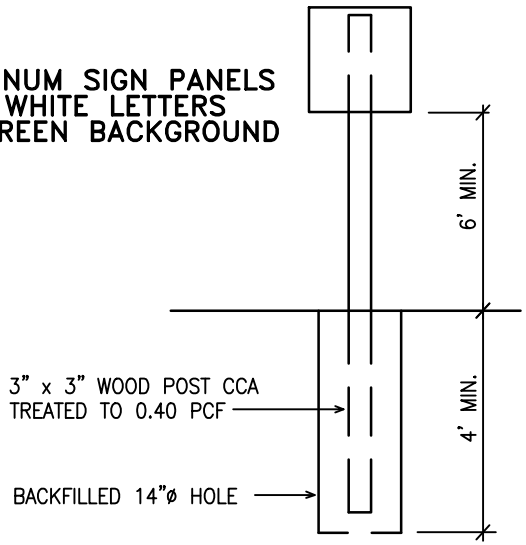
P:\0085\0085B049\CAD\SHEET\0085B049-FC-101 FOREST CONSERVATION PLAN.dwg Sep 22 , 2025 - 11:11am sand

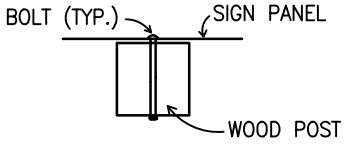
FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED

VIOLATORS ARE SUBJECT TO FINES IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991

NOTE:
ALUMINUM SIGN PANELS WITH WHITE LETTERS ON GREEN BACKGROUND





NOTE:
TREATED WOODEN POST TO BE PLACED IN PRE-DUG HOLE IN GROUND. BACKFILL W/ SUITABLE MAT'L. AND TAMP THOROUGHLY TO PROVIDE RIGID SUBSURFACE CONDITION AROUND POST. ALL BOLTS TO BE 3/8"Ø ASTM F593 (18-8 TYPE 303 OR 304) STAINLESS STEEL OR ANODIZED ALUMINUM HEX HEAD W/WASHERS & NUTS. PING/BURR BOLTS THREADS TO DETER THEFT

SIGN DETAIL

NOT TO SCALE

GENERAL FOREST CONSERVATION NOTES

1. PERMANENT FOREST PROTECTION DEVICES WILL CONSIST OF SIGNS PLACED ON 3" x 3" x 6' POSTS AT 150' ON CENTER, MAXIMUM. WHICH ARE 11"x15" IN SIZE. SIGNS PLACED ALONG FOREST RETENTION AREAS BOUNDARIES WILL READ "FOREST RETENTION AREA, MACHINERY, DUMPING, OR STORAGE OF ANY MATERIALS IS PROHIBITED, VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991".

2. RETENTION AREAS SHALL BE DESCRIBED PER DEED.

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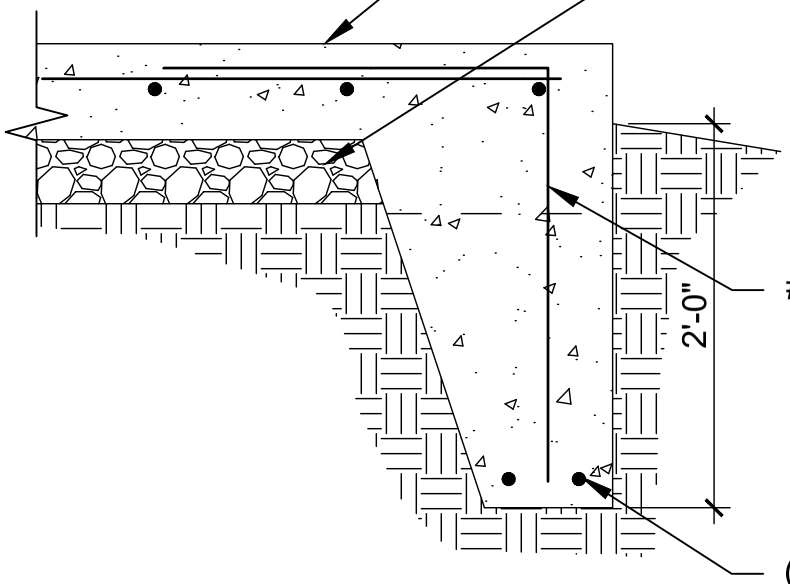
VEHICLE STORAGE FACILITY

CENTRAL SITE LANE

WORCESTER COUNTY, MARYLAND

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	11 (FC-101)

NOTE:
CONTRACTOR SHALL COORDINATE OVERALL SLAB DIMENSIONS WITH SELECTED MECHANICAL UNIT MINIMUM SIZE REQUIREMENTS



Date:	09.22.2025
Scale:	1"=1'
Dwn.By:	JKB
Proj.No.:	0085B49.A01
	ADDENDUM 2
Dwg.No.:	12 (C-101)

VEHICLE STORAGE
EXTERIOR EQUIP. SLAB
WORCESTER, MARYLAND

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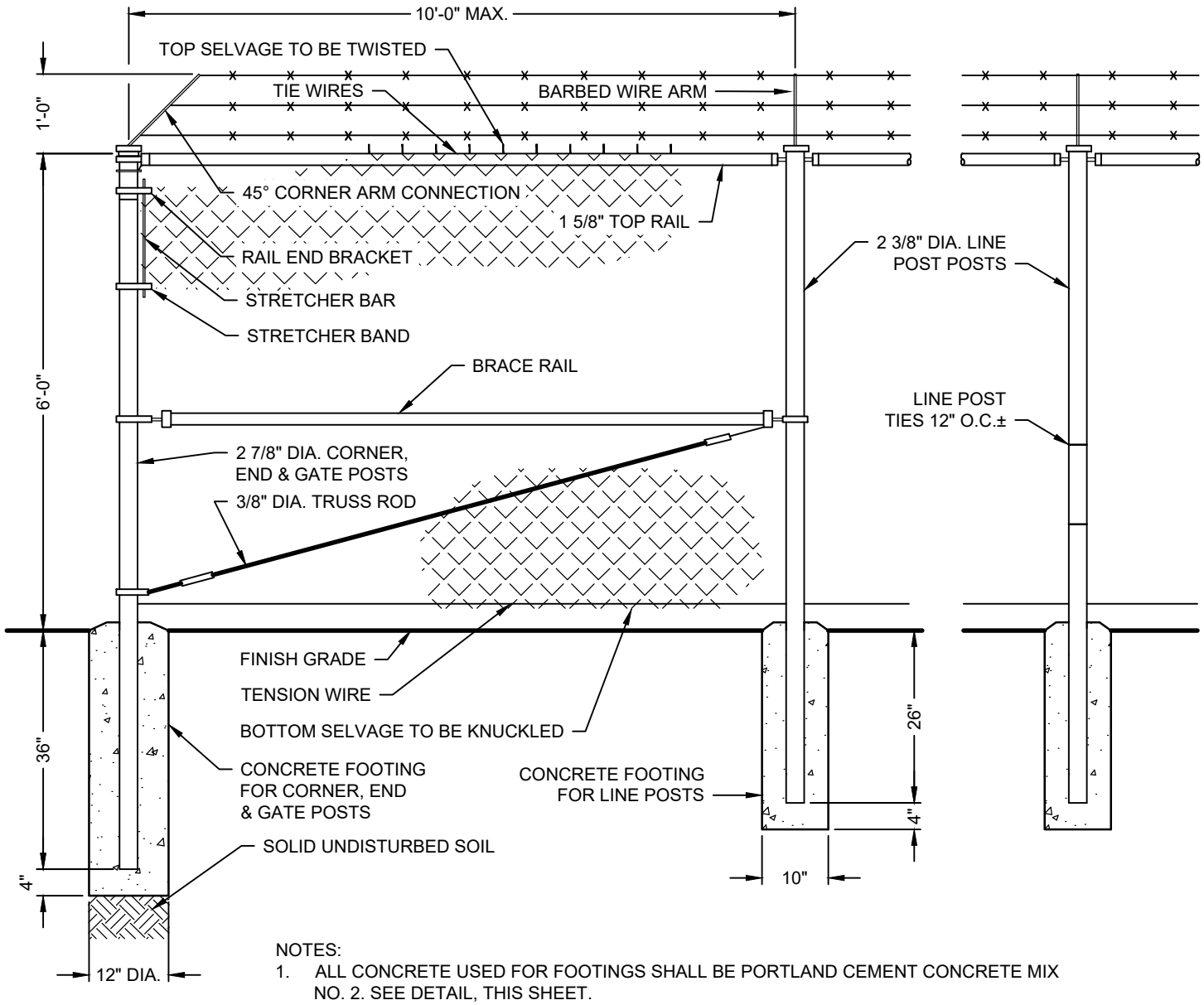
2.12



NOTES:

1. ALL CONCRETE USED FOR FOOTINGS SHALL BE PORTLAND CEMENT CONCRETE MIX NO. 2. SEE DETAIL, THIS SHEET.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. GALVANIZED STEEL CHAIN LINK FENCE.
4. REFER TO MANUFACTURER'S SPECIFICATIONS FOR ADDITIONAL INFORMATION.

6' HIGH CHAIN LINK SECURITY FENCE

NOT TO SCALE

1 ADD

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
	ADDENDUM 2
Dwg.No.:	13 (C-102)

VEHICLE STORAGE FACILITY

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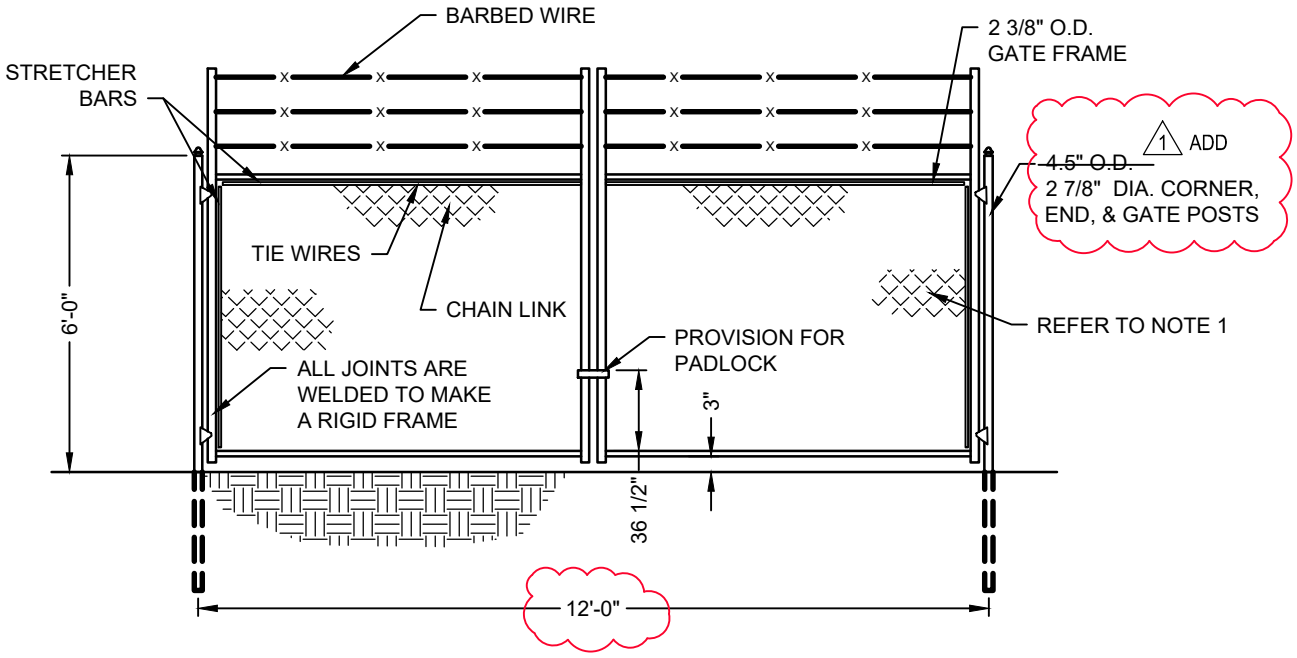

SECURITY DOUBLE LEAF CHAIN LINK GATE DETAIL

NOT TO SCALE

1 ADD

Date:	09/22/2025
Scale:	NOT TO SCALE
Dwn.By:	DLS
Proj.No.:	0085B049
ADDENDUM 2	
Dwg.No.:	14 (C-102)

VEHICLE STORAGE FACILITY

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SECTION 087100 – DOOR HARDWARE

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Electrically operated and controlled hardware.

C. Thresholds

D. Weatherstripping and gasketing

1.2 RELATED REQUIREMENTS

A. Section 081113 – Hollow Metal Doors and Frames

B. Section 081116 – Aluminum Doors and Frames

C. Section 081213 – Hollow Metal Frames

1.3 REFERENCE STANDARDS

A. ADA Standards – American with Disabilities Act (ADA) Standards for Accessible Design 2010.

B. BHMA A156.1 – Standard for Butts and Hinges 2021

C. BHMA A156.2 – Bored and Preassembled Locks and Latches 2017

D. BHMA A156.3 – Exit Devices 2020

E. BHMA A156.4 – Door Controls – Closers 2019

F. BHMA A156.8 – Door Closers – Overhead Stops and Holders 2021

G. BHMA A156.13 – Mortise Locks & Latches Series 1000 2017

H. BHMA A156.16 – Auxiliary Hardware 2018

I. BHMA A156.18 – Materials and Finishes 2020

J. BHMA A156.21 – Thresholds 2019

K. BHMA A156.25 – Electrified Locking Devices 2018

L. BHMA A156.26 – Standard for Continuous Hinges 2021

M. BHMA A156.28 – Recommended for Practices for Mechanical Keying Systems 2018

N. BHMA A156.115 – Hardware Preparation In Steel Doors and Steel Frames 2016

O. BHMA A156.115W – Hardware Preparation in Wood Doors with Wood or Steel Frames 2006

P. DHI (H&S) – Sequence and Format for the Hardware Schedule 2019

Q. DHI (KSN) – Keying Systems and Nomenclature 2019

R. NFPA 70 – National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

S. NFPA 80 – Standard for Fire Doors and Other Opening Protectives 2022

T. NFPA 101 – Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements

U. NFPA 105 – Standard for Smoke Door Assemblies and Other Opening Protectives 2022

V. NFPA 252 – Standard Methods for Fire Tests of Door Assemblies 2022

W. UL 10C – Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that dorr hardware is installed on

B. Sequence installation to ensure facility service connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting four weeks prior to commencing work of this section; require attendance by affected installers and the following:

1. Hardware Installer
2. Owner’s Security Consultant

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware

E. Keying Requirements Meeting: Arrange meeting with Owner, Architect, and finish hardware supplier to determine keying requirements immediately upon receipt of finishing hardware schedule.

1.5 SUBMITTALS

A. See Section 013300 – Submittal Procedures

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings – Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.

1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
   a. Submit in vertical format
3. List groups and suffixes in proper sequence
4. Include complete description for each door listed
5. Include manufacturer's and product's names, and catalog numbers; include functions, types, styles, sizes, and finishes of each item.
6. Include account of abbreviations and symbols used in schedule.

D. Shop Drawings – Electrified Door Hardware: Include door diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:

1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
2. Elevation: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Supplier's qualification statement.

I. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1. Include manufacturer’s parts lists and templates.
2. Bitting List: List of combinations as furnished.

J. Keying Schedule:

1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner’s name and registered with manufacturer.

L. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

M. Maintenance Materials and Tools: Furnish the following for Owner’s use in maintenance of project.

1. See Section 016000 – Product Requirements, for additional provisions.
2. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specialized in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

C. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work for this section

1.7 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.8 WARRANTY

A. See Section 017700 – Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Daye of Substantial Completion. Complete forms in Owner’s name and register with manufacturer.

1. Closers: Ten years, minimum.
2. Exit Devices: Five years, minimum
3. Locksets and Cylinders: Ten years, minimum

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer

C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.

1. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's Series. As indicated in hardware sets.
2. Trim: Provide level handle or pull trim on outside of each lock, unless otherwise indicated.
3. Strikes:
   a. Finish: To match lock or latch
   b. Curved-Lip Strikes: Provide as standard, with extended lip to protect frame, unless otherwise indicated.
   c. Center Strike At Pair of Doors: 7/8in (22.2 mm) lip.

D. Closers:

1. Provide door closer on each exterior door, unless otherwise indicated.
2. Provide door closer on each fire-rated and smoke-rated door
3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.

E. Overhead Stops and Holders (Door Checks)

1. Provide stop for every swinging door, unless otherwise indicated.
2. Overhead stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.
3. Overhead stop is not required if a floor or wall stop has been specified for the door.

F. Drip Guards: Provide at head of out-swinging exterior doors unless protected by roof or canopy directly overhead.

G. Thresholds:

1. Exterior Applications: Provide at each exterior door, unless otherwise indicated.

H. Weatherstripping and Gasketing:

1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
2. Provide door bottom sweep on each exterior door, unless otherwise indicated.

I. Electrically operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.

J. Fasteners:

1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
   a. Aluminum fasteners are not permitted
   b. Provide Phillips flat-head screws with heads finished to match surface hardware, unless otherwise indicated.
2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
   a. Self-drilling (Tek) type screws are not permitted
3. Provide stainless steel machine screws and lead expansion shields for concrete ad masonry substrates
4. Provide wall grip inserts for hollow wall construction
5. Fire-Resistance-Rated Applications: Comply with NFPA 80
   a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
   b. Provide steel through bolts for attachment of surface-mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.2 PERFORMANCE REQUIREMENTS

A. Provide door hardware products that comply with the following requirements:

1. Applicable provisions of federal, state, and local codes.
   a. NFPA 101
2. Accessibility: ADA Standards and ICC A117.1

3. Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing positive pressure in accordance with NFPA 252 or UL 10C.
4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
5. Hardware for Smoke and Draft Control Doors: Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115
7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

2.3 HINGES

A. Manufacturers: Conventional butt hinges

1. BEST; dormakaba Group
2. Mckinney
3. Ives Hardware

B. Properties:

1. Butt Hinges: As applicable to each item specified.
   a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
   b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
   c. Template screw hole locations
   d. Bearings: Concealed fully hardened bearings
   e. UL 10C listed for fire-resistance-rated doors

C. Sizes: See Door Hardware Schedule

1. Hinge Widths: As required to clear surrounding trim
2. Sufficient size to allow 180-degree swing of door

D. Finishes: See Door Hardware Schedule

1. Fully polish hinges, front, back, and barrel

E. Grade:

1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
2. Comply with BHMA A156.18 Materials and Finishes

F. Material: Base metal as indicated for each item by BHMA material and finish designation

G. Types:

1. Butt Hinges: Include full mortise hinges

H. Options: As applicable to each item specified

I. Quantities:

1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) additional 30 inches (762 mm) in height or fraction thereof.
   a. Hinge weight and size unless otherwise indicated in hardware sets:

      1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.

      2) For doors from 36 inches (914 mm) wide up to 42 inches (1,067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

      3) For doors from 42 inches (1,067 mm) wide up to 48 inches (1,129 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

      4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

J. Applications: At swinging doors

1. Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.

K. Products:

1. Butt Hinges:
   a. Ball Bearing, Five (5) Knuckle

2.4 CONTINUOUS HINGES

A. Manufacturers:

1. Best Access
2. Roton
3. Select Hardware
   a. Geared Continuous Hinges: As applicable to each item specified
      1) Non-handed
      2) Anti-spinning through fastener
      3) UL 10C listed for fire-resistance-rated doors
         (a) Metal Door Installation: Rated up to 90 minutes
         (b) Wood Door Installation: Rated up to 60 minutes
      4) Sufficient size to permit door to swing 180 degrees

B. Finishes: See Door Hardware Schedule

2.5 LOCK CYLINDERS

A. Manufacturers:

1. Corbin L1 Keyway Zero Bitted, No Substitutions, Existing System

B. Material:

1. Manufacturer’s standard corrosion-resistant brass alloy

C. Types: As applicable to each item specified

1. Standard core type cylinders, with seven pin cores

2.6 MORTISE LOCKS

A. Manufacturers:

1. BEST, 45H Series
2. Corbin ML2000 Series

B. Properties:

1. Mechanical Locks: Manufacturer’s standard
   a. Fitting modified ANSI A115.1 door preparation
   b. Door Thickness Coordination Fitting 1-3/4 inch (44 mm) to 2-1/4 inch (57 mm) thick doors
   c. Latch: Solid, one-piece, anti-friction, self-lubricating stainless steel

1) Latchbolt Throw: ¾ inch (19 mm) minimum

d. Auxiliary Deadlatch: One-piece stainless steel, permanently lubricated

e. Backset: 2-3/4 inch (70 mm)

f. Lever trim:

1) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly

2) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs. (158.2Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.

3) Spindle: Designed to prevent forced entry from attacking lever.

4) Independent spring mechanism for each lever

(a) Trim to be self-aligning and through-bolted

C. Finishes: See Door Hardware Schedule

1. Core Faces: Match finish of lockset

D. Grades:

E. Products: Mortise locks, including standard and electrified types

1. 45H

2.9 CYLINDRICAL LOCKS

A. Manufacturers:

1. BEST, 9K Series
2. Corbin, CL3300 Series

B. Properties:

1. Mechanical Locks:

a. Fitting modified ANSI A115.2 door preparation

b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors

c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.

1) Through-bolted anti-rotational studs.

d. Cast stainless steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability

e. Bored Hole: 2-1/8 inches (54 mm) diameter

f. Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
g. Latch: Single piece tail-piece construction
1) Latchbolt Throw: 9/16-inch (14.3 mm) minimum
h. Cylinders:
1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable
i. Lever Trim:
1) Style: See Door Hardware Schedule
2) Outside Lever Sleeve: Seamless one-piece construction

2. Electrified Locks: Same properties as standard locks, and as follows:
a. Function: Electronically locked (Fai Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule

C. Finishes: See Door Hardware Schedule

1. Core Faces: Match finish of lockset

D. Grades: Comply with BHMA A156.2, Grade 1, Series 4000, Operational Grade 1, Extra Heavy Duty.

E. Material: Manufacturer's standard for specified lock

F. Products: Cylindrical locks, including mechanical and electrified types

1. 9K (Grade 1)

2.10 CLOSERS

A. Manufacturers:

1. Dorma 8900 Series
2. Corbin DC6000 Series

B. Grades:

1. Closers: Comply with BHMA A156.4, Grade 1
a. Underwriters Laboratories Compliance:
1) Product Listing: UL (DIR) and ULC fir use on fire-resistance-rated doors.
(a) UL 228 – Door Closers-Holders, with or without Integral Smoke Detectors.

C. Installation

1. Mounting: Includes surface mounted installations

2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets
3. At out-swinging exterior doors, mount closer on interior side of door
4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions
5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.

2.11 OVERHEAD STOPS AD HOLDERS

A. Manufacturers:

1. Architectural Builders Hardware Mfg (ABH)
2. Glynn Johnson
3. Rixson

B. Sizes: Manufacturer’s standard for the application

C. Finishes:

1. Arms and Brackets: Zinc-plated

D. Grades: As applicable to the item specified

1. Comply with BHMA A156.8, Grade 1

E. Types:

1. Surface-applied
2. Concealed

2.12 PROTECTION PLATES

A. Manufacturers:

1. Burns
2. Hiawatha
3. Trimco

B. Properties:

1. Plates:
   a. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
      1) Size: 10 inches (254 mm) high by 2 inches (51 mm) less door width (LDW) on push side of door

b. Mop Plates: Provide along bottom edge of push side of doors to provide protection from cleaning liquids and equipment damage to door surface
c. Edges: Beveled, on four (4) unless otherwise indicated.

C. Grades: Comply with BHMA A156.6

D. Material: As indicated for each item by BHMA material and finish designation

1. Metal Properties: Stainless Steel
a. Metal, Standard Duty: Thickness 0.050-inch (1.27 mm) minimum.

E. Installation:

1. Fasteners: Countersunk screw fasteners

2.13 STOPS AND HOLDERS

A. Manufacturers:

1. Burns
2. Hiawatha
3. Trimco

B. General : Provide overhead stop/holder when wall or floor stop is not feasible

C. Grades:

1. Door Holders, Wall Bumpers, and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard

D. Types:

2.14 THRESHOLDS

A. Manufacturers:

1. National Guard Products
2. Pemko
3. Reese

B. Properties:

1. Threshold Surface: Fluted horizontal grooves across full width

C. Grades: Thresholds: Comply with BHMA A156.21

D. Material: Base metal as indicated for each item by BHMA material and finish designation

E. Types: As applicable to project conditions. Provide barrier-free type at every location where specified

1. Saddle Thresholds: Without thermal break\
2. Bumper Seal Thresholds with Gasket: Use silicone gaskets

2.15 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:

1. National Guard Products, Inc.: www.ngpinc.com/#sle
2. Pemko
3. Reese

B. Products:

1. Weatherstripping: See Door Hardware Schedule
2. Smoke Seal: See Door Hardware Schedule
3. Meeting Stile Seals: See Door Hardware Schedule
4. Door Bottom Seals:
   a. Door Sweeps: See Door Hardware Schedule

2.16 KEYS AND CORES

A. Manufacturers:

1. Corbin No Substitution, Existing System. L1 Keyway Zero Bitted
2. Owner to coordinate keying directly with RJ Lock and Security
3. Keying to be done by RJ Lock and Security in Ocean City, Maryland

B. Properties:

1. Provide Corbin Standard keys and cores
2. Provide keying information in compliance with DHI (KSN) standards.
3. Keying Schedule: Arrange for a keying meeting with Architect, Owner, hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
4. Keying: Master keyed
5. Include construction keying as directed by Owner
6. Supply keys in following quantities:
   a. Grand Master Keys: 2 each
   b. Master Keys: 4 each group
   c. Change Keys: 2 change keys for each keyed core
7. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.

2.17 FINISHES

A. Finishes: Identified in Hardware Sets

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Correct all defects prior to proceeding with installation

C. Verify that electric power is available to power operated devices and of correct characteristics.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware using manufacturer’s fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80

D. Install hardware for smoke and draft control doors in accordance with NFPA 105

E. Use templates provided by hardware item manufacturer

F. Do not install surface-mounted items until application of finishes to substrate are fully completed.

G. Wash down masonry walls and complete painting or staining of doors and frames

H. Complete finish flooring prior to installation of thresholds

I. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal, anchor thresholds with stainless steel countersunk screws.

3.3 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014000 – Quality Requirements

3.4 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made

B. Clean adjacent surfaces soiled by hardware installation activities

3.5 PROTECTION

A. Protect finished Work under provisions of Section 017000 – Execution and Closeout Requirements

B. Do not permit adjacent work to damage hardware or finish.

Manufacturer List

Code	Name
BE	Best
BY	By Others
DM	Dorma Door Controls
NA	National Guard
TR	Trimco

Finish List

Code	Description
AL	Aluminum
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
US26D	Chromium Plated, Dull

Hardware Sets

SET #01 – Card Access Doors

Doors:

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	BE
1 Storeroom Locketset	C180D LCC CMK MKD Verify Keyway Req’d	626	DM
1 Electric Strike	S6514 Install As Fail Secure/Volt as Req’d	630	RC
1 Latch Guard	940-LG	630	RC
1 Closer	8916 SDS	689	DM

1 Kick Plate	K0050 10” X 34” B4E-HEAVY-KP CSK	630	TR
1 Gasketing	700 NA @ Head & Jambs		NA
1 Drip Cap	16 A – 4” ODW		NA
2 Door Sweep	200 NA		NA
1 Threshold	896N 1/4-20 SS,S/EA	AL	NA
1 Card Reader	By Owner’s Security Vendor		
1 Door Contact	By Owner’s Security Vendor		
1 Power Supply	DKS-2A		RC

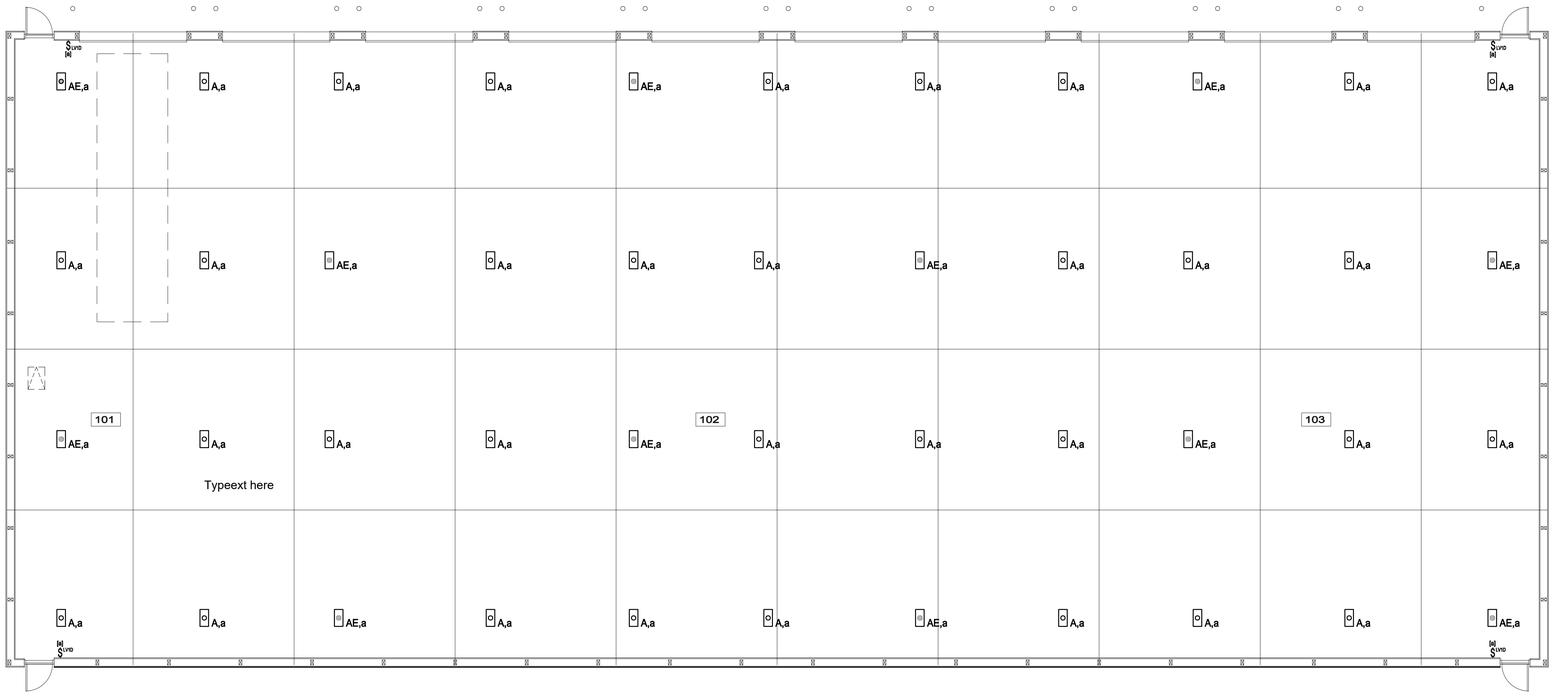
Note: Owner to coordinate keying of locksets. Keying to be done by RJ Lock and Security in Ocean City, MD

SET #02 – Exit Doors

Doors:

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	BE
1 Exit Latch	C125 LCC	626	DM
1 Latch Guard	940-LG	630	RC
1 Closer	8916 SDS	689	DM
1 Kick Plate	K0050 10” X 34” B4E-HEAVY-KP CSK	630	TR
1 Gasketing	700 NA @ Head & Jambs		NA
1 Drip Cap	16 A – 4”		NA
2 Door Sweep	200 NA		NA
1 Threshold	896N 1/4-20 SSMS/EA	AL	NA
1 Door Contact	By Owner’s Security Vendor		

END OF SECTION



SEQUENCE OF OPERATION

STORAGE BAY

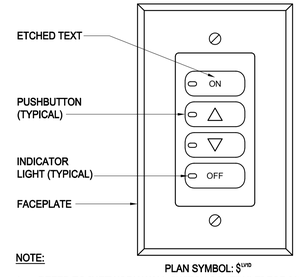
A. ALL STORAGE BAY LIGHTING FIXTURES SHALL BE HELD OFF DURING AND AFTER NORMAL OPERATING HOURS. NORMAL OPERATING HOURS TO BE CONFIRMED WITH OWNER. DURING NORMAL OPERATING HOURS, DIGITAL SWITCH(ES) WILL ALLOW FOR MANUAL OVERRIDE OF LIGHTING FIXTURES AS INDICATED BELOW. AFTER NORMAL OPERATING HOURS, DIGITAL SWITCH(ES) WILL ALLOW FOR MANUAL OVERRIDE OF LIGHTING FIXTURES AS INDICATED BELOW AND SHALL SWEEP OFF AFTER 60 MINUTES.

B. STORAGE BAY SHALL HAVE ONE FOUR-BUTTON WALL STATION AT EACH ENTRY DOOR FOR MANUAL CONTROL OF LIGHTING FIXTURES AS FOLLOWS:
   1. FOUR-BUTTON WALL SWITCH:
      a. BUTTON #1 - ON/OFF - TURN ON ALL LIGHTING FIXTURES IN ZONE "A".
      b. BUTTON #2 - RAISE - INCREASE OUTPUT OF ALL LIGHTING FIXTURES IN ZONE "A".
      c. BUTTON #3 - LOWER - DECREASE OUTPUT OF ALL LIGHTING FIXTURES IN ZONE "A".
      d. BUTTON #4 - OFF - TURN OFF ALL LIGHTING FIXTURES IN ZONE "A".

C. STORAGE BAY LIGHTING FIXTURES SHALL TURN ON TO 100% IN THE EVENT OF A SECURITY BREACH BY MEANS OF AN INTERFACE WITH THE INTRUSION DETECTION SYSTEM PROVIDED UNDER DIVISION 28, AND SHALL REMAIN ON UNTIL THE INTRUSION DETECTION SYSTEM IS RESET TO NORMAL CONDITIONS. AT THAT TIME, LIGHTING FIXTURES SHALL REVERT TO NORMALLY PROGRAMMED SETTINGS.

D. STORAGE BAY SHALL HAVE LIGHTING FIXTURE(S) TO SERVE AS EMERGENCY LIGHT(S) AS NOTED ON THE FLOOR PLANS. EMERGENCY LIGHTING FIXTURES SHALL BE BACKED BY AN INTEGRAL BATTERY AND SHALL NOT BE ABLE TO BE SWITCHED OFF DURING LOSS OF NORMAL POWER. UPON POWER LOSS, EMERGENCY LIGHTING FIXTURE(S) SHALL TURN ON AND REMAIN ON UNTIL NORMAL POWER IS RESTORED. REFER TO FLOOR PLANS AND DETAILS FOR ADDITIONAL INFORMATION.

1



NOTE:

1. REFER TO "NETWORK WALL SWITCH SCHEDULE" FOR MORE INFORMATION, I.E. BASIS OF DESIGN ETC.

PLAN SYMBOL: ^{LVD}

WALL SWITCH DETAIL

(1) **LIGHTING CONTROL SEQUENCE - VEHICLE STORAGE BUILDING**

NO SCALE

DAVIS BOWEN & FRIEDEL, INC.
ARCHITECTS • ENGINEERS • SURVEYORS
SALISBURY, MARYLAND 410.543.9091
MILFORD, DELAWARE 302.424.1441
EASTON, MARYLAND 410.770.4744

ENGINEER
Gipe Associates Inc.
Consulting Engineers
8719 Brooks Drive
Easton, Maryland 21601
Phone (410) 822-6688
Fax (410) 822-6306
WO# 23036

VEHICLE STORAGE FACILITY
CENTRAL SITE LANE
WORCESTER, MARYLAND
BID SET

REVISION 1	09/11/2025
1	

Date: 08/08/2025
Scale: AS NOTED
Dwn.By: KDS
Proj.No.: 0085B049.A01

LIGHTING CONTROL SEQUENCES

Dwg.No.:
E-401

DOCUMENT 004116 - BID FORM - STIPULATED SUM

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: Worcester County Vehicle Storage Facility.

C. Project Location: Worcester County, Maryland.

D. Owner: Worcester County Commissioners.

E. Architect: Davis Bowen & Friedel, Inc.

F. Architect Project Number: 0085B049.B01

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by DBF and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment, and services, including **Builders Risk Insurance and Payment and Performance Bonds** including all scheduled allowances, necessary to complete the construction of the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).

1.3 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 days after a written Notice of Award, if offered within 60 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____ Dollars ($_____).

B. In the event Owner does not offer a Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

1. Concrete Work: _____.

1. MasonryWork:_____.

2. HVAC Work:_____.

3. Plumbing Work:_____.

4. Electrical Work:_____.

5. Roofing Work:_____.

1.5 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect and shall reach Substantial Completion in 275 calendar days.

1.6 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.

B. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within 60 days of the Notice of Award.

C. Acceptance or non-acceptance of any alternates by the Owner shall have no effect on the Contract Time.

1.7 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in Maryland, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.8 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2025.

B. Submitted By :_____(Name of bidding firm or corporation).

C. Authorized Signature :_____(Handwritten signature).

D. Signed By :_____(Type or print name).

E. Title :_____(Owner/Partner/President/Vice President).

F. Street Address: _____.

G. City, State, Zip: _____.

H. Phone: _____.

I. License No.:_____.

J. Federal ID No. :_____(Affix Corporate Seal Here).

END OF DOCUMENT 004116

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.

C. Related Requirements:

1. Section 014000 "Quality Requirements" for procedures governing the use of allowances.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, and similar costs related to products and materials selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1 Lump-Sum: Include the sum of $60,000.00, For security and fire alarm work by Absolute Security Group, Inc..

B. Allowance No 2 Lump Sum : Include the sum of $50,000, For the supply and installation of second fire pump system for the training tower shown in drawings as “Future fire Auxiliary fire pump for tower training” ref drawing P-201.

C. Allowance No 3 Lump Sum : Include the sum of $60,000, For the supply and installation of well and pump and control system labeled as supplied by owner. This allowance will provide for the General Contractor to coordinate and provide the new well and system.

1. These allowances includes material cost, receiving, handling, and installation labor.

END OF SECTION 012100

HARDIN
KIGHT
ASSOCIATES,
INC.

January 16, 2023

Our Job No.: 22828

COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Worcester County Government Center
1 West Market Street, Room 1201
Snow Hill, Maryland 21863

Attention: Mr. Bill Bradshaw

Reference: Vehicle Storage Facility – Central Site Lane
Preliminary Subsurface Investigation Geotechnical Analysis
Tax Map 0048 Parcel 0050

Dear Mr. Bradshaw:

In accordance with our proposal (#103 dated November 17, 2022), we have completed a subsurface investigation and geotechnical analysis for the Vehicle Storage Facility planned for construction in Snow Hill, Maryland. This investigation was performed to analyze the underlying subsurface soil and groundwater conditions on the site and develop preliminary recommendations for site development and the design of foundations, slabs, pavements, and stormwater management features. Our findings, analysis and preliminary recommendations are presented herein.

For this investigation we were provided with an electronic copy of preliminary site drawings, as well as schematic design drawings entitled *Vehicle Storage Facility – Central Site Lane Worcester County Maryland*, prepared by Davis Bowen & Friedel, Inc. (DBF), dated September 2022, and January 2023, respectively. The site plan illustrates the site boundaries, proposed building, parking, SWM Pond, and the location of 8 borings to be drilled. The concept drawings show the planned 1-story pre-engineered metal building with a concrete slab-on-grade. The site plan and concept drawings were utilized in preparation of this report.

SITE DESCRIPTION

The site is located on the north side of Central Site Lane, approximately 1,000 feet east of Worcester Highway (Route 113), in Snow Hill Maryland. The site is located within the Worcester County Fire Training Center property, which has a plan area of approximately 12-acres and contains an existing 1-story building situated on the western edge of the property, and a 4-story concrete structure, located on the north-central portion of the property. The site includes existing parking, utilities and a SWM Pond. The buildings are currently used as office space and training facility for the Worcester County Fire fighting division.

The site is relatively flat. From review of the surface elevations shown on the previously referenced DBF site plan, the surface varies approximately 4 feet in elevation, from 32 feet above Mean Sea Level (MSL) along Central Site Lane to 28 feet above MSL along the northern property boundary. The natural site drainage is from south to north, toward the existing SWM pond. At the time of this investigation the ground surface was wet.

PROPOSED CONSTRUCTION

Site development will include construction of a 1-story pre-engineered metal building with a concrete slab-on-grade, extension of the existing parking, as well as the SWM pond. The building is proposed to be located in the southeastern corner of the property and is to have plan dimensions of approximately 71 by 247 feet. The existing parking and SWM pond will both be extended towards the east to accommodate the new construction.

Final construction drawings and site grading plans were still being prepared at the time of writing this report. However, from our email correspondence we understand that finished floor is planned near or slightly above the existing pavement surface. We anticipate that limited site grading will be required to achieve the finished grade for slab construction, with cuts and fill on the order of 1 to 2 feet or less. Excavations of up to approximately 8 feet are anticipated for the extension of the existing SWM pond. For this preliminary analysis we have assumed wall loads of 1 to 2 kips per linear foot, and maximum column loads of 100 kips.

INVESTIGATION

To evaluate the subsurface conditions, eight (8) standard penetration test borings (SPT) were drilled. The test borings are identified as Borings B-1 through B-8 and were drilled to depths ranging from 11.5 to 21.5 feet below the existing ground surface. Borings B-1 through B-6 were drilled within the proposed building footprint at locations established with reference to existing conditions. Two (2) borings, labeled B-7 and B-8 were drilled within the area proposed for the SWM Pond extension.

Standard penetration tests were taken at close intervals from the surface to 10 feet below the surface, and at 5-foot intervals thereafter. Standard penetration testing involves driving a 2-inch O.D., 1-inch I.D., split spoon sampler with a 140-pound hammer free-falling 30-inches. The SPT N-value, given as blows per foot (BPF), is defined as the total number of blows required to drive the sampler from 6-inches to 18-inches. Split spoon samples were obtained and transported to our laboratory for review and classification. The samples were visually identified in general accordance with *Standard Practice for Description and Identification of Soils* (Visual-Manual Procedure) ASTM Designation: D-2488. Detailed descriptions of the soils encountered are indicated on the attached test drilling logs. The boring locations are shown on the attached Boring Location Plan, labeled as Figure 1. The Boring Location Plan is an altered version of the previously referenced DBF site plan, modified to indicate the test boring locations.

FINDINGS

The subsurface conditions encountered consist primarily of sand with varying amounts of silt and clay. The sands are generally silty-clayey near the ground surface and become clean with depth. Based on the SPT resistance N-values, the sands can be characterized as very loose to medium dense.

At the time of drilling the borings, groundwater was encountered at depths ranging from 11 to 15 feet below the ground surface. All of the boring holes caved upon completion of drilling at depths ranging from 8 to 13 feet below the surface.

GEOLOGY

According to the *Geologic Map of Worcester County* (Owens and Denny, 1978), the site is underlain by the Omar Formation. The Omar Formation is divided into 2 major facies, a light-colored sand and a dark-colored sandy clay silt or silty clay. In eastern Worcester County, the dark-colored facies make up the bulk of the formation. The 2 facies are interstratified, with the sand commonly overlying the dark colored beds. The light-colored sandy beds, typically less than 15 feet thick, consist of mostly medium grained, poorly graded, sands. The dark-colored facies consists of interbedded, 3- to 5-foot-thick layers of silty sand, silt, and silty clay. In most places, thin to thick, dark-brown clayey or sandy peats are interbedded with or lie at the base of the dark-colored facies. The maximum thickness of the Omar Formation is approximately 65 feet near the Maryland Delaware line. The unit underlying the Omar Formation is the Beaverdam Sand.

The Beaverdam Sand formation is described by various sources as heterogeneous unit ranging from very coarse sand with pebbles to silty clay. The predominant lithologies at the land surface are white to mottled light gray and reddish brown, silty to clayey, fine to coarse sand. The subsurface consists of laminae and beds of very coarse sand with pebbles to gravel layered with laminae and beds of bluish gray to light-gray silty clay. In a few places near the land surface, but more commonly in the subsurface, beds ranging from 2 to 20 feet thick of finely laminated, very fine sand and silty clay are present.

SOIL SURVEY

The information in this section is from the *Web Soil Survey* which was accessed on December 16, 2022. The the soil units onsite are:

- Matapeake silt loam, 0 to 2 percent slopes, (MkA). Component: Matapeake (80%), Nassawango (10%), Butlertown (5%), and Mattapex (5%)
- Mattapex silt loam, 0 to 2 percent slopes, Northern Tidewater Area (MtdA). Components: Mattapex (80%), Nassawango (10%), Othello, drained (5%), and Crosiadore (5%).
- Urban land (UpB). Component: Urban land (90%) and Udorthents, loamy (10%)

The descriptions, properties, and limitations are based on Worcester County, Maryland, Version 20, dated September 14, 2022. The components are described below.

The Matapeake component parent material consists of silty eolian deposits over fluviomarine sediments. Depth to a restrictive layer is greater than 60 inches. The hydrologic soil group is C. The natural drainage class is described as well drained. Water movement in the most restrictive layer is moderately low. Typically, this soil is not flooded and does not pond. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria. Shrink-swell potential is low. Potential for frost action is high. The risk of corrosion of uncoated steel is low, and high for concrete.

In the Matapeake component, shallow excavations are somewhat limited due to dusty and unstable excavation walls. Small commercial buildings are not limited. Pavements are very limited due to frost action and low strength. Infiltration is somewhat limited due to adsorptive capacity. Lined retention systems are somewhat limited due to water spreading surface, insufficient groundwater, and water movement. Unlined retention systems are severely limited due to insufficient groundwater, and water movement. Vegetative establishment is an issue for all SWM systems.

The Mattapex component parent material consists of silty eolian deposits over fluviomarine sediments. Depth to a restrictive layer is greater than 60 inches. The hydrologic soil group is C. The natural drainage class is described as moderately well drained. Water movement in the most restrictive layer is moderately low. Typically, this soil is not flooded and does not pond. A seasonal zone of water saturation is at 24 inches during February. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. Shrink-swell potential is low. Potential for frost action is high. The risk of corrosion of uncoated steel is low, and high for concrete.

In the Mattapex component, shallow excavations are very limited due to depth to saturated zone, dusty and unstable excavation walls. Small commercial buildings are somewhat limited due to depth to saturated zone. Pavements are very limited due to frost action, depth to saturated zone, and low strength. Infiltration is severely limited due to wetness and adsorptive capacity shallow and deep systems respectively. Lined retention systems are somewhat limited due to water spreading surface, water movement, and insufficient groundwater. Unlined retention systems are somewhat limited due to wetness interferes with instillation, insufficient ground water, and water movement (0.02). Vegetative establishment is an issue for all SWM systems.

Urban Land is a miscellaneous area affected by human disturbed or deposited material, it may include fill over natural soil, dredged spoils, paved areas or construction debris. Due to the highly variable conditions, they require an investigation to classify.

ANALYSIS/DISCUSSION

Based on our findings the site is satisfactory for the proposed construction provided that the recommendations included herein are followed. From our analysis of the SPT data the building can be supported with spread footing foundations proportioned for an allowable soil contact pressure equal to 2,000 pound per square foot (psf).

The near surface silty-clayey soils encountered are satisfactory for support of the proposed structure and pavements if they are not disturbed by construction grading equipment. They are extremely moisture sensitive and can be rendered unsuitable if subjected to stresses imposed by the weight of construction equipment when the surface is wet. Positive surface drainage must always be maintained and will be a critical component for a successful earthwork operation. If water is allowed to pond and accumulate on the exposed silty-clayey soil subgrade, significant soil strength deterioration can be expected.

Considering the characteristics of the near surface silty-clayey soils, we recommend that site grading operations be conducted in the summer months when the surface is dry. If site grading occurs during the wet season, we anticipate that the silty-clayey soils will become unstable under the weight of earthmoving equipment. Unless earthwork grading is accomplished during the dry months of the summer (June through October), the silty-clayey soils may become unworkable, and will likely require undercut/over-excavation, or alternative stabilization methods. We recommend that the earthwork grading be accomplished with low ground pressure construction equipment to minimize disturbance to the subgrade soils.

Ground floor slabs may be designed and constructed independent of the foundations based on an estimated modulus of subgrade reaction equal to 150 pci. The slabs may be designed with rigid connections to the foundations provided that the structural engineer takes into consideration the potential differential settlement between the slab and the foundation (estimated to be less than ½ inch).

The findings of this investigation revealed that groundwater is currently 11 to 12 feet below the existing surface. We anticipate that the depth to groundwater will decrease during the wet season. The seasonal high groundwater (SHG) is estimated to be approximately 7 to 8 feet below the existing site surface. The depth to groundwater can be expected to fluctuate with seasonal changes and should be considered approximate. Temporary dewatering, using conventional sump and pump techniques, will be required in excavations made below a depth of about 10 to 11 feet below the existing surface. If significantly deeper excavations are made, more comprehensive dewatering will be required.

From review of our findings, we anticipate that the soils encountered in the area proposed for expansion of the SWM pond will be satisfactory for use as excavated borrow fill, provided the natural moisture content of the excavated soils are dried to within 2% of the optimum moisture content for compaction. Moisture conditioning (drying) the excavated soils may be required.

The near surface silty-clayey sands on the project site are anticipated to have a low CBR value. If site development and earthwork grading is attempted during the traditional wet season (November through April), chemical stabilization of the prepared silty-clayey soil subgrade below the pavements may be required. Laboratory testing for design of pavements was not part of the scope of services for this investigation. For budgeting purposes, we have provided preliminary pavement recommendations in the following section.

PRELIMINARY RECOMMENDATIONS

Based on the conditions identified by the test borings drilled for this investigation, we have developed the following preliminary recommendations for your review and consideration. These recommendations are considered preliminary pending our review of the final construction drawings. Once the final construction drawings and building loads become available, our office should be contacted for additional review and comment.

Site Preparation and Earthwork Grading

1. We recommend that earthwork grading be planned for the dry season. We recommend that all stormwater management devices be installed prior to earthwork grading.

2. We recommend that areas to receive fill be stripped of vegetation and topsoil prior to placing fill. The limits of stripping must extend a minimum of 5 feet beyond structure limits and 2 feet beyond pavement limits. We recommend that the ground surface to receive fill be proofrolled with a loaded tandem axle dump truck and approved by Hardin-Kight Associates, Inc. (HKA), prior to placement of fill.

3. We recommend that structural fill be placed and compacted in uniform 8 inch thick layers. The material used for fill construction should meet the AASHTO classification of A-2-4 or more granular. We anticipate that the undercut fill soils can be reused as structural fill, provided the soils are dried to within 2% of the optimum moisture content for compaction. We recommend that fill placed below structures and pavements be compacted to 95% of ASTM D-698.

4. We recommend that the maximum slope (cut or fill) not exceed 2:1 horizontal to vertical.

5. We recommend that site development and construction of structural fill be monitored by HKA.

6. We recommend that we be given the opportunity to review the final grading plans and construction drawings as they become available.

Foundations

1. We recommend that the building be supported on shallow spread footing foundations bearing on firm natural subsoil, or suitably compacted fill, and designed for a net allowable soil contact pressure equal to 2,000 psf. We recommend the footings be located a minimum depth of 24-inches below the finished grade for frost protection. We recommend that the footings contain a minimum of two #4 steel reinforcing bars placed continuously in the footings. Additional reinforcing may be required as determined by the structural engineer.

2. We recommend that footing excavations be inspected and tested by HKA prior to concrete placement. The HKA representative shall confirm that the soils below the foundations, and to a depth of at least 3 feet below the footing bottom, are satisfactory for support of spread footing foundations as designed. If the soils below the foundations are found to be unsatisfactory, the footing shall be modified as recommended by HKA, in conjunction with the structural engineer.

Slab-On-Grade

1. We recommend that ground floor slabs be designed as floating slabs, not rigidly connected to bearing walls or foundations to accommodate differential settlement. The slab may rest on the wall or foundation but should not be structurally connected. The slab may be designed based on a modulus of subgrade reaction k = 150 PCI provided the slab subgrade is constructed with granular soils compacted to a minimum of 95% of ASTM D698.

2. We recommend that a minimum 4-inch-thick drainage layer, consisting of free draining sand or gravel, be placed beneath floor slabs. We recommend that a plastic vapor barrier be provided between the concrete and drainage layer.

3. Prior to placement of the drainage layer, we recommend that the slab subgrade be inspected, tested, and approved by HKA or his representative. We recommend that soft or wet areas that yield under construction traffic be removed and replaced with suitably compacted fill.

Stormwater Management

1. We recommend that the SWM pond be designed and constructed in accordance with the *Maryland Department of Environment 2000 Maryland Stormwater Design Manual, latest edition, as applicable.*

2. We recommend that both permanent fill and cut slopes be constructed on a maximum gradient of 2:1 (horizontal to vertical). Flatter slopes are suggested where possible to aid in the establishment of vegetative cover, reduce the potential for erosion, and facilitate maintenance.

3. We recommend that the contractor be prepared to control groundwater below a depth of approximately 10 feet from the existing ground surface during pond basin excavation.

4. We recommend that the SWM pond excavation be monitored by Hardin-Kight Associates, Inc. (HKA) for slope seepage and stability. If slope seepage resulting in slope instability is observed, supplemental stabilization practices (ie; underdrains, drainage blankets and rip-rap) may be required. HKA will provide recommendations and details during construction as needed.

5. We recommend that the material proposed for use as backfill placed around stormwater inflow and outfall pipes meet the USC classification of SP, SM, SP/SM, SC, CL and CH, and be free of deleterious materials.

6. We recommend that the pipe trench backfill be compacted to a minimum of 95% of the maximum dry density as determined in accordance with the standard moisture density relationship test (ASTM D-698/AASHTO T99).

7. We recommend that each layer of trench backfill be tested and approved prior to placement of the succeeding layer. We recommend that fill which fails to meet the minimum compaction requirements be compacted and reworked until satisfactory compaction is obtained.

8. We recommend that the construction of the SWM Pond be monitored by HKA.

Pavements

1. We recommend that the subgrade soils in areas to receive pavements be compacted to a minimum of 98% of the maximum dry density as determined in accordance with the Standard Moisture Density Relationship Test (ASTM D698).

2. We recommend that the pavement subgrade soil be proofrolled with a loaded tandem dump truck or rubber tire roller with a gross weight in excess of 30 tons.

3. We recommend that unsatisfactory subgrade conditions identified during the proofroll be corrected in accordance with the following procedures:

   a. soft/wet materials may be removed and replaced with suitable fill, compacted to the required density.
   b. the materials may be reworked and re-compacted until satisfactorily compacted to the required density.
   c. unsatisfactory subgrade may be improved by installation of ground stabilization cloth and additional thickness of stone base material.
   d. longitudinal underdrains shall be installed in poorly drained areas as directed by HKA.

4. We recommend that the finished base course stone be compacted to a minimum of 100% of ASTM D698.

5. We recommend that the finished base course stone be proofrolled with a loaded tandem axel dump truck and approved by the geotechnical engineer prior to placement of hot-mix asphalt. If precipitation occurs prior to placement of hot-mix asphalt (HMA), a re-evaluation by HKA is recommended prior to proceeding.

6. For preliminary budgeting purposes we recommend the following HMA pavement sections based on a CBR of 5. Materials with a CBR less than 5 should be removed and replaced with compacted granular soil or be chemically treated.

   Travel Lanes/Heavy Duty Area

   1.5 inches 9.5 mm Superpave Surface Course (PG 64-22)
   3 inches 19 mm Superpave Base Course (PG 64-22)
   6 inches GABC (compacted to 100% ASTM D698)

   Parking Areas/Light Duty

   1.5 inches 9.5 mm Superpave Surface Course (PG 64-22)
   2.5 inches 19 mm Superpave Base Course (PG 64-22)
   6 inches GABC (compacted to 100% ASTM D698)

   Heavy Duty Concrete Paving (Dumpster Pad)

   8 inches 4,000 psi air entrained concrete (reinforced with #4 bars placed at 12 inches on center each way)
   8 inches GABC (compacted to 100% ASTM D698/AASHTO T99)

7. We recommend that the HMA pavements be constructed in accordance with the *MDOT SHA Standard Specifications for Construction and Materials*.

8. We recommend that CBR testing be considered once the parking area is to grade.

Construction Inspection and Testing

We recommend that the owner retain the services of HKA to:

1. Monitor site development and earthwork grading operations including approval of the ground surface prior to placement of fill, proofrolling, and performance of compaction tests.

2. Observe foundation and slab construction, including inspection of the footing excavations, and perform penetration tests to confirm sub-foundation soil suitability, to a minimum depth of 3 feet below the bottom of the footing.

CONCLUSIONS

Based on the findings of this investigation, the site is satisfactory for the proposed construction. The subsurface conditions are satisfactory for support of conventional foundations and ground supported slabs if they are not disturbed by construction equipment during site development. We recommend that site development and earthwork grading be planned for the dry season (June through October).

The recommendations included in this report are based on the findings at the test boring locations, our review of the preliminary design drawings prepared by DBF, and the understanding that we will be retained to monitor site development and fill and foundation construction. Once the final construction drawings become available, we recommend that our office be contacted for additional review and comment.

LIMITATIONS

This report was prepared in accordance with generally accepted practice for geotechnical engineering in this area. It is intended for the use of the client for the specific site, as shown on the Boring Location Plan. The recommendations are based on the general description of the proposed construction as characterized above. If the project is substantially modified, this office should be notified so that we can review our recommendations to determine what impact the changes will have.

The soil and water conditions discussed herein represent the conditions encountered at the locations of the exploratory borings as shown on the Boring Location Plan. Variations in the soils between the boring locations and below the depths explored, should be anticipated.

A copy of the test borings logs, Boring Location Plan and Soil Survey Map are enclosed for your reference. If you have any questions, please feel free to contact this office.

Very truly yours.

HARDIN-KIGHT ASSOCIATES, INC

Paul M. Till

Justin A. Frizzell, P.E.

Hardin-Kight Associates, Inc.
12515 Caterpillar Lane
Bishopville, Maryland 21813

Office: 410-352-5001
Fax: 410-352-3228
www.hardin-kightassociates.com

Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 1
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	31.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
28.0	Tan/reddish brown, moist, loose, fine, silty SAND (SM)	3.0		D	3-3-5	1	DS	14"	4-inches topsoil at surface
	Tan/yellowish, moist, medium dense, medium to fine SAND with little silt (SP/SM)			D	3-7-7	2	DS	16"	
			5	D	4-10-10	3	DS	18"	water encountered at 15.0 feet while drilling
				D	10-10-12	4	DS	18"	
			10	D	9-13-14	5	DS	18"	Rust mottles at 6.5 feet in S-3 Heavy rust mottles in S-5 at 10.0 feet
18.0		13.0							
	Grey/white, wet, very loose to very loose, silty very fine SAND (SM)		15	D	1-2-2	6	DS	18"	cave at 13.0 feet and was dry
9.5		21.5	20	D	1-2-1	7	DS	18"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
- DS - DRIVEN SPLIT SPOON
- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

Sample Conditions
- D - DISINTEGRATED
- I - INTACT
- U - UNDISTURBED
- L - LOST

Ground Water Depth
- AT COMPLETION __DRY____FT
- AFTER____HRS_____FT
- AFTER____24 HRS_____FT

Boring Method
- HSA - HOLLOW STEM AUGERS
- CFA - CONTINUOUS FLIGHT AUGERS
- DC - DRIVEN CASING
- MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

Hardin-Kight Associates, Inc.
12515 Caterpillar Lane
Bishopville, Maryland 21813

Office: 410-352-5001
Fax: 410-352-3228
www.hardin-kightassociates.com

Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 2
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	31.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
	Tan/reddish brown, moist, loose, slightly plastic, fine, silty-clayey SAND (SM/SC)			D	1-3-6	1	DS	15"	7-inches topsoil at surface
27.0		4.0		D	1-5-7	2	DS	16"	
	Tan/yellowish to grey, moist, loose to medium dense, fine SAND with trace to little silt (SP/SM)		5	D	2-5-4	3	DS	18"	water encountered at 15.0 feet while drilling
21.0		10.0		D	4-7-13	4	DS	18"	
18.0	Grey, moist, medium dense, fine, silty SAND (SM)	13.0	10	D	5-8-9	5	DS	18"	
	Grey/white, moist to wet, loose, silty, very fine SAND (SM)		15	D	1-2-2	6	DS	16"	cave at 8.0 feet and was dry
9.5		21.5	20	D	2-5-8	7	DS	18"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

Ground Water Depth
AT COMPLETION __DRY____FT
AFTER____HRS_____FT
AFTER____24 HRS_____FT

Boring Method
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVEN CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

Hardin-Kight Associates, Inc.
12515 Caterpillar Lane
Bishopville, Maryland 21813

Office: 410-352-5001
Fax: 410-352-3228
www.hardin-kightassociates.com

Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 3
Job #: 22828

Datum	NAVD88	Hammer Wt.	140	Lbs.	Sampler Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	31.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
	Tan/brown, moist, loose, fine, slightly plastic silty-clayey SAND (SC/SM)			D	1-2-2	1	DS	17"	6-inches topsoil at surface
27.5		3.5		D	4-6-7	2	DS	18"	
26.0	Tan/yellowish, moist, medium dense, fine SAND with trace to little silt (SP/SM)	5.0	5	D	2-3-4	3	DS	18"	
	Grey, moist, loose, plastic, fine, silty-clayey SAND (SC)			I	5-9-13	4	DS	18"	water encountered at 16.0 feet while drilling
			10	D	5-8-7	5	DS	18"	
18.0		13.0							
	Grey, moist to wet, loose, silty, very fine SAND (SM)		15	D	1-3-3	6	DS	18"	cave at 10.0 feet and was dry
9.5		21.5	20	D	2-3-6	7	DS	18"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

Ground Water Depth
AT COMPLETION __DRY___FT
AFTER____HRS_____FT
AFTER____24 HRS_____FT

Boring Method
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVEN CASING
MD - MUD DRILLING

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Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 4
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	30.5+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
	Tan/brown, moist, loose, fine, silty SAND with trace clay (SM)			I	1-2-2	1	DS	18"	8-inches topsoil at surface
26.5		4.0		I	1-2-3	2	DS	18"	
	Tan to grey, moist, loose to medium dense, fine SAND with little to some silt (SM)		5	D	5-5-3	3	DS	15"	water encountered at 15.0 feet while drilling
				D	8-12-14	4	DS	18"	
			10	D	5-7-6	5	DS	18"	
17.5		13.0							
	Grey/white, moist to wet, loose, silty-clayey very fine SAND (SM)		15	D	2-2-2	6	DS	18"	cave at 10.0 feet and was dry
9.0		21.5	20	D	2-3-6	7	DS	18"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
- DS - DRIVEN SPLIT SPOON
- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

Sample Conditions
- D - DISINTEGRATED
- I - INTACT
- U - UNDISTURBED
- L - LOST

Ground Water Depth
- AT COMPLETION __DRY___FT
- AFTER____HRS_____FT
- AFTER____24 HRS_____FT

Boring Method
- HSA - HOLLOW STEM AUGERS
- CFA - CONTINUOUS FLIGHT AUGERS
- DC - DRIVEN CASING
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Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 5
Job #: 22828

Datum	NAVD88	Hammer Wt.	140 Lbs.	Sampler Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	31.5+/-*	Hammer Drop	30 in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2 in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
31.0	Topsoil	0.5			3-5-8	1	DS	14"	some stone 5.0 feet
30.0	Tan, moist, very medium dense, fine to medium SAND, little silt (SM)	1.5							
27.5	Reddish brown, moist, loose, silty-clayey fine SAND (SC)	4.0			4-4-5	2	DS	16"	
	Tan/rust to tan, moist, medium dense, fine to medium SAND, little to some silt (SM)		5		5-9-4	3	DS	14"	water encountered at 19.0 feet while drilling
					2-9-10	4	DS	18"-	
			10		5-8-16	5	DS	17"	
18.5		13.0							
	Light grey/white to tan, rust, very loose, moderately plastic, silty-clayey, fine SAND (SC)		15		2-2-3	6	DS	18"	cave at 10.0 feet and was dry
10.0		21.5	20		1-1-2	7	DS	18"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

Ground Water Depth
AT COMPLETION __DRY___FT
AFTER____HRS_____FT
AFTER____24 HRS_____FT

Boring Method
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVEN CASING
MD - MUD DRILLING

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Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 6
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	31.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
30.5	Bituminous concrete and crushed stone	0.5			5-8	1	DS	10"	2-inches asphalt
27.0	Tan/rust, moist, loose to very loose, fine SAND some silt (SM)	4.0			2-2-3	2	DS	18"	
	Tan to grey to tan/grey, moist, medium dense, fine to medium SAND with little to some silt and clay (SM/SC)		5		3-4-8	3	DS	17"	water encountered at 16.0 feet while drilling
					3-3-9	4	DS	18"	
18.0		13.0	10		8-12-13	5	DS	16"	
	Tan/grey, wet, loose, slightly plastic, silty-clayey, very fine SAND (SC/SM)		15		1-3-3	6	DS	18"	
13.0		18.0							
9.5	Tan/rust, moist, loose to medium dense, fine to medium SAND, little silt (SPM)	21.5	20		2-9-11	7	DS	16"	
	Bottom of Boring at 21.5 feet		25			8	DS		
			30			9	DS		
			35			10	DS		*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40			11	DS		

Sampler Type
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

Ground Water Depth
AT COMPLETION __DRY___FT
AFTER____HRS_____FT
AFTER____24 HRS_____FT

Boring Method
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
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Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 7
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	29.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
26.5	Tan/brown, moist, loose, plastic, fine, silty-clayey SAND (SM/SC) USDA – Sandy Loam	2.5		I	1-2-2	1	DS	18"	8-inches topsoil at surface
	Tan/yellowish, moist, loose to medium dense, fine SAND with little to some silt (SM) USDA – Loamy Sand			D	2-2-3	2	DS	18"	
			5	D	5-10-11	3	DS	18"	wet at 11.5 feet
19.0		10.0		D	4-4-5	4	DS	18"	
17.5	Tan/reddish/yellow, moist to wet, loose, silty-clayey, very fine SAND (SC) USDA – Sandy Loam	11.5	10	D	2-2-3	5	DS	18"	
	Bottom of Boring at 11.5 feet		15						cave at 9.0 feet and was dry
			20						
			25						
			30						
			35						*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40						

Sampler Type
- DS - DRIVEN SPLIT SPOON
- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

Sample Conditions
- D - DISINTEGRATED
- I - INTACT
- U - UNDISTURBED
- L - LOST

Ground Water Depth
- AT COMPLETION __DRY___FT
- AFTER____HRS_____FT
- AFTER____24 HRS_____FT

Boring Method
- HSA - HOLLOW STEM AUGERS
- CFA - CONTINUOUS FLIGHT AUGERS
- DC - DRIVEN CASING
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STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

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Record of Soil Exploration

Contracted With: COUNTY COMMISSIONERS OF WORCESTER COUNTY MARYLAND
Projects Name: VEHICLE STORAGE FACILITY
Location: CENTRAL SITE LANE – SNOW HILL, MARYLAND

Boring: B - 8
Job #: 22828

					Sampler				
Datum	NAVD88	Hammer Wt.	140	Lbs.	Rock Core Dia.	-	Driller	EARTH MATTERS
Surf. Elev.	29.0+/-*	Hammer Drop	30	in.	Hole Diameter	4"	Inspector	PAUL TILL
Date Started	12/14/2022	Pipe Size	2	in.	Boring Method	HSA/MD	Date Finished	12/14/2022

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
26.5	Tan/brown, moist, medium dense, fine, silty-clayey, fine, silty SAND (SM) USDA – Loamy Sand	2.5		I	2-4-7	1	DS	18"	8-inches topsoil at surface
	Tan/yellowish to tan, moist to wet, medium dense to loose, fine SAND with little to some silt (SM) USDA – Loamy Sand			I	3-7-13	2	DS	18"	
			5	D	4-7-9	3	DS	15"	water encountered at 11.5 feet while drilling
				D	7-8-9	4	DS	18"	
17.5		11.5	10	D	5-2-3	5	DS	18"	
	Bottom of Boring at 11.5 feet								
			15			"			cave at 6.5 feet and was dry
			20			"			
			25						
			30						
			35						*Ground surface elevation estimated from topography shown on DBF site plan (Sheet C-101)
			40						

Sampler Type
- DS - DRIVEN SPLIT SPOON
- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

Sample Conditions
- D - DISINTEGRATED
- I - INTACT
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Ground Water Depth
- AT COMPLETION __DRY___FT
- AFTER____HRS_____FT
- AFTER____24 HRS_____FT

Boring Method
- HSA - HOLLOW STEM AUGERS
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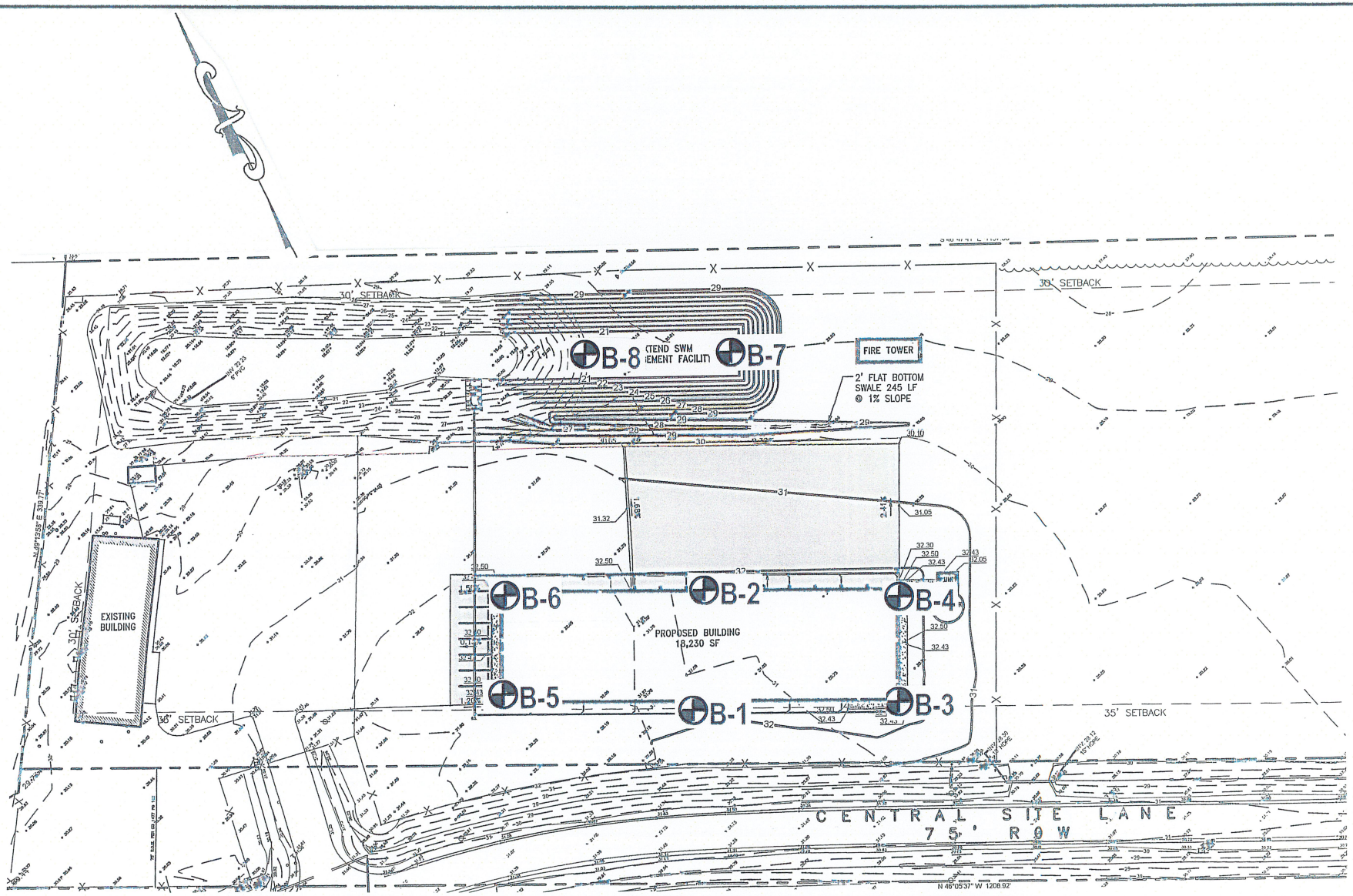
- DC - DRIVEN CASING
- MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

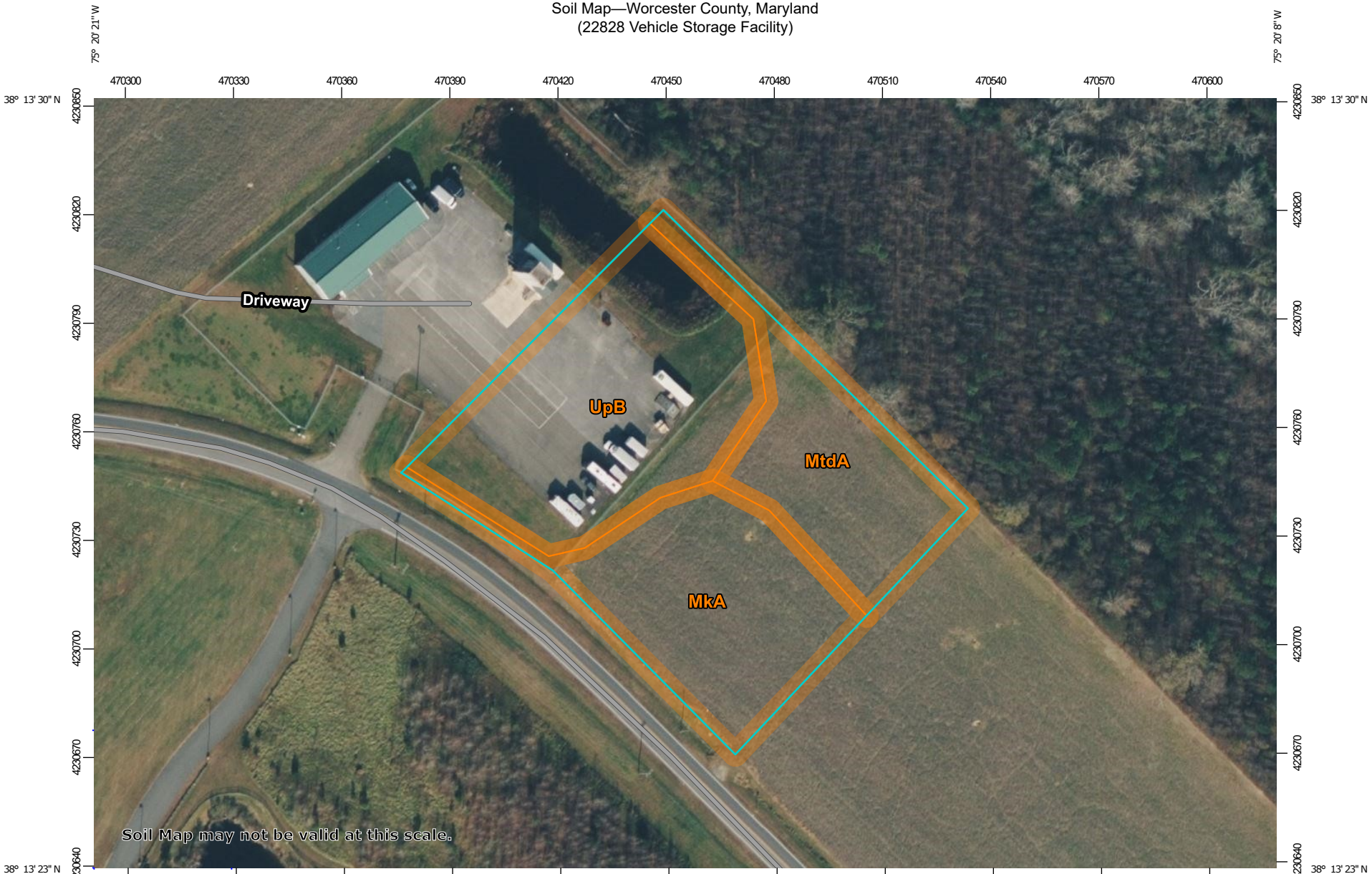


BORING LOCATIONS

FIGURE 1

PROJECT: 22828	VEHICLE STORAGE FACILITY SNOW HILL, MARYLAND BORING LOCATION PLAN	DATE: 12-2022
SCALE: N.T.S.		DRAWN BY: AB
		CHECKED BY: PT
DRAWING:	FILE:	HARDIN–KIGHT ASSOCIATES, INC. CONSULTING ENGINEERS

Soil Map—Worcester County, Maryland
(22828 Vehicle Storage Facility)



Map Scale: 1:1,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Maryland
Survey Area Data: Version 20, Sep 14, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MkA	Matapeake silt loam, 0 to 2 percent slopes	0.9	31.6%
MtdA	Mattapex silt loam, 0 to 2 percent slopes, Northern Tidewater Area	0.7	24.7%
UpB	Urban land	1.2	43.7%
Totals for Area of Interest		**2.8**	**100.0%**