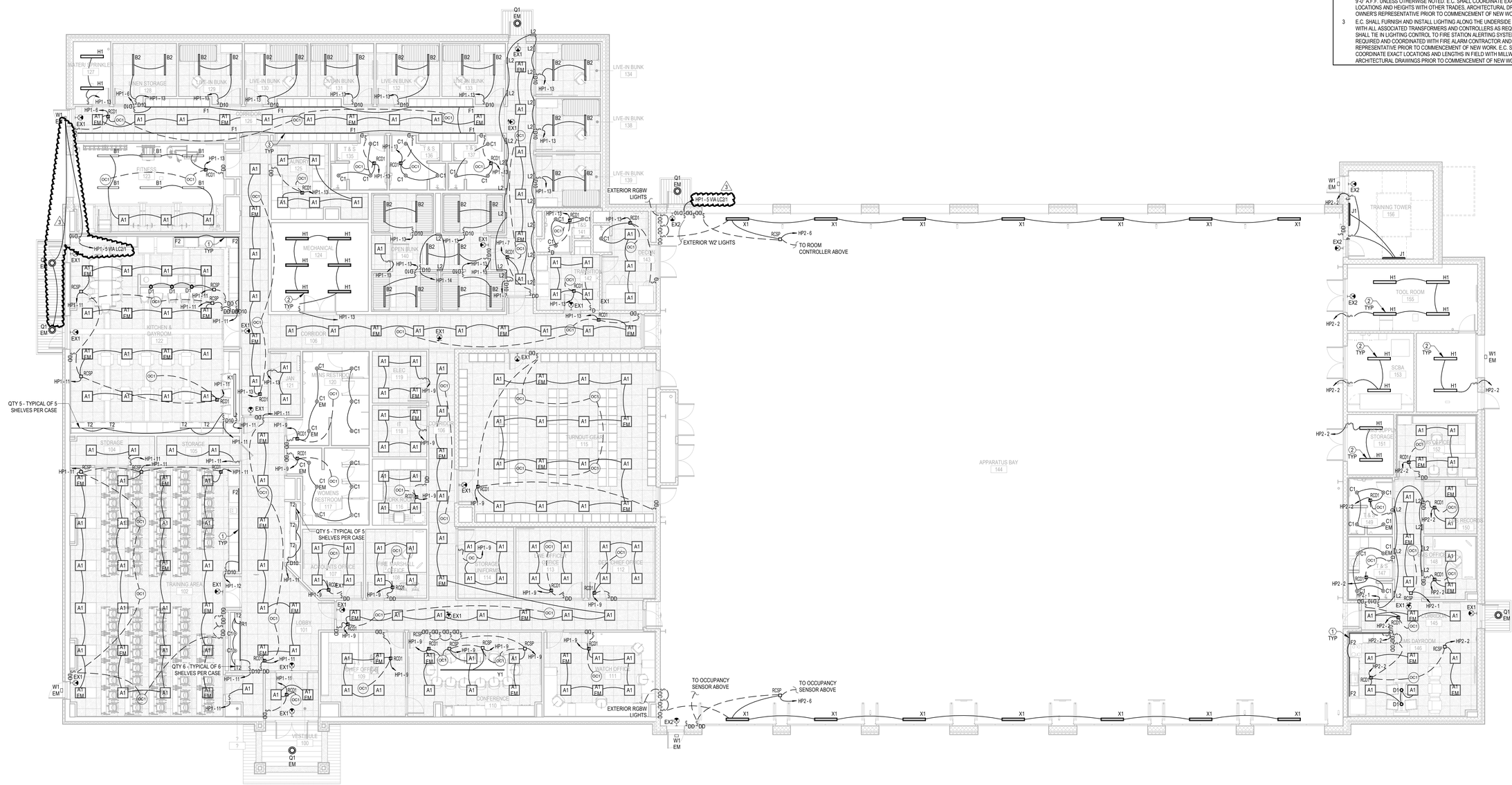

1 FIRST FLOOR LIGHTING PLAN

1/8" = 1'-0"

GENERAL LIGHTING NOTES

A. ALL LIGHTING FIXTURES SHALL BE FED FROM A JUNCTION BOX WITH 6' WHIPS.

B. E.C. SHALL COORDINATE MOUNTING HEIGHTS OF ALL LIGHTS AND EXIT SIGNS IN FIELD WITH CEILING TYPES AND ARCHITECTURAL DRAWINGS.

C. ALL ROOM CONTROLLERS AND OCCUPANCY SENSORS SHALL BE SET FOR 20 MIN. MAX VACANCY TIME.

D. ALL EXIT SIGNS SHALL BE FED UNSWITCHED FROM THE NEAREST LOCAL LIGHTING CIRCUIT IN AREA IN WHICH FIXTURE IS SERVING.

E. ALL WIRING SHOWN DASHED FROM ROOM CONTROLLERS REPRESENT LOW VOLTAGE CAT-6 WIRING. ALL DARK SOLID LINES SHOWN FROM ROOM CONTROLLERS REPRESENTS LINE VOLTAGE SWITCH LEGS. IF MULTIPLE SWITCH LEGS ARE SHOWN FROM ROOM CONTROLLER EACH IS FED FROM A SEPARATE RELAY INTEGRAL TO THE CONTROLLER, AS SUCH, EACH RELAY SHALL BE CONTROLLED BY IT'S OWN MANUAL CONTROL DEVICE, IF PRESENT IN THE AREA, AND SHALL BE PROGRAMMED TO BE OVERALL CONTROLLED BY THE OCCUPANCY SENSOR AS SHOWN IN LIGHTING CONTROL SCHEDULE.

F. E.C. SHALL REFER TO LIGHTING CONTROL WIRING DIAGRAMS ON DRAWING E000 FOR ADDITIONAL LIGHTING CONTROL INFORMATION.

G. ALL LIGHTING INSTALLED IN PATHS OF EGRESS THAT ARE CONTROLLED BY OCCUPANCY SENSORS SHALL HAVE A FIRE ALARM CONTROL MODULE FURNISHED, INSTALLED, AND WIRED INTO THE LIGHTING CONTROLLER TO AUTOMATICALLY PUSH LIGHTING TO 100% ON IN EVENT OF FIRE ALARM SYSTEM ACTIVATION. E.C. SHALL FURNISH AND INSTALL AN ADDITIONAL RCSP DEVICE TO INTERFACE BETWEEN THE LIGHTING CONTROL SYSTEM AND FIRE ALARM SYSTEM INPUT. E.C. SHALL INSTALL ALL WIRING AND DEVICES PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

H. ROOM CONTROLLERS ARE SHOWN IN THEIR LOCATIONS FOR CIRCUITING CLARITY. E.C. SHALL FURNISH AND INSTALL ALL ROOM CONTROLLERS IN EASILY ACCESSIBLE LOCATION ABOVE CEILING.

J. ALL LOCATIONS SHOWN WITH MULTIPLE SWITCHES SHALL BE INSTALLED IN A MULTI-GANG BOX FOR QUANTITY OF DEVICES AS SHOWN ON PLANS. E.C. SHALL COORDINATE ALL LOCATIONS AND QUANTITIES WITH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

KEYNOTES

1. E.C. SHALL FURNISH AND INSTALL UNDER CABINET LIGHTING WITH ALL ASSOCIATED TRANSFORMERS AND CONTROLLERS AS REQUIRED. E.C. SHALL COORDINATE EXACT LOCATIONS AND LENGTHS IN FIELD WITH MILLWORK AND ARCHITECTURAL DRAWINGS PRIOR TO COMMENCEMENT OF NEW WORK.
2. E.C. SHALL FURNISH AND INSTALL LIGHT FIXTURES IN EXPOSED CEILING AREAS AT 9'-0" A.F.F. UNLESS OTHERWISE NOTED. E.C. SHALL COORDINATE EXACT LOCATIONS AND HEIGHTS WITH OTHER TRADES, ARCHITECTURAL DRAWINGS, AND OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW WORK.
3. E.C. SHALL FURNISH AND INSTALL LIGHTING ALONG THE UNDERSIDE OF TOE KICK WITH ALL ASSOCIATED TRANSFORMERS AND CONTROLLERS AS REQUIRED. E.C. SHALL TIE IN LIGHTING CONTROL TO FIRE STATION ALERTING SYSTEM AS REQUIRED AND COORDINATED WITH FIRE ALARM CONTRACTOR AND OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW WORK. E.C. SHALL COORDINATE EXACT LOCATIONS AND LENGTHS IN FIELD WITH MILLWORK AND ARCHITECTURAL DRAWINGS PRIOR TO COMMENCEMENT OF NEW WORK.

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EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING PA 19606

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
1	10/15/26
2	10/22/26
3	10/29/26

LAST PROJECT REVISION: No 3 | 10/29/26

FIRST FLOOR LIGHTING PLAN

SHEET NUMBER:

E301

10/29/2026 10:07:49 AM

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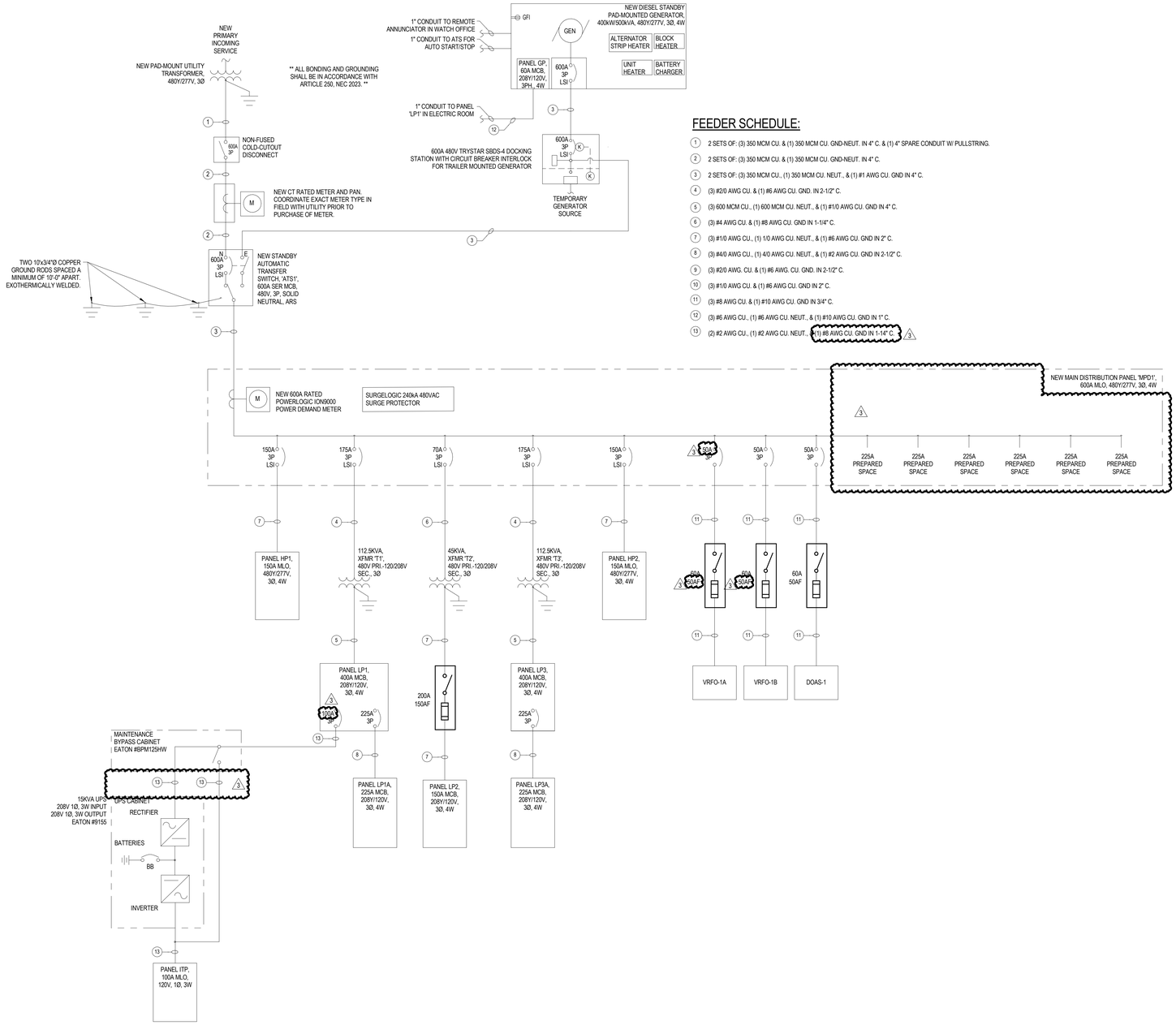
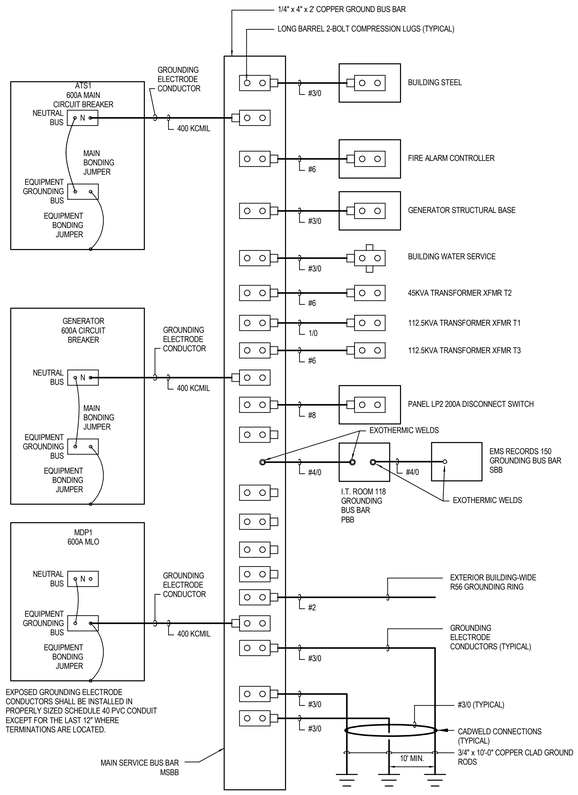


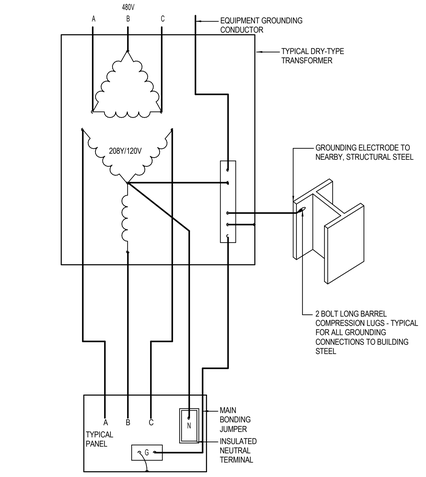
FEEDER SCHEDULE:

1. 2 SETS OF: (3) 350 MCM CU. & (1) 350 MCM CU. GND-NEUT. IN 4" C. & (1) 4" SPARE CONDUIT W/ PULLSTRING.
2. 2 SETS OF: (3) 350 MCM CU. & (1) 350 MCM CU. GND-NEUT. IN 4" C.
3. 2 SETS OF: (3) 350 MCM CU., (1) 350 MCM CU. NEUT., & (1) #1 AWG CU. GND IN 4" C.
4. (3) #2/0 AWG CU. & (1) #6 AWG CU. GND. IN 2-1/2" C.
5. (3) 600 MCM CU., (1) 600 MCM CU. NEUT., & (1) #1/0 AWG CU. GND IN 4" C.
6. (3) #4 AWG CU. & (1) #8 AWG CU. GND IN 1-1/4" C.
7. (3) #1/0 AWG CU., (1) 1/0 AWG CU. NEUT., & (1) #6 AWG CU. GND IN 2" C.
8. (3) #4/0 AWG CU., (1) 4/0 AWG CU. NEUT., & (1) #2 AWG CU. GND IN 2-1/2" C.
9. (3) #2/0 AWG. CU. & (1) #6 AWG. CU. GND. IN 2-1/2" C.
10. (3) #1/0 AWG CU. & (1) #6 AWG CU. GND IN 2" C.
11. (3) #8 AWG CU. & (1) #10 AWG CU. GND IN 3/4" C.
12. (3) #6 AWG CU., (1) #6 AWG CU. NEUT., & (1) #10 AWG CU. GND IN 1" C.
13. (2) #2 AWG CU., (1) #2 AWG CU. NEUT., & (1) #8 AWG CU. GND IN 1-1/4" C. (3)

1 ELECTRICAL SINGLE LINE DIAGRAM
NOT TO SCALE



2 MAIN ELECTRICAL SERVICE GROUND BUSBAR DETAIL (MSBB)
NOT TO SCALE



TYPICAL TRANSFORMER AND PANEL GROUNDING DETAIL
SCALE: N.T.S.

NOTE: PROVIDE DEDICATED GROUNDING TO ALL EQUIPMENT (MEDICAL, MECHANICAL, ETC) AND SYSTEMS AS REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.

3 TYPICAL TRANSFORMER AND PANEL GROUNDING DETAIL
NOT TO SCALE

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EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING PA 19606

PROJECT NUMBER: 25-049

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LAST PROJECT REVISION: No 3 | 10/29/26

ELECTRICAL SINGLE LINE DIAGRAM & DETAILS

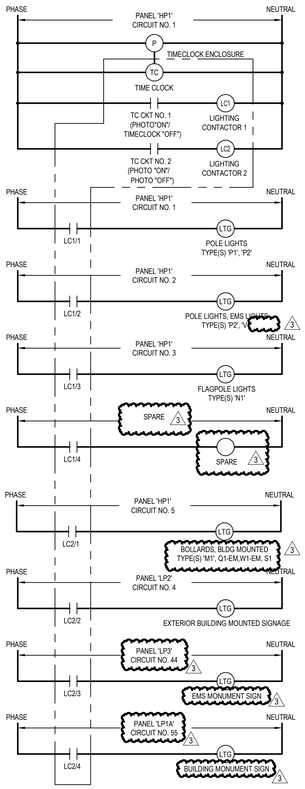
SHEET NUMBER:

E601

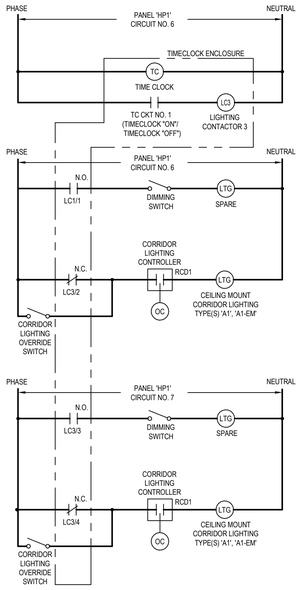
10/29/2026 10:07:50 AM

LIGHTING CONTROL NOTES:

1. DIGITAL TIME CLOCK SHALL BE TORK #DGLC200A-NC WITH PHOTOCELL #EPC-A INCLUDED.
2. PROVIDE NEMA 1 ENCLOSURE. E.C. SHALL FURNISH AND INSTALL PHOTOCELL DEVICE WITH DIGITAL TIMECLOCK ON NORTHEAST CORNER OF BUILDING'S ROOF. E.C. SHALL INSTALL PHOTOCELL SO OPERATION IS NOT INHIBITED DUE TO ADJACENT LIGHTING SOURCES IN THE AREA.
3. INSTALL SYSTEM PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. LIGHTING CONTACTOR #1 SHALL BE 8903-LG04-V02 AND LIGHTING CONTACTOR #2 SHALL BE 8903-LG04-V02 AS MANUFACTURED BY SQUARE-D OR APPROVED EQUAL
5. ALL EXTERIOR LIGHTING FIXTURES SHALL BE INSTALLED ON A LIGHTING CIRCUIT CONTROLLED BY DIGITAL TIMECLOCK WITH PHOTOCELL FOR AUTOMATIC DUSK TO DAWN OPERATION. LIGHTING CIRCUIT SHALL ALSO BE PROVIDED WITH CONTROLS TO DIM ALL FIXTURES TO 50% OPERATION FOR THE HOURS BETWEEN 10PM AND 7AM OR THE HOURS SPECIFIED AND APPROVED BY THE OWNER.



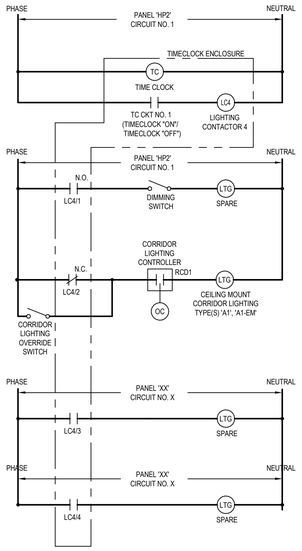
1 EXTERIOR LIGHTING CONTROL WIRING DIAGRAM
NOT TO SCALE



LIGHTING CONTROL NOTES:

1. DIGITAL TIME CLOCK SHALL BE TORK #7200Z PROVIDE NEMA 1 ENCLOSURE. SET TIME CLOCK TIME SETTINGS FOR TYPE 'A1', 'A1-EM' FIXTURE "LIGHTING ON OPERATING HOURS" TO BE ON FROM 7PM TO 7AM OR THE HOURS SPECIFIED AND APPROVED BY THE OWNER.
2. E.C. SHALL SET TIMECLOCK TO TURN LIGHTS ON AND OFF AS COORDINATED WITH OWNER.
3. INSTALL SYSTEM PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. LIGHTING CONTACTOR SHALL BE 8903-LG04-V02 AS MANUFACTURED BY SQUARE-D OR APPROVED EQUAL. CONTACTOR SHALL HAVE N.O./N.C. FOR WIRING BELOW.
5. ALL LIGHTING OVERRIDE SWITCH LOCATIONS SHALL BE LOCATED IN CLOSET WITH CONTACTOR UNLESS OTHERWISE NOTED OR COORDINATED WITH OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW WORK.

2 INTERIOR BUNK CORRIDOR LOW-LEVEL LIGHTING CONTROL WIRING DIAGRAM
NOT TO SCALE



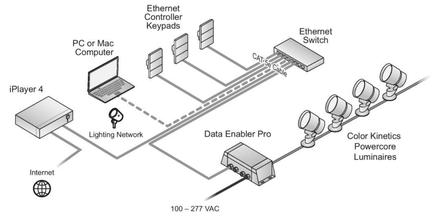
LIGHTING CONTROL NOTES:

1. DIGITAL TIME CLOCK SHALL BE TORK #7200Z PROVIDE NEMA 1 ENCLOSURE. SET TIME CLOCK TIME SETTINGS FOR TYPE 'A1', 'A1-EM' FIXTURE "LIGHTING ON OPERATING HOURS" TO BE ON FROM 7PM TO 7AM OR THE HOURS SPECIFIED AND APPROVED BY THE OWNER.
2. E.C. SHALL SET TIMECLOCK TO TURN LIGHTS ON AND OFF AS COORDINATED WITH OWNER.
3. INSTALL SYSTEM PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. LIGHTING CONTACTOR SHALL BE 8903-LG04-V02 AS MANUFACTURED BY SQUARE-D OR APPROVED EQUAL. CONTACTOR SHALL HAVE N.O./N.C. FOR WIRING BELOW.
5. ALL LIGHTING OVERRIDE SWITCH LOCATIONS SHALL BE LOCATED IN CLOSET WITH CONTACTOR UNLESS OTHERWISE NOTED OR COORDINATED WITH OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW WORK.

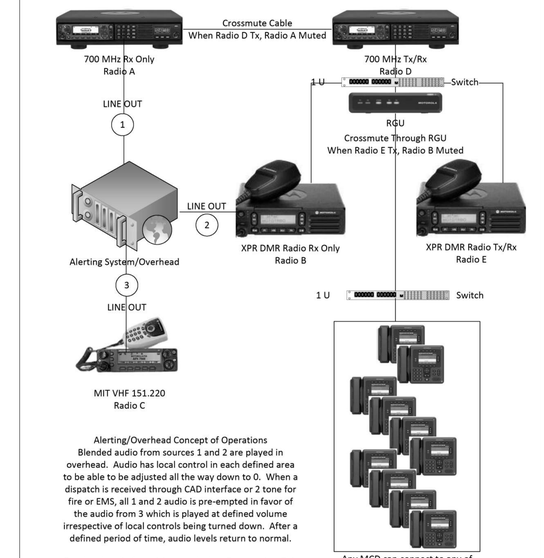
3 INTERIOR EMS CORRIDOR LOW-LEVEL LIGHTING CONTROL WIRING DIAGRAM
NOT TO SCALE

RGB CONTROLLER CONNECTION DIAGRAM NOTES:

1. RGBW CONTROLLER SHALL BE WALL MOUNTED. THE CONTROLLER AND ETHERNET CONTROLLER PADS SHALL BE SUPPLIED WITH THE LIGHTING CONTROL SYSTEM. THE COMPUTER PROGRAM SHALL BE INSTALLED ON THE NETWORK AND FULLY CONTROLLED BY END USER.



4 RGB CONTROLLER CONNECTION DIAGRAM
NOT TO SCALE



Alerting/Overhead Concept of Operations
Blended audio from sources 1 and 2 are played in overhead. Audio has local control in each defined area to be able to be adjusted all the way down to 0. When a dispatch is received through CAD interface or 2 tone for fire or EMS, all 1 and 2 audio is pre-empted in favor of the audio from 3 which is played at defined volume irrespective of local controls being turned down. After a defined period of time, audio levels return to normal.

Overhead audio from A is muted when D transmits. This is accomplished by consolette interconnection. Likewise overhead audio from B is muted when E transmits. This is accomplished through the RGU as these radios are dumb and have no crossmuting.

Version 2026-04-13

Any MCD can connect to any of Radios D or E
Units could connect to B but will not be programmed for this.
RGU interface of B to the RGU is just to accomplish crossmuting

5 FIRE RADIO BLOCK DIAGRAM
NOT TO SCALE

6 LIT BOLLARD BASE DETAIL (TYPICAL)
NOT TO SCALE

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PE084125

EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING PA 19606

PROJECT NUMBER: 25-049

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BID SET

ORIGINAL ISSUE DATE:
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No.	DATE
1	10/15/26
2	10/22/26
3	10/29/26

LAST PROJECT REVISION: No 3 | 10/29/26

ELECTRICAL DETAILS

SHEET NUMBER:
E604

10/29/2026 10:07:51 AM

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Panel: HP1

Location: ELEC 119 | Volts: 480Y/277 | A.I.C. Rating: 65kA
Supply From: MDP1 | Phases: 3 | Mains Type: MLO
Mounting: Surface | Wires: 4 | Mains Rating: 150.0 A
Enclosure: Indoor | MCB Rating: 150.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
LTG - POLE LIGHTS	20 A	1	1	1	2	20 A	LTG - POLE LIGHTS, EMS SIGN, & BOLLARDS	
LTG - FLAGPOLE LIGHTS	20 A	3	1	1	4	20 A	SPARE	3
LTG - BOLLARDS, BUILDING MOUNTED	20 A	5	1	1	6	20 A	LTG - BUNK CORRIDOR LIGHTING	*
* LTG - BLUNK CORRIDOR LIGHTING	20 A	7	1	1	8	20 A	EXTERIOR BUILDING TAPE LIGHTING	*
LTG - RM 106 TO 120	20 A	9	1	1	10	20 A	SPARE	3
LTG - RM 100 TO 105 &122	20 A	11	1	1	12	20 A	LTG - UNDERCABINET RM 102	*
* LTG - RM 123 TO 135, 140 TO 143	20 A	13	1	1	14	20 A	LTG - RM 140	
SPARE	20 A	15	1	1	16	20 A	SPARE	
SPARE	20 A	17	1	1	18	20 A	SPARE	
SPARE	20 A	19	1	1	20	20 A	SPARE	
SPARE	20 A	21	1	1	22	20 A	SPARE	
SPACE	--	23	1	1	24	--	SPACE	
SPACE	--	25	1	1	26	--	SPACE	
SPACE	--	27	1	1	28	--	SPACE	
SPACE	--	29	1	1	30	--	SPACE	

Notes:

Panel: LP1

Location: ELEC 119 | Volts: 208Y/120 | A.I.C. Rating: 42kA
Supply From: | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 400.0 A
Enclosure: Indoor | MCB Rating: 400.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
REC - FITNESS 123	20 A	1	1	1	2	20 A	REC - MONITOR TRAINING AREA 102	3
REC - FITNESS 123	20 A	3	1	1	4	20 A	REC - CORRIDOR 106	
REC - FITNESS 123	20 A	5	1	1	6	20 A	REC - APP BAY	
REC - FITNESS 123	20 A	7	1	1	8	20 A	REC - FITNESS 123	
REC - FITNESS 123	20 A	9	1	1	10	20 A	REC - KITCHEN & DAYROOM 122	
REC - FITNESS 123	20 A	11	1	1	12	20 A	REC - KITCHEN COUNTER	
REC - FITNESS 123	20 A	13	1	1	14	20 A	REC - KITCHEN COUNTER	
REC - FITNESS 123	20 A	15	1	1	16	20 A	DISHWASHER	**
REC - FITNESS 123	20 A	17	1	1	18	20 A	REC - BUNK 132	*
REC - FITNESS 123	20 A	19	1	1	20	20 A	REC - BUNK 133	*
REC - FITNESS 123	20 A	21	1	1	22	20 A	REC - BUNK 134	*
REC - FITNESS 123	20 A	23	1	1	24	20 A	REC - BUNK 138	*
UPS1 (15KVA)	100 A	25	2	1	26	20 A	REC - BUNK 139	*
		27		1	28	20 A	REC - OPEN BUNK 140	*
WATER METER VAULT	20 A	29	1	1	30	20 A	REC - OPEN BUNK 140	*
REC - WATER BOTTLE FILLER	20 A	31	1		32			
REC - MECHANICAL 124, LAUNDRY 125	20 A	33	1	3	34	225 A	PANEL 'LP1A'	
REC - ELEC 119	20 A	35	1		36			
* REC - BUNK 129	20 A	37	1	1	38	20 A	TRAFFIC WARNING DEVICE	
* REC - BUNK 130	20 A	39	1	1	40	20 A	REC - TRAINING AREA 102	
* REC - BUNK 131	20 A	41	1	1	42	20 A	DCP-1	
EXTERIOR BUILDING MOUNTED SIGNAGE	20 A	43	1	1	44	20 A	GWH-1	
EXTERIOR BUILDING MOUNTED SIGNAGE	20 A	45	1	1	46	20 A	DET-1	
EXTERIOR BUILDING MOUNTED SIGNAGE	20 A	47	1	1	48	20 A	BT-1	
REC - DECON	20 A	49	1	2	50	20 A	BP-1	
REC - AV/STORAGE 103	20 A	51	1		52			
* REC - OPEN BUNK	20 A	53	1	2	54	20 A	BC-04, VRFI-02 - VRFI-08	
DRYER	30 A	55	1		56			
* REC - LINEN STORAGE 128	20 A	57	1	1	58	20 A	SPARE	
BP-2	20 A	59	2	1	60	20 A	SPARE	
		61		1	62	20 A	SPARE	
SPACE	--	63	1	1	64	--	SPACE	
SPACE	--	65	1	1	66	--	SPACE	
SPACE	--	67	1	1	68	--	SPACE	
SPACE	--	69	1	3	70	60 A	PANEL GP	3
SPACE	--	71	1		72			

Notes:

Panel: LP1A

Location: STORAGE 105 | Volts: 208Y/120 | A.I.C. Rating: 42kA
Supply From: LP1 | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 225.0 A
Enclosure: Indoor | MCB Rating: 225.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
REC - REFRIGERATOR	20 A	1	1	1	2	20 A	REC - CORRIDOR 126	
REC - REFRIGERATOR	20 A	3	1	1	4	20 A	REC - CORRIDOR 106	
REC - KITCHEN & DAYROOM 122	20 A	5	1	1	6	20 A	REC - WORK ROOM 116	
REC - KITCHEN & DAYROOM 122, EXTERIOR	20 A	7	1	1	8	20 A	REC - BATHROOMS 117, 120, JAN. 121	
REC - KITCHEN COUNTER	20 A	9	1	1	10	20 A	REC - WATER BOTTLE FILLER	
REC - KITCHEN COUNTER	20 A	11	1	1	12	20 A	REC - T & S 135-137	
REC - KITCHEN COUNTER	20 A	13	1	1	14	20 A	FB - KITCHEN & DAYROOM 122	
MICROWAVE	20 A	15	1	1	16	20 A	REC - EXTERIOR	**
COFFEE MAKER	20 A	17	1	1	18	20 A	REC - STORAGE/TURNOUT 114-115	
ICE MAKER	20 A	19	1	1	20	20 A	FB - TRAINING AREA 102	
REC - GAS RANGE	20 A	21	1	1	22	20 A	FB - TRAINING AREA 102	
JB - GAS RANGE HOOD	20 A	23	1	1	24	20 A	FB - TRAINING AREA 102	
REC - REFRIGERATOR	20 A	25	1	1	26	20 A	REC - TRAINING AREA 102	
REC - TRAINING ROOM COUNTER	20 A	27	1	1	28	20 A	FB - TRAINING AREA 102	
REC - TRAINING ROOM COUNTER	20 A	29	1	1	30	20 A	KEF-1	
REC - TRAINING ROOM COUNTER	20 A	31	1	1	32	20 A	FB - TRAINING AREA 102	
REC - CORRIDOR	20 A	33	1	1	34	20 A	DCP-2	
CAD ALERTING	20 A	35	1	1	36	20 A	POWER BAR - TURNOUT GEAR	
POWER BAR - TURNOUT GEAR	20 A	37	1	1	38	20 A	POWER BAR - TURNOUT GEAR	
POWER BAR - TURNOUT GEAR	20 A	39	1	1	40	20 A	POWER BAR - TURNOUT GEAR	
POWER BAR - TURNOUT GEAR	20 A	41	1	1	42	20 A	POWER BAR - TURNOUT GEAR	
REC - LAUNDRY 125	20 A	43	1	1	44	20 A	DRYER	
DRYER	20 A	45	1	1	46	20 A	WASHER	
WASHER	20 A	47	1	1	48	20 A	FC-1	
REC - EXTERIOR PATIO	20 A	49	1	1	50	20 A	REC - EXTERIOR PATIO	3
MONUMENT SIGNAGE	30 A	51	1	1	52	20 A	SPARE	
SPARE	20 A	53	1	1	54	20 A	SPARE	
SPARE	20 A	55	1	1	56	20 A	SPARE	
SPARE	20 A	57	1	1	58	20 A	SPARE	
SPARE	20 A	59	1	1	60	20 A	SPARE	3
SPARE	20 A	61	1	1	62	20 A	SPARE	
SPARE	20 A	63	1	1	64	20 A	SPARE	
SPARE	20 A	65	1	1	66	20 A	SPARE	
SPACE	--	67	1	1	68	--	SPACE	
SPACE	--	69	1	1	70	--	SPACE	
SPACE	--	71	1	1	72	--	SPACE	

Notes:

Panel: LP2

Location: STORAGE/ UNIFORMS... | Volts: 208Y/120 | A.I.C. Rating: 42kA
Supply From: | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 150.0 A
Enclosure: Indoor | MCB Rating: 150.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
WATCH OFFICE 111	20 A	1	1	1	2	30 A	MONUMENT SIGN	
REC - WATCH OFFICE 111	20 A	3	1	1	4	20 A	EXTERIOR BUILDING MOUNTED SIGNAGE	
REC - CONFERENCE 110	20 A	5	1	1	6	20 A	GARBAGE DISPOSAL	
REC - CONFERENCE 110	20 A	7	1	1	8	20 A	REC - REFRIGERATOR	
REC - CHIEF OFFICE 109, EXTERIOR	20 A	9	1	1	10	20 A	REC - COPIER	
REC - DEP. CHIEF OFFICE 112	20 A	11	1	1	12	20 A	FB - TRAINING AREA 102	
REC - LINE OFFICER OFFICE 113	20 A	13	1	1	14	20 A	REC - STORAGE/UNIFORMS	
REC - FIRE MARSHALL OFFICE 108	20 A	15	1	1	16	20 A	DISHWASHER	**
REC - ACCOUNTS OFFICE 107	20 A	17	1	1	18	20 A	IPLAYER RGB CONTROLLER	
REC - LOBBY 101, CORRIDOR 106	20 A	19	1	1	20	20 A	EF-2	
REC - CORRIDOR 106, EXTERIOR	20 A	21	1	1	22	20 A	REC - FITNESS 123	
REC - EXTERIOR	20 A	23	1	1	24	20 A	SPARE	
SPARE	20 A	25	1	1	26	20 A	SPARE	
SPARE	20 A	27	1	1	28	20 A	SPARE	
SPARE	20 A	29	1	1	30	20 A	SPARE	
SPARE	20 A	31	1	1	32	20 A	SPARE	
SPARE	20 A	33	1	1	34	20 A	SPARE	
SPACE	--	35	1	1	36	--	SPACE	
SPACE	--	37	1	1	38	--	SPACE	
SPACE	--	39	1	1	40	--	SPACE	
SPACE	--	41	1	1	42	--	SPACE	

Notes:

Panel: HP2

Location: MEZZANINE 200 | Volts: 480Y/277 | A.I.C. Rating: 65kA
Supply From: MDP1 | Phases: 3 | Mains Type: MLO
Mounting: Surface | Wires: 4 | Mains Rating: 150.0 A
Enclosure: Indoor | MCB Rating: 150.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
LTG - EMS CORRIDOR LIGHTING	20 A	1	1	1	2	20 A	LTG - RM 156, 200, 201	
LTG - APPARATUS BAY 144	20 A	3	1	1	4	20 A	SPARE	
		5		1	6	20 A	LTG - OVERHEAD DOOR LIGHTS	
EF-1	15 A	7	3		8			
		9		3	10	15 A	AC-1	
		11			12			
SCBA COMPRESSOR	40 A	13	3	1	14	20 A	SPARE	
		15		1	16	20 A	SPARE	
SPARE	20 A	17	1	1	18	20 A	SPARE	
SPACE	--	19	1	1	20	--	SPACE	
SPACE	--	21	1	1	22	--	SPACE	
SPACE	--	23	1	1	24	--	SPACE	
SPACE	--	25	1	1	26	--	SPACE	
SPACE	--	27	1	1	28	--	SPACE	
SPACE	--	29	1	1	30	--	SPACE	

Notes:

Panel: LP3

Location: MEZZANINE 200 | Volts: 208Y/120 | A.I.C. Rating: 42kA
Supply From: | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 400.0 A
Enclosure: Indoor | MCB Rating: 400.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description
		1			2		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	3	2	2	4	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		5			6		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	7	2	2	8	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		9			10		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	11	2	2	12	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		13			14		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	15	2	2	16	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		17			18		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	19	2	2	20	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		21			22		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	23	2	2	24	30 A	OVERHEAD DOOR - APPARATUS BAY 144
		25			26		
OVERHEAD DOOR - APPARATUS BAY 144	30 A	27	2	2	28	30 A	OVERHEAD DOOR - APPARATUS BAY 144
REC - CORRIDOR 145	20 A	29	1		30		
		31		2	32	30 A	OVERHEAD DOOR - APPARATUS BAY 144
PANEL LP3A	225 A	33	3		34		
		35		2	36	60 A	VRFO-2
BC-04, VRFI-18 - VRFI-21	20 A	37	2	1	38	20 A	HVLS-1
		39		1	40	20 A	HVLS-1
EMS SERVER	30 A	41	1	1	42	20 A	REC - WATER/SPRINKLER
STACKED DRYER	30 A	43	2	1	44	20 A	REC - STORAGE
		45		1	46	20 A	AIRVAC CONTROL PANEL #1
SPARE	20 A	47	1	1	48	20 A	AIRVAC CONTROL PANEL #2
BC-01, VRFI-10 - 17	20 A	49	2	1	50	20 A	REC - EXTERIOR EMS SIDE
		51			52		
DECON UNIT	20 A	53	2	2	54	50 A	SCBA WASHER
		55		1	56	20 A	CONNEX CONTROL PANEL
GEAR DRYER	30 A	57	3	1	58	20 A	SPARE
		59		1	60	20 A	SPARE
		61		1	62	20 A	SPARE
SPARE	20 A	63	1	1	64	--	SPACE
SPARE	20 A	65	1	1	66	--	SPACE
SPARE	20 A	67	1	1	68	--	SPACE
SPACE	--	69	1	1	70	--	SPACE
SPACE	--	71	1	1	72	--	SPACE

Notes:

Panel: LP3A

Location: MEZZANINE 200 | Volts: 208Y/120 | A.I.C. Rating: 42kA
Supply From: LP3 | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 225.0 A
Enclosure: Indoor | MCB Rating: 225.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description
REC - REFRIGERATOR	20 A	1	1	1	2	20 A	REC - APPARATUS BAY 144
REC - KITCHEN COUNTER	20 A	3	1	1	4	20 A	REC - APPARATUS BAY 144
REC - COFFEE MAKER	20 A	5	1	1	6	20 A	REC - APPARATUS BAY 144
REC - MICROWAVE	20 A	7	1	1	8	20 A	REC - APPARATUS BAY 144
KITCHEN EXHAUST	20 A	9	1	1	10	20 A	REC - APPARATUS BAY 144
REC - COFFEE MAKER	20 A	11	1	1	12	20 A	CONTROL PANEL
REC - MICROWAVE	20 A	13	1	1	14	20 A	AVF-1
REC - EXTERIOR	20 A	15	1	1	16	20 A	AVF-1
REC - EMS DAYROOM 146	20 A	17	1	1	18	20 A	AVF-1
EMS OFFICE II 148	20 A	19	1	1	20	20 A	AVF-1
REC - GENERAL STORAGE	20 A	21	1	1	22	20 A	GWH-1
EMS OFFICE I 152	20 A	23	1	1	24	20 A	EF-2, EF-5, KEF-2
REC - EMS STORAGE	20 A	25	1		26		
REC - GROUNDS STORAGE	20 A	27	1	3	28	20 A	EUH-1
REC - TOOL ROOM, TRAINING TOWER	20 A	29	1		30		
ICE CUBE MACHINE	20 A	31	1	1	32	20 A	AVF-1
REC - TOOL ROOM 155	20 A	33	1	1	34	20 A	B-1
REC - TOOL ROOM 155	20 A	35	1	1	36	20 A	B-2
REC - TOOL ROOM 155	20 A	37	1	1	38	20 A	REC - APPARATUS BAY 144
REC - SCBA 153	20 A	39	1	1	40	20 A	VP-1
RCPT APPARATUS BAY 144	20 A	41	1	1	42	20 A	REC - EXTERIOR EMS SIDE
		43		1	44	20 A	EMS MONUMENT SIGNAGE
TRAINING TOWER WINCH	30 A	45	3	1	46	20 A	SPARE	3
		47		1	48	20 A	SPARE
		49		1	50	20 A	REC - EXTERIOR EMS SIDE
TRAINING TOWER WINCH	30 A	51	3	2	52	20 A	HVLS-2
		53			54		
REC - MEZZANINE	20 A	55	1	2	56	20 A	HVLS-2
HVLS-2	20 A	57	2		58		
		59		2	60	20 A	HVLS-2
SPACE	--	61	1		62		
SPACE	--	63	1	1	64	--	SPACE
SPACE	--	65	1	1	66	--	SPACE
SPACE	--	67	1	1	68	--	SPACE
SPACE	--	69	1	1	70	--	SPACE
SPACE	--	71	1	1	72	--	SPACE

Notes:

Panel: ITP

Location: IT 118 | Volts: 120V | A.I.C. Rating: 42kA
Supply From: | Phases: 1 | Mains Type: MCB
Mounting: Surface | Wires: 3 | Mains Rating: 100.0 A
Enclosure: Indoor | MCB Rating: 100.0 A

Notes:

Circuit Description	Trip	Circuit Number	Number of Poles	Number of Poles	Circuit Number	Trip	Circuit Description	
SERVER	30 A	1	1	1	2	20 A	CARD ACCESS PANEL	
SERVER	30 A	3	1	1	4	20 A	CARD ACCESS PANEL	
SERVER	30 A	5	1	1	6	20 A	SECURITY CONTROL PANEL	
REC - IT 118	20 A	7	1	1	8	20 A	FACP	***
REC - IT 118	20 A	9	1	1	10	20 A	SPARE	
SPARE	20 A	11	1	1	12	20 A	SPARE	
SPARE	20 A	13	1	1	14	20 A	SPARE	
SPARE	20 A	15	1	1	16	20 A	SPARE	
SPARE	20 A	17	1	1	18	20 A	SPARE	
SPACE	--	19	1	1	20	--	SPACE	
SPACE	--	21	1	1	22	--	SPACE	
SPACE	--	23	1	1	24	--	SPACE	
SPACE	--	25	1	1	26	--	SPACE	
SPACE	--	27	1	1	28	--	SPACE	
SPACE	--	29	1	1	30	--	SPACE	

Notes:

GENERAL PANEL SCHEDULE NOTES:

* = PROVIDE AFCI TYPE CIRCUIT BREAKER IN THIS BREAKER POSITION.
** = PROVIDE COMBINATION AFCI/GFCI TYPE CIRCUIT BREAKER IN THIS BREAKER POSITION.
*** = PROVIDE LOCKABLE HANDLE ATTACHMENT ON THIS BREAKER POSITION.

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Pennsylvania
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30 S. 17th Street
Suite 830
Philadelphia, PA 19103
Phone
267.804.7286

SEAL:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SCOTTISH FRENCH
ENGINEER
PE084125

EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING PA 19606

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
2	10/22/26
3	10/29/26

LAST PROJECT REVISION: No 3 | 10/29/26

ELECTRICAL PANEL SCHEDULES

SHEET NUMBER:

E606

10/29/2026 10:08:05 AM

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NOTTINGHAM, MD 21236
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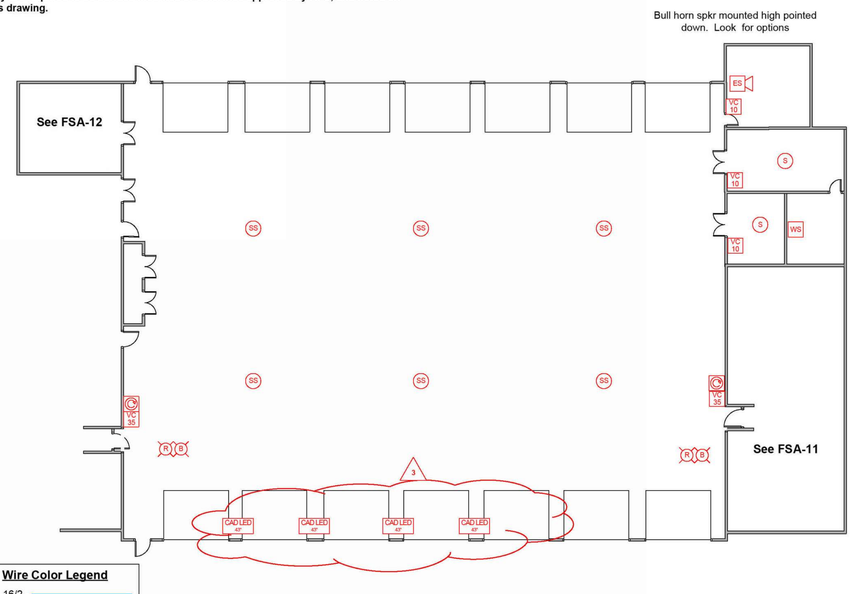
SEAL:

Note: All omni-directional speakers must be lowered to 16 ft. above finished floor, unless they are required to be surface-mounted or otherwise approved by APS, and noted on this drawing.



Device		Mount
	Doorbell	48" AFF
VC 10 / VC 35	Volume Control 10 / 35 Watt	48" AFF
3S	3 Button Alert Selector	48" AFF
2A	2 Button Manual Alert	48" AFF
	Emergency Alert	48" AFF
	Reset Button	48" AFF
	Stove Reset	48" AFF
	Stove Disconnect	Located at Solenoid
S	8" 70V Speaker, 2.5 Watt	Ceiling
BS	Bathroom Speaker, 1.0 Watt	Ceiling
WS	Wall Speaker, 2.0 Watt	78" AFF
SS	Omnidirectional, 7.5 Watt	192" AFF
ES	External Speaker, 7.5 Watt	Under Soffit
LED	8" LED Ceiling Speaker, 2.5 Watt	Ceiling
R B	Colored LED Strobe	Ceiling
3	Red LED Cluster Light	Ceiling
4 DL	Multi-Color Light	Ceiling Wall
Switch	APS Switch	Rack
	RIB Relay	Above Ceiling
CAD LED 43"	CAD 43/55" LED Display	78" AFF* See FHA Notes
FAST	FAST Server	Rack
T	FHA Trouble Strobe	Ceiling
APS	APS Alerting Controller	Rack

Wire Color Legend

16/2 -
16/4 -
18/2 OAS -
18/6 -
Cat6 -
22/6 -

Duplex electrical outlet and RJ45 jack required at all Alerting Display locations

APS Firehouse Alerting
Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE: *Apparatus Bays*

JOB NAME: *Exeter TSWP FD rev 10232026.*

JOB ADDRESS: *x*

CITY, STATE: *x*

DATE: *10-29-26*

SCALE: *NOT TO SCALE*

DRAWN BY:

APPROVED BY:

SHEET NO. **FSA-7**

EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING, PA 19606

PROJECT NUMBER: 25-049

SUBMISSION: BID SET

ORIGINAL ISSUE DATE: 10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

APPARATUS BAYS

SHEET NUMBER: **FSA-7**

10/29/2026 2:49:35 PM

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EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
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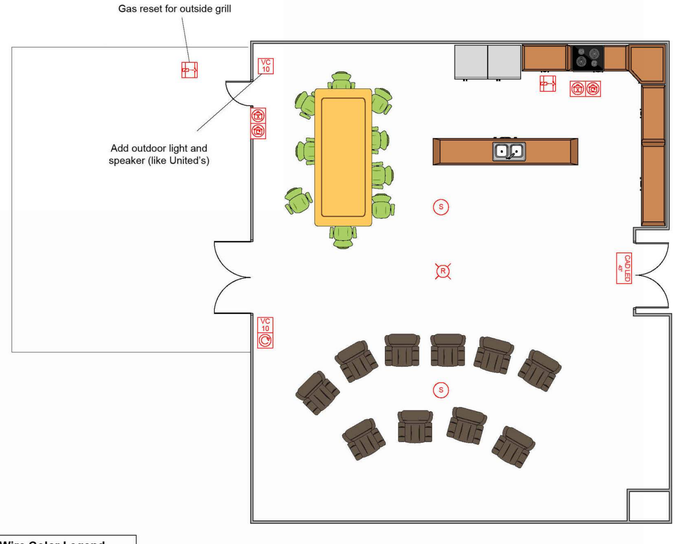

Device	Mount
Doorbell	48" AFF
VC 10 / VC 35 Volume Control 10 / 35 Watt	48" AFF
3S 3 Button Alert Selector	48" AFF
2A 2 Button Manual Alert	48" AFF
Emergency Alert	48" AFF
Reset Button	48" AFF
Stove Reset	48" AFF
Stove Disconnect	Located at Solenoid
S 8" 70V Speaker, 2.5 Watt	Ceiling
BS Bathroom Speaker, 1.0 Watt	Ceiling
WS Wall Speaker, 2.0 Watt	78" AFF
SS Omnidirectional, 7.5 Watt	192" AFF
ES External Speaker, 7.5 Watt	Under Soffit
LED 8" LED Ceiling Speaker, 2.5 Watt	Ceiling
R R Colored LED Strobe	Ceiling
Red LED Cluster Light	Ceiling
R G B L Multi-Color Light	Ceiling Wall
Switch APS Switch	Rack
RIB Relay	Above Ceiling
CAD LED 43" CAD 43/55" LED Display	78" AFF* See FHA Notes
FAST FAST Server	Rack
FHA Trouble Strobe	Ceiling
APS APS Alerting Controller	Rack

Wire Color Legend

- 16/2 -
- 16/4 -
- 18/2 OAS -
- 18/6 -
- Cat6 -
- 22/6 -

APS Firehouse Alerting
Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE: *Living Area*

JOB NAME: *Exeter TSWP FD rev 10232026.*

JOB ADDRESS: *x*

CITY, STATE: *x*

DATE: *10-29-26*

SCALE: *NOT TO SCALE*

DRAWN BY:

APPROVED BY:

SHEET NO. **FSA-8**

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

LIVING AREA

SHEET NUMBER:

FSA-8

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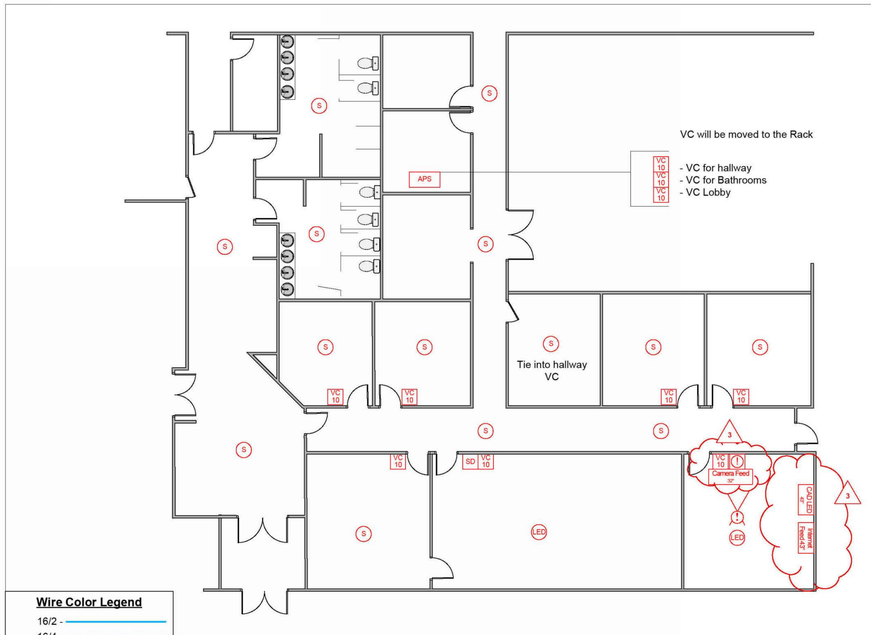
READING, PA 19606



	Device	Mount
	Doorbell	48" AFF
VC 10 / VC 35	Volume Control 10 / 35 Watt	48" AFF
3S	3 Button Alert Selector	48" AFF
2A	2 Button Manual Alert	48" AFF
	Emergency Alert	48" AFF
	Reset Button	48" AFF
	Stove Reset	48" AFF
	Stove Disconnect	Located at Solenoid
S	8" 70V Speaker, 2.5 Watt	Ceiling
BS	Bathroom Speaker, 1.0 Watt	Ceiling
WS	Wall Speaker, 2.0 Watt	78" AFF
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R B	Colored LED Strobe	Ceiling
	Red LED Cluster Light	Ceiling
4 S L	Multi-Color Light	Ceiling Wall
Switch	APS Switch	Rack
	RIB Relay	Above Ceiling
CAD/LED 49"	CAD 43/55" LED Display	78" AFF* See FHA Notes
FAST	FAST Server	Rack
	FHA Trouble Strobe	Ceiling
APS	APS Alerting Controller	Rack

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Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE: *Office Area*

JOB NAME: *Exeter TSWP FD rev 10232026.*

JOB ADDRESS: *x*

CITY, STATE: *x*

DATE: *10-29-26* SHEET NO.

SCALE: *NOT TO SCALE* **FSA-9**

DRAWN BY:

APPROVED BY:

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

OFFICE AREA

SHEET NUMBER:

FSA-9

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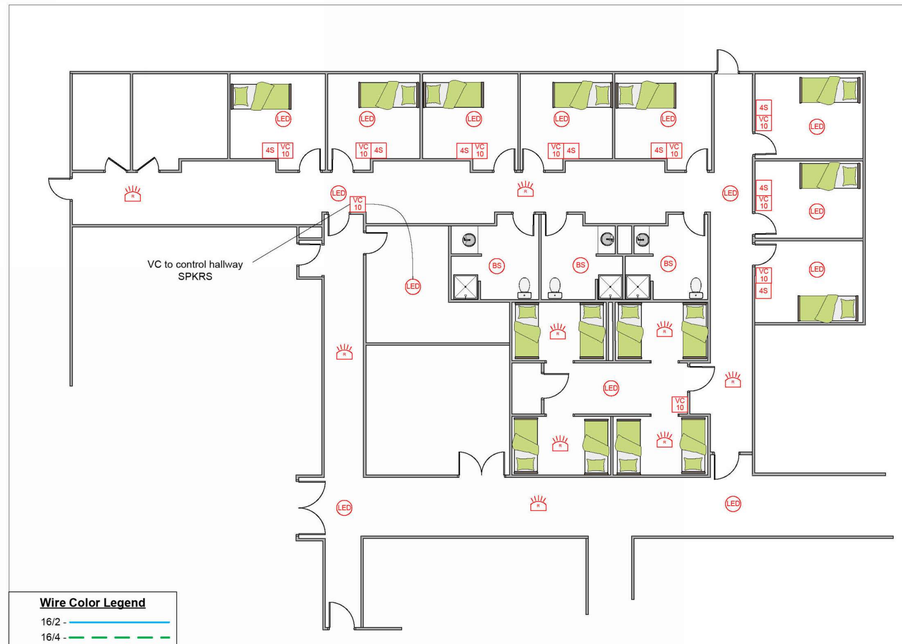
READING, PA 19606



Wire Color Legend

16/2 -
16/4 -
18/2 OAS -
18/6 -
Cat6 -
22/6 -

Device		Mount
	Doorbell	48" AFF
VC 10 / VC 35	Volume Control 10 / 35 Watt	48" AFF
3S	3 Button Alert Selector	48" AFF
2A	2 Button Manual Alert	48" AFF
	Emergency Alert	48" AFF
	Reset Button	48" AFF
	Stove Reset	48" AFF
	Stove Disconnect	Located at Solenoid
S	8" 70V Speaker, 2.5 Watt	Ceiling
BS	Bathroom Speaker, 1.0 Watt	Ceiling
WS	Wall Speaker, 2.0 Watt	78" AFF
SS	Omnidirectional, 7.5 Watt	192" AFF
ES	External Speaker, 7.5 Watt	Under Soffit
LES	8" LED Ceiling Speaker, 2.5 Watt	Ceiling
R R	Colored LED Strobe	Ceiling
A	Red LED Cluster Light	Ceiling
A B C	Multi-Color Light	Ceiling Wall
Switch	APS Switch	Rack
RIB	RIB Relay	Above Ceiling
CAD LED 43"	CAD 43/55" LED Display	78" AFF* See FHA Notes
FAST	FAST Server	Rack
T	FHA Trouble Strobe	Ceiling
APS	APS Alerting Controller	Rack

APS Firehouse Alerting
Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE:
Bunkroom

JOB NAME:
Exeter TSWP FD rev 10232026.

JOB ADDRESS:
x

CITY, STATE:
x

DATE: *10-29-26*
SCALE: *NOT TO SCALE*
DRAWN BY:
APPROVED BY:

SHEET NO.
FSA-10

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

BUNKROOM

SHEET NUMBER:
FSA-10

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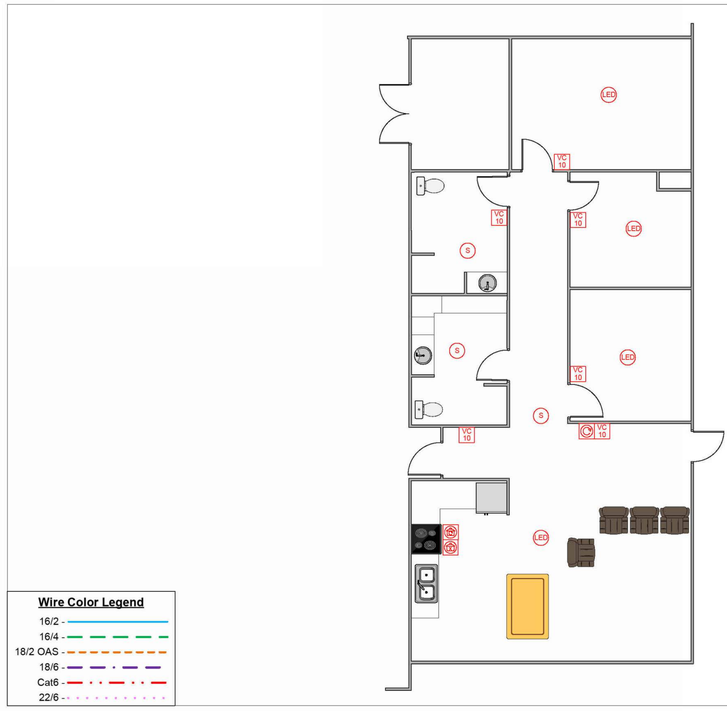
☎ 410-344-1460
✉ INFO@MWSARCH.COM
WWW.MWSARCH.COM

SEAL:

EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING, PA 19606



Device		Mount
	Doorbell	48" AFF
VC 10 / VC 35	Volume Control 10 / 35 Watt	48" AFF
3S	3 Button Alert Selector	48" AFF
2A	2 Button Manual Alert	48" AFF
	Emergency Alert	48" AFF
	Reset Button	48" AFF
	Stove Reset	48" AFF
	Stove Disconnect	Located at Solenoid
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R B	Colored LED Strobe	Ceiling
R	Red LED Cluster Light	Ceiling
RBSL	Multi-Color Light	Ceiling Wall
Switch	APS Switch	Rack
RIB	RIB Relay	Above Ceiling
CAD LED 43" 55"	CAD 43/55" LED Display	78" AFF* See FHA Notes
FAST	FAST Server	Rack
	FHA Trouble Strobe	Ceiling
APS	APS Alerting Controller	Rack

Wire Color Legend

16/2 -
16/4 -
18/2 OAS -
18/6 -
Cat6 -
22/6 -

APS Firehouse Alerting
Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE: *EMS Area*

JOB NAME: *Exeter TSWP FD rev 10232026.*

JOB ADDRESS: *x*

CITY, STATE: *x*

DATE: *10-29-26* SHEET NO.

SCALE: *NOT TO SCALE*

DRAWN BY:

APPROVED BY:

FSA-11

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

EMS AREA

SHEET NUMBER:

FSA-11

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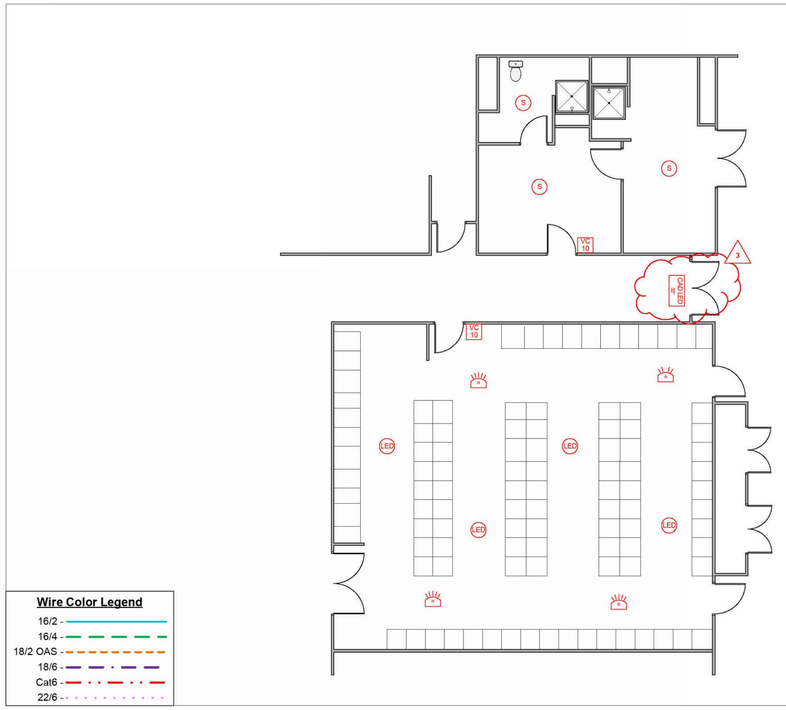
✉ INFO@MWSARCH.COM
WWW.MWSARCH.COM

SEAL:

EXETER TOWNSHIP
EMERGENCY SERVICES FACILITY
70 GIBRALTAR ROAD
READING, PA 19606



Device	Mount
Doorbell	48" AFF
VC 10 / VC 35 Volume Control 10 / 35 Watt	48" AFF
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LES 8" LED Ceiling Speaker, 2.5 Watt	Ceiling
R B Colored LED Strobe	Ceiling
A Red LED Cluster Light	Ceiling
A B L Multi-Color Light	Ceiling Wall
Switch APS Switch	Rack
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CAD LED 43" CAD 43/55" LED Display	78" AFF* See FHA Notes
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FHA Trouble Strobe	Ceiling
APS APS Alerting Controller	Rack

Wire Color Legend

16/2 -
16/4 -
18/2 OAS -
18/6 -
Cat6 -
22/6 -

APS Firehouse Alerting
Fire Station Alerting System Solutions
RF and Network Alerting
(410) 239-4644 - FAX (410) 374-8870
115 Airport Drive, Suite 170
Westminster, MD 21157
www.firehousealerting.com

DRAWING TITLE: *Turnout/Decon*

JOB NAME: *Exeter TSWP FD rev 10232026.*

JOB ADDRESS: *x*

CITY, STATE: *x*

DATE: *10-29-26* | SHEET NO.

SCALE: *NOT TO SCALE*

DRAWN BY:

APPROVED BY:

FSA-12

PROJECT NUMBER: 25-049

SUBMISSION:
BID SET

ORIGINAL ISSUE DATE:
10/01/2026

SHEET REVISION SCHEDULE:

No.	DATE
3	2026-10-29

LAST PROJECT REVISION: No 3 | 2026-10-29

TURNOUT/DECON

SHEET NUMBER:

FSA-12

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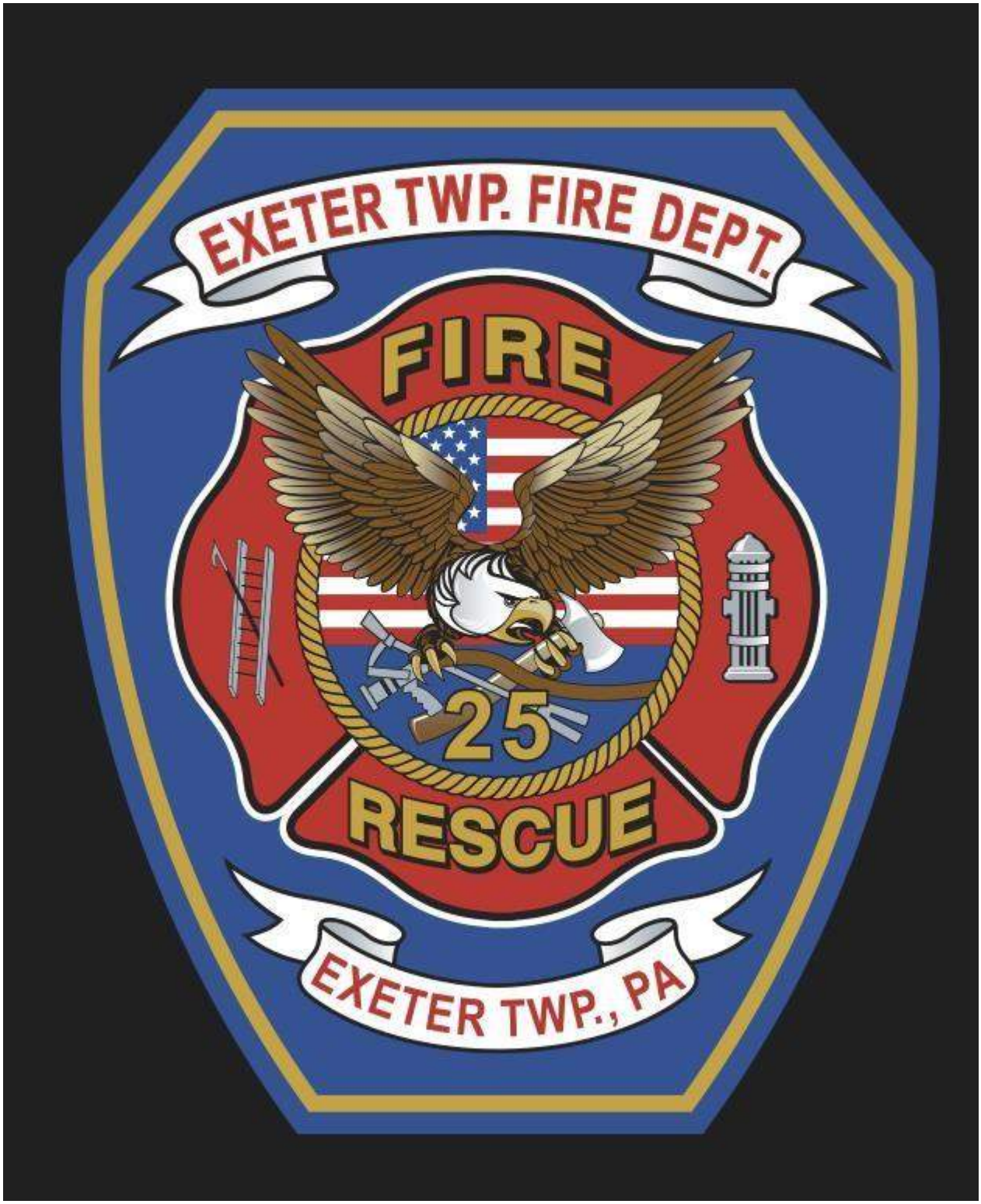
ATTACHMENT 5



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END OF SECTION 00 0010

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SECTION 00 11 00 – INSTRUCTIONS TO BIDDERS

1. GENERAL

1.1 The drawings and specifications are complimentary via the Building Connected Program. Any labor and/or material not shown on the drawings but called for in the specifications or any labor and/or material not called for in the specifications but shown on the drawings, shall be furnished by the contractor as shown and called for in both.

1.2 DEFINED TERMS

1.2.1 Terms used in these Instructions to Bidders, which are defined in the General Conditions of the Contract for Construction (the "General Conditions"), have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to Owner, as distinct from a sub-Bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible, and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement for Bids, Instructions to Bidders, the Bid Form, and the Contract Documents (including all Addenda issued prior to receipt of Bids). The numbering system refers to Articles.

2. COPIES OF BIDDING DOCUMENTS

2.1 In order to Bid the Project, complete sets of PDF documents must be obtained.

2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner, Architect, or Construction Manager assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents. Bidding Documents consist of Contract Documents (and all reference standards), specifications, addenda, and drawings. Bidder is responsible to make sure that the set of Bidding Documents is complete and that any printed contract document is legible and represents properly all the information as represented in the PDF file.

2.3 Owner, Architect, and Construction Manager, in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

3.1 **The following information must be completed and submitted when requested by the Construction Manager.**

3.1.1 The Contractors Qualification Statement A305-2020 found in Section 00 1940. Use additional pages to complete any of the sections if more space is needed. Bidder's failure to fully and accurately disclose all information requested in the Request for Qualifications questionnaire

shall constitute grounds for Bidder's disqualification from being considered the lowest responsive, responsible Bidder.

3.2 To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit with their bid proposal, written evidence such as financial data, insurance certificates, previous experience of the Bidder and its assigned personnel, present commitments, and any other information that may be requested by the Owner. Each Bid must contain evidence of Bidder's qualification to do business in the Commonwealth of Pennsylvania, or covenant to obtain such qualification prior to award of the Contract. Owner reserves the right to reject Bidder if he cannot satisfy all of the Qualification Requirements, including those listed in the Technical Specifications.

3.3 In determining the lowest responsible Bidder, the Owner will consider the integrity, efficiency, experience of the Bidder and its assigned personnel, promptness, current workload, financial capability, performance on recent projects, references from owners, architects, and engineers, list of potential sub-contractors, schedule of values, and ability to successfully and timely complete the Project**.** The apparent low Bidder must demonstrate competency and provide any or all of the above information requested within three (3) calendar days of request. Owner reserves the right to reject the Bidder as non-responsive if all the information is not received on time and/or does not reasonably satisfy the Owner's evaluation process.

3.4 In addition to all the requirements specified in Articles 3.1, 3.2 and 3.3 regarding qualifications of Bidders, the Owner will evaluate Bidders using the following additional criteria:

3.4.1 The Bidder and its assigned personnel must have successfully performed a minimum of 3 previous Pennsylvania public municipal projects within the last 5 years of similar type or a contract value of at least seventy-five percent (75%) of the amount of the Bidder's Base Bid. Provide references including telephone number and contact person.

3.4.2 The Bidder shall perform not less than ten percent (10%) of the actual construction Work with staff employed directly by the Bidder. Project Management and Office Staff shall NOT be included in this percentage.

3.4.3 The Bidder, or its assigned personnel, must have successfully performed at least 3 Pennsylvania public municipal projects within the last 5 years where they have managed multiple trades and coordinated and scheduled all the activities for projects as per Article 3.4.1. Provide references including telephone number and contact person.

3.4.4 An Agreement of Surety certifying that the Surety Company is committed to provide the Bidder with a Performance Bond and Payment Bond each in the amount of one hundred percent (100%) of the contract amount. The Surety Company must have an AM Best rating of A- or higher and a financial rating of Class X or higher.

3.4.5 The Bidder's performance on previous projects including claims, litigation, coordination of work, staffing, and timely completion. If it is determined that the Bidder has not fully performed previous projects in a coordinated, timely, and good and workmanlike manner, the Owner reserves the right to reject the Bid.

3.4.6 The Bidder shall also refer to Article 11.

3.5 Owner shall be entitled to recover attorneys' fees and costs incurred in defending any unsuccessful challenge brought by a Bidder in its own name or as proxy for a Municipality resident to Owner's award of a contract to another Bidder, from the Bidder who brought the unsuccessful challenge as more fully set forth in Section 13.8.1 of the General Conditions of Contract.

3.6 All Bidders should be aware that the Owner encourages and promotes MBE (Minority Business Enterprise) and WBE (Women's Business Enterprise) participation for this Project. Bidders are encouraged to do their own research on the qualifications, and other factors, in preparing a comprehensive and responsible bid.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

4.1 It is the responsibility of each Bidder, before submitting a Bid, to:

1. Examine the Contract Documents thoroughly.
2. Visit the site to become familiar with local conditions that may affect the cost, progress, performance, or furnishing the Work.
3. Consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the Work.
4. Study and carefully correlate Bidder's observations with the Contract Documents.
5. Notify Architect and Construction Manager of any conflicts, errors, or discrepancies discovered in the Contract Documents.

4.1.1 REVIEW OF DRAWINGS AND SPECIFICATIONS

A. Bidders shall thoroughly examine and be familiar with the Specifications and Drawings. The failure or omission of any Bidder to receive or examine any form, instrument, document, or visit the site and acquaint himself with conditions there existing, shall in no way relieve any Bidder from obligation with respect to his or her Bid. By submitting a Bid, the Bidder agrees and warrants that he/she has examined the site and the Specifications and Drawings and, where Specifications and/or Drawings require in any part of the Work a given result to be produced, that the Specifications and Drawings are adequate, and the required result can be produced under the Specifications and Drawings. No claim for any additional costs will be allowed because of alleged impossibilities in the production of the results specified or because of inadequate or improper plans and specifications and whenever a result is required, the successful Bidder shall furnish any and all extras and make any changes needed to produce the required result for the sum stated in the form of proposal.

B. Should any Bidder find discrepancies, duplications, or omissions in the documents or have doubt as to the meaning expressed by the Contract Documents, he/she shall make inquiry at once in writing to the Architect and Construction Manager. Where changes, corrections, or clarifications to Contract Documents are deemed necessary by the Architect and/or Construction Manager, he will issue written Addenda

accordingly. Addenda shall be a part of the Contract Documents. No oral, telephone, email, or letter instructions will be considered as having effect upon the Contract Documents; Addenda only shall constitute change to them. Bidders and sub-Bidders are urged to make early examination of Contract Documents and make inquiries about them, if necessary, even though prices may not be determined until late in the bidding period.

4.2 The site may be made available for visits at the pre-bid conference and at the other specific designated dates and times determined at the pre-bid conference.

4.3 Information and data reflected in the Contract Documents with respect to underground facilities at or contiguous to the site is based upon information and data furnished to Owner and Architect and/or Construction Manager by owners of such underground facilities or others, and Owner and Architect and/or Construction Manager do not assume responsibility for the accuracy or completeness thereof. Successful Bidder shall verify the location of all underground utilities prior to any excavation.

4.4 Successful Bidder for the Site Contract is responsible, on behalf of the Owner, for providing the physical markings of all existing utilities including those on site as indicated on the drawings or that may be identified in the field. The locations shown on the drawings are approximate. The Bidder must include in his proposal the cost for hand-dug test holes, or other means, to ascertain the precise position of such underground facilities on the site owned by the Owner. This verification should be performed for any utilities to be relocated, removed, modified, or that may otherwise interfere with planned work. The utilities in the public right of way will be identified and marked by the appropriate facility owner as per the requirements of the PA One Call Act as amended. Physical layout is to be performed in full compliance with the PA One Call PA Act 287 of 1974 as amended by Act 18 of 1996 and Act 50 of 2017.

4.5 The Owner, Architect, and Construction Manager will not be responsible for the adequacy of data furnished to prospective Bidders on subsurface conditions, underground facilities, and other physical conditions. This information is provided based on information available. Bidder assumes responsibility for verifications, adjustments, and modifications that may be required since this is generally recognized as inherent to the work of the Contract Documents.

4.6 Before submitting a Bid, each Bidder will, at Bidder's expense, make or obtain any additional examinations, investigations, explorations, tests and studies, and obtain any additional information and data which pertain to the physical conditions (surface, subsurface, and underground facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents.

4.7 On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests, as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up, and restore the site to its former condition upon completion of such explorations.

4.8 The lands upon which the Work is to be performed, rights-of-way, and easements for access thereto and other lands designated for use by the Bidder in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Bidder. Easements for permanent structures

or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

4.9 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Bidding Documents and, that without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

5. SCOPE

5.1 Contracts will be awarded in (6) prime contracts: Separate bids shall be submitted for: (BP-01) Site Construction, (BP-02) General Construction, (BP-03) Fire Protection Construction, (BP-04) Plumbing Construction, (BP-05) Mechanical Construction and (BP-06) Electrical Construction.

5.2 Each prime contractor shall furnish all labor, equipment, and materials necessary to complete the work called for and implied by the plans and specifications.

5.3 **Upon issuance of the Letter of Intent to Award to the Electrical and General Construction Prime Contractors, the Owner and Construction Manager request that the following submittals be provided for review due to anticipated lead times: Structural Steel, Pre-Engineered Metal Building System, Generator, and Automatic Transfer Switch (ATS). Submission of these items prior to contract execution shall be at the Prime Contractor's sole risk. Following issuance of the Notice to Proceed, the Prime Contractor may submit payment applications for reimbursement of approved costs associated with these submittals.**

6. TIME

6.1 The Contract Documents include potential assessment of Liquidated Damages. Refer to AIA Document A132 – 2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition.

7. INTERPRETATIONS OF CONTRACT DOCUMENTS PRIOR TO BIDDING

7.1 If any person submitting a bid for construction of the Work is in doubt as to the true meaning or intent of any part of the proposed Contract Documents, or find discrepancies or omissions, they shall submit a request for information to the Architect and Construction Manager no later than the date indicated in the Bid Schedule.

7.2 Interpretation or correction of proposed Contract Documents will be made only by Addendum and will be released to all prime contract bidders of record. The Owner, Architect, and Construction Manager will not be responsible for any other explanations or interpretations of the proposed Contract Documents.

7.3 During the bidding period, Bidders may be furnished these Bid Addenda modifying the Bid Documents. Any such Addenda shall be taken into account in submitting a Bid and shall form a part of the Contract Documents. Receipt of Bid Addenda must be identified on Bid Form.

7.4 When mistakes or omissions occur in the drawings and/or specifications, they shall be brought to the Construction Manager's attention before proceeding with the work.

7.5 All construction shall be in accordance with all federal, state, and local building codes and ordinances, which shall take precedence over these drawings and specifications.

7.6 Manufacturer's directions – All manufacturer's articles, materials and equipment shall be supplied, installed, connected, cleaned or conditioned in strict accordance with the manufacturer's printed directions.

7.7 If there is a discrepancy between the contract documents and the information on Building Connected the contract document requirements shall prevail in all cases.

8. REQUESTS FOR INFORMATION

8.1 If additional information is required concerning the meaning or intent of the Bid Documents, all questions and requests for information must be submitted electronically via Building Connected.

9. SUBMISSION OF PROPOSALS

9.1 Bids shall be submitted at the time and place indicated in the Advertisement for Bids and shall be enclosed in an opaque, sealed envelope, marked with the Project title, Contract No., and, if applicable, the designated portion of the Project for which the Bid is submitted. Envelopes shall contain the name and address of the Bidder and accompanied by the documents listed below. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in another envelope with the notation "BID ENCLOSED" on the face of it. Receipt of Bid is acknowledged when delivered to the Owner and not when mailed.

9.2 **Each Bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

10. BIDDERS RESPONSIBILITIES

10.1 Bidders will be given permission to withdraw any proposal after it has been received by the Owner, provided the Bidder or his agent duly authorized to act for him, personally appears at the Owner's Business Office with a written request signed by the Bidder prior to the time set forth for the opening of the Bids. At the time set for the opening of Bids, the withdrawn proposal will be returned to the Bidder. Such withdrawn proposals will not be opened or read at the Bid opening. Bids may not be modified after submittal.

10.2 Bids shall be irrevocable for ninety (90) days after the actual day of opening thereof unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval/permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds or the award of a grant, in which case, Bids shall be irrevocable for (120) calendar days after Bid opening. Absent an exception for extending time for the award of the Contract, the Owner and the lowest responsible and responsive Bidder may mutually agree in writing to extend the time for the Owner to award the Contract.

10.3 Neither the designation of the apparent lowest responsible Bidder, nor the issuance of a Notice of Intent to Award to the Bidder so designated shall operate to release any other Bidder from its Bid. Each such other Bidder, unless earlier released from its Bid by specific action of the Owner, shall remain bound by its Bid until the earlier of (1) the date of actual execution by Owner of the Agreement Between Owner and Contractor with the Bidder whom the Award of Contract has been made, or (2) the expiration of the firm Bid period stipulated above.

10.4 Negligence by the Bidder in preparing his Bid confers no right of withdrawal or modification of his proposal after such proposal has been opened. No claims on account of mistakes or omissions of any proposal will be considered. Notwithstanding the above, a Bidder may withdraw his Bid within two (2) business days after the Bid opening time in accordance with the Public Contracts – Withdrawal of Bids Law, Act of January 23, 1974, P.L. 9, No. 4, 73 P.S. §1601 et seq., as amended. A Bid which has been

opened may be withdrawn only in accordance with the causes set forth in said Act and for no other reasons. Strict compliance with said Act is required to withdraw a Bid after opening.

10.5 By submitting a bid, the bidder covenants and agrees that he has carefully examined the site, the existing building and details, the documents and the Contract and that, from his own investigations, he has satisfied himself as to the nature and location of the work, the general and local conditions and all matters which may in any way affect the work or its performance and that as a result of such examination, he fully understands the intent and purpose thereof and his obligations thereunder, and that he will not make any claim for, or have any right to, damages because of any lack of information.

10.6 Each bidder is highly encouraged to visit the site to familiarize themselves with the existing conditions thereon pertaining to the work. The bidder shall examine all the documents relating to the Contract on which he is bidding before submitting a Bid. Each Contractor shall obtain the full knowledge by personal and careful inspection of all existing conditions at the site and of all requirements of the Bid Documents that affect the work. The Contractor accepts all such conditions and requirements and hereby assumes all responsibilities and costs resulting from their failure to obtain full knowledge of them.

10.7 The Bids are to include all work as shown or specified, including but not limited to Unit Prices, Alternates and Allowances as may be requested or noted. These prices are important and should be carefully considered when Bids are submitted, and in the form, as quoted, on the Bid forms, attached to these specifications. It is requested upon any bidder, to include all Alternate Bids or Unit Prices. Should any bidder fail to submit requested Alternate Bids or Unit Prices the bidder will be responsible for his omission and shall have no claim against the Owner, should the Owner award the Contract to a bidder who has submitted a more satisfactory and complete bid.

10.8 Any Unit Prices furnished by the Bidder as part of his Proposal Form shall be made a part of the Agreement and shall be the basis of compensation for any Unit Price work required on the Project.

10.9 The Bidder shall identify and list Prior to Award of Contract each Subcontractor or material supplier, with their respective prices, to be used on this Project in accordance with the General Conditions of the Contract.

10.10 Bidders shall also secure and submit Contractors Qualification Statements accordingly as noted below.

10.11 Bidder warrants to execute the Contract, furnish required Bonds in form as incorporated in the contract documents and furnish required insurance certificates and other items, in amounts specified or required, by the owner. Bidder shall also warrant beginning work in accordance with the Project Contract agreement.

10.12 All permits and inspections shall be obtained by each prime contractor and paid for by the owner. The contractors will be required to pay all license and/ or registration fees by the local community.

10.13 A Waiver of Liens shall be signed by The Contractor as requested by the CM or prior to the beginning of the ordering of material and before any work is performed on the property. The Waiver of Lien to be filed and indexed in the Berks County Prothonotary's Office is found as an attachment at the end of these specifications. The Contractor shall provide a Release of Liens for themselves and all suppliers prior to application of final payment.

10.14 All work to be in accordance with applicable codes and ordinances adopted and/or as amended by the local Municipality, and the Commonwealth of Pennsylvania, Pennsylvania Uniform Construction Code, Act 45, The International Code Council, International Building Code – 2021 and Chapter 11 of the IBC 2018.

10.15 This Project falls under the Commonwealth of Pennsylvania Public Works Employment Verification Act, Act 127 of 2012, 43 P.S. § 167.1, which requires all public work contractors and subcontractors to utilize the Federal Government's E-Verify system to ensure that all employees performing work on public work projects are authorized to work in the United States. All Bidders are required to submit a Public Works Employment Verification Form as a precondition for the Contract Award.

10.16 The "Bid Bond," A.I.A. Document No. A310, of the American Institute of Architects, 2010 Edition, is hereby made a part of the Specifications as bound herein. The Bond is subject to all modifications as set forth hereinafter.

10.16.1 A bank cashier's, bank treasurer's certified check or bid bond in favor of Berks County in the amount of 10% of all base bids plus the amount of all add alternates, is required from each bidder and must be submitted electronically with the bid. It is understood the Bid Deposit will be forfeited to and retained by the owner as liquidated damages if the Proposal, or any part thereof, is accepted by the Owner and the Bidder fails to execute the contract and furnish Bonds within ten (10) days from the date of "Notice of Award". Should the owner fail to make any awards through no fault or failures on the part of the bidders, the Owner shall return said Bid Deposits.

10.16.2 Agreement of Surety: The "Agreement of Surety" form is to be provided to the Owner along with the bid proposal should the bid deposit submitted be other than a "Bid Bond". Attached is a 1-page sample letter to be signed and sealed from a corporate surety agreeing to provide a Performance Bond and Payment Bond in favor of the Owner as required for faithful performance and proper fulfillment of the contract. The Agreement is subject to all modifications as set forth hereinafter.

10.16.3 Non-Collusion Affidavit: The "Non-Collusion Affidavit" form is to be provided to the Owner along with the bid proposal by all prospective bidders. Attached is a document to be signed by all prospective bidders and sealed by notary, assuring the owner that the proposal for work is being submitted in good faith and without collusion with any other contractors or sub-contractors. The Affidavit is subject to all modifications as set forth hereinafter.

10.17 Non-Discrimination Clause: The "Non-Discrimination Clause" form is to be provided to the Owner along with the bid proposal by all prospective bidders. Attached is a document to be signed by all prospective bidders, assuring the owner that the proposal for work is being submitted in good faith and without collusion with any other contractors or subcontractors. The Clause is subject to all modifications as set forth hereinafter.

10.18 Performance and Payment Bonds: The "Performance Bond" and the "Payment Bond," A.I.A. Documents No. A312-2010, of the American Institute of Architects, are hereby made a part of the Specifications as bound herein. The Bonds are subject to all modifications as set forth hereinafter.

10.19 Maintenance Bond – the execution of a maintenance bond is required, per Section 00 4316.

10.20 CONTRACTOR'S QUALIFICATION STATEMENT

10.20.1 Each Bidder is required to submit a Contractor's Qualification Statement (AIA A305-2020) with a sworn statement of his financial responsibility, technical qualifications and evidence that he has completed at least Five similar construction contracts within the last five (5) years, each with a minimum value of 75% of the total amount of the proposal submitted. In addition, the designated Project Manager and Superintendent must have at least ten (10) years' experience in similar projects with similar values and phased construction. The Owner /CM has the right to reject a Project Manager or Superintendent if they do not specifically meet the qualifications.

10.21 REJECTION OR WITHDRAWAL OF PROPOSALS

10.21.1 A bidder on any Prime Contract may withdraw his bid from consideration within forty-eight (48) hours of the bid opening without forfeiture of the certified check, bank cashier's check, surety bid bond or other security filed with the bid if the price bid was submitted in good faith, and the bidder submits credible evidence that the reason for the price bid being substantially lower was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional and substantial arithmetical error or an unintentional omission of a substantial quantity of work, labor, material or services made directly in compilation of the bid; provided, 1.) the mistake or error must be proven and submitted to the Owner / CM for review and approval: 2.) notice of a claim of the right to withdraw such bid is made in writing with the contracting body within two business days after the opening of bids; and 3.) the withdrawal of the bid would not result in the awarding of the contract on another bid of the same bidder, his partner, or to a corporation or business venture owned by or in which he has a substantial interest.. No bidder who is permitted to withdraw a bid shall supply any material or labor or perform any subcontract or other work on the project without written approval of the contracting body. No accepted bid may be withdrawn for ninety (90) calendar days after the Bid Opening. Initial determination as to whether there was a clerical mistake or arithmetical error or unintentional omission of substantial quantity of work, labor, material, or services will be within the discretion of the Architect, a representative of the Owner, with the assistance of the Construction Manager, and such decision shall be considered final and determinative.

10.21.2 The Township reserves the right to reject any bid received if the bidder's responses to the Contractor's Qualification Statement (AIA Document A305) fail to satisfy the Township that such bidder is qualified to carry out the obligations of the Contract and to complete work, as specified. By way of specific example, a default in a contract in the last five years will, absent extraordinary justification, disqualify a bidder, as will litigation on a construction contract which, in the past five years, resulted in an award against the interest of the bidder.

10.22 PA PREVAILING WAGE

10.22.1 The Schedule of Minimum Wages as determined by the Department of Labor and Industry, Commonwealth of Pennsylvania, is hereby made a part of this Specification. A copy of these rates is attached in Section 007343 Prevailing Wage Requirements.

10.22.2 Copies of these forms may be obtained from the Prevailing Wage Division. The Project is subject to the Pennsylvania Prevailing Wage Act (Act of 1961, P.L. 987 No. 442) as amended. The pages titled, "Duties of Awarding Agencies Under Pennsylvania Prevailing Wage Act" may be obtained from the Prevailing Wage Division. These duties include requirements of both the awarding agency (Owner), the Contractor(s) and Subcontractors. It is understood that the Owner will comply with its required duties. The Contractor(s) and Subcontractors shall comply with all duties and instructions required of them. All items mentioned as "contract requirements" in the documents are hereby made a part of the contract to the same extent as if included in the Owner-Contractor Agreement.

10.22.3 "Payroll Certification for Public Works Projects". All Contractors and Subcontractors shall complete this form for each week worked on this project. Each Weekly Payroll Certification form shall be Notarized and forwarded to the Construction Manager for inclusion in the Owner's records. Payroll Certification Forms covering work periods included in an application for payment shall be submitted before or with the respective Application For Payment. If the certifications Forms are not submitted with the Application for Payments, the Owner will withhold payment until received.

10.22.4 US Steel Act 132. The Steel Products Procurement Act, 73 P.S. §§1881-1887, and the Trade Practices Act, 71 P.S. §773.101 et seq.

10.22.4.1 If any steel products are to be used or supplied in the performance of the Contract, only steel products produced in the United States shall be used or supplied in the performance of the Contract or any subcontract thereunder. This provision shall not apply in any case where the head of the public agency, in writing, determines that the type of steel products necessary to the performance of the Contract are not produced in the United States in sufficient quantities to meet the requirement of the Contract.

10.22.4.2 Contractors must ensure compliance with all provisions of the above which place restrictions upon the source of certain steel, cast iron and aluminum products allowed to be used in the performance of public agency contracts. The provisions of the above sited statutes are incorporated herein as if the same were set out at length herein.

10.22.4.3 Bidding will be public and utilize Pennsylvania State Prevailing Wage Rates established by the Commonwealth of PA Department of Labor and Industry.

11. INDEMNITY

11.1 The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and

reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to the undersigned's failure to comply with these Bid Documents and procedures.

11.2. Additional Insureds: All shall be named as "Additional Insureds" under all policies of insurances. Coverage shall be primary and non-contributory.
1. Exeter Township - its members, officers, employees and consultants.
2. Boyle Construction, Inc., Manns Woodward Studios, and Herbert, Rowland & Grubic, Inc. - and their members, officers, employees and consultants.
3. The Commonwealth of Pennsylvania.

12. Extra Work – No extra work will be considered unless the Exeter Township authorizes such work, in advance, in writing.

13. Safety and Health Regulations – The Bidder further agrees that should he enter into a Contract with the Exeter Township to perform all or any portion of the work included herein, he will comply with all the provisions of the Department of Labor, Occupational Safety and Health Administration, Safety and Health Regulations for Construction, contained in the Federal Register Volume 37, Number 243, Part II, dated Saturday, December 16, 1972.

14. SPECIFICATION AND PRODUCT DESCRIPTION

14.1 Substitute Material and Equipment – Proposal shall include furnishing and installing material in strict accordance with Contract Documents. No substitutions or deviations will be considered except as provided for in Contract Documents

14.2 Any product substitution requests must be made in writing including all product literature and specification at least ten (10) calendar days prior to the bid due date.

15. This project is financed by Exeter Township.

16. OPENING OF PROPOSALS

16.1 The Owner will, as soon as practical, award the Contracts to the Bidders, and shall have the right to reject any or all Bids, to waive technical defects, and to accept or reject any part of any Bid if in the judgment of the Owner its best interest shall be served by such action; and the Bidder, in submitting a Bid accepts these conditions. No rights shall accrue to any person submitting a Bid or Proposal until such Bid has been accepted, and a contract awarded, and such contract completely executed in writing by both parties.

17. AWARD OF CONTRACT

17.1 The Owner's intent is to enter into Contracts with the lowest responsible and qualified Bidders.

17.2 The Owner reserves the right to reject any and all bids. The Owner reserves the right to waive non-material defects, informalities or technicalities in any Bid in accordance with law. The Owner reserves the right to disregard all nonconforming, non-responsive, unbalanced, or conditional bids. Also, Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive, or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Bidding Documents.

17.3 In evaluating Bids, Owner will consider the qualifications of such Bidders (see Article 3), whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

17.4 Owner may consider the qualifications and experience of Subcontractors, suppliers, and other persons or organizations proposed for any portions of the Work requested by Owner. Owner also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

17.5 Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualification, and financial ability of Bidders, subcontractors, suppliers, and other persons or organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

17.6 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Intent to Award within sixty (60) days after the day of Bid opening unless extended as set forth in these Instructions to Bidders.

17.7 The Owner reserves the right to waive non-material defects, informalities, or technicalities in any Bid in accordance with the law.

18. CONTRACT SECURITY & INSURANCE

18.1 The General Conditions set forth the Owner's requirements as to Performance Bonds, Payment Bonds, and insurance requirements.

18.2 The apparent low Bidder must provide Payment and Performance Bonds in the forms included in the Contract Documents and all Certificates of Insurance or other insurance information as required pursuant to the General Conditions of the Contract within ten (10) days of the issuance of Notice of Intent to Award. **Other bond forms will not be accepted**. Failure of the apparent low Bidder to provide original executed Payment and Performance Bonds in the required form within the required time will result in forfeiture of the Bid Security.

19. SIGNING OF AGREEMENT

When Owner/Construction Manager issues a Notice of Intent to Award to the Successful Bidder, the Successful Bidder shall within ten (10) days thereafter, deliver to the Owner/Construction Manager, One (1) original copy of the required bonds, insurance certificates, and any other documents that may be requested with the Notice of Intent to Award. Within ten (10) days thereafter, the Construction Manager will send contract agreements via DocuSign to Successful Bidder. The Successful Bidder shall sign the agreements and DocuSign will automatically send the agreements to the Owner for signature. Once signed by the Owner DocuSign will automatically return an executed agreement to all parties.

20. RETAINAGE

See Section 5.1.7 of the Agreement (AIA A132-2019) and Article 9 of the General Conditions.

21. PREVAILING WAGES

Pennsylvania Prevailing wage rates will apply to this project. The Contractor and its subcontractors shall comply with the provisions, duties, obligations, remedies, and penalties of the Pennsylvania Prevailing Wage Act, 43 P.S. § 165-1 et seq. which is incorporated herein by reference as if fully set forth herein. The general prevailing minimum wage rates, as determined by the Secretary of Labor and Industry shall be paid for each craft or classification of all workmen needed to perform work on the Project during the term hereof for the locality in which the work is to be performed.

22. COMPETENT WORKMEN

No person shall be employed to perform any work under the Contract if they are not legally eligible to be employed under applicable state and federal law or if they are not a trained, competent workman, or mechanic, as applicable. For purposes of this Section, no workman or mechanic, as applicable, shall be regarded as competent unless he shall be duly skilled in the applicable branch of labor, and paid the applicable prevailing wage.

22.1 The Commonwealth of Pennsylvania enacted Act 127 of 2012, known as the Public Works Employment Verification Act ('the Act') which requires all public work contractors and subcontractors to utilize the Federal Government's E-Verify system to ensure that all employees performing work on public work projects are authorized to work in the United States. The Contractor and its Subcontractor (as such term is defined in the Act) are required to comply with the Act and the Statement of Policy as published in the Pennsylvania Bulletin, December 29, 2012, and effective January 1, 2013.

23. EROSION CONTROL

The Successful Bidders shall comply with all rules and regulations of Chapter 102, Title 25 of

Pennsylvania Code, relating to Soil Erosion and Sedimentation Control.

24. PUBLIC WORKS CONSTRUCTION CONTRACTS

In consideration of the funds awarded and activities funded under the Contract which involves construction, reconstruction, alteration, repair, improvement, or maintenance of a building, structure, or improvement ("The Work"), the Successful Bidder agrees to perform in accordance with the following:

24.1 Steel Products Procurement Act.

24.2 Trade Practices Act.

24.3 Public Works Contractor's Bond Law of 1967. Prior to the award of any Contract for any Work on the Project, the contractor to whom the contract is to be awarded must furnish the following bonds which shall become binding upon the award of such Contract:

24.3.1 A performance bond at 100 percent of the Contract Sum, conditioned upon the faithful performance of the Contract in accordance with the plans, specifications, and conditions of the Contract. Such bond shall solely for the protection of the Owner which awarded said contract.

24.3.2 A payment bond at 100 percent of the Contract Sum. Such bond shall be solely for the protection of claimants supplying labor or materials to the Successful Bidder, its contractor(s) or to any of its Subcontractors, in the prosecution of the work provided for in such Contract and shall be conditioned for the prompt payment of all such material furnished or labor supplied or performed in the prosecution of the Work. "Labor or materials" shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site.

24.3.3 Reference Article 11.1.2 of the General Conditions for additional requirements.

25. SEVERABILITY

25.1 Should any section or any part of any section of the Contract be rendered void, invalid, or unenforceable by any court of law, for any reason, such a determination shall not render void, invalid, or unenforceable any other section or part of any section of the Contract.

26. AMERICANS WITH DISABILITIES ACT

During the term of this Contract, the Successful Bidder agrees as follows:

26.1 Pursuant to federal regulations promulgated under the authority of The Americans with Disabilities Act, 28 C.F.R. § 35.101 et. Seq., the Successful Bidder understands and agrees that no individual with a disability shall, on the basis of the disability, be excluded from participation in this Contract or from activities provided for under this Contract. As a condition of accepting and executing the Contract, the Successful Bidder agrees to comply with the General Prohibitions Against Discrimination, 28 C.F.R. § 35.130, and all other regulations promulgated under Title II of The Americans with Disabilities Act which are applicable to all benefits, services, programs, and activities provided by the Commonwealth of Pennsylvania through contracts.

27. HEALTH AND SAFETY

27.1 Reference Article 10 of the General Conditions.

28. BONDS & INSURANCE

28.1 The Bidder will be required to furnish a Bid Bond, Performance Bond, and Labor and Material Payment Bonds in the amount of one hundred percent (100%) of the Contract Price in the form provided in the Contract Documents. Said Sureties shall be listed on the current Federal Register and have an AM Best rating of 'A-' or better and a financial rating of Class X or higher.

28.2 Insurance companies must be rated 'A-' or better in A.M. Best.

28.3 Bidder shall include the cost of the Bonds & Insurance in their Bid.

28.4 Bidder shall provide the insurance required in the General Conditions.

29. PRE-BID CONFERENCE

29.1 The Mandatory Pre-bid Conference will be held on the date and time listed in the Advertisement for Bids. Representatives of Owner, Construction Manager (CM), Architect and Civil Engineer will be present to discuss the Project. CM will transmit to all prospective Bidders of record such Addenda, as CM considers necessary in response to questions arising at the Conference. **Non-attendees will <u>not</u> be permitted to bid.**

30. PROJECT FINANCING

The Work to be done under the Contract is public work and may be financed in whole or part by the Owner (a public body) by issuance of bonds, which are subject to various qualifications and restrictions. The Owner, in such case and in good faith, intends to consummate such financing, but its ability to do so is subject to many factors beyond its control. It is therefore expressly understood and agreed to by each Bidder that, notwithstanding any other provision of the Contract Documents,

the Owner may at any time cancel any award made by it, or cancel any contract entered into with any Bidder, without liability to the Bidder, at any time before the Bidder has been given written notice to proceed and has actually begun Work under the Contract if financing satisfactory to the Owner cannot reasonably be consummated as contemplated, or if any court of competent jurisdiction shall enjoin or otherwise prohibit the Owner from proceeding with the Work.

30.1 The Work to be done under the Contract is funded in part by a Redevelopment Assistance Capital Program (RACP) Grant from the Commonwealth of Pennsylvania, Office of the Budget. Bidders are notified that Projects funded by state funds are subject to various qualifications, restrictions, and special requirements.

31. FAILURE TO EXECUTE CONTRACT

Failure of the Successful Bidder to whom Notice of Intent to Award has been given to deliver appropriate Payment and Performance Bonds, Certificates of Insurance, or execute the Contract within the time specified, shall constitute a default by such Bidder and the Owner may, at its sole discretion, award the contract to the next lowest responsive and responsible Bidder or re-advertise for Bids, and the defaulting Bidder shall pay to the Owner the difference between the amounts of his Bid and any higher amount for which the Owner may contract for the required work, plus any advertising, consulting, legal or other expenses incurred by reason of the default. The Bid Security of such defaulting Bidder shall be applied on account of said damages, and if the amount of said damages exceeds the amount of the Bid Security, the defaulting Bidder shall pay to the Owner the full amount of the excess.

END OF SECTION 00 1100

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #01 – Site Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with your Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #01 Site Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials, perform all labor and do all else necessary to complete the work for the Bid Package #01 indicated above for the Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____ Dollars Figures: ($_____)
BB2	SC-1: Owner Contingency Allowance, Site Construction Contract	Words: One Hundred Thousand Dollars Figures: ($100,000.00)

	UNIT PRICE ITEMIZATION SCHEDULE			UNIT PRICE ALLOWANCE SCHEDULE
BB3	**Unit Price No.**	**Contractor's Unit Price Bid**	**Bid Quantity**	**Unit Price Allowance (UPA) Amount** ***(To be included in Base Bid)***
	Unit Price No. 1 – Trench Rock Excavation by Hammer in excess of 1CY at individual locations	$_____/CY	150 CY	**Unit Price Allowance No. UPA-1** **$**_____
	Unit Price No. 2 – Bulk Rock Excavation by Ripping in excess of 1CY at individual locations	$_____/CY	**200 CY**	**Unit Price Allowance No. UPA-2** **$**_____
	Unit Price No. 3 – Unsuitable Soil Removal and Replacement with 2A stone	$_____/CY	100 CY	**Unit Price Allowance No. UPA-3** **$**_____
	Unit Price No. 4 – Unsuitable Soil Removal and Replacement with Suitable Soil	$_____/CY	100 CY	**Unit Price Allowance No. UPA-4** **$**_____
	Unit Price No. 5 – Placement of Flow Fill	$_____/CY	50 CY	**Unit Price Allowance No. UPA-5** **$**_____
	Unit Price No. 6 – Installation of Amended Soils	**$_____/CY**	**250 CY**	**Unit Price Allowance No. UPA-6** **$**_____

	UNIT PRICE ITEMIZATION SCHEDULE			UNIT PRICE ALLOWANCE SCHEDULE
BB3	**Unit Price No.**	**Contractor's Unit Price Bid**	**Bid Quantity**	**Unit Price Allowance (UPA) Amount *(To be included in Base Bid)***
	Unit Price No. 7 – Installation of Infiltration Media	**$_____/CY**	**375 CY**	**Unit Price Allowance No. UPA-7** **$_____**

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**) + Unit Price Allowances (**BB3**)
Words: _____Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120 days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award, except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

UNIT PRICE ALLOWANCES: The Contractor must provide a change in scope of work (no change in Contract Sum or Contract Time) Change Order for the allowance work, indicating the allowance amount to be utilized, in which the

Construction Manager (CMa) must review with the Owner and approve prior to the Contractor performing the Work. Should the allowance amount be exceeded and the Work approved to be performed, the Contractor will provide a Change Order for the additional Work and only be paid by an approved Change Order for the additional related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused allowance amount by a Change Order credit. All OH&P for allowances MUST be included within the Base Bid of the Project. NO additional OH&P will be allowed in allowances. Change Orders for the utilization of allowances shall not include OH&P. Change Orders for additional Work exceeding allowance amounts shall include OH&P. Change Orders for credit of unused allowance amounts shall be provided with OH&P in addition to the remaining allowance amount. OH&P for all stipulations noted above is to be a maximum of 5% combined.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: The Bidder shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform all earthwork excavations as UNCLASSIFIED in lieu of CLASSIFIED as specified in the Bid Documents. Under this Alternate, rock removal shall be performed through hydraulic/mechanical means (no blasting permitted) and the surplus soils and rock are to be disposed of legally by the contractor offsite or processed to the equivalent of 2A modified for re-use as structural fill onsite.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #3: The Site Contract Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide engineered structural fill or 2A modified stone in lieu of using on-site materials for all fills required below the bottom of subgrade stone for the entire building pad and up to 10' outside the new buildings exterior wall line as identified on the Special Excavation Plan. Under this alternate, the resulting excess soils are to be disposed of legally by the contractor off-site. Under this Alternate, the General Contract, Mechanical Contract, Electrical Contract, and Plumbing Contract Bidders shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform their scope of work within the engineered structural fill or 2A modified stone in lieu of on-site materials as identified in the Bid Documents.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #4: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide heavy duty PennDOT spec asphalt drive in lieu of concrete.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #5: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide concrete filled permanent bollards in lieu of removable bollards.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #6: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide sod in lieu of seeded lawn in the areas shown on the drawings.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #7: The Bidder shall state the adjustment in price to be deducted from the Base Bid landscaping from the Project (Plantings and Mulch).

DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #8: Not Applicable.

Alternate #9: Not Applicable.

Alternate #10: Not Applicable.

Alternate #11: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide 3" river stone in five (5) beds adjacent to the building in lieu of landscape and mulch. This includes soil sterilant and geotextile (class 2, Type B) fabric as specified.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #12: Not Applicable.

Alternate #13: Not Applicable.

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #02 – General Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with the Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #02 General Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials, perform all labor and do all else necessary to complete the work for the Bid Package #02 indicated above for the Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____ Dollars Figures: ($_____)
BB2	GC-1: Owner Contingency Allowance, General Construction Contract	Words: Two Hundred and Fifty Thousand Dollars Figures: ($250,000.00)
	GC-2: Pre-Engineered Metal Buildings Foundation Design Variation Allowance	Words: Fifty Thousand Dollars Figures: ($50,000.00)

	UNIT PRICE ITEMIZATION SCHEDULE			UNIT PRICE ALLOWANCE SCHEDULE
BB3	**Unit Price No.**	**Contractor's Unit Price Bid**	**Bid Quantity**	**Unit Price Allowance (UPA) Amount** ***(To be included in Base Bid)***
	Unit Price No. 1 – Furnish and Install additional miscellaneous structural steel	$_____/TON	2 TON	**Unit Price Allowance No. UPA-1** **$**_____
	Unit Price No. 2 – Furnish and Install additional miscellaneous metals	$_____/TON	12 TON	**Unit Price Allowance No. UPA-2** **$**_____

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**) + Unit Price Allowances (**BB3**)
Words: _____ Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, in the amount of 10% of the total Base Bid plus ALL possible ADD Alternates, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120 days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award, except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier’s check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.

UNIT PRICE ALLOWANCES: The Contractor must provide a change in scope of work (no change in Contract Sum or Contract Time) Change Order for the allowance work, indicating the allowance amount to be utilized, in which the Construction Manager (CMa) must review with the Owner and approve prior to the Contractor performing the Work. Should the allowance amount be exceeded and the Work approved to be performed, the Contractor will provide a Change Order for the additional Work and only be paid by an approved Change Order for the additional related Work. Similarly, should the allowance used be less than the allowance amount, the Contractor will credit the Owner for the unused allowance amount by a Change Order credit. All OH&P for allowances MUST be included within the Base Bid of the Project. NO additional OH&P will be allowed in allowances. Change Orders for the utilization of allowances shall not include OH&P. Change Orders for additional Work exceeding allowance amounts shall include OH&P. Change Orders for credit of unused allowance amounts shall be provided with OH&P in addition to the remaining allowance amount. OH&P for all stipulations noted above is to be a maximum of 5% combined.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: The Bidder shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform all earthwork excavations as UNCLASSIFIED in lieu of CLASSIFIED as specified in the Bid Documents. Under this Alternate, rock removal shall be performed through hydraulic/mechanical means (no blasting permitted) and the surplus soils and rock are to be disposed of legally by the contractor offsite or processed to the equivalent of 2A modified for re-use as structural fill onsite.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #3: The Site Contract Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide engineered structural fill or 2A modified stone in lieu of using on-site materials for all fills required below the bottom of subgrade stone for the entire building pad and up to 10' outside the new buildings exterior wall line as identified on the Special Excavation Plan. Under this alternate, the resulting excess soils are to be disposed of legally by the contractor off-site. Under this Alternate, the General Contract, Mechanical Contract, Electrical Contract, and Plumbing Contract Bidders shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform their scope of work within the engineered structural fill or 2A modified stone in lieu of on-site materials as identified in the Bid Documents.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #4: Not Applicable.

Alternate #5: Not Applicable.

Alternate #6: Not Applicable.

Alternate #7: Not Applicable.

Alternate #8A: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide Four-Fold doors in lieu of Fully Glazed Sectional overhead doors of Apparatus Bay doors OHD1, OHD2, OHD3, OHD4, OHD5, OHD6, and OHD7.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #8B: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide Fully Glazed Sectional overhead doors in lieu of Four-Fold doors of Apparatus Bay doors FFD1, FFD2, FFD3, FFD4, FFD5, FFD6, and FFD7.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #9: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide resinous floor finish and wall base in Corridor 106, Watch Office 111, **Janitor 121**, Kitchen & Day Room 122, and Laundry 125 in lieu of Base Bid Terrazzo floor and wall base.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #10: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide resinous floor finish and wall base in Corridor 145 and EMS Dayroom 146 ~~and Equipment 147~~ in lieu of Base Bid Terrazzo floor finish and wall base.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #11: Not Applicable.

Alternate #12: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to supply and install all complete systems to include but not limited to masonry, concrete, steel, and fence material for the Dumpster Enclosure in lieu of the chain link fence with privacy slats enclosure per the basis of design.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #13: Not Applicable.

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #03 – Fire Protection Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with your Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #03 Fire Protection Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials, perform all labor and do all else necessary to complete the work for the Bid Package #03 indicated above for the Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____Dollars Figures: ($_____)
BB2	FP-1: Owner Contingency Allowance, Fire Protection Construction Contract	Words: Thirty-Five Thousand Dollars Figures: ($35,000.00)

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**)
Words: _____Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120 days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award,

except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

THERE ARE NO UNIT PRICES and UNIT PRICES ALLOWANCES IN CONTRACT.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: Not Applicable.

Alternate #3: Not Applicable.

Alternate #4: Not Applicable.

Alternate #5: Not Applicable.

Alternate #6: Not Applicable.

Alternate #7: Not Applicable.

Alternate #8: Not Applicable.

Alternate #9: Not Applicable.

Alternate #10: Not Applicable.

Alternate #11: Not Applicable.

Alternate #12: Not Applicable.

Alternate #13: Not Applicable.

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #04 – Plumbing Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with your Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #04 Plumbing Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials, perform all labor and do all else necessary to complete the work for the Bid Package #04 indicated above for the Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____Dollars Figures: ($_____)
BB2	PC-1: Owner Contingency Allowance, Plumbing Construction Contract	Words: Fifty Thousand Dollars Figures: ($50,000.00)

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**)
Words: _____Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120 days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award,

except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

THERE ARE NO UNIT PRICES and UNIT PRICES ALLOWANCES IN CONTRACT.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: Not Applicable.

Alternate #3: The Site Contract Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide engineered structural fill or 2A modified stone in lieu of using on-site materials for all fills required below the bottom of subgrade stone for the entire building pad and up to 10' outside the new buildings exterior wall line as identified on the Special Excavation Plan. Under this alternate, the resulting excess soils are to be disposed of legally by the contractor off-site. Under this Alternate, the General Contract, Mechanical Contract, Electrical Contract, and Plumbing Contract Bidders shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform their scope of work within the engineered structural fill or 2A modified stone in lieu of on-site materials as identified in the Bid Documents.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #4: Not Applicable.

Alternate #5: Not Applicable.

Alternate #6: Not Applicable.

Alternate #7: Not Applicable.

Alternate #8: Not Applicable.

Alternate #9: Not Applicable.

Alternate #10: Not Applicable.

Alternate #11: Not Applicable.

Alternate #12: Not Applicable.

Alternate #13: Not Applicable.

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #05 – Mechanical Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with your Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #05 Mechanical Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials,

perform all labor and do all else necessary to complete the work for the Bid Package #05 indicated above for the Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____ Dollars Figures: ($_____)
BB2	MC-1: Owner Contingency Allowance, Mechanical Construction Contract	Words: One Hundred Thousand Dollars Figures: ($100,000.00)

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**)
Words: _____ Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120

days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award, except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to

the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

THERE ARE NO UNIT PRICES and UNIT PRICES ALLOWANCES IN CONTRACT.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: Not Applicable.

Alternate #3: The Site Contract Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide engineered structural fill or 2A modified stone in lieu of using on-site materials for all fills required below the bottom of subgrade stone for the entire building pad and up to 10' outside the new buildings exterior wall line as identified on the Special Excavation Plan. Under this alternate, the resulting excess soils are to be disposed of legally by the contractor off-site. Under this Alternate, the General Contract, Mechanical Contract, Electrical Contract, and Plumbing Contract Bidders shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform their scope of work within the engineered structural fill or 2A modified stone in lieu of on-site materials as identified in the Bid Documents.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #4: Not Applicable.

Alternate #5: Not Applicable.

Alternate #6: Not Applicable.

Alternate #7: Not Applicable.

Alternate #8: Not Applicable.

Alternate #9: Not Applicable.

Alternate #10: Not Applicable.

Alternate #11: Not Applicable.

Alternate #12: Not Applicable.

Alternate #13: Not Applicable.

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

Bid Form
Bid Package #06 – Electrical Construction

Bids Due: 11/10/26 @ 2:00 PM

Deliver Sealed bids to:
Exeter Township
Attn: Larry Piersol, Township Manager
Exeter Township Building
4975 DeMoss Road
Reading, PA 19606

Date: _____

Firm Name: _____

Firm Address: _____

_____

Contact: _____

Phone Number: _____

Email: _____

THIS BID FORM SHALL NOT BE ALTERED IN ANY MANNER. ANY ALTERED BID FORMS SHALL BE CONSIDERED NON-RESPONSIVE AND WILL BE REJECTED.

This Bid is submitted in accordance with your Advertisement inviting bids to be received for the Exeter Township Emergency Services Facility Bid Package #06 Electrical Construction.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Bid, BIDDER represents, as more fully set forth in the agreement that:

a. BIDDER has carefully examined the Contract Documents including all Addenda which are incorporated with these documents indicating various conditions affecting this contract, the undersigned herein agrees to furnish all materials, perform all labor and do all else necessary to complete the work for the Bid Package #06 indicated above for the

Contract for the above named Project in accordance with said Contract Documents.

b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary. Failure to visit and not be familiar with the Project site shall be no reason for future requests for additional compensation or costs of any kind.

LUMP SUM BASE BID – The contractor shall state the price for the completion of all work as indicated by the Contract Documents that is not included in the bid alternates listed below. This price shall be the base bid. **The base bid below shall include any and all allowances as described below**. All allowances MUST include all overhead and profit.

	BASE BID LINE ITEM SUB-TOTALS	
	Line Item Scope of Work	**Line Item Scope of Work Bid Subtotal**
BB1	Contractors' Cost of Work	Words: _____ Dollars Figures: ($_____)
BB2	EC-1: Owner Contingency Allowance, Electrical Construction Contract	Words: One Hundred Fifty Thousand Dollars Figures: ($150,000.00)

TOTAL LUMP SUM BASE BID Contractors' Cost for the Work (**BB1**) + Owner Contingency Allowances (**BB2**)
Words: _____ Dollars
Figures: ($_____)

Accompanying this Proposal is a certified check, bank cashier's check, bank treasurer's check or Bid Bond required by the Checklist and Instructions to Bidders, in the amount of 10% of the total Base Bid plus ALL possible ADD Alternates, which is deposited as a proposal guarantee, and is to be retained by you and applied as provided in the Instruction to Bidders, in case the undersigned shall default in executing the Contract or in furnishing the required Bonds and insurance certificates within the time specified by the Contract Documents.

The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest of or in behalf of any person, firm or corporation not herein named and that the undersigned has not directly or indirectly induced or solicited any bidder to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself any advantages over any other bidder.

The undersigned, intending to be legally bound, agrees that this Proposal shall be irrevocable and shall remain subject to your acceptance for 90 days after date set for bid opening unless the Owner is delayed in awarding the Contract due to the failure to receive a required approval or permit from one or more reviewing bodies/governmental agencies having jurisdiction over the Project, the sale of bonds, or the award of a grant, in which case, Bids shall remain open for 120

days after the day of Bid Opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of OWNER'S Notice of Award, except as provided by Act 317 of 1978, approved November 26, 1978, which provides for possible extensions of the holding period.

The undersigned submit this Proposal with the full knowledge of the Contract Document and Project requirements and hereby agrees that each phase of the work of this Project, under this Contract, shall be fully and finally completed and ready for occupancy and use on or before the completion date identified for that specific phase in the Contract Documents.

Bidder accepts the provisions of the Agreement as to the liquidated damages for failure to meet the milestone dates defined and substantial completion of the project shall be calculated at One Thousand Five Hundred Dollars ($1,500.00) per day for each calendar day of delay until the work is substantially complete.

The contract amount stated above includes all sales taxes, excise, and other taxes for all materials and appliances subject to and upon which taxes are levied.

The undersigned must enclose the following required attachments to this Bid Form. **Each bidder shall submit two (2) hard copies of the complete bid submission.**

The following shall be included in the bid submission:

1. Form of Proposal, fully executed and notarized
2. Bid Bond or Certified Check or Cashier's check in the amount of 10% of the Bid total and shall include Consent of Surety and Power of Attorney
3. Non-Collusion Affidavit, Signed and Sealed
4. Non-Discrimination Clause, Signed and Sealed
5. PA Public Works Employment Verification Form (E-Verify)
6. **Letter of Insurer**

Note that the following will be required to be submitted by ALL Bidders at the request of the Construction Manager within 48 hours of bid submission:

1. Bidder's Qualifications, AIA A305, completed
2. Schedule of Values
3. List of Subcontractors
4. Safety Questionnaire

Note that the successful bidder will be required to submit the following documents and any other documents deemed necessary by the Construction Manager upon issuance of Letter of Intent to Award:

1. Certificate of Insurance
2. Performance Bond in the amount of 100%
3. Payment Bond in the amount of 100%
4. No Lien Agreement

The undersigned shall indemnify and hold harmless Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with respect to any claims, losses, expenses, costs and reasonable attorney's fees incurred by Exeter Township, Boyle Construction, Inc., Manns Woodward Studios and Herbert, Rowland & Grubic, Inc., all consultants and each officer and employees, with regard to

the undersigned's failure to comply with these Bid Documents and procedures.

Permits and Inspections: Any required permit fee will be paid by the Owner. Upon award, the successful prime contractor must complete any applicable permit form (and business licenses if required) and submit to the Township. Inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the Township are to be paid by the prime contractor.

The Owner also reserves the right to solicit independent proposals as required by Exeter Township guidelines, under a separate contract to perform the services required. **The responsiveness of the Bid and if the Bid is responsible, may be determined by the Owner on the basis of the Unit Prices proposed by the bidder. Unit Prices shall be consistent with verifiable average costs for the work to be performed. Bidders agree that a proposal may be rejected if the Unit Prices submitted are inconsistent with the average cost.** Under NO circumstances will BIDDER perform Unit Price Work without prior written authorization from the OWNER. Contract Unit Price shall include costs for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Contract Unit Price shall also apply to deletion of "furnishing and installing" items from the Project.

In submitting this Bid, it is understood that the OWNER reserves the unrestricted right to reject any and all bids, or to waive any informalities or technicalities in said Bids.

THERE ARE NO UNIT PRICES and UNIT PRICE ALLOWANCES IN CONTRACT.

ALTERNATES: The Bidder agrees that the Owner shall have the right to accept or reject any or all of the following alternates, which acceptance or rejection shall enter into the determination of the lowest Bidder. The Bidder agrees that the Contract Time shall not be increased on account of the acceptance of any one or combination of alternates unless specifically stated in such alternate description(s). The Bidder agrees that the Owner shall have the right to accept an alternate that is higher in price than the Base Bid or other alternate. Alternates' prices shall include the cost of furnishing and installing all materials, labor, tools, equipment and other incidentals necessary to complete the Work in accordance with the design intent, manufacturers' recommendations, building codes, authorities having jurisdiction, and the Construction Documents. Do not adjust material allowances under any alternate bid items. Indicate whether alternate cost is an Add or Deduct when a choice is provided. If there is no change in the contract amount for any alternate write "NO CHANGE" or "Zero (0)" in the blank. The failure to enter an amount or "NO CHANGE" in the blanks for an alternate shall be treated conclusively as a Bid of zero dollars for the work described in the alternate.

Alternate #1: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to increase the Contractor's Warranty period from one-year to two-year from the date of substantial completion (excluding landscaping). This alternate does not affect other warranties required by the Contract Documents or provided by manufacturers.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #2: Not applicable.

Alternate #3: The Site Contract Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide engineered structural fill or 2A modified stone in lieu of using on-site materials for all fills required below the bottom of subgrade stone for the entire building pad and up to 10' outside the new buildings exterior wall line as identified on the Special Excavation Plan. Under this alternate, the resulting excess soils are to be disposed of legally by the contractor off-site. Under this Alternate, the General Contract, Mechanical Contract, Electrical Contract, and Plumbing Contract Bidders shall state the adjustment in price to be added to, or deducted from, the Base Bid to perform their scope of work within the engineered structural fill or 2A modified stone in lieu of on-site materials as identified in the Bid Documents.

ADD/DEDUCT_____Dollars.
(Words)

($ _____)
(Figures)

Alternate #4: Not Applicable.

Alternate #5: Not Applicable.

Alternate #6: Not Applicable.

Alternate #7: Not Applicable.

Alternate #8A: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide all Electrical Components for Four-Fold doors in lieu of Fully Glazed Sectional overhead doors of Apparatus Bay doors OHD1, OHD2, OHD3, OHD4, OHD5, OHD6, and OHD7.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #8B: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide Fully Glazed Sectional overhead doors in lieu of Four-Fold doors of Apparatus Bay doors FFD1, FFD2, FFD3, FFD4, FFD5, FFD6, and FFD7.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

Alternate #9: Not Applicable.

Alternate #10: Not Applicable.

Alternate #11: Not Applicable.

Alternate #12: Not Applicable.

Alternate #13: The Bidder shall state the adjustment in price to be added to or deducted from the Base Bid to provide standard (91dBA) weather enclosure for the generator in lieu of BOD Level 2 (74dBA) sound enclosure for the generator.

ADD/DEDUCT_____Dollars.
(Words)

($ _____
(Figures)

The undersigned hereby acknowledge receipt of following Addenda and has prepared this bid accordingly:

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

ADDENDUM #_____ Dated_____

SIGNATURES:

In witness whereof, the undersigned has caused this Proposal to be executed this _____ day of _____, 20_____.

INDIVIDUAL, PARTNERSHIP, LLC OR CORPORATION

_____
(Firm Name)

By: _____
(Signature)

_____
(Print Name and Title of Authorized Person to Sign)

State of Incorporation: _____

Business Address: _____

_____

_____

Telephone Number: _____

Email Address: _____

_____
Attest By

_____
Print Name of Person

Business/Corporate Seal:

SECTION 00 3100 - AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.1 INFORMATION AVAILABLE TO BIDDERS

A. Certain information relating to existing surface and subsurface conditions and structures is available to Bidders for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. The information available shall not be a warranty or guarantee of existing conditions. The information available will not be part of the Contract Documents.

1.2 EXISTING CONDITIONS

A. Existing drawings and/or reports that include information on existing conditions are as follows:

B. Geotechnical Report: Entitled Report of Geotechnical Exploration, New Exeter Emergency Service Center, Demoss Road and Gibraltar Road, Exeter Township, Berks County, Pennsylvania, dated 01/27/2026.

1. A copy of the original report is available for viewing as appended to this document.
2. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
3. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.
4. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
5. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.

C. Geotechnical Report: Entitled Supplemental Geotechnical Exploration and Report, Exeter Emergency Service Center, Demoss Road and Gibraltar Road, Exeter Township, Berks County, Pennsylvania, dated September 17, 2026.

1. A copy of the original report is available for viewing as appended to this document.
2. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
3. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.
4. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.

5. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.

D. Environmental Soil Analysis Report: Entitled Environmental Soil Sampling & Analysis, PADEP Management of Fill Program, Exeter Emergency Service Center, Demoss Road and Gibraltar Road, Exeter Township, Berks County, Pennsylvania, dated July 10, 2026.
1. A copy of the original report is available for viewing as appended to this document.
2. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
3. Any party using information described in the geotechnical report shall make additional samples and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.
4. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
5. Because subsurface conditions indicated by the test samples are in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the samples are necessarily typical of the entire site. Any party using the information described in the samples and environmental soil analysis report shall accept full responsibility for its use.

E. Pavement Design Report: Entitled Pavement Design, Exeter Emergency Service Center, Demoss Road and Gibraltar Road, Exeter Township, Berks County, Pennsylvania, dated April 29, 2026.
1. A copy of the original report is available for viewing as appended to this document.
2. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
3. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.

1.3 PERMITS

A. Each Prime Contractor shall be responsible for tracking the expiration of all permits related to their Scope of Work during the course of construction up to project closeout unless otherwise indicated. Each Prime Contractor shall notify in writing the Architect, Construction Manager (CMa), and the Owner a minimum of 60 calendar days prior to the expiration of any permit. Each Prime Contractor shall be responsible for any/all costs related to their Scope of Work incurred as a result of failing to notify the Architect and the Owner prior to the 60 calendar day deadline for notification.

B. The Architect/Owner has applied for the following permits:
1. Zoning Board of Appeals approvals.
   a. Status: Under review
2. Planning commission approvals.
   a. Status: Under review
3. Site work and Grading Permit.

a. Status: Under review

C. The General Contractor shall be responsible for obtaining and paying for all other required permits including but not limited to all trade permits. Obtainment of permits includes but is not limited to gathering, producing, and submitting all documentation and information required by the AHJ for any/all permits.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 OBTAINMENT OF PERMITS

A. Each Prime Contractor will secure and pay for all permits required to complete their Scope of Work with the exception of the General Building Permit and Grading Permit. The Owner will be responsible for the submission and cost of the General Building Permit and the Grading Permit.
1. Each Prime Contractor is responsible to complete and submit all necessary forms, produce and submit all necessary drawings, and provide all other necessary items and payments to Plymouth Township or other AHJ as required to secure permits to complete their Scope of Work.

END OF SECTION 00 3100

Providing Innovative Solutions to Subsurface Problems Since 1985

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

REPORT OF GEOTECHNICAL EXPLORATION

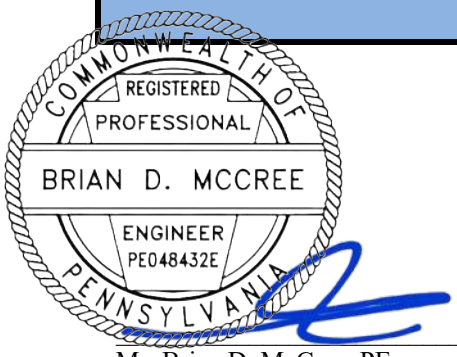
NEW EXETER EMERGENCY SERVICE CENTER
DEMOSS ROAD AND GIBRALTAR ROAD
EXETER TOWNSHIP, BERKS COUNTY, PENNSYLVANIA

PREPARED FOR

BOYLE CONSTRUCTION, INC.
3850 Sierra Circle, Suite 400
Center Valley, PA 18034

PROJECT 5779G1R1
01/27/2026

DAVID BLACKMORE AND ASSOCIATES, INC.
3335 WEST RIDGE PIKE
POTTSTOWN, PENNSYLVANIA 19464
(610) 495-6255



Mr. Brian D. McCree, PE
President

Mr. Marc Utti-Hodge, EIT
Geotechnical Engineer

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SOIL PARTICLE SIZE ANALYSIS RESULTS
SOIL PLASTIC AND LIQUID LIMIT TEST RESULTS
TEST BORING LOGS
TEST PIT LOGS
INFILTRATION DATA
BORING LOCATION PLAN

EXECUTIVE SUMMARY

Purpose

This exploration was conducted to evaluate subsurface conditions and their effects on the proposed site development. This exploration focused on the proposed emergency service center located at the intersection of DeMoss Road and Gibraltar Road in Exeter Township, PA.

Scope

A total of nine (9) borings were completed at the subject site. The proposed borings were drilled within the proposed structure area to a maximum depth of 28 feet. Seven (7) test pits were excavated to complete fourteen (14) constant head hydraulic conductivity testing by the double ring method. The test borings were located in the field by DBA personnel using a Site Plan prepared by Herbert, Rowland & Grubic Inc., Sheet 1, numbered R006367.0427, dated 11/25/2025. Our subcontractor, Corcoran Drilling Company Co. Inc., drilled the test borings under the direction of DBA personnel. All test boring logs and a test boring location plan are included in the appendix of this report.

Findings

The results of our exploration indicate the presence of the following subsurface conditions:

- Existing fill soils
- Variable depths to rock
- Enhanced subsurface weathering.
- Carbonate Geology

The drilling program encountered a thin fill deposit (Stratum IF) in five of the completed borings (B1, B3, B4, B7, B9). The fill deposit consists of orange-brown fine sand and silt with rock fragments and gray cinders. Beneath this fill deposit, a layer of fine sand and silt, orange-brown and reddish-brown, with clay layers and rock fragments (Stratum II) was encountered. This stratum then transitions to a weathered limestone fanglomerate (Stratum III).

Limestone bedrock pinnacles were encountered in four of the test borings (B2, B3, B7, B9) at depths ranging from 11.25 to 23.67 feet below the existing grade. Elevations to bedrock range from 228.06 to 245.17 feet. Dense, weathered rock was encountered at depths of 10.33 to 23.17 feet below the existing grade at elevations from 246.09 feet to 228.58 feet. See Table IIA- Approximate Bedrock Elevations for information at each boring location.

Localized soft conditions were encountered at the soil-to-pinnacled bedrock interface, which may indicate subsurface weathering/dissolution activity and potential sinkhole activity. This condition was encountered in boring B4 and B7. Therefore, we have included a “General Construction Guidelines for Carbonate Geology” in the appendix.

The results of our hydraulic conductivity testing indicate an infiltration range of 0.16 to 0.25 for soils of Stratum I and 0.25 to 3.04 inches per hour for the soils of Stratum II.

Recommendations:

The site conditions are suitable for supporting the proposed structure. A shallow foundation system with slab-on-grade construction is feasible, provided that the recommendations included herein are followed. There is a relatively thin (6 to 18 inch thick) deposit of existing fill at the subject site, a portion of which will be removed during site planned site grading activity. It is anticipated that the remaining fill material can be densified and further evaluated through proof rolling as detailed in Section 7.3 Slab on Grade.

1. INTRODUCTION

David Blackmore and Associates, Inc. (DBA) has completed the geotechnical exploration of the subject site in accordance with our Proposal 5779G1P1, dated October 28, 2025. This exploration was conducted to evaluate the existing subsurface conditions and their effects on the proposed site development. Specifically, DBA has provided recommendations regarding the following:

- Foundation support of the structure and slabs, including soil bearing pressures, bearing elevations, foundation design recommendations, and anticipated settlement for shallow foundations,
- alternate foundation systems,
- Seismic site conditions in accordance with IBC 2021/ASCE 7 guidelines,
- Depth to material requiring rock excavation methods for removal, if encountered
- Relative elevations of surface and subsurface features,
- Fill and compaction criteria,
- Pavements and floor slabs,
- Lateral earth pressures for retaining walls, and
- General geotechnical-related construction procedures.

The following section 2. PROPOSED CONSTRUCTION summarizes the information available to DBA regarding the proposed site development. This report has been prepared based on the proposed construction. Changes to the proposed construction may require alterations to this report or additional investigative work. DBA should be notified of significant changes to the proposed construction.

2. PROPOSED CONSTRUCTION

The proposed project is an estimated 25,000 to 30,000 SF 2-story, new Emergency Service Center. The building includes 8-9 apparatus bays (approximately 12,000 SF) and a living/workspace. The development also includes a 49-space parking area that surrounds the proposed building, walkways, and stormwater management facilities.

3. GEOTECHNICAL EXPLORATION

A total of nine (9) borings were completed at the subject site. The proposed borings were drilled within the proposed structure footprint to a maximum depth of 28 feet or to auger refusal.

Seven (7) test pits were excavated to complete fourteen (14) constant head hydraulic conductivity testing by the double ring method. Test pits were conducted within locations provided by the project civil engineer which are being evaluated for potential stormwater management facilities.

The test borings and test pits were located in the field by DBA personnel using a Site Plan prepared by Herbert, Rowland & Grubic Inc., Sheet 1, numbered R006367.0427, dated 11/25/2025. Our subcontractor, Corcoran Drilling Company Co. Inc., drilled the test borings under the direction of DBA personnel. The test pits were excavated by our subcontractor, Wayne Carmint Landscaping, Inc., under the direction of DBA personnel.

All test boring and test pit logs, and a test boring location plan are included in the appendix of this report.

4. GEOTECHNICAL BACKGROUND

4.1 SITE DESCRIPTION

The subject site is located on the north side of Gibraltar Road, approximately 100 feet east of the intersection of DeMoss Road and Gibraltar Road in Exeter Township, Berks County, PA. The site is currently used by the township as a park/recreation space, and an equipment storage area. The site contains a central paved parking, a fenced paved area containing two sheds to the north, existing underground utilities along Gibraltar Road, and an existing stormwater control and release basin to the southwest. The site includes a fenced along its Gibraltar Road frontage. The site generally slopes in a downward direction from north to south, from an elevation of approximately 257 feet to 251 feet. In

addition, the site gradually slopes downward in a southwesterly direction towards the existing stormwater basin from an elevation of approximately 253 feet to 250 feet.

A copy of the USGS Topographical Map, Birdsboro Quadrangle, indicating the site is included as Figure I.

4.2 GEOLOGY

Available geological sources indicate the site is underlain by the **Limestone Fanglomerate (Trfl)**. This formation is composed chiefly of limestone and dolomite pebbles and fragments; fragments are angular and up to 8 inches in diameter; fragments and pebbles are mostly yellow gray to light medium gray; few shale fanglomerate interbeds; fine grained, red quartz matrix; approximate 200 feet thick. The bedding is moderately well-bedded; thick. Joints have irregular pattern; poorly formed; moderately spaced; steeply dipping and open.

A copy of the USGS Geological Map of the Birdsboro Quadrangle indicating the site is included as Figure II.

4.3 SOILS

Soil records indicate the site soils to be of the following series:

> *UgB – Urban Land, 0 to 8 percent slopes:* This series consist of mostly human transported material such as pavement, buildings, and other artificially covered areas.
>
> *AsB – Athol silt loam, 3 to 8 percent slopes*: This series consists of red-fine loamy residuum weathered rock from calcareous conglomerate. A typical soil profile is as follows:
>
> 0 to 8 inches: silt loam
>
> 8 to 41 inches: gravelly silt loam
>
> 41 to 62 inches: gravelly loam
>
> 62 to 66 inches: bedrock

A copy of the USDA Soil Survey Website, indicating the site is included as Figure III.

5. LABORATORY TESTING

Representative soil samples taken during the field exploration were tested in DBA's laboratory for basic engineering properties. The laboratory testing consisted of classification of soil samples for engineering purposes. The laboratory testing included Particle Size Analysis (ASTM D442), Plastic and Liquid Limits (ASTM D4318), and Natural Moisture Content (ASTM D2216). The Unified Soil Classification System (USCS) was used to assign group symbols and group names to the soils tested.

A summary of the test results is provided in Table I. A copy of the particle size analysis results and the plastic and liquid limit analysis results are included in the appendix of this report.

6. SUBSURFACE CONDITIONS

The results of the drilling program revealed a fairly consistent subsurface profile. The following strata, underlain by 8 to 13 inches of topsoil and 2 to 9 inches of modified stone, can describe a typical soil profile.

Stratum IF: 0.50' to 1.67' thick; FILL consisting of orange-brown, brown, and gray fine sand and silt with some clay, trap rock, and gray cinders. This stratum was encountered in five of the completed test borings (B1, B3, B4, B7, B9).

Stratum I: 1.92' to 7' thick; Orange-brown fine sand and clayey silt; fine sand and silt with clay layers; fine sand and silty clay with occasional to some rock fragments. This stratum is loose to medium dense with SPR values ranging from 4 B/F to 28 B/F. The average SPR value is 13 B/F. This stratum was encountered in each of the borings completed.

Stratum II: 5.75' to 23.42' thick; Orange-brown and reddish-brown fine sand and silt with clay/silty clay layers and rock fragments. This stratum is loose to very dense with SPR values ranging from 2 B/F to 100 B/F. The average SPR value is 17 B/F. This stratum was encountered in each of the borings completed.

Stratum III: 0.92' to 0.33' thick; Multi-colored weathered limestone fanglomerate. Dense, weathered rock was encountered at depths of 10.33 to 23.17 feet below the existing grade at elevations from 246.09 feet to 228.58 feet. This stratum was encountered in four of the completed test borings.

Bedrock: Limestone bedrock was encountered in four of the test borings completed at depths ranging from 11.25 to 23.67 feet below the existing grade. These depths correspond to a bedrock surface elevation ranging from 228.06 to 245.17 feet. See Table IIA- Approximate Bedrock Elevations for information at each boring location.

Groundwater[2]: Groundwater was not encountered in the test borings completed.

NOTES:

1. SPR = the Standard Penetration Resistance or number of blows required of a 140-pound hammer dropping 30", to drive a 2" OD split spoon sampler one foot.

2. The groundwater information provided is based on conditions encountered during the drilling program. Seasonal fluctuations in the groundwater table are to be expected.

7. GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

The results of our exploration indicate the presence of the following subsurface conditions:

- Existing fill soils
- Variable depths to rock
- Enhanced subsurface weathering.
- Carbonate Geology

The drilling program encountered a thin (6 to 18 inches) fill deposit (Stratum IF) in five of the test borings completed (B1, B3, B4, B7, B9). The fill deposit consists of variable strength deposit of orange-brown fine sand and silt with rock fragments and gray cinders. The native soil profile includes a layer of orange, brown fine sand and clayey silt (Stratum I), over an orange, brown to reddish-brown, sandy silt with clay layers and rock fragments (Stratum II). This stratum then transitions to a weathered limestone fanglomerate (Stratum III) at depths ranging from approximately 10 feet to over 26 feet below existing grade.

Limestone bedrock was encountered in four of the test borings (B2, B3, B7, B9) at depths ranging from 11.25 to 23.67 feet below the existing grade. Bedrock surface elevations range from 228.06 at boring B7 to 245.17 feet at boring B3. Dense, weathered rock was encountered at depths of 10.33 to 23.17 feet below the existing grade at elevations from 246.09 feet to 228.58 feet. See Table IIA- Approximate Bedrock Elevations for information at each boring location.

The results of the geotechnical exploration confirmed the presence of carbonate geology consistent with the Limestone Fanglomerate formation. (See section 4.2 Geology). These formations are subject to dissolution activity and the subsequent development of karst features, subsoil erosion, and the formation of sinkholes. Evidence of dissolution activity was noted in the form of localized zones of enhanced weathering within the overburden soils as encountered in the drilling program. Disturbance and/or alteration of the existing site drainage patterns may result in an increase in subsoil erosion and sinkhole formation. Due to the potential for

subsurface dissolution activity and associated sinkhole development DBA has included "Guidelines for Construction is Carbonate Geology" in the appendix of this report.

The site conditions are suitable for supporting the proposed structure. A shallow foundation system with slab-on-grade construction is feasible, provided that the recommendations included herein are followed. See section 7.6 SLAB ON GRADE for more details.

7.1 SITE PREPARATION

All deleterious materials, including topsoil, root mass, trees and vegetation, asphalt, and other materials determined in the field by the Geotechnical Engineer to be unsuitable, shall be removed from all structural areas (buildings, pavements, and walkways) prior to placement of structural fill. Recycling of the asphalt and underlying stone can be accomplished on-site if the asphalt is milled to a maximum 1-inch particle size and the material is used only in the upper fill zones of pavement areas. This fill is not suitable for other structural areas.

7.2 FOUNDATIONS

Foundations shall bear on the undisturbed soils of Stratum II, Stratum III, or structural fill. Soft conditions encountered during foundation construction shall be excavated and replaced with structural fill. Refer to Section 7.7, Fill and Compaction Criteria.

Foundations shall be designed for a maximum soil bearing capacity of 3 KSF on Stratum I, Stratum II, Stratum III, or structural fill. If column loads are revised during a redesign of the structure, the bearing capacity of the soils may have to be modified as well. DBA shall be notified of any significant changes in this regard.

Foundation settlements for the bearing capacities provided herein are to be within a tolerance of one inch total and half-inch differential. It is anticipated

that the bulk of this settlement will take place during the construction period. Settlements of this magnitude are within normal construction tolerances. In the event that more stringent settlement tolerances are required, a reduction of the allowable bearing capacity and/or a change in depth to bearing strata may be required.

Due to the potential for sinkhole activity at the subject site, DBA recommends that the exterior perimeter wall foundations of the Emergency Services Center Building be designed as soil-supported grade beams capable of temporarily spanning up to 15 feet. Due to the potential for significant impact to the foundation design and associated cost, the perimeter column foundations may be omitted from this recommendation or the temporary foundation spanning distance may be reduced to 8 feet For this temporary support design an increased allowable bearing capacity of 4 KSF may be utilized.

To protect against differential settlements, foundations shall not be placed intermittently on soils and boulders. Small boulders encountered within or directly beneath the footing bearing surface shall be removed and replaced with structural fill. Larger boulders shall either be fully or partially removed and replaced with structural fill. Trench excavation through areas containing boulders may require substantial over-excavation to facilitate boulder removal. Partial removal can be completed by splitting or hammering to a minimum of 12" below the footing bottom elevation. Boulder protrusion into the bottom or side of the proposed footing is not an acceptable condition. Boulders can be dislodged in bulk excavations.

Should foundation excavation encounter hard bedrock, the foundation is to be undercut a minimum of 12 inches. The undercut area is to be backfilled with a structural fill or a low-strength flowable fill (max 500 psi) “cushioning” layer to

limit the potential for differential foundation settlement and the development of stress concentrations caused by rock protrusion.

Exterior foundations or foundations in unheated areas shall be provided with a minimum of 36" compacted soil cover above the footing bottom for frost protection.

The variable soil conditions noted make it imperative that full-time Quality Control services are provided for all Geotechnical phases of this project.

7.2.1 SEISMIC SITE COEFFICIENT

A review of Section 1613.5.5 of the International Building Code (IBC 2021 edition)/ASCE 7 and the existing soil profile indicates that a site class C should be used in the design of the proposed structure for seismic load resistance.

7.3 ROCK REMOVAL

Limestone bedrock pinnacles were encountered in test four of the test borings, completed at depths ranging from 11.25 to 23.67 feet below the existing grade. Bedrock elevations range from 228.06 to 245.17 feet. See Table IIA - Approximate Bedrock Elevations for information at each boring location. The hard bedrock encountered cannot be ripped with hydraulic rippers mounted on a bulldozer. It is expected that removing hard bedrock will require hydraulic hammers or explosives (if permitted by local authorities). A monitoring program to record ground vibrations will be required. If changes or utility trenches require blasting, a monitoring program to record ground vibrations should be developed. DBA can develop and execute a program, if required and as directed by Client, which may include blasting methods that increase the amount of shot rock reusable as structural fill.

The Geotechnical Engineer should verify the areas and quantities of hard bedrock in the field during excavation. Excavation requiring hydraulic rippers or similar is considered rock excavation; however, it is generally less expensive than excavation of hard rock, which requires blasting. A clear definition of rock should be included in any bid package.

7.4 SLAB ON-GRADE

The proposed slab on grade section has an assumed thickness of 8 inches (4 inches of concrete and 4 inches of subbase stone). The proposed building footprint is situated within existing greenspace, parking, and drives. Existing grades ranging from 257 feet at the northern end sloping downward in a southerly direction to elevation 251 feet. Comparing the existing grades to the proposed building subgrade elevation of 253 feet, it is anticipated that the majority of the fill (Stratum IF) will be removed during site grading. However, remaining portions of Stratum IF are anticipated to be in the range of 0.5 to 1.50 feet thick. These soils are to be densified/evaluated through proof rolling under the direct supervision of the Geotechnical Engineer as detailed below.

Once the initial site grading is completed, the exposed subgrade is to be proof rolled using a heavy (minimum 15 ton) smooth drum roller. This proof rolling operation shall be performed in the proposed fill areas, in the cut areas when the required grades have been achieved, and immediately prior to pouring the floor slab. This proof roll shall be completed under the supervision of the Geotechnical Engineer. Any loose/soft zones identified shall be repaired to the satisfaction of the Geotechnical Engineer. Subgrade repair would typically include undercutting and/or the use of stabilization fabric or open graded ballast.

Based on the soil type encountered, standard penetration testing of the existing slab subgrade, and provided that all structural fill will be placed in

accordance with the fill and compaction criteria set forth in Section 7.6, an estimated modulus of subgrade reaction of 150 psi/inch may be used for the design of slab sections. Should an increased modulus of subgrade reaction be required for the proposed design, it is recommended that field or laboratory testing be completed to establish specific modulus values.

All slab subgrade areas shall be evaluated by the Geotechnical Engineer prior to pouring the slab so that repair can be completed. It is recommended that the slab be poured under roof during periods of harsh weather.

A smooth drum roller shall be made available to seal the subgrade in the event of predicted precipitation.

7.5 BACKFILL OF FOUNDATION AND UTILITY TRENCHES

All foundation and utility trenches shall be backfilled with *structural fill*, under the supervision of a Geotechnical Engineer (Refer to Section 7.7, Fill and Compaction Criteria).

7.6 PAVEMENTS AND WALKWAYS

Pavement and sidewalk areas shall be prepared in a manner like the slab on-grade areas. A minimum of 8 inches of crushed aggregate base shall be used beneath exterior pavements due to the frost heave potential of the subgrade soils. The pavement subgrade shall be graded to drain water from beneath the pavement system to prevent ponding and subsequent pumping of silty subgrade soils.

For pavement design a preliminary estimated California Bearing Ratio (CBR) Value of 3.0 may be used for stabilized subgrade areas consisting of on-site clayey silt and sandy silts (Stratum II) or Structural fill selected and placed in accordance with Section 7.7 of this report. Should anticipated heavy-duty pavement requirements or other project conditions require final site-specific CBR

values, DBA can complete field and/or laboratory CBR testing of proposed subgrade soils at the client's request.

7.7 FILL AND COMPACTION CRITERIA

Fill supporting slabs, pavements, and foundations is considered herein to be *structural fill*. *Structural fill* shall be placed on an approved, proof rolled, nonyielding, level subgrade, in lifts not exceeding 8 inches (loose thickness), unless otherwise directed by the Geotechnical Engineer. *Structural fill* shall be maintained nominally at *Optimum Moisture Content* (ASTM D-698) and uniformly compacted to the percentages of *Maximum Dry Density* (ASTM D-698) provided in Table III - Compaction Criteria.

Suitable *structural fill* shall consist of clean soils without deleterious inclusions. On-site soils identified as Stratum II and Stratum III are acceptable for use as structural fill if given the opportunity to dry and the soils are maintained nominally at *Optimum Moisture Content*. Samples retrieved from the upper 5 feet of the subgrade indicated moisture contents ranging from 16.0 to 21.0 percent. The optimum moisture content for compaction of these soils is estimated to range between 15.0 and 23.0 percent. Therefore, some of these soils may require aeration and drying prior to re-using as structural fill, which is best accomplished in the summer months. Specific moisture content test results and associated depths are indicated on the test boring logs in the appendix of this report.

Borrow fill shall be clean well-graded soils with good strength characteristics with a maximum particle size of 3 inches and containing not more than 20% silt/clay (by weight). Samples of on-site or borrow sources of fill shall be submitted to the Geotechnical Engineer for testing at least 1 week before use on site. A minimum of 65 lbs. or two (2) five-gallon buckets is required for testing.

7.7 LATERAL EARTH PRESSURES - RETAINING WALLS

The retaining/loading dock walls of the structure, if proposed, should be designed for an at rest condition (Ko). The foundations and walls must be fully drained to relieve potential hydrostatic pressure. A foundation/wall drainage system is recommended. Soil backfill around the basement walls shall be well compacted and should consist of granular soils to prevent the trapping of water.

Retaining walls outside the structure which are free to rotate should be similarly designed except with an active earth pressure as opposed to Ko condition. Soil parameters used to establish the effective fluid pressures (excluding hydrostatic loads) and some additional parameters which may be used in the design of a retaining wall system are summarized in the following table:

SOIL PROPERTIES FOR DETERMINATION OF LATERAL LOADS

Parameter	**Stratum I**	**Stratum II**
Angle of Internal Friction, ϕ	30 degrees	32 degrees
Moist unit weight, γ_m	125 pcf	125 pcf
Active Earth Pressure Coefficient, K_a	0.33	0.31
Passive Earth Pressure Coefficient, K_p	3.03	3.25
At Rest Earth Pressure Coefficient, K_o	0.50	0.47
Soil/Mass concrete interface friction Angle, δ	21 degrees	22 degrees

7.8 STORMWATER INFILTRATION TESTING

A total of fourteen (14) double ring infiltration tests were completed at the subject site. Two infiltration tests were conducted at each of seven (7) test pit locations identified as TP-1 through TP-7 with the pair of double ring infiltration tests labeled IT - #A and IT - #B, respectively. Infiltration testing was completed on December 22nd the 23rd, 2025. The test locations and test depths were provided by the project Civil Engineer, HRG, on the drawing entitled IT Test Location Exhibit, dated 11/25/2025. TP-6 was relocated approximately fifteen feet southeast of the prescribed location to relocate away from the existing pavement area. Test pit locations, TP-1, TP-6, and TP-7 encountered limestone bedrock pinnacles which required adjustment of the test depth and/or location. Test pit TP-1 encountered a limestone pinnacle at the proposed test location at a depth of 5.02 feet (elevation 252.79 feet). Infiltration tests IT-1A and IT-1B were performed approximately ten feet east of the proposed test location. Tests IT-6A and IT-6B were proposed to extend to a depth of 12 feet. However, a limestone pinnacle was encountered at a depth of 10 feet (elevation 246.89 feet) at the test location. The test was relocated five feet towards IT-7 to ensure a minimum of two feet of soil below the proposed test depth. Infiltration test location IT-7 encountered a limestone pinnacle at the proposed test depth of 11.5 feet (elevation 246.93 feet). This test location was moved 15 feet towards Gibraltar Road where limiting conditions were not encountered. The final test locations are presented on the Test Location Plan included in the Appendix of this report. The results of the double ring infiltration testing are presented in the following table:

Test ID	Surface Elevation	Test Depth	Test Elevation	Stratum	Measured Infiltration Rate	Average Infiltration Rate
IT-1 A	253.18 feet	8.17 feet	245.01 feet	II	1.00 in./hr.	0.625 in/hr.
IT-1 B	253.18 feet	8.17 feet	245.01 feet	II	0.25 in./hr.	
IT-2 A	253.79 feet	8.75 feet	245.04 feet	II	1.00 in./hr.	1.0 in/hr.
IT-2 B	253.79 feet	8.75 feet	245.04 feet	II	1.00 in./hr.	
IT-3 A	251.47 feet	5.00 feet	246.47 feet	I	0.16 in./hr.	0.16 in/hr.
IT-3 B	251.47 feet	5.00 feet	246.47 feet	I	0.16 in./hr.	
IT-4 A	252.94 feet	6.00 feet	246.94 feet	II	0.81 in./hr.	0.905 in/hr.
IT-4 B	252.94 feet	6.00 feet	246.94 feet	II	1.00 in./hr.	
IT-5 A	250.38 feet	1.33 feet	249.05 feet	I	0.16 in./hr.	0.205 in/hr.
IT-5 B	250.38 feet	1.33 feet	249.05 feet	I	0.25 in./hr.	
IT-6 A	256.89 feet	10.00 feet	246.89 feet	II	1.84 in./hr.	1.61 in/hr.
IT-6 B	256.89 feet	10.00 feet	246.89 feet	II	1.38 in./hr.	
IT-7 A	258.43 feet	11.42 feet	247.01 feet	II	3.06 in./hr.	3.03 in/hr.
IT-7 B	258.43 feet	11.42 feet	247.01 feet	II	3.00 in./hr.	

NOTES:
Surface elevations at each test pit location were determined in the field using a Trimble 2A Catalyst GPS receiver rover.

As indicated in the table above, the measured infiltration rates at the test locations ranged from 0.16 in./hr. to 3.06 in./hr. Soils of Stratum I and Stratum II range from 0.16 to 0.25 inches per hour and 0.25 to 3.06 inches per hour, respectively.

8. QUALITY CONTROL

This report was prepared to provide design criteria for the design team. DBA assumes that Geotechnical and Construction Quality Control Services will be provided to implement the recommendations provided herein and to identify unanticipated or changed conditions. The Geotechnical Engineer's representative should review the consistency and texture of the exposed soils with the conditions encountered by this exploration as described herein. Since localized loose and yielding subgrade conditions may be encountered between test locations, provisions for the undercutting and subsequent replacement of these materials should be anticipated in the construction documents. The environmental quality of the subgrade soils was not reviewed as part of this evaluation. All materials generated by grading and excavation shall be managed in accordance with regulatory requirements.

DBA can provide a contract for Geotechnical and Construction Quality Control Services (Special Inspections), as required. A pre-work meeting with the design professionals, contractors, and the Geotechnical Engineer is strongly recommended.

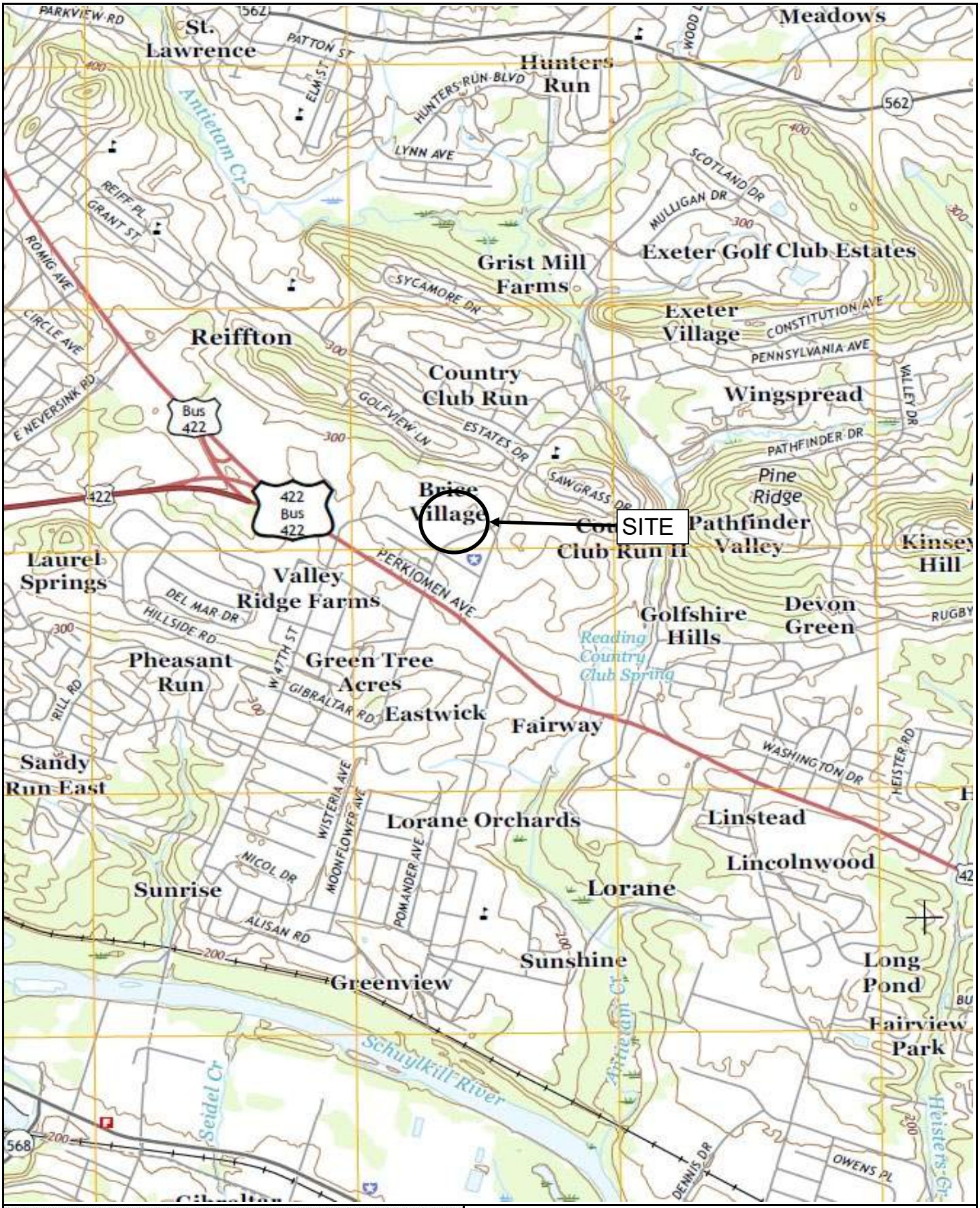
9. LIMITATIONS

Services performed by DBA, including the Geotechnical Exploration report, and any subsequent construction monitoring have been or will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other warranty or guarantee is indicated or intended in this report or any opinion, document or otherwise stated.

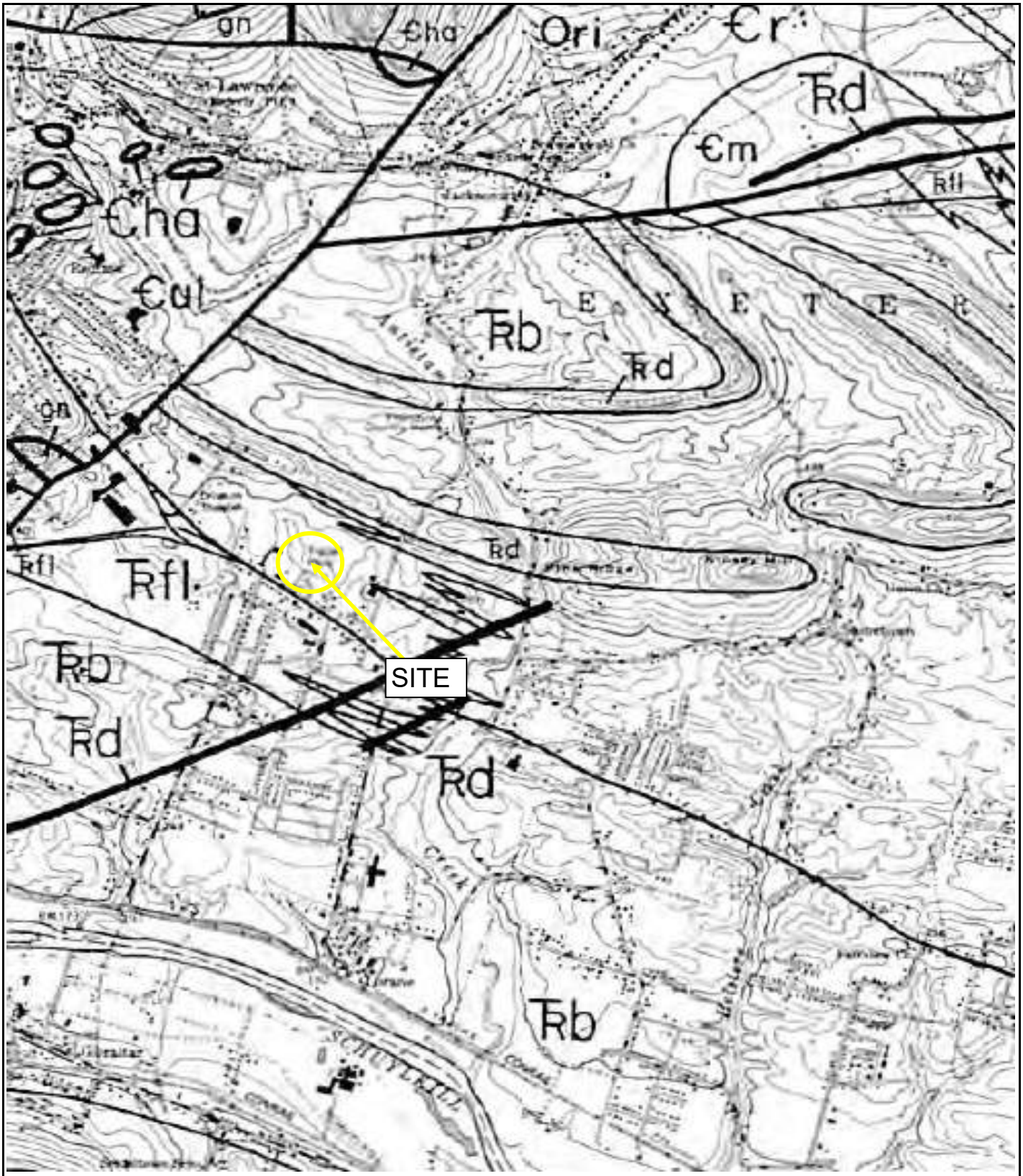
The recommendations included herein are based on the conditions encountered by the test borings performed at the subject site. It is noted that, although soil quality has been inferred from the interpolation of the site sampling data,

subsurface conditions beyond the test borings are, in fact, unknown. As a result, these recommendations may require modifications based on the conditions encountered and exposed during construction excavation. Should any conditions encountered during construction differ from those described in the report, this office should be notified immediately to review and possibly modify the recommendations included in this report.

FIGURES AND TABLES



GEOTECHNICAL & ENVIRONMENTAL ENGINEERS	**Project 5779G1**
DAVID BLACKMORE & ASSOC., INC. **3335 West Ridge Pike** **Pottstown, Pennsylvania 19464** Telephone: (610) 495-6255 FAX: (610) 495-7353	**Figure I** **SITE LOCATION & TOPOGRAPHY** U.S.G.S. 7.5 Minute Topographic Quadrangle Birdsboro Quadrangle



KEY

TRfl - Limestone fanglomerate

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KEY

UsB - Urban Land - 0 to 8 percent slopes

AsB - Athol silt loam, 3 to 8 percent slopes

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Project 5779G1

Figure III

Soils

Exeter Emergency Services Center

Soil Mapping via USDA Natural Resources Conservation Service

TABLE I
LABORATORY TEST RESULTS

BORING #	B1 B3	B2 B9	B3 B4	B5 B6	B7 B9	TP 5	TP 7
SAMPLE #	S2 S2	S3 S3	S1 S2	S4 S4	S8 S5	N/A	N/A
DEPTH	4' – 6' 4' – 6'	9' – 11' 9' – 11'	2' – 4' 4' – 6'	14' – 16' 14' – 16'	22' – 23'2" 15' – 16'9"	4'6"	10'6"
STRATUM	I	II	I	II	II	II	II
NMC* (%)	16.1 20.2	23.8 26.8	17.5 20.6	25.0 22.8	33.1 21.2	22.9	20.2

* NMC = Natural Moisture Content

SOIL PARTICLE SIZE DISTRIBUTION

SIEVE #	**PERCENT PASSING BY WEIGHT**						
3/4"	95.4	100	100	100	100	100	98.0
3/8"	94.3	96.6	98.8	98.2	96.2	99.4	95.9
4	92.2	95.8	97.3	91.1	90.3	99.4	91.6
10	89.2	93.7	94.2	83.9	82.8	98.4	84.5
40	83.9	87.1	88.6	76.2	72.0	96.2	73.3
100	79.2	82.1	84.6	70.6	66.0	94.5	66.6
200	74.7	78.6	81.2	66.8	60.2	93.4	61.8

ATTERBERG LIMIT ANALYSIS

LL*	41	39	36	52	N/A	40	N/A
PL*	16	20	19	16	N/A	19	N/A
PI*	25	19	17	36	N/A	21	N/A

* LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index

USCS CLASSIFICATION

Eng. Class.	CL	CL	CL	CH	ML	CL	ML
Descr.	Lean Clay with Sand	Lean Clay with Sand	Lean Clay with Sand	Sandy Fat Clay	Sandy Silt	Lean Clay with Sand	Sandy Silt

TABLE II
APPROXIMATE ROCK ELEVATIONS

Boring Number	Surface Elevation	Depth to Dense Weathered Rock[1]	Dense Weathered Rock Elevation	Depth to Bedrock[2]	Bedrock Elevation
B2	251.32 feet	17.0 feet	234.32 feet	17.08 feet	234.24 feet
B3	256.42 feet	11.0 feet	245.42 feet	11.25 feet	245.17 feet
B7	251.73 feet	23.17 feet	228.56 feet	23.67 feet	226.06 feet
B9	253.36 feet	17.0 feet	236.36 feet	17.17 feet	236.19 feet

NOTES:
Surface elevations at each boring location were determined in the field using a Trimble 2A Catalyst GPS receiver rover.

[1] As determined by drilling difficulty and Standard Penetration Resistance data.
[2] As determined by auger refusal.

TABLE III
COMPACTION CRITERIA

LOCATION	PERCENT COMPACTION (ASTM-D698)
Foundations	98%
Floor Slabs	98%
Pavements	95%
Berms (non-structural)	93%

APPENDIX

GENERAL CONSTRUCTION GUIDELINES FOR CARBONATE GEOLOGY

Areas underlain by carbonate geologic formations are subject to dissolution activity and the subsequent development of karst features, subsoil erosion, and sinkhole formations. Any disturbance of the natural conditions at a site tends to alter the existing surface drainage patterns which can result in an increase in subsoil erosion and sinkhole activity. The following construction practices will provide general guidelines for minimizing impact on the underlying carbonate formation.

1. Care must be taken to prevent collection and drainage of surface water into excavated or low-lying areas of the site during the construction of roadways, ramps, or structures. This may be accomplished by constructing earthen berms, dikes, or diversion ditches around open excavations or otherwise preventing the collection and ponding of surface water in low-lying areas.

Typically, excavations should not be made during periods of predicted precipitation. Excavations should be backfilled as soon as is practical, especially considering weekends or extended periods of inactivity.

2. The soil layer above a zone of dissolution activity is usually soft and wet and it is important to locate these areas whenever possible. If embankment fill is to be placed in suspected areas of sinkhole activity, the subgrade shall be proof-rolled and all "soft" areas suitably replaced and compacted prior to the construction of the embankment. If the area is to be excavated, proof-rolling shall be done using a roller of suitable weight (generally in excess of 15 tons).

3. Soft areas must be removed and replaced with clean soil, compacted in layers not to exceed 8 inches in thickness. All compacted soil must be placed to a density as determined by the Standard Proctor Test Method (ASTM-698).

4. The bottom of all excavations in carbonate areas should be inspected for soft or unusually moist conditions. A visual inspection of the excavated bearing surface, together with soundings or probes of the soil at regular intervals, is recommended. Any soft or unusually moist soil should be further excavated and a determination made of the extent of the problem. Remedial measures should then be adopted, as necessary.

5. The low points of swales, basins or drainage ditches are particularly vulnerable to subsoil erosion during periods of heavy rainfall and runoff. The same is true of outlet locations for drainage pipes. Consideration should be given to lining such areas with impermeable liners, instead of stone riprap, in order to prevent infiltration.

6. The placement of fill material in carbonate areas will reduce the overall potential for subsoil erosion and sink hole development. Excavation should be kept to a practical minimum in carbonate areas.

7. Blasting for the excavation and removal of rock in cut areas should be undertaken with extreme caution and only when absolutely necessary. Where blasting is required, it

should be done so as to minimize the disturbance to the underlying rock and/or soil strata.

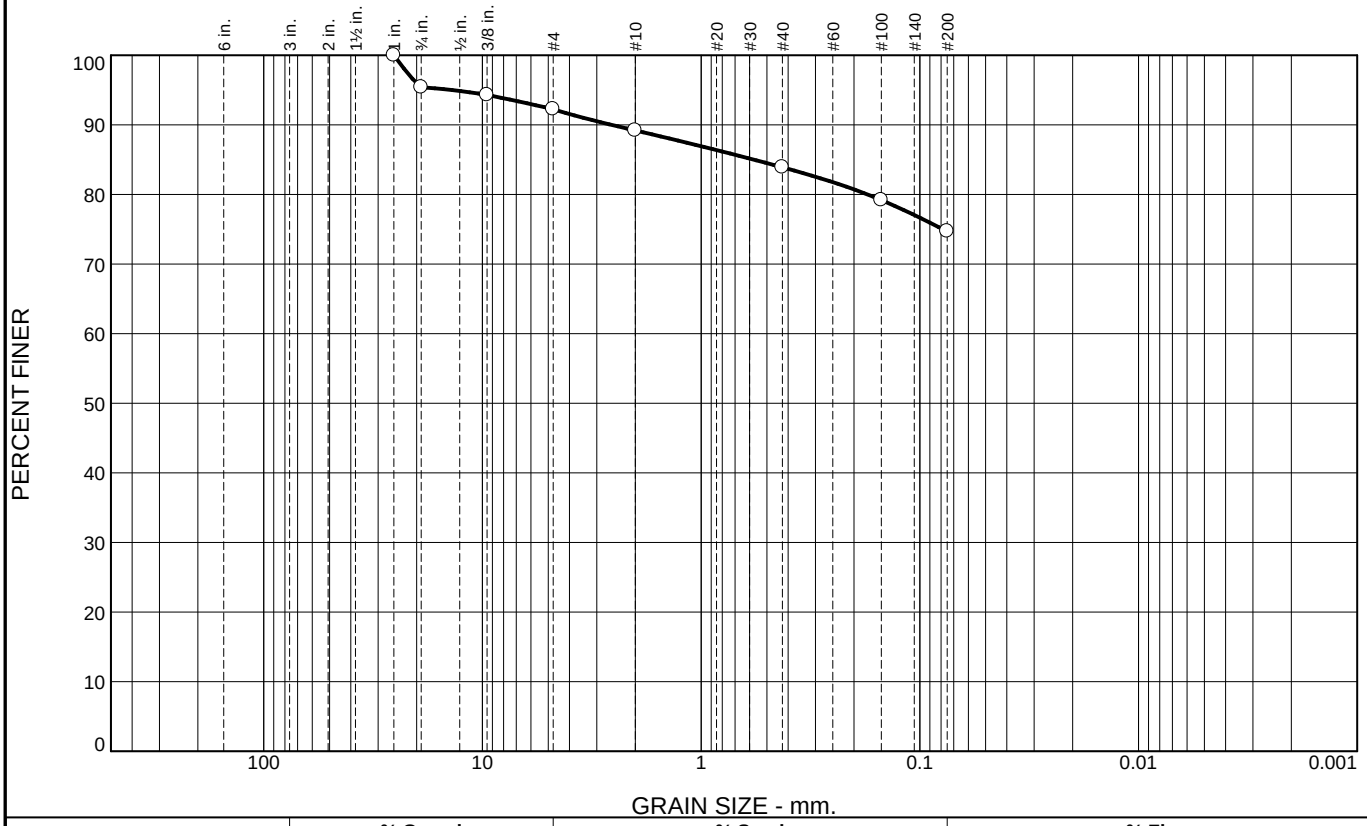
8. Water from roof drains or other drainage systems should be collected and conveyed away from structures to prevent infiltration near foundations. This is extremely important and an often-overlooked detail which results in the formation of numerous sinkholes at or below the building foundation.

9. Subsoil erosion or sinkhole development that occurs during the construction of a project should be corrected as quickly as possible under the supervision of a qualified geotechnical engineer.

Please note that the above guidelines are general procedures and do not represent construction specifications for any particular site. Every situation regarding carbonate geology must be evaluated individually including footing excavations, rock blasting, soft spot evaluation, and/or sinkhole repair. Construction/remediation recommendations for sites located in carbonate geology should be made by a qualified geotechnical engineer with follow-up quality control services.

SOIL PARTICLE SIZE ANALYSIS RESULTS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.6	3.2	3.0	5.3	9.2	74.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0	100.0		
.75	95.4		
.375	94.3		
#4	92.2		
#10	89.2		
#40	83.9		
#100	79.2		
#200	74.7		

* (no specification provided)

Material Description

Reddish brown silty clay with sand.
(lean clay with sand)

Atterberg Limits

PL= 16 LL= 41 PI= 25

Coefficients

D_{90}= 2.5638 D_{85}= 0.5736 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(17)

Remarks

B1/S2 as received moisture content of 16.1%.
B3/S2 as received moisture content of 20.2%.

Source of Sample: B1/B3 **Depth:** 4'-6'
Sample Number: S2/S2

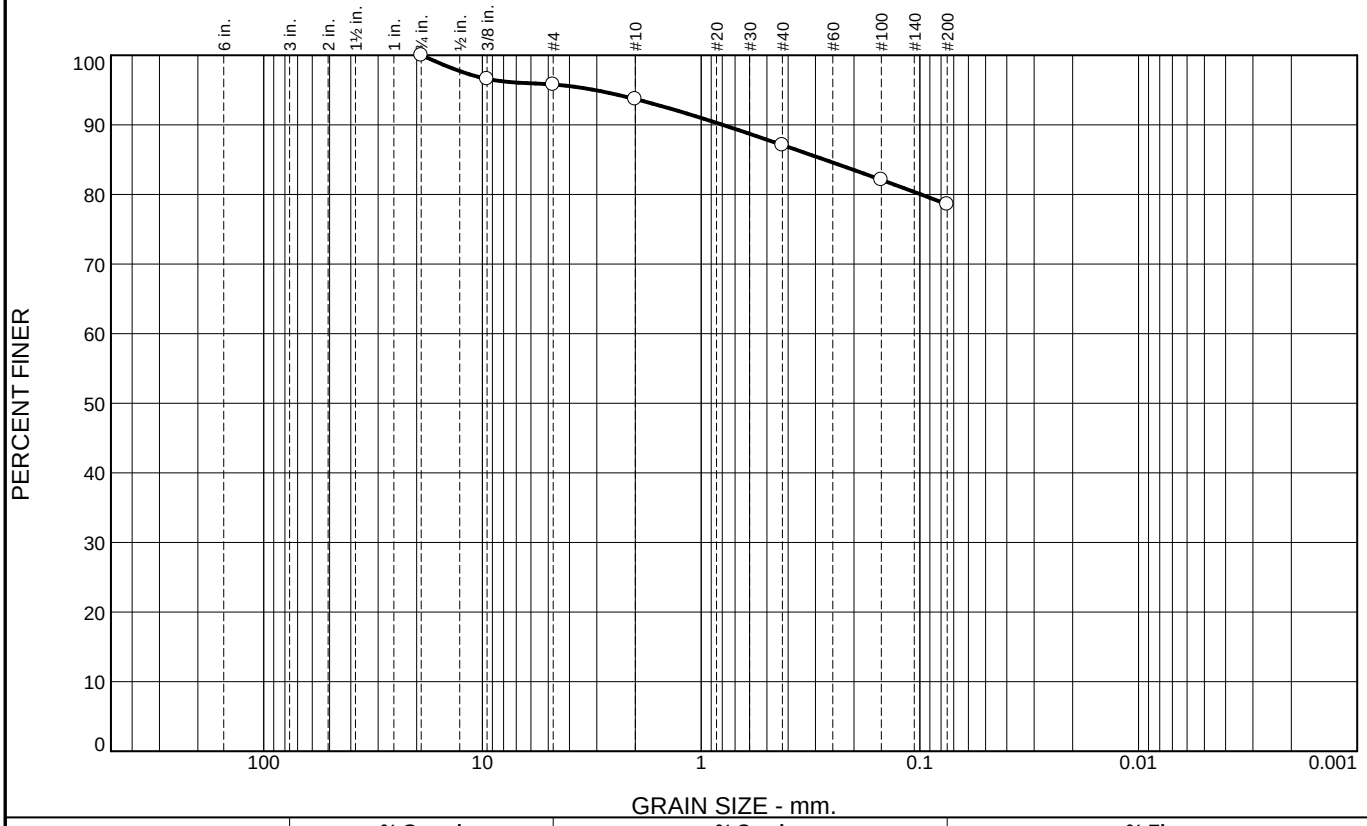
Date: 1/22/2026

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.2	2.1	6.6	8.5	78.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	96.6		
#4	95.8		
#10	93.7		
#40	87.1		
#100	82.1		
#200	78.6		

* (no specification provided)

Material Description

Light brown to brown fine clayey silt.
(lean clay with sand)

Atterberg Limits

PL= 20 LL= 39 PI= 19

Coefficients

D_{90}= 0.7971 D_{85}= 0.2726 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(14)

Remarks

B2/S3 as received moisture content of 23.8%
B9/S3 as received moisture content of 26.8%.

Source of Sample: B2/B9 **Depth:** 9'-11'
Sample Number: S3/S3

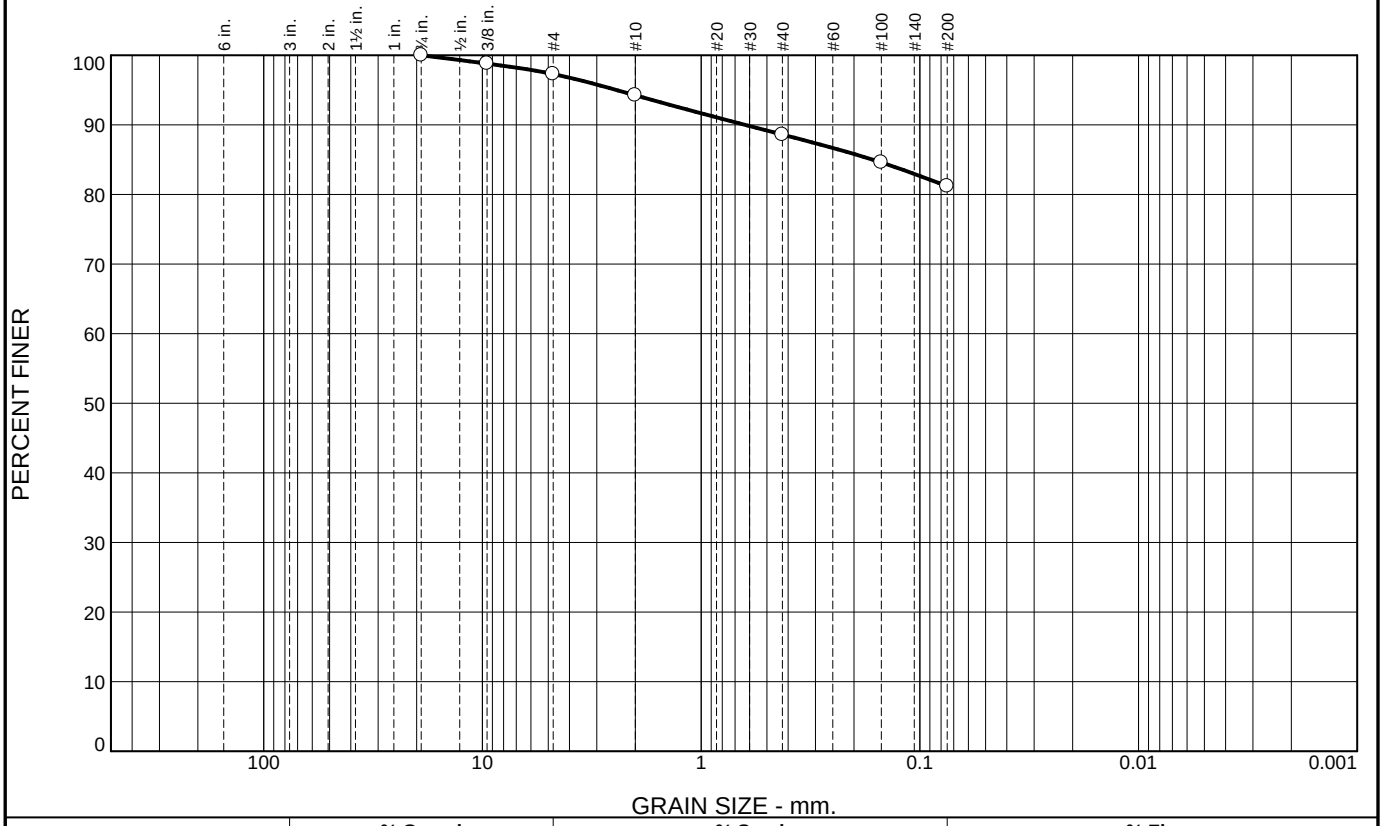
Date: 1/22/2026

DBA DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.7	3.1	5.6	7.4	81.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	98.8		
#4	97.3		
#10	94.2		
#40	88.6		
#100	84.6		
#200	81.2		

* (no specification provided)

Material Description

Orange brown to brown sandy lean clay.
(lean clay with sand).

Atterberg Limits

PL= 19 LL= 36 PI= 17

Coefficients

D_{90}= 0.6302 D_{85}= 0.1643 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(13)

Remarks

B3/S1 as received moisture content of 17.5%.
B4/S2 as received moisture content of 20.6%.

Source of Sample: B3/B4 **Depth:** 2'-6'
Sample Number: S1/S2

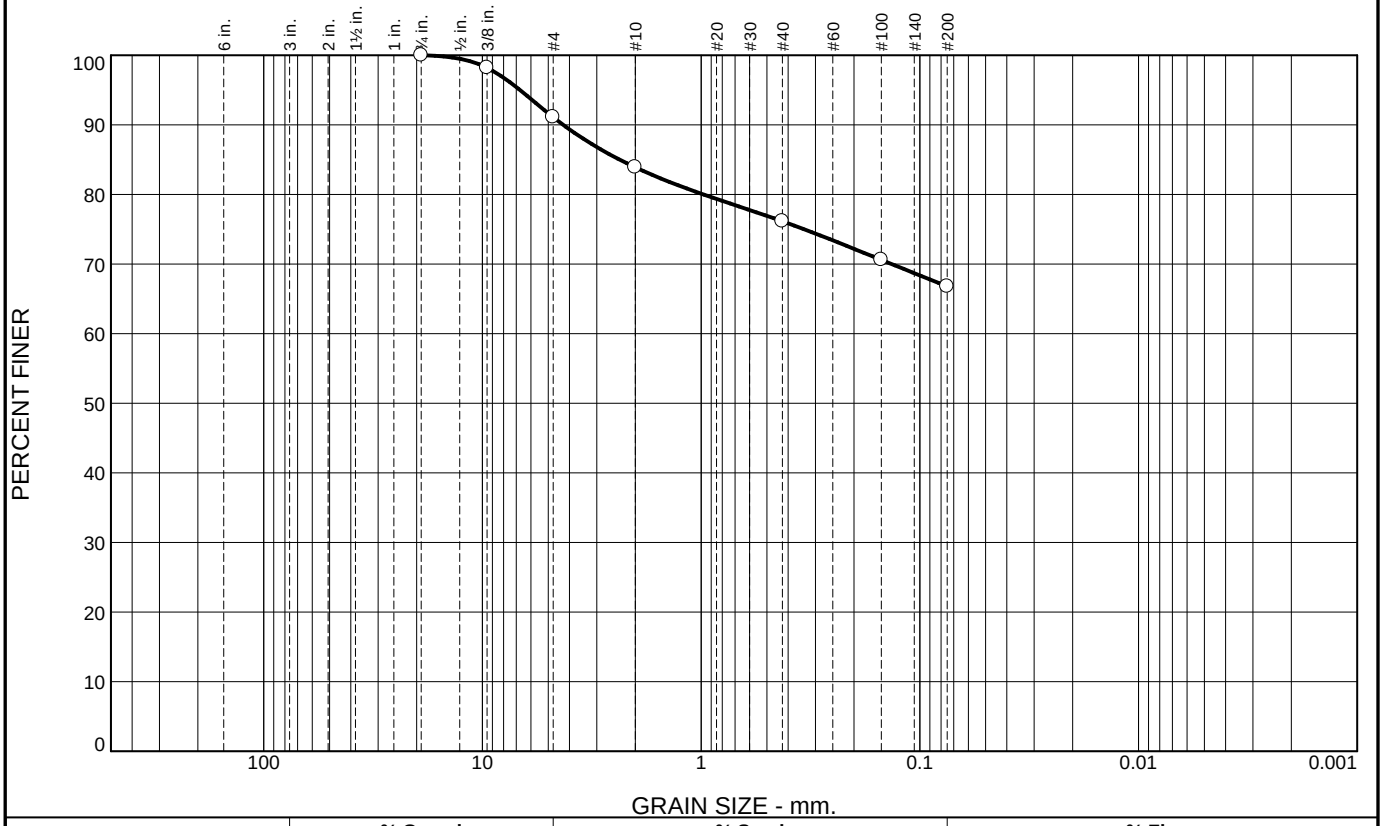
Date: 1/22/2026

DBA DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.9	7.2	7.7	9.4	66.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	98.2		
#4	91.1		
#10	83.9		
#40	76.2		
#100	70.6		
#200	66.8		

* (no specification provided)

Material Description

Reddish brown to brown fat clay w/ silt.
(sandy fat clay)

Atterberg Limits

PL= 16 LL= 52 PI= 36

Coefficients

D_{90}= 4.2732 D_{85}= 2.3582 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(22)

Remarks

B5/S4 as received moisture content of 25.0%.
B6/S4 as received moisture content of 22.8%.

Source of Sample: B5/B6 **Depth:** 14'-16'
Sample Number: S4/S4

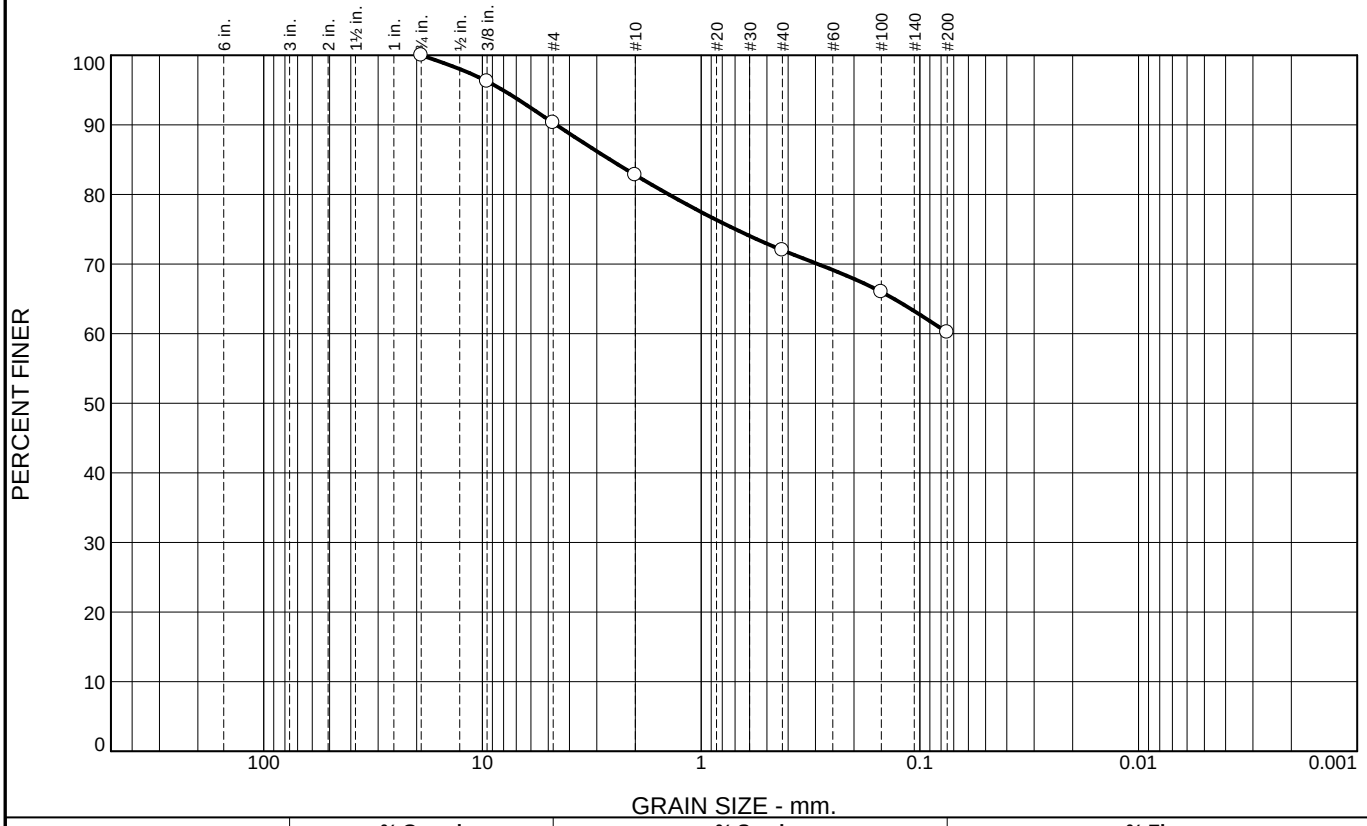
Date: 1/22/2026

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.7	7.5	10.8	11.8	60.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	96.2		
#4	90.3		
#10	82.8		
#40	72.0		
#100	66.0		
#200	60.2		

* (no specification provided)

Material Description

Orange to reddish brown fine silt w/ sand. (sandy silt)

Atterberg Limits

PL= NP LL= NV PI=

Coefficients

D_{90}= 4.5963 D_{85}= 2.6049 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

B7/S8 as received moisture content of 33.1%.
B9/S5 as received moisture content of 21.2%.

Source of Sample: B7/B9 **Depth:** 15'-23'2"
Sample Number: S8/S5

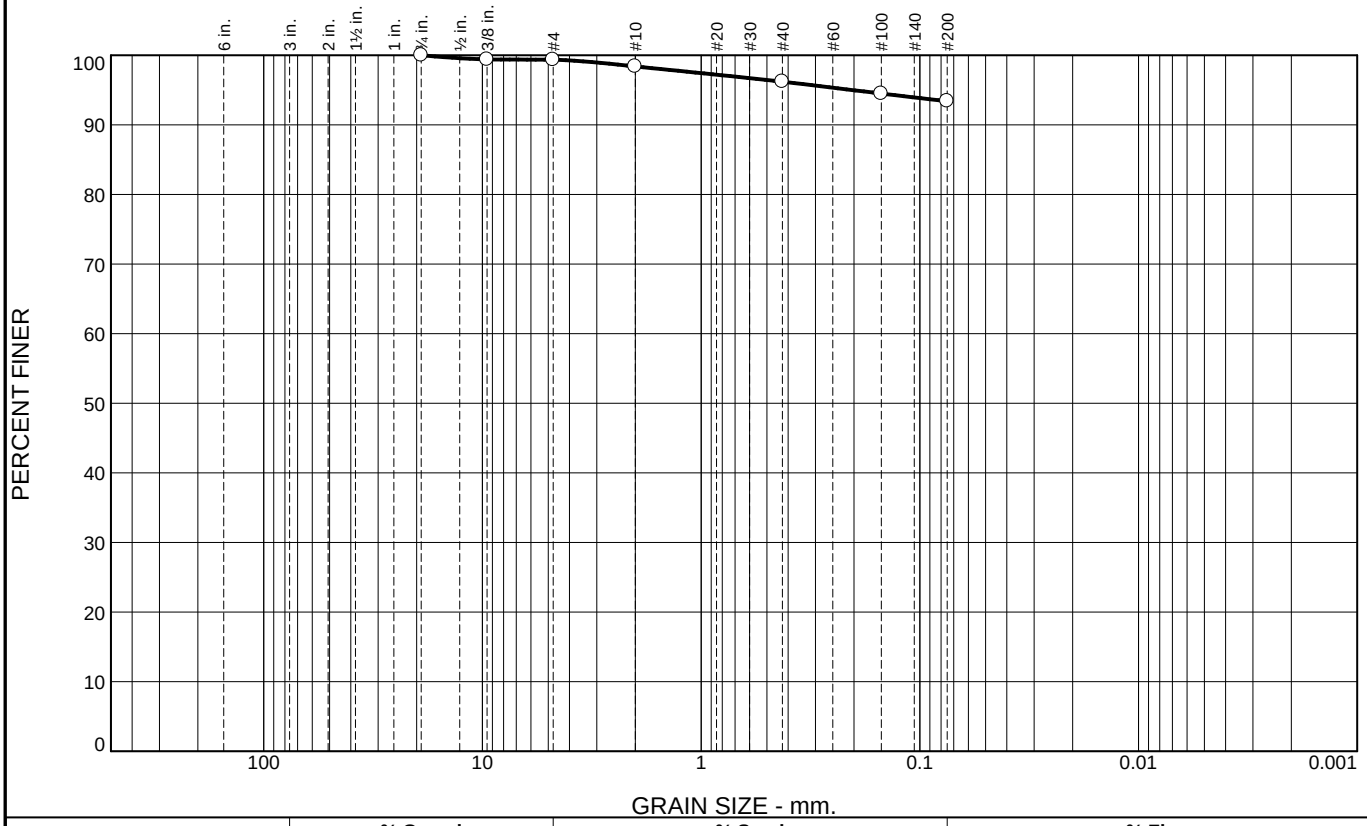
Date: 1/22/2026

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	1.0	2.2	2.8	93.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	99.4		
#4	99.4		
#10	98.4		
#40	96.2		
#100	94.5		
#200	93.4		

* (no specification provided)

Material Description

Brown to dark brown silty clay.
(lean clay)

Atterberg Limits

PL= 19 LL= 40 PI= 21

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(20)

Remarks

As received moisture content of 22.9%.

Source of Sample: TP
Sample Number: 5

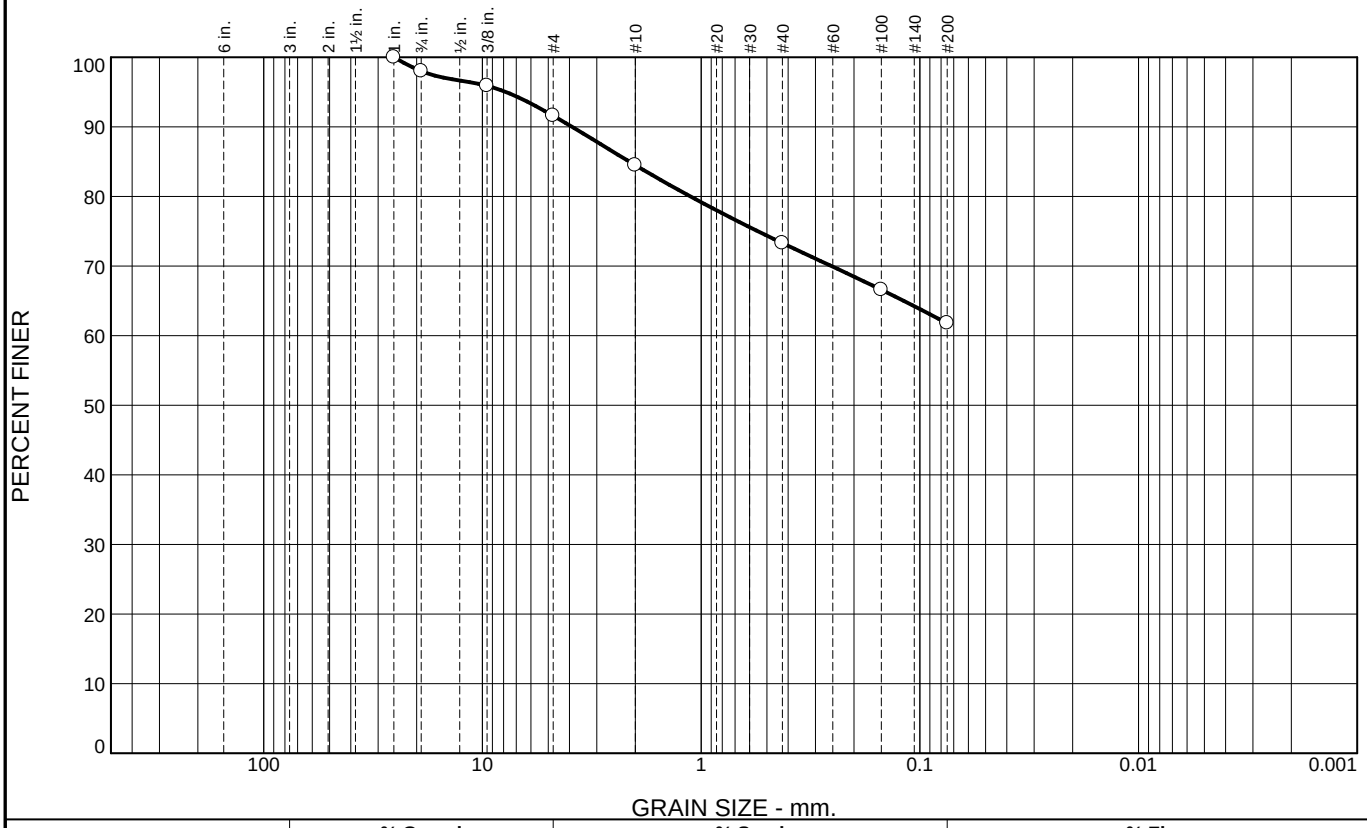
Date: 1/22/2026

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.0	6.4	7.1	11.2	11.5	61.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0	100.0		
.75	98.0		
.375	95.9		
#4	91.6		
#10	84.5		
#40	73.3		
#100	66.6		
#200	61.8		

* (no specification provided)

Material Description

Orange to reddish brown fine silt w/ sand. (sandy silt)

Atterberg Limits

PL= NP LL= NV PI=

Coefficients

D_{90}= 3.8889 D_{85}= 2.1265 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

As received moisture content of 20.2%.

Source of Sample: TP
Sample Number: 7

Date: 1/22/2026

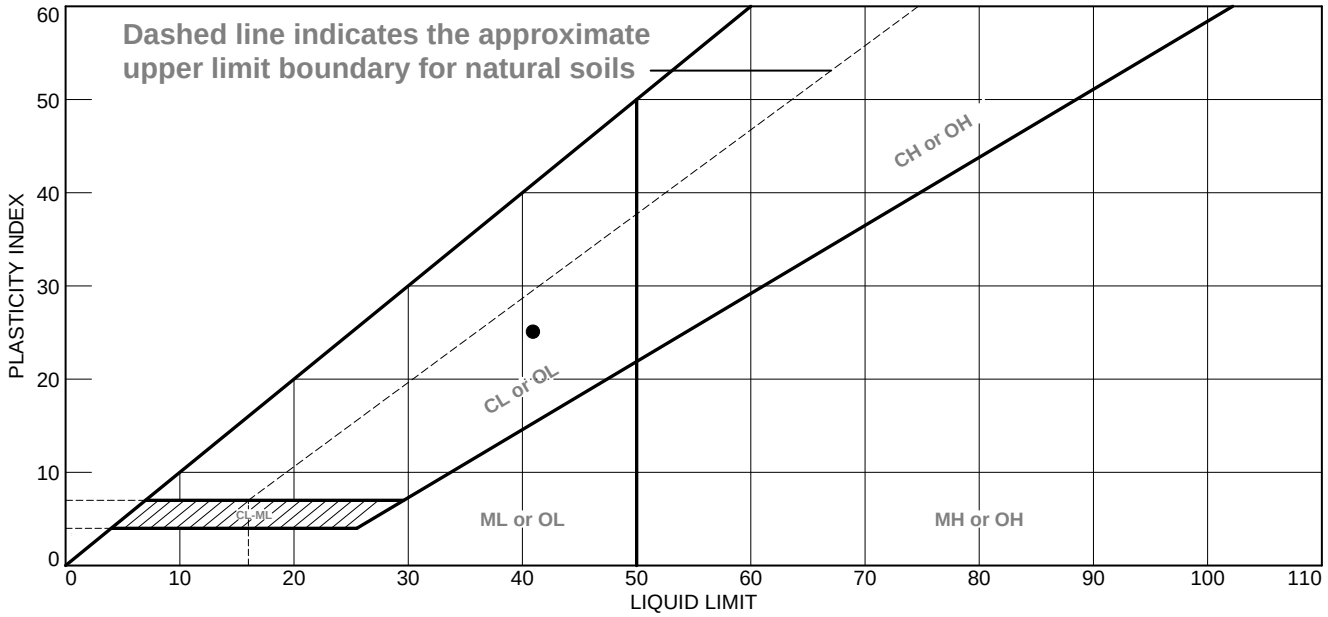
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: Boyle Construction, Inc.
Project: New Emergency Services Center

Project No: 5779G1 **Plate**

SOIL PLASTIC AND LIQUID LIMIT TEST RESULTS

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Reddish brown silty clay with sand. (lean clay with sand)	41	16	25	83.9	74.7	CL

Project No. 5779G1 **Client:** Boyle Construction, Inc.

Project: New Emergency Services Center

Source of Sample: B1/B3 **Depth:** 4'-6'
Sample Number: S2/S2

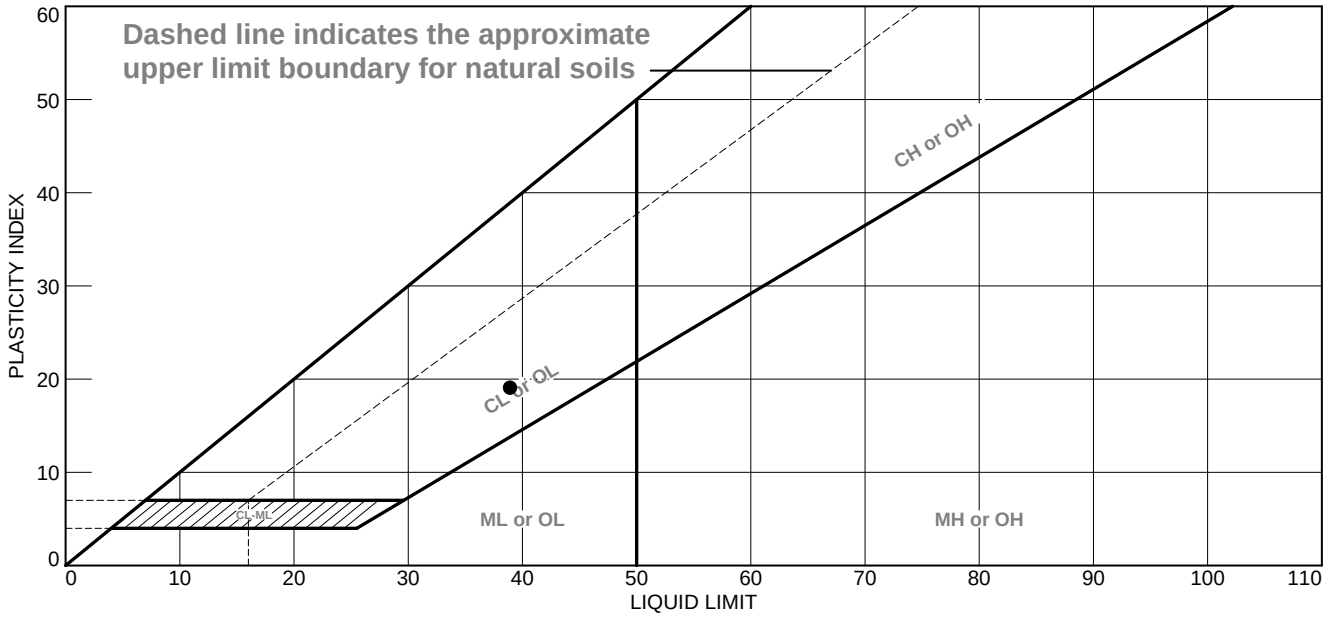
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Remarks:

●B1/S2 as received moisture content of 16.1%.
B3/S2 as received moisture content of 20.2%.

Plate

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Light brown to brown fine clayey silt. (lean clay with sand)	39	20	19	87.1	78.6	CL

Project No. 5779G1 **Client:** Boyle Construction, Inc.

Project: New Emergency Services Center

Source of Sample: B2/B9 **Depth:** 9'-11'
Sample Number: S3/S3

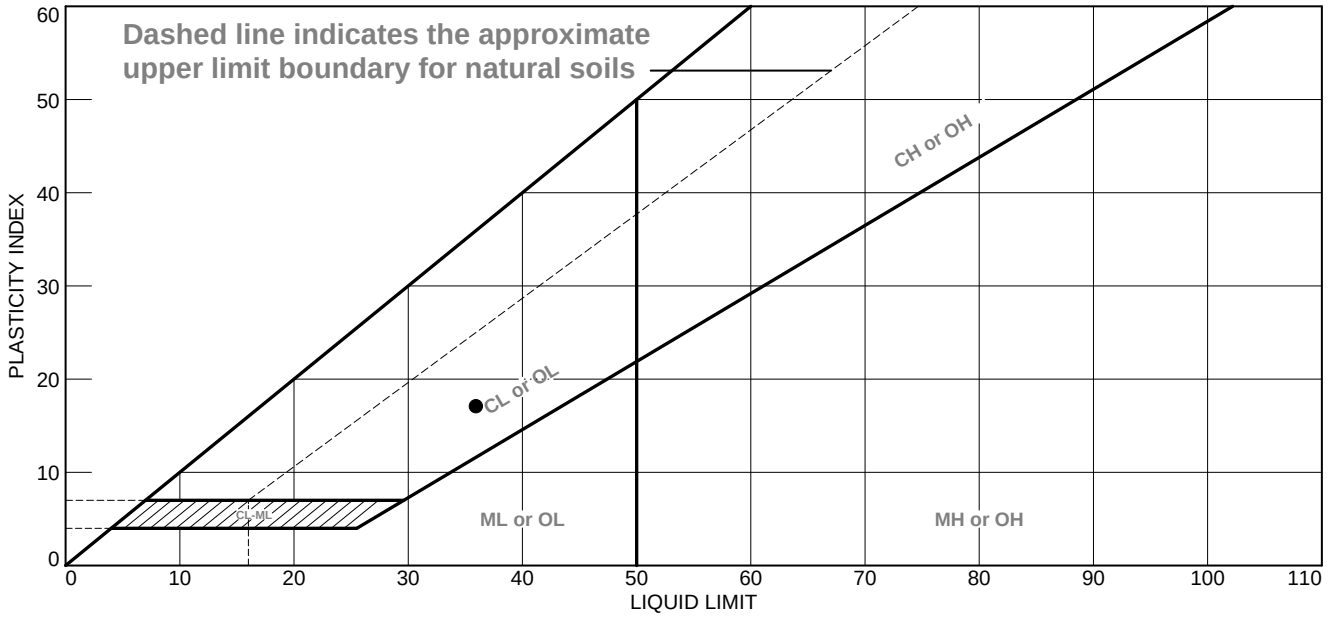
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Remarks:

●B2/S3 as received moisture content of 23.8%
B9/S3 as received moisture content of 26.8%.

Plate

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Orange brown to brown sandy lean clay. (lean clay with sand).	36	19	17	88.6	81.2	CL

Project No. 5779G1 **Client:** Boyle Construction, Inc.

Project: New Emergency Services Center

Source of Sample: B3/B4 **Depth:** 2'-6'
Sample Number: S1/S2

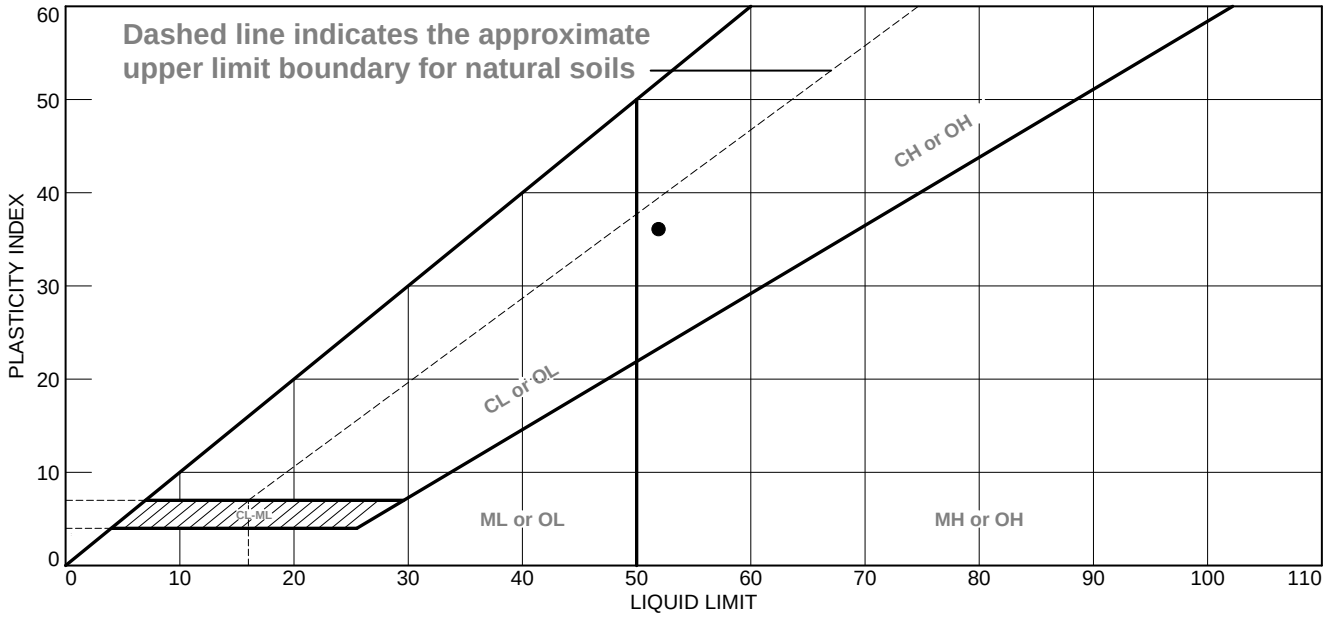
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Remarks:

●B3/S1 as received moisture content of 17.5%.
B4/S2 as received moisture content of 20.6%.

Plate

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Reddish brown to brown fat clay w/ silt. (sandy fat clay)	52	16	36	76.2	66.8	CH

Project No. 5779G1 **Client:** Boyle Construction, Inc.

Project: New Emergency Services Center

Source of Sample: B5/B6 **Depth:** 14'-16'
Sample Number: S4/S4

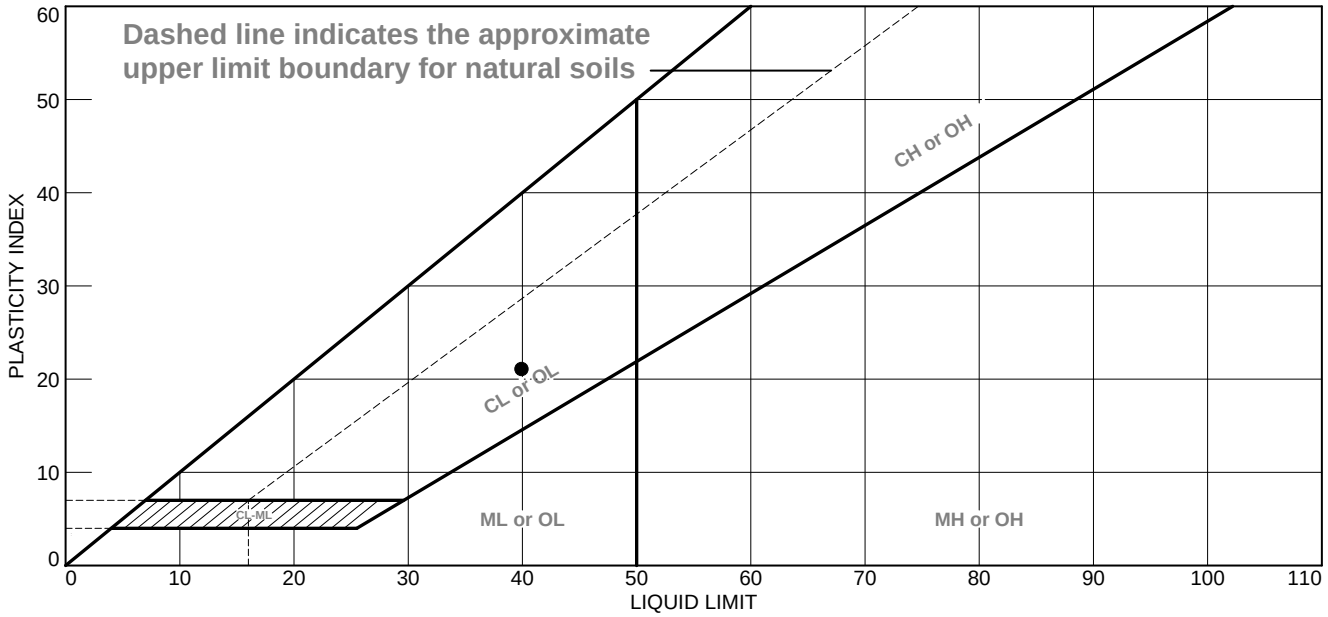
Remarks:

●B5/S4 as received moisture content of 25.0%.
B6/S4 as received moisture content of 22.8%.

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Plate

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown to dark brown silty clay. (lean clay)	40	19	21	96.2	93.4	CL

Project No. 5779G1 **Client:** Boyle Construction, Inc.

Project: New Emergency Services Center

Source of Sample: TP
Sample Number: 5

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Remarks:

●As received moisture content of 22.9%.

Plate

TEST PIT LOGS

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-1

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 10'
Ground Surface Elevation (ft msl): 253.18
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (6")	252.68			
			Stratum II Reddish-brown and orange- brown fine sand and silt with rock fragments				
2.5							
5							
7.5							
10				243.18			
			Test Pit Terminated				
12.5			Notes: Test at 8'2" depth (Elev. 245.01 feet) IT-1A: 1.00 in/hr. IT-1B: 0.25 in/hr. *Test location shifted five feet towards TP-3 due to limestone pinnacle at a depth of 5' *Test location shifted another 10 feet towards TP-3 due to limestone pinnacle at a depth of 7'				
15							
17.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-2

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 10'
Ground Surface Elevation (ft msl): 253.79
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (7")	253.21			
			Stratum II Reddish-brown fine sand and silt with rock fragments				
2.5				249.79			
			Orange-brown and brown fine sand and silt with rock fragments				
5							
7.5				245.54			
			Reddish brown, brown, and orange brown fine sand and silt with rock fragments				
10				243.79			
			Test Pit Terminated				
12.5			Notes: Test at 8'9" depth (Elev. 245.04 feet) IT-2A: 1.00 in/hr. IT-2B: 1.00 in/hr.				
15							
17.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-3

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 7.5'
Ground Surface Elevation (ft msl): 251.47
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (5")	251.05			
			Stratum I Brown and orange brown fine sand and silty clay				
2.5				247.64			
			Brown fine sand and clayey silt with silty clay and some limestone fragments				
5							
7.5				243.97			
			Test Pit Terminated				
10							
12.5							
15							
17.5							

Notes:
Test at 5' depth (Elev. 246.47 feet)
IT-3A: 0.16 in/hr.
IT-3B: 0.16 in/hr.

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-4

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 8'
Ground Surface Elevation (ft msl): 252.94
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (10")	252.11			
			Stratum I Orange brown fine sand and silt with some clay and rock fragments	250.11			
2.5			**Stratum II** Reddish brown fine sand and clayey silt	246.94			
5			Orange brown and reddish brown fine sand and clayey silt with some rock fragments	244.94			
7.5			**Test Pit Terminated**				
10			Notes: Test at 6' depth (Elv. 246.94 feet) IT-4A: 0.81 in/hr. IT-4B: 1.00 in/hr.				
12.5							
15							
17.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-5

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 3'
Ground Surface Elevation (ft msl): 250.38
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content 10 20 30 40	SAMPLING DATA: Comments/Notes
0			Topsoil (8")	249.71			
1			Stratum I Brown and orange brown fine sand and silty clay				
2							
3				247.38			
			Test Pit Terminated Notes: Test at 1'4" depth (Elev. 249.05 feet) IT-5A: 0.16 in/hr. IT-5B: 0.25 in/hr.				
4							
5							
6							
7							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-6

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 14'
Ground Surface Elevation (ft msl): 256.89
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Asphalt (6")	256.39			
			Stratum IF Fill consisting of gray cinders	255.39			
2.5			Stratum I Reddish brown fine sand and clayey silt with rock fragments and some medium sand				
5				251.39			
			Orange brown fine sand and clayey silt	249.89			
7.5			Stratum II Reddish brown and brown fine sand and silt with rock fragments				
10							
12.5				242.89			
			Test Pit Terminated				
15			Notes: Test at 10' depth (Elv. 246.89 feet) IT-6A: 1.84 in/hr. IT-6B: 1.38 in/hr. *Test location shifted five feet towards TP-7 due to limestone pinnacle at a depth of 10'				
17.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-7

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Excavation Contractor: Wayne Carmint
Excavation Equipment: Hydraulic Excavator
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 12/22/2025
Logged By: MUH
Test Pit Depth: 13.5'
Ground Surface Elevation (ft msl): 258.43
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (3 Hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil and root mass (10")	257.60			
			Stratum II Reddish brown and brown fine sand and silt with pebbles				
2.5							
5				253.18			
			Brown and orange brown fine to medium sand and silt				
7.5							
10				248.43			
			Reddish brown fine sand and silt				
12.5				244.93			
			Test Pit Terminated				
15			Notes: Test at 10'5" depth (Elv. 247.93 feet) IT-7A: 3.06 in/hr. IT-7B: 3.00 in/hr. *Test Location shifted 15 feet towards Gilbralter Rd. due to limestone pinnacle encountered at a depth of 11'6"				
17.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

INFILTRATION TEST RESULTS

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-1A
Tested By	MUH
Surface Elevation	253.79 feet
Depth of Testing	8 feet
Testing Elevation	245.79 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:03 AM	6.00	6.00	0.50	6.00	0.50		0.08	0.08	
	E	12/22/2025	11:33 AM	(.50)	5.50		5.50					
2	S	12/22/2025	11:33 AM	0.50	6.00	0.50	6.00	0.50		1.00	1.00	
	E	12/22/2025	12:03 PM	(1.00)	5.50		5.50					
3	S	12/22/2025	12:03 PM	0.50	6.00	0.50	6.00	0.50		1.00	1.00	
	E	12/22/2025	12:33 PM	(1.50)	5.50		5.50					
4	S	12/22/2025	12:33 PM	0.50	6.00	0.50	6.00	0.50		1.00	1.00	
	E	12/22/2025	1:03 PM	(2.00)	5.50		5.50					
6	S	12/22/2025	1:03 PM	0.50	6.00	0.50	6.00	0.50		1.00	1.00	
	E	12/22/2025	1:33 PM	(2.50)	5.50		5.50					
									Infiltration (in\hr)	**1.00**	**At Elevation 245.79 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-1B
Tested By	MUH
Surface Elevation	253.79 feet
Depth of Testing	8 feet
Testing Elevation	245.79 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:05 AM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/22/2025	11:35 AM	(.50)	5.88		5.88					
2	S	12/22/2025	11:35 AM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/22/2025	12:05 PM	(1.00)	5.88		5.88					
3	S	12/22/2025	12:05 PM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/22/2025	12:35 PM	(1.50)	5.88		5.88					
4	S	12/22/2025	12:35 PM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/22/2025	1:05 PM	(2.00)	5.88		5.88					
6	S	12/22/2025	1:05 PM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/22/2025	1:35 PM	(2.50)	5.88		5.88					
									Infiltration (in\hr)	**0.25**	**At Elevation 245.79 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-2A
Tested By	MUH
Surface Elevation	253.18 feet
Depth of Testing	7 feet
Testing Elevation	246.18 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:03 AM	0.50	7.00	0.50	5.00	0.25		1.00	0.50	
	E	12/22/2025	11:33 AM	(.50)	6.50		4.75					
2	S	12/22/2025	11:33 AM	0.50	7.00	0.50	5.00	0.25		1.00	0.50	
	E	12/22/2025	12:03 PM	(1.00)	6.50		4.75					
3	S	12/22/2025	12:03 PM	0.50	7.00	0.50	5.00	0.25		1.00	0.50	
	E	12/22/2025	12:33 PM	(1.50)	6.50		4.75					
4	S	12/22/2025	12:33 PM	0.50	7.00	0.50	5.00	0.25		1.00	0.50	
	E	12/22/2025	1:03 PM	(2.00)	6.50		4.75					
6	S	12/22/2025	1:03 PM	0.50	7.00	0.50	5.00	0.25		1.00	0.50	
	E	12/22/2025	1:33 PM	(2.50)	6.50		4.75					
									Infiltration (in\hr)	**1.00**	**At Elevation 246.18 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-2B
Tested By	MUH
Surface Elevation	253.18 feet
Depth of Testing	7 feet
Testing Elevation	246.18 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:05 AM	0.50	6.00	0.50	5.00	0.50		1.00	1.00	
	E	12/22/2025	11:35 AM	(.50)	5.50		4.50					
2	S	12/22/2025	11:35 AM	0.50	6.00	0.50	5.00	0.50		1.00	1.00	
	E	12/22/2025	12:05 PM	(1.00)	5.50		4.50					
3	S	12/22/2025	12:05 PM	0.50	6.00	0.50	5.00	0.50		1.00	1.00	
	E	12/22/2025	12:35 PM	(1.50)	5.50		4.50					
4	S	12/22/2025	12:35 PM	0.50	6.00	0.50	5.00	0.50		1.00	1.00	
	E	12/22/2025	1:05 PM	(2.00)	5.50		4.50					
6	S	12/22/2025	1:05 PM	0.50	6.00	0.50	5.00	0.50		1.00	1.00	
	E	12/22/2025	1:35 PM	(2.50)	5.50		4.50					
									Infiltration (in\hr)	**1.00**	**At Elevation 246.18 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-3A
Tested By	ZMH
Surface Elevation	251.47 feet
Depth of Testing	5.50 feet
Testing Elevation	245.97 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp °F	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	9:30 AM	0.50	6.00	0.13	6.00	0.06		0.25	0.13	
	E	12/23/2025	10:00 AM	(.50)	5.875		5.9375					
2	S	12/23/2025	10:00 AM	0.50	6.00	0.13	6.00	0.13		0.25	0.25	
	E	12/23/2025	10:30 AM	(1.00)	5.875		5.875					
3	S	12/23/2025	10:30 AM	0.50	6.00	0.06	6.00	0.06		0.13	0.13	
	E	12/23/2025	11:00 AM	(1.50)	5.9375		5.9375					
4	S	12/23/2025	11:00 AM	0.50	6.00	0.06	6.00	0.06		0.13	0.13	
	E	12/23/2025	11:30 AM	(2.00)	5.9375		5.9375					
6	S	12/23/2025	11:30 AM	0.50	6.00	0.06	6.00	0.06		0.13	0.13	
	E	12/23/2025	12:00 PM	(2.50)	5.9375		5.9375					
									Infiltration (in\hr)	**0.16**	**At Elevation 245.97 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-3B
Tested By	ZMH
Surface Elevation	251.47 feet
Depth of Testing	5.50 feet
Testing Elevation	245.97 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	9:30 AM	0.50	6.00	0.25	6.00	0.19				
	E	12/23/2025	10:00 AM	(.50)	5.750		5.8125			0.50	0.38	
2	S	12/23/2025	10:00 AM	0.50	6.00	0.13	6.00	0.13				
	E	12/23/2025	10:30 AM	(1.00)	5.875		5.875			0.25	0.25	
3	S	12/23/2025	10:30 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	11:00 AM	(1.50)	5.9375		5.9375			0.13	0.13	
4	S	12/23/2025	11:00 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	11:30 AM	(2.00)	5.9375		5.9375			0.13	0.13	
6	S	12/23/2025	11:30 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	12:00 PM	(2.50)	5.9375		5.9375			0.13	0.13	
									Infiltration (in\hr)	**0.16**	**At Elevation 245.97 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-4A
Tested By	MUH
Surface Elevation	252.94 feet
Depth of Testing	7.5 feet
Testing Elevation	245.44 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:03 AM	0.50	8.00	0.75	7.00	0.25		1.50	0.50	
	E	12/22/2025	11:33 AM	(.50)	7.25		6.75					
2	S	12/22/2025	11:33 AM	0.50	8.00	0.38	7.00	0.19		0.75	0.38	
	E	12/22/2025	12:03 PM	(1.00)	7.63		6.81					
3	S	12/22/2025	12:03 PM	0.50	8.00	0.50	7.00	0.25		1.00	0.50	
	E	12/22/2025	12:33 PM	(1.50)	7.50		6.75					
4	S	12/22/2025	12:33 PM	0.50	8.00	0.38	7.00	0.31		0.75	0.63	
	E	12/22/2025	1:03 PM	(2.00)	7.63		6.69					
6	S	12/22/2025	1:03 PM	0.50	8.00	0.38	7.00	0.25		0.75	0.50	
	E	12/22/2025	1:33 PM	(2.50)	7.63		6.75					
									Infiltration (in\hr)	**0.81**	**At Elevation 245.44 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-4B
Tested By	MUH
Surface Elevation	252.94 feet
Depth of Testing	7.5 feet
Testing Elevation	245.44 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/22/2025	11:05 AM	0.50	7.00	0.63	7.00	0.50		1.25	1.00	
	E	12/22/2025	11:35 AM	(.50)	6.38		6.50					
2	S	12/22/2025	11:35 AM	0.50	7.00	0.44	7.00	0.31		0.88	0.63	
	E	12/22/2025	12:05 PM	(1.00)	6.56		6.69					
3	S	12/22/2025	12:05 PM	0.50	7.00	0.50	7.00	0.25		1.00	0.50	
	E	12/22/2025	12:35 PM	(1.50)	6.50		6.75					
4	S	12/22/2025	12:35 PM	0.50	7.00	0.56	7.00	0.25		1.13	0.50	
	E	12/22/2025	1:05 PM	(2.00)	6.44		6.75					
6	S	12/22/2025	1:05 PM	0.50	7.00	0.50	7.00	0.25		1.00	0.50	
	E	12/22/2025	1:35 PM	(2.50)	6.50		6.75					
									Infiltration (in\hr)	**1.00**	**At Elevation 245.44 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-5A
Tested By	ZMH
Surface Elevation	250.38 feet
Depth of Testing	1.0 foot
Testing Elevation	249.38 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	9:32 AM	0.50	6.00	0.25	6.00	0.13				
	E	12/23/2025	10:02 AM	(.50)	5.75		5.875			0.50	0.25	
2	S	12/23/2025	10:02 AM	0.50	6.00	0.13	6.00	0.06				
	E	12/23/2025	10:32 AM	(1.00)	5.875		5.9375			0.25	0.13	
3	S	12/23/2025	10:32 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	11:02 AM	(1.50)	5.9375		5.9375			0.13	0.13	
4	S	12/23/2025	11:02 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	11:32 AM	(2.00)	5.9375		5.9375			0.13	0.13	
6	S	12/23/2025	11:32 AM	0.50	6.00	0.06	6.00	0.06				
	E	12/23/2025	12:02 PM	(2.50)	5.9375		5.9375			0.13	0.13	
									Infiltration (in\hr)	**0.16**	**At Elevation 249.38 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-5B
Tested By	ZMH
Surface Elevation	250.38 feet
Depth of Testing	1.0 foot
Testing Elevation	249.38 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	9:32 AM	0.50	6.00	0.19	6.00	0.13				
	E	12/23/2025	10:02 AM	(.50)	5.8125		5.875			0.38	0.25	
2	S	12/23/2025	10:02 AM	0.50	6.00	0.13	6.00	0.13				
	E	12/23/2025	10:32 AM	(1.00)	5.875		5.8750			0.25	0.25	
3	S	12/23/2025	10:32 AM	0.50	6.00	0.13	6.00	0.06				
	E	12/23/2025	11:02 AM	(1.50)	5.875		5.9375			0.25	0.13	
4	S	12/23/2025	11:02 AM	0.50	6.00	0.13	6.00	0.06				
	E	12/23/2025	11:32 AM	(2.00)	5.875		5.9375			0.25	0.13	
6	S	12/23/2025	11:32 AM	0.50	6.00	0.13	6.00	0.06				
	E	12/23/2025	12:02 PM	(2.50)	5.875		5.9375			0.25	0.13	
									Infiltration (in\hr)	**0.25**	**At Elevation 249.38 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-6A
Tested By	MUH
Surface Elevation	256.89 feet
Depth of Testing	10.0 feet
Testing Elevation	246.89 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	10:05 AM	0.50	8.00	1.19	7.50	0.88		2.38	1.75	
	E	12/23/2025	10:35 AM	(.50)	6.81		6.63					
2	S	12/23/2025	10:35 AM	0.50	8.00	0.81	7.50	0.63		1.63	1.25	
	E	12/23/2025	11:05 AM	(1.00)	7.19		6.88					
3	S	12/23/2025	11:05 AM	0.50	8.00	1.00	7.50	0.63		2.00	1.25	
	E	12/23/2025	11:35 AM	(1.50)	7.00		6.88					
4	S	12/23/2025	11:35 AM	0.50	8.00	1.00	7.50	0.50		2.00	1.00	
	E	12/23/2025	12:05 PM	(2.00)	7.00		7.00					
6	S	12/23/2025	12:05 PM	0.50	8.00	0.88	7.50	0.69		1.75	1.38	
	E	12/23/2025	12:35 PM	(2.50)	7.13		6.81					
									Infiltration (in\hr)	**1.84**	**At Elevation 246.89 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-6B
Tested By	MUH
Surface Elevation	256.89 feet
Depth of Testing	10.0 feet
Testing Elevation	246.89 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	10:07 AM	0.50	7.50	0.50	7.00	1.00		1.00	2.00	
	E	12/23/2025	10:37 AM	(.50)	7.00		6.00					
2	S	12/23/2025	10:37 AM	0.50	7.50	0.63	7.00	0.69		1.25	1.38	
	E	12/23/2025	11:07 AM	(1.00)	6.88		6.31					
3	S	12/23/2025	11:07 AM	0.50	7.50	0.75	7.00	0.75		1.50	1.50	
	E	12/23/2025	11:37 AM	(1.50)	6.75		6.25					
4	S	12/23/2025	11:37 AM	0.50	7.50	0.69	7.00	0.75		1.38	1.50	
	E	12/23/2025	12:07 PM	(2.00)	6.81		6.25					
6	S	12/23/2025	12:07 PM	0.50	7.50	0.69	7.00	0.75		1.38	1.50	
	E	12/23/2025	12:37 PM	(2.50)	6.81		6.25					
									Infiltration (in\hr)	**1.38**	**At Elevation 246.89 feet**	

INFILTROMETER DATA

Project Identification	5779G1	Constants	Area, in^2
Test Location	IT-7A	Inner ring	50.3
Tested By	MUH	Annular space	62.9
Surface Elevation	258.43 feet		
Depth of Testing	10.5 feet	Inner ring penetration	2 in
Testing Elevation	247.93 feet	Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp °F	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	10:15 AM	0.50	8.00	1.50	6.00	2.00		3.00	4.00	
	E	12/23/2025	10:45 AM	(.50)	6.50		4.00					
2	S	12/23/2025	10:45 AM	0.50	8.00	1.63	6.00	2.00		3.25	4.00	
	E	12/23/2025	11:15 AM	(1.00)	6.38		4.00					
3	S	12/23/2025	11:15 AM	0.50	8.00	1.50	6.00	1.50		3.00	3.00	
	E	12/23/2025	11:45 AM	(1.50)	6.50		4.50					
4	S	12/23/2025	11:45 AM	0.50	8.00	1.50	6.00	1.63		3.00	3.25	
	E	12/23/2025	12:15 PM	(2.00)	6.50		4.38					
6	S	12/23/2025	12:15 PM	0.50	8.00	1.50	6.00	1.63		3.00	3.25	
	E	12/23/2025	12:45 PM	(2.50)	6.50		4.38					
									Infiltration (in\hr)	**3.06**	**At Elevation 247.93 feet**	

INFILTROMETER DATA

Project Identification	5779G1
Test Location	IT-7B
Tested By	MUH
Surface Elevation	258.43 feet
Depth of Testing	10.5 feet
Testing Elevation	247.93 feet

Constants	Area, in^2
Inner ring	50.3
Annular space	62.9
Inner ring penetration	2 in
Outer ring penetration	4 in

No.	Start or End	Date	Time	Elpd Time, hr (Total)	Water Measurements				Liq Temp ºF	Infiltration Rate		Remarks
					Inner		Annular			Inner in / h	Annular in / h	
					level (h), in	Δh, in	level (h), in	Δh, in				
1	S	12/23/2025	10:17 AM	0.50	6.00	2.50	8.00	2.00		5.00	4.00	
	E	12/23/2025	10:47 AM	(.50)	3.50		6.00					
2	S	12/23/2025	10:47 AM	0.50	6.00	3.00	8.00	1.94		6.00	3.88	
	E	12/23/2025	11:17 AM	(1.00)	3.00		6.06					
3	S	12/23/2025	11:17 AM	0.17	6.00	0.50	8.00	0.63		3.00	3.75	
	E	12/23/2025	11:27 AM	(1.17)	5.50		7.38					
4	S	12/23/2025	11:27 AM	0.17	6.00	0.50	8.00	0.50		3.00	3.00	
	E	12/23/2025	11:37 AM	(1.33)	5.50		7.50					
6	S	12/23/2025	11:37 AM	0.17	6.00	0.50	8.00	0.50		3.00	3.00	
	E	12/23/2025	11:47 AM	(1.50)	5.50		7.50					
8	S	12/23/2025	11:47 AM	0.17	6.00	0.50	8.00	0.50		3.00	3.00	
	E	12/23/2025	11:57 AM	(1.67)	5.50		7.50					
9	S	12/23/2025	11:57 AM	0.17	6.00	0.50	8.00	0.50		3.00	3.00	
	E	12/23/2025	12:07 PM	(1.83)	5.50		7.50					
									Infiltration (in\hr)	**3.00**	**At Elevation 247.93 feet**	

TEST BORING LOGS

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
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Boring Number: B1

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 24'
Drilling Method #2: Split Spoon from 24' to 26'

Project Number: 5779G1
Date Drilled: 12/15/2025
Inspected By: AYM
Boring Depth: 26'
Ground Surface Elevation (ft msl): 252.08
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	NUMBER	Water Content 10 20 30 40	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) 10 20 30 40 60 80
0			Modified stone and gravel (9")	0.75	251.33					
			Stratum IF Fill consisting of brown and orange-brown fine sand and silt with many rock fragments	2.33	249.75	S-1*		3-8-10-13	18	
5			Stratum I Orange-brown fine sand and silt Orange-brown clayey silt with some quartz fragments	4.25	247.83	S-2*		12-14-14-17	28	
				8.00	244.08					
			Stratum II Reddish-brown, brown, and orange-brown fine sand and silt with some rock fragments, some clay			S-3*		5-7-8-10	15	
10										
15						S-4*		5-7-7-8	14	
20						S-5*		9-7-11-12	18	
25						S-6*		8-7-8-11	15	
				26.00	226.08					
30			BORING TERMINATED							
35			Notes: *Moist							

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Phone: 610-495-6255 Fax: 610-495-7353
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Boring Number: B2

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 17.08'
Drilling Method #2:

Project Number: 5779G1
Date Drilled: 12/15/2025
Inspected By: AYM
Boring Depth: 17.08'
Ground Surface Elevation (ft msl): 251.32
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
0			Topsoil (8")	0.67	250.65					
			Stratum I Orange-brown fine sand and silt, some fine sand and silty clay layers	2.83	248.49					
3			**Stratum II** Reddish-brown and orange-brown fine sand and silt, some clay with occasional rock fragments			S-1*		2-2-2-5	4	
						S-2**		5-6-8-12	14	
6										
9						S-3**		7-8-7-9	15	
12				12.50	238.82					
			Reddish-brown,brown, and orange-brown fine sand and silt with rock fragments							
15						S-4**		6-8-9-9	17	
				16.75	234.57					
			Stratum III Multi-colored weathered limestone fanglomerate	17.08	234.24					
18			**Auger Refusal**							
21										

Notes:
*Very Moist
**Moist
Hard Augering from 16.75'
Very Hard augering from 17'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Boring Number: B3

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 11.25'
Drilling Method #2:

Project Number: 5779G1
Date Drilled: 12/15/2025
Inspected By: AYM
Boring Depth: 11.25'
Ground Surface Elevation (ft msl): 256.42
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
0			Modified stone (2")	0.17	256.25		10 20 30 40			10 20 30 40 60 80
			Stratum IF Fill consisting of gray cinders	1.33	255.09					
2			**Stratum I** Orange-brown fine sand and silt, some clay			S-1*		4-5-5-9	10	
4				4.58	251.84					
			Stratum II Orange-brown and reddish brown fine sand and clayey silt with occasional rock fragments			S-2**		8-10-11-14	21	
6										
8				8.00	248.42					
			Reddish-brown, brown, and orange-brown fine sand and silt with occasional rock fragments			S-3*		4-12-50/4"	12	
10				10.33	246.09					
			Stratum III Multi-colored weathered limestone fanglomerate	11.25	245.17					
			Auger Refusal							
12			Notes: *Damp **Moist Hard Augering from 10.33 to 11'' Very Hard augering from 11'							
14										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Boring Number: B4

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 20'
Drilling Method #2: Split Spoon from 20' to 28'

Project Number: 5779G1
Date Drilled: 12/15/2025
Inspected By: AYM
Boring Depth: 28'
Ground Surface Elevation (ft msl): 256.15
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
0			Modified Stone (3")	0.25	255.90		10 20 30 40			10 20 30 40 60 80
			Stratum IF Fill consisting of gray cinders	1.33	254.82					
			Stratum I Orange-brown fine sand and silt, some clay	3.00	253.15	S-1*		5-5-8-12	13	
5			Orange-brown fine sand and silty clay and fine sand and clayey silt			S-2*		7-9-12-14	21	
				7.50	248.65					
			Stratum II Orange-brown, brown, and reddish-brown fine sand and silt with some rock fragments, occasional fine sand and silty clay layers			S-3*		4-3-4-5	7	
10						S-4*		5-6-7-10	13	
15						S-5*		5-9-10-10	19	
20						S-6*		1-2-2-3	4	
						S-7*		5-5-6-6	11	
25						S-8*		6-6-7-7	13	
						S-9*		6-8-11-16	19	
				28.00	228.15					
30			BORING TERMINATED							
35			Notes: *Moist							

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Boring Number: B5

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 24'
Drilling Method #2: Split Spoon from 24' to 26'

Project Number: 5779G1
Date Drilled: 12/16/2025
Inspected By: AYM
Boring Depth: 26'
Ground Surface Elevation (ft msl): 253.55
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	NUMBER	SPT DATA	SPT Value
0	Topsoil (13")	1.08	252.47			
	Stratum I Orange-brown fine sand and silt with occasional rock fragments	3.00	250.55	S-1*	5-7-10-9	17
5	**Stratum II** Reddish-brown, brown, and orange-brown fine sand and silt with clay layers, some siltstone and shale fragments			S-2*	6-10-13-18	23
10				S-3**	6-8-9-11	17
15				S-4**	5-5-7-8	12
20				S-5**	8-8-8-7	16
25		26.00	227.55	S-6**	5-5-5-6	10
	BORING TERMINATED					
30						
35						

Water Content: 10 20 30 40
SPT GRAPH (Blows Per Foot): 10 20 30 40 60 80

Notes:
*Damp
**Moist

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
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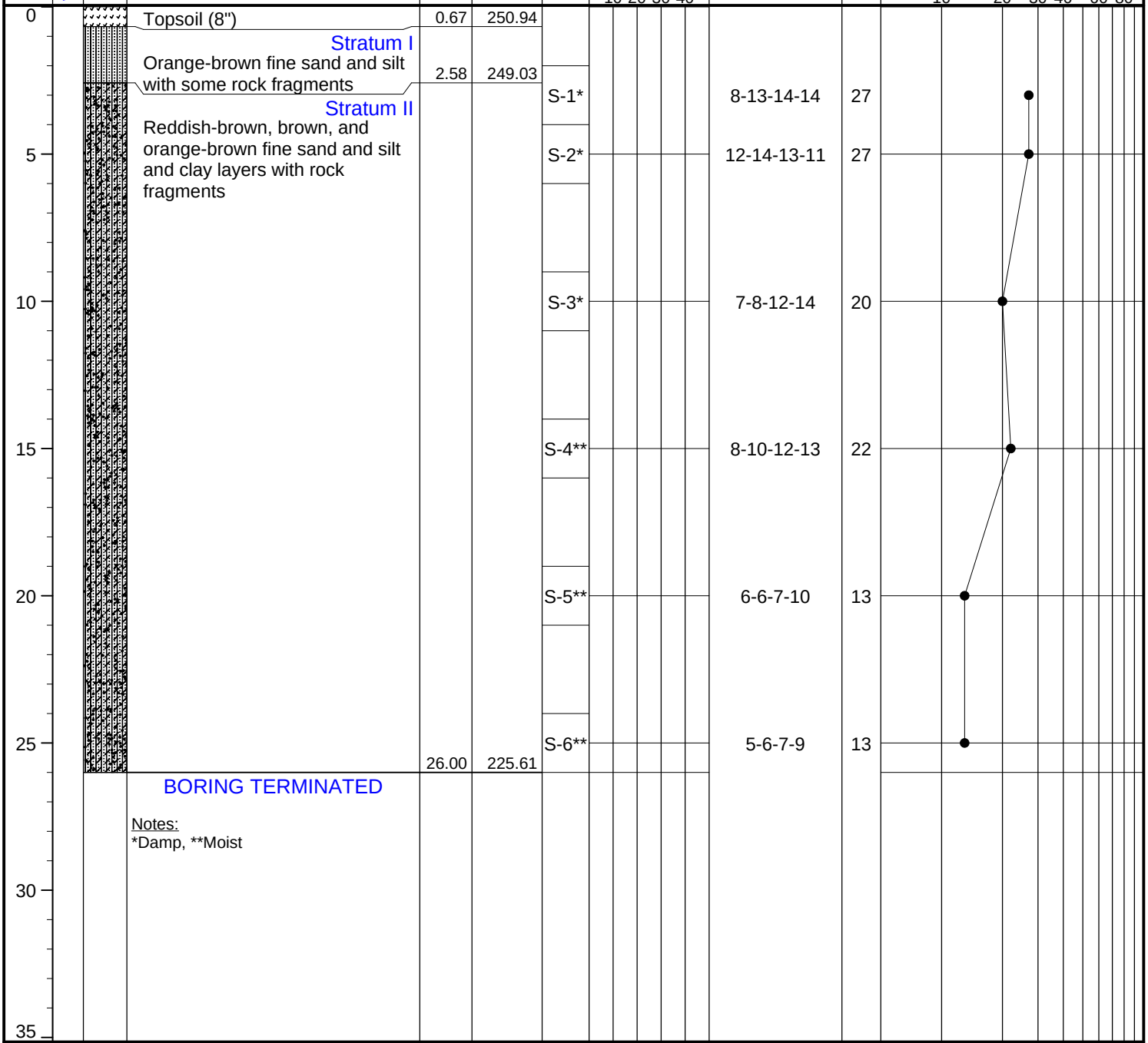
Boring Number: B6

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 24'
Drilling Method #2: Split Spoon from 24' to 26'

Project Number: 5779G1
Date Drilled: 12/16/2025
Inspected By: AYM
Boring Depth: 26'
Ground Surface Elevation (ft msl): 251.61
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	NUMBER	SPT DATA	SPT Value
0		Topsoil (8")	0.67	250.94			
		Stratum I Orange-brown fine sand and silt with some rock fragments	2.58	249.03	S-1*	8-13-14-14	27
		Stratum II Reddish-brown, brown, and orange-brown fine sand and silt and clay layers with rock fragments			S-2*	12-14-13-11	27
10					S-3*	7-8-12-14	20
15					S-4**	8-10-12-13	22
20					S-5**	6-6-7-10	13
25					S-6**	5-6-7-9	13
			26.00	225.61			
30		BORING TERMINATED					
35		Notes: *Damp, **Moist					



The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
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Boring Number: B7

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 20'
Drilling Method #2: Split Spoon from 20' to 23.67'

Project Number: 5779G1
Date Drilled: 12/16/2025
Inspected By: AYM
Boring Depth: 23.67'
Ground Surface Elevation (ft msl): 251.73
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	NUMBER	SPT DATA	SPT Value
0	Topsoil (8")	0.67	251.06			
	Stratum IF Fill consisting of orange-brown, brown, and gray fine sand and silt, some clay with rock fragments, trap rock	2.33	249.40	S-1*	2-2-3-4	5
5	**Stratum I** Orange-brown fine sand and silty clay with occasional rock fragments	7.00	244.73	S-2*	2-3-5-9	8
	Stratum II Reddish-brown, brown, and orange-brown fine sand and silty clay, fine sand and silt, and clay layers with some rock fragments			S-3*	5-8-10-13	18
10				S-4**	2-3-6-7	9
				S-5**	7-8-13-13	21
15				S-6**	4-5-6-8	11
20				S-7*	1-1-1-1	2
		23.00	228.73	S-8*	1-3-50/2"	100
	Stratum III Multi-colored weathered limestone fanglomerate	23.67	228.06			
25	**Auger Refusal**					
30						
35						

Water Content: 10 20 30 40

SPT GRAPH (Blows Per Foot): 10 20 30 40 60 80

Notes:
*Very Moist
**Moist
Hard Augering from 23.17'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

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Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
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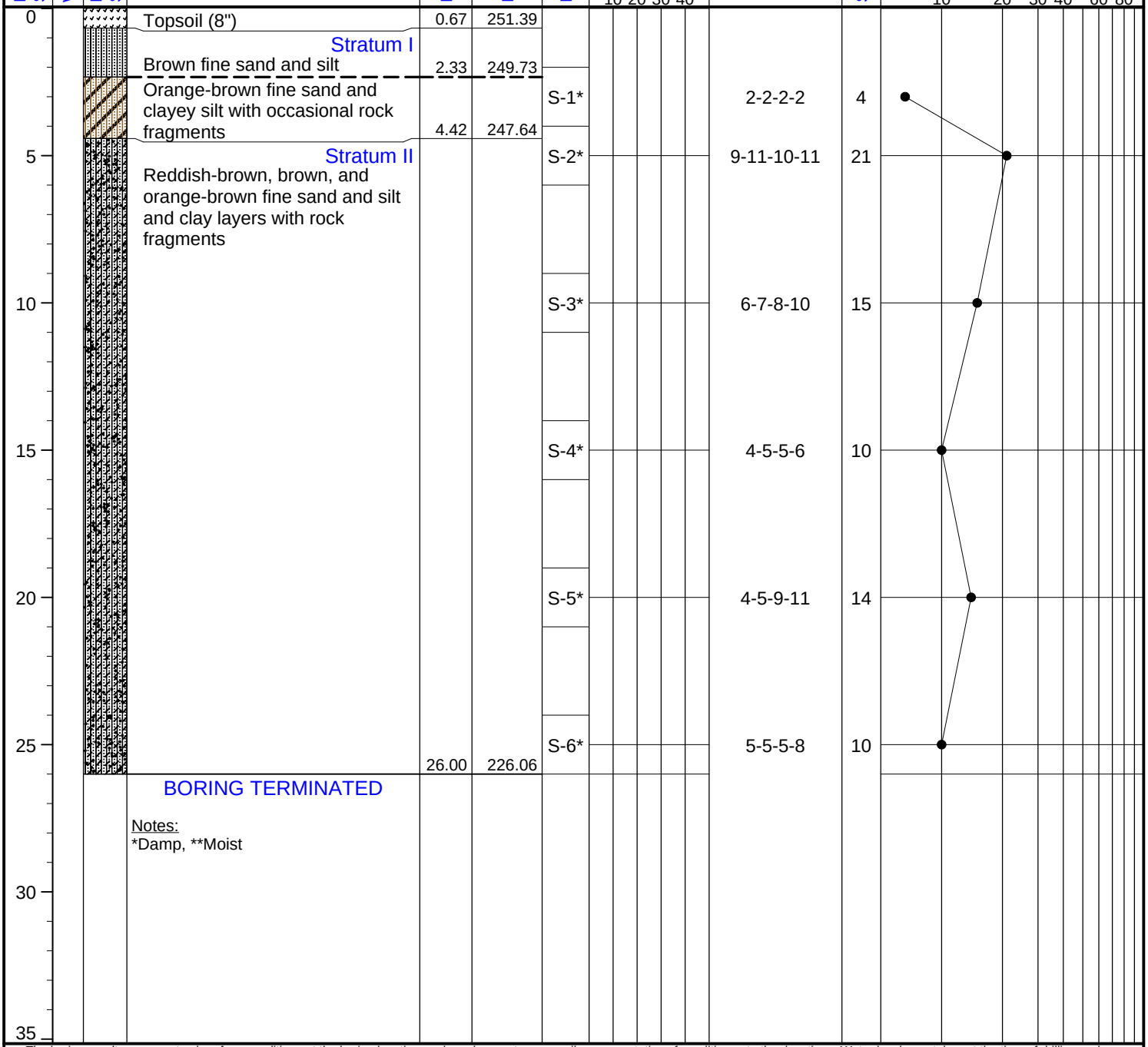
Boring Number: B8

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 24'
Drilling Method #2: Split Spoon from 24' to 26'

Project Number: 5779G1
Date Drilled: 12/16/2025
Inspected By: AYM
Boring Depth: 26'
Ground Surface Elevation (ft msl): 252.06
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	SAMPLING DATA: NUMBER	SPT DATA	SPT Value
0	Topsoil (8")	0.67	251.39			
	Stratum I Brown fine sand and silt	2.33	249.73			
	Orange-brown fine sand and clayey silt with occasional rock fragments	4.42	247.64	S-1*	2-2-2-2	4
5	Stratum II Reddish-brown, brown, and orange-brown fine sand and silt and clay layers with rock fragments			S-2*	9-11-10-11	21
10				S-3*	6-7-8-10	15
15				S-4*	4-5-5-6	10
20				S-5*	4-5-9-11	14
25				S-6*	5-5-5-8	10
		26.00	226.06			
30	BORING TERMINATED					
35	Notes: *Damp, **Moist					



The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

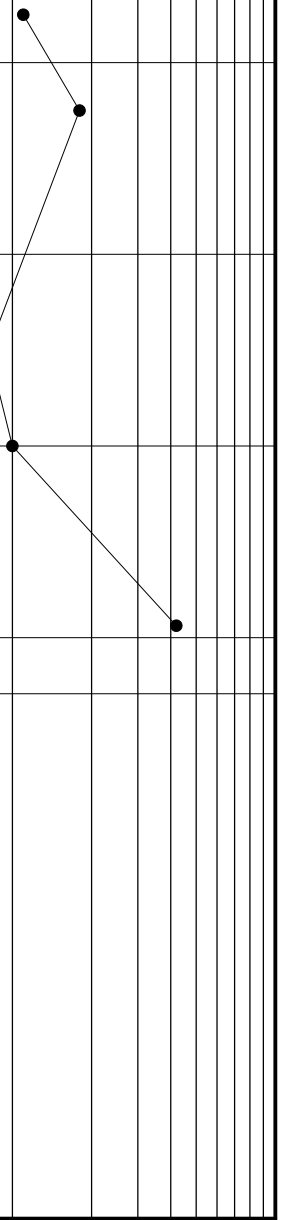
Boring Number: B9

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gibraltar Road
Twp/City/State: Exeter Township, Berks County, PA
Drilling Contractor: Corcoran Drilling Co., Inc
X Coordinate (ft): Y Coordinate (ft):
Drilling Method #1: 6" Solid Auger from 0' to 17.17'
Drilling Method #2:

Project Number: 5779G1
Date Drilled: 12/16/2025
Inspected By: AYM
Boring Depth: 17.17'
Ground Surface Elevation (ft msl): 253.36
Water Level - Immediate (ft bgs): Dry (5 min)
Water Level - Static (ft bgs): Dry (24 Hrs)

DEPTH BELOW SURFACE (FT)	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION (FT)	NUMBER	SPT DATA	SPT Value
0	Modified Stone (6")	0.50	252.86			
	Stratum IF Fill consisting of gray cinders	1.00	252.36			
	Stratum I Orange-brown fine sand and silt	2.75	250.61	S-1*	3-5-6-7	11
4	Orange-brown fine sand and clayey silt with occasional rock fragments	4.33	249.03	S-2*	7-8-10-12	18
	Reddish-brown and orange-brown fine sand and clayey silt					
8		8.00	245.36			
	Stratum II Reddish-brown, brown, and orange-brown fine sand and silt with some rock fragments			S-3**	3-3-4-5	7
12				S-4**	4-5-5-6	10
16				S-5**	4-4-38-50/3"	42
		16.50	236.86			
	Stratum III Multi-colored weathered limestone fanglomerate	17.17	236.19			
	Auger Refusal					
20						
24						
28						

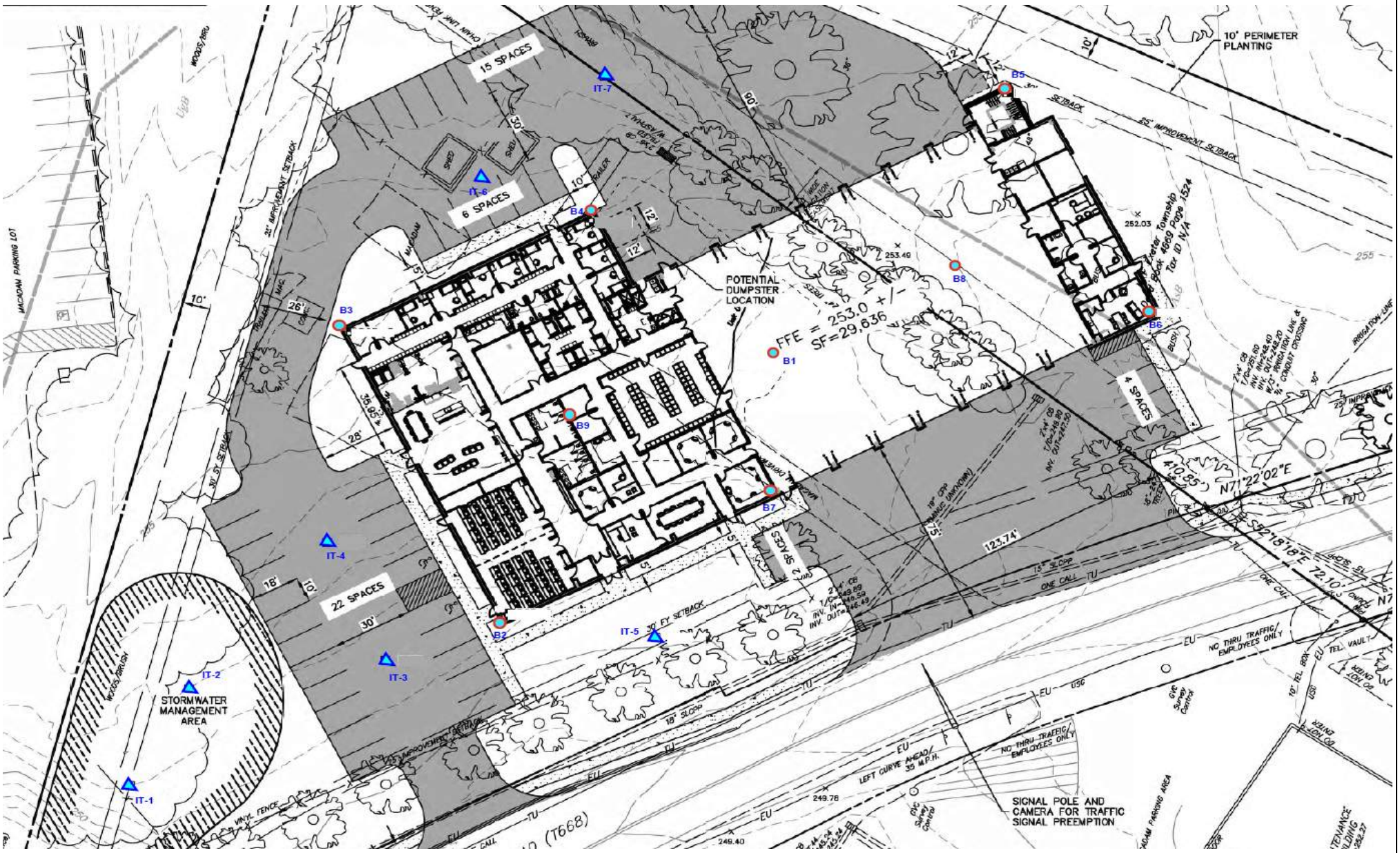
Water Content: 10 20 30 40
SPT GRAPH (Blows Per Foot): 10 20 30 40 60 80



Notes:
*Moist
**Damp
Hard Augering from 17'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

TEST BORING LOCATION PLAN



KEY	GEOTECHNICAL & ENVIRONMENTAL ENGINEERS	Project 5779G1
Infiltration Test Location Test Boring Location	***DAVID BLACKMORE & ASSOC., INC.*** **3335 West Ridge Pike** **Pottstown, Pennsylvania 19464** Telephone: (610) 495-6255 FAX: (610) 495-7353	**EXETER EMERGENCY CENTER** **TEST LOCATION PLAN** Gibraltar Road/ DeMoss Road Exeter Township/ Berks County/ PA

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Project 5779G1L2
September 17, 2026

EXETER TOWNSHIP
c/o Boyle Construction, Inc..
Suite 400, 3850 Sierra Circle
Center Valley, PA 18034

ATTN: Mr. Christopher Haller, Senior Project Manager

RE: Supplemental Geotechnical Exploration and Report
Exeter Emergency Services Center
DeMoss Road and Gibraltar Road
Exeter Township, Berks County, PA

Dear Mr. Haller:

David Blackmore and Associates, Inc. (DBA) has completed the supplemental geotechnical exploration of the subject site in accordance with our Proposal 5779G1P2, dated August 5, 2026. DBA has previously completed geotechnical exploration and report on January 27, 2026, to assist the design team with the building and site design, report number 5779G1R1. The presence of fill material, shallow rock, and karst features were identified in the initial investigation. This exploration was completed to evaluate the existing subsurface conditions at improvement areas to identify the potential presence of fill materials and/or bedrock conflicts for the proposed two-story, 25,000 to 30,000 square foot, emergency services center and related underground utilities.

GEOTECHNICAL EXPLORATION

A total of sixteen (16) test pits were completed at the subject site to evaluate the potential presence of fill materials and/or bedrock conflicts along proposed improvement areas. All of the test pits were excavated to a maximum depth of ten feet below grade, to bucket refusal on dense weathered rock, or to a sufficient depth for the required development. One (1) test pit, TP-1, was omitted due to the proximity of an existing outlet structure residing at the same elevation as the proposed outlet structure. Four (4) test pits, TP-1, TP-2, TP-12, and TP-13, were completed at proposed stormwater outlet structures to the west and east of the proposed structure. Two (2) of the test pits completed, TP-7 and TP-8 were conducted in the northmost proposed infiltration bed. One

(1) test pit, TP-3, was conducted within the westmost infiltration bed. Seven (7) test pits, TP-4, TP-5, TP-10, TP-11, and TP-14 to TP-16, were completed at proposed underground utilities across the site. The remaining one (1) test pit, TP-9, was completed at the west end of the building pad. The test pits were located in the field by DBA personnel using a Grading and PCSM Plan Prepared by Herbert, Rowland & Grubic, Inc., dated 2/18/2026. The test pits were excavated by Exeter Township Personal under the direction of DBA.

A copy of an excerpt of this plan which has been annotated with our test pit locations is included in the appendix of this report.

GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

The results of our exploration revealed a somewhat variable profile beneath 6" to 18" of topsoil, 6" of topsoil and 2" of asphalt millings or 6" to 7" of asphalt millings mixed with 2A modified stone. Beneath the top-soil or subbase layer resides a somewhat localized fill deposits consisting of orange-brown, reddish-brown, and brown fine sand and silt with occasional rock fragments (Stratum IF). Portions of this fill material contain asphalt, concrete, bricks, and other construction debris, see test pits TP-10 and TP-15. This stratum transitions into two intermittent soil strata consisting of either 2.0' to 8.25' thick layer of orange-brown fine sand and silt with rock fragments, silty clay, and clayey silt layers (Stratum I), or a 1.0' to 3.25' thick layer of reddish-brown fine sand and silt with some medium sand, silty clay, and clayey silt layers (Stratum II). These strata transition into weathered reddish-brown limestone (Stratum III) at a variable depth.

Based on the conditions encountered, the majority of the site contains sufficient depth to dense weathered rock to complete the proposed site development however, the proposed infiltration bed located to the west of the structure will encounter limestone bedrock throughout the excavation to proposed bed bottom. Bedrock was encountered in test pit TP-3, where bucket refusal was encountered at a depth of 5' below the existing surface elevation, corresponding to an elevation of 246.78 feet. This test pit was shifted 5.0' to the north and encountered bucket refusal on the edge of a limestone at 7.0' below existing surface elevation, corresponding to an elevation of 244.78 feet.

Localized deposits of fill material were encountered within five (5) of the test pits completed. It is anticipated that the material encountered within test pits TP-3, TP-4, and TP-16 are associated with prior grading, whereas the deleterious fill materials encountered in test pits TP-10 and TP-15 are associated with fill pits from prior construction. Extensive depths of topsoil were encountered in

two (2) test pits. Test pit TP-4 encountered 11" of topsoil overlying 2'5" of fill containing significant root mass and TP-11 encountered 18" of topsoil.

The site conditions are suitable for the support of the proposed structure and associated utilities however; it is expected that the west most infiltration bed will require the removal of hard bedrock through the use of hydraulic hammers or blasting. See 5579G1R1 report Section 7.3 ROCK REMOVAL for more information. Site clearing may require additional removal to fully separate out the topsoil and root mass. It is recommended that a Geotechnical Engineer inspects the site once the initial clearing has taken place to confirm the removal of organic material from the development areas.

LIMITATIONS

Services performed by DBA, including this Geotechnical Exploration report, any subsequent supplemental site exploration, and construction monitoring have been or will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other warranty or guarantee is indicated or intended in this report or any opinion, document or otherwise stated.

If you have any questions regarding this letter, please contact our office.

Sincerely,
DAVID BLACKMORE & ASSOCIATES, INC.

Marc Utti Hodge, EIT
Geotechnical Engineer

Brian D. McCree, PE
President

APPENDIX

TEST PIT LOGS
TEST PIT LOCATION PLAN

APPENDIX

TEST PIT LOGS

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-2

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 9'
Ground Surface Elevation (ft msl): 250.30
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (9")	249.55			
1.5			Stratum I Orange-brown fine sand and clayey silt *Moist from 9" to 2'3"*	248.05			
3			Orange-brown fine sand and silt with some clay and rock fragments *Very moist from 2'3" to 9'*				
4.5							
6							
7.5							
9			Test Pit Terminated	241.30			
10.5			Notes: Easy excavation to 9'				



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DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-3

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 5'
Ground Surface Elevation (ft msl): 251.78
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			**Topsoil (6")**	251.28			
			Stratum IF Fill consisting of orange-brown fine sand and silt with some rock fragments	250.70			
1.5			**Stratum I** Orange-brown fine sand and silt with some clay *Moist from 1'1" to 3'7"*				
3				248.20			
			Stratum III Weathered reddish-brown limestone				
4.5				246.78			
			Bucket Refusal on Dense Weathered Limestone				
6			Notes: Easy to medium excavation to refusal at 5' Test pit shifted 5 feet north: Medium excavation to refusal at 7'				
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-4

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 6'
Ground Surface Elevation (ft msl): 254.92
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (11")	254.00			
1.5			Stratum IF Orange-brown fine sand and silt with some rock fragments and root mass	251.59			
3			Stratum I Orange-brown fine sand and silt with occasional rock fragments	248.92			
4.5							
6			Test Pit Terminated				
7.5			Notes: Medium excavation to refusal to 3'4"				
9							
10.5							

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DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-5

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 6'
Ground Surface Elevation (ft msl): 257.07
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			**Stratum IF** FILL consisting of 2A modified stone and asphalt millings	256.49			
			Stratum I Orange-brown fine sand and silty clay *Moist from 7" to 4'8"*				
4.5				252.40			
			Stratum II Reddish-brown fine sand and silt with some clay and occasional rock fragments	251.07			
6			Test Pit Terminated				
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-6

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 7'
Ground Surface Elevation (ft msl): 258.11
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			**Stratum IF** FILL consisting of asphalt millings and modified stone	257.61			
			Stratum I Reddish-brown fine sand and silty clay *Moist to very moist from 6" to 5'4"*				
4.5				252.78			
			Stratum II Orange-brown fine sand and silt				
6				251.11			
			Test Pit Terminated				
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-7

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 7'
Ground Surface Elevation (ft msl): 258.24
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			**Stratum IF** FILL consisting of asphalt millings and modified stone	257.74			
			Stratum I Orange-brown fine sand and silty clay with some rock fragments *Moist to very moist from 6" to 5'9"*				
1.5							
3							
				253.82			
4.5			**Stratum II** Orange-brown fine to medium sand and silt	253.24			
			Reddish-brown fine to medium sand and silt				
6							
				251.24			
			Test Pit Terminated				
7.5			Notes: Medium excavation from 5'9"				
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-8

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 7'
Ground Surface Elevation (ft msl): 257.26
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (7")	256.68			
			Stratum I Orange-brown and reddish-brown fine sand and clayey silt				
3				253.51			
			Stratum II Reddish-brown fine sand and silt with limestone fragments, cobbles, and boulders				
6				250.26			
			Test Pit Terminated				
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-9

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 4'
Ground Surface Elevation (ft msl): 253.78
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (6")	253.28			
			Asphalt millings (2")	253.11			
			Stratum I Orange-brown fine sand and clayey silt				
1.5							
3				249.78			
			Test Pit Terminated				
4.5			Notes: Easy excavation to 4'				
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-10

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 5'
Ground Surface Elevation (ft msl): 253.91
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Asphalt millings (2")	253.74			
			Stratum IF FILL consisting of reddish-brown fine sand and silt with asphalt and construction debris *Moist from 2" to 4'*				
1.5							
3							
				249.91			
			Stratum II Orange-brown fine to medium sand with some silt				
4.5				248.91			
			Test Pit Terminated				
			Notes: Easy excavation to 5'				
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-11

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 5'
Ground Surface Elevation (ft msl): 254.55
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil with root mass (18")	253.05			
1.5			Stratum I Orange-brown fine sand and silt with occasional rock fragments	250.55			
3			Stratum II Reddish-brown fine sand and silt with some clay	249.55			
4.5			Test Pit Terminated Notes: Easy excavation to 5'				
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-12

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 3.25'
Ground Surface Elevation (ft msl): 254.71
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (8")	254.04			
			Stratum II Reddish-brown fine sand and silty clay with rock fragments				
1.5				252.79			
			Reddish-brown fine sand and clayey silt with limestone fragments				
3				251.46			
			Test Pit Terminated				
4.5			Notes: Medium excavation from 2'2"				
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-13

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 3'
Ground Surface Elevation (ft msl): 254.89
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (6")	254.22			
			Stratum II Reddish-brown and orange-brown fine sand and clayey silt				
1.5				252.97			
			Reddish-brown fine sand and silt with rock fragments				
3				251.89			
			Test Pit Terminated				
4.5			Notes: Test pit moved 5' nothwest due to irrigation line Easy excavation to 3'				
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-14

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/03/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 2.5'
Ground Surface Elevation (ft msl): 252.30
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (6")	251.80			
			Stratum II Reddish-brown fine sand and clayey silt with rock fragments *Very moist from 6" to 1'8"*				
1.5				250.63			
			Reddish-brown fine sand and silt	249.80			
			Test Pit Terminated Notes: Medium excavation from 1'8"				
3							
4.5							
6							
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-15

Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 5.67'
Ground Surface Elevation (ft msl): 250.89
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			Topsoil (6")	250.39			
			Stratum IF FILL consisting of brown fine sand and silt with asphalt, concrete, and rock fragments	248.39			
			Asphalt (6")	247.89			
			Stratum I Orange-brown fine sand and silt with some clay *Moist from 3' to 5'6"*	245.39			
			Stratum III Weathered reddish-brown limestone	245.22			
			Test Pit Terminated				



Notes:
Easy excavation to 5'8"

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

DAVID BLACKMORE & ASSOCIATIES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Test Pit Number: TP-16

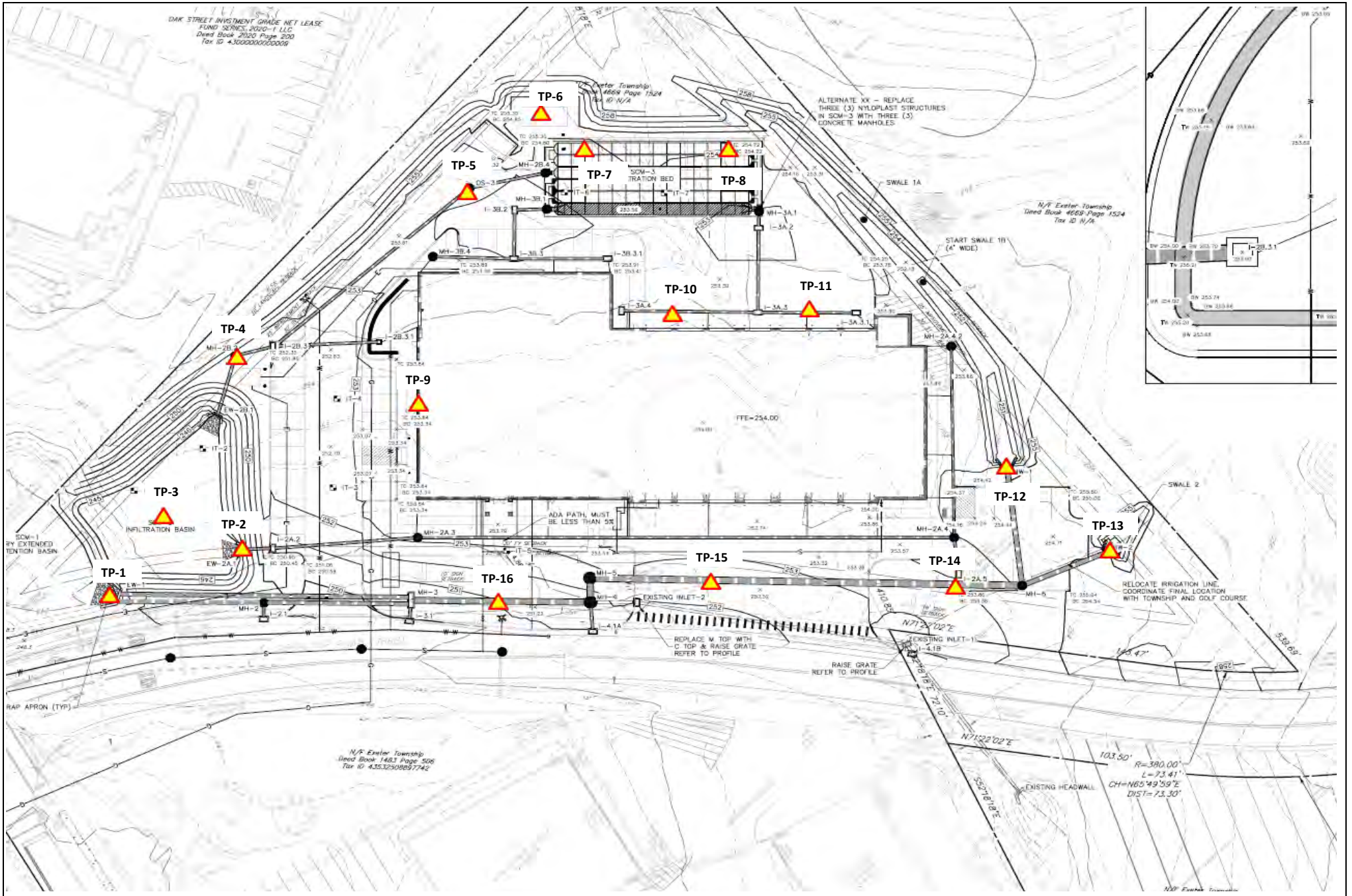
Project: New Exeter Emergency Services Center
Location: DeMoss Road and Gilbraltar Road
Twp/City/State: Exeter Township/Berks County/PA
Excavation Contractor: Exeter Township
Excavation Equipment: Backhoe
Operator:
X Coordinate (ft): Y Coordinate (ft):

Project Number: 5779G1
Date Excavated: 09/02/2026
Logged By: M. Utti-Hodge
Test Pit Depth: 5'
Ground Surface Elevation (ft msl): 249.74
Water Level - Immediate (ft bgs): Dry (5 Min)
Water Level - Static (ft bgs): Dry (1 Hr)

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: ELEVATION (FT)	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (10 20 30 40)	SAMPLING DATA: Comments/Notes
0			**Topsoil (9")**	248.99			
1.5			**Stratum IF** FILL consisting of orange-brown fine sand and silt with rock fragments	248.07			
3			**Stratum I** Orange-brown fine sand and silt with some clay	246.07			
4.5			**Stratum II** Reddish-brown fine sand and silty clay	244.74			
6			**Test Pit Terminated** <u>Notes:</u> Easy excavation to 5'				
7.5							
9							
10.5							

The test pit results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of excavation and are not indicative of seasonal variations in the ground water lovel. NR = No Recovery, S = Split Spoon sample (2" O.D.), C = Rock Coring Run.

TEST PIT LOCATION PLAN



KEY

▲ Additional Test Pit Location

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

DAVID BLACKMORE & ASSOC., INC.

3335 West Ridge Pike

Pottstown, Pennsylvania 19464

Telephone: (610) 495-6255 FAX: (610) 495-7353

Project 5779G1L2

EXETER EMERGENCY CENTER

TEST LOCATION PLAN

Gibraltar Road/ DeMoss Road

Exeter Township/ Berks County/ PA

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Project: 5779E1L2
July 10, 2026

Exeter Township
c/o Boyle Construction, Inc.
Suite 400, 3850 Sierra Circle
Center Valley, PA 18034

ATTN: Mr. Chris Haller

RE: Environmental Soil Sampling & Analysis
PADEP Management of Fill Program
Exeter Emergency Services Center
Demoss Road & Gibraltar Road
Exeter Township, Berks County, PA

Dear Mr. Haller:

DBA has completed environmental sampling and testing in accordance with Proposal 5779E1P2, dated April 8, 2026, for the Emergency Service Center project.

BACKGROUND

DBA completed an analysis of the onsite soils for the potential presence of contaminants that will affect the construction activity and, in particular, the ability to transport the excavated soil off-site as clean fill material defined by the Pennsylvania Department of Environmental Protection.

The results of this analysis, as indicated in our letter report 5779E1L1 dated February 9, 2026, identified a localized area where soils were encountered with an elevated chloride (salt) content. Based on reports from the client, this chloride is suspected to be related to a release/spill of salt from a truck that was on-site for service. The identified chloride concentration was 270 ppm, marginally exceeding the PADEP clean fill concentration limit of 250 ppm. Chloride concentrations above 250 would result in either management under the General Permit as Regulated Fill, which may allow the relocation of these soils to another township property, or disposal at an approved facility. The requirements under the general permit include a number of protocols, including a 30-day notification period and a list of other potential requirements. DBA contacted PADEP to determine which of these requirements would apply to this specific condition, given a single marginal exceedance of the clean fill concentration limits. Their response was that the general permit process could not be used in this

situation and that the soils may need to be disposed of at an approved facility. However, before making this conclusion, they have recommended that the soils be resampled and tested using a different leaching procedure than was performed by the environmental testing lab (ASTM D3987-12) as part of the initial sampling program. Based on the results of this analysis (EPA SPLP 1312), the final management of these soils can be determined. Based on this input, DBA performed the following sampling and analysis program at the single location where the chloride-impacted soil was identified. This report details the sampling process, summarizes lab analysis results, and provides conclusions on soil handling.

ENVIRONMENTAL SAMPLING PROGRAM

DBA obtained soil samples by test pit excavation performed by Exeter Township. A total of three (3) sampling locations were selected by DBA to obtain sufficient data to apply the 95% Upper Limit of the mean analysis to evaluate the clean fill status in accordance with PADEP's Management of Fill Policy. The samples were collected from the initial sampling site for sample E2, which showed elevated chlorides. At each of the three (3) sampling locations, four (4) grab samples were collected and used to prepare a composite sample. These three (3) composite samples were analyzed for chloride using the Synthetic Precipitation Leaching Procedure (SPLP) methodology.

All soil samples were submitted to Eurofins TestAmerica for analytical laboratory testing. The sampling location plan and laboratory data are included in the appendix of this report.

ENVIRONMENTAL ANALYSIS RESULTS

The results of the analytical testing are detailed in the report titled "Analytical Report", as prepared by Eurofins Test America and dated May 20, 2026, and are provided as an appendix to this letter. The results of the laboratory testing were compared with the concentration guidelines set forth in the Pennsylvania Department of Environmental Protection – Bureau of Waste Management document titled "Management of Fill Policy" dated January 16, 2021.

The chloride levels from this supplemental sampling program ranged from 4.4 mg/L to 8.7 mg/L, remaining well below the 250 mg/L clean fill concentration limit set by the PADEP Management of Fill Policy. In addition, using statistical analysis of all of the analyzed soil samples from the site in accordance with the Management of Fill policy, the 95% Upper Confidence Limit of the mean concentration measured for this compound was calculated to be 170.6 mg/kg, which is also below the clean fill policy concentration limit. Therefore, the soils tested which are intended for export may be deemed as clean fill under the PADEP Management of Fill Policy.

If you have any questions regarding this letter, please contact our office.

Sincerely,
DAVID BLACKMORE & ASSOCIATES, INC.

Mr. Angel Matos, EIT
Geotechnical Engineer

Attachments:

1. ***Sampling Location Plan***
2. ***Chloride 95% UCL Calculation***
3. ***Eurofins TestAmerica "Analytical Report", dated 5/20/2026***

APPENDIX

95% UCL CALCULATIONS

UCL Statistics for Data Sets with Non-Detects		
User Selected Options		
Date/Time of Computation	ProUCL 5.2 7/10/2026 3:18:56 PM	
From File	WorkSheet.xls	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

Chloride

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	3.3	Mean	59.21
Maximum	270	Median	27
SD	84.81	Std. Error of Mean	26.82
Coefficient of Variation	1.432	Skewness	2.093

Normal GOF Test

Shapiro Wilk Test Statistic	0.7	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.781	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.335	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.304	Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	108.4	95% Adjusted-CLT UCL (Chen-1995)	122.3
		95% Modified-t UCL (Johnson-1978)	111.3

Gamma GOF Test

A-D Test Statistic	0.468	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.763	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.237	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.278	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.671	k star (bias corrected MLE)	0.536
Theta hat (MLE)	88.24	Theta star (bias corrected MLE)	110.4
nu hat (MLE)	13.42	nu star (bias corrected)	10.73
MLE Mean (bias corrected)	59.21	MLE Sd (bias corrected)	80.85
		Approximate Chi Square Value (0.05)	4.401
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	3.723

Assuming Gamma Distribution

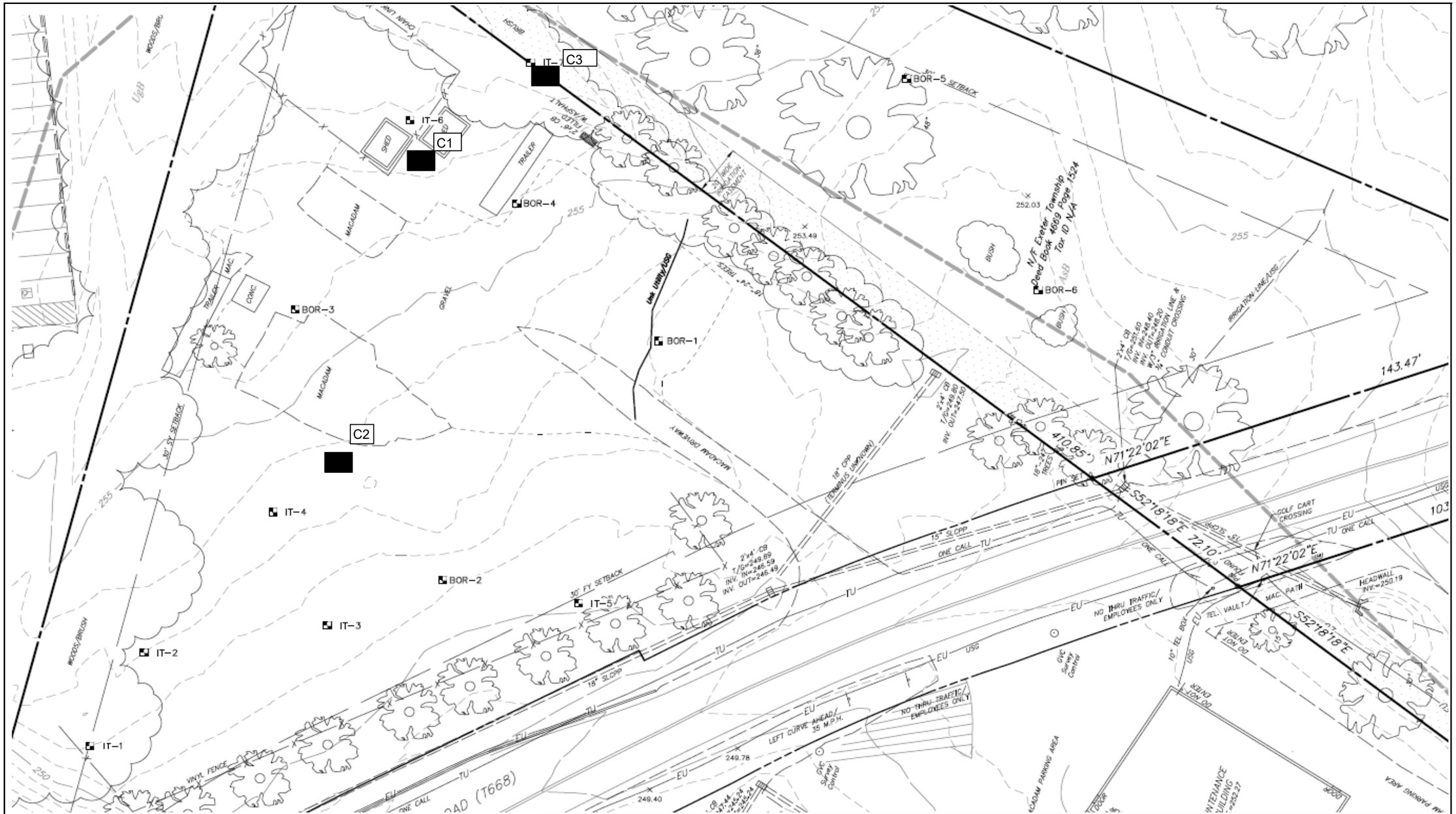
95% Approximate Gamma UCL	144.3	95% Adjusted Gamma UCL	170.6

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk Lognormal GOF Test**

53				10% Shapiro Wilk Critical Value		0.869	Data appear Lognormal at 10% Significance Level					
54				Lilliefors Test Statistic		0.197	**Lilliefors Lognormal GOF Test**					
55				10% Lilliefors Critical Value		0.241	Data appear Lognormal at 10% Significance Level					
56	**Data appear Lognormal at 10% Significance Level**											
57												
58	**Lognormal Statistics**											
59				Minimum of Logged Data		1.194	Mean of logged Data					3.175
60				Maximum of Logged Data		5.598	SD of logged Data					1.473
61												
62	**Assuming Lognormal Distribution**											
63				95% H-UCL		541.4	90% Chebyshev (MVUE) UCL					146.2
64				95% Chebyshev (MVUE) UCL		185.7	97.5% Chebyshev (MVUE) UCL					240.6
65				99% Chebyshev (MVUE) UCL		348.2						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution**											
69												
70	**Nonparametric Distribution Free UCLs**											
71				95% CLT UCL		103.3	95% BCA Bootstrap UCL					121.6
72				95% Standard Bootstrap UCL		102.6	95% Bootstrap-t UCL					213
73				95% Hall's Bootstrap UCL		329.2	95% Percentile Bootstrap UCL					106.7
74				90% Chebyshev(Mean, Sd) UCL		139.7	95% Chebyshev(Mean, Sd) UCL					176.1
75				97.5% Chebyshev(Mean, Sd) UCL		226.7	99% Chebyshev(Mean, Sd) UCL					326.1
76												
77	**Suggested UCL to Use**											
78				95% Adjusted Gamma UCL		170.6						
79												
80	**The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.**											
81	**Please verify the data were collected from random locations.**											
82	**If the data were collected using judgmental or other non-random methods,**											
83	**then contact a statistician to correctly calculate UCLs.**											
84												
85	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
86	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
87	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
88												

SAMPLING LOCATION PLAN



C# — Sampling Location

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
DAVID BLACKMORE & ASSOC., INC.
3335 West Ridge Pike
Pottstown, Pennsylvania 19464
Telephone: (610) 495-6255 FAX: (610) 495-7353

Project 5779G1

EXETER EMERGENCY CENTER
Environmental Sampling Plan
Gibraltar Road/DeMoss Road
Exeter Township/ Berks County/ PA

EUROFINS
TESTAMERICA
“ANALYTICAL REPORT”
DATED 5/20/2026

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Angel Matos
David Blackmore & Associates Inc
3335 West Ridge Pike
Pottstown, Pennsylvania 19464

Generated 5/20/2026 6:27:54 PM

JOB DESCRIPTION

Exeter Township

JOB NUMBER

460-350703-1

Eurofins Edison
777 New Durham Road
Edison NJ 08817

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization



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Authorized for release by
Julie Gilmore, Project Manager I
Julie.Gilmore@et.eurofinsus.com
(484)685-0865

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Receipt Checklists 16

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
460-350703-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt
The samples were received on 5/8/2026 6:25 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.0°C.

General Chemistry
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Client Sample ID: C1
Lab Sample ID: 460-350703-1

No Detections.

Client Sample ID: C2
Lab Sample ID: 460-350703-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.7		5.0	3.3	mg/L	1		4500-Cl-E-2021	SPLP East

Client Sample ID: C3
Lab Sample ID: 460-350703-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.4	J	5.0	3.3	mg/L	1		4500-Cl-E-2021	SPLP East

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Client Sample ID: C1
Lab Sample ID: 460-350703-1
Date Collected: 05/07/26 10:00
Matrix: Solid
Date Received: 05/08/26 18:25

General Chemistry - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4500-Cl-E-2021)	3.3	U F1	5.0	3.3	mg/L			05/20/26 14:26	1

Client Sample ID: C2
Lab Sample ID: 460-350703-2
Date Collected: 05/07/26 09:30
Matrix: Solid
Date Received: 05/08/26 18:25

General Chemistry - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4500-Cl-E-2021)	**8.7**		5.0	3.3	mg/L			05/20/26 14:13	1

Client Sample ID: C3
Lab Sample ID: 460-350703-3
Date Collected: 05/07/26 09:00
Matrix: Solid
Date Received: 05/08/26 18:25

General Chemistry - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4500-Cl-E-2021)	**4.4**	**J**	5.0	3.3	mg/L			05/20/26 14:13	1

Client: David Blackmore & Associates Inc
Project/Site: Exeter Township

Job ID: 460-350703-1

Method: 4500-Cl-E-2021 - Chloride, Total

Lab Sample ID: MB 460-1109011/4
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.3	U	5.0	3.3	mg/L			05/20/26 14:13	1

Lab Sample ID: LCSSRM 460-1109011/5
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	142	155.0		mg/L		109.2	88.0 - 112.0

Lab Sample ID: MRL 460-1109011/3
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	5.00	4.87	J	mg/L		97	50 - 150

Lab Sample ID: LB 460-1108831/1-A
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: Method Blank
Prep Type: SPLP East

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.3	U	5.0	3.3	mg/L			05/20/26 14:16	1

Lab Sample ID: 460-350703-1 MS
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: C1
Prep Type: SPLP East

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	3.3	U F1	50.0	55.16		mg/L		110	90 - 110

Lab Sample ID: 460-350703-1 MSD
Matrix: Solid
Analysis Batch: 1109011

Client Sample ID: C1
Prep Type: SPLP East

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	3.3	U F1	50.0	55.24		mg/L		110	90 - 110	0	10

QC Association Summary

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

General Chemistry

Leach Batch: 1108831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-350703-1	C1	SPLP East	Solid	1312	
460-350703-2	C2	SPLP East	Solid	1312	
460-350703-3	C3	SPLP East	Solid	1312	
LB 460-1108831/1-A	Method Blank	SPLP East	Solid	1312	
460-350703-1 MS	C1	SPLP East	Solid	1312	
460-350703-1 MSD	C1	SPLP East	Solid	1312	

Analysis Batch: 1109011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-350703-1	C1	SPLP East	Solid	4500-Cl-E-2021	1108831
460-350703-2	C2	SPLP East	Solid	4500-Cl-E-2021	1108831
460-350703-3	C3	SPLP East	Solid	4500-Cl-E-2021	1108831
LB 460-1108831/1-A	Method Blank	SPLP East	Solid	4500-Cl-E-2021	1108831
MB 460-1109011/4	Method Blank	Total/NA	Solid	4500-Cl-E-2021	
LCSSRM 460-1109011/5	Lab Control Sample	Total/NA	Solid	4500-Cl-E-2021	
MRL 460-1109011/3	Lab Control Sample	Total/NA	Solid	4500-Cl-E-2021	
460-350703-1 MS	C1	SPLP East	Solid	4500-Cl-E-2021	1108831
460-350703-1 MSD	C1	SPLP East	Solid	4500-Cl-E-2021	1108831

Lab Chronicle

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Client Sample ID: C1
Lab Sample ID: 460-350703-1

Date Collected: 05/07/26 10:00
Matrix: Solid
Date Received: 05/08/26 18:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
SPLP East	Leach	1312			1108831	GMR	EET EDI	05/19/26 15:11 - 05/20/26 10:00 [1]
SPLP East	Analysis	4500-Cl-E-2021		1	1109011	HTV	EET EDI	05/20/26 14:26

Client Sample ID: C2
Lab Sample ID: 460-350703-2

Date Collected: 05/07/26 09:30
Matrix: Solid
Date Received: 05/08/26 18:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
SPLP East	Leach	1312			1108831	GMR	EET EDI	05/19/26 15:11 - 05/20/26 10:00 [1]
SPLP East	Analysis	4500-Cl-E-2021		1	1109011	HTV	EET EDI	05/20/26 14:13

Client Sample ID: C3
Lab Sample ID: 460-350703-3

Date Collected: 05/07/26 09:00
Matrix: Solid
Date Received: 05/08/26 18:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
SPLP East	Leach	1312			1108831	GMR	EET EDI	05/19/26 15:11 - 05/20/26 10:00 [1]
SPLP East	Analysis	4500-Cl-E-2021		1	1109011	HTV	EET EDI	05/20/26 14:13

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Laboratory: Eurofins Edison

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Pennsylvania	NELAP	68-00522	02-28-27

The following analytes are included in this report, but the laboratory is not certified by Pennsylvania NELAP 68-00522. This list may include analytes for which the agency does not offer certification:

Analysis Method	Prep Method	Matrix	Analyte
4500-Cl-E-2021		Solid	Chloride

Method Summary

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Method	Method Description	Protocol	Laboratory
4500-Cl-E-2021	Chloride, Total	SM	EET EDI
1312	SPLP Extraction	SW846	EET EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: David Blackmore & Associates Inc
Job ID: 460-350703-1
Project/Site: Exeter Township

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
460-350703-1	C1	Solid	05/07/26 10:00	05/08/26 18:25	Pennsylvania
460-350703-2	C2	Solid	05/07/26 09:30	05/08/26 18:25	Pennsylvania
460-350703-3	C3	Solid	05/07/26 09:00	05/08/26 18:25	Pennsylvania

Chain of Custody Record 776023

eurofins Environment Testing

214 - KOP 2 rec not on sc

Address. Eurofins Environment Testing
777 New Durham Road
Edison, NJ 08817

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ DKQP ☐ NYASP ☐ PADEP ☐ DE HSCA ☐ NJGWQC

TAL-8210

Client Contact	Eurofins Project #:	Site Contact:	Date:	COC No:
Company Name: David Blackmore & Associates	Lab Project Manager:	Site Phone/Email:	Carrier:	Page ____ of ____ COCs
Client Project Manager: Angel Marks	Analysis Turnaround Time			Sampler:
Address: 3833 W. Gage Pike	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
City/State/Zip: Pottstown PA 19464	TAT if different from Below ____			Walk-in Client:
Phone: 484-576-0226	☐ 2 weeks			Lab Sampling
Email: amarks@dbaenvironmental.com	☐ 1 week			
Project/Site/State: Bartlett Township	☐ 2 days			Job / SDG No
PO # 577961	☐ 1 day			X = Active H = Hold

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS/MSD (Y/N) | SM4500_CL_E_SPLP | | |

Job Number 350703

Eurofins Edison
Receipt Temperature and pH Log

Number of Coolers: 1 IR Gun # KOP 2

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1	21.4 °C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	1,4-Dioxane (pH<4)	Other

If pH adjustments are required record the information below*

Sample No(s). adjusted _____

Preservative Name/Conc. _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

**Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

EDS-WI-038, Rev 5
9/5/2025

Initials JK Date 5/8/26

Login Sample Receipt Checklist

Client: David Blackmore & Associates Inc

Job Number: 460-350703-1

Login Number: 350703

List Source: Eurofins Edison

List Number: 1

Creator: Nelson, Rose E

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Project: 5779G1L3
April 29, 2026

Boyle Construction, Inc.
Suite 400, 3850 Sierra Circle
Center Valley, PA 18034

ATTN: Mr. Chris Haller

RE: Pavement Design
Exeter Emergency Services Center
Demoss Road & Gibraltar Road
Exeter Township, Berks County, PA

Dear Mr. Haller:

As per your request, David Blackmore & Associates, Inc. (DBA) is providing this letter summarizing the flexible and rigid pavement thickness design for both heavy duty and light duty pavement areas at the subject site.

Using the design equations set forth in the Asphalt Thickness Design Manual[1] and criteria detailed in both the Asphalt Thickness Design Manual[1] and the Florida Department of Transportation Design Manual[2], DBA calculated the required flexible pavement structural number for light and heavy-duty applications. A combination of the Florida Department of Transportation Design Manual[2] and the ACOE Engineering and Design Manual[3] were utilized to determine the rigid slab thickness for both light and heavy duty applications. The following assumptions were considered for the design:

- ESAL of 0.3 to 1.5 million for Light Weight Pavement Sections
- ESAL of greater than 1.5 million for Heavy Duty Pavement Sections
- Service Life of 20 years.
- Growth Rate of 2% for passenger vehicles and 4% for trucks
- CBR of 5 %
- Terminal Serviceability Index of 2.0 for flexible and 2.5 for rigid
- Reliability of 95%
- Joint Transfer Factor of 3.2
- Modulus of Elasticity based on ACI 318-19 formula
- Modulus of Rupture of 631 psi
- Modulus of subgrade reaction, 125psi/inch

[1] *Thickness Design – Asphalt Pavements for Highways and Streets.* College Park: Asphalt Institute, 1981. Print. Ser. No.1 (MS-1)
[2] *Flexible Pavement Design Manual Office of Design,* Pavement Management Section Tallahassee, Florida Topic #625-010-002
[3] RIGID PAVEMENTS FOR ROADS, STREETS, WALKS AND OPEN STORAGE AREAS. (1984). In *Engineering and Design* (pp. 1–40). Army Corps of Engineers. https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-3-132.pdf EM 1100-3-132

The subgrade for proposed pavement areas must be prepared and the subgrade evaluated using the proof rolling methods outlined in our geotechnical report number 5779G1R1 dated 01/27/2026 (Section 7.4 SLAB ON GRADE and 7.6 PAVEMENTS AND WALKWAYS).

A flexible pavement section with a thickness of 4.5 inches for light duty and 6.5 inches for heavy-duty pavement areas, respectively. An unreinforced rigid pavement section of 8 inches is recommended for light-duty areas, and 10 inches is recommended for areas of heavy-duty traffic. These thicknesses can be further reduced by reinforcing the slab with welded wire fabric(W10-4x4). The pavement section is designed to be supported by a minimum of six inches of compacted 2A modified subbase stone, see attached pavement details for further information. Note: Due to the site surface soil's potential for frost heave, and in accordance with the recommendations in our Geotechnical Report we provided an 8-inch-thick subbase stone layer.

If you have any questions regarding this letter, please contact our office.

Sincerely,
DAVID BLACKMORE & ASSOCIATES, INC.

Marc Utti-Hodge, EIT
Geotechnical Engineer

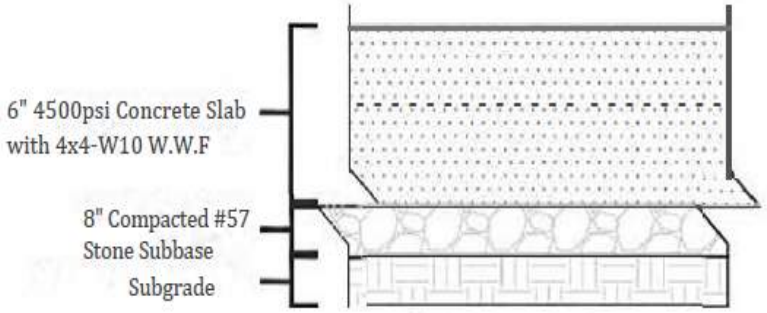
Brian D. McCree, PE
President

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
BRIAN D. MCCREE
ENGINEER
PE048432E

Attachments:
Pavement Design Details
Pavement Design Calculation

APPENDIX

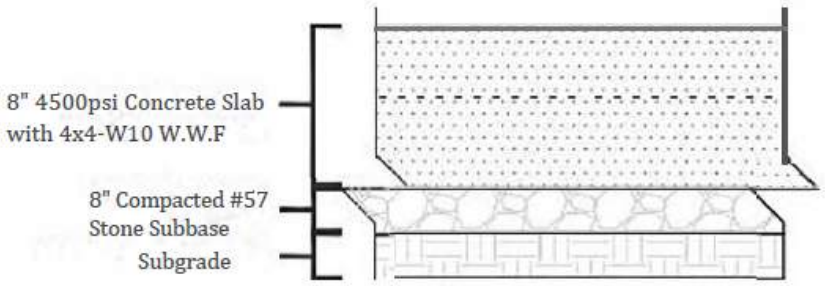
PAVEMENT DESIGN SECTIONS



1.) All concrete to be 4500psi 28-day compressive strength.
2.) Compact subgrade to at least 98% of it's maximum dry density determined in accordance with A.S.T.M D698. Subgrade to be proof rolled by a tandem-axle dump truck under the direct observation of a geotechnical engineer
3.) Expansion joints shall be provided where abrupt changes in geometry or immovable structures and where there are curbs, traffic separators, manholes, or drainage structures.
4.) Welded wire fabric (W.W.F 4x4-W10) installed to maintain a 3" concrete cover.
5.) Transverse and longitudinal joint spacing shall be no more than 15 feet or 24 times the slab thickness.
6.) All joints are to be sealed to prevent the inflow of water.

TYPICAL LIGHT-DUTY RIGID PAVEMENT DETAIL

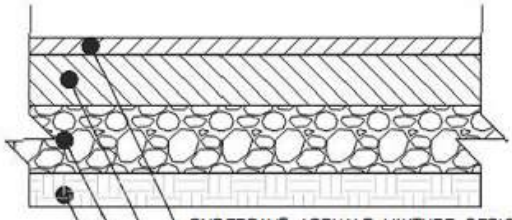
NTS



1.) All concrete to be 4500psi 28-day compressive strength.
2.) Compact subgrade to at least 98% of it's maximum dry density determined in accordance with A.S.T.M D698. Subgrade to be proof rolled by a tandem-axle dump truck under the direct observation of a geotechnical engineer
3.) Expansion joints shall be provided where abrupt changes in geometry or immovable structures and where there are curbs, traffic separators, manholes, or drainage structures.
4.) Welded wire fabric (W.W.F 4x4-W10) installed to maintain a 3" concrete cover.
5.) Transverse and longitudinal joint spacing shall be no more than 15 feet or 24 times the slab thickness.
6.) All joints are to be sealed to prevent the inflow of water.

TYPICAL HEAVY-DUTY RIGID PAVEMENT DETAIL

NTS



SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, PG 64–22, 0.3 TO 1.5 MILLION DESIGN ESALS, 9.5 MM MIXTURE, SRL–L, 1 1/2" DEPTH

SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BASE COURSE, PG 64–22, 0.3 TO 1.5 MILLION DESIGN ESALS, 25 MM MIXTURE, 3" DEPTH

COMPACTED SUB–BASE: MIN. 6" (NO. 2A STONE)

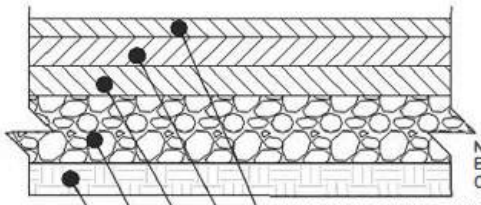
COMPACTED SUBGRADE–COMPACT SUBGRADE TO AT LEAST 98% OF ITS MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH A.S.T.M. D698, STANDARD PROCTOR. PRIOR TO PLACEMENT OF BASE COURSE MATERIALS, THE PAVEMENT SUBGRADE SHOULD BE PROOF–ROLLED WITH LOADED TANDEM–AXLE DUMP TRUCK UNDER THE OBSERVATION OF A GEOTECHNICAL ENGINEER TO EVALUATE STABILITY. Y.

NOTE: ALL EDGES OF NEW PAVEMENT SHALL BE TAMPED AND BEVELED TO PROVIDE A CLEAN & STABLE EDGE.

TYPICAL PAVEMENT SECTION LIGHT DUTY PAVING

NTS

(OUTSIDE RIGHT-OF-WAY)



NOTE: ALL EDGES OF NEW PAVEMENT SHALL BE TAMPED AND BEVELED TO PROVIDE A CLEAN & STABLE EDGE.

SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, PG 64–22, >1.5 MILLION DESIGN ESALS, 9.5 MM MIXTURE, SRL–L, 1 1/2" DEPTH

SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BINDER COURSE, PG 64–22, >1.5 MILLION DESIGN ESALS, 19 MM MIXTURE, 2" DEPTH

SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BASE COURSE, PG 64–22, 0 TO <0.3 MILLION DESIGN ESALS, 25 MM MIXTURE, 3" DEPTH

COMPACTED SUB–BASE: MIN. 6" (NO. 2A STONE)

COMPACTED SUBGRADE–COMPACT SUBGRADE TO AT LEAST 98% OF ITS MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH A.S.T.M. D698, STANDARD PROCTOR. PRIOR TO PLACEMENT OF BASE COURSE MATERIALS, THE PAVEMENT SUBGRADE SHOULD BE PROOF–ROLLED WITH LOADED TANDEM–AXLE DUMP TRUCK UNDER THE OBSERVATION OF A GEOTECHNICAL ENGINEER TO EVALUATE STABILITY.

TYPICAL PAVEMENT SECTION HEAVY DUTY PAVING

NTS

(OUTSIDE RIGHT-OF-WAY)

PAVEMENT DESIGN CALCULATIONS

Heavy-Weight											
Vehicle Type	**Axle Configuration**	**Axle Type**	**Axle Location**	**Axle Load**	**LEF**	**Total Lef**	**ADDT**	**Passages per day**	**Passages per year**	**Growth Factor**	**ESAL**
Passanger Truck	2 Axel-4 Wheel	Single	F	4000	0.00209	0.00418	43	2	31390	24.3	3188.40786
		Single	B	4000	0.00209						
Construction Vehicle	2 Axel-4 Wheel	Single	F	30000	6.97	13.94	10	2	7300	29.78	3030472.36
(Salt/Haul Truck)		Single	B	30000	6.97						
Construction Vehicle	3 Axel- 6 Wheel	Single	F	20000	1.51	3.59	10	2	7300	29.78	780444.46
(Salt/Haul Truck)		Tandem	B	40000	2.08						
Emergency Vehicle	2 Axel-4 Wheel	Single	F	22000	2.18	7.57	5	2	3650	29.78	822836.29
(Ambulance)		Single	B	28000	5.39						
Emergency Vehicle	3 Axel- 6 Wheel	Single	F	28000	5.39	11.02	5	2	3650	29.78	1197840.94
(Fire Truck)		Tandem	B	52000	5.63						
Construction Vehicle	5 Axel- 10 Wheel	Single	F	14000	0.36	3.76	5	2	3650	29.78	408700.72
(Water Truck/Semi)		Tandem	M	38000	1.7						
		Tandem	B	38000	1.7						
										TOTAL Design EAL	**6243483.178**

Light-Weight											
Vehicle Type	**Axle Configuration**	**AxleType**	**Axle Location**	**Axle Load**	**LEF**	**Total Lef**	**ADDT**	**Passages per day**	**Passages per year**	**Growth Factor**	**ESAL**
Passanger Truck	2 Axel-4 Wheel	Single	F	4000	0.00209	0.00418	43	2	31390	24.3	3188.40786
		Single	B	4000	0.00209						
Construction Vehicle	2 Axel-4 Wheel	Single	F	30000	6.97	13.94	2	2	1460	29.78	606094.472
(Salt/Haul Truck)		Single	B	30000	6.97						
Construction Vehicle	3 Axel- 6 Wheel	Single	F	20000	1.51	3.59	2	2	1460	29.78	156088.892
(Salt/Haul Truck)		Tandem	B	40000	2.08						
Emergency Vehicle	2 Axel-4 Wheel	Single	F	22000	2.18	7.57	1	2	730	29.78	164567.258
(Ambulance)		Single	B	28000	5.39						
Emergency Vehicle	3 Axel- 6 Wheel	Single	F	28000	5.39	11.02	1	2	730	29.78	239568.188
(Fire Truck)		Tandem	B	52000	5.63						
Construction Vehicle	5 Axel- 10 Wheel	Single	F	14000	0.36	3.76	1	2	730	29.78	81740.144
(Water Truck/Semi)		Tandem	M	38000	1.7						
		Tandem	B	38000	1.7						
										TOTAL Design EAL	**1251247.362**

Flexible-Pavement Variables			
Discription	**Variable**	**Value**	**Units**
Slab Thickness Heavy-Weight	SN_{HW}	6.5	inch
Slab Thickness Light-Weight	SN_{LW}	4.5	inch
Inital Servicability Index	Po	4.2	-
Terminal Serviceability Index	Pt	2	-
Reliability	R	0.95	-
Coefficient of Drainage	Cd	1.15	-
California Bearing Ratio*	CBR	3	%
Soil Resiliant Modulus	Mr	4500	%
Standard Deviation	Sz	0.45	-
Standard Normal Deviate	Zr	-1.674	-

Flexible Pavement					
Light-Weight			Heavy-Weight		
Check			Check		
6.097343175	=	6.156767	6.795427	=	7.550673793

Heavy-Duty											
Vehicle Type	**Axle Configuration**	**Axle Type**	**Axle Location**	**Axle Load**	**LEF**	**Total Lef**	**ADDT**	**Passages per day**	**Passages per year**	**Growth Factor**	**ESAL**
Passanger Truck	2 Axel-4 Wheel	Single	F	4000	0.00209	0.00418	43	2	31390	24.3	3188.40786
		Single	B	4000	0.00209						
Construction Vehicle	2 Axel-4 Wheel	Single	F	30000	6.97	13.94	10	2	7300	29.78	3030472.36
(Salt/Haul Truck)		Single	B	30000	6.97						
Construction Vehicle	3 Axel- 6 Wheel	Single	F	20000	1.51	3.59	10	2	7300	29.78	780444.46
(Salt/Haul Truck)		Tandem	B	40000	2.08						
Emergency Vehicle	2 Axel-4 Wheel	Single	F	22000	2.18	7.57	5	2	3650	29.78	822836.29
(Ambulance)		Single	B	28000	5.39						
Emergency Vehicle	3 Axel- 6 Wheel	Single	F	28000	5.39	11.02	5	2	3650	29.78	1197840.94
(Fire Truck)		Tandem	B	52000	5.63						
Construction Vehicle	5 Axel- 10 Wheel	Single	F	14000	0.36	3.76	5	2	3650	29.78	408700.72
(Water Truck/Semi)		Tandem	M	38000	1.7						
		Tandem	B	38000	1.7						
										TOTAL Design EAL	**6243483.178**

Light-Duty											
Vehicle Type	**Axle Configuration**	**AxleType**	**Axle Location**	**Axle Load**	**LEF**	**Total Lef**	**ADDT**	**Passages per day**	**Passages per year**	**Growth Factor**	**ESAL**
Passanger Truck	2 Axel-4 Wheel	Single	F	4000	0.00209	0.00418	43	2	31390	24.3	3188.40786
		Single	B	4000	0.00209						
Construction Vehicle	2 Axel-4 Wheel	Single	F	30000	6.97	13.94	2	2	1460	29.78	606094.472
(Salt/Haul Truck)		Single	B	30000	6.97						
Construction Vehicle	3 Axel- 6 Wheel	Single	F	20000	1.51	3.59	2	2	1460	29.78	156088.892
(Salt/Haul Truck)		Tandem	B	40000	2.08						
Emergency Vehicle	2 Axel-4 Wheel	Single	F	22000	2.18	7.57	1	2	730	29.78	164567.258
(Ambulance)		Single	B	28000	5.39						
Emergency Vehicle	3 Axel- 6 Wheel	Single	F	28000	5.39	11.02	1	2	730	29.78	239568.188
(Fire Truck)		Tandem	B	52000	5.63						
Construction Vehicle	5 Axel- 10 Wheel	Single	F	14000	0.36	3.76	1	2	730	29.78	81740.144
(Water Truck/Semi)		Tandem	M	38000	1.7						
		Tandem	B	38000	1.7						
										TOTAL Design EAL	**1251247.362**

Rigid-Pavement Variables			
Discription	**Variable**	**Value**	**Units**
Slab Depth Heavy-Duty	D_{HW}	10	inch
Slab Depth Light-Duty	D_{LW}	8	inch
Inital Servicability Index	Po	4.2	-
Terminal Serviceability Index	Pt	2.5	-
Reliability	R	0.95	-
Coefficient of Drainage	Cd	1.15	-
Modulus of Elasticity	Ec	3823676	psi
Modulus of Subgrade Reaction	k	125	psi/inch
Load Transfer Factor	J	3.2	-
Compressive Strength	f'c	4500	psi
Modulus of Rupture	S'c	631	psi
Standard Deviation	Sz	0.35	-
Standard Normal Deviate	Zr	-1.674	-

Rigid Pavement					
Light-Duty			Heavy-Duty		
Check			Check		
6.097343175	=	6.336594	6.795427	=	6.931362037

DRAFT

AIA® Document A132™ – 2019

Standard Form of Agreement Between Owner and Contractor,
Construction Manager as Adviser Edition

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

«Exeter Township »« »
«4975 DeMoss Road »
«Reading, PA 19606 »
«610-779-5560»

and the Contractor:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location, and detailed description)

«Exeter Township Emergency Services Facility»
«70 Gibraltar Road»
«Reading, PA 19606»

The Construction Manager:
(Name, legal status, address, and other information)

«Boyle Construction, Inc.»« »
«3850 Sierra Circle, Suite 400»
«Center Valley, PA 18034»
«484-223-0726»

The Architect:
(Name, legal status, address, and other information)

«Manns Woodward Studios, Inc.»« »
«8098 Sandpiper Circle, Suite H»
«Nottingham, MD 21236»
« 410-344-1460»

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9. To the extent of any direct conflict or inconsistency between any of the Contract Documents, the Contractor shall immediately seek clarification from the Construction Manager. In the event that the Construction Manager fails to clarify such discrepancy, within a reasonable time under the circumstances, the Contractor shall proceed with the Work and give precedence to the Contract Documents in the following order of priority: (1) modifications issued after execution of the Agreement; (2) the Agreement; (3) Addenda issued prior to the execution of the Agreement, with the Addenda bearing the latest date taking precedence; (4) any supplementary conditions; (5) the General Conditions of the Contract for Construction; and (6) the Final Drawings and Specifications. The Contract Documents do not include soundings, dug test pits, and/or auger or test borings reports, or other information contained in geotechnical reports or similar documents.

ARTICLE 2 THE WORK OF THIS CONTRACT

§ 2.1 The Contractor shall fully execute the Work described in the Contract Documents as well as all attachments thereto and all work reasonably inferable by the Contract Documents as necessary to produce the results intended by the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others. A list of Contract Documents is attached hereto and incorporated herein as part of Exhibit "___."

§ 2.2 The Contractor shall furnish only skill and properly trained staff for the performance of the Work. The key members of the Contractor's staff shall be persons agreed upon by the Owner and identified in writing prior to the start of the Work. The Owner's authorized representative is set forth in section 14.3 below.

§ 2.2.1 Such key members of the Contractor's staff shall not be changed without the written consent of the Owner, unless such person becomes unable to perform any required duties due to death, disability, transfer, or termination of employment with the Contractor. If a key member is no longer capable of performing, the Owner and the Contractor shall agree on a mutually acceptable substitute.

§ 2.2.2 During the performance of the Work, the Contractor shall keep competent key personnel, including, but not limited to, Project Manager, Project Engineer, and Superintendent, at the Project site, fully authorized to act on behalf of

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the Contractor. Notice from the Owner and/or Construction Manager to such key personnel shall be considered notice to the Contractor.

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[« »] The date of this Agreement.

[« X »] A date set forth in a written notice to proceed issued by the Owner to the Contractor, or upon the receipt of the Building Permit, whichever is later.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be:
(Insert the date of Substantial Completion of the Work of all Contractors for the Project.)

« »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of all of the Contractors for the Project are to be completed prior to Substantial Completion of the entire Work of all of the Contractors for the Project, the Contractors shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:
(Check one of the following boxes and complete the necessary information.)

[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.4.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of this Contract are to be substantially complete prior to when the entire Work of this Contract shall be substantially complete, the Contractor shall substantially complete such portions by the following dates:

Portion of Work	Date to be substantially complete

§ 3.4.3 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

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ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:
(Check the appropriate box.)

[« »] Stipulated Sum, in accordance with Section 4.2 below

[« »] Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

[« »] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be « » ($ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

§ 4.2.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.2.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.2.4 Unit prices, if any:
(Identify the item and state the unit price, and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

§ 4.3.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.3.2 The Contractor's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.3.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.3.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

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« »

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed « » percent (« » %) of the standard rental rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager, within 14 days of executing this Agreement, a written Control Estimate for the Owner's review and approval. The Control Estimate shall include the items in Section B.1 of Exhibit B, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price
§ 4.4.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.4.2 The Contractor's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.4.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.4.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

« »

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed « » percent (« » %) of the standard rental rate paid at the place of the Project.

§ 4.4.6 *Unit Prices, if any: (Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)*

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.4.7 Guaranteed Maximum Price
§ 4.4.7.1 The Contract Sum is guaranteed by the Contractor not to exceed « » ($ « »), subject to additions and deductions by Change Order as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

§ 4.4.7.2 Alternates
§ 4.4.7.2.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price

§ 4.4.7.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

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Item	Price	Conditions for Acceptance

§ 4.4.7.3 Allowances, if any, included in the Guaranteed Maximum Price:
(Identify each allowance.)

Item	Price

§ 4.4.7.4 Assumptions, if any, upon which the Guaranteed Maximum Price is based:
(Identify each assumption.)

« »

§ 4.4.8 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 4.4.9 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 4.4.7.4. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 4.4.7.4 and the revised Contract Documents.

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)

« The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial use of the completed work following expiration of the Contract Time. The Contractor further acknowledges and agrees that if the Contractor fails to achieve Substantial Completion of the entire Work within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, the Owner and Contractor agree as set forth in this section.

« If the Contractor fails to achieve Substantial Completion as set forth in Section 3.3.1 of this Agreement, as may be adjusted pursuant to the Contract Documents, the Owner shall be entitled to assess liquidated damages against the Contractor in the amount of $_____ for each and every day thereafter until Substantial Completion is achieved.

The liquidated damages assessed by Owner against Contractor shall be Owner's sole monetary remedy against Contractor for Contractor's delay and failure to attain Substantial Completion of the Work by the date set forth in Section 3.3.1, as may be adjusted pursuant to the Contract Document; provided, however, that nothing herein shall limit Owner's rights to suspend or terminate the Work or Contractor, nor any of Owner's other non-monetary rights set forth herein. The Owner and Contractor agree that actual damages incurred by the Owner as a result of the delay are difficult to calculate with specificity and that the foregoing Liquidated Damages represent a mutual good faith estimate of what the parties believe to be the amount of actual damages to be incurred by the Owner on account of the delay. The parties jointly agree and stipulate that the contractually agreed to liquidated damages set forth above are not a penalty.
»

§ 4.6 Other:
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall make progress payments on account of the

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Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents. In addition to the other required items, each application for payment shall be accomplished by the following, all in form and substance satisfactory to the Owner and in compliance with applicable statutes of the jurisdiction in which the Project is located:

.1 A current sworn statement from the Contractor setting forth all Subcontractors and any material suppliers with whom Contractor has subcontracted, the amount requested for any Subcontractor or material supplier in the Application for Payment and the amount to be paid to the Contractor from such progress payment, as well as a sworn statement from the Contractor establishing receipt of payment or satisfaction of the payment requested by the Contractor in the previous Application for Payment, if any;
.2 Duly executed releases of mechanics' and material suppliers' liens and claims from the Contractor and also Subcontractors, sub-subcontractors and suppliers establishing payment or satisfaction of the payment requested by the Contractor in the previous Application for Payment (See Exhibit "___"); and
.3 Such other information, documentation, and materials, as the Owner, Owner's Lender, or the title insurer may reasonably require.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« On or before the 20th day of the month immediately preceding a month in which the Contractor will submit an Application for Payment, the Owner, the Architect, the Construction Manager and the Contractor shall meet to review a preliminary draft of such Application for Payment (hereinafter referred to as a "Pencil Draw") prepared by the Contractor. The Contractor shall revise the Pencil Draw in accordance with any objection or recommendation of the Owner, Construction Manager or the Architect. Such revised Pencil Draw shall be resubmitted by the Contractor to the Construction Manager as the Application for Payment due on the fifth (5th) day of the month immediately following the month in which the Pencil Draw was first amended. The Contractor shall also submit with each Application for Payment a written narrative describing the basis for any items set forth in the Application for Payment that does not conform to the instructions of the Owner, Construction Manager or the Architect in connection with any applicable Pencil Draw. »

§ 5.1.3 Provided that a "Pencil Draw" Application for Payment pursuant to Section 5.1.2 is received by the Construction Manager not later than the «20th » day of a month and the Application for Payment submitted by the fifth (5th) day of the following month as stated above, , the Owner shall make payment of the amount certified to the Contractor not later than the «last » day of the «same » month in which the Application for Payment is submitted. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than «thirty» («30 ») days after the Construction Manager receives the Application for Payment. Contractor is only permitted to submit one Application for Payment per calendar month.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum
§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.4.3.1 The amount of each progress payment shall first include:
.1 That portion of the Contract Sum properly allocable to completed Work;

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.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner and Owner's Lender, if any, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.4.3.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit B, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices, or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor, plus payrolls for the period covered by the present Application for Payment, less that portion of the payments attributable to the Contractor's Fee.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

§ 5.1.5.3 In accordance with AIA Document A232-2019 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.5.3.1 The amount of each progress payment shall first include:

.1 The Cost of the Work as described in Exhibit B, Determination of the Cost of the Work;

.2 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and

.3 The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 5.1.5.3.1.1 at the rate stated in Section 4.3.2; or if the Contractor's Fee is stated as a fixed sum in Section 4.3.2 an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 5.1.5.3.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 5.1.5.3.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;

.5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.5.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 5.1.7.

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§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.5.5 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action shall not be deemed to be a representation that (1) the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; (2) that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 5.1.5.6 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.5.7 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price

§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Contractor's Fee.

§ 5.1.6.2.1 The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values, unless objected to by the Owner, Architect, or Construction Manager shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.6.2.2 The allocation of the Guaranteed Maximum Price under this Section 5.1.6.2 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 5.1.6.2.3 When the Contractor allocates costs from a contingency to another line item in the schedule of values, the Contractor shall submit supporting documentation to the Architect and Construction Manager.

§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work and for which the Contractor has made payment or intends to make payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 5.1.6.4 In accordance with AIA Document A232-2019, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.4.1 The amount of each progress payment shall first include:

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.1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;

.2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner and Owner's Lender, if any, suitably stored off the site at a location agreed upon in writing;

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and

.4 The Contractor's Fee, computed upon the Cost of the Work described in the preceding Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 5.1.6.4.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;

.5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.6.5 The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.6.6 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and such action shall not be deemed to be a representation that (1) the Construction Manager or Architect have made a detailed examination, audit, or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; (2) that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 5.1.6.7 Except with the Owner's prior approval and the prior written approval of Owner's Lender, if any, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.6.8 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

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« Ten percent (10%) of the amount due on each Application for Payment for Work completed and materials suitably stored, until the Work of this Contract is fifty percent (50%) complete, subject to Section 5.1.7.2 and 62 Pa.C.S. § 3921.~~Ten Percent (10%) of the Contract amount of completed work and stored materials.~~»

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

«None »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

« When the Architect certifies that the Work of this Contract is fifty percent (50%) complete, the Owner shall return one-half of the retainage then held and thereafter shall withhold no more than five percent (5%) of the value of Work completed on each subsequent Application for Payment, provided the Architect has approved the Application, the Contractor is making satisfactory progress and there is no specific cause for greater withholding. If a dispute arises between the Contractor and another prime contractor concerning increased costs attributed to the Contractor's delay or actions, the Owner may withhold additional retainage of one and one-half times the potential liability until the dispute is resolved, unless the Contractor posts a bond satisfactory to the Owner. Withholding for deficiency items is governed by 62 Pa.C.S. § 3934 and Article 9 of the General Conditions.

If the Owner reduces the retainage requirements of this Agreement or releases any portion of retainage prior to the date specified in the Contract Documents, any such reduction or release of retainage, or portion thereof, shall not be a waiver of any of the Owner's rights to retainage in connection with other payments to the Contractor or any other right or remedy that the Owner has under the Contract Documents, at law or in equity. Furthermore, the Owner reserves the right to withhold retainage due to the existence of unresolved claims from the Contractor's Subcontractors, Suppliers or any lower tier sub-subcontractors or suppliers to the extent necessary to reasonably protect the Owner where such claims constitute specific cause for greater withholding under 62 Pa.C.S. § 3921. ~~as determined in Owner's sole discretion.~~ The retainage of trades that complete their work prior to Final Completion of the Project, such as, but not limited to, steel, concrete, caissons, curtain wall, earthwork, aluminum, glass, glazing, exterior panels, plank, etc. ("Early Trades") may be released in Owner's sole discretion upon final completion of all the Early Trade's work on the Project including any punch-list items.»

»

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted when the Work of this Contract is substantially complete shall not include retainage as follows:
(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

« Retainage shall be released in accordance with 62 Pa.C.S. § 3941. Upon the Contractor's request, the Architect shall make a final inspection within thirty (30) days. If the Work of this Contract is substantially complete, the Architect shall issue a certificate of substantial completion and a final payment certificate listing each uncompleted item and its reasonable cost to complete, and the Owner shall pay the balance due, including retainage, within forty-five (45) days, less one and one-half times the reasonable cost of the listed items, which amount shall be paid when those items are completed.»

§ 5.2 Final Payment
§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum
§ 5.2.1.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

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.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor has submitted all necessary documentation required by the Contract Documents, as well as any reasonable requests for additional documentation made by the Owner or the Construction Lender, if any;

.3 the Contractor has submitted duly executed releases of mechanics' and material suppliers' liens and claims from the Contractor and also Subcontractors, sub-subcontractors and suppliers; and

.4 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

§ 5.2.1.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

« Furthermore, the Owner reserves the right to withhold Final Payment due to the existence of unresolved claims from the Contractor's Subcontractors, Suppliers or any lower tier sub-subcontractors or suppliers to the extent necessary to reasonably protect the Owner as determined in Owner's sole discretion. »

§ 5.2.2 Final Payment Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 5.2.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit B, Determination of the Cost of the Work and a final Application for Payment;

.3 the Contractor has submitted all necessary documentation required by the Contract Documents, as well as any reasonable requests for additional documentation made by the Owner or the Construction Lender, if any;

.4 the Contractor has submitted duly executed releases of mechanics' and material suppliers' liens and claims from the Contractor and also Subcontractors, sub-subcontractors and suppliers

.5 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect in accordance with Exhibit B, Determination of the Cost of the Work.

§ 5.2.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

« Furthermore, the Owner reserves the right to withhold Final Payment due to the existence of unresolved claims from the Contractor's Subcontractors, Suppliers or any lower tier sub-subcontractors or suppliers to the extent necessary to reasonably protect the Owner as determined in Owner's sole discretion. »

§ 5.3 Intentionally omitted.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
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§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232–2019, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[«X »] Arbitration pursuant to Article 15 of AIA Document A232–2019.

[« »] Litigation in a court of competent jurisdiction.

[« »] Other: *(Specify)*

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.1.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

«None »

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Termination

§ 7.2.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.2.1.2 Termination by the Owner for Cause

§ 7.2.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the Owner shall then only pay the Contractor an amount as follows:

.1 Take the Cost of the Work incurred by the Contractor to the date of termination;

.2 Add the Contractor's Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 4.3.2 or 4.4.2, as applicable, or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A232–2019.

§ 7.2.1.2.2 When the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, if the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232-2019, the amount, if any, to be paid to the Contractor under Article 14 of AIA Document A232-2019 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.1.2.1.

§ 7.2.1.2.3 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the

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payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Contractor will contain provisions allowing for assignment to the Owner as described above.

§ 7.2.1.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

«None »

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A232–2019, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Section 4.3.2 or 4.4.2, as applicable, of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

«Mr. Larry Piersol»
«Exeter Township»
«4975 DeMoss Road »
«Reading, PA 19606 »
«610-779-5560»

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A132™–2019, Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

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(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

§ 8.8 Other provisions:

««**§ 8.8.1** The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents), as a material inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of this Agreement, and the final completion of the Work:

.1 The Contractor is financially solvent, is able to pay all debts as they mature, and is possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

.2 The Contractor is able to furnish the plant, tools, materials, supplies, equipment and the labor required to complete the Work and perform its obligations hereunder and has sufficient experience and competence to do so;

.3 The Contractor is authorized to do business in the state in which the Project is located and is properly licensed by all necessary governmental and public and qualified public authorities having jurisdiction over the Contractor and over the Work and the Project;

.4 The Contractor's execution of this Agreement and performance thereof is within the Contractor's duly authorized powers;

.5 The Contractor's duly authorized representative has visited the site of the Project, is familiar with the location conditions under which the Work is to be performed, and has correlated observations with the requirements of the Contract Documents; and

.6 The Contractor possesses a high level of experience and expertise in the business administration, construction, construction management, and superintendence on Projects of this size, complexity, and the nature of this particular Project and will perform the Work with the care, skill, and diligence of such a contractor.

§ 8.8.2 Employee Verification through E-Verify.

Contractor and its Subcontractors shall comply with the Construction Industry Employee Verification Act ("Act 75"). In accordance with Act 75, each "construction industry employer" who hires an employee on or after October 7, 2020 shall verify the employment eligibility of the employee through the E-Verify program operated by the Department of Homeland Security and shall keep a record of the verification for the duration of the employee's employment or three years, whichever is longer.

§ 8.8.3 The Contractor acknowledges that the Owner maybe financing the Work with a loan from the Lender. In order to perform under the Contract Documents, the Owner must comply with certain terms and conditions embodied in the Lender's construction loan agreement. The Contractor agrees to use its best efforts to comply with the requirements of the Lender that bear upon the performance of the Work. The Contractor shall also:

1. Make the site of the Work available at reasonable times for inspection by the Lender or the Lender's representatives;

2. Consent to execute all documents reasonably requested by the Owner in connection with the assignment of this Agreement and the Drawings and Specifications to the Lender for collateral purposes. Such assignment shall provide that the Contractor agrees that notwithstanding a default by the Owner under the provisions of this Agreement that would give the Contractor the right to terminate this Agreement, the Contractor will continue

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to perform its obligations hereunder (on the same terms and conditions as are set forth herein) for and on account of the Lender, if the Lender, in its sole discretion, decided to proceed with the Project; and

3. Promptly furnish the Owner with information, documents, and material that the Owner may reasonably request from time to time in order to comply with the requirements of the Lender.

§ 8.8.4 Notwithstanding anything to the contrary contained in this Agreement or in any of the other Contract Documents, neither the Owner, any partner of the Owner, nor any person or entity holding any interest in the Owner shall be personally liable, whether directly or indirectly, by reason of any default by the Owner in the performance of any of the obligations of the Owner under this Agreement, including, without limitation, the Owner's failure to pay the Contractor as required hereunder, and in the event of any such default, the Contractor hereby agrees to look solely to the Owner's interest in the property upon which the Project is situated to secure the performance in payment of all such obligations. From time to time, however, the Owner may elect to sell, lease, mortgage, or otherwise transfer any of the Owner's interest in any portion of the Project site, not including any part of the Project site covered by the Project itself ("Site Conveyance"). In connection with any Site Conveyance, the Contractor shall execute and deliver to the Owner and shall cause any Subcontractors to execute and deliver to the Owner such documents for the benefit of the Owner, any purchaser, and any title insurance company issuing title insurance a full and complete release of all mechanics' and materials suppliers' liens and rights, with respect to the property that is the subject of such Site Conveyance, together with such other documents as a title company may require to induce it to issue its policy of title insurance with respect to the Site Conveyance without requiring the Owner's indemnity against mechanics' and materials suppliers' liens. »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, as modified

.2 AIA Document A132™–2019, Exhibit A, Insurance and Bonds Exhibit

.3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as modified

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work

[« »] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser

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Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

«»

This Agreement is entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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SECTION 01 1200 - MULTIPLE CONTRACT SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes a summary of each contract, including responsibilities for coordination.

B. Specific requirements of each contract are also indicated in individual Specification Sections and on Drawings.

C. Related Sections include the following:
1. Division 01 Section 011000 "Summary" for the Work covered by Contract Documents and for work sequence.
2. Division 01 Section 013100 "Project Management and Coordination" for general coordination requirements.
3. Division 01 Section 015000 "Temporary Facilities and Controls" for specific requirements for temporary facilities and controls.
4. Division 01 Section 019113 “General Commissioning Requirements” for additional information and procedures.

D. Definitions:
1. Permanent Enclosure: As determined by Architect and/or Construction Manager, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial (watertight and insulated) temporary closures.
2. Coordinate: The term “coordinate” means “to cooperate with related trades to furnish and install all connections between the trades in correct sequence size and location to create a complete system ready for intended use.”
3. Verify: The term “verify” means “to measure, investigate, review, test, check the accuracy or correctness of and prove by demonstration, evidence, or testimony the location, size, dimension and condition of an item.”
4. Furnish: The term “furnish” is used to mean “supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations.”
5. Install: The term “install” is used to describe operations at the project site including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, performing, coordinating with other trades, protecting, cleaning, and similar activities.”
6. Provide: The term “provide” means “to furnish and install, complete and ready for the intended use.”

1.3 COORDINATION

A. Project Coordinator shall be responsible for coordination between the General Construction Contract, Site Work Contract, Plumbing Contract, Fire Protection Contract, HVAC (also referenced as Mechanical) Contract, and Electrical Contract.
   1. General Construction Contractor shall act as and assume responsibilities of Project Coordinator or Lead Contractor which are designated throughout the Contract Documents. The General Contractor shall be the full-time Project Coordinator and shall be experienced in Administration and Supervision of building construction activities, including Site Work, Mechanical, Electrical, Plumbing, and Fire Protection work.

B. Site, HVAC, Plumbing, Fire Protection, & Electrical Coordinators are responsible for coordinating with the Project Coordinator.

C. The HVAC Contractor shall be responsible for the assembly of coordination drawings for himself, and the inclusion of coordination drawings provided by the Electrical, Plumbing, and Fire Protection Contractors.

D. The HVAC (Mechanical) Contractor shall be the primary M/E/P/FP coordinator and shall be responsible for the preparation of 2D CAD electronic coordination drawings between HVAC, Plumbing, Fire Protection and Electrical trades. 2D CAD files are required to be provided by all contractors with final coordination drawings provided from HVAC Contractor. 3D CAD files and coordination drawings are preferred. The Plumbing, Fire Protection, and Electrical Contractors shall provide such information electronically to fully coordinate their work with that of the other primes and in the format requested by the HVAC Contractor. All Prime Contractors shall cooperate and be responsible for preparation and compliance with coordination drawings.

E. GC shall coordinate all work in accordance with project phasing requirements and scheduled activities of all other contractors.

1.4 PROJECT COORDINATOR RESPONSIBILITIES

A. Project Coordinator: Full-time Project Coordinator shall be experienced in administration and supervision of building construction, including HVAC, plumbing, fire protection, and electrical work.
   1. Coordination activities of Project Coordinator include, but are not limited to, the following:
      a. Provide typical overall coordination of the Work.
      b. Provide overall coordination for project.
      c. Coordinate shared access to workspaces.
      d. Coordinate product selections for compatibility.
      e. Provide overall coordination of temporary facilities and controls.
      f. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
      g. Coordinate construction and operations of the Work with work performed by each Contract and Owners subcontractors.
      h. Prepare Coordination Drawings to coordinate work by more than one contract except for HVAC, electrical, plumbing, and fire protection coordination drawings which are the responsibility of the respective Contractors and primarily the HVAC Contractor.
      i. Coordinate sequencing and scheduling of the Work. Include the following:
         1) Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.

2) Prepare a combined Contractor's Construction Schedule and monthly updates for entire Project. Base schedule on Preliminary Construction Schedule. Secure time commitments for performing critical construction activities from contractors. Show activities of each contract on a separate sheet. Prepare a summary sheet indicating combined construction activities of contracts.
3) Submit schedules to Construction Manager for approval.
4) Prepare recovery schedules as needed.
5) Construction Manager will distribute copies of approved schedules to Architect, Owner, and Contractors.

j. Provide photographic and video documentation of existing conditions, work as it progresses and at completion.
k. Provide quality-assurance and quality-control services specified in Section 014000 "Quality Requirements."
l. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
m. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
n. Perform field engineering, construction layout, and locate existing permanent benchmarks and control points. Provide similar reference points and establish permanent benchmarks, control points, and elevations on project site for use by other prime contractors and all trades.
o. Provide field surveys of in-progress construction and site work.
p. Coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked. Progress cleaning of building and site shall be performed on a daily basis.
q. Coordinate final cleaning of building with all Contractors.
r. Coordinate cutting and patching.
s. Coordinate protection of the Work.
t. Coordinate completion of interrelated punch list items.
u. Construction Manager will coordinate preparation Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
v. Print and submit Record Documents if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.
w. Construction Manager will collect Record Specification Sections from other contractors, collate Sections into numeric order, and submit complete set.
x. Construction Manager will coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
y. Before building foundations are placed, create a rough-in drawing indicating locations through-foundation-wall penetrations (horizontal and vertical dimensions). Coordinate with all other Prime Contractors and submit drawing to the Construction Manager for confirmation of all penetrations with Design Professionals.
z. Before the concrete floor slab is poured, create a rough-in drawing indicating location of under slab and in-wall conduits and utilities related to Work by Owner’s Vendors. Intent: Vendors’ Work requires coordination with Prime Contractors’ Work.
aa. Coordinate work of all Owner vendors.

B. HVAC, Electrical, Plumbing and Fire Protection (MEP&FP) Coordinators: Full-time HVAC, Electrical, Plumbing, and Fire Protection Coordinators shall be experienced in coordination of M/E/P/FP construction, including coordination of type of operations required for this Project.
   1. Coordination activities of HVAC, Electrical, Plumbing and Fire Protection Coordinators include, but are not limited to, the following:
      a. Schedule and sequence of activities.
      b. Coordinate sharing access to workspaces.
      c. Coordinate integration of work into limited spaces.
      d. Coordinate protection of completed work.
      e. Coordinate cutting and patching work.
      f. Take the lead and be responsible Coordination Drawings. Coordination drawings must be reviewed with Project Coordinator for finish ceiling heights. Drawings shall coordinate and include but not be limited to the following components:
         1) Structural System limits.
         2) Electrical Systems.
         3) Fire Protection Systems.
         4) Mechanical piping and ductwork.
         5) Storm and sanitary piping.
         6) Data and telecommunications.
      g. Coordinate tests and inspections.
      h. Coordinate temporary services and facilities.
      i. Coordinate with all utility companies with bringing all utilities into the site (i.e. electric, cable, water, sewer, etc.). Further Coordinate with Project Coordinator, Construction Manager, and Site Contractor for all Utility Company work.

1.5 GENERAL PARAMETERS FOR HVAC, ELECTRICAL, PLUMBING AND FIRE PROTECTION COORDINATION DRAWINGS

A. HVAC Contractor is responsible for integrating Coordination Drawings.

B. Coordination drawings must be prepared electronically and in CAD format. 2D drawings are required and 3D drawings are preferred for project model integration.

C. Comply with the requirements for Coordination Drawings as specified in the Division 01 Section “Project Management and Coordination.”

D. HVAC Contractor shall within 20 days of a fully executed contract, distribute layout drawings in CAD format to all Contractors. Layout drawings shall include but not be limited to the following:
   1. Columns and beams.
   2. Ceiling heights.
   3. Ceiling dimensional layouts per the reflected ceiling plans.
   4. Ceiling grid.
   5. Coordination drawings of ceiling cavities and mechanical rooms demonstrating the spatial relationships and necessary clearances within the available space above ceilings and within rooms for HVAC, Electrical, Plumbing and Fire Protection structural systems.
   6. Wall to wall dimensions.
   7. Partition layouts.
   8. Windows, doors and other openings.
   9. Heights from ceiling to structural components.

10. Dimensions from column centerlines.
11. Other appropriate building features.

E. Upon receipt of layout CAD files, each contractor shall proceed immediately and independently to indicate their work as overlays on the CAD files. This work shall be done within the next 5 days unless otherwise agreed upon by the Construction Manager.

F. The drawing layout prepared by each contractor shall be transmitted to HVAC contractor and other contractors for comment and adjustments.

G. Coordination meetings will be held, and all contractors will be required to attend and cooperate. Changes shall be made as requested by HVAC contractor. This process shall take up to 30 days.

H. Contractors shall also prepare additional CAD drawings as necessary to adequately and completely show the intended routing and layout of their work. Additional drawings may include riser diagrams, flow sheets, elevations, details, sections, isometric layouts, etc. as determined by the HVAC contractor and the Architect.

I. The Prime Contractor responsible for Work in each of the following categories shall prepare or arrange for preparation of Coordination Drawings for the following systems:
1. HVAC systems
2. Plumbing systems
3. Fire protection systems including sprinklers
4. Electrical systems
5. Openings and sleeves in structural slabs
6. Ceiling systems

J. Include on Coordination Drawings the information listed below for each of the following categories of Work:
1. Mechanical Systems:
    a. Sizes and bottom/headroom elevations of new unit heaters.
    b. Weights of each unit and the proposed attachment structure.
    c. Locations of major components, including ductwork, piping, dampers, valves, diffusers, cleanouts, and electrical distribution equipment.
    d. Curb locations of penetrations through roofing assemblies.
2. Electrical Systems:
    a. Horizontal and vertical runs of conduit 1-1/4-inch diameter and larger.
    b. Light fixture locations and mounting type including bottom of fixture AFF.
    c. Smoke and Carbon Monoxide detector locations.
    d. Panel boards, switch boards, switch gear, transformers, busways, generator, and motor control center.
    e. Exit signs, strobe/horn, emergency battery pack locations, Fire Alarm Panels, and Generator annunciator panels.
    f. Pull box dimensioned from column centerlines.
3. Fire Protection Systems:
    a. Sizes and centerline elevations of sprinkler piping.
    b. Sprinkler head locations with elevations referenced to ceiling heights.
    c. Fire Pump Room Layout and Riser Diagram.
    d. Locations of major valves.
4. Structural Work:

a. Openings and sleeve locations required in slabs, walls, beams, and other structural elements, including required openings not indicated on Contract Documents.
b. Slab edge locations.

5. Elevated floor and roof Structure, Reflected Ceiling:
   a. Locations and attachment methods of mechanical, fire protection and electrical items, including grilles, registers, diffusers, light fixtures, smoke detectors, sprinkler heads, exit signs, speakers, and other items.
   b. Conform to locations indicated on Contract Drawings to the minimum extent possible.
   c. Indicate positions relative to acoustical ceiling grid where applicable.

K. HVAC Contractor shall assemble all information for final preparation and submission of integrated coordination drawings. This shall be done within 60 days of a fully executed contract for all areas of the building unless otherwise approved by Owner.

L. All communication related to coordination drawings must include the Construction Manager and Project Coordinator on said communication. This includes but is not limited to emails, document distribution in any format, and coordination meetings.

M. Any Contractor not complying with any of the coordination requirements including the timelines will be assessed $1,000.00 for each day that Contractor is not in compliance.

1.6 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Contract Documents contain a more specific description of the Work, names, and terminology on Drawings and in Specification Sections determine which contract includes a specific element of Project.
   1. Unless otherwise indicated, the Work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
   2. Local custom and trade-union jurisdictional settlements do not control the scope of the Work of each contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected contractors shall negotiate a reasonable settlement to avoid or minimize interruption and delays.
   3. Trenches are not to be left open unless they are enclosed by fencing or barriers.
   4. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of each contract for its own work.
   5. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work. Installation and finishing of access panels shall be the work of the General Contractor.
   6. Work involving a structural element shall be completed by the General Contractor.
   7. Roof Mounted Equipment Curbs for the work of Each Contract shall be the work of each contract. GC is responsible for all roof curb blocking. Flashing of Roof Mounted Curbs is by General Contractor.
   8. Painting for the work of each contract shall be the work of the General Contractor.
   9. Cutting and Patching – Provided under each contract for its own work. Exterior Patching of Penetrations through exterior assemblies shall be by General Contractor. Patching in finished surfaces to be the work of the General Contractor.
   10. Through-penetration fire-stopping and thermal insulation for the work of each contract shall be provided by each Contractor.

11. Dust and Smoke Control: Each contract shall be responsible for controlling dust and smoke production and distribution in occupied areas of the building that require work. Do not do work that produces dust, smoke or other airborne particulates without adequate control facilities. Protections include but are not limited to:
    a. HEPA vacuums to collect dust.
    b. Temporary dust enclosure.
    c. Negatively pressurize the space and exhaust to a location not disruptive to the Owner.
    d. Employ water spray for concrete saws.
    e. When using gasoline powered equipment inside an occupied building, this shall be limited to times when the building is not occupied. Alternatively use electric or compressed air powered equipment.
    f. Comply with all current OSHA requirements for smoke and dust control.
12. Protection of Ceilings: Each contract shall be responsible for removing, carefully storing, and reinstall ceilings in rooms with above ceiling work where new ceiling tiles have already been installed. Where ceilings are damaged, the cost of replacement or repairs will be divided equally between prime contractors with above ceiling work in that room.
    a. Where a Prime Contractor requires extended access above a newly installed ceiling, that Contractor shall coordinate with the GC to not install the permanent ceiling panels, and that contractor shall provide and install temporary ceiling panels in place of the permanent ceiling panels. Temporary ceiling panels can be salvaged from demolition work (if applicable), or reused from some other source, or may be the lowest cost panel available to that Contractor. When access is no longer required, that Contractor shall remove the temporary panels and coordinate the permanent installation of ceiling tiles with the GC.
13. Concealed sealants for the Work of each contract shall be provided by each contract for its own Work. Comply with Division 07 requirements for sealants.
14. Contractors' Startup Construction Schedule – Within ten (10) working days after initial Preconstruction Meeting horizontal bar-chart-type construction schedule submittal has been received from Project coordinator, submit a matching startup horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.
15. Permits and Inspections: The plans will be submitted to Exeter Township for a plan review by the Architect. Upon award, each successful prime contractor must complete any applicable permit forms (and business licenses if required) and submit to the Exeter Township and obtain the approved plans. Building permit and inspection fees will be paid for by the Owner. Any additional costs incurred due to failed inspections shall be paid by the prime contractor. Any required contractor or business license fees required by the municipality are to be paid for by each prime contractor.
16. See the “Construction Milestone Schedule” for mandatory, contractual, completion dates through the duration of the project. Schedule must be held. There will be no exceptions.
17. Each prime contractor is responsible for importing any and all material required for their work including cost of the material, hauling placement and compaction.
18. All utility company tap-in or new service fees such as electric; natural gas; sanitary sewer and water service are to be paid for by the Owner.
19. Construction testing shall be provided by the Owner.
20. HVAC Testing, adjusting and Balancing and Commissioning Verification shall be provided by the Owner. Each Contractor is responsible for the startup, initial balancing, and commissioning of their equipment and systems.
21. Each prime contractor is responsible for offsite storage of their own materials. Onsite storage may only be permitted as space allows. Construction Manager will approve storage locations. Construction Manager reserves the right to deny use of storage.

22. Each prime contractor shall be responsible for their own daily clean-up.
23. Each prime contractor shall remove all packaging or protective film on all of their finishes just prior to final cleaning.
24. Each prime contractor is responsible for their own as-built drawings to include final CAD file as-built drawings.
25. Each and all primes are responsible for all drawings for coordination and layout purposes.
26. Contractor shall be required to conduct his activities in a safe manner and shall be responsible for observing the safety requirements of OSHA and local life safety agencies.
    a. Comply with all applicable laws, ordinances, rules, regulations, and orders of the governing authorities having jurisdiction for safety of persons and property to protect them from damage, injury and/or loss.
    b. Erect and maintain as required by conditions and progress of the work, all necessary safeguards for safety and protection, including fences, railings, barricades, lighting, posting of danger signs and other warnings against hazards.
    c. Be solely responsible for initiating maintaining and supervising all safety precautions and programs in connection with the project.
    d. Where noxious or nuisance fumes and odors occur due to construction processes, the contractor shall take every precaution to inform occupants of adjacent buildings and shall take every precaution to prevent the fumes or odors from penetrating the adjacent building. Precautions may include but are not limited to sealing vents and louvers and providing fans to direct odors away from the occupied areas. Contractor shall coordinate with the Construction Manager and Owner minimum of 72 hours prior to beginning such processes.
27. Non-compliance by any Prime Contractor with the agreed upon schedule that results in delays of the project schedule and results in additional time expenditure and/or additional Work for any other Prime Contractor shall result in a Change Order to the offending Prime Contractor. It shall be the responsibility of the affected Prime Contractors to provide proof of delay resulting in additional time and Work as back-up upon issuance of a Change Order Request for the delay caused by another Prime Contractor. The Change Order Requests accompanied by acceptable back-up from the affected Prime Contractors shall be the basis to establish the Change Order issued to the offending Prime Contractor. The Construction Manager will review all information regarding schedule delays and determine fault and accuracy of all claims made.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.
    1. The General Construction Contract shall coordinate applicable substitutions by other contractors.

C. Each Prime Contractor responsible for installation of the systems and equipment is responsible for commissioning each system. The minimum commissioning requirements in accordance with Division 01 and other specific project requirements, including coordination and verification, shall be the responsibility of the Contractor.

D. Each Prime Contractor is responsible for coordinating, installing, maintaining, and removing all Temporary Facilities & Controls as outlined in Division 01 Section 015000 "Temporary Facilities and Controls".

1.7 MULTIPLE PRIME COORDINATION CLARIFICATIONS

A. General Contractor shall furnish and install all lintels and structural supports required for openings and recesses to allow the passage of the Work of his Contract and the Work of the Plumbing, Fire Protection, HVAC, and Electrical Prime Contracts.

B. To the extent that the work of all of the contracts represents a complete and integrated whole, each Prime Contractor shall become thoroughly familiar with all of the construction documents. Work of a particular contract shall be substantially located on the documents referenced below, but such references do not relieve each Contractor for responsibility to provide work in compliance with requirements on all of the documents as follows:
   1. Information contained on any construction document shall be enforceable on each Contractor as indicated on drawings and specifications, by reference to contractor designations (SC, GC, MC, PC, FPC, and EC).
   2. Dimensional information on the Architectural, MEP/FP and Site drawings that relates to the work of a particular contract shall be the responsibility of that Contractor to install the item where located. In the absence of specific dimensional information on the Architectural, MEP/FP and Site plans for exposed items provided by the HVAC, Plumbing, Fire Protection and Electrical Contracts, consult Architect, Engineer, or Construction Manager for decisional requirements before installing exposed item.
   3. In case of conflicts, assignment of responsibilities shall be at the sole interpretation of the Architect, Engineer, or Construction Manager.

C. General Contractor shall provide chases and openings 12” x 12” or larger for equipment in new and existing construction, including all roof areas, as directed, supervised, located, marked, and configured within the project structure, by the Plumbing, HVAC, and Electrical Prime Contractors' personnel onsite. These openings shall be sealed by the prime contractor requiring the opening until permanent equipment is in place and flashings are installed by the GC. All sleeves, conduits, and sealing of the same shall be furnished and installed by the prime contractor that requires the access for installation of systems. Roofing Subcontractor to the GC shall perform cutting and patching of roof materials as directed by the other Prime Contractors for the implementation of their work.

D. The Prime Contractors shall be responsible to seal all roof openings. GC and Roofing Subcontractor are responsible up to curb flashings. The HVAC Contractor shall layout all openings and curbs and shall furnish all roof curbs to GC for installation. GC shall provide all blocking and accessories to install curb(s). Roofing subcontractor will provide all permanent roofing and flashing to the curbs. HVAC Contractor is responsible to seal any temporary or permanent openings and install new equipment keeping the opening watertight at all times.

E. During placement of concrete slabs, each Prime Contractor that has rough-in requirements in the slab shall provide on-site personnel while slabs are being poured to direct, supervise, locate, mark, and configure rough-in requirements. Sleeves required for floor, wall, and roof penetrations shall be furnished and installed by the Prime Contractor(s) that require the sleeves. The Prime Contractor using the sleeves is responsible for installing sealant, fire-safing, and/or escutcheons necessary for a finished installation.

F. Prime Contractors who fail to properly coordinate their work in new construction work and whose work requires an opening, or recess, in completed construction shall be responsible to provide that alteration; to furnish and install lintels and structural supports required; and to patch the construction to match the completed unaltered.

G. General Contractor shall apply sealant around wall mounted outside air intake louvers provided and installed by the HVAC Contractor.

H. Site Contractor shall provide sanitary sewer system from a point five feet outside the perimeter of the building, unless noted otherwise. Plumbing Contractor shall provide sanitary system within building, including underground to a point five feet outside the building perimeter, unless noted otherwise, and shall make final connection to sanitary system.

I. General Contractor shall provide building exterior stormwater conveyance including exterior gutters and downspouts, and make final connections to boots. GC to coordinate with SC for downspout and boot locations. SC will install all exterior storm piping up to and including boot locations for downspout connections. Site Contractor shall provide below grade drainage as shown on the Civil drawings.

J. Site Contractor shall provide domestic and fire suppression water supply system into the Water/Sprinkler Room from Meter Pit. Plumbing Contractor shall provide plumbing water supply system within building and underground from riser in the Water/Sprinkler Room. The Fire Protection Contractor shall provide fire suppression system within building from riser in the Water/Sprinkler Room.

K. Interior concrete bases and pads required for plumbing, fire suppression, heating, ventilation, and air conditioning, and electrical equipment shall be provided by the General Contractor and coordinated with the contractor installing the equipment unless noted otherwise.

L. Site Contractor shall provide exterior concrete pads and bases with exception of exterior light bases and transformer vault. Exterior light pole bases and transformer vaults are provided by the Electrical Contractor and installed by the Site Contractor. Site Contractor will install the generator pad and coordinate with Electrical Contractor for all layout.

M. HVAC and Plumbing Contractors shall provide control interlock wiring for their associated system equipment.
   1. The MC, PC, FPC and EC shall be responsible for coordinating watertight conditions for all roof penetrations and openings that are part of their scope with the GC. GC is responsible for maintaining all watertight conditions.
   2. Electrical Contractor shall provide disconnect switches for HVAC and Plumbing system equipment except where such items are factory installed as an integral part of the equipment.
   3. Electrical Contractor shall provide manual motor starters, or magnetic motor starters, for HVAC and Plumbing equipment except where such equipment is provided with factory installed starters as an integral part of the equipment or equipment control panel. Variable frequency drives shall be an integral part of HVAC equipment and HVAC variable speed pumping package.
   4. Electrical Contractor shall provide fuses for disconnects and disconnect/starter switches. HVAC and Plumbing Contractors shall furnish the Electrical Contractor with required motor data to properly size and select fuses and overload protection in accordance with the National Electrical Code requirements. HVAC and Plumbing Contractors shall furnish to the Electrical Contractor the equipment manufacturers' circuit protection data.
   5. Where fireproofing is indicated for the project, each Prime Contractor shall install clips, hangers, supports, sleeves, runners, and other items required prior to installation of fireproofing. Each Prime Contractor shall protect fireproofing material; damages to fireproofing shall be repaired by the General Contractor and charged to the Prime Contractor responsible for the damage; this includes items installed out of sequence.
   6. Plumbing, Fire Protection, HVAC, and Electrical Contractors shall provide miscellaneous steel members for support of hanging systems installed under their contract and shall reinforce joists for non-panel point concentrated loads. When running parallel to joists, hanging systems shall be supported from steel installed perpendicular to joists and spanning a minimum of three (3) joists. All miscellaneous steel required shall be provided by contractor installing the systems under their contract; do not use joists for support. Supporting from metal roof deck and deck systems is prohibited.
   7. HVAC Contractor shall set controls, panelboards, and appurtenances installed in pipelines and ductwork and shall provide control wiring.

8. Electrical Contractor shall provide devices, wiring within casework, and final connections for casework as provided for in the Contract Documents.
9. Plumbing Contractor to provide all fixtures, traps, etc. to provide all installation and final connections of sinks, faucets, and fittings. Coordinate this work with the General Contractor as provided in the contract documents.
10. Fire Protection Contractor to coordinate tie-in of sprinkler system to fire alarm system with Electrical Contractor. Fire Protection Contractor to provide flow and tamper switches for connection to fire alarm system.
11. Plumbing, HVAC, and Electrical Prime Contracts shall furnish any access panels which are required for access to their work. Coordinate opening requirements with the General Contractor for installation by GC.
12. General Contractor to furnish and install all exterior Architectural vents and louvers.
13. The disconnection and/or reconnection of existing equipment shall be by the Plumbing/ HVAC/ Electrical Contractor as applicable.

N. All roofing work will be performed by GC:
1. GC shall coordinate all work in accordance with project scheduled activities of all other contractors. GC shall perform cutting and patching of all roofing materials including concrete and metal deck. Any structural reinforcement required is by the General Contractor.
2. The GC shall be responsible to maintain watertight conditions between the roof and curbs, pipes and conduits for both permanent and temporary flashing. The MC, PC, FPC and EC shall be responsible for providing temporary enclosures that are watertight for all roof penetrations and openings that are part of their scope in order to maintain watertight conditions beyond the roofer's flashings. GC is responsible for installing all required leveling blocking for curbs. HVAC to furnish and install curbs and layout. GC is responsible for curb flashing.
3. Reference Article 1.7.B of this Section for additional requirements.

O. BUILDING PAD - Building pad shall be priced and procured as follows:
1. SC shall provide building pad at Finish Floor minus concrete slab and stone thickness.
2. GC will then sign-off and approve of the Pad.
3. GC will install footings and foundations. GC is responsible for back fill, compaction, and restoration of the pad.
4. MEP primes will then sign-off and approve the slab.
5. MEP trades will install underground rough-ins. MEP trades are responsible for back fill, compaction, and restoration of the pad.
6. GC will then sign-off and approve the slab.
7. The MEP trades are responsible for any concrete required for their trenches, drains, or conduits.
8. Each trade (GC or MEP) is responsible for dewatering for its own construction activities.
9. GC will stone the building pad and prepare, as required, for pours.
10. GC to coordinate the installation of tie-rod or hair pins (if required) with the MEP trades.

1.8 MULTIPLE PRIME COORDINATION FOR ELECTRONIC/ELECTRIC TEMPERATURE CONTROLS, DIVISION 23

A. The HVAC Contractor is defined herein to include the work of the Mechanical Contractor, H.C., M.C., ATC Sub-Contractor, and/or BAS Contractor.

B. The HVAC Contractor shall provide wiring, fiber, and data cable between all Ethernet Network Controllers Standalone Digital Control Units, workstations, software, sensors, transducers, relays, valves, dampers, damper operators, control panels, and other accessory equipment, along with a complete system of electrical interlocking wiring to fill the intent of the specification and provide for a complete and operable system as specified in Division 23.

C. The Electrical Contractor shall provide electric power wiring to new plumbing and HVAC equipment. HVAC Contractor shall provide electric power wiring and control wiring for ATC equipment and devices.

D. The Electrical Contractor shall furnish duct smoke detectors. The Mechanical Contractor shall install duct detector in ducts. The Electrical Contractor shall wire the duct smoke detectors to the fire alarm system. The Electrical Contractor shall provide fire alarm relays adjacent to the mechanical equipment, and the Mechanical Contractor shall wire to the ATC/BAS system to de-energize the fan.

E. The Electrical Contractor shall provide the kW/KWH transducer specified at each secondary metering location if required. The HVAC contractor shall provide control wiring to the points specified.

F. The Electrical Contractor shall provide auxiliary contacts on generator/transfer switch as required in the points list in Division 23. The HVAC Contractor shall provide control wiring to the points.

G. The HVAC Contractor shall provide all interlock wiring specific to equipment.

1.9 SITE CONSTRUCTION CONTRACT (SC)

A. The Work under the Site Construction Contract includes all construction and other activities traditionally recognized as site work required by any of the Contract Documents including, but not limited to, the site drawings, specification Divisions 00, 01, 31, 32 and 33 except when specifically assigned to another contract for construction. Work in the Site Construction Contract includes, but is not limited to, the following:
   1. Work not identified as work under other contracts.
   2. Site Preparation including demolition, clearing, grubbing, and earthwork.
   3. Utility installation to inside the building pad at ultimate location shown on the MEP and FP Drawings and coordinated with MEP and FP Contractors for final layout. Excavation for all conduits and concrete pole bases. Trenching, stone base, and backfill for MEP Primes outside of building pad. All Primes to furnish and install any necessary conduits, piping etc. Site Contractor to coordinate with all other primes for trenching and backfill work. Utility Installation clarifications are as follows:
      a. Installation of underground storm piping and connections for downspout locations is by the SC. This includes all work from tie-ins to the main storm water runs to the building including the cast boot at grade where downspouts will tie-in. GC will make final connection of downspouts to cast boot. Coordinate all connection points of downspouts with GC.
      b. Installation of all sanitary piping and connections to include the installation of the oil/sand separator. PC will install all piping and connections from the building to the oil/sand separator.
      c. Installation of sanitary piping from valve location behind curb on the site to five feet outside the building. PC will bring sanitary to the exterior of the building and make final connections.
      d. PAWC (Utility Provider) will install all sanitary piping and structures in the public right of way to inside the curb line as shown.
      e. PAWC (Utility Provider) will install all water piping and structures in the public right of way and will also install the water meter pit. SC will install all water piping from the water meter pit to the Water/Sprinkler Room including the installation and testing of the riser in the Water/Sprinkler Room.

f. Installation of gas pipe casing/conduit/sleeves from the building and meter piping riser location to outside edge of driveway. UGI will install gas piping in right of way to include the service to the building inside the installed sleeve from the SC. UGI will conduct all excavation, installation, and backfill in the right of way. Refer to Civil plans for gas piping details and profiles.

4. Establishment of building pad to be provided at Finish Floor minus concrete slab and stone thickness.
5. All storm water systems to include piping, structures, and underground and or infiltration basins.
6. Construction of all new concrete curbs and sidewalks. Including subbase, ramps, and detectable warning surfaces.
7. Landscaping, seeding, topsoil, and mulching. SC is responsible for irrigation for complete stabilization until NOT is received for NPDES permit.
8. Existing Irrigation Line to the neighboring golf course on the South East corner of the site will be relocated by others. SC is required to coordinate all work in this area and confirm relocation has been completed prior to work taking place in this location.
9. Subbase stone and asphalt paving.
10. Subbase stone and concrete paving.
11. Parking bumpers/curb stops.
12. Excavation, grading, cut/fill, export, import, amended soils. All Earthwork responsibilities.
13. Line striping.
14. Fencing, gates, and operators. Coordinate all access control and power connections with EC and Access Control Vendor.
15. E&S Controls and maintenance thereof.
16. Post-mounted signage, and signals. Include temporary traffic signals and controls as required for new installation.
17. Grass cutting and maintenance from start of project through NOT.
18. Dumpster enclosure bollards and concrete only.
19. All Bollards.
20. SC is responsible for capping, rolling, and crowning site grade for positive flow of rain water until building pad is established.
21. Testing required for all water and sewer lines. Including videoing for all storm sewer, sanitary and water piping. Final cleaning of all storm piping prior to turnover to the Owner.
22. Concrete pads for all equipment including generator pad and excluding work under GC Contract.
23. Trenching, stone base and backfill for all Site electrical & data distribution including all conduit & pull boxes installations.
24. Site Contractor shall provide below grade drainage as shown on the Civil drawings.
25. Coordinate with all Owner's Vendors equipment. Review Owner's Vendors Equipment in Information to Bidders for items to be included in Bid.

1.10 GENERAL CONSTRUCTION CONTRACT (GC)

A. The Work under the General Construction Contract includes architectural and structural construction, and other activities traditionally recognized as general construction required by any of the Contract Documents including, but not limited to, the architectural and structural drawings, specification Divisions 00, 01, 03 through 14, except when specifically assigned to another Contract for construction. Work in the General Construction Contract includes, but is not limited to, the following:

1. Work not identified as work under other contracts.
2. All work shown on structural plans, all duct chases, and platforms. This includes all steel and miscellaneous metals construction.

   a. Upon issuance of the Letter of Intent to Award to the Electrical and General Construction Prime Contractors, the Owner and Construction Manager request that the following submittals be provided for review due to anticipated lead times: Structural Steel, Pre-Engineered Metal Building System, Generator, and Automatic Transfer Switch (ATS). Submission of these items prior to contract execution shall be at the Prime Contractor's sole risk. Following issuance of the Notice to Proceed, the Prime Contractor may submit payment applications for reimbursement of approved costs associated with these submittals.
3. Dumpster Enclosure Privacy Slatted Fence and Posts. GC to coordinate install with SC for installation of post foundations and under slab work prior to concrete paving installation.
4. Foundations, including footings, foundation walls and column piers.
5. Slabs-on-grade, including earthwork, sub drainage systems, and insulation.
6. All concrete pads for all work including pads for all other primes within the building footprint.
7. Below-grade building construction, including excavation, backfill, and thermal and moisture protection.
8. Superstructure, including floor and roof construction.
9. Pre-Engineered Metal Building Structure including all hairpins, grade beams and footings.
   a. The Construction Manager and Owner are requesting the General Construction Contractor provide submittals for the Pre-Engineered Metal Building System upon receiving their Letter of Intent to Award due to lead times. Submission of these items prior to contract execution shall be at the Prime Contractor's sole risk. Following issuance of the Notice to Proceed, the Prime Contractor may submit payment applications for reimbursement of approved costs associated with these submittals.
10. Insulation and fireproofing. GC to provide rated joints and assemblies outside of individual MEPF contractor firestopping of penetrations.
11. Exterior closures, including walls, doors, garage doors, four-fold doors, windows, sheathing, thermal and moisture protection and exterior finishes.
12. Masonry work to include all accessories and grout.
13. Exterior patio seat wall to include all excavation, concrete, masonry, and backfill. Coordinate all rough-ins for gas and electric with PC and EC.
14. Rough and finish carpentry.
15. Framing for all roof and floor openings and supported equipment, including coordination for all roof work.
16. General Contractor shall provide all door louvers.
17. All roofing, gutters and downspouts, roofing accessories, all blocking required for installation of roof curbs, and final flashing to roof curbs.
18. Interior construction, including partitions, insulation, doors (wood, hollow metal, aluminum, etc.), fittings, finishes, hardware, and glazing.
19. General floor flash patching and leveling.
20. Fire suppression specialties and fire-rated framing and glass.
21. Stairs, including railings and finishes.
22. General Contractor to clean and provide final polishing of terrazzo floors as indicated on the Construction Documents.
23. Finishes to include all flooring and floor systems, painting and coatings, countertops, lockers, tiling, wall coverings, corner guards, FRP, toilet accessories, toilet partitions, way finding signage and code signage.
24. GC is responsible for coordination and placement of 9/11 memorial steel. CG is responsible for providing memorial support structure and all miscellaneous features specified for a proper installation. Coordinate and confirm final placement with Construction Manager, Architect, and Owner.
25. Installation and finishing of access panels.

26. Installation of vendor supplied Antenna Mount for radio antenna. Complete all finishing and sealants on exterior of building for water tightness.
27. Furnishings, including casework, specialty casework, and window treatments.
28. Temporary fire protection including fire extinguishers.
29. Openings including windows, doors, and hardware. Provide all aluminum windows, storefronts, entrance doors, curtainwalls, glass, and glazing. Provide temporary opening enclosures as required.
30. Exterior Canopies and exterior Flagpoles. Flagpoles include foundations.
31. Monument Sign construction. Coordinate electrical with EC and Sign Vendor.
32. GC shall provide all final cleaning for move-in condition by the Owner. Final cleaning includes but is not limited to: removal of all debris; vacuuming of all floors; wet cleaning; ceramic floors mopped and cleaned accordingly; all fixtures cleaned and free of dust; all cabinets vacuumed of any dust or debris; all horizontal services wiped cleaned; all windows (glass and frames) cleaned inside and outside; all exterior surfaces cleaned and dirt free including sweeping and power washing as required.
33. Starting, commissioning, adjusting, and training of all General Construction systems and equipment in accordance with manufacturers' recommendations and in conjunction with Owner's Commissioning Verification and Testing Agent(s).
34. All drywall, metal studs, and insulation.
35. All acoustical ceilings and grid, and drywall ceilings.
36. All expansion joints and covers.
37. All interior and exterior building joint sealants.
38. Installation of manhole ring for training prop in Mezzanine floor.
39. Installation of Owner-furnished items as noted on the plans and specifications. ~~This includes but is not limited to motorized chain winches, magnetic white boards, roller shades, and blocking for TV/monitor locations.~~
40. Provide all blocking necessary to install Owner-furnished items.
41. GC shall perform cutting and patching of all roofing materials including concrete and metal deck. Any structural reinforcement required is by the General Contractor.
42. GC is responsible for all caulking and sealing of all penetrations, expansion joints and transitions between dissimilar materials.
43. GC is responsible to protect all adjoining properties and Owner's existing property exterior to the building. The GC shall video the property prior to construction to identify any areas of concern and also video the building and property upon completion. Any necessary repairs will be the responsibility of the GC.
44. GC is responsible for safe pedestrian access along the entire frontage of the building.
45. GC shall be responsible for all sprinkler head penetrations that relate to new Fire Protection drawings. FPC shall verify all locations prior to install.

1.11 HVAC CONTRACT (MC/HVAC)

A. The Work under the HVAC Construction Contract includes all construction and other activities traditionally recognized as mechanical work required by any of the Contract Documents including, but not limited to, the HVAC drawings, specification Divisions 00, 01, 03, 07, 11, 14, 23 and 31 except when specifically assigned to another contract for construction. Work in the HVAC Contract includes, but is not limited to, the following:
1. All Work as specified in the contract documents and shown on the Mechanical Drawings.
2. HVAC Systems and Equipment as shown and specified.
3. HVAC instrumentation and controls.
4. Starting, Commissioning, adjusting, and training of all HVAC equipment.

5. Coordination of HVAC commissioning, testing, adjusting, and balancing in conjunction with the Owner's Commissioning Verification and Testing Agent(s).
6. Coordinate work with all contractors including, but not limited to electrical, general, and plumbing contractors. Coordinate and confirm locations and rough-in for all work with all contractors. Make location adjustments as required.
7. All roof curbs and accessories for HVAC equipment including louvers and vents. MC shall furnish curbs and layout for installation by GC.
8. All exhaust air systems.
9. Mechanical connections to equipment furnished by other contracts including dryer vents.
10. Final low voltage wiring and electrical connections to all heating, ventilating and air conditioning equipment as required.
11. Preparation of ductwork and HVAC/Electrical coordination drawings.
12. Firestopping of HVAC work.
13. All new duct work must be professionally cleaned prior to turnover of the system to the Owner.
14. MC shall be responsible for the disassembling and reassembling of any equipment related to their scope of work that does not fit in the accessible routes (Doors, Elevator, Stairs to Attic Area).
15. MC shall be responsible for coordinating with Exeter Township, CM, and Architect on the requirements of having any reassembled equipment and following the UL Certification Guidelines.
16. MC shall be responsible for maintaining all warranties for any equipment that is disassembled and reassembled.
17. MC shall implement the certification schedules into the Project Schedule to prevent long lead times and any delays with startup dates.
18. The MC shall be responsible for coordinating with the scope of the FPC as needed.
19. Provide temporary heat, as required; refer to Section 015000.
20. Provide temporary dust and fume control machines as required.

1.12 PLUMBING CONTRACT (PC)

A. The Work under the Plumbing Construction Contract includes all construction and other activities traditionally recognized as plumbing work required by any of the Contract Documents including, but not limited to, the plumbing drawings, specification Divisions 00, 01, 03, 07, 11, 14, 21, 22 and 31 except when specifically assigned to another contract for construction. Work in the Plumbing Contract includes, but is not limited to, the following:
   1. All Work as specified in the contract documents and shown on the Plumbing Drawings.
   2. Domestic water distribution from riser in Water/Sprinkler Room including main water service systems.
   3. Plumbing fixtures including domestic water heater, combustion air, and vent.
   4. Sanitary waste piping, accessories, and complete systems within the building to outside perimeter wall connections. PC to install sanitary piping and connections to the oil/sand separator on site.
   5. Natural gas piping from meter through the entirety of the building and tie-ins to all equipment, fixtures, and appliances..
   6. Plumbing connections to equipment furnished by the General Construction Contract, Fire Protection Contract, HVAC Contract, and Electrical Contract.
   7. Plumbing Connections and installations required for Owner-furnished items as noted on the plans and specifications.
   8. Coordinate work with all contractors including, but not limited to electrical, general, fire protection, and HVAC contractors. Coordinate and confirm locations and rough-in for all work with all contractors. Make location adjustments as required.
   9. Firestopping of Plumbing Contractor Work.

10. Contractor shall include temporary feeds (including additional piping and valves) and connection to permanent system.
11. Perform all starting, commissioning, testing, adjusting, balancing, and training of all plumbing systems and equipment in accordance with the manufacturers' recommendations and in conjunction with Owner's Commissioning Verification and Testing Agent(s).
12. Coordinate with the EC on wiring and connections as needed.
13. All Plumbing fixtures as identified in the Contract Documents.
14. All devices such as hose bibbs, washing machine outlet box, water conditioner, water filter, and pet cock for icemaker.
15. Domestic water distribution.
16. Sanitary routing, waste, and vents.
17. Radon Piping and system as Delegated Design.
18. Low voltage final electrical connections to all plumbing contracts supplied electrically powered equipment.
19. New sanitary lines must be cleaned and videoed professionally prior to turnover of the system to the Owner.
20. Responsible for cutting, capping and or removing any existing lines (Copper, Steel, Aluminum Etc.) that are abandoned that interfere with any new construction and/or new equipment being installed.
21. Coordinate with all trades and to include the Owner and CM as needed.

1.13 FIRE PROTECTION CONTRACT (FPC)

A. The Work under the Fire Protection Construction Contract includes all construction and other activities traditionally recognized as fire protection work required by any of the Contract Documents including, but not limited to, the fire protection drawings, specification Divisions 00, 01, 03, 07, 11, 14, 21, 22 and 31 except when specifically assigned to another contract for construction. Work in the Fire Protection Contract includes, but is not limited to, the following:
   1. Fire suppression sprinklers including pumps, sprinkler piping, heads, flow and tamper switches, corrosion mitigation system, trim, accessories, and support.
   2. Fire suppression hydraulic calculations to size fire suppression system.
   3. Professional engineered fire suppression drawings for submission to the Township and permit.
   4. Perform all required Fire Protection system flushes and fills as required.
   5. FPC shall coordinate with the GC on all penetrations for new and existing sprinkler heads.
   6. Firestopping for Fire Protection Contractor Work.
   7. Perform all starting, commissioning, testing, adjusting, balancing, and training of all fire protection systems and equipment in accordance with the manufacturers' recommendations and in conjunction with Owner's Commissioning Verification and Testing Agent(s).

1.14 ELECTRICAL CONTRACT (EC)

A. The Work under the Electrical Construction Contract includes all construction and other activities traditionally recognized as electrical work required by any of the Contract Documents including, but not limited to, the electrical drawings, specification Divisions 00, 01, 03, 07, 08, 11, 12, 14, 26, 27, 28, 31 and 33 except when specifically assigned to another contract for construction. Work in the Electrical Contract includes, but is not limited to, the following:
   1. Site electrical distribution.
   2. Site lighting including site pole concrete footing and bases.
   3. Site conduits, ducts, handholes for lighting, power communications and security.

4. Electrical distribution.
5. Electrical grounding and bonding.
6. Lighting and power branch wiring.
7. Supply and Installation of generator systems, including automatic transfer switches and temporary generator connection equipment. Packaged Generator and ATS will be supplied by Owner through Co-operative Purchasing due to lead times. The Construction Manager and Owner are requesting the Electrical Contractor provide submittals for the Generator and ATS upon receiving their Letter of Intent to Award due to lead times. Submission of these items prior to contract execution shall be at the Prime Contractor's sole risk. Following issuance of the Notice to Proceed, the Prime Contractor may submit payment applications for reimbursement of approved costs associated with these submittals.
8. Digital clock systems and all required wiring.
9. Electrical connections to equipment furnished under other contracts.
10. Structural supports, hangers, sleeves and inserts for new electrical systems and components.
11. New sleeves through existing exterior walls for all electrical components.
12. Perform all starting, commissioning, testing, adjusting, balancing and training of all electrical systems and equipment in accordance with the manufacturers' recommendations and in conjunction with the Owner's Commissioning Verification and Testing Agent(s).
13. Luminaires, lighting controls and all accessories.
14. Fire detection and notification systems, including but not limited to smoke detectors, carbon monoxide detectors and horns/strobes.
15. Conduits and raceway for special systems as required.
16. Conduits and raceway for Owner Vendor systems as required.
17. Emergency lighting systems and exit signs.
18. Coordinate work with all contractors including, but not limited to plumbing, fire protection, general and HVAC contractors. Coordinate and confirm locations and rough-in for all work with all contractors. Make location adjustments as required.
19. Cable tray for all work as specified.
20. Spare site underground conduits with pull strings.
21. All rough-in including conduit, pull wire in conduit, and back boxes for all work.
22. Floor and wall boxes for all work.
23. Furnish and install all accessories, hangers, Velcro wraps, etc.
24. Provide electrical dimensions and drawings and assist HVAC Contractor in preparation of coordination drawings.
25. Firestopping of Electrical Contractor Work.
26. Furnish and install racks, patch panels, cross connect, and punch blocks.
27. Furnish and install wall jacks and face plates.
28. Provide equipment and all necessary wiring for interfacing of the following systems:
    a. HVAC equipment
    b. Temperature control
    c. Plumbing equipment
29. Coordinate utility transformer installation and all primary and secondary cable terminations with local utility.
30. Provide coordination, furnish and install conduit, duct banks, vaults, etc. for all power coming onto the site and all underground power to new transformer and electrical switchgear as shown on drawings and in compliance with Met-Ed requirements.

31. Coordinate work with all of the Owner's vendors and sub-contractors including, but not limited to Telecom, Security, and Audio Visual. Coordinate and confirm locations and rough-in for all work with all vendors and sub-contractors. Make location adjustments as required.
32. All work as shown on the Electrical drawings.
33. Site communications and security.
34. Special Electrical systems, including all conduit and pull strings for data connections.
35. High Voltage Electrical connections to equipment furnished by other contracts.
36. Receive, coordinate, install and connect Owner supplied items as identified. Electrical Connections and installations required for Owner-furnished items as noted on the plans and specifications.
37. Coordinate final connections and load bank test with Owner's vendor.
38. Coordinate electrical service to the building with Met-Ed. All work necessary to gain service to the building will be the responsibility of the EC.
39. EC to coordinate with FPC on Fire Protection. EC shall be responsible for reconnection to any boxes, wire pulls as needed. The EC shall be responsible for coordinating with the scope of the FPC as needed.
40. The EC is responsible for installing all equipment pertaining to their scope, it is the EC's responsibility for all means and methods of deliverables and to coordinate with the Manufacturer and County on mobilizing, disassembling, and reinstalling all equipment as needed. The EC shall be responsible for transporting all electrical equipment stored by the County to the site and assemble as needed.
41. EC shall be responsible for coordinating with Exeter Township, the CM and the Electrical Design Professional on the requirements of having any reassembled equipment and following the UL Certification Guidelines.
42. EC shall implement the certification schedules into the Project Schedule to prevent long lead times and any delays with startup dates.
43. EC shall lock out and tag circuit breakers and switches and shall check cables and wires to ensure they are de-energized to ground potential before Work begins.

1.15 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes providing support systems to receive Owner's equipment and making plumbing, fire protection, mechanical, and electrical connections.
   1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
   2. Owner will arrange and pay for delivery of Owner-furnished and contractor installed items according to Contractor's Construction Schedule.
   3. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
   4. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
   5. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
   6. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.
   7. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Architect, noting discrepancies or anticipated problems in use of product.
   8. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site if identified as a Contractor installed item.
   9. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.

10. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
11. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 1200

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SECTION 01 3117A - COORDINATION DRAWINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section and each Division 01 Section applies to all separate Prime Contracts.

B. This Section includes requirements for preparation of Coordination Drawings for structural, mechanical, plumbing, fire protection, and electrical work.

C. Related Documents and Sections: The following documents and Sections contain requirements that relate to this Section:
1. Division 01 Section 013100 “Project Management and Coordination” and Division 01 Section 011200 “Multiple Contract Summary” specify requirements for coordinating construction operations by the Prime Contractors.
2. Division 01 Section 013300 “Submittal Procedures”.
3. Division 01 Section 017123 “Field Engineering”.

1.3 DEFINITIONS

A. Coordination Drawings: Scaled drawings and Building Information Modeling files (BIM) prepared by each Prime Contractor which superimpose work of several trades, intended for careful coordination of installation of products and materials provided by separate entities.

B. Key Drawings: Two dimensional drawings of each floor or area of the Project indicating proposed subdivision into ductwork layout shop drawings.

C. Layout Drawings: Two and three dimensional architectural and structural backgrounds to be used by all Prime Contractors for development of Coordination Drawings.

D. Electronic Documents: Electronic reproductions and photocopy reproductions of contract drawings will not be accepted for shop drawing and product submittals by contractors. Refer to procedures for obtaining contract drawings for background use only and BIM Model for coordination purposes only. The Construction Documents and BIM Model shall not be construed as dictating the ways and means of construction.

1.4 COORDINATION DIGITAL DATA FILES:

A. Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings (Revit 2022) operating in Microsoft Windows operating system.
2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format and Navisworks File (NWC).
3. Architect and their consultants will furnish Contractor one set of Revit 2022 Building Information Modeling files (BIM) of Drawings for use in preparing coordination digital data files.

    a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    b. Digital Data Software Program: Drawings are available in Revit 2022 digital data software working on the windows operating system. Sheet views will be deleted to protect Architect and consultants. Full model will be available for coordination.
    c. Contractor shall execute Specification Section 013117B, 3D Computer Model Agreement, and additional releases that may be provided by the Architect prior to the transfer of files to the Contractor.

4. BIM File Incorporation: Develop and incorporate coordination drawing information into Building Information Model established for Project.

    a. Each of the Prime Contractors shall model their respective systems in the BIM Model that are part of their contract and provide updated files to the HVAC contractor.
    b. The HVAC Contractor (Prime Coordinator) shall perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts with each Prime prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect and obtain approval of Architect.
    c. HVAC contractor shall revise the BIM model as necessary to reflect the coordination changes. HVAC contractor shall pay for the cost of revisions to the BIM model. HVAC contractor shall include a separate minimum of 300 hours for specific changes to Architectural components of the BIM model provided by Architect as a result of supplemental instruction or other direction that is identified as a result of coordination. All modifications, enhancements, additions, and changes to structural, mechanical, electrical, plumbing, fire protection, or HVAC components shall be made by the respective Prime Contractors responsible for that system as part of their contract.

1.5 COORDINATION DRAWING PROCEDURES

A. General: Approval of Shop Drawings assumes satisfactory incorporation of coordination information.

B. Do not use Contract Drawings as Coordination Drawings.

C. Initial Submittal: Key Drawings & BIM layout drawings shall be submitted by HVAC Contractor within 60 calendar days of Contract Award.

D. Final Submittal: Submit final BIM layout drawings & Coordination Drawings 60 days after submission of Initial Submittal.

E. Provide Coordination Drawing initial submittals as follows:

1. Key Drawings: The HVAC Contractor shall prepare and submit Key Drawings consisting of scaled drawings in .pdf format of each floor or area of the Project indicating proposed subdivision into ductwork layout shop drawings, with applicable shop drawing numbers.
2. Review: The HVAC contractor shall conduct a Coordination Planning Meeting with all contractors and the Construction Manager to review the Key Drawings and determine adequacy of proposed layouts to cover the Project and the following:

    a. Sequencing and scheduling of Coordination Drawing production in relation to the Construction Schedule.
    b. Complex areas for which larger scale drawings and details will be required.
    c. Coordination Drawing format, text, title blocks, and Contractor coordination sign-off.

3. Layout Drawings: Upon acceptance of Key Drawings, HVAC Contractor shall prepare common BIM layout drawings of all architectural and structural backgrounds to be used by all Prime Contractors for development of Coordination Drawings. Include the following elements and information on Layout Drawings:

    a. Columns and beams.
    b. Ceiling heights.
    c. Ceiling dimensional layouts as shown on reflected ceiling plans.
    d. Acoustical ceiling grid.
    e. Wall-to-wall dimensions.
    f. Partition layouts.
    g. Windows, doors, and other openings.
    h. Other major architectural and structural features shown on General Construction Drawings.
    i. Indicate dimensions from column centerlines.
    j. Include space in title block for Contractor sign-off and shop drawing control number.

4. Drawing Format: Produce Layout Drawings in BIM format. The version of BIM software used to produce the layout drawings shall be at the discretion of the HVAC Contractor; however, any version used must be compatible with Revit 2022. The HVAC Contractor shall coordinate the modeling software he proposes to use with the other Prime Contractors. The HVAC Contractor shall distribute the layout drawings in BIM format to the following for their use:

    a. Architect.
    b. Construction Manager.
    c. General Contractor.
    d. HVAC Contractor.
    e. Plumbing Contractor/Fire Protection.
    f. Electrical Contractor.
    g. Subcontractors as deemed appropriate by the Construction Manager or Architect.

F. Coordination Drawing Preparation: Upon receipt of BIM Layout files, each Prime Contractor shall proceed immediately and independently to indicate the work included in their Contract:

1. Circle, highlight, or otherwise clearly indicate deviations from Contract Documents and state reasons for deviation.
2. BIM Standards: Comply with the following:

    a. Indicate pipes, conduits, and pipes with diameter of less than 6 inches with single lines.
    b. Indicate ducts and pipes with diameter of 6 inches and greater with double lines showing width to scale.
    c. Indicate busways to scale.
    d. Use competent BIM operator to develop Coordination Drawings in a clear, legible manner.
    e. The Owner, Construction Manager, and Architect shall have sole judgment as to acceptability of Coordination Drawings and adherence to expected standards.

3. Ductwork Drawings: Show all items included as part of ductwork system, including:

    a. Ductwork with insulation.
    b. Hangers.
    c. Equipment.
    d. Grilles, registers, and diffusers.
    e. Filters.
    f. Volume dampers.
    g. Fire dampers.
    h. Automatic control dampers.
    i. Duct smoke detectors.
    j. Access doors and other access requirements for maintenance.
    k. Location of ATC sensors and controllers.

4. Piping Drawings: Show all items included in piping systems, including:

    a. Piping runs with insulation.
    b. Hangers.
    c. Valves.
    d. Coils.
    e. Equipment.
    f. Sensors.
    g. Flow monitors.
    h. Access door locations and other access requirements for maintenance.

5. Plumbing and Fire Suppression Drawings: Show all items included for plumbing and fire suppression systems, including:

    a. All domestic water, fire suppression, rainwater, and sanitary piping including main and branch lines.
    b. Standpipes.
    c. Sprinkler heads.
    d. Valves.
    e. Fire hose cabinets.
    f. Inspector test assemblies.
    g. Drain outlets.
    h. Access door locations and other access requirements for maintenance.

i. Flow and tamper valves.

6. Electrical Drawings: Show items included in lighting and electrical power systems, including:

   a. Equipment.
   b. Panels.
   c. Boxes.
   d. Conduit runs.
   e. Light fixture locations and depths.
   f. Devices.
   g. Access door locations and other access requirements for maintenance.
   h. Cable trays.

7. Structural Drawings – Show all foundation and structural systems, braces, hangars, and connections.
8. Other contractors required to participate in coordination drawing program shall indicate their work on the BIM Layout Drawings as directed.
9. Additional Drawings: Each contractor shall prepare additional BIM drawings as necessary to show the intended routing and layout of their work adequately and completely. Additional drawings may include riser diagrams, flow sheets, elevations, details, sections, isometric layouts, etc. as determined by the Construction Manager or HVAC Contractor.
10. Scheduling: Time allotted for each contractor to develop their Coordination Drawings and schedule of coordination meeting will be determined by the HVAC Contractor and Construction Manager during the initial coordination planning meeting.

    a. Each Contractor's initial planning shall include preparing and coordinating not less than four (4) drawing areas per week or a greater amount if required. Project management time required to accomplish this schedule shall be included in Bid.
    b. Each Prime Contractor shall be responsible to provide sufficient staff at appropriate times to avoid delays in the coordination process.
    c. Coordination Drawing preparation shall commence as soon as final BIM layout drawings are submitted.

11. Interim Submissions: Coordination Drawings and Building Information Modeling files (BIM) shall be developed and submitted in the sequence directed, in sufficient time to avoid delay in the construction schedule. Partially completed Coordination Drawing submissions may be accepted in cases where complete data is not available, pending receipt of shop drawings. Leave sufficient space to incorporate missing information in subsequent submission; note such omissions and state reason for vacant area.

    a. When final information is available, promptly insert in Coordination Drawings. Submit complete set of Coordination Drawings covering all area once final information incorporated.

G. Coordination Process: Due to the complexity of the Project, coordination activities are anticipated to be a continuous daily operation. HVAC contractor and other prime contractors shall devote whatever is necessary to fulfill the requirements and to keep the process on schedule. HVAC contractor shall revise the BIM model as necessary to reflect the coordination changes. HVAC contractors shall pay for the cost of revisions to the BIM model.

1. Basis for Placement of Elements: Make every reasonable effort to retain the layouts, placements, and routings shown on the Contract Drawings. Deviations from Contract Drawings will be permitted only when no other resolution is deemed appropriate and only upon written approval of the Construction Manager and Architect.
2. Coordination Drawing Development: As Coordination Drawings are developed, each Prime Contractor shall check and adjust locations to avoid interferences. Highlight conflicts, particularly involving finish products, for discussion at coordination meeting. Minor variances from Contract Drawings in routing of ducts, pipes, and conduits may be made to avoid conflicts when mutually agreed, provided these variances do not alter the intended function or require an adjustment of the contract price.

    a. Do not change sizes, adjust location of exposed items, or expose items not shown exposed on Contract Drawings without approval of the Construction Manager or Architect.
    b. Do not revise any wall or chase locations, ceiling heights, door swings or locations, windows or other openings, or other features affecting the function or aesthetic effect of the building.
    c. Refer conflicts and interferences that cannot be satisfactorily resolved to the Architect for a determination through the use of an RFI.
    d. Coordination drawings shall follow the construction phasing drawing sequence.

3. Coordination Meetings: The HVAC Contractor and Construction Manager will schedule coordination meetings every two weeks, or as required, to review each contractor's layout drawings. All Prime Contractors, major trade contractors, and subcontractors, as required by the HVAC Contractor and Construction Manager, shall be represented at the meetings to review, and resolve conflicts and interferences.

4. Coordination Sequence:

    a. Structural detailer to complete structural model. Upon completion, in whole or by phase or area determined at the coordination meetings, this model shall be shared with the HVAC Contractor.
    b. HVAC Contractor to model all HVAC systems. HVAC to perform clash detection between HVAC, structural items, and ceiling systems. All clashes shall be resolved prior to proceeding.
    c. HVAC to provide all other prime contractors the coordinated Structural and HVAC models.
    d. All prime contractors to complete their 3D Models for their systems. Upon completion, provide model to HVAC contractor.
    e. HVAC contractor to combine all models and run clash detection to report all interferences. HVAC contractor to host coordination meetings as required to resolve all interferences with respective contractors.

5. Coordination Responsibility: **All Prime Contractors have collective responsibility to fulfill coordination requirements.** The HVAC Contractor and Construction Manager may require attendance at meetings on a daily or weekly basis, or as otherwise required, to maintain the Project schedule.

    a. If it becomes necessary to relocate any element due to failure of a Prime Contractor to coordinate the Work, the responsible Contractor shall bear the cost for such relocation, including costs for additional work performed by other Prime Contractors as a result of the responsible Prime Contractor's failure to properly coordinate.

b. Responsibility for the costs for any such additional work shall be as determined by the Construction Manager. In the event an agreement as to responsibility cannot be reached, the determination by the Construction Manager shall be final and binding.

H. Final Coordination Drawings: Once all necessary information has been added to the BIM Layout Drawings, the HVAC Contractor shall prepare a conformed file and review for clashes to be resolved. All clashes shall be addressed to create the final layout drawings and BIM Model. The HVAC Contractor (Prime Coordinator) shall perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts with each Prime prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect. Each Prime Contractor required to produce Coordination Drawings shall sign off on each of the other Coordination Drawings to indicate agreement and recognition of the indicated routing and layouts and the correlation with adjoining or contiguous work of all contracts.

1. After sign-off, no unauthorized deviations will be permitted. If deviations are made without consent of the Construction Manager or other affected Prime Contractors, the responsible Prime Contractor shall remove and correct the affected work at no additional cost to the Owner.
2. Final Submission: Following agreement and sign-off by all Prime Contractors, the HVAC Contractor shall submit the files of all the systems to the Architect for review as follows; one (1) electronic copy (.pdf) of all 2D drawings, one (1) Navisworks NWC file, and one (1) Navisworks NWF file of completed Coordination Drawings. Furnish one additional electronic copy (.pdf) to all other Prime Contractors and applicable subcontractors. Furnish one (1) electronic copy (.pdf), one (1) Navisworks NWC file, and one (1) Navisworks NWF file of completed Coordination Drawings to the Construction Manager. The files submitted shall note any conflicts or changes required that require further input or direction of Architect.

    a. Architect will review for resolution of conflicts and will process Coordination Drawings for general conformance with design only.

I. Shop Drawing Coordination: Shop Drawings produced separately from Coordination Drawings shall be reviewed by the submitting Prime Contractor in detail to assure conformance with coordination process. Included a statement and signature on shop drawings indicating contractor's review and conformance with Coordination Drawings.

1. Architect's or Construction Manager's review of shop drawings submitted during the coordination process will be considered independent of Coordination Drawing review and need not take into consideration information included on Coordination Drawings.
2. If changes resulting from shop drawing review affect work included in Coordination Drawings, the Prime Contractor submitting the shop drawing shall correct the Coordination Drawing, coordinate with affected Prime contractors, and resubmit for approval. Perform correction and coordination without delay or additional cost to avoid impacting the construction schedule.

J. Record Coordination Drawings: Each Prime contractor shall retain record copies of final Coordination Drawings and Building Information Modeling files (BIM) as a working reference. Any revision which may become necessary during the course of the Work shall be neatly and accurately recorded on the record copies by each Prime Contractor. Each Prime Contractor is responsible for maintaining record Coordination Drawings up to date.

1. Each Prime Contractor shall maintain one copy of record Coordination Drawings available at the site.

2. All changes in the Work of any Contract, whether or not associated with a change in cost, shall be recorded on the Coordination Drawings.
3. Coordination Drawings and any subsequent changes shall be incorporated into As-Built Drawings.

    a. Subject to approval of the Owner, Construction Manager, and Architect, final updated Coordination Drawings may be used for As-Built Drawings.
    b. As-Built Drawings shall also incorporate details of structural elements cut during construction and supplemental bracing or reinforcement.

K. Resolution of Conflicts: Where conflicts occur either on Coordination Drawings or during actual installation in the field, and they can be resolved by rerouting conflicting elements or installing risers, offsets, falls, curves, pull boxes, transitions, or other solutions, the affected Prime Contractor shall bear the expense of adjustments required, including costs for labor and material, and shall modify the Coordination Drawings to reflect the changes at no additional cost.

L. Managing as built and recording BIM Model: The HVAC Contractor shall periodically coordinate with each of the prime contractors the updates to the BIM Model and all the systems and components. The prime contractors are responsible for updating their model to reflect as-built information and provide this to the HVAC contractor for final model update. Any prime contractor who does not provide the revisions when requested will be subject to the assessment of costs to perform this work. The HVAC Contractor shall deliver a final and complete BIM model showing all as-built conditions at the completion of the project to the Architect and Construction Manager.

1.6 COORDINATION DRAWING CONTENT

A. The Prime Contractor responsible for Work in each of the following categories shall prepare or arrange for preparation of Coordination Drawings and 3D model for the following systems:

1. Kitchen equipment
2. HVAC systems
3. Electrical systems
4. Plumbing systems
5. Fire protection systems including sprinklers
6. Opening and sleeves in structural slabs and structural framing
7. Ceiling systems
8. Wall systems
9. Stage equipment

B. Include on Coordination Drawings and in 3D model the information listed below for each of the following categories of Work:

1. Food Service Equipment

    a. Locations and dimensions of food service equipment.
    b. Access panels and hatchway.
    c. Rough-in locations for mechanical and electrical services.

2. HVAC Systems:

a. Sizes and bottom elevations of rectangular ductwork.
b. Sizes and centerline elevations of round ductwork, piping, and conduit.
c. Acoustical lining in ductwork.
d. Identification of low, medium, and high-pressure ductwork.
e. Locations of major components, including dampers, valves, diffusers, cleanouts, and electrical distribution equipment.
f. HVAC and ATC Panels.

3. Electrical Systems: Equipment Control Panels

a. Horizontal and vertical runs of conduit 1-1/4-inch diameter and larger.
b. Light fixture location.
c. Smoke detector locations.
d. Speaker locations.
e. Panel boards, switch boards, switch gear, transformers, busways, generator, and motor control center.
f. System racks.
g. Exit signs, strobe/horn, and emergency battery pack locations.
h. Pull boxes dimensional from column centerlines.
i. Cable tray pathways.

4. Electrical Systems: Other

a. Lighting systems and fixtures.
b. Power systems, conduit, and cable tray.
c. Sound and other systems.

5. Plumbing and Fire Protection System:

a. Sizes and centerline elevations of sprinkler piping.
b. Sprinkler head locations with elevations reverenced to ceiling heights.
c. Locations of major valves. Test and drain ports.
d. All rainwater piping.
e. All plumbing piping including domestic water, sanitary, vent piping, and clean out locations.

6. Structural Work:

a. Openings and sleeve locations required in slabs, walls, beams, and other structural elements, including required openings not indicated on Contract Documents.
b. Slab edge locations.
c. Columns, beams, joists, hangars, connections, braces, and other structural systems.

7. Ceiling Systems:

a. Locations in ceiling of mechanical, fire protection and electrical items, including grilles, registers, diffusers, light fixtures, smoke detectors, sprinkler heads, exit signs, speakers, and other items.
b. Conform to locations indicated on Contract Drawings to the maximum extent possible.

c. Indicate positions relative to acoustical ceiling grid where applicable.

8. Wall Systems: All walls, chases, and other components.
9. Stage Equipment.

1.7 BIM MODELING CONTENT

A. See the attached summary from AIA Document G202-2013, Project BIM Protocol Form included as Specification Section 013117C that identifies the minimum expected Level of Development that contractors are responsible for to address and incorporate.

1.8 STRICT COMPLIANCE WITH COORDINATION REQUIREMENTS

A. Each Prime Contractor recognizes that they must cooperate and coordinate all of their work. Any Prime Contractor that does not comply with the established timelines and requirements for coordination will have their payment request withheld until the necessary work is completed. In addition, the Prime Contractor may be charged the costs for doing any coordination drawing or BIM Modeling that is part of their contract responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - PRODUCTS (Not Used)

END OF SECTION 01 3117A

3D Computer Model
User Release & Terms of Use Agreement

User Name:			
Project Name:	**Exeter Township Emergency Services Facility**	**Project No.:**	**25051.01/ 25-049**
PM Name:	**Rob Lenosky**		
Boyle Office	**3850 Sierra Circle, Suite 400 Center Valley, PA 18018**	**Date:**	**October 2026**

The 3D Computer Model for the Project is provided by the Architect, Construction Manager, and Owner to users (individually, a "User", or collectively, "Users") at the User's request subject to the terms and conditions stated below (the "Terms of Use"):

1. By opening the files provided, the User agrees that these terms apply to the 3D Model in its entirety, together with all of its component parts and data The User acknowledges that the requirements of these Terms of Use apply to all of User's principals, employees, and agents.

2. The 3D Model is made available to User solely for his convenience and for informational purposes only. The User is not to rely upon the 3D Computer Model and the data and/or information contained therein in preparing any of the coordination documents for the Project.

3. The User acknowledges that the Architect, Construction Manager, or Owner makes no representations or warranties, express or implied, regarding the 3D Computer Models, accuracy or completeness, or the data and/or information contained therein.

4. The User agrees that the use of the 3D Computer Model is solely at the User's risk and that the User assumes full responsibility and liability in connection with the User's use of the 3D Computer Model and the information and/or data contained therein. The User agrees that the Architect, Construction Manager, or Owner has no responsibility for any deficiencies, inaccuracies, errors, and/or omissions contained in the 3D Computer Model or the data and/or information contained therein. The Architect, Construction Manager, or Owner has no responsibility for any deficiencies or defects in the User's documents, work, and/or services resulting from the User's use of the 3D Computer Model in lieu of the Construction and/or Contract Documents for the Project.

5. The User acknowledges and agrees that:
   a. The use of the 3D Computer Model is not a substitute for professional judgment.
   b. The use of the 3D Computer Model does not relieve the User from applying the appropriate standard of care and skill relevant to the use of the 3D Computer Model and its contents.
   c. The 3D Computer Model is only to be used as a tool to assist the User in connection with the Project.
   d. The User is solely responsible for verifying the accuracy of all results created with the use of the 3D Computer Model; and
   e. The Architect, Construction Manager, or Owner is not responsible or liable for the means and methods of construction and the User's use of the 3D Computer Model shall in no way give rise to any responsibility or liability by the Architect, Construction Manager, its consultants, or the Owner.

6. The Architect, Construction Manager, Owner, and its consultants specifically disclaim all warranties whether expressed, implied, or statutory including, without limitation, all warranties of merchantability, title, fitness for a particular purpose, constructability, non-infringement, compatibility, security or accuracy and users' use of the 3D Computer Model is at its own risk. User assumes full responsibility and risk of loss resulting from use or inability to use the 3D Computer Model or its content.

7. The User further agrees that the 3D Computer Model contains information that is confidential and proprietary to the project, and that the Architect retains the copyright and all other reserved rights in the work product reflected in the 3D Computer Model that was prepared by the Architect or its consultants for the Project. The Architect, Construction Manager, and Owner grant the User a non-exclusive, non-transferable royalty-free license to use the 3D Computer Model for informational purposes only in connection with the Project in strict accordance with these Terms of Use. The User agrees that the 3D Computer Model will be used solely and exclusively for the Project and that it will not use the 3D Computer Model and the data and/or information contained therein, in whole or in part, for any purpose or project other than the Project. The User further agrees that the 3D Computer Model will continue to be kept confidential by the User, and that it shall not be disclosed in any manner, transferred, or exchanged to any third parties by the User without the express written consent of the Architect, Construction Manager, and Owner.

8. Upon completion of the User's involvement with the Project or at any time upon written request of the Architect, Construction Manager, or Owner, the User shall promptly deliver to the Architect, Construction Manager, or Owner the 3D Computer Model and any other material containing or reflecting any information or data in the 3D Computer Model (whether prepared by the Architect, the User, or otherwise) and will not retain copies, extracts, or other reproductions, tangible or intangible, in whole or in part of the 3D Computer Model. The User's non-disclosure and non-use obligations set forth herein shall survive the return, destruction, or deletion of the 3D Computer Model. If the User becomes legally compelled, by subpoena or court order, to disclose the 3D Model, or any information contained therein, the User shall provide the Architect, Construction Manager, and Owner with prompt notice.

9. User hereby agrees that the Architect, Construction Manager, and Owner shall be entitled to equitable relief, including injunction, in the event of any breach of the Terms of Use, including without limitation its obligations to maintain the confidentiality of the 3D Model, that the granting of such relief will not be opposed and that such relief shall not be the exclusive remedy for such breach. The Architect, Construction Manager, or Owner's failure to insist upon strict adherence to any term of these Terms of Use shall not be considered a waiver thereof or deprive the Architect, Construction Manager, and Owner of the right subsequently to insist upon strict adherence to that term or any other term of this Terms of Use.

10. The User hereby agrees, to the fullest extent permitted by law, that in no event shall the Architect, Construction Manager, or Owner be liable to User for any damages or losses of any kind including, but not limited to, damages for death or bodily injury to persons, injury to property, and direct, indirect, consequential, special, or incidental damages resulting from any error, omission, inaccuracy, deficiency or defect in or problem with, the 3D Computer Model or the data and/or information contained therein.

11. The User agrees that in the event the User, its officers, directors, shareholders, partners, agents, employees, consultants, or independent contractors use the 3D Computer Model or the information and/or data contained therein, it shall, to the fullest extent permitted by law, defend, indemnify, and hold the Architect, Construction Manager, and Owner and their respective officers, directors, shareholders, partners, principals, consultants, agents, and employees harmless from and against any and all actions, damages, demands, claims, suits, losses, liability, judgments, recoveries, costs, and expenses including, but not limited to, reasonable attorney's fees which any of them may incur in connection with, arising from, resulting from, or related to any use of the 3D Computer Model or the

data and/or the information contained therein by the User or any third party who receives the 3D Computer Model from the User. Such claims include, without limitation, any claim which may arise due to deletions, omissions, or variations of data due to mechanical or technical failure in connection with the transmission of the 3D Computer Model.

12. The User further agrees to obligate any contractor, consultant, or other party who uses the 3D Computer Model to be bound by the terms and conditions contained herein. Any User's use of the 3D Computer Model and the information and/or data contained therein constitutes such User's acceptance of all the terms here specified.

AGREEMENT APPROVAL and DISTRIBUTION

USER: Project Manager or Principal-in-Charge Signature **Date**

Printed name and title

Company Name

Address

Phone Number

Email Address

3D Computer Model
User Release & Terms of Use Agreement

User Name:			
Project Name:	**Exeter Township Emergency Services Facility**	**Project No.:**	**25051.01/ 25-049**
PM Name:	**Rob Lenosky**		
Boyle Office	**3850 Sierra Circle, Suite 400 Center Valley, PA 18018**	**Date:**	**October 2026**

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2. The 3D Model is made available to User solely for his convenience and for informational purposes only. The User is not to rely upon the 3D Computer Model and the data and/or information contained therein in preparing any of the coordination documents for the Project.

3. The User acknowledges that the Architect, Construction Manager, or Owner makes no representations or warranties, express or implied, regarding the 3D Computer Models, accuracy or completeness, or the data and/or information contained therein.

4. The User agrees that the use of the 3D Computer Model is solely at the User's risk and that the User assumes full responsibility and liability in connection with the User's use of the 3D Computer Model and the information and/or data contained therein. The User agrees that the Architect, Construction Manager, or Owner has no responsibility for any deficiencies, inaccuracies, errors, and/or omissions contained in the 3D Computer Model or the data and/or information contained therein. The Architect, Construction Manager, or Owner has no responsibility for any deficiencies or defects in the User's documents, work, and/or services resulting from the User's use of the 3D Computer Model in lieu of the Construction and/or Contract Documents for the Project.

5. The User acknowledges and agrees that:
   a. The use of the 3D Computer Model is not a substitute for professional judgment.
   b. The use of the 3D Computer Model does not relieve the User from applying the appropriate standard of care and skill relevant to the use of the 3D Computer Model and its contents.
   c. The 3D Computer Model is only to be used as a tool to assist the User in connection with the Project.
   d. The User is solely responsible for verifying the accuracy of all results created with the use of the 3D Computer Model; and
   e. The Architect, Construction Manager, or Owner is not responsible or liable for the means and methods of construction and the User's use of the 3D Computer Model shall in no way give rise to any responsibility or liability by the Architect, Construction Manager, its consultants, or the Owner.

6. The Architect, Construction Manager, Owner, and its consultants specifically disclaim all warranties whether expressed, implied, or statutory including, without limitation, all warranties of merchantability, title, fitness for a particular purpose, constructability, non-infringement, compatibility, security or accuracy and users' use of the 3D Computer Model is at its own risk. User assumes full responsibility and risk of loss resulting from use or inability to use the 3D Computer Model or its content.

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AIA® Document G202™ – 2013

Project Building Information Modeling Protocol Form

PROJECT: *(Name and address)*
Exeter Township
Emergency Services Facility
70 Gibraltar Road
Reading, PA 19606

PROTOCOL VERSION NUMBER: « 1 »
DATE: «October 2026»
PREPARED BY: «Boyle Construction, Inc. »
DISTRIBUTION TO: *(List each individual to whom this protocol is distributed. Include individuals listed in Section 1.1, or reference Section 1.1, along with any additional recipients.)*
«1. **Architect:** MW Studios, 8098 Sandpiper Circle, Suite H, Nottingham, MD 21236
2. **Site Contractor: TBD**
3. **General Contractor: TBD**
4. **Fire Protection Contractor: TBD**
5. **Plumbing Contractor: TBD**
6. **Mechanical Contractor: TBD**
7. **Electrical Contractor: TBD**

TABLE OF ARTICLES

1 GENERAL PROVISIONS

2 LEVEL OF DEVELOPMENT

3 MODEL ELEMENTS

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 This Exhibit provides for the establishment of the protocols necessary to implement the use of Building Information Modeling on the Project, including protocols that establish the expected Level of Development for Model Elements at various milestones of the Project, and the associated Authorized Uses of the Building Information Material.

§ 1.1.1 For individuals responsible for implementation of the Modeling protocols, see Article 3.2, Modeling Element Responsibilities. The Architect established the protocols for the original Model which is transferred to the Contractor(s) for refinement and implementation.

§ 1.2 This document establishes the Modeling protocols for the Project. For purposes of these protocols, the Model is comprised of the following information and other data sets: *(Indicate disciplines, separate models, and other data that will be included within the Model and governed by the Modeling protocols.)*

«**1.2.1** The parties agree to incorporate this Exhibit by reference into any other agreement for services or construction for the Project.»

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with a Project specific AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, which the Parties will incorporate into their agreement for the Project, and a Project specific AIA Document G201™–2013, Project Digital Data Protocol Form.

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§ 1.3 Protocols. The Project Participants' protocol for the collaborative utilization of the Model, if any, including communications protocol, a collaboration meeting schedule and colocation requirements.

§ 1.3.1 Coordination and Conflicts. Where conflicts are found in the Model, regardless of the phase of the Project or LOD, the discovering party shall promptly notify the Model Element Author(s). Upon such notification, the Model Element Author(s) shall act promptly to mitigate the conflict.

§ 1.3.2 Model Ownership. The Model, Model Elements and any content developed shall be provided by the Architect and used by the owner for the design, construction and future needs of the project. The Owner may make use of this data following any deliverable.

§ 1.4 Model Requirements.

§ 1.4.1 Model Standard. The Model shall be developed in accordance with the following standard, if any:
Architect shall issue BIM standards to be used by the design team prior to the start of design. Standards shall include but not limited to the following:

1. File naming
2. Sheet naming
3. Family naming
4. View naming and arrangement.
5. Workset naming and special instructions.
6. File linking methods – Revit, AutoCAD, Images, etc.
7. Text and Dimension Standards.
8. Project browser organization
9. Model exchange standards – what information should be in the model when sharing with other disciplines. Care should be taken to help keep file size to a minimum when exchanging models.
10. Base Point - a common base point should be established and documented. All model element author's shall coordinate their model by using this base point. The basepoint shall be a bench mark coordinated with the benchmark established by the surveyor for the existing conditions plan of the site.

Prior to the start of design, the Architect shall conduct a project kick off meeting with all parties involved with the design to review all project standards in further detail.

§ 1.4.2 File Format. Models shall be delivered in the following format as appropriate to the use of the Model:

Use of Model	Required File Format(s)
1. BIM Authoring/Model Elements	Autodesk Revit 2022 (.rvt)
2. Model Review	Autodesk Design Web Format (.DWF), Portable Document Format (.pdf), Navisworks/Navisworks Freedom (.nwc, .nwd, nwf)
3. Clash Detection	Navisworks (.nwc, .nwd, nwf)
4. Civil Site Drawings	AutoCAD Civil 3D(dwg)
5. Other	If BIM Authoring software other than Autodesk Revit is used, all appropriate file formats required to view model with full access shall be provided.
6. Analysis	If analysis software is used by Model Element Author, then analysis file shall be provided in the same format as the analysis software as well as analysis software in a read only format to allow for viewing of that data through a free viewer if available.

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User Notes: (1630229338)

7. Bid Documents	Autodesk Design Web Format (.dwf) Full set of 2D documents and 3D Models, Portable Document Format (.pdf) Full set of 2D Documents.
8. Construction Documents	Same as 7 plus Revit (.rvt) model files to prime contractors

§ 1.5 Not Used.

§ 1.6 Not Used.

§ 1.7 Model Management Protocols and Processes

§ 1.7.1 The requirements for managing the Model include, but are not limited to, the duties set forth below in this Section 1.7. The Architect will manage the Model from the inception of the Project. If the responsibility for Model management will be assigned to another party at a particular phase of the Project, indicate below the identity of the party that will assume that responsibility, and the phase at which that party will assume those responsibilities.

Responsible Party	Project Phase
HVAC Contractor	Construction/As-built Drawings

§ 1.7.2 Initial Responsibilities. The party responsible for managing the Model shall facilitate the establishment of protocols for the following:

.1 Model origin, coordinate system, and units
.2 File storage location(s)
.3 Processes for transferring and accessing Model files
.4 Clash detection
.5 Access rights
.6 Other protocols required by Architect:

§ 1.7.3 Ongoing Responsibilities. The party responsible for managing the Model shall have the following ongoing responsibilities:

.1 Collect incoming Models:
  .1 Coordinate submission and exchange of Models
  .2 Log incoming Models
  .3 Validate that files are complete and usable and in compliance with applicable protocols
  .4 Maintain record copy of each file received
.2 Aggregate Model files and make available for viewing
.3 Perform clash detection in accordance with established protocols and issue periodic clash detection reports
.4 Maintain Model archives and backups
.5 Manage access rights
.6 Follow protocols established in Section 1.7.3

§ 1.7.4 Model Archives. The party responsible for Model management as set forth in this Section 1.7 shall produce a Model Archive at the end of each Project phase and shall preserve the Model Archive as a record that may not be altered for any reason.

§ 1.7.4.1 The Model Archive shall consist of two sets of files. The first set shall be a collection of individual Models as received from the Model Element Author(s). The second set of files shall consist of the aggregate of those individual Models in a format suitable for archiving and viewing. The second set shall be saved in the following file format:

Design Review (.dwf) - 2D of all sheets and 3D of all individual Models

§ 1.7.4.2 Additional Model Archive requirements, if any, are as follows:

1. Navisworks (.nwc, nwd, .nwf) - 3D of all individual models along with any 4D simulations and clash detection reports with comments.

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2. Portable Network Files (.pdf) - All documentation sheets associated to the milestone.

3. Any drawings that were produced in AutoCAD shall be archived in .dwg format in the same version they were produced in at the end of each Milestone.

§ 1.7.4.3 The procedures for storing and preserving the Model upon final completion of the Project are as follows:

1. All Archives as defined in 1.7.4.1 and 1.7.4.2 to be delivered to the Owner on a removable hard drive.

ARTICLE 2 LEVEL OF DEVELOPMENT

§ 2.1 The Level of Development (LOD) descriptions, included in Section 2.2 through Section 2.6 below, identify the specific minimum content requirements and associated Authorized Uses for each Model Element at five progressively detailed levels of completeness. The Parties shall utilize the five LOD descriptions in completing the Model Element Table at Section 3.3.

§ 2.2 LOD 100

§ 2.2.1 Model Element Content Requirements. The Model Element may be graphically represented in the Model with a symbol or other generic representation but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e., cost per square foot, tonnage of HVAC, etc.) can be derived from other Model Elements.

§ 2.2.2 Authorized Uses

§ 2.2.2.1 Analysis. The Model Element may be analyzed based on volume, area and orientation by application of generalized performance criteria assigned to other Model Elements.

§ 2.2.2.2 Cost Estimating. The Model Element may be used to develop a cost estimate based on current area, volume or similar conceptual estimating techniques (e.g., square feet of floor area, condominium unit, hospital bed, etc.).

§ 2.2.2.3 Schedule. The Model Element may be used for Project phasing and determination of overall Project duration.

§ 2.2.2.4 Other Authorized Uses. Additional Authorized Uses of the Model Element developed to LOD 100, if any, are as follows:

«1. Site Development, programming and overall building massing. »

§ 2.3 LOD 200

§ 2.3.1 Model Element Content Requirements. The Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

§ 2.3.2 Authorized Uses

§ 2.3.2.1 Analysis. The Model Element may be analyzed for performance of selected systems by application of generalized performance criteria assigned to the representative Model Elements.

§ 2.3.2.2 Cost Estimating. The Model Element may be used to develop cost estimates based on the approximate data provided and quantitative estimating techniques (e.g., volume and quantity of elements or type of system selected).

§ 2.3.2.3 Schedule. The Model Element may be used to show ordered, time-scaled appearance of major elements and systems.

§ 2.3.2.4 Coordination. The Model Element may be used for general coordination with other Model Elements in terms of its size, location and clearance to other Model Elements.

§ 2.3.2.5 Other Authorized Uses. Additional Authorized Uses of the Model Element developed to LOD 200, if any, are as follows:

« 1. General Code Review

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2. Project Phasing and Simulation
3. Constructability
4. Solar Study
5. Visualization
6. Energy Analysis
7. Green Building Analysis
8. Structural Analysis »

§ 2.4 LOD 300

§ 2.4.1 Model Element Content Requirements. The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

§ 2.4.2 Authorized Uses

§ 2.4.2.1 Analysis. The Model Element may be analyzed for performance of selected systems by application of specific performance criteria assigned to the representative Model Element.

§ 2.4.2.2 Cost Estimating. The Model Element may be used to develop cost estimates suitable for procurement based on the specific data provided.

§ 2.4.2.3 Schedule. The Model Element may be used to show ordered, time-scaled appearance of detailed elements and systems.

§ 2.4.2.4 Coordination. The Model Element may be used for specific coordination with other Model Elements in terms of its size, location and clearance to other Model Elements including general operation issues.

§ 2.4.2.5 Other Authorized Uses. Additional Authorized Uses of the Model Element developed to LOD 300, if any, are as follows:

« 1. Clash Detection
2. Visualization
3. Energy Analysis
4. Green Building Analysis
5. Structural Analysis
6. Project Phasing and Simulation
7. General Code Review »

§ 2.5 LOD 400

§ 2.5.1 Model Element Content Requirements. The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, and installation information. Non-graphic information may also be attached to the Model Element.

§ 2.5.2 Authorized Uses

§ 2.5.2.1 Analysis. The Model Element may be analyzed for performance of systems by application of actual performance criteria assigned to the Model Element.

§ 2.5.2.2 Cost Estimating. Costs are based on the actual cost of the Model Element at buyout.

§ 2.5.2.3 Schedule. The Model may be used to show ordered, time-scaled appearance of detailed specific elements and systems including construction means and methods.

§ 2.5.2.4 Coordination. The Model Element may be used for coordination with other Model Elements in terms of its size, location and clearance to other Model Elements, including fabrication, installation and detailed operation issues.

§ 2.5.2.5 Other Authorized Uses. Additional Authorized Uses of the Model Element developed to LOD 400, if any, are as follows:

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« 1. Extract Building Information
2. Visualization
3. Facilities Management »

§ 2.6 LOD 500

§ 2.6.1 Model Element Content Requirements. The Model Element is a field verified representation in terms of size, shape, location, quantity, and orientation. Non-graphic information may also be attached to the Model Elements.

§ 2.6.2 Authorized Uses. Specific Authorized Uses of the Model Element developed to LOD 500, if any, are as follows:

« 1. Extract Building Information
2. Visualization
3. Facilities Management »

ARTICLE 3 MODEL ELEMENTS

§ 3.1 Reliance on Model Elements

§ 3.1.1 At any particular Project milestone, a Project Participant may rely on the accuracy and completeness of a Model Element only to the extent consistent with the minimum data required for the Model Element's LOD for that Project milestone as identified below in the Model Element Table, even if the content of a specific Model Element includes data that exceeds the minimum data required for the identified LOD.

DRAFT

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§ 3.2 Table Instructions

§ 3.2.1 The Model Element Table in Section 3.3 indicates the LOD to which each Model Element shall be developed at each identified Project milestone and the Model Element Author.

§ 3.2.2 Abbreviations for each Model Element Author to be used in the Model Element Table are as follows:
(Provide abbreviations, such as "A—Architect," or "C—Contractor.")

Abbreviation	Model Element Author (MEA)
A	Architect
E	Mechanical, Electrical, Plumbing Engineer
CE	Civil Engineer
C	Contractor

§ 3.3 Model Element Table

Identify (1) the LOD required for each Model Element at each Project milestone, (2) the Model Element Author, and (3) references to any applicable notes found in Section 3.4.

Insert abbreviations for each MEA identified in the table below, such as "A – Architect," or "C – Contractor."

NOTE: LODs must be adapted for the unique characteristics of each Project.

Model Elements Utilizing CSI UniFormat™	Preliminary Design			Schematic Design			Design Development			Construction Documents			Construction			As Built Drawings			Notes *(See Sec 3.4 and 3.5)*
	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
A SUBSTRUCTURE																			
A10 FOUNDATIONS																			
A1010 Standard Foundations																			
A1010.10 Wall Foundations	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1010.30 Column Foundations	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1010.90 Standard Foundation Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020 Special Foundations																			
A1020.10 Driven Piles	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.15 Bored Piles	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.20 Caissons	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.30 Special Foundation Walls	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.40 Foundation Anchors	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.50 Underpinning	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.60 Raft Foundations	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.70 Pile Caps	0	NA		100	A		200	A		300	A		300	C		300	C		1
A1020.80 Grade Beams	0	NA		100	A		200	A		300	A		300	C		300	C		1
A20 SUBGRADE ENCLOSURES																			
A2010 Walls for Subgrade Enclosures																			
A2010.10 Subgrade Enclosure Wall Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1

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NOTE: LODs must be adapted for the unique characteristics of each Project.

Model Elements Utilizing CSI UniFormat™	Preliminary Design			Schematic Design			Design Development			Construction Documents			Construction			As Built Drawings			Notes (See Sec 3.4 and 3.5)
	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
A2010.20 Subgrade Enclosure Wall Interior Skin	0	NA		100	A		200	A		300	A		300	C		300	C		1
A2010.90 Subgrade Enclosure Wall Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
A40 SLABS-ON-GRADE																			
A4010 Standard Slabs-on-Grade	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4020 Structural Slabs-on-Grade	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4030 Slab Trenches	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4040 Pits and Bases	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4090 Slab-On-Grade Supplementary Components																			
A4090.10 Perimeter Insulation	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4090.20 Vapor Retarder	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4090.30 Waterproofing	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4090.50 Mud Slab	0	NA		100	A		200	A		300	A		300	C		300	C		1
A4090.60 Subbase Layer	0	NA		100	A		200	A		300	A		300	C		300	C		1
A60 WATER AND GAS MITIGATION																			
A6010 Building Subdrainage																			
A6010.10 Foundation Drainage	0	NA		100	A		200	A		300	A		300	C		300	C		1
A6010.20 Underslab Drainage	0	NA		100	A		200	A		300	A		300	C		300	C		1
A6020 Off-Gassing Mitigation																			
A6020.10 Radon Mitigation	0	NA		100	A		200	A		300	A		300	C		300	C		1
A6020.50 Methane Mitigation	0	NA		100	A		200	A		300	A		300	C		300	C		1
A90 SUBSTRUCTURE RELATED ACTIVITIES																			
A9010 Substructure Excavation																			
A9010.10 Backfill and Compaction	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9020 Construction Dewatering	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9030 Excavation Support																			
A9030.10 Anchor Tiebacks	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9030.20 Cofferdams	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9030.40 Cribbing and Walers	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9030.60 Ground Freezing	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9030.70 Slurry Walls	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
A9040 Soil Treatment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		

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	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
B SHELL																			
B10 SUPERSTRUCTURE																			
B1010 Floor Construction																			
B1010.10 Floor Structural Frame	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1010.20 Floor Decks, Slabs, and Toppings	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1010.30 Balcony Floor Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1010.40 Mezzanine Floor Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1010.50 Ramps	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1010.90 Floor Construction Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1020 Roof Construction																			
B1020.10 Roof Structural Frame	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1020.20 Roof Decks, Slabs, and Sheathing	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1020.30 Canopy Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1020.90 Roof Construction Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080 Stairs																			
B1080.10 Stair Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080.30 Stair Soffits	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080.50 Stair Railings	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080.60 Fire Escapes	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080.70 Metal Walkways	0	NA		100	A		200	A		300	A		300	C		300	C		1
B1080.80 Ladders	0	NA		100	A		200	A		300	A		300	C		300	C		1
B20 EXTERIOR VERTICAL ENCLOSURES																			
B2010 Exterior Walls																			
B2010.10 Exterior Wall Veneer	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.20 Exterior Wall Construction	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.30 Exterior Wall Interior Skin	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.40 Fabricated Exterior Wall Assemblies	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.50 Parapets	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.60 Equipment Screens	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.80 Exterior Wall Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2010.90 Exterior Wall Opening Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2020 Exterior Windows																			
B2020.10 Exterior Operating Windows	0	NA		100	A		200	A		300	A		300	C		300	C		1

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		LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
	B2020.20 Exterior Fixed Windows	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2020.30 Exterior Window Wall	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2020.50 Exterior Special Function Windows	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2050	**Exterior Doors and Grilles**																			
	B2050.10 Exterior Entrance Doors	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.20 Exterior Utility Doors	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.30 Exterior Oversize Doors	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.40 Exterior Special Function Doors	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.60 Exterior Grilles	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.70 Exterior Gates	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2050.90 Exterior Door Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2070	**Exterior Louvers and Vents**																			
	B2070.10 Exterior Louvers	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2070.50 Exterior Vents	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2080	**Exterior Wall Appurtenances**																			
	B2080.10 Exterior Fixed Grilles and Screens	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2080.30 Exterior Opening Protection Devices	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2080.50 Exterior Balcony Walls and Railings	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2080.70 Exterior Fabrications	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B2080.80 Bird Control Devices	0	NA		100	A		200	A		300	A		300	C		300	C		1
B2090	**Exterior Wall Specialties**	0	NA		100	A		200	A		300	A		300	C		300	C		1
B30	**EXTERIOR HORIZONTAL ENCLOSURES**																			
B3010	**Roofing**																			
	B3010.10 Steep Slope Roofing	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3010.50 Low-Slope Roofing	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3010.70 Canopy Roofing	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3010.90 Roofing Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3020	**Roof Appurtenances**																			
	B3020.10 Roof Accessories	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3020.30 Roof Specialties	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3020.70 Rainwater Management	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3040	**Traffic Bearing Horizontal Enclosures**																			
	B3040.10 Traffic Bearing Coatings	0	NA		100	A		200	A		300	A		300	C		300	C		1
	B3040.30 Horizontal Waterproofing Membrane	0	NA		100	A		200	A		300	A		300	C		300	C		1

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		LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
B3040.50	Wear Surfaces	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3040.90	Horizontal Enclosure Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3060	**Horizontal Openings**																			
B3060.10	Roof Windows and Skylights	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3060.50	Vents and Hatches	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3060.90	Horizontal Opening Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
B3080	**Overhead Exterior Enclosures**																			
B3080.10	Exterior Ceilings	0	NA		100	A		200	A		300	A		400	C		400	C		1
B3080.20	Exterior Soffits	0	NA		100	A		200	A		300	A		400	C		400	C		1
B3080.30	Exterior Bulkheads	0	NA		100	A		200	A		300	A		400	C		400	C		1
C	**INTERIORS**																			
C10	**INTERIOR CONSTRUCTION**																			
C1010	**Interior Partitions**																			
C1010.10	Interior Fixed Partitions	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1010.20	Interior Glazed Partitions	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1010.40	Interior Demountable Partitions	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1010.50	Interior Operable Partitions	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1010.70	Interior Screens	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1010.90	Interior Partition Supplementary Components	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1020	**Interior Windows**																			
C1020.10	Interior Operating Windows	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1020.20	Interior Fixed Windows	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1020.50	Interior Special Function Windows	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1020.90	Interior Window Supplementary Components	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030	**Interior Doors**																			
C1030.10	Interior Swinging Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.20	Interior Entrance Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.25	Interior Sliding Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.30	Interior Folding Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.40	Interior Coiling Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.50	Interior Panel Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.70	Interior Special Function Doors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1030.80	Interior Access Doors and Panels	0	NA		100	A		200	A		300	A		400	C		400	C		1

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	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
C1030.90 Interior Door Supplementary Components	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1040 Interior Grilles and Gates																			
C1040.10 Interior Grilles																			
C1040.50 Interior Gates	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1060 Raised Floor Construction																			
C1060.10 Access Flooring	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1060.30 Platform/Stage Floors	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1070 Suspended Ceiling Construction																			
C1070.10 Acoustical Suspended Ceilings	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1070.20 Suspended Plaster and Gypsum Board Ceilings	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1070.50 Specialty Suspended Ceilings	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1070.70 Special Function Suspended Ceilings	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1070.90 Ceiling Suspension Components	0	NA		100	A		200	A		300	A		400	C		400	C		1
C1090 Interior Specialties																			
C1090.10 Interior Railings and Handrails	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.15 Interior Louvers	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.20 Information Specialties	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.25 Compartments and Cubicles	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.30 Service Walls	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.35 Wall and Door Protection	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.40 Toilet, Bath, and Laundry Accessories	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.45 Interior Gas Lighting	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.50 Fireplaces and Stoves	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.60 Safety Specialties	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.70 Storage Specialties	0	NA		100	A		200	A		300	A		300	C		300	C		1
C1090.90 Other Interior Specialties	0	NA		100	A		200	A		300	A		300	C		300	C		1
C20 INTERIOR FINISHES																			
C2010 Wall Finishes																			
C2010.10 Tile Wall Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.20 Wall Paneling	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.30 Wall Coverings	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.35 Wall Carpeting	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.50 Stone Facing	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.60 Special Wall Surfacing	0	NA		100	A		200	A		300	A		300	C		300	C		1

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	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
C2010.70 Wall Painting and Coating	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.80 Acoustical Wall Treatment	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2010.90 Wall Finish Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2020 Interior Fabrications																			
C2030 Flooring																			
C2030.10 Flooring Treatment	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.20 Tile Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.30 Specialty Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.40 Masonry Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.45 Wood Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.50 Resilient Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.60 Terrazzo Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.70 Fluid-Applied Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.75 Carpeting	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.80 Athletic Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.85 Entrance Flooring	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2030.90 Flooring Supplementary Components	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040 Stair Finishes																			
C2040.20 Tile Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040.40 Masonry Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040.45 Wood Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040.50 Resilient Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040.60 Terrazzo Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2040.75 Carpeted Stair Finish	0	NA		100	A		200	A		300	A		300	C		300	C		1
C2050 Ceiling Finishes																			
C2050.10 Plaster and Gypsum Board Finish	0	NA		100	A		200	A		300	A		400	C		400	C		1
C2050.20 Ceiling Paneling	0	NA		100	A		200	A		300	A		400	C		400	C		1
C2050.70 Ceiling Painting and Coating	0	NA		100	A		200	A		300	A		400	C		400	C		1
C2050.80 Acoustical Ceiling Treatment	0	NA		100	A		200	A		300	A		400	C		400	C		1
C2050.90 Ceiling Finish Supplementary Components	0	NA		100	A		200	A		300	A		400	C		400	C		1
C2090 Interior Finish Schedules	NA	NA		NA	NA		NA	NA		NA	NA		300	C		300	C		1

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	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
D SERVICES																			
D10 CONVEYING																			
D1010 Vertical Conveying Systems																			
D1010.10 Elevators	0	NA		100	A		200	A		300	A		400	C		400	C		1
D1010.20 Lifts	0	NA		100	A		200	A		300	A		400	C		400	C		1
D1010.30 Escalators	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1010.50 Dumbwaiters	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1010.60 Moving Ramps	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1030 Horizontal Conveying																			
D1030.10 Moving Walks	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1030.30 Turntables	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1030.50 Passenger Loading Bridges	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1030.70 People Movers	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050 Material Handling																			
D1050.10 Cranes	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.20 Hoists	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.30 Derricks	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.40 Conveyors	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.50 Baggage Handling Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.60 Chutes	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1050.70 Pneumatic Tube Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1080 Operable Access Systems																			
D1080.10 Suspended Scaffolding	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1080.20 Rope Climbers	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1080.30 Elevating Platforms	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1080.40 Powered Scaffolding	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D1080.50 Building Envelope Access	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D20 PLUMBING																			
D2010 Domestic Water Distribution																			
D2010.10 Facility Potable-Water Storage Tanks	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2010.20 Domestic Water Equipment	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2010.40 Domestic Water Piping	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2010.60 Plumbing Fixtures	0	NA		100	E		200	E		300	E		300	C		300	C		1

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D2010.90 Domestic Water Distribution Supplementary	0	NA		100	E		200	E		300	E		400	C		400	C		1
D2020 Sanitary Drainage																			
D2020.10 Sanitary Sewerage Equipment	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2020.30 Sanitary Sewerage Piping	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2020.90 Sanitary Drainage Supplementary Components	0	NA		100	E		200	E		300	E		400	C		400	C		1
D2030 Building Support Plumbing Systems																			
D2030.10 Stormwater Drainage Equipment	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2030.20 Stormwater Drainage Piping	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2030.30 Facility Stormwater Drains	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2030.60 Gray Water Systems	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2030.90 Building Support Plumbing System Supplementary	0	NA		100	E		200	E		300	E		400	C		500	C		1
D2050 General Service Compressed-Air																			
D2060 Process Support Plumbing Systems																			
D2060.10 Compressed-Air Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2060.20 Vacuum Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2060.30 Gas Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2060.40 Chemical-Waste Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2060.50 Processed Water Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D2060.90 Process Support Plumbing System Supplementary Components	0	NA		100	E		200	E		300	E		300	C		300	C		1
D30 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)																			
D3010 Facility Fuel Systems																			
D3010.10 Fuel Piping	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3010.30 Fuel Pumps	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3010.50 Fuel Storage Tanks	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3020 Heating Systems	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3020.10 Heat Generation	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3020.30 Thermal Heat Storage	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3020.70 Decentralized Heating Equipment	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3020.90 Heating System Supplementary Components	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3030 Cooling Systems																			
D3030.10 Central Cooling	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3030.30 Evaporative Air-Cooling	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3030.50 Thermal Cooling Storage	0	NA		100	E		200	E		300	E		300	C		300	C		1

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D3030.70 Decentralized Cooling	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3030.90 Cooling System Supplementary Components	0	NA		100	E		200	E		300	E		300	C		300	C		1
D3050 Facility HVAC Distribution Systems																			
D3050.10 Facility Hydronic Distribution	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3050.30 Facility Steam Distribution	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3050.50 HVAC Air Distribution	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3050.90 Facility Distribution Systems Supplementary Components	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060 Ventilation																			
D3060.10 Supply Air	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.20 Return Air	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.30 Exhaust Air	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.40 Outside Air	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.60 Air-to-Air Energy Recovery	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.70 HVAC Air Cleaning	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3060.90 Ventilation Supplementary Components	0	NA		100	E		200	E		300	E		400	C		500	C		1
D3070 Special Purpose HVAC Systems																			
D3070.10 Snow Melting	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D40 FIRE PROTECTION																			
D4010 Fire Suppression																			
D4010.10 Water-Based Fire-Suppression	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4010.50 Fire-Extinguishing	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4010.90 Fire Suppression Supplementary Components	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4030 Fire Protection Specialties																			
D4030.10 Fire Protection Cabinets	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4030.30 Fire Extinguishers	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4030.50 Breathing Air Replenishment Systems	0	NA		100	E		200	E		300	E		400	C		500	C		1
D4030.70 Fire Extinguisher Accessories	0	NA		100	E		200	E		300	E		400	C		500	C		1
D50 ELECTRICAL																			
D5010 Facility Power Generation																			
D5010.10 Packaged Generator Assemblies	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D5010.20 Battery Equipment	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D5010.30 Photovoltaic Collectors	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D5010.40 Fuel Cells	0	NA		0	NA		100	E		200	E		200	C		200	C		1

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	D5010.60	Power Filtering and Conditioning	0	NA		0	NA		100	E		200	E		200	C		200	C		1
	D5010.70	Transfer Switches	0	NA		0	NA		100	E		200	E		300	C		300	C		1
	D5010.90	Facility Power Generation Supplementary Components	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D5020	**Electrical Service and Distribution**																				
	D5020.10	Electrical Service																			
	D5020.30	Power Distribution	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5020.70	Facility Grounding	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5020.90	Electrical Service and Distribution Supplementary Components	0	NA		0	NA		100	E		200	E		400	C		400	C		1
D5030	**General Purpose Electrical Power**																				
	D5030.10	Branch Wiring System	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5030.50	Wiring Devices	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5030.90	General Purpose Electrical Power Supplementary Components	0	NA		0	NA		100	E		200	E		400	C		400	C		1
D5040	**Lighting**																				
	D5040.10	Lighting Control	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5040.20	Branch Wiring for Lighting	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5040.50	Lighting Fixtures	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5040.90	Lighting Supplementary Components	0	NA		0	NA		100	E		200	E		400	C		400	C		1
D5080	**Miscellaneous Electrical Systems**																				
	D5080.10	Lightning Protection	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5080.40	Cathodic Protection	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5080.70	Transient Voltage Suppression	0	NA		0	NA		100	E		200	E		400	C		400	C		1
	D5080.90	Miscellaneous Electrical Systems Supplementary Components	0	NA		0	NA		100	E		200	E		400	C		400	C		1
D60	**COMMUNICATIONS**																				
D6010	**Data Communications**																				
	D6010.10	Data Communications Network Equipment	0	NA		0	NA		100	E		200	E		300	C		300	C		1
	D6020.20	Data Communications Hardware	0	NA		0	NA		100	E		200	E		300	C		300	C		1
	D6010.30	Data Communications Peripheral Data Equipment	0	NA		0	NA		100	E		200	E		300	C		300	C		1
	D6010.50	Data Communications Software	0	NA		0	NA		100	E		200	E		300	C		300	C		1
	D6010.60	Data Communication Program and Integration Services	0	NA		0	NA		100	E		200	E		300	C		300	C		1

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D6020 Voice Communications																			
D6020.10 Voice Communications Switching and Routing Equipment	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D6020.20 Voice Communications Terminal Equipment	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D6020.30 Voice Communications Messaging	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D6020.40 Call Accounting	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D6020.50 Call Management	0	NA		0	NA		100	E		200	E		300	C		300	C		1
D6030 Audio-Video Communication																			
D6030.10 Audio-Video Systems	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D6030.50 Electronic Digital Systems	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D6060 Distributed Communications and Monitoring																			
D6060.10 Distributed Audio-Video Communications Systems	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D6060.30 Healthcare Communications and Monitoring	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D6060.50 Distributed Systems	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D6090 Communications Supplementary Components																			
D6090.10 Supplementary Components	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D70 ELECTRONIC SAFETY AND SECURITY																			
D7010 Access Control and Intrusion Detection																			
D7010.10 Access Control	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7010.50 Intrusion Detection	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7030 Electronic Surveillance																			
D7030.10 Video Surveillance	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7030.50 Electronic Personal Protection	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050 Detection and Alarm																			
D7050.10 Fire Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050.20 Radiation Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050.30 Fuel-Gas Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050.40 Fuel-Oil Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050.50 Refrigeration Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7050.60 Water Intrusion Detection and Alarm	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7070 Electronic Monitoring and Control																			
D7070.10 Electronic Detention Monitoring and Control	0	NA		0	NA		100	E		200	E		200	C		200	C		1
D7090 Electronic Safety and Security Supplementary Components																			
D7090.10 Supplementary Components	0	NA		0	NA		100	E		200	E		200	C		200	C		1

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D80 INTEGRATED AUTOMATION																			
D8010 Integrated Automation Facility Controls																			
D8010.10 Integrated Automation Control of Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.20 Integrated Automation Control of Conveying Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.30 Integrated Automation Control of Fire-Suppression Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.40 Integrated Automation Control of Plumbing Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.50 Integrated Automation Control of HVAC Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.60 Integrated Automation Control of Electrical Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.70 Integrated Automation Control of Communication Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.80 Integrated Automation Control of Electronic Safety and Security Systems	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
D8010.90 Integrated Automation Supplementary Components	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E EQUIPMENT AND FURNISHINGS																			
E10 EQUIPMENT																			
E1010 Vehicle and Pedestrian Equipment																			
E1010.10 Vehicle Servicing Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1010.10 Interior Parking Control Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1010.10 Loading Dock Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1010.10 Interior Pedestrian Control Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1030 Commercial Equipment																			
E1030.10 Mercantile and Service Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1030.20 Vault Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1030.25 Teller and Service Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1030.30 Refrigerated Display Equipment	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1030.35 Commercial Laundry and Dry Cleaning Equipment	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1030.40 Maintenance Equipment	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1030.50 Hospitality Equipment	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1030.55 Unit Kitchens	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1030.60 Photographic Processing Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1030.70 Postal, Packaging, and Shipping Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		

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	E1030.75	Office Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1030.80	Foodservice Equipment	0	NA		100	A		200	A		300	A		300	C		300	C		1
E1040	**Institutional Equipment**																				
	E1040.10	Educational and Scientific Equipment	0	NA		100	A		200	A		300	A		NA	NA		300	C		1
	E1040.20	Healthcare Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1040.40	Religious Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1040.60	Security Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1040.70	Detention Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1060	**Residential Equipment**																				
	E1060.10	Residential Appliances	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1060.50	Retractable Stairs	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1060.70	Residential Ceiling Fans	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E1070	**Entertainment and Recreational Equipment**																				
	E1070.10	Theater and Stage Equipment	0	NA		100	A		200	A		300	A		400	C		400	C		1
	E1070.20	Musical Equipment	0	NA		100	A		200	A		300	A		400	C		400	C		1
	E1070.50	Athletic Equipment	0	NA		100	A		200	A		300	A		400	C		400	C		1
	E1070.60	Recreational Equipment	0	NA		100	A		200	A		300	A		400	C		400	C		1
E1090	**Other Equipment**																				
	E1090.10	Solid Waste Handling Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1090.30	Agricultural Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1090.40	Horticultural Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	E1090.60	Decontamination Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
E20	**FURNISHINGS**																				
E2010	**Fixed Furnishings**																				
	E2010.10	Fixed Art	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2010.20	Window Treatments	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2010.30	Casework	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2010.70	Fixed Multiple Seating	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2010.90	Other Fixed Furnishings	0	NA		100	A		200	A		300	A		300	C		300	C		1
E2050	**Movable Furnishings**																				
	E2050.10	Movable Art	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2050.30	Furniture	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2050.40	Accessories	0	NA		100	A		200	A		300	A		300	C		300	C		1
	E2050.60	Movable Multiple Seating	0	NA		100	A		200	A		300	A		300	C		300	C		1

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	E2050.90	Other Movable Furnishings	0	NA		100	A		200	A		300	A		300	C		300	C		1
F	**SPECIAL CONSTRUCTION AND DEMOLITION**																				
F10	**SPECIAL CONSTRUCTION**																				
F1010	**Integrated Construction**																				
	F1010.10	Building Modules	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1010.50	Manufactured/Fabricated Rooms	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1010.70	Modular Mezzanines	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1020	**Special Structures**																				
	F1020.10	Fabric Structures	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.20	Space Frames	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.30	Geodesic Structures	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.40	Manufacturer-Engineered Structures	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.60	Manufactured Canopies	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.65	Rammed Earth Construction	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1020.70	Towers	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1030	**Special Function Construction**																				
	F1030.10	Sound and Vibration Control	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1030.30	Seismic Control	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1030.50	Radiation Protection	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1050	**Special Facility Components**																				
	F1050.10	Pools	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.20	Interior Fountains	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.30	Interior Water Features	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.40	Aquariums	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.50	Amusement Park Structures and Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.60	Ice Rinks	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1050.70	Animal Containment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1060	**Athletic and Recreational Special Construction**																				
	F1060.10	Indoor Soccer Boards	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1060.20	Safety Netting	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1060.30	Arena Football Boards	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1060.40	Floor Sockets	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
	F1060.50	Athletic and Recreational Court Walls	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		

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F1060.60 Demountable Athletic Surfaces	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1080 Special Instrumentation																			
F1080.10 Stress Instrumentation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1080.20 Seismic Instrumentation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1080.40 Meteorological Instrumentation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F1080.80 Earth Movement Monitoring	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F20 FACILITY REMEDIATION																			
F2010 Hazardous Materials Remediation																			
F2010.10 Transportation and Disposal of Hazardous Materials	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F2010.20 Asbestos Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F2010.30 Lead Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F2010.40 Polychlorinate Biphenyl Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F2010.50 Mold Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F30 DEMOLITION																			
F3010 Structure Demolition																			
F3010.10 Building Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3010.30 Tower Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3010.50 Bridge Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3010.70 Dam Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030 Selective Demolition																			
F3030.10 Selective Building Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030.30 Selective Interior Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030.50 Selective Bridge Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030.70 Selective Historic Demolition	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030 Structure Moving																			
F3030.10 Structure Relocation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
F3030.30 Structure Raising	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G SITEWORK																			
G10 SITE PREPARATION																			
G1010 Site Clearing																			
G1010.10 Clearing and Grubbing	0	NA		0	NA		0	NA		100	CE		NA	NA		NA	NA		
G1010.30 Tree and Shrub Removal and Trimming	0	NA		0	NA		0	NA		100	CE		NA	NA		NA	NA		
G1010.50 Earth Stripping and Stockpiling	0	NA		0	NA		0	NA		100	CE		NA	NA		NA	NA		

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G1020 Site Elements Demolition																			
G1020.10 Utility Demolition	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1020.30 Infrastructure Demolition	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1020.50 Selective Site Demolition	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1030 Site Element Relocations																			
G1030.10 Utility Relocation	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1050 Site Remediation																			
G1050.10 Physical Decontamination	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.15 Chemical Decontamination	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.20 Thermal Decontamination	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.25 Biological Decontamination	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.30 Remediation Soil Stabilization	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.40 Site Containment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.45 Sinkhole Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.50 Hazardous Waste Drum Handling	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.60 Contaminated Site Material Removal	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1050.80 Water Remediation	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G1070 Site Earthwork																			
G1070.10 Grading	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.20 Excavation and Fill	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.30 Embankments	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.35 Erosion and Sedimentation Controls	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.40 Soil Stabilization	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.45 Rock Stabilization	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.50 Soil Reinforcement	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.55 Slope Protection	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.60 Gabions	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.65 Riprap	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.70 Wetlands	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.80 Earth Dams	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G1070.90 Site Soil Treatment	0	NA		0	NA		100	CE		200	CE		NA	NA		NA	NA		
G20 SITE IMPROVEMENTS																			
G2010 Roadways																			
G2010.10 Roadway Pavement	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1

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G2010.20	Roadway Curbs and Gutters	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2010.40	Roadway Appurtenances	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2010.70	Roadway Lighting	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2010.80	Vehicle Fare Collection	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2020	**Parking Lots**																			
G2020.10	Parking Lot Pavement	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2020.20	Parking Lot Curbs and Gutters	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2020.40	Parking Lot Appurtenances	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2020.70	Parking Lot Lighting	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2020.80	Exterior Parking Control Equipment	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030	**Pedestrian Plazas and Walkways**																			
G2030.10	Pedestrian Pavement	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030.20	Pedestrian Pavement Curbs and Gutters	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030.30	Exterior Steps and Ramps	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030.40	Pedestrian Pavement Appurtenances	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030.70	Plaza and Walkway Lighting	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2030.80	Exterior Pedestrian Control Equipment	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2040	**Airfields**																			
G2040.10	Aviation Pavement	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G2040.20	Aviation Pavement Curbs and Gutters	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G2040.40	Aviation Pavement Appurtenances	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G2040.70	Airfield Lighting	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G2040.80	Airfield Signaling and Control Equipment	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G2050	**Athletic, Recreational, and Playfield Areas**																			
G2050.10	Athletic Areas	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2050.30	Recreational Areas	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2050.50	Playfield Areas	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060	**Site Development**																			
G2060.10	Exterior Fountains	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.20	Fences and Gates	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.25	Site Furnishings	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.30	Exterior Signage	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.35	Flagpoles	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.40	Covers and Shelters	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1

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G2060.45 Exterior Gas Lighting	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.50 Site Equipment	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.60 Retaining Walls	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.70 Site Bridges	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.80 Site Screening Devices	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2060.85 Site Specialties	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080 Landscaping																			
G2080.10 Planting Irrigation	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080.20 Turf and Grasses	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080.30 Plants	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080.50 Planting Accessories	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080.70 Landscape Lighting	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G2080.80 Landscaping Activities	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G30 LIQUID AND GAS SITE UTILITIES																			
G3010 Water Utilities																			
G3010.10 Site Domestic Water Distribution	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3010.30 Site Fire Protection Water Distribution	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3010.50 Site Irrigation Water Distribution	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3020 Sanitary Sewerage Utilities																			
G3020.10 Sanitary Sewerage Utility Connection	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3020.20 Sanitary Sewerage Piping	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3020.40 Utility Septic Tanks	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3020.50 Sanitary Sewerage Structures	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3020.60 Sanitary Sewerage Lagoons	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030 Storm Drainage Utilities																			
G3030.10 Storm Drainage Utility Connection	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.20 Storm Drainage Piping	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.30 Culverts	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.40 Site Storm Water Drains	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.50 Storm Drainage Pumps	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.60 Site Subdrainage	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3030.70 Storm Drainage Ponds and Reservoirs	0	NA		0	NA		100	CE		200	CE		NA	NA		200	C		1
G3050 Site Energy Distribution																			
G3050.10 Site Hydronic Heating Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		

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G3050.20 Site Steam Energy Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3050.40 Site Hydronic Cooling Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3060 Site Fuel Distribution																			
G3060.10 Site Gas Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3060.20 Site Fuel-Oil Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3060.30 Site Gasoline Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3060.40 Site Diesel Fuel Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3060.60 Site Aviation Fuel Distribution	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G3090 Liquid and Gas Site Utilities Supplementary Components																			
G3090.10 Supplementary Components	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		
G40 ELECTRICAL SITE IMPROVEMENTS																			
G4010 Site Electric Distribution Systems																			
G4010.10 Electrical Utility Services	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.20 Electric Transmission and Distribution	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.30 Electrical Substations	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.40 Electrical Transformers	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.50 Electrical Switchgear and Protection Devices	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.70 Site Grounding	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4010.90 Electrical Distribution System Instrumentation and Controls	0	NA		0	NA		100	CE		200	CE		200	C		200	C		1
G4050 Site Lighting																			
G4050.10 Area Lighting	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G4050.20 Flood Lighting	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G4050.50 Building Illumination	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G4050.90 Exterior Lighting Supplementary Components	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G50 SITE COMMUNICATIONS																			
G5010 Site Communications Systems																			
G5010.10 Site Communications Structures	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G5010.30 Site Communications Distribution	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G5010.50 Wireless Communications Distribution	0	NA		0	NA		100	E		200	E		200	C		200	C		1
G90 MISCELLANEOUS SITE CONSTRUCTION																			
G9010 Tunnels																			
G9010.10 Vehicular Tunnels	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA	NA	
G9010.20 Pedestrian Tunnels	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA	NA	

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§ 3.3 Model Element Table *Identify (1) the LOD required for each Model Element at each Project milestone, (2) the Model Element Author, and (3) references to any applicable notes found in Section 3.4.* *Insert abbreviations for each MEA identified in the table below, such as "A – Architect," or "C – Contractor."* *NOTE: LODs must be adapted for the unique characteristics of each Project.*	**Preliminary Design**			**Schematic Design**			**Design Development**			**Construction Documents**			**Construction**			**As Built Drawings**			**Notes** *(See Sec 3.4 and 3.5)*
Model Elements Utilizing CSI UniFormat™	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
G9010.40 Service Tunnels	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA	NA	
G9010.90 Tunnel Construction Related Activities	NA	NA		NA	NA		NA	NA		NA	NA		NA	NA		NA	NA	NA	

§ 3.4 Model Element Table Notes

Notes:

(List by number shown on table.)

1. *Model Element Author shall modify all model elements to reflect actual selected item where applicable. These items shall be at the level of detail noted in the table but shall also include manufacturer's data including Manufacturer, Manufacturer's url, Description, Model, Color, Warranty Information at minimum plus any additional information that may be included with a manufacturer's model element where applicable.*

§ 3.5 BIM Team Responsibility Chart

BIM TEAM RESPONSIBILITY CHART

	SCHEMATIC DESIGN	DESIGN DEVELOPMENT	BID/CONSTR DOCUMENTS	CONSTRUCTION COORDINATION	AS BUILTS
Architect	X	X	X – NOTE 1	REVIEW	REVIEW
Resident Project Engineer / Construction Manager	Constructability Review of 2D .pdf documents	Constructability Review of 2D .pdf documents	Constructability Review of 2D .pdf documents (*)	Constructability Review of 2D .pdf documents	NOTE 2
General Contractor	N/A	N/A	N/A	NOTE 4	NOTE 4
Mechanical Contractor	N/A	N/A	N/A	NOTE 3	NOTE 3
Plumbing Contractor	N/A	N/A	N/A	NOTE 4	NOTE 4
Electrical Contractor	N/A	N/A	N/A	NOTE 4	NOTE 4
Fire Protection Contractor	N/A	N/A	N/A	NOTE 4	NOTE 4

(*) Perform clash detection

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1. TRANSFER TO PRIME CONTRACTORS AS PER ARTICLE AIA G202 SECTION 1.7.1

2. RECEIVE FROM ARCHITECT AS-BUILT MODEL FOR OWNER'S USE

3. MERGE, COORDINATE, & DELIVER BIM MODEL TO ARCHITECT WITH INPUT AND APPROVAL BY ALL PRIME CONTRACTORS

4. PROVIDE BIM MODEL FILES & COORDINATE ALL WORK WITH CONTRACTORS BASED ON FORMAT & SCHEDULE OF MECHANICAL CONTRACTOR. SEE PROJECT SPECIFICATIONS FOR ALL REQUIREMENTS

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STUDIOS
ARCHITECTURE
MASTER PLANNING

410.344.1460
8098 Sandpiper Circle, Suite H
Nottingham, Maryland 21236

DIGITAL RELEASE FORM

PROJECT: Exeter Township Fire Department
ADDRESS: 70 Gibraltar Road
Reading, PA 19606

PROJECT NUMBER: 25-049

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ACKNOWLEDGEMENT AND ACCEPTANCE PAGE

PROJECT:	Exeter Township Fire Department		
ADDRESS:	70 Gibraltar Road Reading, PA 19606	PROJECT NUMBER:	25-049

By signing below, I acknowledge that I have read, understand, and accept the terms of the Digital Release Form. Furthermore, I acknowledge that I have the right and have been assigned the power to represent the party/entity/company, receiving the digital data, for this binding agreement.

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ENGINEERING

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(Please print)

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01 3117E

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FOR THE TRANSMITTAL AND USE OF ELECTRONIC FILES

PREPARED BY HERBERT, ROWLAND & GRUBIC, INC.

As a condition precedent to the release of electronic files for Exeter Township Emergency Services Facility (PROJECT), Herbert, Rowland & Grubic, Inc. (HRG) shall hereby require that _____ (RECIPIENT) execute this agreement of release and fully abide by and be bound by all terms and conditions as outlined herein:

The information contained in the electronic files was prepared by HRG specifically for the PROJECT and said files, information, data, and other contents shall remain an instrument of service of HRG who shall retain all ownership and other rights thereto, including applicable copyrights, as may be prescribed by law, statute, agreement or otherwise. RECIPIENT agrees to use said information for use exclusively on the PROJECT and said information shall not be used or reused for any other project or use nor shall said information be provided to or used by any other party other than RECIPIENT.

RECIPIENT agrees that any use or reuse of the information contained in the electronic files provided by HRG is done so at RECIPIENT'S own risk and HRG makes no warranty, guarantee, or other representation, either expressed or implied, as to the accuracy, reliability, compatibility or suitability for the intended use. RECIPIENT understands and agrees that documents delivered in electronic form may vary from those contained on paper or hard copy versions of the same for a variety of reasons and that the automated conversion or transfer of electronic information between HRG and RECIPIENT cannot be accomplished without the risk of inexactitudes, anomalies, and other similar conversion errors. As such, said electronic files are provided merely as a convenience to the RECIPIENT for their use solely on the PROJECT. Only those hard copy documents which have been finally issued and appropriately signed and sealed by HRG's design professionals shall be relied upon as being accurate and said hard copy documents shall govern where discrepancies exist between the two mediums.

RECIPIENT agrees to forever release, hold harmless and indemnify HRG, its officers, employees, shareholders, directors, affiliates, and subconsultants, from and against any and all claims, damages, losses, and expenses, either direct, indirect or consequential, including reasonable attorney's fees, arising out of or resulting from RECIPIENT's use or misuse of said electronic files.

All exchanges will occur using agreed upon exchange method (e-mail, FTP, CD, DVD, hard drive). The electronic files will be in the following format(s):

- ☒ Autodesk® AutoCAD .dwg format Version: 2021
- ☐ Microsoft® Excel .xlsx or .xml format Version _____
- ☐ Microsoft® Access .mdb format Version _____
- ☐ ESRI® shapefile (.shp) and geodatabase (.gdb)
- ☐ Bentley® MicroStation .dgn format Version _____

In the event that the RECIPIENT requests electronic file versions not identified above, HRG shall be reimbursed on an hourly basis (at $150 per hour) for any costs necessary to create or otherwise prepare the data in a manner deemed appropriate by HRG.

In witness thereof and with the intent to be legally bound, RECIPIENT agrees to all terms and conditions contained herein and hereby sets their hand and seal this _____ day of _____20___.

_____ Name of Company or Individual

_____ Printed Name

_____ Authorized Signature

_____ Title

DEDC LLC
ENGINEERING | DESIGN | CONSULTING

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Suite 830
Philadelphia, PA 19103
Phone
267.804.7286
www.dedc-eng.com

RELEASE FORM FOR ELECTRONIC FILES TO CONTRACTORS

Owner: _____

Project: _____

Design Professional: _____

List of Drawings: _____

Usage Fee: N/A Date: _____

Definitions:

All Electronic Information provided by the Design Professional, which includes everything transmitted on electronic storage media, from a website, or via the Internet, is known as the Data.

The Recipient is the undersigned firm or individual requesting the Data.

Terms:

In accepting and utilizing the Data, the Recipient agrees with the following Terms:

1. The General Contractor/Construction Manager, and every subcontractor using the Data shall each return one signed copy of this Release Form to the Design Professional.

2. DISTRIBUTION AND COORDINATION: The Recipient will not distribute the Data to any other firm or individual, except for the Recipient's consultants or subcontractors. If the Design Professional issues an update or change in the Data during the course of the project, the General Contractor/Construction Manager is responsible for distribution and coordination.

3. USE: The Data will be used only for the specific project and owner listed above. None of the Data will be used for any other project or purpose, at this or any other site. Indicia/Title Block may be removed at the discretion of the design professional.

4. OWNERSHIP: Copyright and ownership of the Data are not transferred to the Recipient, or to any other party. The Design Professional and/or Owner retain all rights to the Data.

5. ACCURACY: Design data is never perfect. The information is not guaranteed to be accurate. The method of data transfer cannot be guaranteed to be error-free, durable, or compatible with the Recipient's hardware, software or output systems. Any defects discovered by the Recipient shall be reported to the Design Professional. **Contractors and subcontractors are not relieved of their normal responsibilities to independently**

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6. The Design Professionals are not to be held liable for any damages attributable to the use of the Data, or changes and additions made to the Data by you or your consultants or subcontractors.

7. This agreement shall be governed by the laws of Delaware.

GENERAL CONTRACTOR, CONSTRUCTION MANAGER, OR SUBCONTRACTOR:

Recipient: _____

Company

Print Name: _____

Signed: _____

Date

SECTION 08 4113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

B. Related Requirements:
1. Section 08 1613 - Fiberglass Doors.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
   a. Joinery, including concealed welds.
   b. Anchorage.
   c. Expansion provisions.
   d. Glazing.
   e. Flashing and drainage.
3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
4. Include point-to-point wiring diagrams showing the following:
   a. Power requirements for each electrically operated door hardware.
   b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:
1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.

4. Glazing.
5. Flashing and drainage.

E. Delegated Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
a. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

B. Test and Evaluation Reports:
1. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by qualified testing agency.

C. Qualification Statements:
1. For Installer.

D. Delegated design engineer qualifications.

E. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For aluminum-framed entrances and storefronts.

1.6 QUALITY ASSURANCE

A. Qualifications:
1. Installers: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors and that employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.
2. Delegated Design Engineer: A professional engineer who is legally qualified to practice in state where Project is located and who is experienced in providing engineering services of the type indicated.
3. Testing Agency: Qualified in accordance with ASTM E699 for testing indicated and acceptable to Owner and Architect.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures, including, but not limited to, excessive deflection.
      b. Noise or vibration created by wind and thermal and structural movements.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Water penetration through fixed glazing and framing areas.
      e. Failure of operating components.
   2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
   1. Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
      c. Cracking, peeling, or chipping.
   2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
   1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
   2. Failure also includes the following:
      a. Thermal stresses transferring to building structure.
      b. Glass breakage.
      c. Noise or vibration created by wind and thermal and structural movements.
      d. Loosening or weakening of fasteners, attachments, and other components.
      e. Failure of operating units.

C. Structural Loads:
   1. Wind Loads: As indicated on Drawings.

2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:
1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

E. Structural: Test in accordance with ASTM E330/E330M as follows:
1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:
1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft. (480 Pa).

G. Water Penetration under Dynamic Pressure: Test in accordance with AAMA 501.1 as follows:
1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft. (480 Pa).
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

H. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:
1. Thermal Transmittance (U-factor):
   a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.36 Btu/sq. ft. x h x deg F (2.55 W/sq. m x K) as determined in accordance with NFRC 100.
   b. Entrance Doors: U-factor of not more than 0.63 Btu/sq. ft. x h x deg F (4.37 W/sq. m x K) as determined in accordance with NFRC 100.
2. Solar Heat-Gain Coefficient (SHGC):
   a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.36 as determined in accordance with NFRC 200.
   b. Entrance Doors: SHGC of not more than 0.58 as determined in accordance with NFRC 200.
3. Air Leakage:
   a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa) when tested in accordance with ASTM E283.
   b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
4. Condensation Resistance Factor (CRF):
   a. Fixed Glazing and Framing Areas: CRF for the system of not less than 55 as determined in accordance with AAMA 1503.
   b. Entrance Doors: CRF of not less than 63 as determined in accordance with AAMA 1503.

I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
   1. Temperature Change: 120 degrees Fahrenheit, ambient; 180 degrees Fahrenheit, material surfaces.

2.3 STOREFRONT SYSTEMS

A. Basis of Design Manufacturer: Kawneer North America; an Arconic company or one of the following companies that may offer comparable products:
   1. Arcadia, Inc.
   2. Avanti Systems, Inc.
   3. EFCO Corporation.
   4. U.S. Aluminum; a brand of C.R. Laurence
   5. YKK AP America Inc.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
   1. Exterior Framing Construction: Thermally broken .
      a. Basis of Design Product: Subject to compliance with requirements, provide Kawneer North America Trifab VG 451UT and VG451T or comparable product by another manufacturer.
   2. Interior Framing Construction: Nonthermal.
      a. Basis of Design Product: Subject to compliance with requirements, provide Kawneer North America Trifab VG 451 or comparable product by another manufacturer
   3. Glazing System: Retained mechanically with gaskets on four sides.
   4. Glazing Plane: Center(SF-3) and Front (Typical).
   5. Finish:
      a. Typical: Clear Anodized finish.
      b. SF-3: Color Anodized finish.
   6. Fabrication Method: Field-fabricated stick system.
   7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   8. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 08 7100 "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets as indicated within door and door hardware schedule(s) within the drawings to comply with requirements in Section 08 7100 Door Hardware.

2.5 GLAZING

A. Glazing: Comply with Section 08 8000 "Glazing."

B. Glazing Sealants: As recommended by manufacturer. Comply with Section 08 8000 "Glazing."

2.6 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (((ASTM B221M))).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:
1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

F. Regional Materials: Products shall be manufactured within 100 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.

2.7 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

C. Concealed Flashing: Dead-soft, 0.018-inch- (0.457-mm-) thick stainless steel, complying with ASTM A240/A240M, of type recommended by manufacturer.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.

3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using head-and-sill-receptor system with shear blocks at intermediate horizontal members.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
1. Color: Red, submit manfuacturer's full range of indicated color for selection.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 07 9200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 08 8000 "Glazing."

3.4 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:
   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

END OF SECTION 08 4113

SECTION 08 8000 - GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Glass products.
2. Insulating glass.
3. Glazing sealants.
4. Glazing tapes.
5. Miscellaneous glazing materials.

1.2 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.3 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For glass.

C. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved and certified by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 degrees Fahrenheit.

1.10 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
   1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.
   1. Warranty Period: 10 years from date of Substantial Completion.

~~C. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.~~
~~1. Warranty Period: 10 years from date of Substantial Completion.~~

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain tinted and coated glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:
1. Design Wind Pressures: As indicated on Drawings.
    a. Wind Design Data: As indicated on Drawings.
2. Design Snow Loads: As indicated on Drawings.
3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
4. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 0.24 inch thick.
2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
3. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
4. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
5. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. NGA Publications: "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.
1. Minimum Glass Thickness for Exterior Lites: 6 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 MANUFACTURERS

A. Basis-of-Design: Provide Basis-of-Design Product or comparable products by the following:

B. Base Glass Manufacturers:
1. AGC Glass Company North America, Inc.
2. Cardinal Glass Industries.
3. Guardian Glass; SunGuard.
4. Pilkington North America.
5. Schollglas.
6. Vitro Architectural Glass.

C. Glass Fabricators:
1. Dreamwalls.
2. Pilkington.
3. McGrory.
4. Viracon.
5. PRL Glass & Aluminum.
6. Or comparable local to project site glass fabricator submitted for Architect's review.

D. IGU Fabricators:
1. Guardian Glass.
2. Pilkington.

3. Vitro Architectural Glass.
4. Viracon.
5. PRL Glass & Aluminum.
6. Or comparable IGU fabricator submitted for Architect's review.

2.5 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Tinted Annealed Float Glass: ASTM C1036, Type I, Class 2 (tinted), Quality-Q3.

C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

D. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

E. Reflective- and Low-E-Coated Vision Glass: ASTM C1376.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.
1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
    a. Manufacturers: Subject to compliance with requirements, provide products by the following:
        1) Technoform.
        2) Thermix; a brand of Ensinger USA.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 GLAZING SEALANTS

A. General:
1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As indicated by manufacturer's designations.

B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    a. GE Construction Sealants; Momentive Performance Materials Inc.
    b. Pecora Corporation.

c. Sika Corporation.
d. The Dow Chemical Company.
e. Tremco Incorporated.

C. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
a. Adfast.
b. GE Construction Sealants; Momentive Performance Materials Inc.
c. Pecora Corporation.
d. Sika Corporation.
e. The Dow Chemical Company.
f. Tremco Incorporated.

D. Neutral-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
a. GE Construction Sealants; Momentive Performance Materials Inc.
b. Pecora Corporation.
c. Sika Corporation.
d. The Dow Chemical Company.
e. Tremco Incorporated.

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.9 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:
1. Silicone with Shore A durometer hardness of 85, plus or minus 5.

2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:
1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:
1. Silicone with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
a. Temperature Change: 120 degrees Fahrenheit , ambient; 180 degrees Fahrenheit , material surfaces.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

A. Clear Glass Type GL1: Fully tempered float glass.
1. Minimum Thickness: 6 mm.
2. Safety glazing required.

3.9 INSULATING GLASS SCHEDULE

A. Low-E-Coated, Tinted Insulating Glass Type GL3:
1. Basis-of-Design Product: Vitro Architectural Glass; Solarban70.
2. Overall Unit Thickness: 1 inch.
3. Minimum Thickness of Each Glass Lite:6 mm.
4. Outdoor Lite: Tinted heat-strengthened float glass.
   a. Tint Color: Gray; Vitro Solargray.
5. Interspace Content: Argon.
6. Indoor Lite: Clear fully tempered float glass.
7. Low-E Coating: Sputtered on second surface.
8. Winter Nighttime U-Factor: 0.24 maximum.
9. Summer Daytime U-Factor: 0.36 maximum.
~~10. Visible Light Transmittance: 64 percent minimum.~~
~~11.~~10. SGHC: 0.36 maximum.
~~12.~~11. Safety glazing required.

END OF SECTION 08 8000

SECTION 23 8129 - VARIABLE-REFRIGERANT-FLOW HVAC SYSTEMS

PART 1 GENERAL

1.1 REFERENCE STANDARDS

A. AHRI 1230 - Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment; 2021.

B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.

C. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

D. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.

E. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2026.

F. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service; 2016.

G. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV); 2013.

H. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.

I. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015, with Editorial Revision (2018).

J. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2017.

K. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012 (Reapproved 2018).

L. ASTM F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40; 2017.

M. ASTM F441/F441M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80; 2015.

N. ASTM F493 - Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings; 2014.

O. ASTM F656 - Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) and Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings; 2025.

P. ISO 9001 - Quality Management Systems — Requirements; 2015, with Amendment (2024).

Q. ISO 14001 - Environmental Management Systems — Requirements with Guidance for Use; 2026.

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

S. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces; 2023.

1.2 SUMMARY

A. Section includes complete VRF HVAC system(s) which may include, but not limited to, the following components:
1. Indoor, exposed, wall-mounted units.
2. Indoor, concealed, ceiling-mounted units for ducting.
3. Indoor, concealed, multi-position units for ducting.
4. Indoor, recessed, ceiling-mounted units with 33x33” grilles.
5. Indoor, recessed, ceiling-mounted units with 24x24” grilles.
6. Indoor, recessed, one-way ceiling-mounted units.
7. Indoor, suspended, ceiling-mounted units.
8. Indoor, energy recovery ventilator.
9. Indoor, shut-off valve kits (SVKs)
10. Indoor, heat recovery control units (HRCUs).
11. Indoor, water-source heat recovery units.
12. Outdoor, air-source heat-pump units.
13. Outdoor, air-source heat recovery units.
14. VRF system controls.
15. VRF system refrigerant and oil.
16. VRF system control cable.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Nationally recognized manufacturer of VRF HVAC systems and products.
2. Shipped VRF HVAC systems with similar requirements to local market for a continuous period of 5 years within time of bid.
3. VRF HVAC systems and products that have been successfully tested and in use on at least 5 completed projects.
4. Having complete published online catalog literature, installation, and operation and maintenance manuals for all products intended for use. Resources must be publicly available without login or sign-in as registered account.
5. Having full-time in-house employees for the following:
   a. Product research and development.
   b. Product and application engineering.
   c. Product manufacturing, testing, and quality control.
   d. Technical support for system installation training, startup, commissioning, and troubleshooting of installations.
   e. Owner training.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by VRF HVAC system manufacturer.

1. Each employee shall be certified to have successfully completed manufacturer training for proper installation of systems, including, but not limited to, equipment, piping, controls, and accessories indicated and furnished for installation.
2. Installer certificate shall be valid and current for duration of Project.
3. Retain copies of Installer certificates on-site and make available on request.
4. Each person assigned to Project shall have demonstrated past experience.
    a. Demonstrated experience with VRF products being installed for period within 3 consecutive years before time of bid.
    b. Demonstrated experience on 3 projects of similar VRF system complexity, scope, and value.

C. ISO Compliance: System equipment and components furnished by VRF HVAC system manufacturer shall be manufactured in an ISO 9001 and ISO 14001 facility.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in a clean and dry place. Protect products from weather, dirt, dust, water, construction debris, and physical damage.
1. Retain factory-applied coverings on equipment to protect finishes during construction and remove just prior to operating unit.

B. Cover unit openings before installation to prevent dirt and dust from entering inside of units. If required to remove coverings during unit installation, reapply coverings over openings after unit installation and remove just prior to operating unit.

C. Comply with manufacturer's written rigging and installation instructions for unloading and moving to final installed location.

1.5 SUBMITTALS

A. Product Data: Provide drawings indicating dimensions, rough-in connections, and electrical characteristics and connection requirements.

B. Manufacturer's Instructions: Include assembly instructions, support details, connection requirements, and start-up instructions.

C. Manufacturer's qualification statement.

D. Installer's qualification statement.

E. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

F. Operation and Maintenance Data: Provide maintenance data, parts lists, controls, and accessories. Include trouble-shooting guide.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of the type this section and approved by manufacturer, with minimum three years of documented experience.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace equipment and components that fail(s) in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures.
      b. Faulty operation.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
   2. Warranty Period:
      a. For Compressor 10 year(s) from date of Substantial Completion.
      b. For Parts, 10 year(s) from date of Substantial Completion.

B. Installer's Labor Warranty: Installer agrees to repair or replace equipment and components that fail(s) in materials or workmanship within specified warranty period.
   1. Warranty Period 1 year from date of substantial completion.

PART 2 PRODUCTS

2.1 VRF HVAC SYSTEMS

A. Manufacturers: Basis of design is CITY MULTI. Subject to compliance with requirements, provide products by one of the following brands only:
   1. Mitsubishi Electric & Electronics USA, Inc.
   2. Trane, Inc.
   3. Daikin Applied
   4. Samung
   5. LG

2.2 SYSTEM DESCRIPTION

A. VRF HVAC system(s) with variable capacity in response to varying cooling and heating loads. System shall consist of multiple indoor units, outdoor unit module(s), and HRCUs or SVKs when shown on Drawings. Piping, controls, and electrical power to components make operating system(s) complying with requirements indicated.
   1. System(s) operation being heat pump or heat recovery as indicated on Drawings.
   2. Each system with one refrigerant circuit serving all indoor units connected to system.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. AHRI Compliance: System and equipment performance certified according to AHRI 1230-2023.

D. UL Compliance: Comply with UL 60335-2-40.

2.3 INDOOR, EXPOSED, WALL-MOUNTED UNITS

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.
4. Coil Assembly:
5. Coil Casing: Aluminum, galvanized, or stainless steel.
6. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
7. Coil Tubes: Copper, of diameter and thickness required by performance.
8. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics. Hydronic coil by modulating control valve.
9. Unit Internal Tubing: Copper tubing with brazed joints.
10. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
11. Factory Charge: Dehydrated air or nitrogen.
12. Testing: Factory pressure tested and verified to be without leaks.

C. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Gravity.
    a. If a floor drain is not available at unit, provide unit with field-installed condensate pump accessory.
3. Field Piping Connection: Non-ferrous material.

D. Fan and Motor Assembly:
1. Fan(s):
    a. Direct-drive arrangement.
    b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
    c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
    d. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
5. Vibration Control: Integral isolation to dampen vibration transmission.

E. Filter Assembly:
1. Access: Front, to accommodate filter replacement without the need for tools.
2. Media: Manufacturer's standard washable filter with antimicrobial treatment.

F. Grille Assembly: Manufacturer's standard discharge grille within front face of unit cabinet.
1. Motorized Vane: Adjustable or oscillating flow pattern.

G. Field-Installed Unit Accessories:
1. Condensate pump with integral white plastic housing for exposed surface mounting directly under indoor unit capable of at least 10 feet of lift with drain pan level sensor and overflow switch.

H. Unit Controls:
1. Factory-Installed Sensors:
   a. Unit inlet air temperature.
   b. Coil entering refrigerant or water temperature.
   c. Coil leaving refrigerant or water temperature.
   d. Refrigerant detection if coil is DX.
2. Features and Functions:
   a. Self-diagnostics.
   b. Time delay.
   c. Auto-restart.
   d. Auto operation mode.
   e. Manual operation mode.
   f. Filter service notification.
   g. Run test switch.

I. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.4 INDOOR, CONCEALED, CEILING-MOUNTED UNITS FOR DUCTING

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

B. Cabinet:
1. Material: Galvanized steel.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.
4. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics. Hydronic coil by modulating control valve.
5. Unit Internal Tubing: Copper tubing with brazed joints.
6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:
   1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
   2. Condensate Removal: Unit-mounted lifting mechanism, capable of lifting drain water to an elevation above top of cabinet (sizes 54 and smaller only).
   3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
   1. Fan(s):
      a. Direct-drive arrangement.
      b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
      c. Fabricated from non-ferrous components or ferrous components with corrosion-resistant finish.
      d. Wheels statically and dynamically balanced.
   2. Motor: PSC, Brushless DC or electronically commutated with permanently lubricated bearings.
   3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
   4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
   5. External Static Settings: Vary based on Low, Medium, or High Static models. Models as shown on Drawings
      a. Low Static settings include 0.02, 0.06, 0.14, or 0.20” WG.
      b. Medium Static settings include 0.14, 0.20, 0.28, 0.40, or 0.60” WG.
      c. High Static settings include 0.40 or 1.00” WG for 208V and 0.60 or 1.00” WG for 230V.
   6. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
   1. Access: Bottom, side, or rear to accommodate field installation and replacement without need for tools.
   2. Media: Poly Propylene Honeycomb Fabric (Washable) with Low and Medium Static models. No filter provided with High Static models.

G. Field-Installed Unit Accessories:
   1. Condensate pump capable of at least 10 feet of lift.

H. Unit Controls:
   1. Factory-Installed Sensors:
      a. Unit inlet air temperature.
      b. Coil entering refrigerant or water temperature.
      c. Coil leaving refrigerant or water temperature.
      d. Refrigerant detection if coil is DX.
   2. Features and Functions:
      a. Self-diagnostics.
      b. Time delay.
      c. Auto-restart.
      d. External static pressure control.
      e. Auto operation mode.
      f. Manual operation mode.
      g. Filter service notification.
      h. Drain assembly high water level safety shutdown and notification.
      i. Run test switch.

I. Unit Electrical:
1. Field Connection: Single point connection to power unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch.

2.5 INDOOR, CONCEALED, MULTI-POSITION UNITS FOR DUCTING

A. Description: Factory-assembled complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted steel.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.
4. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics.
5. Unit Internal Tubing: Copper tubing with brazed joints.
6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Gravity.
   a. If a floor drain is not available at unit, provide unit with field-installed condensate pump accessory.
3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
1. Fan(s):
   a. Direct-drive arrangement.
   b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
   c. Fabricated from non-ferrous components or ferrous components with corrosion-resistant finish.
   d. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
5. External Static Settings: 0.30, 0.50, or 0.80” WG.

6. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
1. Access: Front to accommodate field installation and replacement without need for tools.
2. Media: Poly Propylene Honeycomb Fabric (Washable).

G. Field-Installed Unit Accessories:
1. Accessory electric heat kit mounted directly to unit air outlet connection, heat amount per Drawings, separate power supply required.
2. Condensate pump capable of at least 10 feet of lift with drain pan level sensor and overflow switch.

H. Unit Controls:
1. Factory-Installed Sensors:
   a. Unit inlet air temperature.
   b. Coil entering refrigerant temperature.
   c. Coil leaving refrigerant temperature.
   d. Refrigerant detection.
2. Features and Functions:
   a. Self-diagnostics.
   b. Time delay.
   c. Auto-restart.
   d. External static pressure control.
   e. Auto operation mode.
   f. Manual operation mode.
   g. Filter service notification.
   h. Drain assembly high water level safety shutdown and notification.
   i. Run test switch.

I. Unit Electrical:
1. Field Connection: Single point connection to power unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch.

2.6 INDOOR, RECESSED, CEILING-MOUNTED UNITS WITH 33x33” GRILLES

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.

4. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics. Hydronic coil by modulating control valve.
5. Internal Tubing: Copper tubing with brazed joints.
6. Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Unit-mounted integral lifting mechanism, capable of lifting drain water to an elevation above top of cabinet.
3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
1. Fan(s):
   a. Direct-drive arrangement.
   b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
   c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
   d. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
   a. Airflow volume shall vary based on three unit height settings.
5. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
1. Access: Bottom, to accommodate filter replacement without the need for tools.
2. Media: Washable screen.

G. Return/Discharge-Air Grille Assembly: Attached to bottom of unit cabinet.
1. Discharge Pattern: Include accessory air outlet shutter plates as required for two, three, or four-way throw as indicated on Drawings.
   a. Discharge Pattern Adjustment: Field-adjustable settings for up and down range of motion.
   b. Discharge Pattern Closure: Ability to close individual discharges of units with multiple patterns using wall-mounted controller.
2. Motorized Vanes: Modulating up and down flow pattern for uniform room air distribution.
3. Alternate Branch Supply Duct Connection: Sheet metal knockout for optional connection to one supply branch duct as shown on Drawings. Utilize accessory air outlet shutter plate with branch ducting.

H. Integral Occupant and Location Detection: Unit includes occupant and location detection for automatic air distribution and energy saving setback control in the following manner.
1. Air Distribution
   a. Distribution operation: Integral occupant and location detection will not be utilized to control air distribution. During COOL mode, vanes move to horizontal airflow direction. During HEAT mode, vanes move to down airflow direction.

I. Outdoor Air Ventilation Connection: Sheet metal knockout for connection to outdoor air ventilation duct per Drawings.

J. Unit Controls:
1. Factory-Installed Sensors:
   a. Unit inlet air temperature.
   b. Coil entering refrigerant or water temperature.
   c. Coil leaving refrigerant or water temperature.
   d. Room occupancy/location.
   e. Refrigerant detection if coil is DX
2. Features and Functions:
   a. Integral occupancy and location sensor.
   b. Time delay.
   c. Auto-restart.
   d. Auto operation mode.
   e. Manual operation mode.
   f. Filter service notification.
   g. Drain assembly high water level safety shutdown and notification.
   h. Run test switch.

K. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.7 INDOOR, RECESSED, CEILING-MOUNTED UNITS WITH 24x24” GRILLES

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics. Hydronic coil by modulating control valve.
5. Internal Tubing: Copper tubing with brazed joints.
6. Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:

1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Unit-mounted integral lifting mechanism, capable of lifting drain water to an elevation above top of cabinet.
3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
1. Fan(s):
   a. Direct-drive arrangement.
   b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
   c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
   d. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
5. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
1. Access: Bottom, to accommodate filter replacement without the need for tools.
2. Media: Washable screen.

G. Return/Discharge-Air Grille Assembly: Attached to bottom of unit cabinet.
1. Discharge Pattern: Four-way throw.
   a. Discharge Pattern Adjustment: Field-adjustable settings for up and down range of motion for individual vanes. Provide Deluxe controller to enable configuration.
2. Motorized Vanes: Modulating up and down flow pattern for uniform room air distribution.

H. Integral Occupant and Location Detection: Unit includes occupant and location detection for automatic air distribution and energy saving setback control in the following manner-
1. Air Distribution
   a. Default distribution operation: Integral occupant and location detection will not be utilized to control air distribution. During COOL mode, vanes move to horizontal airflow direction. During HEAT mode, vanes move to down airflow direction.

I. Outdoor Air Ventilation Connection: Sheet metal knockout for optional connection to outdoor air ventilation duct.

J. Unit Controls:
1. Factory-Installed Sensors:
   a. Unit inlet air temperature.
   b. Coil entering refrigerant or water temperature.
   c. Coil leaving refrigerant or water temperature.
   d. Refrigerant detection if coil is DX.
2. Features and Functions:
   a. Integral occupancy and location sensor.
   b. Time delay.
   c. Auto-restart.
   d. Auto operation mode.
   e. Manual operation mode.

f. Filter service notification.
g. Drain assembly high water level safety shutdown and notification.
h. Run test switch.

K. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.8 INDOOR, RECESSED, ONE-WAY CEILING-MOUNTED UNITS

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Capacity Control: DX coil by electronic modulating type valve with linear or proportional characteristics.
5. Internal Tubing: Copper tubing with brazed joints.
6. Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Unit-mounted integral lifting mechanism, capable of lifting drain water to an elevation above top of cabinet.
3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
1. Fan(s):
a. Direct-drive arrangement.
b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
d. Wheels statically and dynamically balanced.
2. Motor: PSC, Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
5. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
1. Access: Bottom, to accommodate filter replacement without the need for tools.
2. Media: Washable screen.

G. Return/Discharge-Air Grille Assembly: Attached to bottom of unit cabinet.
1. Discharge Pattern: One-way throw.
a. Discharge Pattern Adjustment: Field-adjustable settings for up and down range of motion for individual vanes.
2. Motorized Vanes: Modulating up and down flow pattern for uniform room air distribution.

H. Field-Installed Unit Accessories:
1. Condensate pump capable of at least 10 feet of lift.

I. Unit Controls:
1. Factory-Installed Sensors:
a. Unit inlet air temperature.
b. Coil entering refrigerant temperature.
c. Coil leaving refrigerant temperature.
d. Refrigerant detection.
2. Features and Functions:
a. Integral occupancy and location sensor.
b. Time delay.
c. Auto-restart.
d. Auto operation mode.
e. Manual operation mode.
f. Filter service notification.
g. Drain assembly high water level safety shutdown and notification.
h. Run test switch.

J. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.9 INDOOR, SUSPENDED, CEILING-MOUNTED UNITS

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to piping, power, and controls field connections.

B. Cabinet:
1. Material: Painted or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. DX Coil Assembly:
1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.

3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Expansion Valve: Electronic modulating type with linear or proportional characteristics.
5. Internal Tubing: Copper tubing with brazed joints.
6. Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Factory Charge: Dehydrated air or nitrogen.
8. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Gravity.
    a. If a floor drain is not available at unit, provide unit with field-installed condensate pump accessory.
3. Field Piping Connection: Non-ferrous material.

E. Fan and Motor Assembly:
1. Fan(s):
    a. Direct-drive arrangement.
    b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
    c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
    d. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Multiple or variable speed with speed setting adjustable via central or wall controllers when present.
5. Vibration Control: Integral isolation to dampen vibration transmission.

F. Filter Assembly:
1. Access: Bottom, to accommodate filter replacement without the need for tools.
2. Media: Manufacturer's washable filter with antimicrobial treatment.

G. Discharge-Air Grille Assembly: Mounted in front of unit cabinet.
1. Discharge Pattern: One-way throw.
2. Discharge Pattern Adjustment: Field-adjustable limits for range of pattern.
3. Motorized Vanes: Modulating up and down flow pattern for uniform room air distribution.

H. Return-Air Grille Assembly: Manufacturer's standard.

I. Outdoor Air Ventilation Connection: Sheet metal knockout for optional connection to outdoor air ventilation duct.

J. Field-Installed Unit Accessories:
1. Condensate pump capable of at least 10 feet of lift with drain pan level sensor and overflow switch.

K. Unit Controls:
1. Factory-Installed Sensors:
    a. Unit inlet air temperature.
    b. Coil entering refrigerant temperature.
    c. Coil leaving refrigerant temperature.
    d. Refrigerant detection.

2. Features and Functions:
    a. Time delay.
    b. Auto-restart.
    c. Auto operation mode.
    d. Manual operation mode.
    e. Filter service notification.
    f. Drain assembly high water level safety shutdown and notification.
    g. Run test switch.

L. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.10 INDOOR, ENERGY RECOVERY VENTILATOR

A. Description: Factory-assembled and tested complete unit with components, wiring, and controls required for mating to ductwork, power, and controls field connections.

B. Cabinet:
1. Material: Galvanized steel.
2. Insulation: Self-extinguishing urethane foam.
3. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.
4. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Energy Recovery Heat-Exchanger Bypass:
1. Low Leakage Damper: with electric actuator with integral controls to bypass up to 70% of outdoor air flow around the energy recovery heat exchanger during times of favorable weather, and there is no energy-saving benefit to circulate air across the energy recovery heat exchanger.

D. Fan and Motor Assemblies: Separate fan and motor assemblies for supply and exhaust airstreams with control for equal airflow.
1. Fan(s):
    a. Direct-drive arrangement.
    b. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
    c. Wheels statically and dynamically balanced.
2. Motor: Brushless DC or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control:
    a. Single-phase units shall include four speed settings or variable speed with a speed range of least 25 percent.
    b. Three-phase units shall include independent control for supply and exhaust air to enable & control pressurization.
5. Vibration Control: Integral isolation to dampen vibration transmission.

E. Filter Assemblies: Separate filter assemblies for outdoor air and exhaust airstreams entering energy recovery heat exchanger.
1. Access: Removable maintenance access panel.

2. Efficiency: MERV 7.
3. Replaceable Media: Extended surface, panel, or cartridge with antimicrobial treatment fiber media.

F. Energy Recovery Heat Exchanger:
1. Total (sensible and latent) energy exchange between outdoor air and exhaust airstreams with performance indicated on Drawings.
2. Fixed element with no moving parts.
3. Plate Material and Coating: Chemically treated paper with selective hygroscopicity, moisture permeability, and gas barrier properties.
4. AHRI 1060 certified and bearing the AHRI label.
5. Entering Outside Air Temperature Range: Shall be between 14°F and 104°F to avoid intermittent supply air fan operation-
   a. OFF for 10 minutes, ON for 60 minutes if entering OA below 14ºF.
   b. OFF for 55 minutes, ON for 5 minutes if entering OA below 5º F.

G. Unit Controls:
1. Factory-Installed Sensors:
   a. Unit entering outdoor air temperature.
   b. Unit entering exhaust air temperature.
2. Features and Functions: Self-diagnostics, time delay, auto-restart.

H. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.11 INDOOR, VENTILATED HEAT RECOVERY CONTROL UNITS (HRCUs)

A. Description: Factory-assembled and tested complete unit with components, piping, wiring, and controls required for mating to piping, power, and controls field connections.
1. Specially designed for use in systems with simultaneous heating and cooling.
2. Systems shall include one or multiple units designed by variable refrigerant system manufacturer for field interconnection to make a single refrigeration circuit and multiple indoor units.
3. Units shall respond to calls for HEAT or COOL operation from indoor units by enabling refrigerant or water flow as equipment shown on Drawings require.
   a. If flow direction from HRCU alternates, flow in COOL direction to indoor units in HEAT mode during outdoor unit defrost sequence is not allowed.

B. Cabinet:
1. Galvanized-steel construction.
2. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
3. Internal Access:
   a. Removable panels or hinged doors of adequate size.
   b. Access to all internal components for inspection, cleaning, service, or replacement.
4. Qty (2) 4” duct connection ports for exhaust and intake air

C. Drain Pan: If required by manufacturer's design, provide unit with non-ferrous drain pan with bottom sloped to a low point drain connection.

D. Assemblies and Specialties:
1. Specially designed by manufacturer for type of VRF HVAC system being installed, either two or three pipe.
2. Each branch circuit shall have refrigerant and/or water control valve(s) to control flow.
3. Units serving DX indoor units shall include mitigation shut-off valves at each branch circuit.
4. Each branch port connection shall be fitted with an isolation valve to simplify service to any individual branch.

E. Unit Controls:
1. Factory-Installed Sensors:
   a. Liquid inlet temperature.
   b. Bypass exit area temperature.
   c. Bypass outlet temperature.
   d. Bypass inlet temperature.
   e. High pressure sensor.
   f. Medium pressure sensor.
   g. Integral Refrigerant Leak Detector Sensor

F. Refrigerant Leak Detection:
1. Sequence upon receiving leak detection signal from any DX indoor unit:
   a. Shut-off valves for each port(s) connected DX indoor unit(s) having detected refrigerant close.
   b. If indoor unit fan(s) where refrigerant is detected is set to AUTO, fan switches to ON.
   c. Refrigerant detection signal output activated.
   d. Normal operation continues uninterrupted for ports and DX indoor units where refrigerant is not detected.
2. Sequence upon receiving leak detection signal from integral leak detection sensor
   a. All connected indoor and outdoor units within the system are stopped
   b. Shut-off valves for liquid and suction lines close
   c. Dry contact output from TBX1-2 is activated
   d. Alarm output signal TBX3-4 is activated
   e. Error Code 1524 appears on local controller and central controller

G. Unit Electrical:
1. Field Connection: Single point connection to power entire unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.12 OUTDOOR, AIR-SOURCE HEAT RECOVERY UNITS

A. Description: Factory-assembled and tested complete unit designed for use in systems with simultaneous heating and cooling.
1. Systems shall consist of one unit, or multiple unit modules that are designed by variable refrigerant system manufacturer for field interconnection to make a single refrigeration circuit, heat recovery control unit(s), and multiple indoor units.

B. Cabinet:
1. Galvanized steel and coated with a corrosion-resistant finish.
   a. Coating with documented salt spray test performance of 2000 hours according to ASTM B117 surface scratch test (SST) procedure.

2. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Compressor and Motor Assembly:
1. One or more positive-displacement, direct-drive and hermetically sealed scroll compressor(s) with inverter drive. Non-inverter compressors—where LRA applies—are not allowed.
2. Protection: Integral protection against the following-
   a. Refrigerant overcharge and undercharge
   b. High and low refrigerant pressure.
   c. High refrigerant and oil temperature.
   d. Liquid flood back.
   e. Thermal and overload.
   f. Voltage fluctuations.
   g. Phase failure and phase reversal.
   h. Short cycling.
3. Speed Control: Configurable to maintain refrigerant evaporating and condensing temperatures while varying refrigerant flow to satisfy cooling and heating loads.
   a. Cooling mode fixed 32°F evaporator temperature.
   b. Cooling mode fixed 43°F evaporator temperature.
   c. Cooling mode variable 32-48°F evaporator temperature.
   d. Heating mode high COP operation.
   e. Heating mode high heating output operation.
4. Vibration Control: Integral isolation to dampen vibration transmission.
5. Oil Management: Timed sequence enabled during extended periods of reduced refrigerant flow to ensure proper lubrication over entire operating range. Sequences which rely on sensing oil level risk sensor failure or sensor placement not accounting for line length and are not allowed.
6. Crankcase heaters with integral control to maintain safe operating temperature.
7. Fusible plug.

D. Heat-Exchanger Assembly: Individual coil segments for each unit face to simplify future service replacement costs. Documented salt spray test performance of 2000 hours according to ASTM B117 surface test (SST) procedure.
1. Plate Fin Coils:
   a. Casing: Aluminum, galvanized, or stainless steel.
   b. Fins: Aluminum or copper, mechanically bonded to tubes, with arrangement required by performance.
   c. Tubes: Copper, of diameter and thickness required by performance.
2. Zinc-Coated Aluminum Vertical Flat Tube Coils:
   a. Series of tubes containing a series of multiple, parallel flow channels layered between refrigerant header manifolds.
   b. Construct fins, tubes, and header manifolds of aluminum alloy.

E. Heat-Exchanger Defrost Strategy:
1. Alternate methods based on ambient temperatures.
   a. Hot-gas method to maximize efficiency during mild ambient temperatures. Method prolongs defrost sequence.
      1) Segmented coil (single-module systems) or alternating modules (twinned systems) to deliver simultaneous defrost and HEAT delivery indoors.

b. Reverse-cycle method to maximize comfort during extreme ambient temperatures. Method shortens defrost sequence.
1) Leverage below 33.8°F for single-module systems and below 23°F for twinned systems to deliver shorter defrost cycles.

2. Preheat Defrost Operation: Signal to indoor units operating in HEAT to increase space temperature before the start of defrost sequence.

F. Heat-Exchanger Fan and Motor Assembly:
1. Fan(s): Propeller type.
a. Direct-drive arrangement.
b. Fabricated from non-ferrous components.
c. Statically and dynamically balanced.
2. Fan Guards: Removable safety guards complying with OSHA regulations. If using metal materials, coat with corrosion-resistant coating to match performance indicated for heat exchanger coil.
3. Motor(s): Brushless DC or electronically commutated with permanently lubricated bearings and rated for outdoor duty.
4. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.

G. Field-Installed Unit Accessories:
1. Snow/Hail Protection Kit: Provide heat exchanger coil guards and fan hoods to protect against hail damage.

H. Unit Controls:
1. Enclosure: Manufacturer's standard, and suitable for unprotected outdoor locations.
2. Factory-Installed Controller: Configurable digital control.
3. Factory-Installed Sensors:
a. Refrigerant suction temperature.
b. Refrigerant discharge temperature.
c. Outdoor air temperature.
d. Refrigerant high pressure.
e. Refrigerant low pressure.
4. Features and Functions: Self-diagnostics, time delay, auto-restart, USB connector to allow running system data up to five days based on storage capacity of memory stick when provided.

I. Unit Electrical:
1. Field Connection: Single point connection to power each unit module or factory-twinned unit and integral controls.
2. Disconnecting Means: Field-installed circuit breaker or switch, complying with NFPA 70.

2.13 VRF SYSTEM CONTROLS

A. General Requirements:
1. Communicating network may include: Indoor units, outdoor units, HRCUs, SVKs and integral controls connect through a manufacturer-selected network.
2. Network Communication Protocol: Manufacturer proprietary control communication between interconnected units.
3. Integration with Building Automation System: ASHRAE 135, BACnet IP and certified by BACnet Testing Lab (BTL), including the following-

a. Ethernet connection via RJ-45 connectors and port with transmission
b. Integration shall include control,monitoring,scheduling,change of value notifications

4. Operator Interface:
   a. Operators shall interface with system and unit controls through the following:
      1) Operator interfaces integral to controllers
      2) [Manufacturer-provided central controller.
      3) Integration with Building Automation System.
   b. Users shall be capable of interface with controllers for indoor units' control to extent privileges are enabled. Control features available to users shall include the following:
      1) On/off control.
      2) Temperature set-point adjustment.
      3) Fan speed control.

B. Wired Controllers and Sensors for Indoor Units
1. Simple Controllers for Indoor Units:
   a. Single controller capable of controlling multiple indoor units as group.
   b. Integral room temperature sensor
   c. Temperature Units: Fahrenheit and Celsius.
   d. On/Off: Turns indoor unit on or off.
   e. Operation Mode: Cool, Heat, Auto, Dehumidification, Fan Only.
   f. Temperature Display and Set-Point: Separate set points for Cooling, Heating. Adjustable in 1-degree Fahrenheit increments between.
   g. Fan Speed Setting: Select between available options furnished with unit.
   h. Airflow Direction Setting: If applicable to indoor unit style, select between available options furnished with the unit.
   i. Service Notification Display: "Filter".
   j. Error Code Notification Display: Used by service personnel to troubleshoot abnormal operation and equipment failure.
   k. Low-voltage power required for controller shall be powered through non-polar connections to indoor unit.

2.14 VRF SYSTEM REFRIGERANT AND OIL

A. Refrigerant:
1. As required by VRF HVAC system manufacturer for system to comply with performance requirements indicated.
2. ASHRAE 34, Class A2L
3. R-32.

B. Oil:
1. As required by VRF HVAC system manufacturer and to comply with performance requirements indicated.

2.15 VRF SYSTEM CONTROL CABLE

A. General Requirements: Refer to and verify all wire and cabling requirements with the manufacturer's current installation and operation manuals to ensure compliance with the latest standards and

specifications. Cables may not be spliced and shall be continuous from terminal to terminal. Do not splice cable.

B. Low-Voltage Control Network Cabling:
   1. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
      a. Shielded wire (2-core) 16 AWG—CVVS, CPEVS or MVVS.
      b. PVC insulation and jacket.
      c. Foil shielded.
      d. Flame Resistance: Comply with NFPA 262.
      e. Maximum cable distance (distance to farthest components) is 1,640 feet.
      f. Maximum cable distance from OU to connected IU is 656 feet.
      g. Maximum total cable length (sum of all network cabling) is 6,560 feet.

C. Low-Voltage Wall-Mounted Controller Cabling to Indoor Units:
   1. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
      a. 22 AWG, 2-conductor unshielded 7-stranded bare copper wire.
         1) Residential / multi-family style controllers require 4-conductor.
         2) Touch controllers with integral occupancy and light sensing controllers require low-voltage control network cabling to the network.
      b. PVC insulation and jacket.
      c. Flame Resistance: Comply with NFPA 262.
      d. Maximum cable distance (distance from controller to indoor unit) varies by controller style. Refer to manufacturer Submittal or Installation Guides.

D. Transmission power booster provided if additional signal power is required based on connected devices. Coordinate with VRF manufacturer and install near middle of communication bus when required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine products before installation. Reject products that are wet, moisture damaged, or mold damaged.

C. Examine roughing-in for piping and tubing to verify actual locations of connections before equipment installation.

D. Examine roughing-in for ductwork to verify actual locations of connections before equipment installation.

E. Examine roughing-in for wiring and conduit to verify actual locations of connections before equipment installation.

F. Examine walls, floors, roofs, and outdoor pads for suitable conditions where equipment will be installed.

G. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

H. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION, GENERAL

A. Clearance:
1. Maintain manufacturer's recommended clearances for service and maintenance.
2. Maintain clearances required by governing code.

B. Equipment Restraint Installation: Install equipment with seismic-restraint device. Comply with requirements for seismic-restraint devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."

3.3 INSTALLATION OF INDOOR UNITS

A. Install units to be level and plumb while providing a neat and finished appearance.

B. Unless otherwise required by VRF HVAC system manufacturer, support ceiling-mounted units from structure above using threaded rods; minimum rod size of 3/8 inch

C. Adjust supports of exposed and recessed units to draw units tight to adjoining surfaces.

D. Protect finished surfaces of ceilings, floors, and walls that come in direct contact with units. Refinish or replaced damaged areas after units are installed.

E. In rooms with ceilings, conceal piping and tubing, controls, and electrical power serving units above ceilings.

F. In rooms without ceiling, arrange piping and tubing, controls, and electrical power serving units to provide a neat and finished appearance.

G. Provide lateral bracing if needed to limit movement of suspended units to not more than 0.25 inch.

3.4 INSTALLATION OF OUTDOOR UNITS

A. Install units to be level and plumb while providing a neat and finished appearance.

B. Install outdoor units on support structures indicated on Drawings.

C. Pad-Mounted Installations: Install outdoor units on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
1. Attachment: Install anchor bolts to elevations required for proper attachment to supported equipment.
2. Grouting: Place grout under equipment supports and make bearing surface smooth.

D. Roof-Mounted Installations: Install outdoor units on equipment supports specified in Section 077200 "Roof Accessories." Anchor units to supports with removable, stainless-steel fasteners.

3.5 GENERAL REQUIREMENTS FOR PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping and tubing systems. Install piping and tubing as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping and tubing in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping and tubing at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping and tubing above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping and tubing to permit valve servicing.

F. Install piping and tubing at indicated slopes.

G. Install piping and tubing free of sags.

H. Install fittings for changes in direction and branch connections.

I. Install piping and tubing to allow application of insulation.

J. Install groups of pipes and tubing parallel to each other, spaced to permit applying insulation with service access between insulated piping and tubing.

K. Install sleeves for piping and tubing penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230500 "Common Work Results for HVAC."

L. Install escutcheons for piping and tubing penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230500 "Common Work Results for HVAC."

3.6 INSTALLATION OF SYSTEM CONDENSATE DRAIN PIPING

A. General Requirements for Drain Piping and Tubing:
1. Install a union in piping at each threaded unit connection.
2. Install an adjustable stainless steel hose clamp with adjustable gear operator on unit hose connections. Tighten clamp to provide a leak-free installation.
3. If required for unit installation, provide a trap assembly in drain piping to prevent air circulated through unit from passing through drain piping. Comply with more stringent of the following:
   a. Details indicated on Drawings.
   b. Manufacturer's requirements.
   c. Governing codes.
   d. In the absence of requirements, comply with requirements of ASHRAE handbooks.
4. Extend drain piping from units with drain connections to drain receptors as indicated on Drawings. If not indicated on Drawings, terminate drain connection at nearest accessible location that is not exposed to view by occupants.
5. Provide each 90-degree change in direction with a Y- or T-fitting. Install a threaded plug connection in the dormant side of fitting or future use as a service cleanout.

B. Gravity Drains:
1. Slope piping from unit connection toward drain termination at a constant slope of not less than one percent.

C. Pumped Drains:
1. If unit condensate pump or lift mechanism is not included with an integral check valve, install a full-size check valve in each branch pipe near unit connection to prevent backflow into unit.

3.7 INSTALLATION OF REFRIGERANT PIPING

A. Refrigerant Tubing Kits:
1. Unroll and straighten tubing to suit installation. Deviations in straightness of exposed tubing shall be unnoticeable to observer.
2. Support tubing as specified in Section 230516 “Hangers and Supports for HVAC Piping and Equipment.”
3. Prepare tubing ends and make mating connections to provide a pressure tight and leak-free installation.

B. Select system components with minimum 650 psig pressure rating.

C. Install piping as short and direct as possible, with a minimum number of joints and fittings.

D. Arrange piping to allow inspection and service of equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.

E. Install refrigerant piping and tubing in protective conduit where installed below ground.

F. Install refrigerant piping and tubing in rigid or flexible conduit in locations where exposed to mechanical damage.

G. Unless otherwise required by VRF HVAC system manufacturer, slope refrigerant piping and tubing as follows:
1. Install horizontal hot-gas discharge piping and tubing with a uniform slope downward away from compressor.
2. Install horizontal suction lines with a uniform slope downward to compressor.
3. Traps to entrain oil in vertical runs are not allowed.
4. Inverted traps for twinned systems may be required by manufacturer.
5. Liquid lines may be installed level.

H. When brazing, remove or protect components that could be damaged by heat. Braze pipes with a dry nitrogen purge to avoid oxidation.

I. Before installation, clean piping, tubing, and fittings to cleanliness level required by VRF HVAC system manufacturer.

J. Joint Construction:
1. Brazed Joints
a. Ream ends of tubes and remove burrs.
b. Remove scale, slag, dirt, and debris from inside and outside of tube and fittings before assembly.
c. Construct joints in accordance with AWS's "Brazing Handbook," "Pipe and Tube" Chapter.
d. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze.
e. The piping being brazed shall be purged of air to remove the oxygen and filled with one of the following inert gases: oxygen-free nitrogen, helium or argon. The piping system shall be purged with an inert gas for a minimum time corresponding to five volume changes through the piping system prior to brazing. The pre-purge rate shall be at a minimum velocity of 100 feet per minute (0.56 yard/s). The inert gas shall be directly connected to the tube system being brazed to

prevent the entrainment of ambient air. After the pre-purge, the inert gas supply shall be maintained through the piping during the brazing operation at a minimum pressure of 1.0 psi and a maximum pressure of 3.0 psi. The joint shall be brazed with a filler metal conforming to AWS A5.8

2. Mechanically Pressed Joints
    a. The installing contractor shall be fully trained and qualified by the manufacturer of the mechanically pressed joints to install the selected piping connections.
    b. Mechanical joints shall be installed in accordance with the manufacturer's instructions.
3. Flared Joints
    a. Flared fittings shall be installed in accordance with the manufacturer's instructions. The flared fitting shall be used with the tube material specified by the fitting manufacturer. The flared tube end shall be made by a tool designed for that operation.
4. Soldered Joints
    a. Use of soldered joints is prohibited within VRF systems.

3.8 INSTALLATION OF PIPING AND TUBING INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated. Installation to maintain a continuous vapor barrier.

B. Insulation Installation on Pipe Fittings and Elbows:
1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Valves and Pipe Specialties:
1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are unavailable, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints, for horizontal applications. Seal with manufacturer's recommended adhesive.
1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

E. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel bands 12 inches o.c. and at end joints.

3.9 INSTALLATION OF DUCT, ACCESSORIES, AND AIR OUTLETS

A. Where installing ductwork adjacent to equipment, allow space for service and maintenance.

3.10 IDENTIFICATION

A. Identify system equipment, piping, tubing, and valves. Comply with requirements for identification specified in Section 230553 "Identification for HVAC Piping and Equipment."

3.11 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage VRF HVAC system manufacturer's service representative to advise and assist installers; witness testing; and observe and inspect components, assemblies, and equipment installations, including controls and connections.
   1. Field service shall be performed by a manufacturer-trained and authorized service representative of VRF HVAC system manufacturer whose primary job responsibilities are to provide direct technical support of its products.
   2. Manufacturer-trained and authorized service representative shall provide on-site visits during construction at installation milestones indicated. System Installer shall coordinate each visit in advance to give manufacturer sufficient notice to plan the visit.
      a. First Visit: Kick-off meeting.
      b. Second Visit: At approximately 50 percent completion of system(s).
      c. Fifth Visit: Final inspection before system startup.
   3. Kick-off Meeting:
      a. Meeting shall include system Installer and other related trades with sole purpose of reviewing VRF HVAC system installation requirements and close coordination required to make a successful installation.
      b. Meeting shall be held at Project site and scheduled at a mutually agreed to time that occurs before the start of any part of system installation.
      c. Meeting shall cover the following as a minimum requirement:
         1) Review of latest issue of Contract Documents, Drawings, and Specifications, relevant to VRF HVAC systems.
         2) Manufacturer's installation requirements specific to systems being installed.
         3) Review of all relevant VRF HVAC system submittals, including delegated-design submittals.
         4) Required field activities related installation of VRF HVAC system.
         5) Project team communication protocol, contact information, and exchange of responsibilities for each party involved, including manufacturer, supplier, system Installer, and other related trades.
   4. Site Visits: Activities for each site visit shall include the following:
      a. Meet with VRF HVAC system Installer to discuss field activities, issues, and suggested methods to result in a successful installation.
      b. Offer technical support to Installer and related trades as related to VRF system(s) being installed.
      c. Review progress of VRF HVAC system(s) installation for strict compliance with manufacturer's requirements.
      d. Advise and if necessary, assist Installer with updating related refrigerant calculations and system documentation.
   5. Final Inspection before Startup:
      a. Before inspection, Installer to provide written request to manufacturer stating the system is fully installed according to manufacturer's requirements and ready for final inspection.

b. All system equipment and operating components shall be inspected. If components are inaccessible for inspection, they shall be made accessible before the final inspection can be completed.
c. A factory-trained and authorized service representative shall provide a comprehensive inspection of all equipment and each operating component that comprise the complete system(s). Inspection shall follow a detailed checklist specific to each equipment and operating component.
d. Inspection reports for indoor units shall include, but not be limited to, the following:
    1) Unit designation on Drawings.
    2) Manufacturer model number.
    3) Serial number.
    4) Network address, if applicable.
    5) Each equipment setting.
    6) Mounting, supports, and restraints properly installed.
    7) Proper service clearance provided.
    8) Wiring and power connections correct.
    9) Line-voltage reading(s) within acceptable range.
    10) Wiring and controls connections correct.
    11) Low voltage reading(s) within an acceptable range.
    12) Controller type and model controlling unit.
    13) Controller location.
    14) Temperature settings and readings within an acceptable range.
    15) Condensate removal acceptable.
    16) Fan settings and readings within an acceptable range.
    17) Unit airflow direction within an acceptable range.
    18) If applicable, fan external static pressure setting.
    19) Filter type and condition acceptable.
    20) Noise level within an acceptable range.
    21) Refrigerant or hydronic piping properly connected and insulated.
    22) Condensate drain piping properly connected and insulated.
    23) If applicable, ductwork properly connected.
    24) If applicable, external interlocks properly connected.
    25) Remarks.
e. Inspection reports for outdoor units shall include, but not be limited to, the following:
    1) Unit designation on Drawings.
    2) Manufacturer model number.
    3) Serial number.
    4) Network address, if applicable.
    5) Each equipment setting, including compressor speed control.
    6) Mounting, supports, and restraints properly installed.
    7) Proper service clearance provided.
    8) Wiring and power connections correct.
    9) Line-voltage reading(s) within acceptable range.
    10) Wiring and controls connections correct.
    11) Low voltage reading(s) within an acceptable range.
    12) Condensate removal acceptable.

13) Noise level within an acceptable range.
14) Refrigerant piping properly connected and insulated.
15) Condensate drain piping properly connected and insulated.
16) For water-source outdoor units, water piping properly connected and insulated.
17) For water-source outdoor units, proof of water flow checked for proper operation.
18) Remarks.

f. Installer shall provide manufacturer with the requested documentation including as-built piping lengths and technical support during inspection.
g. Installer shall correct observed deficiencies found by the inspection.
h. Upon completing the on-site inspection, manufacturer shall provide a written report with complete documentation describing each inspection step, the result, and any corrective action required.
i. If corrective action is required by Installer that cannot be completed during the same visit, provide additional visits, as required, until deficiencies are resolved, and systems are deemed ready for startup.
j. Final report shall indicate the system(s) inspected are installed according to manufacturer's requirements and are ready for startup.

B. Perform the following tests and inspections with the assistance of manufacturer's service representative:
1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: Not less than 24 hours after electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Refrigerant and Hydronic Tubing Positive Pressure Testing:
1. Comply with more stringent of VRF HVAC system manufacturer's requirements and requirements indicated.
2. After completion of tubing installation, pressurize tubing systems to a test pressure:
   a. Refrigerant piping to a test pressure of not less than 600 psig using dry nitrogen.
   b. Hydronic piping to a test pressure of not less than 43 psig.
3. Successful testing shall maintain a test pressure for a continuous and uninterrupted period of 24 hours. Allowance for pressure changes attributed to changes in ambient temperature are acceptable.
4. Prepare test report to record the following information for each test:
   a. Name of person starting test, company name, phone number, and e-mail address.
   b. Name of manufacturer's service representative witnessing test, company name, phone number, and e-mail address.
   c. Detailed description of extent of tubing tested.
   d. Date and time at start of test.
   e. Test pressure at start of test.
   f. Outdoor temperature at start of test.
   g. Name of person ending test, company name, phone number, and e-mail address.
   h. Date and time at end of test.
   i. Test pressure at end of test.
   j. Outdoor temperature at end of test.
   k. Remarks:

5. Submit test reports for Project record and to system manufacturer.

D. Refrigerant Tubing Evacuation Testing:
1. Comply with more stringent of VRF HVAC system manufacturer's requirements and requirements indicated.
2. After completion of tubing positive-pressure testing, evacuate tubing systems to a pressure of 500 microns.
3. Successful testing shall maintain a test pressure for a continuous and uninterrupted period of one hour with no change.
4. Prepare test report to record the following information for each test:
   a. Name of person starting test, company name, phone number, and e-mail address.
   b. Name of manufacturer's service representative witnessing test, company name, phone number, and e-mail address.
   c. Detailed description of extent of tubing tested.
   d. Date and time at start of test.
   e. Test pressure at start of test.
   f. Outdoor temperature at start of test.
   g. Name of person ending test, company name, phone number, and e-mail address.
   h. Date and time at end of test.
   i. Test pressure at end of test.
   j. Outdoor temperature at end of test.
   k. Remarks:
5. Submit test reports for Project record and to system manufacturer.
6. Upon successful completion of evacuation testing, system shall be charged with refrigerant.

E. System Refrigerant Charge:
1. System Installer shall consult system manufacturer to determine the correct system refrigerant charge based on as-built piping lengths.
2. Installer shall charge system following VRF HVAC system manufacturer's written instructions.
3. Total refrigerant charge shall be recorded and permanently displayed at the system's outdoor unit.

3.12 STARTUP SERVICE

A. Installer shall engage a factory-trained and authorized service representative of VRF HVAC system manufacturer to perform system(s) startup supervision.
1. Complete startup service of each separate system.
2. Complete system startup service according to manufacturer's written instructions.

B. Startup checks shall include, but not be limited to, the following:
1. Check control communications of equipment and each operating component in system(s).
2. Check each outdoor unit’s power supply is connected 12 to 24 hours before startup of system.
3. Check each indoor unit's response to demand for cooling and heating.
4. Check each indoor unit's response to changes in airflow settings.
5. Check each indoor unit, outdoor unit, and HRCU when present for proper condensate removal.

C. Installer shall accompany factory-trained and authorized service representative during startup service and provide manufacturer's service representative with requested documentation and technical support during startup service.

1. Installer shall correct deficiencies found during startup service for reverification.

D. System Operation Report:
1. After completion of startup service, manufacturer shall issue a report for each separate system.
2. Report shall include complete documentation describing each startup check, the result, and any corrective action required.
3. Manufacturer shall electronically record not less than one hour of continuous operation of each system and submit with report for historical reference.
   a. All available system operating parameters shall be included in the information submitted.

3.13 ADJUSTING

A. Adjust equipment and components to function smoothly and lubricate as recommended by manufacturer.

B. Adjust initial temperature set points. Adjust initial airflow settings and discharge airflow patterns.

C. Set field-adjustable switches according to VRF HVAC system manufacturer's written instructions, and as indicated.

3.14 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by manufacturer's authorized service representative. Include four service visits for preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper equipment and system operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

3.15 DEMONSTRATION

A. Engage a VRF HVAC system manufacturer's factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain entire system.

B. Instructor:
1. Instructor shall be factory trained and certified by VRF HVAC system manufacturer with current training on the system(s), equipment, and controls that are installed.

C. Schedule:
1. Schedule training with Owner at least 10 business days before first training session.
2. Training shall occur before Owner occupancy.
3. Training shall be held at mutually agreed date and time during normal business hours.

D. Location: Owner shall provide a suitable on-site location to host classroom training.

E. Training Attendance: For record purposes, document training attendees at the start of each new training session. Record attendee's name, signature, phone number, and e-mail address.

F. Training Format: Individual training modules shall include classroom training followed by hands-on field demonstration and training.

G. Training Materials: Provide training materials in electronic format to each attendee.

1. Offer online instructional videos showing general operation and maintenance that are coordinated with operation and maintenance manuals.

H. Acceptance: Obtain Owners written acceptance that training is complete, and requirements indicated have been satisfied.

END OF SECTION 23 8129

SECTION 33 1416 - SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Pipe and fittings for Site water line, including domestic water line and fire water line.
2. Tapping sleeves and valves.
3. Valves: Gate, ball, swing check, and butterfly.
4. Hydrants and yard hydrants.
5. Positive displacement meters.
6. Reduced-pressure backflow preventers.
7. Underground pipe markers.
8. Precast concrete vaults.
9. Valve boxes.
10. Bedding and cover materials.

B. Related Requirements:
1. Section 03 30 00 - Cast-in-Place Concrete: Concrete for thrust restraints.
2. Section 09 90 00 - Painting and Coating: Painting requirements for fire hydrants.
3. Section 22 11 00 - Facility Water Distribution: Product and execution requirements for domestic water piping at building.
4. Section 31 05 13 - Soils for Earthwork: Soils for backfill in trenches.
5. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.
6. Section 31 23 16 - Excavation: Product and execution requirements for excavation and backfill.
7. Section 31 23 16.13 - Trenching: Execution requirements for trenching.
8. Section 31 23 23 - Fill: Requirements for backfill to be placed by this Section.
9. Section 33 12 33 - Water Utility Metering: Positive displacement meters as required by this Section.
10. Section 33 13 00 - Disinfecting of Water Utility Distribution: Disinfection of Site service utility water piping.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:
1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Society of Mechanical Engineers:
1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
2. ASME B16.18 - Cast Copper Alloy Solder-Joint Pressure Fittings.
3. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

C. American Society of Sanitary Engineering:
1. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent.

2. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers.

D. ASTM International:
1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
3. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
4. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3).
5. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
6. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
7. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
8. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
9. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
10. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
11. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

E. American Water Works Association:
1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
5. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
6. AWWA C502 - Dry-Barrel Fire Hydrants.
7. AWWA C504 - Rubber-Seated Butterfly Valves, 3 In. (75 mm) Through 72 In. (1,800 mm).
8. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS.
9. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
10. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
11. AWWA C606 - Grooved and Shouldered Joints.
12. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
13. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
14. AWWA C702 - Cold-Water Meters - Compound Type.
15. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
16. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.
17. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In.(13 mm) Through 3 In.(76 mm) for Water Service.
18. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission.
19. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

F. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

G. Manufacturers Standardization Society of the Valve and Fittings Industry:
1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

H. UL:
1. UL 246 - Hydrants for Fire-Protection Service.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on pipe materials, pipe fittings, valves, and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.4 CLOSEOUT SUBMITTALS

A. Section 01 77 00 - Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work according to Pennsylvania Department of Environmental Protection and AWWA standards.

PART 2 - PRODUCTS

2.1 WATER PIPING

A. Ductile Iron Pipe:
1. Comply with AWWA C151.
2. Fittings:
a. Material: Ductile iron
b. Thickness: Standard.
3. Joints:
a. Comply with AWWA C111.
b. Provide rubber gasket with rods.
4. Jackets: AWWA C105, polyethylene jacket.

3

2.2 TAPPING SLEEVES AND VALVES

A. Tapping Sleeves:
1. Manufacturers:
a. Ford, Romac Industries, Mueller Co., US Pipe Valve & Hydrant.

b. Substitutions: As specified in Section 01 61 00 - Product Requirements.

B. Description:
1. Material: Ductile or cast iron.
2. Type: Dual compression.
3. Outlet Flange Dimensions and Drilling: Comply with ASME B16.1, Class 125 and MSS SP-60.

C. Tapping Valves:
1. Manufacturers:
a. Kennedy Valve Company, Mueller Co., US Pipe Valve & Hydrant.
b. Substitutions: As specified in Section 01 61 00 - Product Requirements.

D. Description:
1. Comply with AWWA C500.
2. Type: Double disc with non-rising stem.
3. Inlet Flanges: Comply with ASME B16.1, Class 125, and MSS SP-60.
4. Mechanical Joint Outlets: Comply with AWWA C111.
5. Mark manufacturer's name and pressure rating on valve body.

2.3 GATE VALVES

A. Manufacturers:
1. Kennedy Valve Company, Clow, American Flow Control.
2. Substitutions: As specified in Section 01 61 00 - Product Requirements.

B. 2-1/2 Inch and Smaller: Brass or bronze body, non-rising stem, inside screw, single wedge or disc, Mechanical joint ends, with control rod, valve box, and valve key.

C. 3 Inch and Larger: AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint ends, control rod, valve box, and valve key.

D. Mark manufacturer's name and pressure rating on valve body.

2.4 BALL VALVES

A. 2 Inch and Smaller: Brass body, TEFC-coated brass ball, rubber seats and stem seals, tee stem pre-drilled for control rod, AWWA inlet end, IPS outlet with electrical ground connector, with control rod, valve box, and valve key.

B. Mark manufacturer's name and pressure rating on valve body.

2.5 SWING CHECK VALVES

A. 2 Inches to 24 Inches: AWWA C508, iron body, bronze trim, 45-degree swing disc, renewable disc and seat, and flanged ends.

B. Mark manufacturer's name and pressure rating on valve body.

2.6 BUTTERFLY VALVES

A. 2 Inches to 24 Inches: AWWA C504, iron body, bronze disc, resilient replaceable seat, water or lug ends, infinite-position lever handle.

B. Mark manufacturer's name and pressure rating on valve body.

2.7 HYDRANTS

A. Hydrants: According to Pennsylvania American Water and Exeter Township requirements.

2.8 METERS

A. Meters: According to Pennsylvania American Water requirements.

2.9 REDUCED-PRESSURE BACKFLOW PREVENTERS

A. Description:
1. Comply with ASSE 1013.
2. Materials:
a. Body: Bronze.
b. Internal Parts: Bronze.
c. Springs: Stainless steel.
3. Check Valves:
a. Quantity: Two.
b. Description: Independently operating, spring-loaded.
c. Type: Diaphragm type, differential pressure relief, located between check valves.
d. Provide third check valve opening under back pressure in case of diaphragm failure.
e. Vent Outlet: Non-threaded.
4. Provide two gate valves, one strainer, and four test cocks.

B. Double Check Valve Assemblies:
1. Comply with ASSE 1012.
2. Description: Two independently operating check valves, with intermediate atmospheric vent.
3. Materials:
a. Body: Bronze.
b. Internal Parts: Corrosion resistant.
c. Springs: Stainless steel.

C. Double Check Valve Assembly in Meter Pit:
1. Comply with ASSE 1015.
2. Description: Two independently operating check valves, with intermediate atmospheric vent.
3. Type: Short lay-length for small space installation.
4. Materials:
a. Body: Stainless Steel
b. Internal Parts: Corrosion resistant.
c. Springs: Stainless steel.

d. Maximum Operating Pressure: 175 psig.
e. Size: 6 inch.

2.10 UNDERGROUND PIPE MARKERS

A. Plastic Ribbon Tape:
1. Brightly colored, continuously printed.
2. Minimum 6 inches wide by 4 mil thick.
3. Manufactured for direct burial service.

B. Trace Wire:
1. Electronic detection materials for nonconductive piping products.
2. Unshielded, 10 AWG, THWN-insulated copper wire.
3. Conductive tape.

2.11 PRECAST CONCRETE VAULTS

A. Description:
1. Precast vault designed according to ASTM C858, comprising modular and interlocking sections, complete with accessories.
2. Shape: Rectangular.
3. Nominal Inside Dimensions: As required.
4. Inside Depth: 6 feet.
5. Wall Thickness: As determined by manufacturer to suit application.

B. Base Section:
1. Size: As indicated on Drawings.
2. Sump Size: 3 inches deep by 14 inches in diameter.
3. Provide cast sleeve and two 1-inch ground rod openings.

C. Top Section:
1. Grooved Opening for Frame and Cover.

D. Riser Casting:
1. Size: 6 inches.
2. Provide manhole step cast into frame.

E. Frames and Covers:
1. Comply with ASTM A48.
2. Material: Class 30B gray cast iron.
3. Diameter: 30 inches.
4. Finish: Machine-finished with flat bearing surfaces.
5. Covers marked WATER SERVICE.

F. Steps:
1. Polypropylene plastic step with 1/2-inch steel reinforcement.
2. Cast steps at 12 inches o.c. vertically.

2.12 VALVE BOXES

A. Description:

1. Valve boxes and covers, including position indicators and valve extensions, and as indicated on Drawings.
2. Material: Cast iron.
3. Type: Extension, with slide adjustment.
4. Covers marked WATER SERVICE.

2.13 MATERIALS

A. Bedding and Cover:
1. Bedding and cover: PennDOT 2A, as specified in Section 31 05 16 - Aggregates for Earthwork.
2. Soil Backfill from above Pipe to Finish Grade: Suitable Backfill and Embankment Material as specified in Section 310513 - Soils for Earthwork.
3. Subsoil: No rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.14 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type as specified in Section 033000 - Cast-in-Place Concrete.

B. Manhole and Cover: As specified in Section 330513 - Manholes and Structures.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Requirements for installation examination.

B. Verify that building service connections and municipal utility water main sizes, locations, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 01 73 00 - Execution Requirements: Requirements for installation preparation.

B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare pipe connections to equipment with flanges or unions.

E. Protect and support existing distribution piping and appurtenances as Work progresses.

3.3 INSTALLATION

A. Bedding:
1. Excavate pipe trench as specified in Section 31 23 16.13 - Trenching.
2. Place bedding material at trench bottom.
3. Level fill materials in continuous layers not exceeding 6 inches compacted depth.
4. Compact to 100 percent of maximum density.
5. Backfill around sides and to top of pipe as specified in Section 31 23 23 - Fill.

6. Maintain optimum moisture content of fill material to attain required compaction density.
7. Place fill materials as specified in Section 31 23 23 - Fill.

B. Piping:
1. Maintain separation of water main from sewer piping according to PA DEP code.
2. Group piping with other Site piping work whenever practical.
3. Install pipe to elevations indicated on Drawings.
4. Install piping and fittings according to AWWA C600.
5. Route pipe in straight line.
6. Install access fittings to permit disinfection of water system performed under Section 33 01 10.58 - Disinfecting of Water Utility Distribution Piping.
7. Thrust Restraints:
   a. Form and place concrete for pipe thrust restraints at each elbow or change of pipe direction.
   b. Place concrete to permit full access to pipe and pipe accessories.
   c. Provide bearing area as indicated on Drawings.
8. Establish elevations of buried piping with not less than 4 feet of cover.
9. Pipe Markers:
   a. Install plastic ribbon tape and trace wire continuous buried 6 inches below finish grade, above piping.
   b. Coordinate with trench Work as specified in Section 31 23 16.13 - Trenching.
10. Backfill trench as specified in Section 31 23 23 - Fill.

C. Valves and Hydrants:
1. Set valves on solid bearing.
2. Valve Box:
   a. Center and plumb valve box over valve.
   b. Set box cover flush with finished grade.
3. Set hydrants plumb.
4. Locate pumper nozzle perpendicular to and facing roadway.
5. Set hydrants to grade, with nozzles at least 20 inches above ground.
6. Locate control valve 4 inches away from hydrant.
7. Provide drainage pit 36 inches square by 24 inches deep, filled with 2 inches washed gravel.
8. Encase elbow of hydrant in gravel to 6 inches above drain opening.
9. Do not connect drain opening to sewer.
10. Paint hydrants as specified in Section 09 90 00 - Painting and Coating.

D. Meters:
1. Install meters according to AWWA M6 with isolating valves on inlet and outlet.
2. Provide full line size bypass with globe valve for liquid service meters.

E. Service Connections:
1. Install water service according to utility company requirements with double check valve backflow preventer, and water meter with bypass valves.
2. Install water meter and backflow preventer in concrete vault located on Site.
3. Install water service to 5 feet of building and connect to building water service as specified in Section 22 11 00 - Facility Water Distribution.
4. Pipe Sleeve:
   a. Install 18-gage galvanized sheet metal sleeve surrounding service main to 6 inches above floor and 6 feet minimum below grade.

b. Size for 2 inches minimum of glass fiber insulation stuffing.

F. Disinfection:
1. Flush and disinfect system as specified in Section 33 01 10.00 - Disinfecting of Water Utility Distribution.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.

B. Install pipe within tolerance of ½ inch.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

B. Pressure test system according to AWWA C600 and following:
1. Test Pressure: Not less than 200 psig or 50 psi in excess of maximum static pressure, whichever is greater.
2. Conduct hydrostatic test for at least two hours.
3. Slowly fill with water section to be tested and expel air from piping by installing corporation cocks at high points.
4. Close air vents and corporation cocks after air is expelled and raise pressure to specified test pressure.
5. Observe joints, fittings, and valves under test. Remove and renew cracked pipes, joints, fittings, and valves showing visible leakage and retest.
6. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.
7. Maintain pressure within plus or minus 5 psi of test pressure.
8. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
9. Compute maximum allowable leakage using following formula:
a. L = SD x sqrt(P)/C.
1) L = testing allowance, gph.
2) S = length of pipe tested, feet.
3) D = nominal diameter of pipe, inches.
4) P = average test pressure during hydrostatic test, psig.
5) C = 148,000.
b. If pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.
10. If test of pipe indicates leakage greater than that allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
11. Correct visible leaks regardless of quantity of leakage.

C. Perform pressure test on piping according to AWWA standards.

D. Compaction Testing for Bedding: Comply with ASTM D698 and ASTM D6938.

E. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

F. Frequency of Compaction Tests: one per 25 cy with minimum of 1 per lift for every 500 lf of trench.

END OF SECTION 33 1416

SUBSTITUTION REQUEST FORM:

Project:	Exeter Township Emergency Services Facility	Substitution Request No.:	087100
		From:	Maxx Townsend
To:	MW Studios	Date:	10/16/2026
		Architects Project No.	25-049
Re:	087100 Door Hardware		

Specification Title:	087100 Door Hardware	Description:	Approve Equal
Section No.	2		
Page No.		Article	see page 2

Proposed Substitution:	Competitive products as listed on the attachment		
Manufacturer:	Allegion	Website URL:	https://www.allegion.com
Trade Name:	Schlage	Model No:	
Installer:		Phone No.	

Differences between proposed substitution and specified product:

Provide point by point comparative data on separate sheet as attachment to this form. (This is required for review of any substitution.

Reason for not providing specified item: See attached product data.

Similar Installation:

Project:		Architect:	
Address:		Owner:	

Does proposed substitution affect other Work? [No] [Yes] (Explain)

Total Cost of Substitution: Dollars: $

Cost change to contract: [Deduct] [Addition] Dollars: $

Schedule Impact: [Deduct] [Addition] days.

Does Substitution Require Redesign: [No] [Yes]

Submitting Representative Initials: _____

Substitution Request

www.allegion.com

Document Library

Division 8

We are requesting approval to substitute products that are recognized as equal or better throughout the industry with millions of satisfactory installations that include equal or better warranties than specified. The addition of these approved products will encourage competition in lieu of the currently specified single source products. Cutsheets are attached for review.

SECTION 08 71 00 ---- DOOR HARDWARE

PART 2 – PRODUCTS

2.2 Butt Hinges: Ives; an Allegion Company

2.3 Continuous Hinges: Ives; an Allegion Company

2.4 Power Transfer Devices: Von Duprin; an Allegion Company

2.5 Door Operating Trim: Ives; an Allegion Company

2.6 Cylinders and Keying: Schlage; an Allegion Company

2.8 Mortise Locks and Latching Devices: Schlage L/ND; an Allegion Company

2.9 Cylindrical Locks and Latching Devices: Schlage L/ND; an Allegion Company

2.10 Deadlocks and Latches: Schlage B600/700/800; an Allegion Company

2.12 Conventional Exit Devices: Von Duprin 98/99/33A/35A/70; an Allegion Company

2.13 Surface Door Closers: LCN 4040/4110; an Allegion Company

2.14 Surface Mounted Closer Holders: LCN 4110; an Allegion Company

2.15 Architectural Trim and Accessories: Ives; an Allegion Company

2.16 Door Stops and Holders: Ives/ GJ; an Allegion Company

2.17 Architectural Seals: Zero; an Allegion Company

2.18 Electronic Accessories: Schlage; an Allegion Company

General information - electrification options

Electrical through-wire (TW4 and TW8)



Provides electric power transfer from the frame to the door in order to supply power to an electrified mortise or cylindrical locks, exit devices with electric latch retraction, and/or electric strikes (pairs of doors). Through-wire is rated 50 volts AC/DC at 3.5 amp continuous and 16 amp pulse. Maximum pulse 400 milliseconds. Ives through-wire hinges are fully compatible with 4 wire(TW4) and 8 wire (TW8) installations. Available CON option comes with the Allegion Connect 8-pin Connector which makes it easy to connect to other electrical consumption devices.

- UL634 Listed
- Not available 3PB1, 3SP1, and 5PB1 models
- Not available on 3.5 x 3.5 size hinges
- Not available with security stud (SH) option
- Packaged one hinge per box with standard wood and machine screws
- Hinge is NRP as a standard
- High quality brass ferrules and plastic tubing protect the wires
- Through-wire hinges cycle tested to ensure durability
- Special wire gauge, number, and color configurations available, contact factory

Electrical Monitor (MON, TW4M,TW8M)

Provides door position monitoring. Monitor is rated 30 volts AC/DC at 0.5 amp. Fully compatible with through-wire hinges with 4 wire(TW4M) and 8 wire (TW8M) installations. Available CON option comes with the Allegion Connect 8-pin Connector which makes it easy to connect to other electrical consumption devices.

- UL634 Listed
- Not available 3PB1, 3SP1, and 5PB1 models
- Not available on 3.5 x 3.5 and 4X4 size hinges
- Not available with security stud (SH) option
- Packaged one hinge per box with standard wood and machine screws
- Hinge is NRP as a standard
- High quality brass ferrules and plastic tubing protect the wires
- Through-wire hinges cycle tested to ensure durability
- Special wire gauge, number, and color configurations available, contact factory

Ives Hinge number system

Please note: For availability of specific models, please refer to the item's catalog page or consult Customer Service.

How to order:

5 - BB - 1 - HW - SH - 4.5x4.5 - 652 - NRP

Number of knuckles:

3	3 Knuckle
5	5 Knuckle

Function:

PB	Plain bearing
BB	Ball bearing
CB	Concealed bearing
SP	Spring Hinge

Type:

1	Full mortise
2	Half mortise
3	Full surface
4	Half surface

Weight / Type:

Blank	Standard weight(BHMA Grade 2)
HW	Heavy weight(BHMA Grade 1)
SC	Swing clear
BSC	Beveled swing clear
SCHW	Swing clear, heavy weight
BSCHW	Beveled swing clear, heavy weight
WT	Wide throw

Options:

HT	Hospital tip
SH	Security stud (includes NRP as a standard offering)

Height x Width

3.5	x	3.5
4	x	4
4.5	x	4, 4.5, 5, 6
5	x	4.5, 5, 6, 7

Consult model page for availability.

Finish

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.

Options 2

NRP	Non-removable pin
RC-1/4	Rounded corners 1/4"
RC-5/8	Rounded corners 5/8"
SEC	Security screws (hollow metal - hex head pin in socket)
TW4	Thru-wire - four wire
TW8	Thru-wire - eight wire
MON	Monitor
TW4M	Thru-wire - four wire with monitor
TW8M	Thru-wire - eight wire with monitor
CON	Allegion connect for wire options above



3PB1 3 Knuckle, plain bearing full mortise hinge

- Recommended for standard weight doors
- Recommended for low frequency usage
- Not recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  10-24 x 1/2 UFPHMS, 10 x 1 FPHWS (3.5x3.5 hinge size only)

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP . . . . . Non-removable pin
- HT. . . . . Hospital tip
- SH. . . . . Security stud - comes standard with NRP
- RC-1/4, RC-5/8. . . . Rounded corners
- SEC . . . . . Security fasteners - pin-in-socket

Dimensions

Height x Width	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146

Refer to General Hinge Information page to determine proper hinge for application

3PB1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



3CB1 3 Knuckle, concealed bearing full mortise hinge

- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two concealed nylon bearings
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  10-24 x 1/2 UFPHMS, 10 x 1 FPHWS (3.5x3.5 hinge size only)

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP . . . . . Non-removable pin
- HT. . . . . Hospital tip
- SH. . . . . Security stud - comes standard with NRP
- RC-1/4, RC-5/8 . . . Rounded corners
- SEC . . . . . Security fasteners - pin-in-socket
- TW4 . . . . . Four wire
- TW4M . . . . . Four wire with monitor
- TW8 . . . . . Eight wire
- W8M. . . . . Eight wire with monitor
- MON. . . . . Monitor (not available on 3.5X3.5)

Dimensions

Height x Width	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146
5 x 5	127 x 127	0.146

Refer to General Hinge Information page to determine proper hinge for application

3CB1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



3CB1HW 3 Knuckle, concealed bearing, heavy weight full mortise hinge

- Recommended for heavier weight doors (>150 lbs)
- Recommended for high frequency usage (400 cycles per day)
- Made with two heavy duty concealed nylon bearings
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP .....Non-removable pin
- HT. .....Hospital tip
- SH. .....Security stud - comes standard with NRP
- RC-1/4, RC-5/8....Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4. .....Four wire
- TW4M. .....Four wire with monitor
- TW8. .....Eight wire
- TW8M .....Eight wire with monitor
- MON. .....Monitor

Dimensions

Height x Width	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180
4.5 x 4.5	114 x 114	0.180
5 x 4.5	127 x 114	0.190
5 x 5	127 x 127	0.190

Refer to General Hinge Information page to determine proper hinge for application

3CB1HW Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.

3CB1WT 3 Knuckle, concealed bearing, wide throw full mortise hinge

- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two concealed nylon bearings
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- 1040 steel

Options

- NRP .....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- MON .....Monitor

Dimensions

Height x Width	Size (mm)	Gauge
4.5 x 5	114 x 127	0.134
4.5 x 6	114 x 152	0.134
5 x 6	127 x 152	0.146
5 x 7	127 x 178	0.146
5 x 8	127 x 203	0.146

Refer to General Hinge Information page to determine proper hinge for application

3CB1WT Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



3SP1 3 Knuckle, spring full mortise hinge

- For use with doors where self-closing is required
- Maximum door weight 120 lbs, max door width 36"
- Maximum labeled door size - 3'0" wide x 7'0" x 1 3/4" thick as set in NFPA #80
- Packed with fasteners for hollow metal and half metal / half wood applications
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  Pin for setting spring tension
  Adjusting wrench

Certifications

- Certified to ANSI/BHMA A156.4 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL listed for use with fire rated doors

Material substrate

- Made from 1040 steel or 304 series stainless steel

Options

- RC-1/4, RC-5/8. . .Rounded corners
- SEC . . . . . .Security fasteners - pin-in-socket

Dimensions

Height x Width	Size (mm)	Gauge
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134

Refer to General Hinge Information page to determine proper hinge for application.

3SP1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



5PB1 5 Knuckle, plain bearing full mortise hinge

- Recommended for standard weight doors
- Recommended for low frequency usage
- Not recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  10-24 x 1/2 UFPHMS, 10 x 1 FPHWS (3.5x3.5 hinge size only)

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP.....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket

Dimensions

Height x Width	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146

Refer to General Hinge Information page to determine proper hinge for application

5PB1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



5BB1 5 Knuckle, ball bearing full mortise hinge

- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two ball bearing assemblies
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  10-24 x 1/2 UFPHMS, 10 x 1 FPHWS (3.5x3.5 hinge size only)

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP.....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- MON .....Monitor (not available on 3.5X3.5)

Dimensions

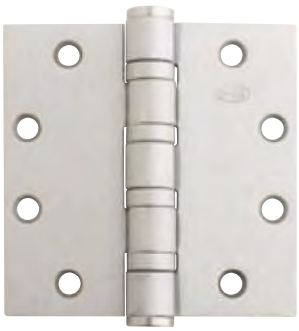
Height x Width	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146
5 x 5	127 x 127	0.146

Refer to General Hinge Information page to determine proper hinge for application

5BB1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



5BB1HW 5 Knuckle, ball bearing, heavy weight full mortise hinge

- Recommended for heavier weight doors (>150 lbs)
- Recommended for high frequency usage (400 cycles per day)
- Made with four ball bearing assemblies
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP .....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- MON .....Monitor

Dimensions

Height x Width	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180
4.5 x 4.5	114 x 114	0.180
5 x 4.5	127 x 114	0.190
5 x 5	127 x 127	0.190

Refer to General Hinge Information page to determine proper hinge for application

5BB1HW Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
610	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



5BB1WT 5 Knuckle, ball bearing, wide throw full mortise hinge

- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two ball bearing assemblies
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- 1040 steel

Options

- NRP . . . . . Non-removable pin
- HT. . . . . Hospital tip
- SH. . . . . Security stud - comes standard with NRP
- RC-1/4, RC-5/8. . . Rounded corners
- SEC . . . . . Security fasteners - pin-in-socket
- TW4 . . . . . Four wire
- TW4M . . . . . Four wire with monitor
- TW8 . . . . . Eight wire
- TW8M . . . . . Eight wire with monitor
- MON. . . . . Monitor

Dimensions

Height x Width	Size (mm)	Gauge
4.5 x 5	114 x 127	0.134
4.5 x 6	114 x 152	0.134
5 x 6	127 x 152	0.146
5 x 7	127 x 178	0.146
5 x 8	127 x 203	0.146

Refer to General Hinge Information page to determine proper hinge for application

5BB1WT Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



Meets ANSI/BHMA A156.1
A8122 – Steel
A5122 – Stainless Steel
A2122 – Brass

5BB1SC 5 Knuckle, ball bearing, swing clear full mortise hinge
5BB1BSC 5 Knuckle, ball bearing, beveled swing clear full mortise hinge

- Designed to completely clear the opening when door is opened 92°.
- Recommended for use in ADA door opening applications
- 5BB1SC made for square edge doors
- 5BB1BSC made for beveled edge doors
- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two ball bearing assemblies
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- Made from 1040 steel or 304 series stainless steel

Options

- NRP .....Non-removable pin
- HT.....Hospital tip
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- MON .....Monitor

Dimensions

Height	Size (mm)	Gauge
4.5	114	0.134
5	127	0.146

Refer to General Hinge Information page to determine proper hinge for application

5BB1SC Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.



5BB1SCHW 5 Knuckle, ball bearing, swing clear,heavy weight full mortise hinge
5BB1BSCHW 5 Knuckle, ball bearing, beveled swing clear, heavy weight full mortise hinge

- Designed to completely clear the opening when door is opened 92°.
- Recommended for use in ADA door opening applications
- 5BB1SCHW made for square edge doors
- 5BB1BSCHW made for beveled edge doors
- Recommended for heavier weight doors (>150 lbs)
- Recommended for high frequency usage (400 cycles per day)
- Made with four ball bearing assemblies
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions

Material substrate

- Made from 1040 steel or 304 series stainless steel

Options

- NRP.....Non-removable pin
- HT.....Hospital tip
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- MON .....Monitor

Dimensions

Height	Size (mm)	Gauge
4.5	114	0.180
5	127	0.190

Refer to General Hinge Information page to determine proper hinge for application

5BB1SCHW Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.

Ives Continuous Hinges are designed to last the life of the building. The unique design distributes the weight of the door along the entire length of the frame, reducing the high amount of stress normally associated at top of door and frame on butt hinge applications.

Not only does this reduce hinge failure, it also keeps your door in constant alignment, greatly reducing the chance of door sag. These characteristics make continuous hinges suitable for high use/high traffic doors.

The design of a continuous hinge eliminates the gap between the door and the frame. The absence of gap also helps prevents finger from being pinched, making it a safer device than traditional hinges. These benefits result in higher efficiency and less maintenance, maximizing the value of your opening investment.

Continuous hinges are available in two styles; aluminum geared and pin and barrel in steel or stainless steel.

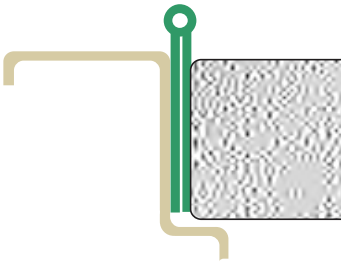


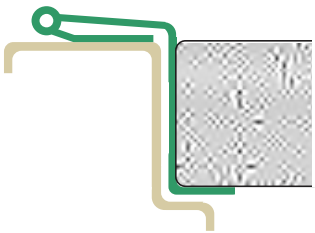


Aluminum geared

Geared continuous hinges utilize a single gear section for the leaf and a separate gear section for the frame side of the door. The two are held in place together by a full length cover channel and rotate on a series of bearings.

Ives provides two unique series of bearing designs. The HD model features a spread bearing design for lighter weight doors. The XY features a center load bearing design to help reduce frame issues and also has an available hospital tip cap and electric through wire panel with a continuous cover.





Pin and barrel

Pin and Barrel hinges share many of the same characteristics of a traditional hinge. Both have a center pin and rolled knuckles. However, a continuous Pin and Barrel hinge stretches along the entire length of the frame. IVES offers both stainless steel and primed steel to best match your specific application.

Ives also offers the CS series pin and barrel hinges which provides a patented solution that brings the clean aesthetic design of aluminum geared continuous hinge to the ruggedness and safety afforded by stainless pin and barrel continuous hinges.

Lifetime warranty

Ives continuous hinges carry a limited lifetime warranty, ensuring your opening will function to your satisfaction every time. Please refer to the price book for more detailed warranty information.

General hinge information

ANSI Certified
All Ives Aluminum geared hinges are certified to ANSI 156.26, Grade 1
XY Models ..... Grade 1 150lb and 300lb door test
HD Models ..... Grade 1 150lb door test

UL Listed
All Ives Aluminum geared hinges are tested and approved UL 10C (90 minutes).

Material
6063-T6 Aluminum

Hinge duty
All Ives Aluminum geared hinges are heavy duty(XY and HD models)

XY Model - Slot Adjustability



XY Model - Bearings



HD Model



XY Models:
- Rounded gear design for extended life and smoother operation.
- Patented, center loaded, interlocking bearing design which helps handle the opening and closing of the door better over time. All sizes have 37 Bearings.
- XY Mounting Slot Adjustability on all full and half surface models to help with installation.
- Frame guidance lip is extended further for retrofit applications to cover existing heavy weight architectural hinge preps.
- Improved aesthetics with a curved, articulating cover design which eliminates pinch points

HD Models
Features transmission gear design with bearings that are evenly spaced every 3" on center - Amount of bearings varies by size
- 83" .....32 Bearings
- 85" .....32 Bearings
- 95" .....36 Bearings
- 120" .....47 Bearings

Standard lengths
83", 85", 95", 119"(XY Models), 120"(HD Models) Custom lengths available up to 119", consult factory. Handing required for 224HD

Finishes

BHMA	US	Description	Base Material
628	US28	Clear aluminum anodized	Aluminum
710	313AN	Dark bronze anodized	Aluminum

Custom finishes available, consult factory.

Field modifications
Ives Aluminum geared continuous hinges can be cut to length from both ends during installation.

XY Models
The unique mounting pattern of the XY hinge allows it to be cut down to 69" while still having double row fastners regardless of the original length of the hinge. Requires the hinge to be cut from both ends. Example: A 119" hinge can have 25" removed from each end to make it a 69" long hinge.

HD Models
The unique mounting pattern allows to cut up to 6" from bottom while still having double row fasteners. If cut more than 13.5", other modifications may be necessary.

Door weight
For doors up to 200 lbs, no door reinforcement is required. For doors between 200 and 450 lbs a 16 gauge channel in the frame is required. For doors up to 600 lb, rivet nuts are required in the frame in addition to the frame reinforcement. Max door width of 4'0".

Hospital tips
Hospital tip (HT) for XY models
The new XY models features a new ligature resistant and tamper resistant Hospital Tip Cap. The new design provides a single uniform 45° angle surface with no exposed edges or openings.

Hospital tips (HT) for HD models
The standard hospital tip option includes an angle machined channel cover and bearing to provide a flush angled surface. Recommended for HT retrofit applications only.



Mounting hardware

Standard hardware	
Full mortise hinges	12-24 x 3/4" Steel self drilling / self tapping phillips head screw
Half surface hinges Includes 210XY	12-24 x 3/4" Steel self drilling / self tapping phillips head screw 12-24 x 3/4" Steel self drilling / self tapping hex head screw
Full surface hinges 157XY Only	12-24 x 3/4" Steel self drilling / self tapping hex head screw

Security screws - Hollow metal door and frame (SEC/HM)	
Full mortise hinges	12-24 X 1/2" Stainless steel socket security screw
112HD and 224HD only Available as accessory parts kit for full mortise XY hinges (026XY, 027XY, 040XY, 041XY, 112XY, 114XY, 224XY)	

Security screws - 1/2 wood, 1/2 hollow metal (SEC/WD/HM)	
Full Mortise Hinges 112HD and 224HD only	12-24 X 1/2" Stainless steel socket security screw 12 X 1 1/4" Stainless steel socket security wood screw
Available as accessory parts kit for full mortise XY hinges (026XY, 027XY, 040XY, 041XY, 112XY, 114XY, 224XY)	

1/2 Self drill, self tap / 1/2 wood (TEK/WD)		
Full mortise hinges	12-24 x 3/4" Steel self drilling / self tapping phillips head screw	12 x 1 1/4" Phillips head wood screw
Half surface hinges	12-24 x 3/4" Steel self drilling / self tapping phillips head screw	1/4 x 1 1/2" Hex head lag screw
Full surface hinges	12-24 x 3/4" Steel self drilling / self tapping hex head screw	1/4 x 1 1/2" Hex head lag screw

Wood door and frame (WD)	
Full mortise hinges	12 x 1 1/4" Phillips head wood screw
Half surface hinges Includes 210XY	12 x 1 1/4" Phillips head wood screw 1/4 x 1 1/2" Hex head lag screw
Full surface hinges 157XY only	1/4 x 1 1/2" Hex head lag screw

Thread forming (TF)	
Full mortise hinges	12-24 x 3/4" Steel thread forming phillips head screw
112HD and 224HD only Available as accessory parts kit for full mortise XY hinges (026XY, 027XY, 040XY, 041XY, 112XY, 114XY, 224XY)	

General information - electrification options

Electric power transfer (EPT) availabile on HD and XY models

Electric power transfer provides the most secure and best solution for transferring power from the door frame to the edge of a swinging door. Ives Continuous Hinges provide standard cut outs to fit Von Duprin EPT-2, EPT-10 and PNT-1 devices. Consult factory for other electrical cut out options. Door handing is required.

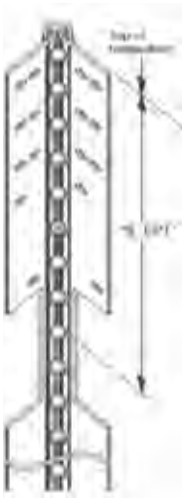


NEW Electrical through-wire panel with Allegion Connect (TWP CON) (XY models only)

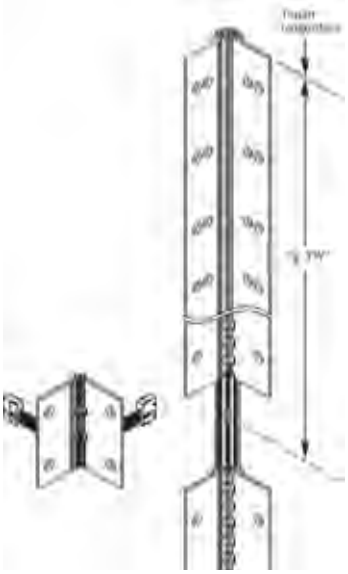
The most secure and best solution for powering your door. The redesigned XY Through-Wire Panel is heavy duty and easy-to-install. Hinge consists of single piece cover design for improved aesthetics and three sections with a standard bottom length and through wire panel location. The panel can quickly slip in and out of the the hinge for maintenance and replacement. Unlike all of the other manufacturer solutions, the XY through-wire panel maintains a one piece appearance on the cover side of the hinge. The new wire design features a teflon coated wire which greatly improves performance and durability. The new panel also comes standard with the Allegion Connect 8-pin Connector which makes it easy to connect to other electrical consumption devices. Warrantied for up to 5 years. Door handing is required.

Provides electric power transfer from the frame to the door in order to supply power to an electrified mortise or cylidrical locks, exit devices with electric latch retraction, and/or electric strikes (pairs of doors). Through-wire is rated 50 volts AC/DC at 3.5 amp continuous and 16 amp pulse. Maximum pulse 400 milliseconds. Ives through-wire hinges are fully compatible with 4 wire and 8 wire installations.

EPT 112HD



TWP XY Series



Note: See ordering guide in price book for proper placement.

Electrical cutouts

Ives aluminum continuous hinges are available with factory modified cutouts to accommodate most electrical frame to door requirements. Special templates are required.

When ordering indicate the following:

1. Opening size.
2. Handing. LH, RH, LHR or RHR.
3. Manufacturer and model number of the electrical product being used. Example; Von Duprin ETPT2

Because clearances may vary between door and frame manufacturer, and locations can be influenced by the door hardware it is always recommend contacting Ives Customer Technical for specific template information.

Below are standard locations for Von Duprin EPT2 or EPT10, and monitor switch.

In accordance with industry standards, all cutouts are made from top edge of door to center line of cut-out

Standard Length	HD	XY	XY
	EPT	EPT	TWP CON
83"	30"	30"	43.5"
85"	32"	32"	45.5"
95"	42"	42"	55.5"
119" (XY)	–	66"	79.5"
120" (HD)	67"	–	–

XY TWP CON is located 39.5 inches from bottom of the hinge. Consult factory for TWP locations on custom length hinges.

How to order

112XY | HT | US28 | 83 | TWP CON

Model

026XY	Full mortise - narrow frame leaf, wide door leaf
027XY	Full mortise - wide door leaf
040XY	Full mortise - wide throw
041XY	Full mortise - swing clear
045XY	Half surface - narrow frame leaf, wide door leaf
046XY	Half surface - wide door leaf
053XY	Half surface - narrow frame leaf, narrow door leaf
054XY	Half surface - narrow door leaf
112XY	Full mortise - narrow frame and door leaf
112HD	Full mortise - narrow frame and door leaf
114XY	Full mortise - narrow frame leaf, door edge protector
157XY	Full surface - center pivot
210XY	Full surface - swing clear
224XY	Full mortise - door edge protector
224HD	Full mortise - door edge protector

Option 1

HT	Hospital tip (XY models only) (Only available on 026XY, 027XY, 040XY, 112XY, 114XY, 224XY)

Finish

US28	Clear Anodized Aluminum
313AN	Dark Bronze Anodized Aluminum
315AN	Black Anodized Aluminum (XY only)

Custom finishes available, consult factory.

Length

83"
85"
95"
119"(XY) / 120"(HD)

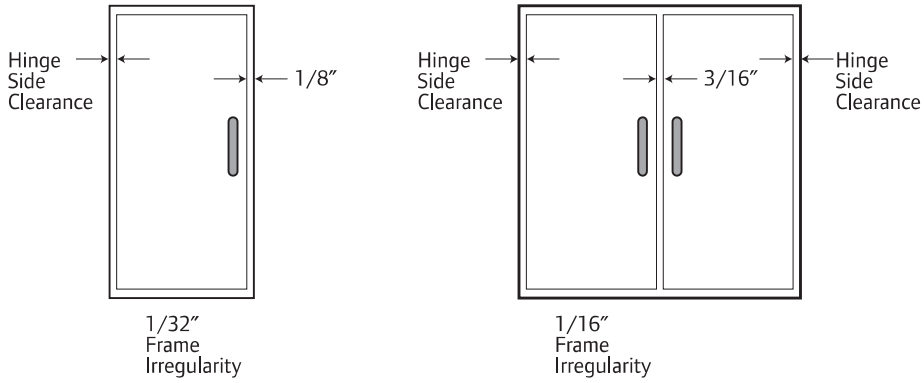
Custom lengths available up to 119", consult factory. When specifying length, handing required.

Option 2

EPT	Electric power transfer prep (Only available on 026XY, 027XY, 112HD, 112XY, 114XY, 224HD, 224XY) Handing (LH and RH) Required for 026, 027, 114, and 224 models
TWP CON	Through Wire Panel with Allegion Connect Standard (Only Available on 026XY, 027XY, 112XY, 114XY, 224XY)
SECHM	Security fasteners - pin-in-socket
SECWDHM	Security fasteners - pin-in-socket (half wood, half hollow metal)
SECWDWD	Security fasteners - pin-in-socket (wood door and frame)
WD	Wood door fasteners
TEKWD	Half thread forming, half wood
TF	Thread forming screws (pilot hole required) (Only available with 112HD and 224HD)
TFWD	Half thread forming, half wood

Clearance requirements

Consult your local authority having jurisdiction for specific fire codes relating to fire rated doors. The table below is only recommended for non fire related doors.



Single door

Model	Hinge-side clearance	Lock-side clearance	Frame irregularity	Beveled door clearance	Door under-sizing Square edged	Beveled edge
026XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
027XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
040XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
041XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
045XY	5/32"	1/8"	1/32"	1/32"	5/16"	11/32"
046XY	5/32"	1/8"	1/32"	1/32"	5/16"	11/32"
053XY	5/32"	1/8"	1/32"	1/32"	5/16"	11/32"
054XY	5/32"	1/8"	1/32"	1/32"	5/16"	11/32"
112HD	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
112XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
114XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
157XY	1/16"	1/8"	1/32"	1/32"	7/32"	1/4"
210XY	1/16"	1/8"	1/32"	1/32"	7/32"	1/4"
224HD	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
224XY	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"

Pair of doors

Model	Hinge-side clearance (2 doors)	Lock-side clearance	Frame irregularity (2 doors)	Beveled door clearance (2 doors)	Door under-sizing Square edge total	Square edge each door	Beveled edge total	Beveled edge each door
026XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
027XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
040XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
041XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
045XY	5/16"	3/16"	1/16"	1/16"	9/16"	9/32"	5/8"	5/16"
046XY	5/16"	3/16"	1/16"	1/16"	9/16"	9/32"	5/8"	5/16"
053XY	5/16"	3/16"	1/16"	1/16"	9/16"	9/32"	5/8"	5/16"
054XY	5/16"	3/16"	1/16"	1/16"	9/16"	9/32"	5/8"	5/16"
112HD	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
112XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
114XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
157XY	1/8"	3/16"	1/16"	1/16"	3/8"	3/16"	7/16"	7/32"
210XY	1/8"	3/16"	1/16"	1/16"	3/8"	3/16"	7/16"	7/32"
224HD	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
224XY	5/8"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"

Templates and installation instructions available on line at www.allegion.com/us

General information - electrification options

Only available for the full mortise hinges

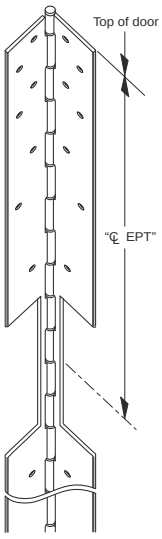
Electric power transfer (EPT) availabile on 600, 700, 705, 715, 700CS, 715CS models

Electric power transfer provides the most secure and best solution for transferring power from the door frame to the edge of a swinging door. Ives Pin and Barrel Hinges provide standard cut outs to fit Von Duprin EPT- 2, EPT-10 and PNT-1 devices. Consult factory for other electrical cut out options. Door handing is required.

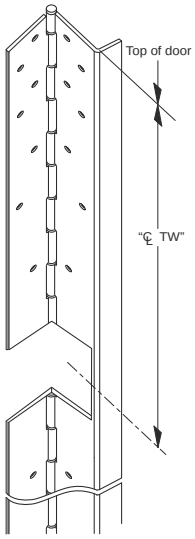
Electrical through-wire (TW8) for standard models (600, 700, 705, 715) only

Recommended for low frequency usage. Provides electric power transfer from the frame to the door cable in order to supply power to an electrified mortise or cylidrical locks, exit devices with electric latch retraction, and/or electric strikes (pairs of doors). Through-wire is rated 50 volts AC/DC at 3.5 amp continuous and 16 amp pulse. Maximum pulse 400 milliseconds. Ives through-wire hinges are fully compatible with 4 wire and 8 wire installations. Requires the door to be torn down for maintenance. Available CON option comes with the Allegion Connect 8-pin Connector which makes it easy to connect to other electrical consumption devices.

EPT 600/700/ 700CS



TW8 600/700s



Note: See ordering guide in price book for proper placement.

Standard Length	EPT	TW	TWP
83"	30"	43-19/32"	43-13/16"
85"	32"	45-17/32"	44-29/32"
95"	42"	55-17/32"	55-9/32"
120"	67"	80-17/32"	79-1/2"

Electrical through-wire panel with Allegion Connect (TWP) (700CS models only)

The thru-wire panel solution works in the CS mortise hinge to maintain the clean aesthetic design of aluminum geared continuous hinges. Made with the same medical grade bearings of Ives other pin and barrel hinges, the CS Series brings thru-wire panel innovation to your continuous hinge application while keeping its great looks.

The CS Series thru-wire panel is a heavy duty, easy-to-install, stainless steel panel. Tested to 2.5 million cycles, the CS Series panel can quickly slip in and out of the hinge for maintenance and replacement.

Unlike all of the other manufacturer solutions the CS Series thru-wire panel maintains a one piece appearance on the cover side of the hinge. It installs with the same 5/16" clearance as aluminum geared hinges and works in all of the decorative cover finishes.

Provides electric power transfer from the frame to the door in order to supply power to an electrified mortise or cylindrical locks, exit devices with electric latch retraction, and/or electric strikes (pairs of doors). Thru-wire panel is rated 50 volts AC/DC at 3.5 amp continuous and 16 amp pulse. Maximum pulse 400 milliseconds. Ives through-wire hinges are fully compatible with 4 wire and 8 wire installations. Available CON option comes with the Allegion Connect 8-pin Connector which makes it easy to connect to other electrical consumption devices.

Electrical Cutouts

Ives Pin & Barrel Continuous Hinges are available with factory modified cutouts to accommodate most electrical frame to door requirements. Special templates are required.

When ordering indicate the following:

1. Opening size.
2. Handing. LH, RH, LHR or RHR.
3. Manufacturer and model number of the electrical product being used. Example; Von Duprin ETPT2

Because clearances may vary between door and frame manufacturer, and locations can be influenced by the door hardware it is always recommend contacting Ives Customer Technical for specific template information.

For your general information following are standard locations for Von Duprin EPT2 or EPT10, and TW (through wire).

In accordance with industry standards, all cutouts are made from Top Edge of Door to Center Line of Cut-out.

How to order

700 | HT | US32D | 83 | TW8 CON

Model

Stainless steel

700/700CS	Full Mortise
702	Full Surface - Center Pivot
705	Full mortise - full wrap
711/711CS	Full surface - swing clear
715/715CS	Full mortise - half wrap

Steel

600	Full mortise
602	Full surface - center pivot
611	Full surface - swing clear

Option 1

HT	Hospital tip (600 and 700 series only)

Finish

Stainless steel - only available on 700 Series

US32D	Satin stainless steel

Stainless steel / aluminum - only available on CS Series

US32DAN	Satin stainless anodized
USP	Grey primer paint
US28	Clear aluminum anodized
US4AN	Satin brass anodized
US10AN	Satin bronze anodized
313AN	Dark bronze anodized
315AN	Black anodized
US26AN	Bright chrome anodized
US26DAN	Satin chrome anodized

Steel - only available on 600 Series

600	Grey primer paint

Length

83"
85"
95"
120"

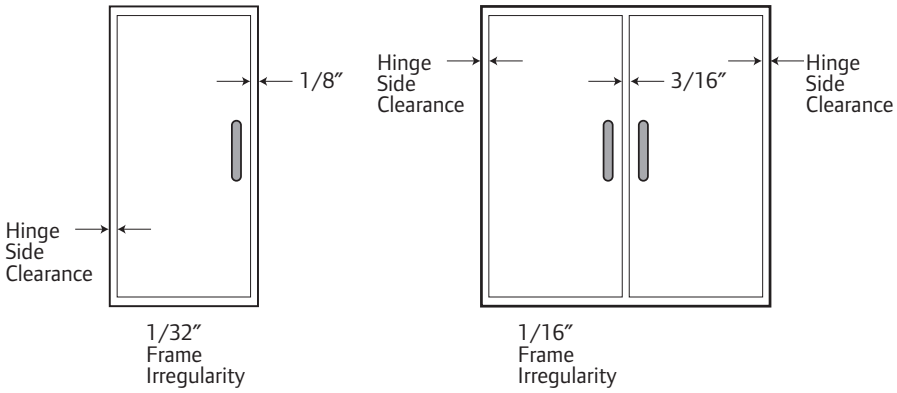
Other lengths available up to 120", consult factory. Handing is required.

Option 2

EPT	Electric power transfer prep (600, 700, 705, 715, 700CS, 715CS models only) Handing (LH and RH) required for 026, 027, 114, and 224 models
TWP	Through wire panel (only available on 700CS)
TW8	Electric through Wire (600, 700, 705, 715 models only)
CON	Allegion Connect (600, 700, 705, 715, 700CS models only)
SECHM	Security fasteners - Torx
SECWDHM	Security fasteners - Torx (half wood, half hollow metal)
SECWDWD	Security fasteners - Torx (wood door and frame)
WD	Wood door fasteners

Clearance requirements

Consult your local authority having jurisdiction for specific fire codes relating to fire rated doors.
The table below is only recommended for non fire related doors.



Single door

Model	Hinge-side clearance	Lock-side clearance	Frame irregularity	Beveled door clearance	Door under-sizing	
					Square edged	Beveled edged
600	1/4"	1/8"	1/32"	1/32"	13/32"	7/16"
602	1/8"	1/8"	1/32"	1/32"	9/32"	5/16"
700	1/4"	1/8"	1/32"	1/32"	13/32"	7/16"
700CS	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"
702	1/8"	1/8"	1/32"	1/32"	9/32"	5/16"
705	3/8"	1/8"	1/32"	1/32"	17/32"	9/16"
705*	1/2"	1/8"	1/32"	1/32"	21/32"	11/16"
711	7/32"	1/8"	1/32"	1/32"	3/8"	13/32"
711CS	3/8"	1/8"	1/32"	1/32"	17/32"	9/16"
715	1/4"	1/8"	1/32"	1/32"	13/32"	7/16"
715CS	5/16"	1/8"	1/32"	1/32"	15/32"	1/2"

** Use the Adjusta-Studs with 705*

Pair of doors

Model	Hinge-side clearance	Lock-side clearance	Frame irregularity	Beveled door clearance	Door under-sizing			
					Square edge total	Square edge each door	Beveled edge total	Beveled edge each door
600	1/4"	3/16"	1/16"	1/16"	3/4"	3/8"	13/16"	13/32"
602	1/8"	3/16"	1/16"	1/16"	1/2"	1/4"	9/16"	9/32"
700	1/4"	3/16"	1/16"	1/16"	3/4"	3/8"	13/16"	13/32"
700CS	5/16"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"
702	1/8"	3/16"	1/16"	1/16"	1/2"	1/4"	9/16"	9/32"
705	3/8"	3/16"	1/16"	1/16"	1"	1/2"	1-1/16"	17/32"
705*	1/2"	3/16"	1/16"	1/16"	1-1/4"	5/8"	1-5/16"	21/32"
711	7/32"	3/16"	1/16"	1/16"	11/16"	11/32"	3/4"	3/8"
711CS	3/8"	3/16"	1/16"	1/16"	1"	1/2"	1-1/16"	17/32"
715	1/4"	3/16"	1/16"	1/16"	3/4"	3/8"	13/16"	13/32"
715CS	5/16"	3/16"	1/16"	1/16"	7/8"	7/16"	15/16"	15/32"

** Use the Adjusta-Studs with 705*



600 Full mortise pin and barrel continuous hinge - steel
700 Full mortise pin and barrel continuous hinge - stainless steel

- 1/4" diameter pin with nylon self-lubricating, medical grade split bearing
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- 1/8" Inset recommended for 1 3/4" doors
- 48" Maximum door width
- Non handed for custom cut lengths
- Bevel or square edge door

Certifications
- Meets ANSI 156.26
- UL10C certified

Standard lengths
- 83", 85", 95", 120"

Standard mounting hardware
- #10 X 1/2" Self Drilling, Self Tapping Screws
- #10 X 1" Wood Screws

Material
- 600 - 1012 Cold-rolled steel
- 700 - 14 Gauge Type 304 stainless steel

Finishes

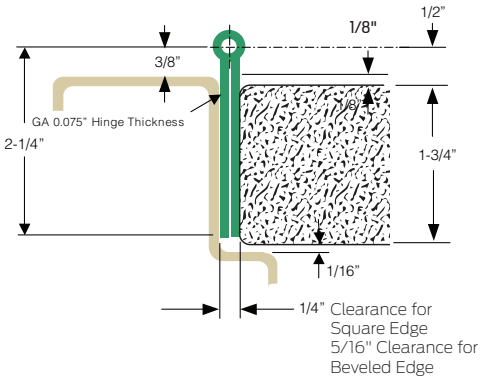
BHMA	Description	Substrate	Finish
600	Grey primer paint	Steel	USP
630	Satin stainless steel	Stainless steel	US32D

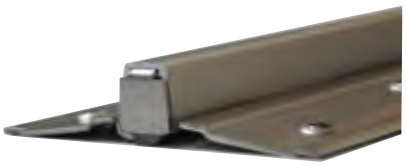
Custom paint available on 600 series, consult factory.

Options
- HT.....Hospital tip
- EPT .....Electric power transfer
- TW8 .....Electrical through wire
- CON.....Allegion Connect

Optional mounting hardware
- SECHM.....Security screws - hollow metal door and frame
- SECWDHM.....Security screws - 1/2 wood, 1/2 hollow metal
- SECWDWD .....Security screws - wood door and frame
- WD.....Wood door and frame

For single door applications:
For pairs of doors see chart and general information





700CS Full mortise pin and barrel continuous hinge w/ decorative cover

- Patented cover protects hinge knuckle and creates a cleaner and neater appearance
- XY adjustability feature allows for better door alignment during installation
- Patented, medical grade, nylon winged bearings
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- 1/16" door inset
- 48" Maximum door width
- Non handed
- Bevel or square edge door

Certifications

- Meets ANSI 156.26
- UL10C certified

Standard lengths

- 83", 85", 95", 120"

Standard mounting hardware

- 12-24 X 3/4" Self drilling, self tapping screws

Material

- 14 Gauge Type 304 stainless steel

Finishes

BHMA	Description	Substrate	Finish
441	Satin stainless anodized	Aluminum/Steel	US32DAN
600	Grey primer paint	Aluminum/Steel	USP
628	Clear aluminum anodized	Aluminum/Steel	US28
688	Satin brass anodized	Aluminum/Steel	US4AN
709	Satin bronze anodized	Aluminum/Steel	US10AN
710	Dark bronze anodized	Aluminum/Steel	313AN
711	Black anodized	Aluminum/Steel	315AN
712	Bright chrome anodized	Aluminum/Steel	US26AN
713	Satin chrome anodized	Aluminum/Steel	US26DAN

Custom paint available, consult factory. Standard custom paint is on cover only. Specify if paint on whole hinge is needed.

Options

- HT.....Hospital tip
- EPT .....Electric power transfer
- TW8 .....Electrical through wire
- CON.....Allegion Connect

Optional mounting hardware

- SECHM.....Security screws - hollow metal door and frame
- WD.....Wood door and frame

For single door applications:

For pairs of doors see chart and general information



602 Full surface pin and barrel continuous hinge - steel
702 Full surface pin and barrel continuous hinge - stainless steel

- 1/4" diameter pin with nylon self-lubricating, medical grade split bearing
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- Flush mounted, no inset
- 48" Maximum door width
- Non handed for custom cut lengths
- Bevel or square edge door

Certifications
- Meets ANSI 156.26
- UL10C certified

Standard lengths
- 83", 85", 95", 120"

Standard mounting hardware
- #10 X 1/2" Self drilling, self tapping screws
- #10 X 1" Wood screws
- Cover clips

Material
- 602 - 1012 Cold-rolled steel
- 702 - 14 Gauge Type 304 stainless steel

Finishes

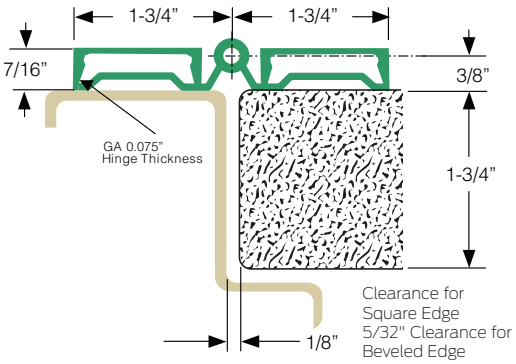
BHMA	Description	Substrate	Finish
600	Grey primer paint	Steel	USP
630	Satin stainless steel	Stainless steel	US32D

Custom paint available on 600 series, consult factory.

Options
- HT.....Hospital tip

Optional mounting hardware
- SECHM.....Security screws - hollow metal door and frame
- SECWDHM.....Security screws - 1/2 wood, 1/2 hollow metal
- SECWDWD .....Security screws - wood door and frame
- WD.....Wood door and frame

For single door applications:
For pairs of doors see chart and general information





705 Full mortise, full wrap pin and barrel continuous hinge - stainless steel

- Full wrap edge guard
- Adjustable for undersized and out of square doors
- 1/4" diameter pin with nylon self-lubricating, medical grade split bearing
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- Flush mounted, no inset
- 48" Maximum door width
- Non handed, handing required for custom cut lengths
- Bevel or square edge door

Certifications
- Meets ANSI 156.26
- UL10C certified

Standard lengths
- 83", 85", 95", 120"

Standard mounting hardware
- #10 X 1/2" Self drilling, self tapping screws
- #10 X 1" Wood screws

Material
- 14 Gauge Type 304 stainless steel

Finishes

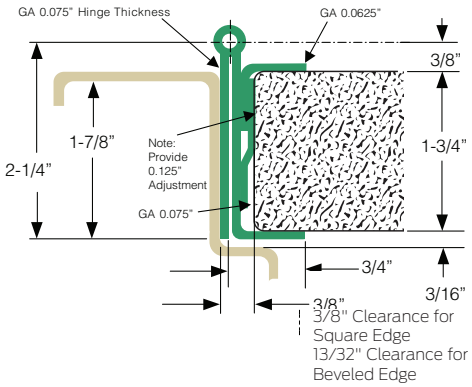
BHMA	Description	Substrate	Finish
630	Satin stainless steel	Stainless steel	US32D

Custom paint available, consult factory.

Options
- HT.....Hospital tip
- EPT .....Electric Power Transfer
- TW8 .....Electrical Through Wire
- CON.....Allegion Connect

Optional mounting hardware
- SECHM.....Security screws - hollow metal door and frame
- SECWDHM.....Security screws - 1/2 wood, 1/2 hollow metal
- SECWDWD .....Security screws - wood door and frame
- WD.....Wood door and frame

For single door applications:
For pairs of doors see chart and general information



* Adjusta-Stud allows up to 3/8" width adjustment which ensures proper alignment and easy installation. Adjusta-Stud also makes it possible for future adjustments of the door on the frame through repositioning.



611 Swing clear pin and barrel continuous hinge - steel
711 Swing clear pin and barrel continuous hinge - stainless steel

- Edge guard
- May be difficult to install on inside walls
- 1/4" diameter pin with nylon self-lubricating, medical grade split bearing
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- 48" Maximum door width
- Non handed, handing required for custom cut lengths
- Square edge door

Certifications
- Meets ANSI 156.26
- UL10C certified

Standard lengths
- 83", 85", 95", 120"

Standard mounting hardware
- #10 X 1/2" Self drilling, self tapping screws
- #10 X 1" Wood screws

Material
- 611 - 1012 cold-rolled steel
- 711 - 14 Gauge Type 304 stainless steel

Finishes

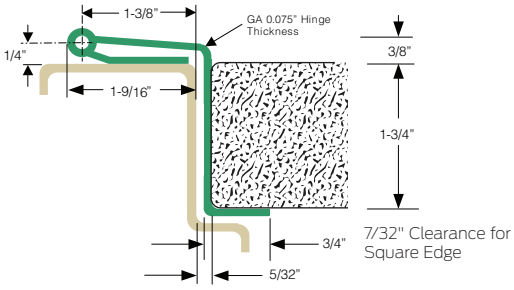
BHMA	Description	Substrate	Finish
600	Grey primer paint	Steel	USP
630	Satin stainless steel	Stainless steel	US32D

Custom paint available on 600 series, consult factory.

Options
- HT.....Hospital tip

Optional mounting hardware
- SECHM.....Security screws - hollow metal door and frame
- SECWDHM.....Security screws - 1/2 wood, 1/2 hollow metal
- SECWDWD .....Security screws - wood door and frame
- WD.....Wood door and frame

For single door applications:
For pairs of doors see chart and general information





711CS Swing clear pin and barrel continuous hinge w/ decorative cover

- Patented cover protects hinge knuckle and creates a cleaner and neater appearance
- XY adjustability feature allows for better door alignment during installation
- Edge guard
- Easy to install mounting location on mortise end of frame
- 2-11/16" minimum frame face requirement
- Patented, medical grade, nylon winged bearings
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- 1/16" door inset
- 48" Maximum door width
- Non Handed, handing required for custom cut lengths
- Square edge door

Certifications

- Meets ANSI 156.26
- UL10C certified

Standard lengths

- 83", 85", 95", 120"

Standard mounting hardware

- 12-24 X 3/4" Self drilling, self tapping screws

Material

- 14 Gauge Type 304 stainless steel

Finishes

BHMA	Description	Substrate	Finish
441	Satin stainless anodized	Aluminum/Steel	US32DAN
600	Grey primer paint	Aluminum/Steel	USP
628	Clear aluminum anodized	Aluminum/Steel	US28
688	Satin brass anodized	Aluminum/Steel	US4AN
709	Satin bronze anodized	Aluminum/Steel	US10AN
710	Dark bronze anodized	Aluminum/Steel	313AN
711	Black anodized	Aluminum/Steel	315AN
712	Bright chrome anodized	Aluminum/Steel	US26AN
713	Satin chrome anodized	Aluminum/Steel	US26DAN

Custom paint available, consult factory. Standard custom paint is on cover only. Specify if paint on whole hinge is needed.

Optional mounting hardware

- SECHM.....Security screws - hollow metal door and frame
- WD.....Wood door and frame

For single door applications:

For pairs of doors see chart and general information



715 Full mortise, half wrap pin and barrel continuous hinge - stainless steel

- Half wrap edge guard
- 1/4" diameter pin with nylon self-lubricating, medical grade split bearing
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- 1/16" door inset
- 48" Maximum door width
- Non handed, handing required for custom cut lengths
- Square edge door

Certifications
- Meets ANSI 156.26
- UL10C certified

Standard lengths
- 83", 85", 95", 120"

Standard mounting hardware
- #10 X 1/2" Self Drilling, Self Tapping Screws
- #10 X 1" Wood Screws

Material
- 14 Gauge Type 304 Stainless Steel

Finishes

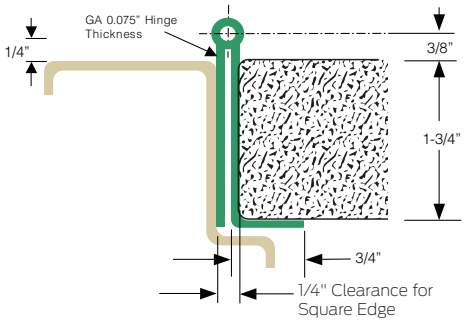
BHMA	Description	Substrate	Finish
630	Satin stainless steel	Stainless steel	US32D

Custom paint available on 600 series, consult factory.

Options
- HT.....Hospital tip
- EPT .....Electric power transfer
- TW8 .....Electrical through wire
- CON.....Allegion Connect

Optional mounting hardware
- SECHM.....Security screws - hollow metal door and frame
- SECWDHM.....Security screws - 1/2 wood, 1/2 hollow metal
- SECWDWD .....Security screws - wood door and frame
- WD.....Wood door and frame

For single door applications:
For pairs of doors see chart and general information





715CS Full mortise, half wrap pin and barrel continuous hinge w/ decorative cover

- Patented cover protects hinge knuckle and creates a cleaner and neater appearance
- XY adjustability feature allows for better door alignment during installation
- Half wrap edge guard
- Patented, medical grade, nylon winged bearings
- For doors weighing up to 300 pounds without reinforcing. 600 pounds with reinforcing
- Flush mounted, no inset
- 48" Maximum door width
- Non handed, handing required for custom cut lengths
- Square edge door

Certifications

- Meets ANSI 156.26
- UL10C certified

Standard lengths

- 83", 85", 95", 120"

Standard mounting hardware

- 12-24 X 3/4" Self drilling, self tapping screws

Material

- 14 Gauge Type 304 stainless steel

Finishes

BHMA	Description	Substrate	Finish
441	Satin stainless anodized	Aluminum/Steel	US32DAN
600	Grey primer paint	Aluminum/Steel	USP
628	Clear aluminum anodized	Aluminum/Steel	US28
688	Satin brass anodized	Aluminum/Steel	US4AN
709	Satin bronze anodized	Aluminum/Steel	US10AN
710	Dark bronze anodized	Aluminum/Steel	313AN
711	Black anodized	Aluminum/Steel	315AN
712	Bright chrome anodized	Aluminum/Steel	US26AN
713	Satin chrome anodized	Aluminum/Steel	US26DAN

Custom paint available, consult factory. Standard custom paint is on cover only. Specify if paint on whole hinge is needed.

Options

- EPT .....Electric power transfer

Optional mounting hardware

- SECHM.....Security screws - hollow metal door and frame
- WD.....Wood door and frame

For single door applications:

For pairs of doors see chart and general information

The door rests on the bottom pivot in this application. This reduces the stress on the frame by distributing the weight of the door throughout the floor and structure. By taking advantage of the strength of the structure, this makes a pivot the ideal solution for your heavy doors. Center and pocket pivots also provide an aesthetic option for your opening.

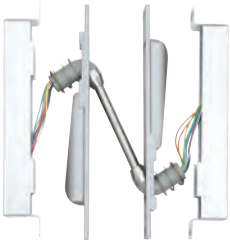
Used in conjunction with rescue hardware, center hung pivots allows a bi-directional door swing in emergency situations. When a patient becomes trapped behind an inward swing door, the center tong depresses allowing the door to swing in the opposite direction without causing damage to the frame.



Electric power transfer accessories

EPT Electrical power transfer

PNT Pneumatic transfer



Electric Power Transfer provides a means of transferring electrical power from a door frame to the edge of a swinging door. The units are completely concealed when the door is in the closed position, and are ideal for installations involving abuse or heavy traffic.

Two models are available; EPT-2, two 18 gauge wires and EPT-10, ten 24 gauge wires. The EPT-2 and EPT-10 are U/L listed as "miscellaneous door accessory".

UL Listed for use on fire doors.

Door applications:

Degree of opening	Hinge type	Door thickness
0-180	Up to 5" butt hinges	1 3/4"
0-180	Up to 3/4" offest pivots	1 3/4"
0-130	5 1/2" butt hinges	1 3/4"
0-110	6" butt hinges	1 3/4"
0-90	Swing clear hinges	1 3/4"

Finishes

SP28 (sprayed aluminum)

SP313 (sprayed duranodic).

Dimensions

Housing	9" x 1 1/4" x 1 5/8" (229mm x 32mm x 38mm)
EPT-2	Two 18 gauge wires, Up to 2 AMPS @ 24VDC, with a 16 AMPS Maximum Surge
EPT-10	Ten 24 gauge wires, Up to 1 AMPS @ 24VDC, with a 16 AMPS Maximum Surge
PNT-1	5/32" Tubing

To order, specify:

1. EPT-2 ,EPT-10 or PNT-1.
2. Finish, SP28 or SP313.

Electromagnetic locks

Schlage has a rich heritage in electronic security. For years we have led the industry by providing a broad portfolio of solutions to meet the diverse needs of the market. Today, our electromagnetic locking portfolio continues to evolve to meet your changing needs.

Schlage electromagnetic locks are used to secure the door in conjunction with push bars, request to- exit devices, or credential readers for fail-safe applications when code compliance permits. You can use them on a single standalone door or as part of an access control system. Electromagnetic locks do not contain moving parts, making them extremely durable and preferred for high security applications.

Electromagnetic locks consist of an armature and a coil assembly, which become magnetized when an electric current passes through them. This magnetic field secures the door. Electromagnetic locks are fail-safe by design. To unlock the door simply remove power.

M400 Series electromagnetic locks

The M400 Series is a robust line of electromagnetic locks with unique new design elements that make them easy to install and secure.

Features:

- Auto voltage selection is standard
- Plus Package (P) adds magnetic bond sensor, relocking time delay, door status monitor
- Optional mounting kits available including: Top Jamb Mount, Double and Glass Door

Certifications:

- UL 1034
- UL 10C 3 hour fire rating
- BHMA Grade 1
  - M420 – 500 lb. hold force for traffic control
  - M450 – 1000 lb. hold force for high security
  - M490 – 1500 lb. hold force for max security

Electromagnetic specialty locks

Schlage's electromagnetic specialty locks provide flexibility for a variety of applications. They offer a depth of features and a proven record of performance.

Features and certifications:

M490DE: Delays egress with 15 second timer: includes integrated alarm

- Designed to meet NFPA 101 & BOCA, UL 10C 3 hr fire rating, UL 294, and BHMA 1500 lb. hold force

M490G: Gate lock is weather resistant for exterior swinging and sliding gates

- BHMA 1500 lb. hold force rated GF3000: Concealed locking mechanism enhances security and appearance
- UL 10C 3 hr fire rating, BHMA 1500 lb. hold force 320M: MiniLine is mortise designed for interior sliding doors
- UL 10C 3 hr fire rating, UL 1034 listed

40/70 Series Electromagnetic Locks

Ease of installation makes the 40/70 Series a perfect choice for retrofit applications. It is also easy to select and stock.

Features and Certifications:

- Magnetic bond sensor and door status monitor standard
- UL 10C 1 hour fire rating and BHMA Grade 1:

- 40 Series – 500 lb. hold force
- 70 Series – 1000 lb. hold force

Allegion Connect

Cross category electrified solution for FAlcon, IVES, Schlage and Von Duprin



Overview

Allegion Connect is a cross-category electrified solution utilizing common interconnect components to our electrified options. Allegion Connect is a quick and easy way to connect power sources; all the way from your power supply to electrified door hardware. There is no wire cutting; reducing installation and maintenance time ultimately cutting cost. After installation, Allegion Connect continues to provide benefits throughout the lifetime of the opening by offering a comprehensive service kit. Our cross category product offering is interchangeable which allows for simple upgrades and replacements.

Features and benefits

- **Quick:** common connections reducing installation time
- **Perfect connections:** these factory installed connectors ensure the right wires match up every time
- **Protective:** the connectors protect the connection points throughout the installation process and lifetime of the opening
- **Interchangeable:** all Allegion Connect products utilize the same connectors
- **Maintenance:** you no longer need to cut away wire to disconnect Allegion products, also available are service kits specifically for Allegion Connect

Available products

Von Duprin	Exits	22, 33A/35A, 98/99 Series
	Electric strikes	6100, 6200 Series
	EPT	10
Schlage	Locks	ND Series - 10, 12, 80, 96 functions L Series - 9080, 9082 functions
Falcon	Exits	24, 25 Series
	Locks	T Series - 851, 881 functions MA Series - 851, 881 functions
IVES	Architectural hinges	3CB1, 5BB1 Standard and heavyweight
	Geared hinges	112, 224
	Pin/barrel hinges	600, 700, 715

For more visit www.allegion.com/us or call 877-671-7011.

Allegion Connect - the perfect connection

Locks, exits, hinges and accessories

How to order

1. Specify CON for Connect electronic options

   Example: EL-99-EO-CON (99 Series Electrified Latching exit only with ConneX connectors)

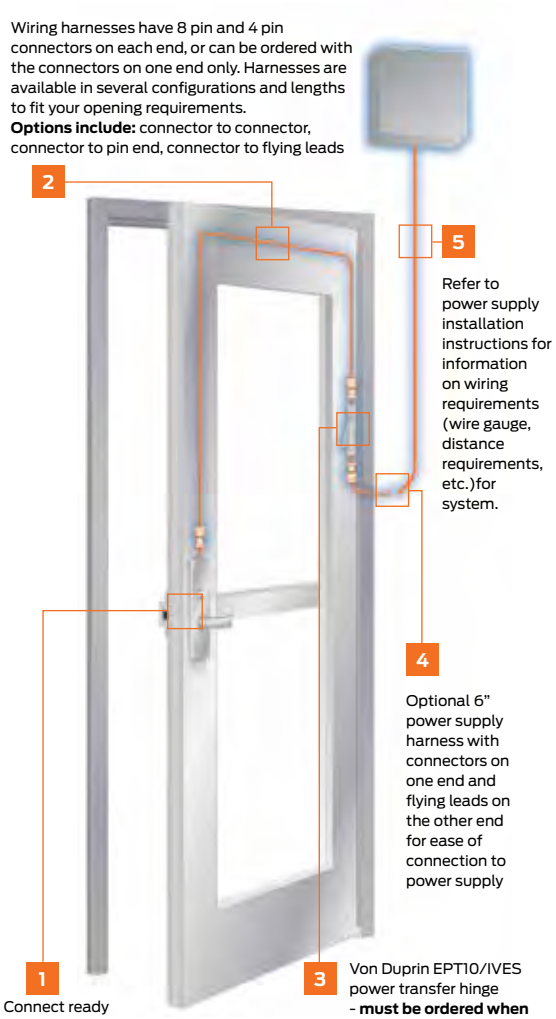
2. Specify harness length; Consult door manufacturer for harness length

3. Specify Von Duprin EPT10-CON or Ives 7200 power transfer hinge

   Note: Must be ordered with exit devices and locks

Note: You will need to purchase a separate wiring harness to go from exit device to EPT/hinge/electric strike. We recommend the use of our 6" power supply harness (connectors on one end, flying lead on the other) to tie into wiring coming out from power supply or access control system.

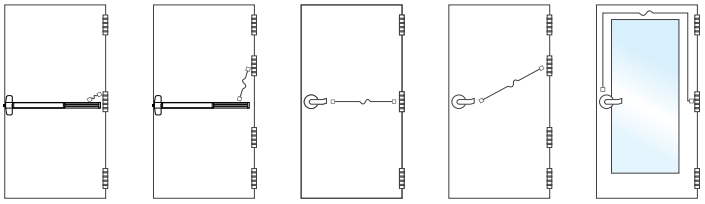
Wiring harnesses have 8 pin and 4 pin connectors on each end, or can be ordered with the connectors on one end only. Harnesses are available in several configurations and lengths to fit your opening requirements.
Options include: connector to connector, connector to pin end, connector to flying leads



How to order examples

Von Duprin	CX-99-EO-**CON**
	EPT-10-**CON**
Schlage locks	ND80PDEL-RHO-626-**CON**
	L9080EUP-03A-626-**CON**
Falcon exits	EL-25-R-L-US26D-RHR-**CON**
Falcon locks	MA-851P-24-DG-626-**CON**
IVES	5BB-1-HW-4.5x4.5-626-**CON**-TW8
	112HD-CL-83-TW8-**CON**
	700-630-83-TW8-**CON**

Wire run options



Note: For illustration purposes only. Consult your door manufacturer for harness length requirements.

Harness lengths

Harness length	Connectors on both ends	Connectors on one end, crimped pins on other end (recommended for doors with narrow channel)
6 inches	CON-6	CON-6P
12 inches	CON-12	CON-12P
26 inches	CON-26	CON-26P
32 inches	CON-32	CON-32P
38 inches	CON-38	CON-38P
44 inches	CON-44	CON-44P
50 inches	CON-50	CON-50P
192 inches	CON-192	CON-192P
Optional power supply wire harness: Connectors on one end, stripped leads on the other end, offereing a direct connection to the power supply		
6 inches	CON-6W - wire extension to power supply	

Note: Wiring harnesses are used to connect the door hardware (lock, exit device) to the EPT/hinge, and an additional wiring harness can be used to route from the EPT/hinge to locations outside of the frame. Wiring harnesses are not to be used to connect system to power supply, refer to your power supply installation instructions for more information. We recommend the use of our optional 6" power supply harness (connectors on one end, flying leads on the other) to tie into wiring coming out from power supply or access control system. Consult door manufacturer for harness length requirements.

Harness part numbers with ordering information can be located in the Schlage, Von Duprin and Falcon pricebooks.

A service kit is available for order in the Schlage, Von Duprin and Falcon pricebooks. Included in this kit are male end plugs, female end plugs and pins to customize harnesses to your application.

Contact your local Allegion Representative today at 877-671-7011 or visit allegion.com/us to learn how our Connect solution can simplify your installation and maintenance processes.

About Allegion

Allegion (NYSE: ALLE) creates peace of mind by pioneering safety and security. As a $2 billion provider of security solutions for homes and businesses, Allegion employs more than 8,000 people and sells products in more than 120 countries across the world. Allegion comprises more than 25 global brands, including strategic brands CISA®, Interflex®, LCN®, Schlage® and Von Duprin®. For more, visit **www.allegion.com.**

aptiQ ■ LCN ■ SCHLAGE ■ STEELCRAFT ■ VON DUPRIN

ALLEGION™

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www.allegion.com/us

SB360

Surface bolt

- Surface bolt has 1 1/4" throw for maximum security
- Jimmy-resistant design, bolt locks automatically when thrown, can be released only be pressing knob toward door while retracting
- Ideal for all types of doors
- Available in 12" length
- Unit locks in both the up and down position
- Accepts padlock (not furnished) with maximum 3/8" diameter shackle, minimum 1 3/4" shackle opening height
- Units packed with one-way wood screws for added security
  - Standard wood screws also supplied
- Units packed with a universal top strike (US)





Available mortise strike

Specifications

Material substrate	Heavy duty steel
Certifications	▪ Meets ANSI/BHMA A156.16 ▪ UL10C Listed (3 hour) fire doors up to 10'0" ▪ Miami Dade County NOA listed ▪ Florida Building Commission listed ▪ FEMA 361 and 320 listed

Dimensions

Bar	Overall width	Overall projection	Top strike	Available mortise strike
3/4" W x 3/4" T	2 1/32"	2 1/16"	1 1/2" W x 1 1/2" L x 3/16" T	1 5/8" W x 3 1/2" L x 1/8" T

Finish

BHMA	Description	Substrate	Finish
604	Clear Zinc	Steel	US2C

Available accessories

- Through bolt
- Mortise bottom strike (MS)

SB453

Surface bolt

- Surface bolt has 1 3/16" throw for maximum security
- Strong tension springs prevent creep
- Ideal for all types of doors
- Available 8" and 12" lengths
- Units packed with standard wood screws and machine screws to meet most field conditions
- Units packed with both a universal top strike (US) and a mortise bottom strike (MS)



Specifications

Material substrate	Heavy duty steel
Certifications	▪ Meets ANSI/BHMA A156.16 L84161 ▪ UL10C Listed (3 hour) fire doors up to 10'0"

Dimensions

Bar	Overall width	Overall projection	Top strike	Bottom strike
3/4" W x 3/4" T	2 1/32"	1 5/16"	1 1/2" W x 1 1/2" L x 3/16" T	1 5/8" W x 3 1/2" L x 1/8" T

Finishes

BHMA	Description	Substrate	Finish
604	Clear Zinc	Steel	US2C
631	Matte Black	Steel	BLK
632*	Bright Brass	Steel	US3
633*	Satin Brass	Steel	US4
639	Satin Bronze	Steel	US10
640	Oil Rubbed Bronze	Steel	US10B
643e/716	Aged Bronze	Steel	643e/716
646	Satin Nickel	Steel	US15
652	Satin Chrome	Steel	US26D

* Only available in 8" bolt length. For other colors, consult factory.

Available accessories

- Through bolt
- Through bolts (machine screws with cap nuts) not intended for use as security screws

SB1630/SB1640





Universal top strike



Flat bottom strike

Surface bolt

- Standard surface bolt has 1" throw for maximum security
- Ideal for all types of doors
- Fully concealed mounting prevents vandalism
- Units packed with wood and machine screws to meet most field conditions
- Comes end plug and end plug stud package
- Available in locking version, unit locks in both the up and down position
  - Locking bolts are furnished with 2 keys in 4 keying variations

Specifications

Material substrate	▪ 1630 Series is constructed of heavy duty steel ▪ 1640 Series is constructed of brass
Certifications	▪ 1630 Meets ANSI/BHMA A156.16 L84161 and UL10C Listed (3 hour) fire doors up to 8'0" ▪ 1640 Meets ANSI/BHMA A156.16 L24161

Dimensions

Body	Overall knob or lock housing projection	Top strike	Bottom strike
8" L x 7/8" W x 3/4" T	1 1/2"	1 1/4" W x 7/8" L x 15/16" D	3" L x 1" W x 1/8" T

Strike options

- **T** Top strike only
- **B** Bottom strike only
- **TB** Top and bottom strike*
- **TL** Locking bolt with top strike only
- **BL** Locking bolt with bottom strike only
- **TBL** Locking bolt with top and bottom strike*

* Available on SB1630 Only

Key code

- 1289 Standard key code
- 1360
- 1390
- 1395

SB1630 Finishes

BHMA	Description	Substrate	Finish
603	Clear Zinc	Steel	US2G
640	Oil Rubbed Bronze	Steel	US10B
652	Satin Chrome	Steel	US26D

SB1640 Finishes

BHMA	Description	Substrate	Finish
605	Bright Brass	Brass	US3
613	Oil Rubbed Bronze	Brass	US10B
626	Satin Chrome	Brass	US26D

For other colors, consult factory.

Available accessories

- Security pin screw
- Through bolts available
- End plug and end plug stud package
- Cylinder package
- Replacement strike packages

SB1600M1/SB1600M2

Surface bolt

- Standard surface bolt has 3 1/2" throw for maximum security and for doors with larger undercuts
- Sleek handle design
- Ideal for all types of doors
- Fully concealed mounting prevents vandalism
- Available in locking version. Unit locks in both the up and down position
  – Locking bolts are furnished with 2 keys in 4 keying variations
- Units packed with wood and machine screws to meet most field conditions
- M1 version has Actuator tab pointing away from the door
- M2 version has Actuator tab pointing towards the door



SB1600M1 SB1600M2 SB1600M2-TL



Optional flat bottom strike



Optional universal strike



Specifications

Material substrate	Constructed of heavy duty steel
Certifications	Meets ANSI/BHMA A156.16 L84161 and UL10C Listed (3 hour) fire doors up to 8'0"

Dimensions

Bar	Top strike	Bottom strike
11" L x 3/4" W x 3/4" T, locking version 1 1/2" thick	1 1/4" W x 7/8" T x 15/16" D	3" L x 1" W x 1/8" T

Strike options

- **T** Top strike only
- **B** Bottom strike only
- **TL** Top locking strike only
- **BL** Bottom locking strike only

Key code

- 1289 Standard key code
- 1360
- 1390
- 1395

Finishes

BHMA	Description	Substrate	Finish
631	Matte Black	Steel	BLK
689	Aluminum Painted	Steel	SP28
691	Dull Bronze Painted	Steel	SP10
695	Dark Bronze Painted	Steel	SP313
706	Dull Brass Painted	Steel	SP4

For other colors, consult factory.

Available accessories

- Security pin screw
- Through bolts available
- End plug and end plug stud package
- Cylinder package
- Replacement strike packages

40

Surface bolt, decorative light duty

- Recommended for 1 3/8" and 1 3/4" hollow core doors or door partitions
- Concealed screw design enhances appearance and security
- Exceptional strength and durability provided by interlocking construction of heavy gauge track and rod
- Permanent stop prevents rod disengagement from track
- Tension spring holds bolt in desired position
- Track assures smooth operation and interlocks with side edges of rod to eliminate marring
- Decorative 5/8" diameter knob designed to facilitate bolt operation
- Available in 3", 4" and 6" lengths
- Units packed with wood screws
- Packed with both universal and mortise strikes





Universal strike



Mortise strike

Specifications

Material substrate	Made from extruded brass
Certifications	Meets ANSI/BHMA A156.16

Dimensions

Throw	Projection	Width	Length
11/16"	3/4"	11/16"	3", 4" or 6

Finishes

BHMA	Description	Substrate	Finish
605	Bright Brass	Brass	B3
609	Blackened Brass	Brass	B5
613	Oil Rubbed Bronze	Brass	B10B
619	Satin Nickel	Brass	B15
622	Matte Black	Brass	BLK
625	Bright Chrome	Brass	B26
626	Satin Chrome	Brass	B26D
643e/716	Aged Bronze	Brass	643e/716

For other colors, consult factory.

253

Surface bolt, decorative heavy duty

- Recommended for 1 3/4" or larger doors
- Heavy duty, decorative bolt ideal where extra strength required
- Decorative 1 1/4" diameter knob fits well with any décor and designed to facilitate bolt operation
- Available in 8" and 12" lengths. Optional lengths available, consult factory.
- Units packed with wood screws
- Packed universal strike (US) and mortise strike (MS)





Universal strike



Mortise strike

Specifications

Material substrate	Made from solid brass
Certifications	Meets ANSI/BHMA A156.16

Dimensions

Throw	Projection	Half round rod	Overall width	Length
1 1/8"	1 5/16"	5/8"	1 5/8"	8" or 12"

Finishes

BHMA	Description	Substrate	Finish
605	Bright Brass	Brass	B3
613	Oil Rubbed Bronze	Brass	B10B
626	Satin Chrome	Brass	B26D

For other colors, consult factory.

054

Dutch door bolt



- Practical, rugged, attractive bolt for application on Dutch doors as well as other areas
- Chamfered rod end draws the two leaves of door tightly together
- Sufficient tolerance provided in strike opening to allow for misalignment of door leaves and also prevents binding of bolt
- Decorative 1" diameter knob designed to facilitate bolt operation
- Units packed with wood screws
- Packed with Standard Strike (SS), Mortise Strike (MS) and Universal Strike (US)



Standard strike | Mortise strike | Universal strike

Specifications

Material substrate	Made from solid brass
Certifications	Meets ANSI/BHMA A156.16

Dimensions

Throw	Projection	Half round rod	Overall width	Rod length	Overall length
5/8"	1 1/8"	5/8"	1 5/8"	4 1/4"	Specify 4 3/8" (including knob)

Finishes

BHMA	Description	Substrate	Finish
605	Bright Brass	Brass	B3
606	Satin Brass	Brass	B4
612	Satin Bronze	Brass	B10
613	Oil Rubbed Bronze	Brass	B10B
619	Satin Nickel	Brass	B15
625	Bright Chrome	Brass	B26
626	Satin Chrome	Brass	B26D

For other colors, consult factory.

S48

Mortise door bolt



- Brass oval turn knob and escutcheon
- Steel bolt for extra strength
- Rack is milled for precision fit with pinion
- Units packed with wood screws

Specifications

Material substrate	Made from brass and steel
Certifications	Meets ANSI/BHMA A156.16

Dimensions

Throw	Projection	Half round rod	Overall width	Rod length
1 3/4"	1/2"	1/2"	2 1/2" L x 9/16" D	1 3/4" H x 7/8" W

Finishes

BHMA	Description	Substrate	Finish
605	Bright Brass	Brass	B3
609	Blackened Brass	Brass	B5
613	Oil Rubbed Bronze	Brass	B10B
619	Satin Nickel	Brass	B15
625	Bright Chrome	Brass	B26
626	Satin Chrome	Brass	B26D

For other colors, consult factory.



261 Flush bolt - 4"

- An exceptionally smooth working flush bolt with sharp, crisp lines
- Double action spring design provides automatic holding of brass bolt in projected or retracted position, and assures ease of operation in conjunction with deep cup finger hole
- Made from polished cast brass
- Bolt tip is 5/16" Diameter
- Bolt throw is 3/4"
- Bolt backset is 15/32"

Certifications

- Meets ANSI A156.16, L04201

Mounting

- 5 X 5/8" FPHSMS
- 8 X 3/4" FPHSMS

Dimensions

Body size (Width X Length X Depth)	Strike size (Width X Length)
3/4" x 4" x 1-1/8"	5/8" x 1-1/2"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
609	Satin brass	Brass	US5
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D

Custom finishes are available as engineering special, consult customer service



262 Flush bolt - 6" square end

- An exceptionally smooth working flush bolt with sharp, crisp lines
- Double action spring design provides automatic holding of brass bolt in projected or retracted position, and assures ease of operation in conjunction with deep cup finger hole
- Made from polished cast brass
- Bolt tip is 1/2" diameter
- Bolt throw is 1"
- Bolt backset is 15/32"

Certifications

- Meets ANSI A156.16, L04201

Mounting

- 5 X 5/8" FPHSMS
- 8 X 3/4" FPHSMS

Dimensions

Body size (Width X Length X Depth)	Strike size (Width X Length)
3/4" x 6" x 1-11/32"	7/8" x 1-3/4"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
609	Satin brass	Brass	US5
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D

Custom finishes are available as engineering special, consult customer service.



265 Flush bolt - 6" round end

- A flush bolt with radiused bottom faceplate designed specifically for simple one-step router installation
- Double action spring design provides automatic holding of brass bolt in projected or retracted position, and assures ease of operation in conjunction with deep cup finger hole
- Faceplate is polished solid brass; bolt is made from aluminum zinc alloy
- Bolt tip is 1/2" diameter
- Bolt throw is 1"
- Bolt backset is 1/2"

Certifications

- Meets ANSI A156.16, L042011

Mounting

- 5 X 5/8" FPHSMS
- 8 X 3/4" FPHSMS

Dimensions

Body size (Width X Length X Depth)	Strike size (Width X Length)
3/4" x 6" x 1-7/16"	7/8" x 1-3/4"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
609	Satin brass	Brass	US5
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D

Custom finishes are available as engineering special, consult customer service.



FB358 Top or bottom bolts

- When the active door is opened, the lever can be moved to the 'up' position, retracting the bolt and allowing the inactive leaf to be opened. When the inactive leaf is closed, the lever can be moved to the 'down' position, projecting the bolt into the strike and securely locking the inactive leaf
- Reduces installation costs; requires only simple router mortise at top and bottom corners of doors
- Door strength and rigidity maintained by tying door faces to reinforcing extensions on guide with machine screws and bearing washers, not supplied
- Non-handed
- Bolt tip 1/2" diameter
- Bolt throw is 3/4" with a 7/8" vertical adjustment
- Bolt backset is 3/4"
- Not available for rabbeted door installations

Certifications

- Meets ANSI A156.16, L04261
- UL Listed 90 Minute fire doors 8'0" X 10'0". Fire rated openings require top and botom bolt.

Mounting

- 8 X 1" FPHSMS
- 8 X 3/4" FPHSMS

Dimensions

Body size (Width X Length X Depth)	Guide Size (Width X Length X Thickness)	Strike size (Width X Length X Thickness)
1" x 6-3/4" x 1-3/8"	1" x 2-1/2" x 5/64"	15/16" x 2-1/4" x 5/64"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
612	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
622	Matte black	Brass	BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	–

Custom finishes are available as engineering special, consult customer service.

Available accessory items

- DP1 and DP2 dust proof strike, see page C16



FB457 Top or bottom bolts

- When the active door is opened, the lever can be moved to the 'up' position, retracting the bolt and allowing the inactive leaf to be opened. When the inactive leaf is closed, the lever can be moved to the 'down' position, projecting the bolt into the strike and securely locking the inactive leaf.
- Simplified installation in metal frames. Round bolt head requires only a punched hole. Use of strike optional. Special design of guide and flat sided bolt tip to prevent bolt rotation.
- Non-handed
- Bolt tip 1/2" diameter
- Bolt throw is 3/4" with a 7/8" vertical adjustment
- Bolt backset is 3/4"
- Standard rod length is 12", which is measured from the center of the flush bolt body to the bolt tip

Certifications

- Meets ANSI A156.16, L04261
- UL Listed 3 Hour fire doors 8'0" X 10'0". Fire rated openings require top and bottom bolt.

Mounting

- 8-32 X 1" FPHMS

Dimensions

Body size (Width X Length X Depth)	Guide Size (Width X Length X Thickness)	Strike size (Width X Length X Thickness)
1-1/4" x 6-3/4" x 1-1/8"	1" x 2" x 5/64"	15/16" x 2-1/4" x 5/64"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
612	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
622	Matte black	Brass	BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	–

Custom finishes are available as engineering special, consult customer service.

Available options

- Optional rod lengths available for top bolt only on non-fire rated openings—18", 24" for fire rated doors with AHJ approval, 36" and 48" for non-fire rated doors

Available accessory items

- DP1 and DP2 dust proof strike, see page C16



FB458 Top or bottom bolts

- When the active door is opened, the lever can be moved to the 'up' position, retracting the bolt and allowing the inactive leaf to be opened. When the inactive leaf is closed, the lever can be moved to the 'down' position, projecting the bolt into the strike and securely locking the inactive leaf.
- Simplified installation in metal frames. Round bolt head requires only a punched hole. Use of strike optional. Special design of guide and flat sided bolt tip to prevent bolt rotation.
- Non-handed
- Bolt tip 1/2" diameter
- Bolt throw is 3/4" with a 7/8" vertical adjustment
- Bolt backset is 3/4"
- Standard rod length is 12", which is measured from the center of the flush bolt body to the bolt tip

Certifications

- Meets ANSI A156.16, L04261
- UL Listed 3 Hour fire doors 8'0" X 10'0". Fire rated openings require top and bottom bolt.

Mounting

- 8-32 X 1" FPHMS

Dimensions

Body size (Width X Length X Depth)	Guide Size (Width X Length X Thickness)	Strike size (Width X Length X Thickness)
1" x 6-3/4" x 1-1/8"	1" x 2" x 5/64"	15/16" x 2-1/4" x 5/64"

Finishes

BHMA	Description	Substrate	US
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
609	Blackened brass	Brass	US5
612	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
619	Satin nickel	Brass	US15
622	Matte black	Brass	BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	–

Custom finishes are available as engineering special, consult customer service.

Available options

- Optional rod lengths available for top bolt only on non-fire rated openings—18", 24" for fire rated doors with AHJ approval, 36" and 48" for non-fire rated doors

Available accessory items

- DP1 and DP2 dust proof strike, see page C16

How to order:

PR8303-8 US32D 4X16 N 1-3/4"

Single/Pair	Model	Center to center	Finish	Plate W X H	Mounting	Door thickness
PR	8303	8	US32D	4 X 16	N	1-3/4"

Single/Pair

"Blank"	Single pull machined with standard threads
PR	Pair of pulls and plates - One pull machined with standard threads and one pull machined for back to back mounting
Nsgl	Single pull machined for back to back mounting

Model

8200	Push Plate
8300	Pull plate (less pull)
8302	Pull plate (with 8102 pull)
8303	Pull plate (with 8103 pull)
8305	Pull plate (with 8105 pull)
8311	Pull plate (with 8111 pull)

Pull center to center

5	5-1/4" (8111 only)
6	6" (8102HD and 8105 only)
8	8" (8102HD, 8103HD, 8105 only)
0	10" (8102HD, 8103HD, 8105 only)
2	12" (8103HD only)

Finish

605	Buff Brass	US3
606	Satin Brass	US4
612	Satin Bronze	US10
613	Antique Bronze	US108
619	Satin Nickel	US15
625	Buff Chrome	US26
626	Satin Chrome	US26D
626-AM	Satin Chrome - Anti-Microbial	US260-AM
628	Satin Clear Anodized	US28
629	Buff Stainless	US32D
630	Satin Stainless	US32D
630-AM	Satin Stainless - Anti-Microbial	US32D-AM
643e/716	Aged Bronze	---
BLK	Matte black	---

Plate width x height

3X12	3" Wide X 12" High
3.5X15	3-1/2" Wide X 15" High
4X16	4" Wide X 16" High
6X16	6" Wide X 16" High
8X16	8" Wide X 16" High

Mounting hardware

STD	Thru-bolt with decorative washer
A	Concealed mount - aluminum doors
F	Thru-bolt with countersunk hole
G	Concealed mount with pull plates
I	Concealed mount - wood doors
J	Back to back mount (8102 only)
L	Concealed mount - hollow metal doors
N	Back to back mount

Door thickness

1-3/4"	Standard
2"	Optional
2-1/4"	Optional



8200 Push plate
8300 Pull plate, prep for pull (less pull)

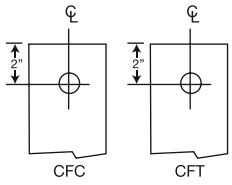
Certifications
- Meets ANSI A156.6 for J301 Materials

Mounting
- Standard mounting package
  - #6X5/8 oval head screws
- Optional TEK/TORX package
  - #6X5/8 Self-drilling, Self-tapping screws
  - #6X5/8 Torx screws

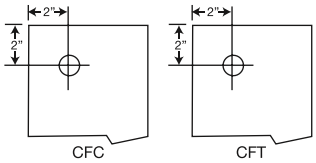
Widths and heights
- 3" X 12"
- 3-1/2" X 15"
- 4" X 16"
- 6" X 16"
- 8" X 16"

Optional pull center to center spacing
- For 8300 pull plates, plates are prepped with 2 3/8" holes for pull machining
- For holes prepped for G mounting hardware, consult customer service.
  - 5-1/4"
  - 6"
  - 8"
  - 10"
  - 12"

For plates up to 4"



For plates greater than 4" (RH shown)



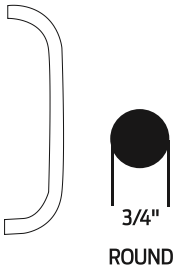
Finishes
- Available in Aluminum, Brass, and Stainless Steel substrates. See general information section for specific BHMA finish code, finish description, US finish code, and substrate information.
- Standard finishes available;
  605, 606, 612, 613, 619, 625, 626, 626-AM, 628, 630, 630-AM, BLK
- *Custom finishes are available as engineering special, consult customer service.*

Additional information
- Specify PR when ordering a set of plates for back to back mounting
- *Custom widths, heights, and special cut-outs are available as engineering special, consult customer service.*

Plates cut for cylinder or thumbturns
Plates are available with cutout for cylinder or thumbturn; standard cutout is 2" from top and centered on plates up to 4" wide. For plates wider than 4" cutout is located 2" from outer edge, specify LH or RH. When pull location interferes with standard cutout location a detail drawing should be furnished with the order.

- Standard cutout is 1-1/4" for cylinder and 3/8" for thumbturn.
- Specify CFC for cutout for cylinder or CFT for cutout for thumbturn.





8302 Pull plate

Certifications
- Meets ANSI A156.06

Mounting
- Heavy duty mounting hardware exceeds industry standards
- 5/16-18 mounting hardware
- Specify door thickness. Standard mounting hardware for door thickness of 1-1/2" to 1-3/4" unless otherwise specified. Optional package available for 2" and 2-1/4" thick doors.
- Comes standard with thru-bolt screws and decorative washers.
- Optional mounting hardware available (see general information section for details) F, G, I, J, L
- *Mounting hardware for other door thicknesses are available as engineering special, consult customer service.*
- Standard mounting package for plate
  - #6 X 5/8 oval head screws
- Optional TEK/TORX package
  - #6 X 5/8 Self-drilling, Self-tapping screws and
  - #6 X 5/8 Torx screws
- Plate prepped with 2 pull mounting holes spaced at 6", 8", or 10" center to center

Widths and heights
- 3-1/2" X 15"
- 4" X 16"
- 6" X 16

Pull center to center
- 6"
- 8"
- 10"

Finishes
- Available in Aluminum, Brass, and Stainless Steel substrates. See general information section for specific BHMA finish code, finish description, US finish code, and substrate information.
- Standard finishes available;
  605, 606, 612, 613, 619, 625, 626, 626-AM, 628, 630, 630-AM, 643e/716, BLK
- *Custom finishes are available as engineering special, consult customer service.*

Additional information
- Specify PR when ordering a set of pulls for back to back mounting
- For one back to back machined pull, specify Jsgl
- *Custom widths, heights, and special cut-outs are available as engineering special, consult customer service.*





8303 Pull plate

Certifications
- Meets ANSI A156.06

Mounting
- Heavy duty mounting hardware exceeds industry standards
- 3/8-16 mounting hardware
- Specify door thickness. Standard mounting hardware for door thickness of 1-1/2" to 1-3/4" unless otherwise specified. Optional package available for 2" and 2-1/4" thick doors.
- Comes standard with thru-bolt screws and decorative washers.
- Optional mounting hardware available (see general information section for details) A, F, G, I, L, N
- *Mounting hardware for other door thicknesses are available as engineering special, consult customer service.*
- Standard mounting package for plate
  - #6 X 5/8 oval head screws
- Optional TEK/TORX package
  - #6 X 5/8 Self-drilling, Self-tapping screws and
  - #6 X 5/8 Torx screws
- Plate prepped with 2 pull mounting holes spaced at 8" or 10" center to center

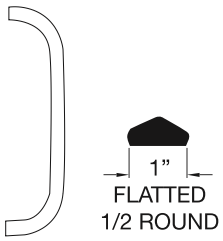
Widths and heights
- 3-1/2" X 15"
- 4" X 16"
- 6" X 16"

Pull center to center
- 8"
- 10"

Finishes
- Available in Aluminum, Brass, and Stainless Steel substrates. See general information section for specific BHMA finish code, finish description, US finish code, and substrate information.
- Standard finishes available; 605, 606, 612, 613, 619, 625, 626, 626-AM, 628, 630, 630-AM, 643e/716, BLK
- *Custom finishes are available as engineering special, consult customer service.*

Additional information
- Specify PR when ordering a set of pulls for back to back mounting
- For one back to back machined pull, specify Nsgl
- *Custom widths, heights, and special cut-outs are available as engineering special, consult customer service.*





8305 Pull plate

Certifications
- Meets ANSI A156.06

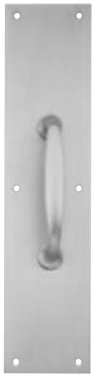
Mounting
- 1/4-20 mounting hardware
- Specify door thickness. Standard mounting hardware for door thickness of 1-1/2" to 1-3/4" unless otherwise specified. Optional package available for 2" and 2-1/4" thick doors.
- Comes standard with thru-bolt screws and decorative washers.
- Optional mounting hardware available (see general information section for details)
  F
- *Mounting hardware for other door thicknesses are available as engineering special, consult customer service.*
- Standard mounting package for plate
  - #6 X 5/8 oval head screws
- Optional TEK/TORX package
  - #6 X 5/8 Self-drilling, Self-tapping screws and
  - #6 X 5/8 Torx screws
- Plate prepped with 2 pull mounting holes spaced at 6", 8", or 10" center to center

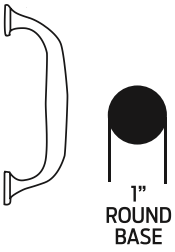
Widths and heights
- 3-1/2" X 15"
- 4" X 16"
- 6" X 16"

Pull center to center
- 6"
- 8"
- 10"

Finishes
- Available in Aluminum, Brass, and Stainless Steel substrates. See general information section for specific BHMA finish code, finish description, US finish code, and substrate information.
- Standard finishes available;
  605, 606, 612, 613, 619, 625, 626, 626-AM, 628, 630, 630-AM, 643e/716, BLK
- *Custom finishes are available as engineering special, consult customer service.*

Additional information
- Specify PR when ordering a set of pulls for back to back mounting
- For one back to back machined pull, specify Nsgl
- *Custom widths, heights, and special cut-outs are available as engineering special, consult customer service.*





8311 Pull plate

Certifications
- Meets ANSI A156.06

Mounting
- 1/4-20 mounting hardware
- Specify door thickness. Standard mounting hardware for door thickness of 1-1/2" to 1-3/4" unless otherwise specified. Optional package available for 2" and 2-1/4" thick doors.
- Comes standard with thru-bolt screws and decorative washers.
- Optional mounting hardware available (see general information section for details)
  F, G
- *Mounting hardware for other door thicknesses are available as engineering special, consult customer service.*
- Standard mounting package for plate
  - #6 X 5/8 oval head screws
- Optional TEK/TORX package
  - #6 X 5/8 Self-drilling, Self-tapping screws and
  - #6 X 5/8 Torx screws
- Plate prepped with 2 pull mounting holes spaced at 5-1/4" center to center

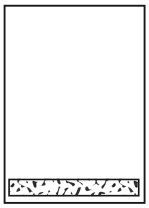
Widths and heights
- 3-1/2" X 15"
- 4" X 16"
- 6" X 16"

Pull center to center
- 5-1/4"

Finishes
- Available in Aluminum, Brass, and Stainless Steel substrates. See general information section for specific BHMA finish code, finish description, US finish code, and substrate information.
- Standard finishes available;
  605, 606, 612, 613, 619, 625, 626, 626-AM, 628, 630, 630-AM, 643e/716, BLK
- *Custom finishes are available as engineering special, consult customer service.*

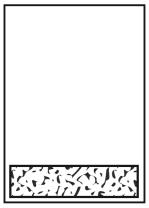
Additional information
- Specify PR when ordering a set of pulls for back to back mounting
- *Custom widths, heights, and special cut-outs are available as engineering special, consult customer service.*

Types of protection plates



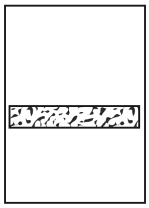
Mop plates

- Protect the bottom of the pull side of door subject to cleaning and mopping procedures.
- Size Ranges: 4” to 6” high, 22” to 48” wide



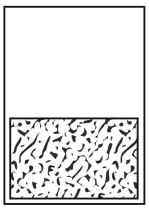
Kick plates

- Protect the bottom of the push side of doors subject to scuffing from foot traffic.
- Recommended for all doors subject to normal use (especially doors using a closer).
- Size Ranges: 8” to 24” high, 22” to 48” wide



Stretcher plates

- Protect doors at specific areas where consistent contact is made by stretchers, service carts or other equipment.
- Usually applied to push side of doors.
- Specify “B4E” Option for beveled edges.
- Size Ranges: 6” to 8” high, 22” to 48” wide



Armor plates

- Protect lower half of doors from abuse by hard carts, trucks and rough usage.
- Usually applied to push side of single doors and both sides of double acting doors.
- Size Ranges: 26” to 48” high, 22” to 48” wide

8400 Commercial protection plates
8402 UL Commercial protection plates

- Door protection plates are available in .050" thick brass, stainless steel or aluminum; and 1/8" thick high impact polyethylene in clear or black.
- All plates, metal and plastic, come standard with four beveled edges and countersunk mounting holes (B-CS).
- Protection plates must be ordered in 1/2" increments. Available in other sizes, consult customer service
- *For 8402 UL Plates, UL mark appears in upper right corner. Not available on plastic protection plates.*

Certifications
- Meets ANSI A156.6 for J301
- UL protection plates certified to UL10C

Mounting
- Standard mounting package, 16 per pack
  - #6 X 5/8 oval head screws
- Optional TEK/TORX package, specify TK-TX
  - #6 X 5/8 Self-drilling, Self-tapping screws
  - #6 X 5/8 Torx screws

Finishes
- Aluminum 5005 Series, Brass C26800 Series, Stainless Steel 300 Series, Plastic

BHMA	Description	Substrate	Finish	Max sizes
605	Bright Brass	Brass	US3	24"X48"
606	Satin Brass	Brass	US4	24"X48"
612	Satin Bronze	Brass	US10	24"X48"
613	Oil rubbed Bronze	Brass	US10B	36"X48"
619	Satin Nickel	Brass	US15	24"X48"
625	Bright Chrome	Brass	US26	36"X48"
626	Satin Chrome	Brass	US26D	24"X48"
628	Satin Aluminium	Aluminium	US28	48"X48"
629	Bright Stainless Steel	Stainless Steel	US32	48"X48"
630	Satin Stainless Steel	Stainless Steel	US32D	48"X48"
654	Satin Stainless Steel	Stainless Steel	US32D	48"X48"
BLK	Matte black	Stainless Steel	BLK	24"X48"
P-BLK	Black	Plastic	P-BLK	48"X48"
CLR	Clear	Plastic	CLR	48"X48"

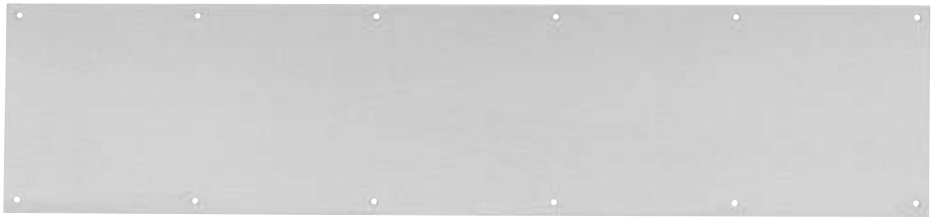
Number of screw packs required by plate size (specify TEK Screws or TORK screws)

	22"-25"	26"-33"	34"-41"	42"-48"
4"-8"	1	1	1	1
9"-16"	1	1	1	1
17"-24"	1	1	1	2
25"-32"	1	1	2	2
33"-40"	1	2	2	2
41"-48"	2	2	2	2

- Custom finishes are available as engineering special, consult customer service.

Available options
- Specify B-NH for no mounting holes. (Not available on 8402. Available only with US32D, US32, US3, US4, US28, Clear, Black only)
- Specify B-NHA for no mounting holes with adhesive.
- Specify ERS prepped with extra row of screws.
- Special Cut-outs are available as engineering special, consult customer service.

Available accessory
- Gasket tape kit tape is recommended when using a brass plate on a metal door to reduce tarnishing from electrolytic oxidation. One tape pack will cover an the perimeters of a 8" x 34" kickplate. Order 8401 gasket tape.



SCHLAGE



L Series

Grade 1 Mortise Locks

Mechanical | Wired Electrified | Wireless Electronic | Multi-Point

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Support@allegion.com

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eFax: 1-833-312-3669

Canada Customer Service

800-900-4734
Canada.CustomerService@allegion.com

Ordering
Canada.Orders.Service@allegion.com
eFax: 1-800-209-4734

Technical Product Support

877-671-7011, Option 2
Mechanical_Locks_TechProdSupport@allegion.com
Electronic_Lock_TechProdSupport@allegion.com
Readers_Credentials_Biometrics_TechProdSupport@allegion.com
Engage.Tech.Prod.Support@allegion.com

Online Support

Knowledge Center > kc.allegion.com
How To Videos > www.youtube.com/SchlageSecurity
or us.allegion.com/supportvideos
Code Support > idighardware.com

Master Key Support

Mechanical_Locks_TechProdSupport@allegion.com

Ordering
U.S. > Customer Service
Canada > Canada.Masterkey@allegion.com
International > Intl.SCH.SS@allegion.com

Restricted Account Support

KeyControlDepartment@allegion.com
Support.restrictedproduct@allegion.com > Sign In

Overtur™ Key System Support

Support.overtur.allegion.com > Submit a ticket



INNOVATION THAT WORKS FOR YOU

Designed for beauty, security, and flexibility, L Series features the most innovative and comprehensive list of mortise functional, design, and trim options Schlage has to offer. Able to withstand the rigors of daily use without fail even in the abusive environments of K-12, Higher Education, and Healthcare. These locks will stand the test of time and can serve the needs of all opening types: from mechanical and multi-point latching to electrified and electronic locks served by some of the most secure key and credential systems in the industry. You can use L Series as part of a common aesthetic. They are made to suite with other Allegion products to present a quality, complete door hardware solution and provide a consistent user experience throughout your building or campus. L Series does all this while lowering the total cost of ownership through maintenance ease, key system flexibility and beautiful finishes that are made to last.

A Legacy of Trust

Over a century ago, Walter Schlage invented the cylindrical lock. His was a simple solution to a problem hidden in plain sight, and from it he built a company that has since grown to become one of the most recognizable names in the security industry. Delivering on quality and building on the trust of our customers, Schlage continues a legacy of providing innovative locking hardware and access control solutions to suit all types of commercial, institutional and multifamily spaces. And, everything we do is backed by friendly, knowledgeable service and support.

Beyond the Brand

Schlage is part of the Allegion family of safety and security solutions featuring other pioneering brands like LCN® and Von Duprin®. Focusing on security around the door and in adjacent areas, we strive to be a trusted advisor to our customers, providing seamless access solutions to secure buildings, people and property. We do this by collaborating with our customers and offering valued services that support their day-to-day responsibilities, including architectural and specification consulting, security and safety consulting, technical services, code compliance support, and training.



STRONG

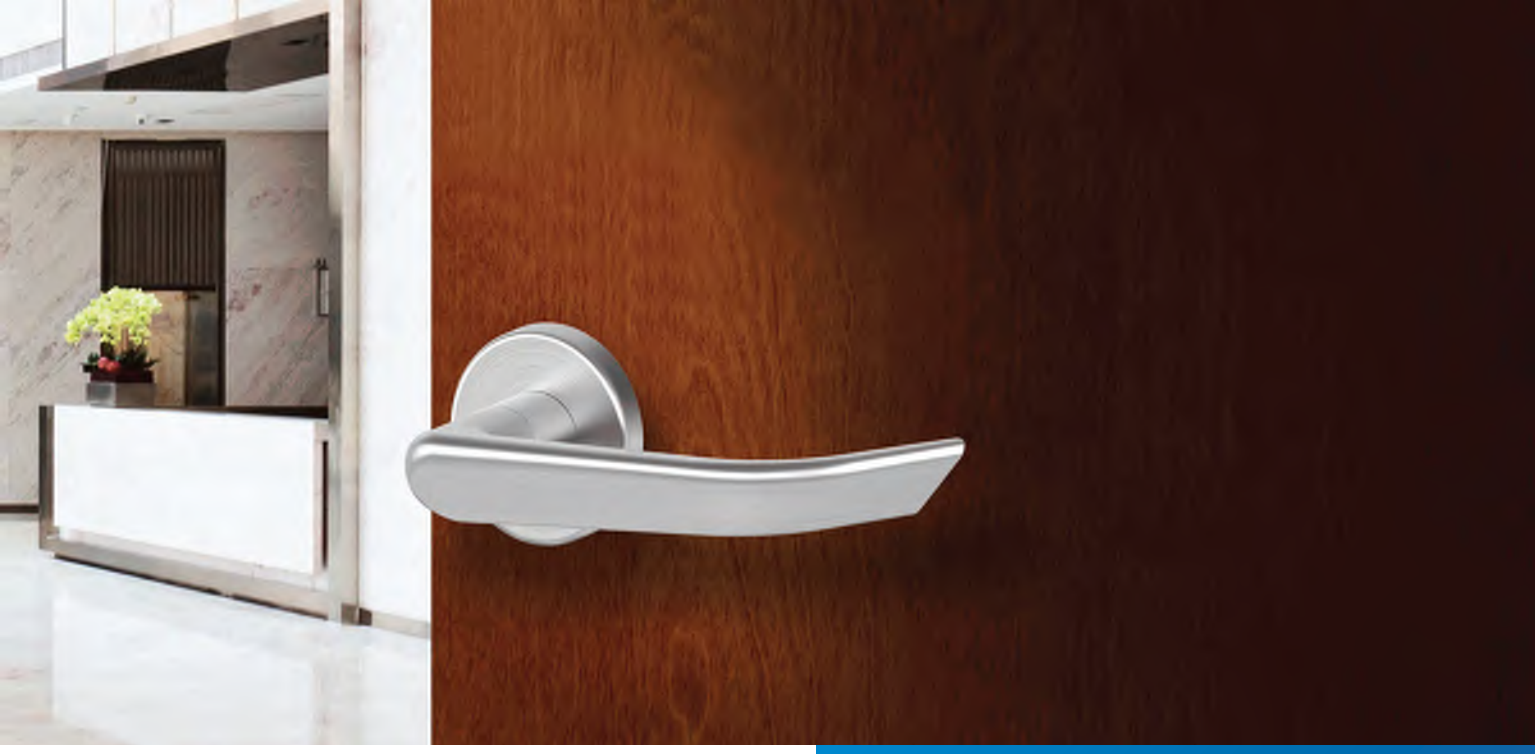
The Schlage L Series has long been the benchmark for heavy-duty mortise locks.

- Exceeds Security Grade 1 and Operational Grade 1 ratings
- Every Schlage lock undergoes intensive testing to determine its ANSI grade level:
  - Cycle tests
  - Resistance tests
  - Door impact tests
  - Warped door tests
  - Bolt strength tests
- Levers constructed of solid brass or solid stainless steel for a strong-yet-comfortable feel
- Whether the application calls for high abuse resistance or just operation over millions of cycles without degradation in performance, users can have confidence that L Series locks will last

SECURE

A strong lock is only part of the security equation—proper key and card access control are equally important.

- Everest 29™ cylinder with S123 keyway is provided standard which prohibits unauthorized key duplication at local retail stores; patent protected until 2029
- Dealer and end user restricted geographically exclusive Primus cylinder options for advanced key control
- The unique SL cylinder option is designed to accept the same Schlage A2 key system of SFIC cylinders, enabling one key system to span Conventional, FSIC and SFIC cylinder formats for better control
- Wired electrified and wireless electronic locks enable the use of electronic credentials for increased visibility and control over access
- Schlage smart credentials using MIFARE® DESFire® technology utilize encryption, mutual authentication and key diversification to ensure the highest levels of security



SMART

Smart means using innovation to make solutions more efficient, flexible, and easier to install and use.

- One platform, three solutions (mechanical, wired electrified, wireless electronic)—same look and feel throughout the building for a common user experience and lower cost of ownership
- Wired electrified lock has autodetecting 12/24V[1] input and selectable fail safe/fail secure operation
- Optional RX switch[2] monitors the inside lever to balance security with lever actuation sensitivity
- Energy efficient design allows multiple locks on a single power supply with no "hot levers"
- Wireless electronic locks can be managed with a third party access control system, or software solutions from Allegion
- Wireless electronic locks allow for offline, periodic or real-time control based on application needs
- Mobile enabled wireless locks are ready for the future with the ability to read Bluetooth and NFC mobile credentials

1. Motorized latch retraction functions use 24V DC input only.
2. See function details for availability.

SCHLAGE

More than just locks, Schlage delivers a complete portfolio and an infrastructure of support throughout the entire build and ownership process.

- Order entry, customer service, technical support, engineering and manufacturing are co-located in the same building in Colorado Springs, Colorado
- Comprehensive support from our sales offices includes consultations, masterkey development and training, industry and code training, specification writing, and product service
- Schlage products suite with other Allegion brands including Von Duprin® exit devices, LCN® door closers and Steelcraft® doors and frames
- A custom engineering department that can develop specialized functions, trim and finishes for unique applications
- Trusted brand for over 100 years

Mortise Lock Comparison

L MECHANICAL



Applications

Schlage mechanical mortise locks offer the most diverse functional and trim options of the Schlage brand. Built on a universal lock case design, several functions in the L mechanical group can be changed and adapted to the building needs over time.

As a commercial mortise lock L Series is inherently more robust and secure than other types of locks against break-in. It's ideal in any institutional, government or educational setting.

Key Features

- Exceeds ANSI/BHMA Grade 1 operational and security standards
- Single- and dual-sided visual indication options available for most functions
- Over 50 standard mechanical functions with custom functions also offered
- Available Vandlgard® and ligature-resistant features
- "The Original" universal lock case allows creation of eight common functions from a single lock body
- 12 finishes and 33 levers, two knobs, five roses and two escutcheon designs
- Supports Conventional, FSIC, SL and SFIC cylinder formats in standard and Primus® designs
- Multiple key systems available: open, patented, restricted, and geographically exclusive

L WIRED ELECTRIFIED



Applications

The wired electrified L Series is ideal for new construction and high traffic areas where hardwired power ensures continuous operation and where electrified door prep, hinges and wiring can easily be incorporated into the building.

The electrified L Series is regularly used as part of an access control system for high security areas, or independently in areas that require a remote access control for entry or accessibility purposes.

Key Features

All mechanical features[1] plus:

- Auto-detects 12/24 VDC[2]
- Selectable EL/EU
- 15 electrified functions include lever locking/unlocking and latch retraction options
- Available Vandlgard® and ligature-resistant features
- Optional monitoring features: request-to-exit, door position switch and latchbolt monitoring
- Deadbolt monitoring standard on all L949X functions
- Motor-driven activation eliminates "hot levers" and ensures smooth, quiet, and dependable operation
- Patent-pending feature on latch retraction functions detects binding conditions on the motor and adjusts as needed to overcome side load, static pressure and warped door conditions

LE WIRELESS ELECTRONIC



Applications

The Schlage LE mobile enabled wireless mortise lock is designed to affordably extend electronic access control deeper into the building beyond traditional perimeter and high security openings.

The LE is ideal for commercial real estate, K-12, higher education, assisted living, medical offices, or multi-family applications. Facilities can benefit from the enhanced security, efficiency, and convenience of upgrading to electronic credentials.

Key Features

All mechanical features[1] plus:

- Six functions with LED indicator, deadbolt, and interior push button options
- Compatible with Bluetooth, NFC, smart and proximity credentials from Schlage and other brands
- Sectional and escutcheon trim options
- 31 levers, 2 knobs and 9 finishes
- Integrated door position sensor (DPS) and request to exit (RX)
- Wireless configuration from smart phones/tablets
- Built-in Wi-Fi® enables automatic daily updates sent directly from host software
- Capable of networked real-time communication with the ENGAGE Gateway and software alliances
- Up to 2 years of battery life

1. Electrified and electronic locks are offered in fewer functions overall and do not utilize mechanical indicator trims.
2. Latch retraction functions utilize 24V DC power only.

L400 MECHANICAL



Applications

L400 Series locks are designed for use as primary locks where no latching is required, such as restrooms and doors to utility spaces.

These mortise deadbolt locks also offer optimum security when used as an auxiliary lock in other applications.

Key Features

- Six available functions
- 12 finishes
- 1" (25 mm) stainless steel throw deadbolt
- Deeper retainer groove in cylinder shell increases security against wrenching and pullout
- 6-pin Everest® 29 cylinder with patented keys standard
- Steel case and parts are corrosion resistant
- Supports Conventional, FSIC, SL and SFIC cylinder formats plus high-security UL 437 options
- Multiple key systems available: open, patented, restricted, and geographically exclusive

LM9200 MULTI-POINT



Applications

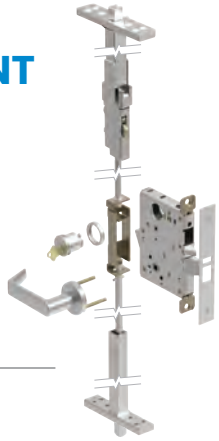
The Schlage LM9200 Series lock utilizes latches in the top and bottom of the door, rather than the side, allowing both leaves of a pair of doors to be active.

Compatible with wood or hollow metal doors, the LM9200 Series is ideal for conference rooms, corridors, office suites, elevator lobbies, and openings where flush bolts and coordinators are not desired.

Key Features

- Concealed vertical cables provide easier installation and reliable performance
- Compatible with sectional and escutcheon trim; does not require "backer plates" or metal wraps for fire protection
- Fire-rated for up to 60 minutes for wood door applications; 90-minute fire rating for hollow metal door applications
- 33 lever designs
- 13 functions (mechanical and electrified)
- Available without the bottom latch for single point latching

LM9300 MULTI-POINT



Applications

The LM9300 Series provides a three-point locking system designed for tornado, hurricane or high security applications, providing superior protection with familiar operation.

Latches at the top, side and bottom of the door protect against high wind speeds and 15-lb. projectile impacts up to 100 mph when paired with a Steelcraft Paladin tornado-resistant door.

Key Features

- All three latches engage when the door is shut and retract simply by rotating the lever
- Compatible with sectional and escutcheon trim
- 33 lever designs
- Six available functions
- Complies to ICC 500-2020, FEMA P-320 (2021), and FEMA P-361 (2021) for tornado shelters when paired with appropriate Steelcraft doors (LM9310 and LM9370 are not approved for use with our ICC 500-2020 solutions)
- Vertical rods ship pre-aligned and pre-installed with Steelcraft doors, enabling quick and simple installation
- Solution requires door and rod set sold through Steelcraft

L SERIES OFFERS A GRADE 1 SOLUTION FOR THE ENTIRE PROJECT

L Mechanical



Suitable for all openings

L Wired Electrified

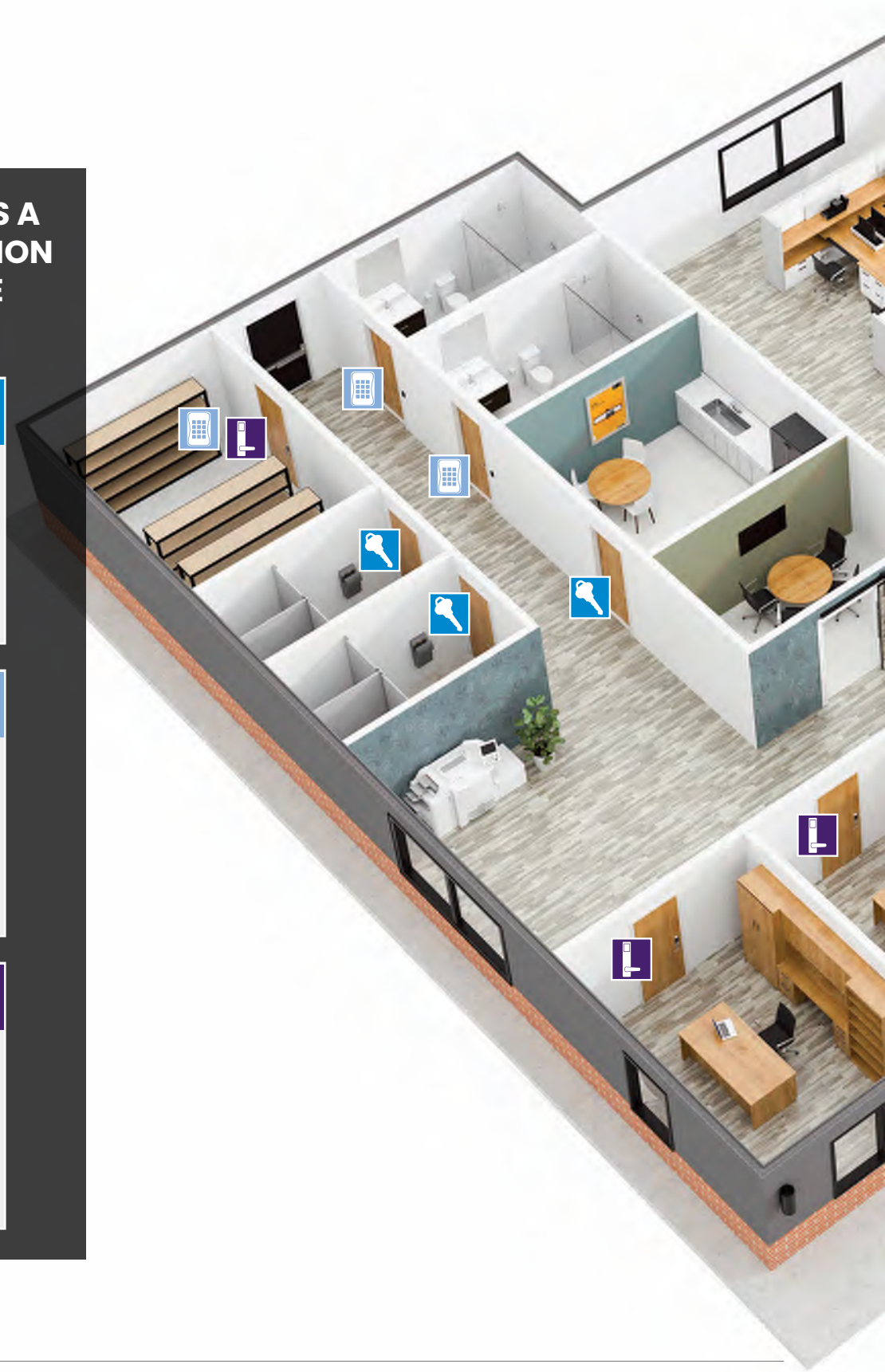


Ideal for high-traffic access control

LE Wireless Electronic



Ideal for access control

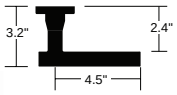




The M Collection

The M Collection is an entire lineup of decorative levers designed to maintain a custom high-style look on doors throughout any building—from the main entrance to the supply closet. The ability to suite M Collection levers across multiple platforms from Schlage and Von Duprin means consistent style and functionality—along with unrivaled security.

M51





851 - Knurled tactile warning[1]

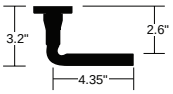
M52 (Broadway)





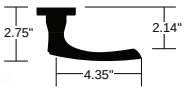
852 - Knurled tactile warning[1]

M53



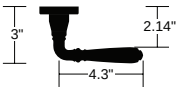


M54





M55



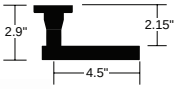


M56





M57 [2]





M61





Handed

M62[2, 3]





Handed

Images shown with Schlage L mortise 'A' rose; additional rose and escutcheon designs available.

1. Knurled tactile warning available on 609, 612, 613, 625, 626, 629, and 630 finishes only.
2. Not available on LE wireless electronic locks.
3. Available in 629, 630 and 630AM only.

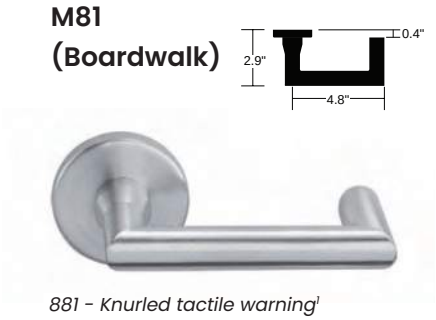
The M Collection

M63



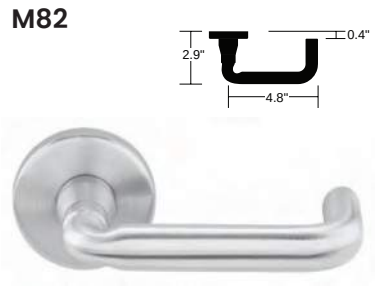
Handed

M81 (Boardwalk)



881 - Knurled tactile warning[1]

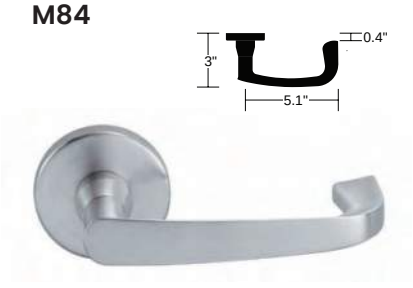
M82



M83



M84

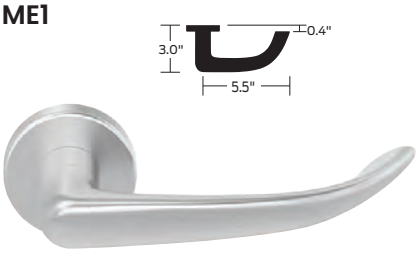


M85



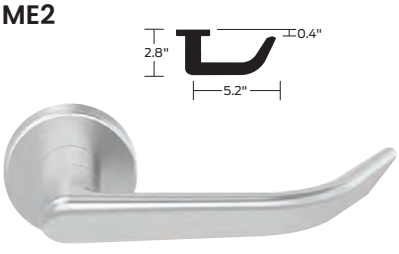
Handed

ME1



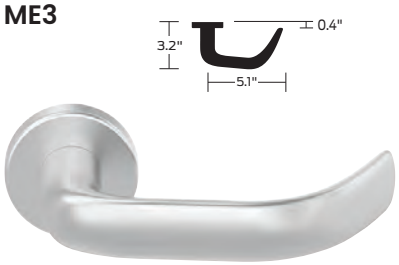
8ME1 - Milled tactile warning
Handed

ME2



8ME2 - Milled tactile warning
Handed

ME3



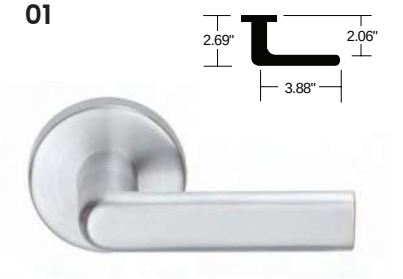
8ME3 - Milled tactile warning

Images shown with Schlage L mortise 'A' rose; additional rose and escutcheon designs available.
ME1, ME2 and ME3 ergonomic levers designed with Gensler as product design consultant.

The Standard Collection

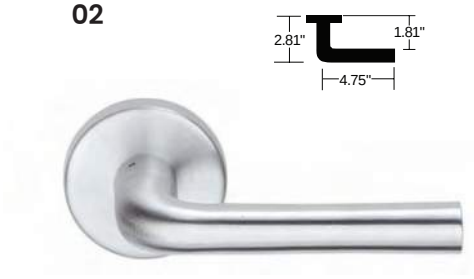
The Standard Collection levers can be paired with exit devices and locks from our trusted Schlage and Von Duprin brands. And, they are built to the same exacting standards. Our Standard Collection levers offer a more traditional style that is appropriate for use in a number of commercial applications.

01



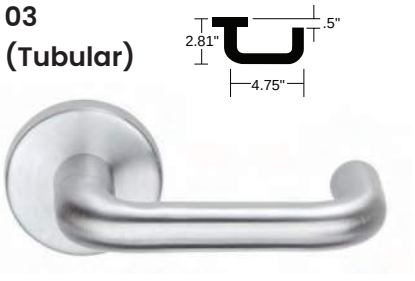
801 - Milled tactile warning

02



802 - Knurled tactile warning[1]

03 (Tubular)



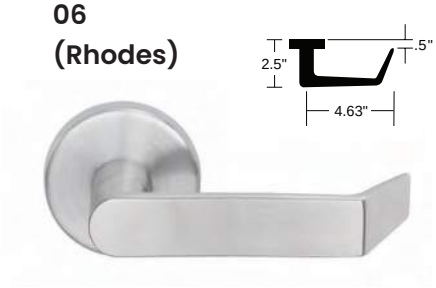
803 - Knurled tactile warning[1]

05



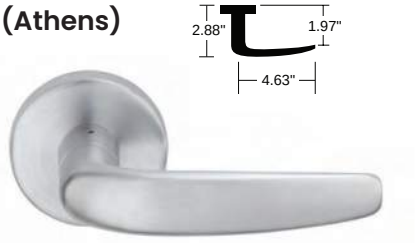
805 - Milled tactile warning

06 (Rhodes)



806 - Milled tactile warning

07 (Athens)



807 - Milled tactile warning

12



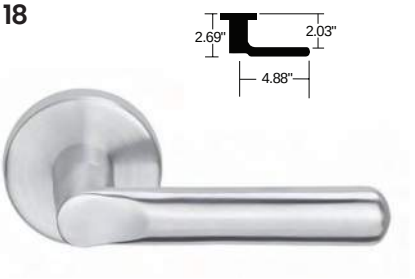
812 - Milled tactile warning
Handed

17 (Sparta)



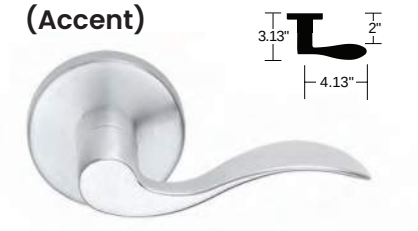
817 - Milled tactile warning

18



818 - Milled tactile warning

ACC (Accent)



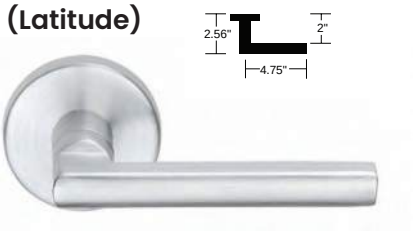
Handed

AST (Asti)



Handed

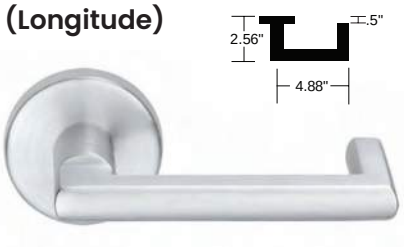
LAT (Latitude)



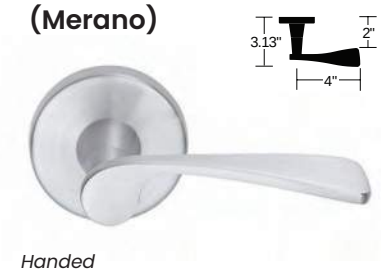
1. Knurled tactile warning available on 609, 612, 613, 625, 626, 629, and 630 finishes only.

The Standard Collection

LON (Longitude)

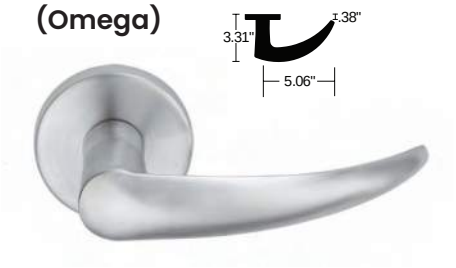


MER (Merano)

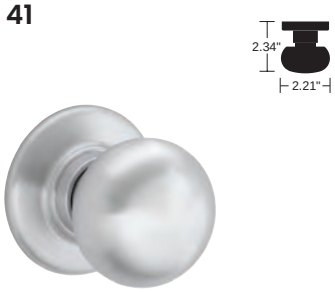


Handed

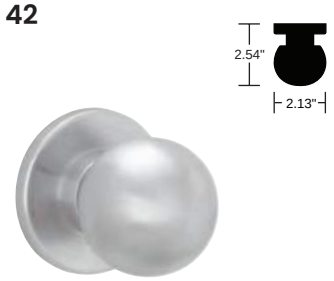
OME (Omega)



41



42



Levers shown with Schlage L Series mortise 'A' rose. Additional rose and escutcheon designs available. Knobs shown with rose that is unavailable in the L Series. See available A, B, and C rose options on page 14.

Finishes



605
Bright Brass

606
Satin Brass

609
Antique Brass

612[1]
Satin Bronze

613[1]
Oil Rubbed Bronze

619
Satin Nickel

622
Matte Black



625
Bright Chrome

626
Satin Chrome

626AM
Satin Chrome Antimicrobial

629[2]
Bright Stainless Steel

630[2]
Satin Stainless Steel

630AM[2]
Satin Stainless Steel Antimicrobial

643e
Aged Bronze

1. Available on standard levers only, not available on Latitude, Longitude, Accent, Asti, or Merano.
2. Not available on Accent, Asti, or Merano.

Lever & Finish Suiting

L Series levers suite widely across mechanical and electronic solutions to provide design and finish options that can carry throughout your building, campus or business.

	Mechanical Locks			Electrified Locks	Electronic Locks		Exit Devices	
Series	**L Series**		**PT Series**	**L Series**	**LE Wireless**	**XE360™ Series Wireless**	**98/99 Series**	**33A/35A Series**
Type	**Mortise**	**Mortise Multi-Latch**	**Tubular**	**Mortise**	**Mortise**	**Mortise, Tubular, & Exit**	**Von Duprin Exit Exterior Trims**	
Standard Collection Levers								
01, 05, 12, 18	●	●		●	●[4]		●[7]	●[10]
02, 03 (Tubular), 06 (Rhodes), 07 (Athens)	●	●	●[5]	●	●[4]		●[7]	●[9]
17 (Sparta/Neptune)	●	●	●[5]	●	●[4]	●[6]	●[7]	●[9]
Accent, Asti (optional AVA rose), Merano (optional Merano rose)	●[1,2]	●[1,2]		●[1,2]	●[9]		●[7]	●[9]
Latitude, Longitude	●[1]	●[1]	●[5]	●[1]	●[9]	●[6]	●[7]	●[9]
Omega/ Von Duprin 16	●	●		●	●[4]		●[7]	●[9]
M Collection Levers								
M51, M53, M54, M55, M56, M61, M63, M82, M83, M84, M85, ME1, ME2, ME3	●[1]	●[1]		●[1]	●[9]		●[7]	●[9]
M52/Broadway	●[1]	●[1]	●[5]	●[1]	●[9]	●[6]	●[7]	●[9]
M81/Boardwalk	●[1]	●[1]		●[1]	●[9]		●[7]	●[9]
M57	●[3]	●[3]		●[3]			●[8]	●[8]
M62	●[8]	●[8]		●[8]			●[8]	●[8]
Trim								
A rose	●	●	●[5]	●	●[4]			
B rose	●	●		●	●[4]			
C rose	●[1]	●[1]	●[5]	●[1]	●[4]			
N escutcheon	●	●	●[5]	●				
L escutcheon	●	●		●				
Addison escutcheon					●[4]			
996L escutcheons (98/99 Series)							●[7]	
360L escutcheons (33A/35A Series)								●
940L escutcheons (94/95 Series)								●

Finish availability details: notations on exceptions and limitations

1. All finishes except 612 or 613
2. All finishes except 629 or 630/630AM
3. Available in 629, 630, and 630AM only
4. All finishes except 609, 613, 629 or 630/630AM
5. Available in 613, 619, 622, 625, 626, and 643e finishes only
6. Available in 619, 622, 625, 626, and 716 only
7. All finishes except 609, 629, or 643e
8. Available in 629 and 630 finishes only
9. All finishes except 609, 612, 613, 629, 630/630AM
10. All finishes except 609, 629, 630/630AM, or 643e

Schlage Locks



PT Series Tubular Locks / Grade 2

As a tubular lock, PT Series complements the L Series providing a grade 2 alternative for non-mortise interior doors where security is less of a concern. They are also ideal for multi-family settings providing an expanded lever offering on interior doors.



XE360™ Electronic Locks / Grade 1

Available in tubular, mortise, mortise deadbolt and exit trim, XE360™ devices are a perfect complement to the L series, providing a unified aesthetic in addition to intelligent features like wireless lock and unlock. Great for openings that need to utilize access control data.

Von Duprin Exit Devices



98/99 Exit Devices / Grade 1

The 98/99 Series is engineered, manufactured, and tested for superior performance. Designed for flexibility, these devices are configurable and upgradable to meet customer needs.



33A/35A Exit Devices / Grade 1

Offering the same innovative features as the 98/99 Series, the 33A/35A Series of exit devices is intended for narrow-stile doors.

Escutcheons



L full face
Specify by adding 'L' after lever design.

Material: Cold-forged brass or stainless steel

Finishes: Available in all L Series finishes.

Size: 7-15/16" x 1-3/4" x 7/16" (202 mm x 44 mm x 11 mm)



N full face
Specify by adding 'N' after lever design.

Material: Heavy-wrought, reinforced brass or stainless steel

Finishes: Available in all L Series finishes.

Size: 7-7/8" x 2-1/2" x 7/16" (200 mm x 64 mm x 11 mm)



L concealed
Specify by adding 'C' suffix to function and by adding 'L' after lever design.

Material: Cold-forged brass or stainless steel

Finishes: Available in all L Series finishes.

Size: 7-15/16" x 1-3/4" x 7/16" (202 mm x 44 mm x 11 mm)

Roses



A rose
Available for use on L Series knob and lever designs. Specify by adding 'A' after lever design.

Material: Cold-forged brass or stainless steel

Finishes: Available in all L Series finishes.

Size: 2-1/8" (54 mm) diameter

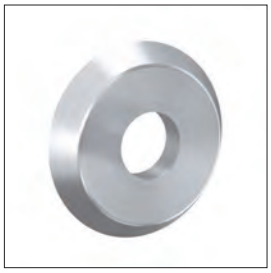


B rose
Available for use on L Series knob and lever designs. Specify by adding 'B' after lever design.

Material: Cold-forged brass or stainless steel

Finishes: Available in all L Series finishes.

Size: 2-9/16" (65 mm) diameter



C rose
Available for use on L Series knob and lever designs. Specify by adding 'C' after lever design.

Material: Cold-forged brass or stainless steel

Finishes: 605, 606, 609, 619, 622, 625, 626, 629, 630, 643e.

Size: 2-5/8" (66 mm) diameter



AVA rose
Available for use with Asti (AST) lever only. Specify as ASTAVA.

Material: Cold-forged brass or stainless steel

Finishes: 605, 606, 609, 619, 622, 625, 626, 643e.

Size: 2-5/8" (66 mm) diameter



MER rose
Available for use with Merano (MER) lever only. Specify as MERMER.

Material: Cold-forged brass or stainless steel

Finishes: 605, 606, 609, 619, 622, 625, 626, 643e.

Size: 2-5/8" (66 mm) diameter

Thumbturns | Turns



ADA thumbturn (standard)
09-544



Large ADA thumbturn
09-509 x L583-363

Optional thumbturn trim for all deadbolt functions except L9463 and L463.



Basic thumbturn
09-509



Cylinder thumbturn
09-90x

Optional thumbturn trim for all deadbolt functions except L9463 and L463.



Coin turn
L283-124

For lock functions L9044 and L9444 with rose trim.

Know It's Locked.™

Patented, 180-Degree, High-Visibility Lock Status Indicator Trims

Lock status indication is about assuring safety and/or privacy. A classroom door that is visibly locked when seen from any angle, even 30' away can help students and teachers feel confident and secure. In restaurant settings, it can reduce patron time spent away from the table. In health care, it can inform staff of a patient's location when out of bed and give the patient a greater sense of privacy. Whether the need is for privacy on dressing rooms, mother's lactation rooms, or restroom doors or, more importantly, for security—to know it's locked when seconds count, status indication is a valuable feature available on most L Series mortise functions.



MADE TO BE SEEN

Clear messaging that can be seen across the room and from any position in sight of the door means teachers can focus on calming and protecting students in an emergency. Schlage has designed indication trim allowing high visibility at a greater distance than other locks.

- Large main viewing windows are 2" x 0.6"
- Maximized message size
- Patented, 180-degree window for visibility from any angle
- High contrast, red and white color is easy-to-read for even the color blind
- Available in 34 functions (31 mechanical and three multi-latch)
- Most functions available as inside, outside, and dual (inside and outside) indication
- Available retrofit kits

Inside Trims



Thumbturn



Key cylinder

Outside Trims



Emergency key



Coin turn



Key cylinder

Available messages

	LOCKED	OCCUPIED	DO NOT DISTURB	
	UNLOCKED	VACANT		
Inside trim	IS-LOC	IS-OCC	IS-DND	IS-SYM
Outside trim	OS-LOC	OS-OCC	OS-DND	OS-SYM
Inside trim	IS-LOCFR	IS-OCCFR	–	–
Outside trim	OS-LOCFR	OS-OCCFR	–	–

Note: Spanish language options available via Special Product Process.



Chevron Indicator

Functions L9486, L9496, and L496 (sectional trim only) use the 09-611 chevron style indicator. Available in these messages: "OCCUPIED", "DO NOT DISTURB" or "LOCKED".



Application Versatility

With many available functions, in all the finishes and lever designs common to L Series locks, you can utilize indication for security, for privacy, and for convenience in many situations.

K-12

- Classroom and study room doors
- Adjoining room doors
- Lab room doors
- Administrative offices
- Faculty and nurse's office restroom doors
- Individual restroom and shower room doors
- Larger rooms like auditoriums, gyms, and lunchrooms using exit devices can include lock status indication with Von Duprin 98/99 Series exit devices

Higher Education

- Applications similar to K-12
- Study pods
- Rehearsal rooms
- Faculty offices

Commercial Real Estate

- Public restrooms
- Mother's lactation rooms
- Rooms requiring temporary closures due to cleaning or stocking

Healthcare

- Patient bathrooms
- Public restrooms
- Physician sleeping/on call rooms
- Radiology or other therapy rooms
- Dressing rooms

Retail

- Restaurant single use restrooms
- Dressing rooms

Complementing Healthcare Trims

HL6 Quiet Push/Pull Mortise Trim

The HL6 push/pull latches are ideal for healthcare applications, restrooms, commercial and institutional doors. The short throw angle allows door opening with an easy push or pull action.

- Vertical or horizontal mounting positions
- 14 mortise functions plus two electrified
- 8 finishes, including antimicrobial options
- Quiet operation designed for healing environments
- Optional engraving on handles
- Available with lead lining
- ASA strike available
- Also available in tubular latching only or privacy models
- Use on 1-3/4" doors only



Material: *Heavy-wrought, reinforced brass or stainless steel*

Finishes: *605, 606, 612, 613, 625, 626, 626AM, 629, 630, and 630AM*

Size: *2.44" x 5.38" x 2"*

HSLR Series Ligature-Resistant Trim

The High Security Ligature Resistant (HSLR) trim is especially recommended for high-risk patient applications. The patented crescent-style handle design has quickly become the standard for ligature resistance and accessibility and is recognized by the widely-accepted New York State Office of Mental Health (NYS-OMH) Patient Safety Standard.

- Provides the highest level of ligature-resistance to positively contribute to healing environments
- "Paperclip Protection" designation as determined by NYS-OMH testing
- Recommended for low-, medium- or high-risk areas
- 17 mortise functions plus five electrified (not available with Vandlgard feature)
- ADA compliant - "no pinch, no grasp"
- BAA compliant
- Locks are ANSI/BHMA Grade 1 certified
- UL Listed 3-hour
- Also available in cylindrical trim for the ND Series lock functions



Material: *Heavy-wrought, reinforced brass or stainless steel*

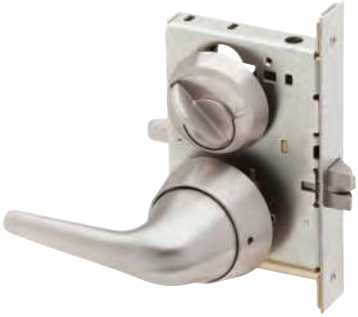
Finishes: *630 and 630AM*

Size: *13.17" x 6" x 2.27"*

Ligature-Resistant Solutions

Specifically designed with multiple safety facets including recessed trim, sloped surfaces and concealed fastening hardware to reduce the risk of injury or death due to ligature strangulation in hospitals, behavioral health facilities and detention centers

- Available with lever, knob, thumbturn and cylinder rings
- 22 mortise functions plus nine electrified (not available with Vandlgard feature)
- Available as a complete new lock assembly or as a conversion to an existing lock (available for SK1 and SL1 trim only)



SL1 lever



SK1 knob

Material: *Heavy-wrought, reinforced brass or stainless steel*

Finishes: *630 and 630AM*

Size: ***SL1*** *– 3.24" x 6.12" x 3.13"*
SK1 *– 3.19" x 2.3"*
Thumbturn *– 2.7" x 1.1"*



Accessibility & Life Safety

Door hardware should be as effective in helping people go about their lives as it is in securing their environments. Schlage L Series is designed with these requirements in mind.

Life Safety

The Schlage L is UL listed for use on 3-hour fire doors (except L9076 and L9077 functions). All levers with returns comply with the California State fire code for return to within 1/2" of the door face.

Barricade-Resistant Solutions

Key Override is an optional feature available on six mechanical and two electrified functions that allows a key (or emergency key) used on the outside to retract the deadbolt and/or latchbolt, overriding the inside thumbturn when it is being held in the locked position.

- Barricade-resistant
- Privacy and Lockdown functions
- Code-compliant

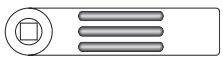
Lead Lined Solutions

Lead lined locks are intended for use in X-ray or other rooms with radiation concerns. Add option XL11-515 (L9000) or XL12-216 (L400) on order. Lead lined solutions must be ordered with a complete lock or lock case.

Tactile Warning for the Visually Impaired

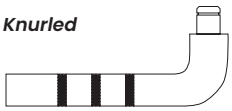
Tactile warning is a special knurled or milled surface used to alert the visually impaired to a potential hazard on the opposite side of the door (exit to street, a workshop or other hazardous area, etc.). Tactile warning is typically applied to the outside lever only and is specified by an 8 prefix on the lever design.

Milled



Milling pattern example available on backside of 01, 05, 06, 07, 12, 17, 18, ME1, ME2, and ME3 levers.

Knurled



Knurling pattern example available on 02, 03, M51, M52, and M81 levers.

Accessibility

All Schlage L levers comply with the Americans with Disabilities Act (ADA), which requires that “Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.” Hands free options for accessibility ease can be achieved using Motorized Latch Retraction lock functions coordinated with an auto operator and a wall-mounted activator.

L Series Mechanical Locks

The Schlage L Series mechanical lock is an industry-leading mortise solution. Designed for flexibility, the L Series mechanical lock is one of only two series in the Schlage lineup offered in ligature-resistant trims for healthcare settings. Other trims and options include the HL hospital latch and widely supported use of visual lock status indication.

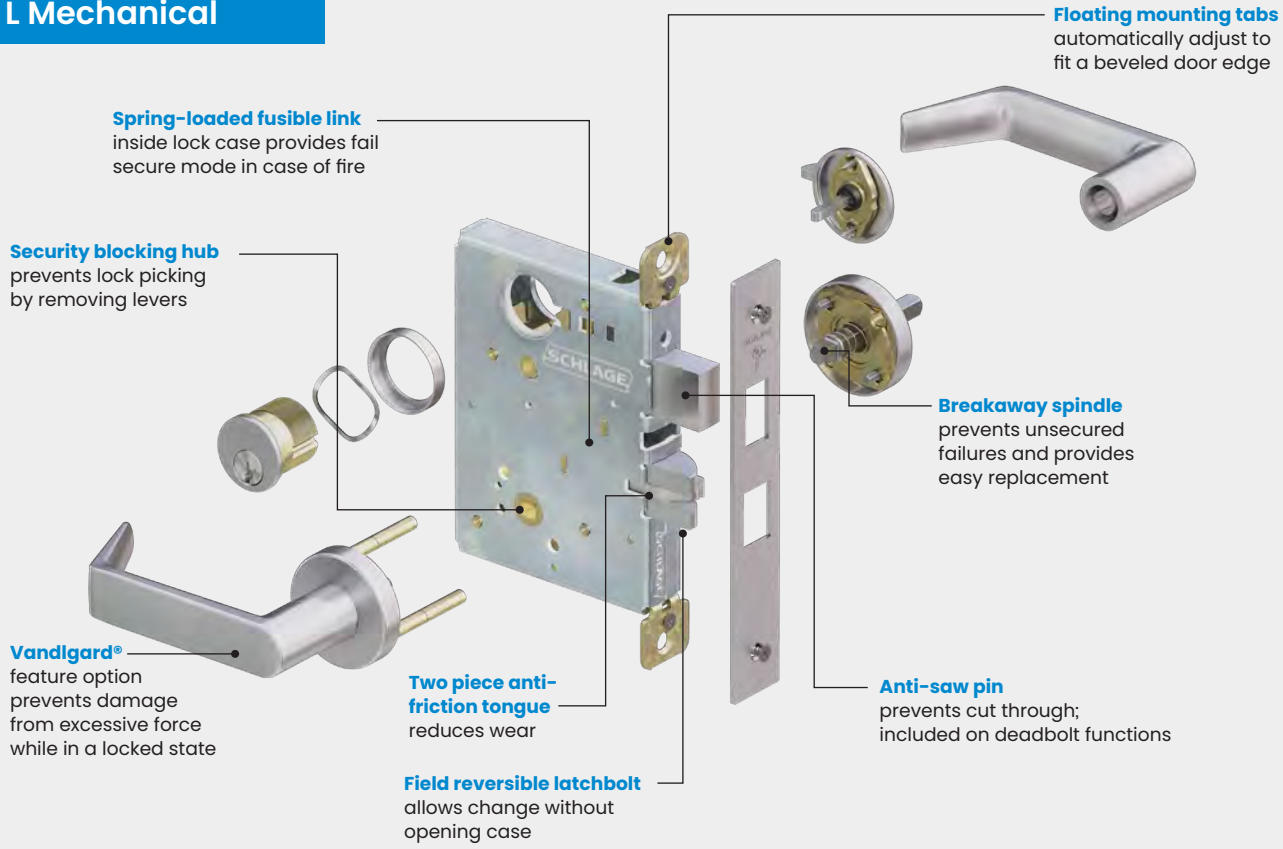
The L Series not only exceeds ANSI/BHMA Security Grade 1 and Operational Grade 1 standards, it also serves as the foundation for the Schlage L wired electrified, LE wireless electronic, and multi-point mortise locks.

33 levers and 12 finishes allow seamless suiting across other Allegion lock styles and exit trims to create truly beautiful environments.

Features

- Exceeds ANSI/BHMA Grade 1 operational and security standards
- Expansive list of configurations and options
- 52 mechanical functions meet the requirements of most applications
- Visual locked/unlocked status indicator options available on most functions
- 12 finishes paired with 33 levers, two knobs, five roses and two escutcheon designs to enhance any building style
- Levers constructed of solid brass or solid stainless steel for a strong-yet-comfortable feel made to endure the elements
- Supports Schlage Conventional, FSIC, SL and SFIC key cylinder formats plus a wide range of competitive cylinders
- Layered security key systems range from open and patented to restricted and geographically exclusive Primus options which include UL 437 high-security cylinders.

L Mechanical



Beauty, Brawn & Flexibility

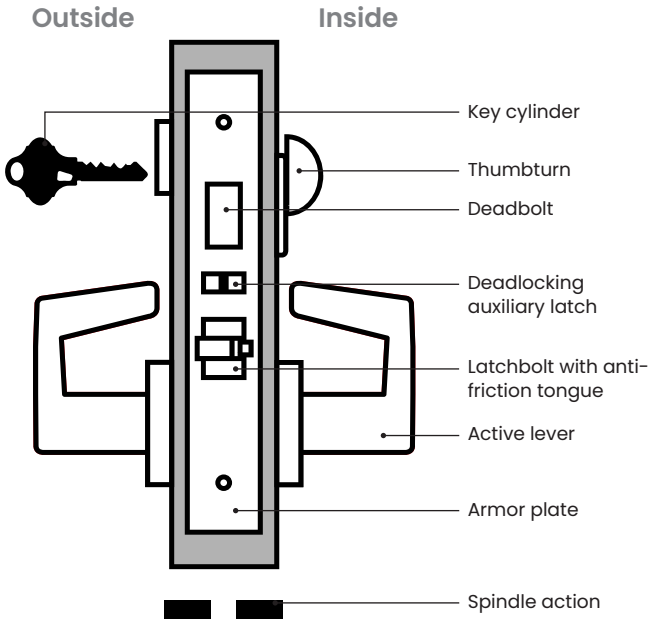
L Series mortise offers the greatest opportunity for customization to fit your needs. Featuring an extensive number of design choices, it's also the strongest, most secure mechanical lock in the Schlage portfolio.

- Several functions can be configured for visual indication trims, push/pull hospital latch or ligature-resistant trims
- Universal lock case design allows the L9050 function to be reconfigured into any of seven other functions
- 46 standard case mortise functions plus 6 small case mortise deadbolt functions
- 12 finishes plus two options for antimicrobial coating
- 33 ADA compliant lever options
- Available Vandlgard and/or key override feature options on several functions
- BAA compliant
- Locks are ANSI/BHMA Grade 1 certified
- Available with lead lining
- UL Listed 3-hour

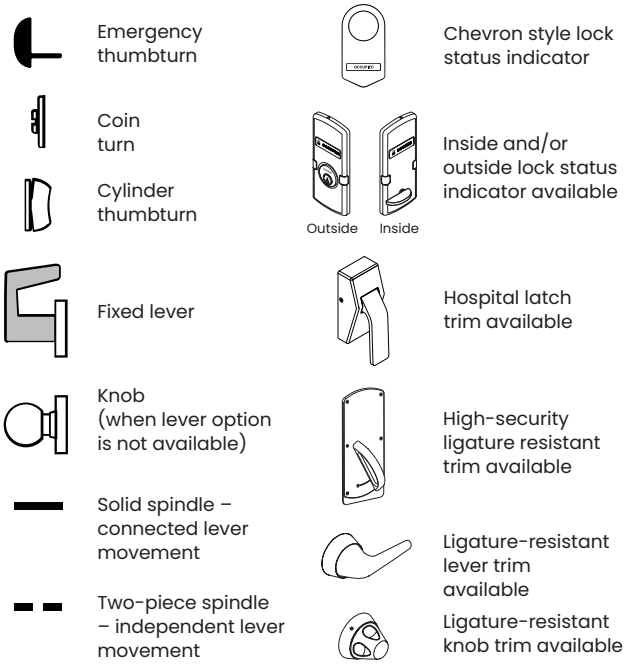


Mechanical Lock Functions

Legend



Key



Product Identification Guide

LV9460 with XL11-635

Lock series and function code
L = standard
LV = Vandlgard option
LM = multi-latch
LMV = multi-latch with Vandlgard

0 = no lock case (dummy trim)
9 = functions with lock case

0 = no deadbolt
1 = dummy trim
4 = with deadbolt

Function code

Functions requiring special ordering nomenclature

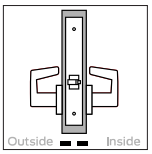


Vandlgard® feature helps protect the lock chassis from damage.

The Vandlgard optional feature available on many functions allows the outside lever to rotate freely down when in a locked state. This limits the ability of vandals to apply excessive force to the lever helping to prevent damage to internal components.

Non-Keyed Functions

Schlage **ANSI**
L9010 **F01**

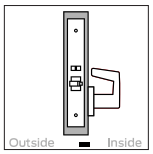


Passage latch



- Levers (or knobs) only-both sides; latchbolt only
- Latchbolt retracted by lever (or knob) from either side at all times
- Inside lever always free for immediate egress

Schlage **ANSI**
L9025 **F31**

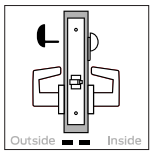


Exit or communicating lock

- No outside trim; lever (or knob) only-inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from inside only
- Inside lever always free for immediate egress

When ordering, specify door handing.

Schlage **ANSI**
L/LV9040 **F22**



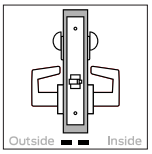
Bath/bedroom privacy lock



- Emergency thumbturn access outside; thumbturn inside; latchbolt only
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by rotating inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- To unlock from outside, remove access hole cover, insert emergency thumbturn (furnished) and rotate
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts latchbolt and unlocks outside lever; closing door also unlocks preventing lock-out
- Inside lever always free for immediate egress

Note: Hospital latch trim not available with Vandlgard option.

Schlage **ANSI**
L/LV9040 with XL11-446 **-**



Privacy with thumbturn both sides

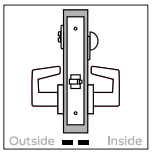


- Thumbturn both sides; latchbolt only
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by rotating either thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- Rotating either thumbturn unlocks outside lever
- Rotating inside lever retracts latchbolt and unlocks outside lever; closing door also unlocks
- Inside lever always free for immediate egress

Note: Available in rose or L escutcheon trim only.

To order, specify function and note XL11-446 as a special option.

Schlage **ANSI**
L/LV9044 **-**



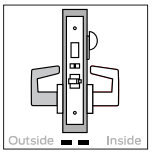
Privacy with coin turn outside



- Coin turn outside; thumbturn inside; latchbolt only
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by rotating outside coin turn or inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- Rotating outside coin turn unlocks outside lever
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts latchbolt and unlocks outside lever; closing door also unlocks preventing lock-out
- Inside lever always free for immediate egress

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L9412 **-**

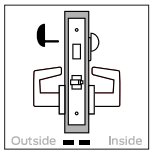


Exit lock with deadbolt

- Lever (or knob) only-outside; thumbturn inside with lever; deadbolt, latchbolt and deadlocking auxiliary latch
- Outside lever (or knob) always fixed; latchbolt retracted by inside lever
- Deadbolt thrown or retracted by rotating inside thumbturn
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Non-Keyed Functions

Schlage **ANSI**
L/LV9440 **F19**

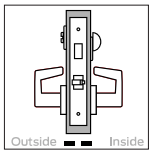


Privacy with deadbolt



- Emergency thumbturn access outside; thumbturn inside; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by rotating inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- To unlock from outside, remove access hole cover, insert emergency thumbturn (furnished) and rotate
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Schlage **ANSI**
L/LV9444 **-**



Privacy with deadbolt and coin turn outside

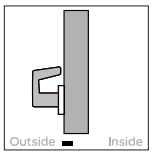


- Coin turn outside; thumbturn inside; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by rotating inside thumbturn or outside coin turn; Vandlgard® option allows outside lever to rotate freely down while locked
- Rotating outside coin turn retracts deadbolt and unlocks outside lever
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Note: Ligature-resistant trims not available with Vandlgard option.

Non-Keyed Dummy Functions

Schlage **ANSI**
L0170 **-**



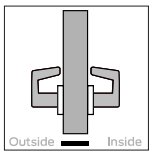
Half dummy trim

- Lever (or knob) only-one side; no armor front or mortise case
- Lever always fixed

Note: Do not use on hollow core wood doors. All metal door applications require reinforcement.

Ordering: Specify door handing. Additionally, when ordering with escutcheon trim, an inside escutcheon with through bolts will be provided.

Schlage **ANSI**
L0172 **-**

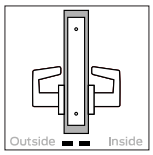


Full dummy trim

- Levers (or knobs) only-both sides; no armor front or mortise case
- Both levers always fixed

Note: All metal door applications require reinforcement.

Schlage **ANSI**
L9110 **-**



Full dummy trim with active levers

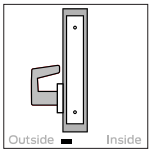
- Levers (or knobs) only-both sides; blank armor front without latchbolt
- Both levers always active

Note: Includes blank armor front and lock case.

May be ordered with optional XL11-743 armor front with cutout to receive deadbolt.

Non-Keyed Dummy Functions

Schlage **ANSI**
L9175 **-**



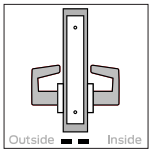
Half dummy trim with lock case

- Lever (or knob) only-one side; blank armor front without latchbolt
- Lever always fixed

Note: Includes blank armor front and lock case.

Door handing must be specified. May be ordered with optional XL11-743 armor front with cutout to receive deadbolt.

Schlage **ANSI**
L9176 **-**



Full dummy trim with lock case

- Levers (or knobs) only-both sides; blank armor front without latchbolt
- Both levers always fixed

Note: Includes blank armor front and lock case.

May be ordered with optional XL11-743 armor front with cutout to receive deadbolt.

Ordering: In a double-door application where dummy is used as the strike, order 10-091 armored front strike separately.

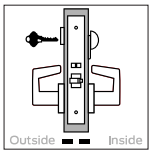
Single Cylinder Non-Deadbolt Functions

The L Series offers a multitude of functional options. But among them, the L9050 basic entrance/office function, is perhaps the most versatile in its ability to be transformed for other uses. With a few part changes this lock can be transformed into these functions:

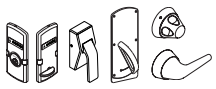
L9010 Passage latch
L9025 Exit or communicating lock
L9026 Exit lock with cylinder
L9060 Apartment entrance lock
L9070 Classroom lock, exterior lockdown only
L9071 Classroom security lock, interior/exterior lockdown
L9080 Storeroom lock

To learn more, reference the L Series Universal Transformation Guide.

Schlage **ANSI**
L/LV9050 **F04**



Entrance/office lock

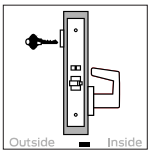


- Key cylinder outside; thumbturn inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by key outside or by turning inside thumbturn; Vandlgard® option allows both levers to rotate freely down while locked
- Key outside unlocks outside lever and retracts latchbolt
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts latchbolt but does not unlock
- Inside lever always free for immediate egress

Caution: Egress without fully rotating the thumbturn to vertical position can result in lock-out situations.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L9026 **-**



Exit lock with cylinder

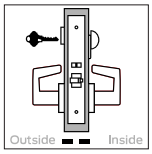
- Key cylinder only, no lever (or knob) outside; lever only-inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever from inside
- Key outside retracts latchbolt
- Inside lever always free for immediate egress

Note: Available in rose or L escutcheon trim only.

When ordering, specify door handing.

Single Cylinder Non-Deadbolt Functions

Schlage **ANSI**
L/LV9056 **-**
L/LV9056 with XL13-439 key override



Entrance/office lock with automatic unlocking

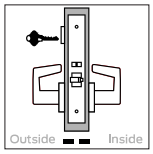


- Key cylinder outside; thumbturn inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by key outside or by turning inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside unlocks outside lever and retracts latchbolt; XL13-439 option allows key to retract latchbolt overriding thumbturn if being held in locked position
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts latchbolt and unlocks outside lever; closing door also unlocks preventing lock-out
- Inside lever always free for immediate egress

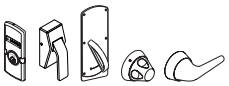
Note: Ligature-resistant trims not available with Vandlgard option.

To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L/LV9070 **F05**



Classroom lock, exterior lockdown only

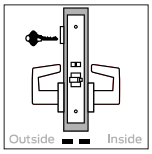


- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever from either side
- Outside lever is made inoperative by key outside; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside unlocks outside lever and retracts latchbolt
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9076 **F06**



Classroom holdback lock, exterior lockdown only



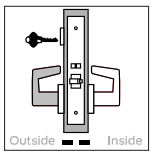
- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever from either side
- Outside lever is made inoperative by key outside; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside unlocks outside lever and retracts latchbolt
- Rotate inside lever while turning key 360° to activate retracted latch holdback feature; to deactivate, reverse key rotation 360°
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.

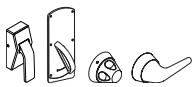
Note: Locks with holdback feature are not UL listed. Installation should be in accordance with existing codes only.

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9080 **F07**



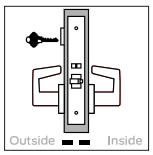
Storeroom lock



- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Outside lever always fixed; latchbolt retracted by inside lever; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts latchbolt
- Inside lever always free for immediate egress

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9081 **-**



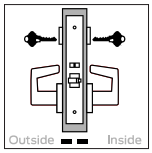
Accessible storeroom lock

- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever from either side
- Outside lever is made inoperative by key outside; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside inserted and turned 280° unlocks allowing outside lever to retract latchbolt
- Inside lever always free for immediate egress

When ordering, specify door handing.

Double Cylinder Non-Deadbolt Functions

Schlage **ANSI**
L/LV9060 **F09**



Apartment entrance lock

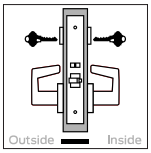


- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by key inside; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts latchbolt but cannot lock or unlock outside lever
- Rotating inside lever retracts latchbolt; key inside retracts latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key inside.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L9066 **-**



Store lock

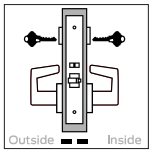


- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Both levers are made inoperative by key from either side
- Key use on either side unlocks both levers and retracts latchbolt

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9071 **F32**



Classroom security lock, interior/exterior lockdown

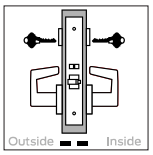


- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by key from either side; Vandlgard® option allows outside lever to rotate freely down while locked
- Rotating inside lever retracts latchbolt; key on either side unlocks outside lever and retracts latchbolt
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9077 **-**



Classroom security holdback lock, interior/exterior lockdown



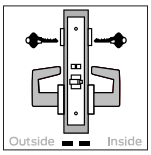
- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative by key from either side; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts latchbolt but cannot unlock outside lever
- Rotating inside lever retracts latchbolt; key inside retracts latchbolt and unlocks outside lever
- Rotate inside lever while turning key 360° to activate retracted latch holdback feature; to deactivate, reverse key rotation 360°
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key inside.

Note: Locks with holdback feature are not UL listed. Installation should be in accordance with existing codes only.

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9082 **F30**



Institution lock



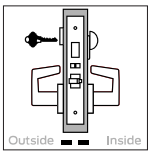
- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Both levers (or knobs) always fixed; Vandlgard® option allows both levers to rotate freely down while locked
- Key on either side retracts latchbolt

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Single Cylinder Deadbolt Functions

Schlage **ANSI**
L/LV9453 **F20**



Entrance/office lock with deadbolt

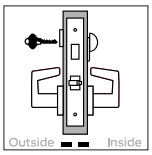


- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by key outside; rotating thumbturn 20° locks outside lever only; rotating thumbturn 90° also throws deadbolt; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts deadbolt and latchbolt, however, outside lever remains locked
- Rotating inside lever retracts deadbolt and latchbolt; outside lever unlocked when thumbturn is returned to vertical position
- Inside lever always free for immediate egress

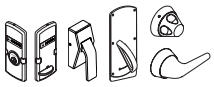
Caution: Egress without fully rotating the thumbturn to vertical position can result in lock-out situations.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9456 **F13**
L/LV9456 with XL13-439 key override



Corridor lock with deadbolt

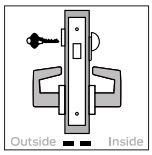


- Key cylinder outside; thumbturn inside; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by key outside or by inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts deadbolt and unlocks outside lever; XL13-439 option allows key to retract deadbolt overriding thumbturn if being held in locked position
- Rotating inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L9460 with XL11-635 **-**



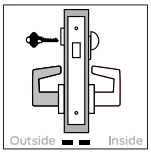
Cylinder x thumbturn deadbolt with fixed levers



- Key cylinder outside; thumbturn inside; deadbolt only
- Both levers (or knobs) always fixed
- Deadbolt thrown or retracted by key outside or by inside thumbturn

To order, specify function and note XL11-635 as a special option.

Schlage **ANSI**
L9460 with XL11-886 **-**



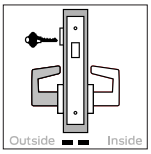
Cylinder x thumbturn deadbolt with inside active lever



- Key cylinder outside; thumbturn inside; deadbolt only
- Outside lever (or knob) always fixed; inside lever always active
- Deadbolt thrown or retracted by key outside or by inside thumbturn
- Rotating inside lever retracts deadbolt
- Inside lever always free for immediate egress

To order, specify function and note XL11-886 as a special option.

Schlage **ANSI**
L9464 with XL11-886 **-**



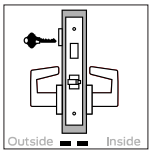
Single cylinder deadbolt with inside active lever



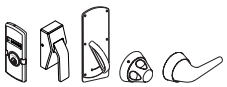
- Key cylinder outside with lever (or knob); lever only-inside; deadbolt only
- Outside lever always fixed; inside lever always active
- Deadbolt thrown or retracted by key outside
- Rotating inside lever retracts deadbolt
- Inside lever always free for immediate egress

To order, specify function and note XL11-886 as a special option.

Schlage **ANSI**
L9465 **-**



Closet/storeroom lock



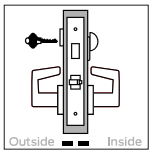
- Key cylinder outside with lever (or knob); lever only-inside; deadbolt and latchbolt
- Latchbolt retracted by lever from either side at all times
- Deadbolt thrown or retracted by key outside

Caution: Deadbolt locks with outside key retraction only can result in situations where occupants can be locked in.

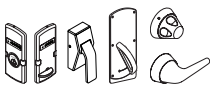
Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Single Cylinder Deadbolt Functions

Schlage **ANSI**
L9473 **F21**



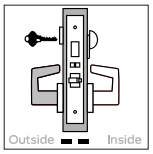
Dormitory/ bedroom lock



- Key cylinder outside; thumbturn inside; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side at all times
- Deadbolt thrown or retracted by key outside or by inside thumbturn

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9480 **-**
L/LV9480 with XL13-439 key override



Storeroom lock with deadbolt

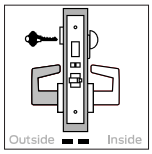


- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Outside lever (or knob) always fixed; latchbolt retracted by inside lever; Vandlgard® option allows outside lever to rotate freely down while locked
- Deadbolt thrown or retracted by key outside or by inside thumbturn
- Key outside retracts deadbolt and latchbolt, however, outside lever remains locked; XL13-439 option allows key to retract deadbolt and latchbolt overriding thumbturn if being held in locked position
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Note: Ligature-resistant trims not available with Vandlgard option.

To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L/LV9485 **-**
L/LV9485 with XL13-439 key override



Faculty/hotel restroom lock with deadbolt



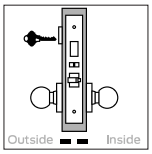
- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Outside lever (or knob) always fixed; latchbolt retracted by inside lever; Vandlgard® option allows outside lever to rotate freely down while locked
- Deadbolt thrown or retracted by rotating inside thumbturn
- Key outside retracts latchbolt but does not retract deadbolt unless using an emergency key (sold separately)
- Optional XL13-439 allows emergency key to retract deadbolt and latchbolt overriding thumbturn if being held in locked position
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Note: Not available in SFIC or Everest SL formats.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L9485 with XL11-557 **-**



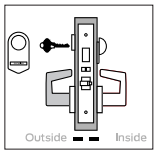
Prison function lock

- Key cylinder outside with knob; knob only-inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Outside knob always free spinning; latchbolt retracted by inside knob
- Inside knob is made inoperative (fixed) when deadbolt is thrown by guard key outside
- Guard key outside retracts deadbolt and unlocks inside knob; in unlocked state use of prisoner's key outside retracts latchbolt only

Note: Available with knobs in rose or L escutcheon trim only. Tamper-resistant Torx screws standard.

To order, specify function and note XL11-557 as a special option.

Schlage **ANSI**
L/LV9486 **-**
L/LV9486 with XL13-439 key override



Faculty/hotel restroom lock with chevron indicator



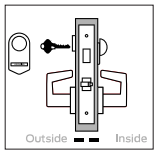
- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Outside lever (or knob) always fixed; latchbolt retracted by inside lever; Vandlgard® option allows outside lever to rotate freely down while locked
- Deadbolt thrown or retracted by rotating inside thumbturn, when thrown-indicator message changes from blank to "DO NOT DISTURB"
- Key outside retracts latchbolt but does not retract deadbolt unless using an emergency key (sold separately)
- Optional XL13-439 allows emergency key to retract deadbolt and latchbolt overriding thumbturn if being held in locked position
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Note: Not available in SFIC or Everest SL formats. Hospital latch trim not available with Vandlgard option.

To order with key override, specify function and note XL13-439 as a special option.

Available with A, B or C roses only; to order chevron indicator with "OCCUPIED" message specify L583-375.

Schlage **ANSI**
L/LV9496 **-**
L/LV9496 with XL13-439 key override



Corridor lock with chevron indicator

- Key cylinder outside; thumbturn inside; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by key outside or by inside thumbturn, when thrown-indicator message changes from blank to "OCCUPIED"; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts deadbolt and unlocks outside lever; XL13-439 option allows key to retract deadbolt overriding thumbturn if being held in locked position
- Rotating inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

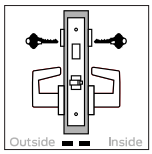
Note: Available in rose trim only.

To order with key override, specify function and note XL13-439 as a special option.

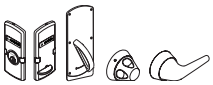
Adds chevron style occupancy indicator (09-611) to sectional trim lock with A or B roses only.

Double Cylinder Deadbolt Functions

Schlage **ANSI**
L/LV9457 **F33**



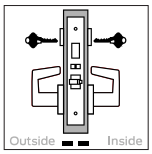
Classroom security lock with deadbolt



- Key cylinder both sides; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by key from either side; Vandlgard® option allows outside lever to rotate freely down while locked
- Key either side retracts both latchbolt and deadbolt and unlocks outside lever
- Rotating inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9458 **F34**



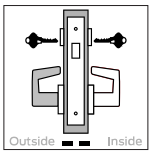
Classroom security lock with deadbolt and auxiliary latch



- Key cylinder both sides; deadbolt, latchbolt and deadlocking auxiliary latch
- Latchbolt retracted by lever (or knob) from either side
- Outside lever is made inoperative when deadbolt is thrown by key from either side; Vandlgard® option allows outside lever to rotate freely down while locked
- Key either side retracts both latchbolt and deadbolt and unlocks outside lever
- Rotating inside lever retracts both deadbolt and latchbolt and unlocks outside lever
- Inside lever always free for immediate egress

Note: Ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L9462 with XL11-886 **-**



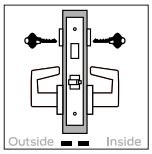
Double cylinder deadbolt with active inside lever



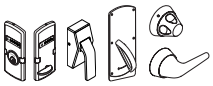
- Key cylinder both sides; deadbolt only
- Outside lever (or knob) always fixed; inside lever always active
- Deadbolt thrown or retracted by key from either side
- Rotating inside lever retracts deadbolt
- Inside lever always free for immediate egress

To order, specify function and note XL11-886 as a special option.

Schlage **ANSI**
L9466 **F14**



Utility room/ storeroom lock

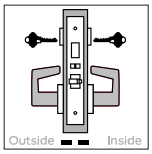


- Key cylinder both sides; deadbolt and latchbolt
- Latchbolt retracted by lever (or knob) from either side
- Deadbolt thrown or retracted by key from either side

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Schlage **ANSI**
L/LV9482 **-**



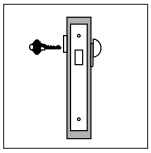
Institution lock with deadbolt

- Key cylinder both sides; deadbolt, latchbolt and deadlocking auxiliary latch
- Both levers always fixed; Vandlgard® option allows both levers to rotate freely down while locked
- Deadbolt thrown or retracted by key from either side
- Key on either side retracts both deadbolt and latchbolt

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Mortise Deadbolt Functions

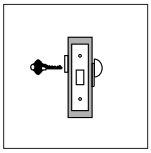
Schlage **ANSI**
L9460 **F17**



Cylinder x thumbturn mortise deadbolt



Schlage **ANSI**
L460 **E06071**



Cylinder x thumbturn small case mortise deadbolt

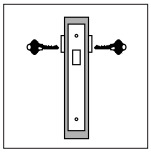


- Key cylinder only, no lever (or knob) outside; thumbturn only, no lever inside; deadbolt only
- Deadbolt thrown or retracted by key outside or by inside thumbturn

Note: L9000 mortise deadbolts available in L escutcheon or sectional trim only.

Note: L400 small case not available with escutcheon trim.

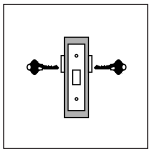
Schlage **ANSI**
L9462 **F16**



Double cylinder mortise deadbolt



Schlage **ANSI**
L462 **E06061**



Double cylinder small case mortise deadbolt



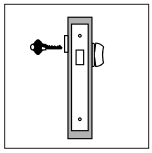
- Key cylinder both sides, no levers (or knobs); deadbolt only
- Deadbolt thrown or retracted by key from either side

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Note: L9000 mortise deadbolts available in L escutcheon or sectional trim only.

Note: L400 small case not available with escutcheon trim.

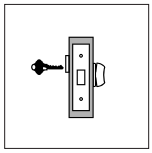
Schlage **ANSI**
L9463 **F29**



Cylinder x cylinder thumbturn mortise deadbolt



Schlage **ANSI**
L463 **E06091**



Cylinder x cylinder thumbturn small case mortise deadbolt

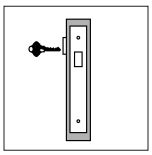


- Key cylinder only, no lever (or knob) outside; cylinder thumbturn only, no lever inside; deadbolt only
- Deadbolt thrown or retracted by key outside
- Rotating inside thumbturn retracts deadbolt but cannot project it

Note: L9000 mortise deadbolts available in L escutcheon or sectional trim only.

Note: L400 small case not available with escutcheon trim.

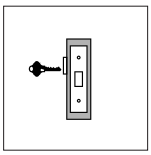
Schlage **ANSI**
L9464 **F18**



Cylinder only mortise deadbolt



Schlage **ANSI**
L464 **E06081**



Cylinder only small case mortise deadbolt

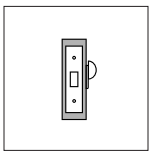


- Key cylinder only, no lever (or knob) outside; no interior trim; deadbolt only
- Deadbolt thrown or retracted by key

Note: L9000 mortise deadbolts available in L escutcheon or sectional trim only.

Note: L400 small case not available with escutcheon trim.

Schlage **ANSI**
L480 **-**



Thumbturn only small case mortise deadbolt

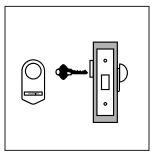


- No outside trim; thumbturn only, no lever inside; deadbolt only
- Deadbolt thrown or retracted by rotating inside thumbturn

Note: When ordered with indicator, the indicator is applied to the thumbturn side.

Note: L400 small case not available with escutcheon trim.

Schlage **ANSI**
L496 **-**



Cylinder x thumbturn small case mortise deadbolt with chevron indicator

- Key cylinder only, no lever (or knob) outside; thumbturn only, no lever inside; deadbolt only
- Deadbolt thrown or retracted by key outside or by inside thumbturn, when thrown-indicator message changes from blank to "OCCUPIED"

L Series Wired Electrified Locks



Electrified locks offer a powerful blend of mechanical reliability and electronic control—making them a smart, scalable solution for modern access control needs. The Schlage® L Series includes electrified functions that build on this strength, delivering robust Grade 1 security in a fire-rated lock with the added benefits of independent remote operation or full access control integration. Most functions are built for lever control — electrically managing the locking or unlocking of one or both levers. Motorized latch retraction options are offered with or without lever control. All are built to be efficient, quiet, and long lasting for exceptional performance under even the most challenging conditions

Universal Features for functions with lever control

- User selectable fail safe/fail secure—changing mode between EL and EU is as simple as flipping a switch on the lock case
- Low holding current on lever—0.1 amp produces minimal heat, eliminating “hot levers” in electrically locking applications and allows reliable operation even in poorly ventilated wood doors
- Optional Request to exit (RX) switch monitors the inside lever with enhanced detection level that balances security with lever sensitivity
- Modular RX design — RX can be added on at a later time without opening the lock case

L Wired Electrified

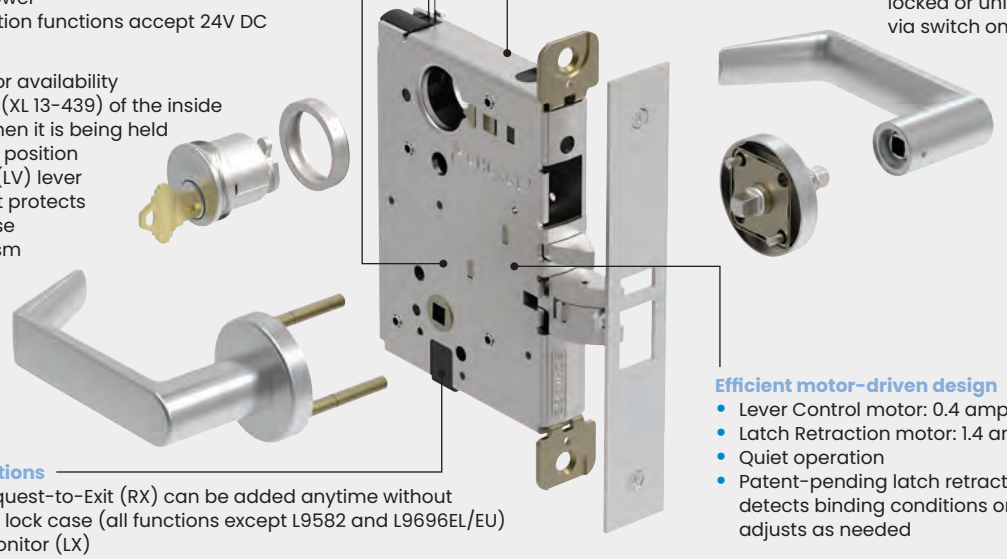
All mechanical features +

Standard Molex® connector
- Simplifies connection
- Includes additional 6" wire harness extension for traditional hard terminations

Input voltage
- Lever Control only functions accept 12V or 24V DC power
- Latch Retraction functions accept 24V DC

Added options
See functions for availability
- Key override (XL 13-439) of the inside them turn when it is being held in the locked position
- VandIgard® (LV) lever engagement protects against abuse and vandalism

Switch-selectable EL/EU
Change mode (electrically locked or unlocked) anytime via switch on lock case



Efficient motor-driven design
- Lever Control motor: 0.4 amp max draw (24V)
- Latch Retraction motor: 1.4 amps max draw
- Quiet operation
- Patent-pending latch retraction feature detects binding conditions on the motor and adjusts as needed

Monitoring options
- Modular Request-to-Exit (RX) can be added anytime without opening the lock case (all functions except L9582 and L9696EL/EU)
- Latchbolt Monitor (LX)

Lever Control only functions:
- Door Position Sensor (DPS) (non-deadbolt functions)
- Deadbolt Monitor (DM) is standard for deadbolt functions

L/LV9092EL/EU shown.

Choosing Lever Control and/or Latch Retraction

Lever control—electrically managing the locked or unlocked state of one or both levers—is a versatile solution for doors requiring remote release, timed access, or credentialed entry. These locks are ideal for controlled access points while maintaining egress where needed.

In contrast, **latch retraction** directly retracts the latch bolt, enabling hands-free operation. This is commonly used with automatic door openers, such as those used in accessible restrooms. Some functions provide only latch retraction for simple push/pull access, while others combine it with lever control.

When selecting between these options, it's important to consider building codes and safety requirements—particularly whether **fail safe** or **fail secure** operation is appropriate for the application.

Fail Safe vs. Fail Secure

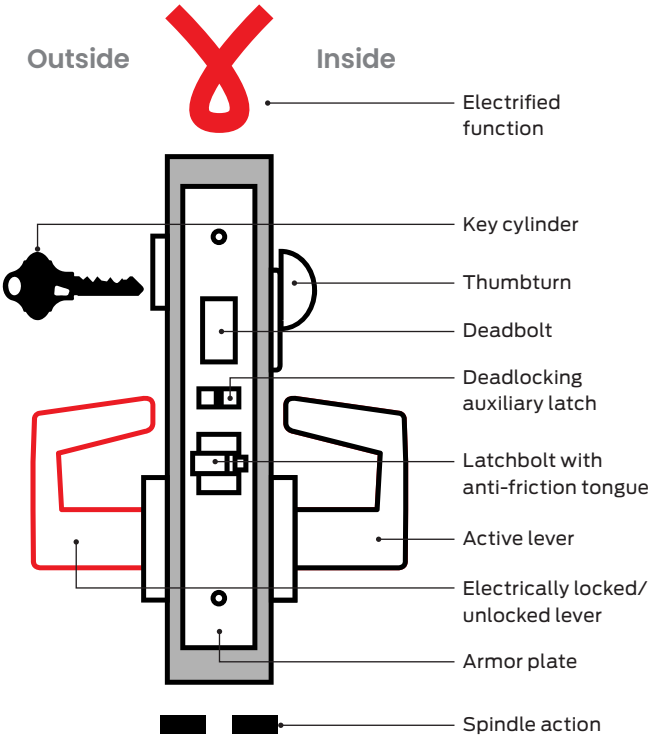
Electromechanical locks with lever control typically operate in one of two ways. Some manage only the outside lever, allowing free egress at all times. Others control both levers and should not be used where free exit is required. Schlage L Series electrified locks include a chassis switch that allows field selection between fail safe and fail secure modes.

Fail Secure (Electrically Unlocked - EU): Remains locked on the secure side(s) when power is lost or removed. Power must be applied to unlock and allow lever rotation. This mode is ideal for securing areas during a power outage.

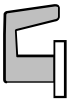
Fail Safe (Electrically Locked - EL): Locked when powered and unlocked when power is lost or removed. Commonly used on stairwell doors to allow re-entry during fire alarms or power failures. These locks always permit exit into the stairwell, except at the discharge door, which may be locked from the outside. Other applications can include areas requiring emergency access during outages or fire events.

Wired Electrified Lock Functions

Legend



Key


Fixed lever


Motorized latch retraction function

Solid spindle – connected lever movement

Two-piece spindle – independent lever movement


Hospital latch trim available


High-security ligature resistant trim available


Ligature-resistant lever trim available


Ligature-resistant knob trim available

Available electrified options include:

RX	Request to Exit
LX	Latch bolt monitor
DPS	Door Position Switch
DM	Deadbolt monitor (DM)

Product identification guide

LV9492EL with XL13-439

Lock series and function code
L = standard
LV = Vandlgard® option
LM = multi-latch
LMV = multi-latch with Vandlgard

0 = no lock case (dummy trim)
9 = functions with lock case

0 = no deadbolt
4 = with deadbolt
5 = with motorized latch retraction
6 = with motorized latch retraction and lever control

Function code

Electrified functions
EL = electrically locked
EU = electrically unlocked

Functions requiring special ordering nomenclature

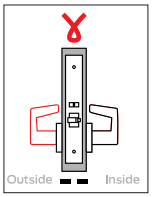


Vandlgard® feature helps protect the lock chassis from damage.

The Vandlgard optional feature available on many functions allows the outside lever to rotate freely down when in a locked state. This limits the ability of vandals to apply excessive force to the lever helping to prevent damage to internal components.

Non-Keyed Electrified Functions

Schlage **ANSI**
L/LV9090EL/EU **-**



Electrically locking/ unlocking outside lever, no cylinder



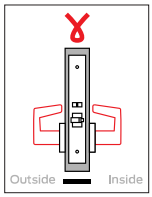
- Levers (or knobs) only both sides; latchbolt and deadlocking auxiliary latch
- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows outside lever to rotate freely down while locked
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode outside lever is locked
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L/LV9091EL/EU **-**



Electrically locking/ unlocking both levers, no cylinder



- Levers (or knobs) only both sides; latchbolt and deadlocking auxiliary latch
- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows both levers to rotate freely down while locked
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked

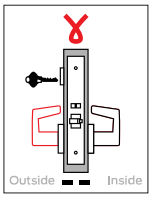
Note: Auto detects 12 or 24V DC.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Keyed Non-Deadbolt Electrified Functions

Schlage **ANSI**
L/LV9092EL/EU **-**



Electrically locking/ unlocking outside lever, outside cylinder



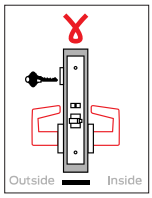
- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside retracts latchbolt but cannot change the normal locked or unlocked state of outside lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode outside lever is locked
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L/LV9093EL/EU **-**



Electrically locking/ unlocking both levers, outside cylinder



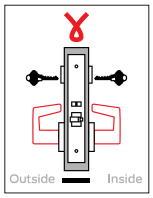
- Key cylinder outside with lever (or knob); lever only-inside; latchbolt and deadlocking auxiliary latch
- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows both levers to rotate freely down while locked
- Key outside retracts latchbolt but cannot change the normal locked or unlocked state of either lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked

Note: Auto detects 12 or 24V DC.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L/LV9095EL/EU **-**



Electrically locking/ unlocking both levers, double cylinder



- Key cylinder both sides; latchbolt and deadlocking auxiliary latch
- Powered state: both levers (or knobs) continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows both levers to rotate freely down while locked
- Key on either side retracts latchbolt but cannot change the normal locked or unlocked state of levers
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked

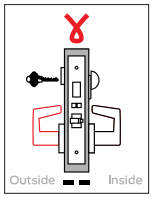
Note: Auto detects 12 or 24V DC.

Note: Hospital latch and ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Keyed Deadbolt Electrified Functions

Schlage **ANSI**
L/LV9492EL/EU -
L/LV9492EL/EU with XL13-439 key override



Electrically locking/unlocking outside lever, outside cylinder, inside thumbturn with deadbolt



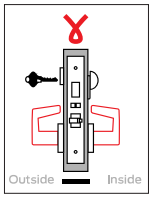
- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Powered state: outside lever (or knob) continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows outside lever to rotate freely down while locked
- Deadbolt thrown or retracted by key outside or by inside thumbturn; XL13-439 option allows key to retract deadbolt overriding thumbturn if being held in locked position
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode outside lever is locked; deadbolt projection is independent of electrically locked or unlocked state of outside lever
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC; supplied deadbolt monitor allows option to prevent ingress with card use when deadbolt is thrown.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU. To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L/LV9493EL/EU -
L/LV9493EL/EU with XL13-439 key override



Electrically locking/unlocking both levers, outside cylinder, inside thumbturn with deadbolt



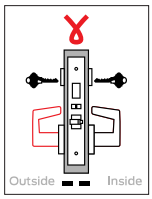
- Key cylinder outside; thumbturn inside; deadbolt, latchbolt and deadlocking auxiliary latch
- Powered state: both levers (or knobs) continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows both levers to rotate freely down while locked
- Deadbolt thrown or retracted by key outside or by inside thumbturn; XL13-439 option allows key to retract deadbolt overriding thumbturn if being held in locked position
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked; deadbolt projection is independent of electrically locked or unlocked state of either lever
- When unlocked, rotating inside lever retracts both deadbolt and latchbolt

Note: Auto detects 12 or 24V DC; supplied deadbolt monitor allows option to prevent ingress with card use when deadbolt is thrown.

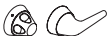
Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU. To order with key override, specify function and note XL13-439 as a special option.

Schlage **ANSI**
L/LV9494EL/EU -



Electrically locking/unlocking outside lever, double cylinder with deadbolt



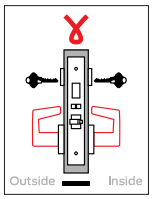
- Key cylinder both sides; deadbolt, latchbolt and deadlocking auxiliary latch
- Powered state: outside lever (or knob) continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows outside lever to rotate freely down while locked
- Deadbolt thrown or retracted by key from either side
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode outside lever is locked; deadbolt projection is independent of electrically locked or unlocked state of outside lever
- Rotating inside lever retracts both deadbolt and latchbolt
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC; supplied deadbolt monitor allows option to prevent ingress with card use when deadbolt is thrown.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L/LV9495EL/EU -



Electrically locking/unlocking both levers, double cylinder with deadbolt



- Key cylinder both sides; deadbolt, latchbolt and deadlocking auxiliary latch
- Powered state: both levers (or knobs) continuously locked (EL mode) or unlocked (EU mode); Vandlgard® option allows both levers to rotate freely down while locked
- Deadbolt thrown or retracted by key from either side
- When power is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked; deadbolt projection is independent of electrically locked or unlocked state of either lever
- When unlocked, rotating inside lever retracts both deadbolt and latchbolt

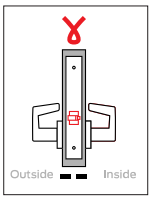
Note: Auto detects 12 or 24V DC; supplied deadbolt monitor allows option to prevent ingress with card use when deadbolt is thrown.

Note: Ligature-resistant trims not available with Vandlgard option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Motorized Latch Retraction Functions

Schlage **ANSI**
L9510 **-**

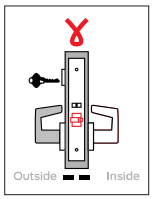


Passage latch with motorized latch retraction

- Lever only both sides; latchbolt only
- Extended latchbolt is retracted by lever from either side at all times
- Powered state: latchbolt is retracted
- When power is removed latchbolt extends
- Inside lever always free for immediate egress

Note: 24V DC only. Available options include Request to Exit (RX) or Latchbolt Monitor (LX).

Schlage **ANSI**
L9580 **-**

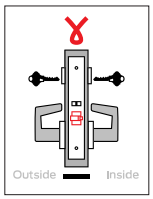


Storeroom lock with motorized latch retraction

- Key cylinder outside with lever; lever only-inside; latchbolt and deadlocking auxiliary latch
- Outside lever always fixed; extended latchbolt is retracted by inside lever
- Key outside retracts latchbolt
- Powered state: latchbolt is retracted
- When power is removed latchbolt extends
- Inside lever always free for immediate egress

Note: 24V DC only. Available options include Request to Exit (RX) or Latchbolt Monitor (LX).

Schlage **ANSI**
L9582 **-**



Institution lock with motorized latch retraction

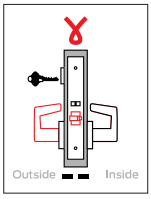
- Key cylinder and lever both sides; latchbolt and deadlocking auxiliary latch
- Both levers always fixed
- Key on either side retracts latchbolt
- Powered state: latchbolt is retracted
- When power is removed latchbolt extends

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

Note: 24V DC only. Available Latchbolt Monitor (LX) option.

Motorized Latch Retraction Functions With Lever Control

Schlage **ANSI**
L9692EL/EU **-**



Electrically locking/ unlocking outside lever, outside cylinder with motorized latch retraction

- Key cylinder outside with lever; lever only-inside; latchbolt and deadlocking auxiliary latch

Lever control

- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode)
- When power for lever is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode outside lever is locked

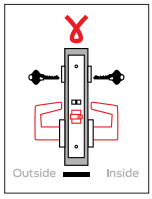
Independent latchbolt control

- Powered state: latchbolt is retracted
- When power is removed latchbolt extends
- Key outside retracts latchbolt but cannot change the normal locked or unlocked state of outside lever
- Inside lever always free for immediate egress

Note: 24V DC only. Available options include Request to Exit (RX) or Latchbolt Monitor (LX).

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L9695EL/EU **-**



Electrically locking/ unlocking both levers double cylinder with motorized latch retraction

- Key cylinder and lever both sides; latchbolt and deadlocking auxiliary latch

Lever control

- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode)
- When power for levers is removed (or power fails): in EL mode either lever will retract latchbolt; in EU mode both levers are locked

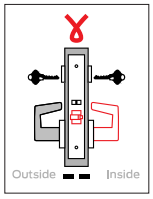
Independent latchbolt control

- Powered state: latchbolt is retracted
- When power is removed latchbolt extends
- Key either side retracts latchbolt but cannot change the normal locked or unlocked state of either lever

Note: 24V DC only. Available options include Request to Exit (RX) or Latchbolt Monitor (LX).

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
L9696EL/EU **-**



Electrically locking/ unlocking inside lever double cylinder with motorized latch retraction

- Key cylinder and lever both sides; latchbolt and deadlocking auxiliary latch

Lever control

- Powered state: inside lever continuously locked (EL mode) or inside lever unlocked (EU mode); outside lever always fixed
- When power for lever is removed (or power fails): in EL mode inside lever will retract latchbolt; in EU mode inside lever is locked; outside lever always fixed

Independent latchbolt control

- Powered state: latchbolt is retracted
- When power is removed latchbolt extends
- Key either side retracts latchbolt but cannot change the normal locked or unlocked state of either lever

Note: 24V DC only. Available Latchbolt Monitor (LX) option.

Ordering: Case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

LE Mobile Enabled Wireless Electronic Locks

The Schlage LE mobile enabled wireless mortise lock is designed to affordably extend electronic access control deeper into the building beyond traditional perimeter and high security openings. It offers enhanced security, intelligence, and the convenience of upgrading to smart and mobile credentials[1].

LE wireless locks simplify installation by combining the lock, credential reader, door position sensor and request-to-exit switch into one unit. Installation requires only minor modifications to existing mechanical mortise prep with no wires to run to the lock or additional components necessary.

Schlage offers organizations the freedom to use the access control software of their choice to manage their system. Select an Allegion solution or one of our third party physical access control software (PACS) alliances to meet application requirements.

- Ideal for office and suite entries, conference rooms, common area doors, resident units, and sensitive storage areas with a mortise door prep
- Multi-technology credential compatibility includes Schlage MIFARE®, Bluetooth® and NFC mobile[1], and proximity
- Optional support for HID® iCLASS®, iCLASS SE®, Seos® and NFC mobile credentials
- Wireless configuration from connected smartphones and tablets
- Built-in Wi-Fi® enables automated daily updates sent directly from host software
- Networked real-time communication available with the ENGAGE Gateway and PACS provider solutions
- Weather-resistant design





1. Dependent on availability of compatible mobile credential.

LE Wireless Electronic

Most mechanical features +

Compatible with 2.4 GHz Bluetooth® and NFC mobile*
13.56 MHz smart and
125 kHz proximity credentials

Connectivity options
for real-time networked via gateway, No-Tour and offline applications

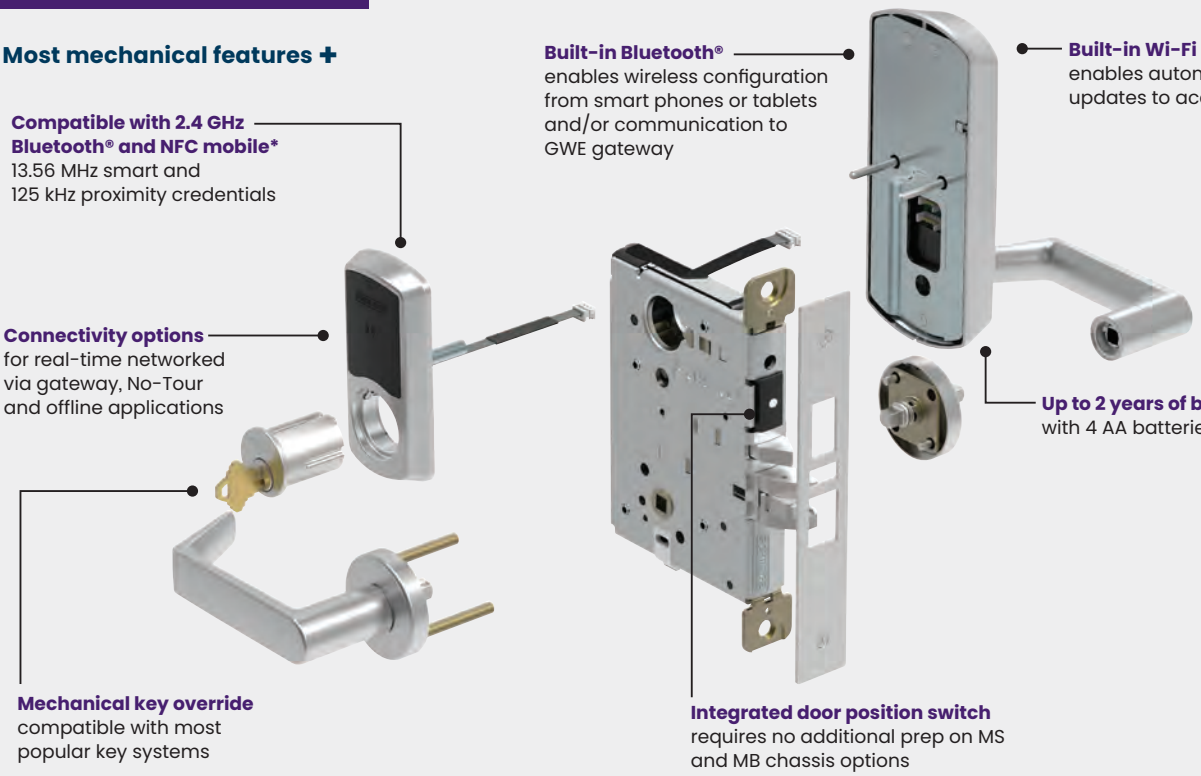
Mechanical key override
compatible with most popular key systems

Built-in Bluetooth®
enables wireless configuration from smart phones or tablets and/or communication to GWE gateway

Built-in Wi-Fi
enables automatic updates to access rights

Up to 2 years of battery life
with 4 AA batteries

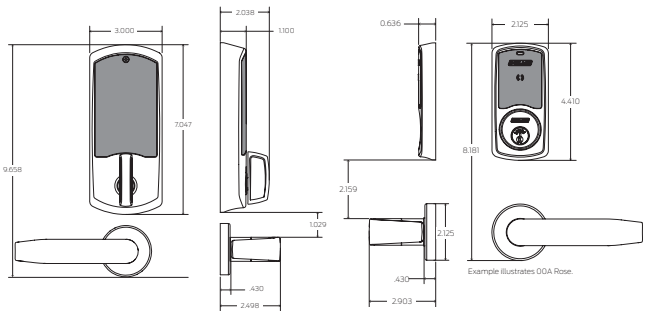
Integrated door position switch
requires no additional prep on MS and MB chassis options



*Dependent on availability of compatible mobile credential

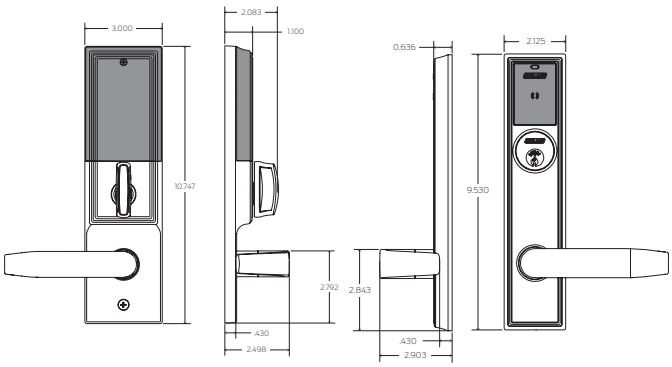
Greenwich





Addison





Available Status Signals

- Request to Exit
- Door position
- Interior cover tamper[1]
- Battery level
- Lock/unlock status[2]
- Communication status[1]
- Deadbolt position status (MD only)[1]
- Interior push button status (MB only)[1]

Standard Multi-Technology Specifications	
Credential technologies	Proximity (125 kHz) Smart (13.56 MHz) Bluetooth Low Energy (LE) (2.4 GHz) Near Field Communication (NFC)
Standards	ISO standard 15693 and ISO 14443
Maximum read range	Proximity: up to 1.25" Smart: up to .75" Bluetooth Low Energy: up to 15' NFC: mobile device dependent

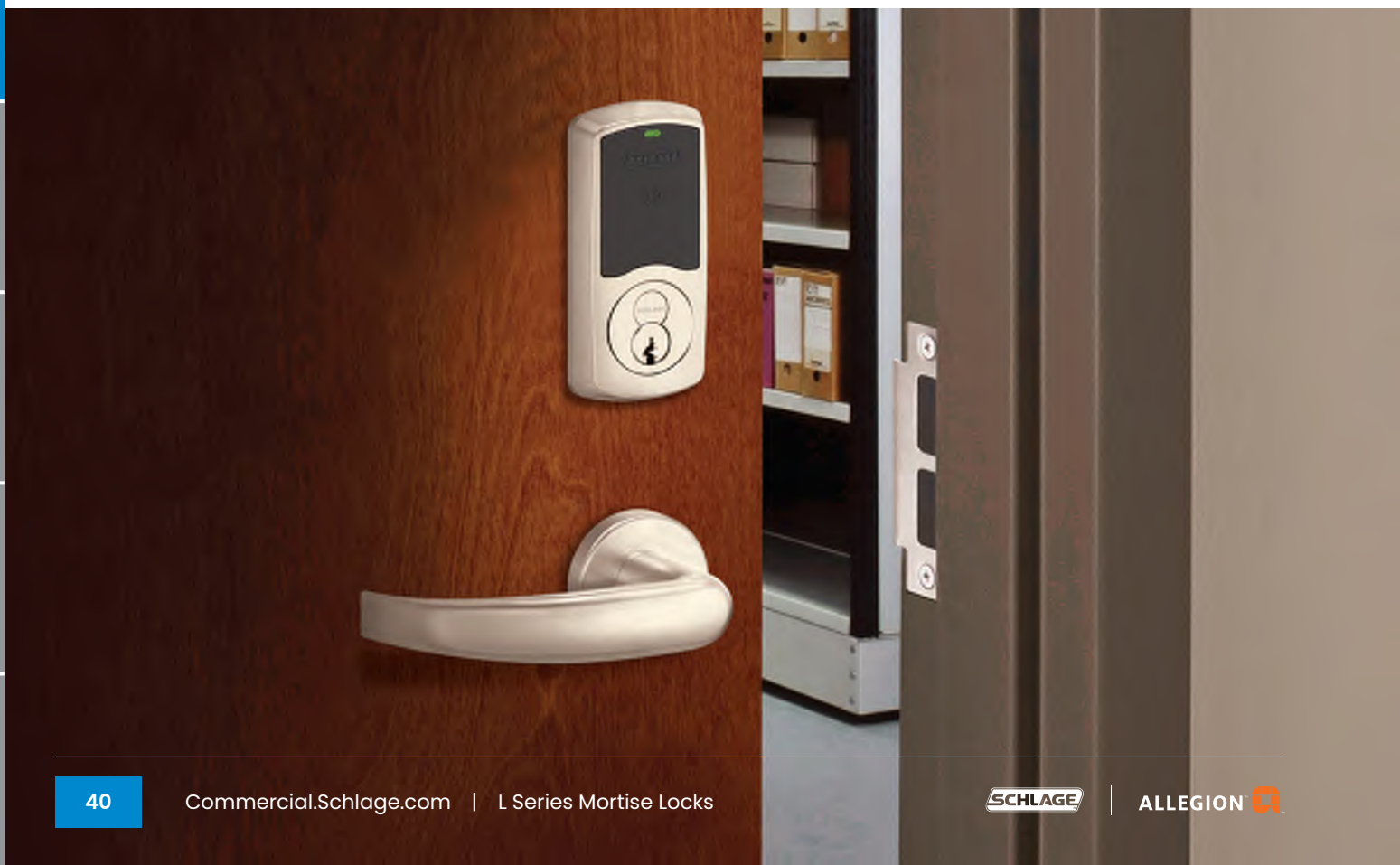
1. Consult your access control software provider for specific scope of support.
2. Software indicates lock/unlock status based on sequence of events.



Use the ENGAGE mobile app to commission and connect devices to your access control system of choice

Download on the App Store

ANDROID APP ON Google play



LEMS
LED Indicator

Storeroom
- Lockset is normally secure
- Inside lever always free for immediate egress
- A valid normal credential or mechanical key will momentarily unlock the door
- Valid toggle credential on the exterior may be used to change to a passage or secured status

LEMB
Interior Push Button and LED

Office
- Lockset is normally secure
- Inside lever is always free for immediate egress
- Valid normal credential or key momentarily unlocks door
- Interior push button on inside escutcheon may be used to select a passage or secured state and confirms state of the lock via LED indicator
- Valid toggle credential may be used to change to a passage or secured state
- Meets need for lockdown function for safety and security

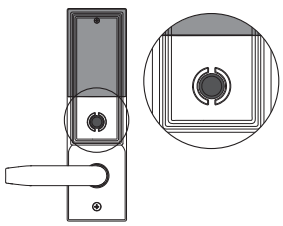
Privacy
- Lockset is normally secure
- Valid normal credential or key momentarily unlocks door
- Inside lever is always free for immediate egress
- Interior push button on inside escutcheon may be used to select a privacy status
- Interior push button will disable normal electronic access from the exterior
- Opening the door or pressing the interior push button a second time on the inside housing deactivates the privacy status
- Mechanical key will always retract the latch
- Door position sensor required for function

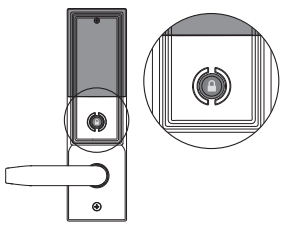
Apartment
- Lockset is normally secure
- Inside lever always free for immediate egress
- Valid normal or toggle credential is used to change to a passage or secured state
- Interior push button on inside escutcheon may be used to select a passage or secured status
- Opening the door or pressing the interior push button causes the lockset to toggle to passage
- While in passage mode, the lockset can only be secured while the door is closed by pressing the interior push button or using a normal credential on the exterior
- Mechanical key will retract the latch
- Door position sensor required for function

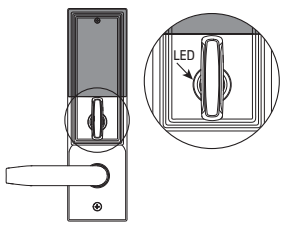
LEMD
Deadbolt with LED

Privacy
- Lockset is normally secure
- Valid normal credential or key momentarily unlocks door
- Valid toggle credential may be used to change to a passage or secured state
- Inside lever always free for immediate egress
- The thumbturn on inside housing may be used to select a privacy status
- The thumbturn will disable normal electronic access from the exterior and confirms state of the lock via LED indicator
- Opening the door or retracting deadbolt deactivates the privacy status
- Mechanical key will always retract the latch
- Door position sensor required for function

Apartment
- Lockset is normally secure
- Inside lever always free for immediate egress
- Opening the door or retracting the deadbolt causes the lockset to toggle to passage
- Valid normal or toggle credential is used to change to a passage or secured state
- Thumbturn on inside housing may be used to select a passage or secured state and confirms state of the lock via LED indicator
- While in passage mode, the lockset can only be secured while the door is closed by extending the deadbolt from inside or using a normal credential on the exterior reader
- Normal electronic access from the exterior is always allowed
- Mechanical key will retract the latch
- Door position sensor required for function







LM9200 Multi-Point Locks

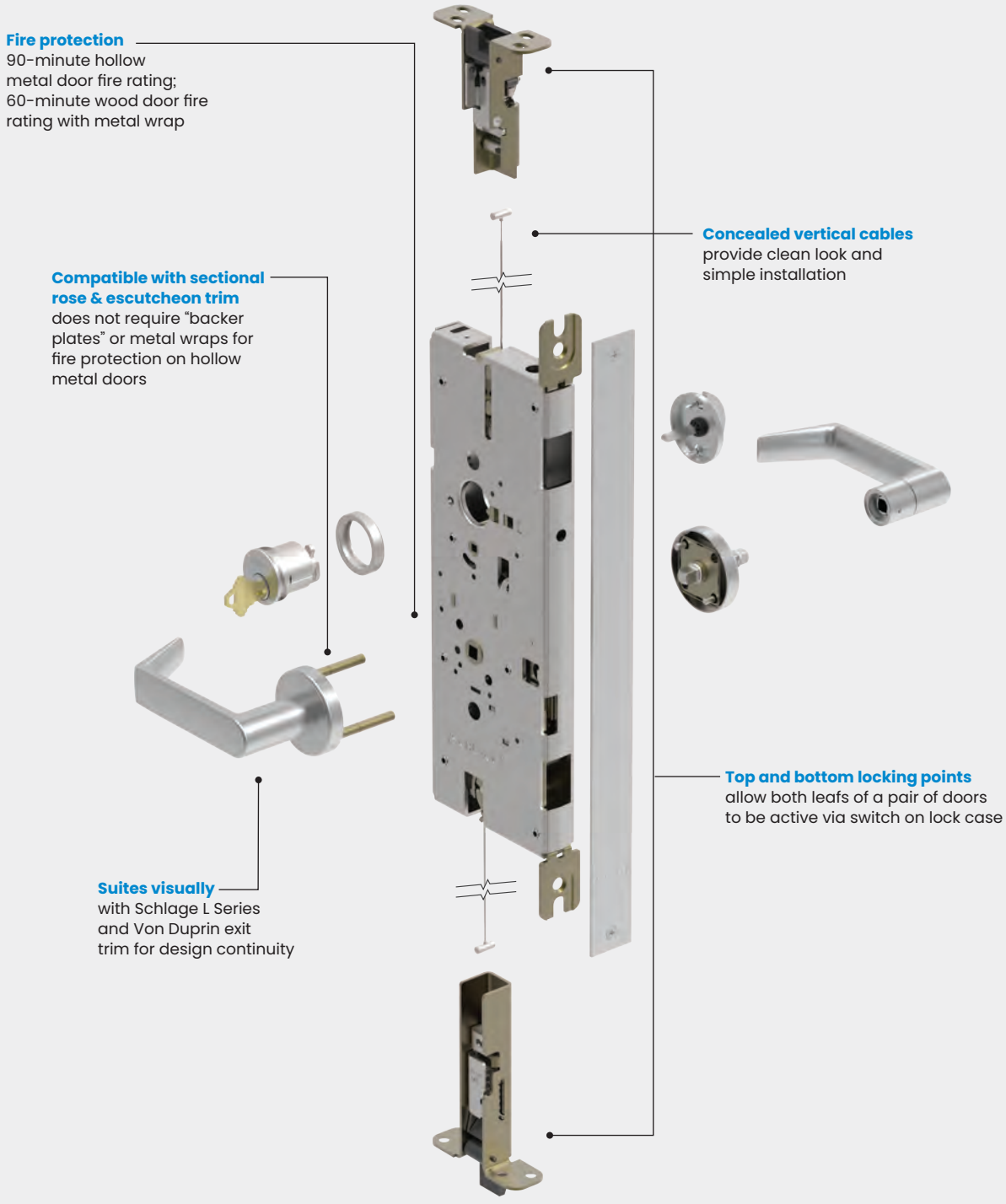
The Schlage LM9200 lock utilizes latches in the top and bottom of the door, rather than the side, on single or double sets of doors. Compatible with wood or hollow metal doors, the LM9200 is also available without the bottom latch for single point latching.

The LM9200 can easily integrate into any application and suite with other Schlage locks and Von Duprin exit devices.

Some applications include:

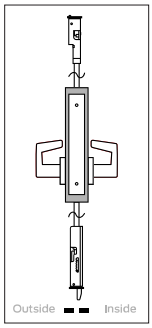
- Pair of conference room doors
- Pair of fire rated corridor doors
- Pair of office suite doors
- Pair of elevator lobby doors
- Pair of doors where flush bolts and a coordinator are not desired

LM9200 Multi-Point



Mechanical Functions

Schlage **ANSI**
LM9210 **-**

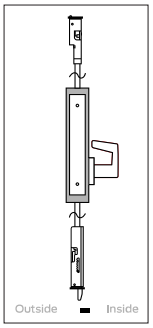


2-point passage latch

- Levers only-both sides; 2-point latch
- Latchbolts retracted by lever from either side at all times
- Inside lever always free for immediate egress

When ordering, specify door handing.

Schlage **ANSI**
LM9225 **-**



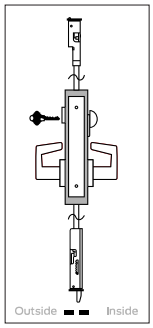
2-point exit lock

- No outside trim; lever only-inside; 2-point latch
- Latchbolts retracted by lever from inside only
- Inside lever always free for immediate egress

Note: Available in rose trim only.

When ordering, specify door handing.

Schlage **ANSI**
LM9250 **-**



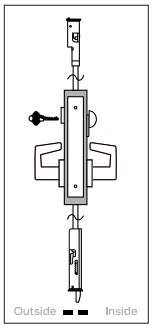
2-point entrance/ office lock

- Key cylinder outside; thumbturn inside; 2-point latch
- Latchbolts retracted by lever from either side
- Outside lever is made inoperative by key outside or by turning inside thumbturn
- Key outside unlocks and enables outside lever to retract both latches
- Rotating inside lever retracts latchbolts; outside lever unlocked when thumbturn is returned to vertical position
- Inside lever always free for immediate egress

Caution: Outside lever remains inoperative until thumbturn is returned to vertical or unlocked by key.

When ordering, specify door handing.

Schlage **ANSI**
LM9256 **-**

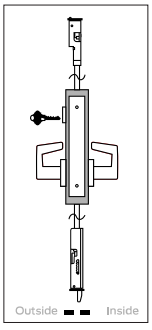


2-point entrance/ office lock with automatic unlocking

- Key cylinder outside; thumbturn inside; 2-point latch
- Latchbolts retracted by lever from either side
- Outside lever is made inoperative by key outside or by turning inside thumbturn
- Key outside unlocks and enables outside lever to retract both latches
- Rotating inside thumbturn unlocks outside lever; turning inside lever retracts latchbolts and unlocks outside lever
- Inside lever always free for immediate egress

When ordering, specify door handing.

Schlage **ANSI**
LM9270 **-**



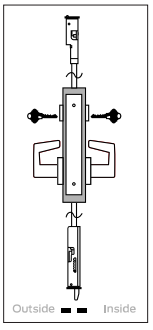
2-point classroom lock, exterior lockdown only

- Key cylinder outside with lever; lever only-inside; 2-point latch
- Latchbolts retracted by lever from either side
- Outside lever is made inoperative by key outside
- Key outside unlocks and enables outside lever to retract both latches
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.

When ordering, specify door handing.

Schlage **ANSI**
LM9271 **-**



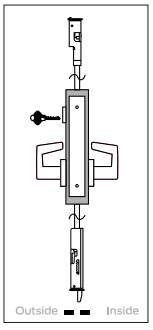
2-point classroom security lock, interior/exterior lockdown

- Key cylinder both sides; 2-point latch
- Latchbolts retracted by lever from either side
- Outside lever is made inoperative by key from either side
- Key on either side unlocks and enables outside lever to retract both latches
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.

When ordering, specify door handing.

Schlage **ANSI**
LM9280 **-**



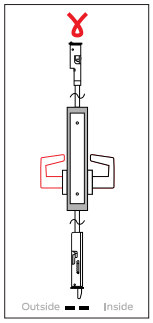
2-point storeroom lock

- Key cylinder outside with lever; lever only-inside; 2-point latch
- Outside lever normally locked; latchbolts retracted by inside lever
- Key outside inserted and turned 280° unlocks, allowing outside lever to retract latches; removal of key returns door to locked state
- Inside lever always free for immediate egress

When ordering, specify door handing.

Electrified Functions

Schlage **ANSI**
LM9290EL/EU **-**



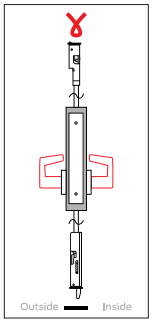
Electrically locking/ unlocking outside lever, no cylinder 2-point lock

- Levers only-both sides; 2-point latch
- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode)
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode outside lever is locked
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
LM9291EL/EU **-**



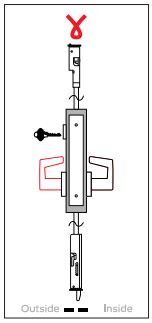
Electrically locking/ unlocking both levers, no cylinder 2-point lock

- Levers only-both sides; 2-point latch
- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode)
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode both levers are locked

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
LM9292EL/EU **-**



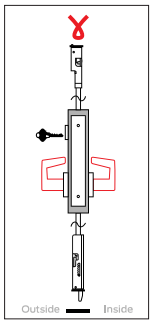
Electrically locking/unlocking outside lever, outside cylinder 2-point lock

- Key cylinder outside with lever; lever only-inside; 2-point latch
- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode)
- When locked, key outside enables outside lever to retract both latches but cannot change the normal locked or unlocked state of outside lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode outside lever is locked
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
LM9293EL/EU **-**



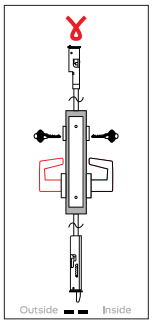
Electrically locking/unlocking both levers, outside cylinder 2-point lock

- Key cylinder outside with lever; lever only-inside; 2-point latch
- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode)
- When locked, key outside enables outside lever to retract both latches but cannot change the normal locked or unlocked state of outside lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode both levers are locked

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
LM9294EL/EU **-**



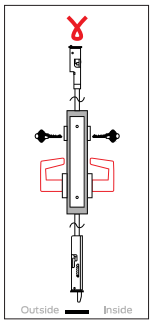
Electrically locking/ unlocking outside lever, double cylinder 2-point lock

- Key cylinder both sides; 2-point latch
- Powered state: outside lever continuously locked (EL mode) or unlocked (EU mode)
- When locked, key on either side enables either lever to retract both latches but cannot change the normal locked or unlocked state of outside lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode outside lever is locked
- Inside lever always free for immediate egress

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

Schlage **ANSI**
LM9295EL/EU **-**



Electrically locking/ unlocking both levers, double cylinder 2-point lock

- Key cylinder both sides; 2-point latch
- Powered state: both levers continuously locked (EL mode) or unlocked (EU mode)
- When locked, key on either side enables either lever to retract both latches but cannot change the normal locked or unlocked state of either lever
- When power is removed (or power fails): in EL mode either lever will retract latchbolts; in EU mode both levers are locked

Note: Auto detects 12 or 24V DC.

Ordering: Specify door handing. Additionally, case-mounted switch allows field selectable EL/EU setting however, when ordering, please specify EL or EU.

LM9300 Multi-Point Locks

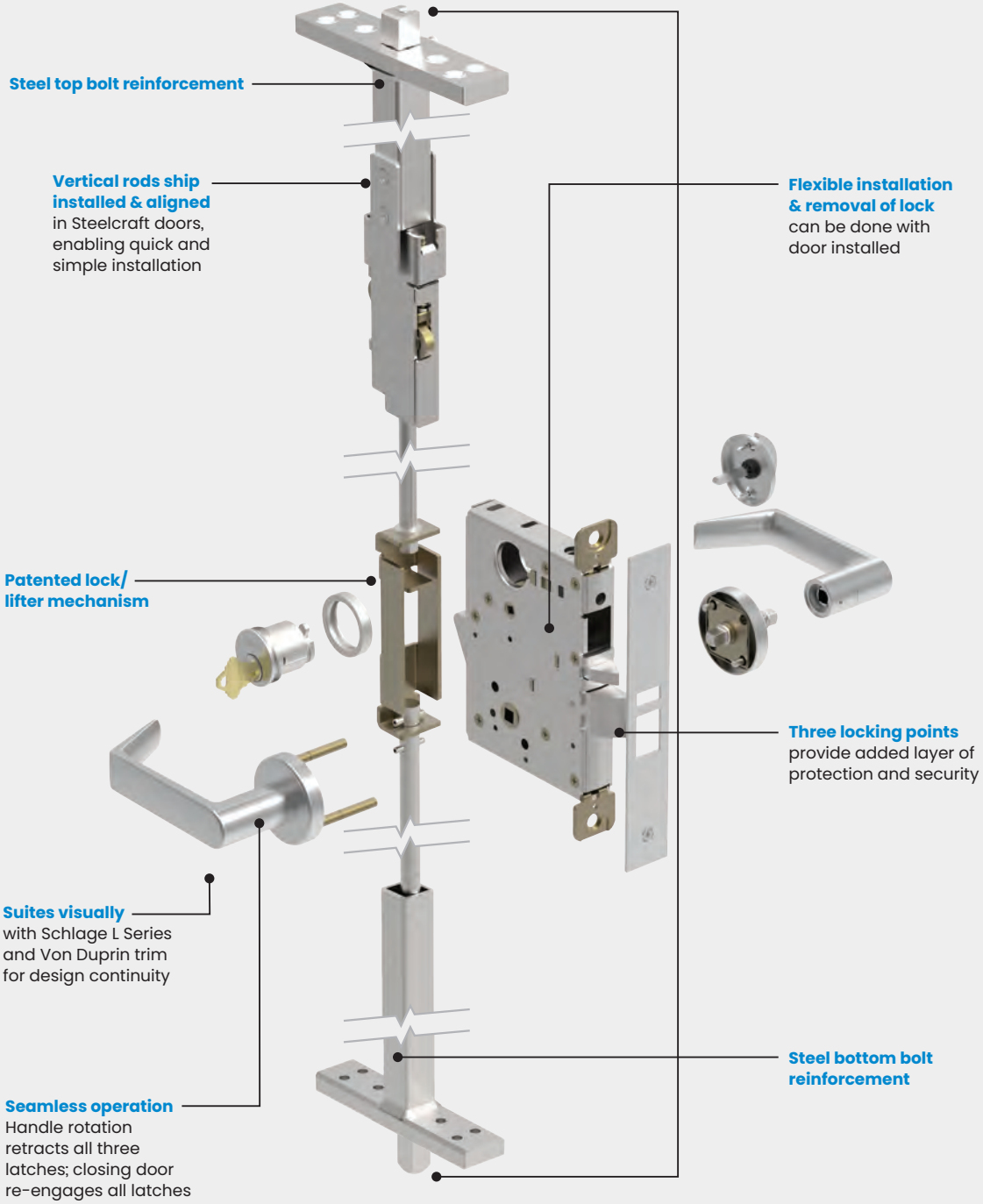
The LM9300 is part of a three-point locking system designed for tornado, hurricane or high security applications. Latches at the top, side and bottom of the door provide protection from high wind speeds and 15-lb. projectile impacts up to 100 mph when paired with a Steelcraft Paladin tornado-resistant door.

All three latches engage when the door is shut and retract simply by rotating the lever, providing superior protection with familiar operation. Available in six functions and with 33 lever designs, the LM9300 can easily integrate into any application and suite with other Schlage locks, as well as Von Duprin exit devices.

Features

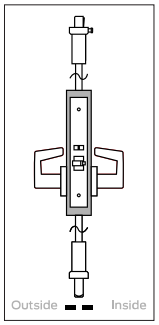
- Tornado configuration is certified by Intertek and labeled showing compliance to ICC 500-2020, FEMA P-320 (2021), and FEMA P-361 (2021) as required by the International Building Code and Florida Building Code Enhanced Protection Area (EHPA) standards when paired with appropriate Steelcraft doors
- Hurricane configuration complies with Florida Building Code Enhanced Protection Area (EHPA) standard when paired with Steelcraft Hurricane doors
- For high security applications, pair with Steelcraft steel-reinforced or honeycombed doors
- Also available for storm shutter configurations

LM9300 Multi-Point



Mechanical Functions

Schlage **ANSI**
LM9310 **-**

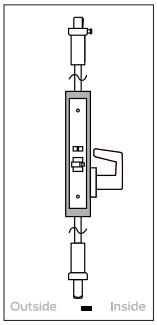


3-point passage latch

- Levers (or knobs) only-both sides; 3-point latch and deadlocking auxiliary latch
- Latchbolts retracted by lever from either side at all times
- Inside lever always free for immediate egress

Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.

Schlage **ANSI**
LM9325 **-**

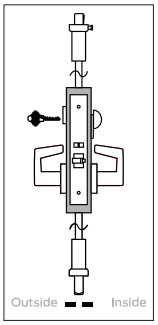


3-point exit lock

- No outside trim; lever (or knob) only-inside; 3-point latch and deadlocking auxiliary latch
- Latchbolts retracted by lever from inside only
- Inside lever always free for immediate egress

Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.

Schlage **ANSI**
LM/LMV9350 **-**



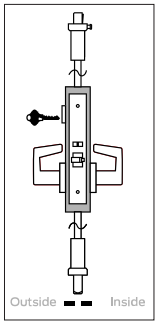
3-point entrance/ office lock



- Key cylinder outside; thumbturn inside; 3-point latch and deadlocking auxiliary latch
- Latchbolts retracted by lever (or knob) from either side
- Outside lever is made inoperative by key outside or by turning inside thumbturn; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside unlocks and enables outside lever to retract all three latches
- Rotating inside lever retracts latchbolts; outside lever unlocked when thumbturn is returned to vertical position
- Inside lever always free for immediate egress

Caution: Outside lever remains inoperative until thumbturn is returned to vertical or unlocked by key.
Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.

Schlage **ANSI**
LM/LMV9370 **-**



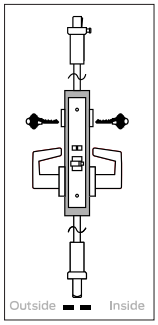
3-point classroom lock, exterior lockdown only



- Key cylinder outside with lever (or knob); lever only-inside; 3-point latch and deadlocking auxiliary latch
- Latchbolts retracted by lever from either side
- Outside lever is made inoperative by key outside; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside unlocks and enables outside lever to retract all three latches
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.
Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.

Schlage **ANSI**
LM/LMV9371 **-**



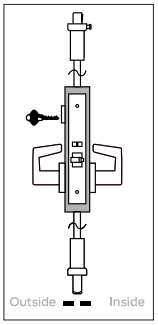
3-point classroom security lock, interior/ exterior lockdown



- Key cylinder both sides; 3-point latch and deadlocking auxiliary latch
- Latchbolts retracted by lever (or knob) from either side
- Outside lever is made inoperative by key either side; Vandlgard® option allows outside lever to rotate freely down while locked
- Key on either side unlocks and enables outside lever to retract all three latches
- Inside lever always free for immediate egress

Note: Outside lever remains inoperative until unlocked by key.
Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.

Schlage **ANSI**
LM/LMV9380 **-**



3-point storeroom lock

- Key cylinder outside with lever (or knob); lever only-inside; 3-point latch and deadlocking auxiliary latch
- Outside lever normally locked; latchbolts retracted by inside lever; Vandlgard® option allows outside lever to rotate freely down while locked
- Key outside inserted and turned 280° unlocks, allowing outside lever to retract latches; removal of key returns door to locked state
- Inside lever always free for immediate egress

Note: Requires door and rod set sold through Steelcraft.
When ordering, specify door handing.



Ensuring Mechanical & Electronic Security Continuity

In buildings where electronic access control is used, true security can only be effective if your key system plan accounts for doors where credential use is present. Most often, credential access exists on common area doors and perimeter entrances where limited key distribution is desired. Many facilities also have high security areas where credential use is beneficial.

Credentials are like keys in that they come with varying degrees of duplication control. Any facility employing high security where both keys and credentials are in use must ensure cohesive application of both. Because of this, the choice of credential should reflect the highest level of key system security in the building and vice versa.

Readers

Schlage's comprehensive portfolio of and wall mount readers are designed to provide enhanced levels of security, efficiency and convenience to any facility.



MTB11
Mullion



MTB15
Single gang



MTKB15
Keypad single gang



MT11
Mullion



MT15
Single gang



MTK15
Keypad single gang



MTM515
with magnetic stripe reader



MTMSK15
with magnetic stripe reader and keypad

Mobile Enabled Multi-Technology Readers:

- Compatible with Bluetooth® and NFC-open smartphones
- Supports a wide range of credential technologies including mobile Bluetooth and NFC, high-frequency smart and low-frequency proximity
- Eases transition from existing legacy system to secure smart technology or mobile solution
- Reader options available with keypad for high security applications
- OSDP, RS-485 and Wiegand support
- Reads proximity, Schlage MIFARE Classic®, Plus®, or DESFire® credentials

Multi-Technology Readers:

- Supports for both high-frequency smart and low-frequency proximity credentials
- Compatible with NFC-enabled mobile devices
- Enables migration from legacy platform to secure smart technology
- Reader options available with keypad for high security applications
- Wiegand and RS-485 support
- Reads proximity, Schlage MIFARE Classic®, Plus®, or DESFire® credentials



SM10
Mini-mullion

Smart (13.56 MHz) Technology Reader:

- Advanced contactless technology, more secure than magnetic stripe and proximity options
- Advanced data encryption secures against duplication
- Recommended for new systems
- Open platform, designed to work with a wide array of systems and applications beyond access control
- SM10 reader features a Wiegand or Clock and Data interface
- Reads proximity, Schlage MIFARE Classic®, Plus®, or DESFire® credentials



PR10
Mini-mullion

Proximity (125 kHz) Technology Reader:

- Basic open contactless technology; recommended for legacy systems only
- Encoded with a unique number that cannot be updated or changed
- PR10 is a Wiegand interface, single technology proximity reader

Credentials

With the latest in NFC and Bluetooth® mobile, as well as smart, multi-technology and proximity technologies, Schlage offers a credential solution for every budget and security strategy.



Mobile Credentials:

- Schlage offers both Bluetooth® and NFC mobile credentials which provide different user experiences
- Schlage Mobile Bluetooth® Credentials require the user to tap on a specific door in an app and are commonly used in small businesses or multifamily sites
- NFC credentials provide a frictionless experience through the Apple Wallet® or Google Wallet™ and are ideal for higher education or corporate settings
- Mobile credentials require software integration, please confirm support with your PACS or Proptech provider



Multi-Technology MIFARE® Credentials:

- Available with MIFARE Classic® and MIFARE® DESFire®
- Multi-technology options available to support transition from proximity or magnetic stripe to secure MIFARE® or MIFARE® DESFire®
- Compatible with Schlage and other industry manufacturers' readers and electronic locks
- Form factors include ISO and clamshell cards, fobs, PVC disks, and wristbands
- Available in multiple memory capacities



Proximity Credentials:

- 125 kHz proximity technology
- Available in ISO style cards with or without a magnetic stripe, clamshell style cards, keyfobs or PVC adhesive disks

Schlage Credential Services provide unique advantages with programs designed to help businesses thrive and make doing business easier. Our services include CardTrax™, custom encryption keys, custom artwork and more.

Scan or click the link below to check out Credential Services

Power Supplies



Schlage power supplies are designed for speed and ease of installation upfront with the assurance post installation of the highest quality output in terms of even power flow to protect downstream devices.

Engineered with versatility and reliability in mind, they can be factory ordered to meet specific needs or configured in-field using a wide selection of option boards. The use of separate battery management ensures tight output power regulation to protect downstream devices. The series includes three models: PS902, PS904 and PS906. They vary by total amperage output capability, ranging from 2 to 6 amps.



Overtur™ Key System Management

A key system is a critical investment in the security of any facility or campus. Safeguarding its integrity requires more than the use of restricted key products and a well-designed master key plan—it takes meticulous tracking of key issuances and returns. While effective management is essential, it doesn't have to be time-consuming or complicated. Overtur™ Key System Management offers a smarter, more efficient solution for managing even the most complex systems with ease.

Getting Started Costs Nothing

Made for security professionals, the Overtur digital platform supports the design, construction, and long-term management of door security systems. Accessible via web or mobile app, it provides intuitive tools for creating, collaborating on, and maintaining key systems.

Learn more at www.OverturKey.com

Subscription Options Simplify Key System Management

Paper-based or ad hoc tracking methods often lack the convenience of cloud access, making it easy to lose visibility—and costly should a master key go missing. Overtur Key System Management subscriptions, available through door hardware distributors, offer powerful user-friendly, digital tools for managing bitting, pinning and the tracking of keys and key rings. Features include on-demand bitting lists and pinning charts, next available change key information, customizable reports, and digital storage of key holder agreements.

Cylinders & Key Systems

A strong lock is only part of the security solution—proper levels of key system security is equally important. Schlage offers extensive options to meet the needs of each opening and enables a cost-saving layered approach to key system security.

Cylinders



Conventional Mortise Cylinder Options[1]

- 6-pin length (default)
- 7-pin length in SL cylinder
- Available in Schlage Classic and Everest 29™ open and restricted keyways
- Primus® level security features and geographic exclusivity options
- Primus UL 437 listed high security cylinder options
- Faculty restroom function available



Full Size Interchangeable Core (FSIC) Options[1]

- 6-pin length (default)
- 7-pin length in SL cylinder
- Available in Schlage Classic and Everest 29 open and restricted keyways
- Interchangeable core compatible with conventional cylinder key systems
- Primus level security features and geographic exclusivity options



Small Format Interchangeable Core (SFIC) Options[1]

- 7-pin combinated Everest 29 R restricted keyways[2]
- SFIC Everest 29 R keyway can be matched in SL versions of Conventional and FSIC cylinder formats

Key Systems

Classic Obverse Keyway

- Open keyway—keys are duplicated and available without ordering formalities
- Upgradeable to Primus RP and UL 437 levels of security

Everest 29

- Patented through 2029
- Available restricted keyway families provide a higher level of administrative security
- Can be integrated to an existing Everest B, C, or D key system
- Upgradeable to Primus XP and UL 437 levels of security

Cylinder Mechanism Options

Primus Cylinders

- Independent, dual locking mechanisms
- Unique side bit milling on key makes unauthorized duplication highly enforceable
- Allows creation of geographically exclusive keys in thousands of available combinations
- Provides patent protection to 2029 when applied to Schlage Classic Obverse keyway family
- Primus XP cylinders are compatible to all Everest and Everest 29 keyways

Everest 29 SL

- Available in Conventional and FSIC cylinder formats
- Pinned on an A2 system compatible with the Schlage Everest B and Everest 29 R keyways
- Allows sites with multiple Schlage key systems to unify under one system offered in Conventional, FSIC and SFIC formats
- Enables Primus level upgrades on SFIC keyways



1. Plug faces available in 606, 613 (simulated), 626, and 643e (simulated).
2. Restricted keyway cores require authorization from the end user.

Administrative Security

Primus® geographically exclusive side bit milling options

Schlage Everest 29™

Schlage Classic Obverse			
	End user exclusive nationwide	4N	9N
	End user exclusive within time zone/country	4Z	9Z
	End user exclusive within zip code	3G	9G
	End user controlled; non-exclusive	3U	9U
	Dealer exclusive within time zone/country	2	8
	Dealer exclusive within zip code	1+	7
	Authorized dealer only; non-exclusive	1	





End user controlled; non-exclusive

Authorized dealer only

No authorization



OPEN
Schlage Classic Obverse
FSIC and Conventional

- Duplicate anywhere



OPEN
Schlage Everest 29 S
FSIC and Conventional

- Patented design
- Check pin in cylinder



RESTRICTED
Schlage Everest 29 R[1]
SFIC, FSIC[2] and Conventional[2]
Schlage Everest 29 T
FSIC and Conventional

- Requires letter of authorization
- Patented design
- Check pin in cylinder

Primus RP RESTRICTED
Schlage Classic Obverse
FSIC and Conventional

- 5 levels of side bit milling exclusivity
- Patent protection to 2029
- Independent sidebar and finger pin locking mechanisms

Primus XP RESTRICTED
Schlage Everest 29 R
FSIC[2] and Conventional[2]
Schlage Everest 29 S or T
FSIC and Conventional

- 5 levels of side bit milling exclusivity
- Patent protection to 2029
- Independent sidebar and finger pin locking mechanisms

Primus UL 437 Option
Schlage Classic Obverse
Conventional
Schlage Everest 29 R
Conventional SL
Schlage Everest 29 S or T
Conventional

- Hardened steel drill pins
- Proven pick and drill resistant
- Withstands extreme physical attack

Physical Security

COMPARABLE ELECTRONIC SECURITY – Ensure your credential is a secure as your keyway

Proximity Credentials
- Low frequency, entry level proximity cards
- Easily duplicated

MIFARE Classic® Smart Credentials
- Legacy smart card technology
- Difficult to duplicate

MIFARE® DESFire® Smart Credentials
- Advanced data encryption makes duplication nearly impossible
- Most secure credentials available from Schlage

1. Limited dealer controlled programs available.
2. FSIC and Conventional in the form of SL cylinders that accept a 7-pin SFIC key.
3. UL 437 available on Primus XP SL cylinders in the conventional format only.

Primus Access Control & High Security Cylinders

The Primus program of access control and high security cylinders is available to add patented key control and varying degrees of geographical exclusivity to most Schlage 6- and 7-pin key systems, whether Everest, Everest 29, or Classic Obverse keyways. In addition to a standard pin tumbler mechanism, Primus cylinders incorporate a patented finger pin and sidebar design, providing a "dual-locking" cylinder that is virtually pick-proof. For added resistance to drilling and other physical attack, specify UL 437 listed high-security cylinders.

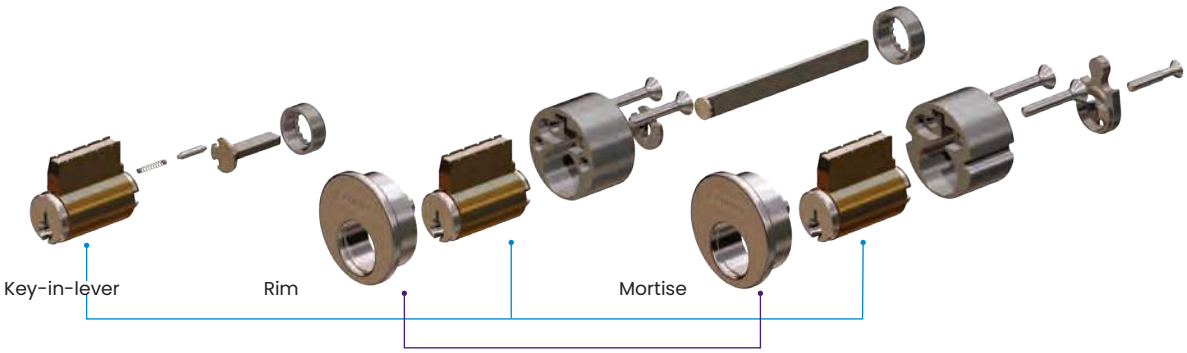
To upgrade an existing Schlage C open keyway system, a changeover to Classic Obverse Primus RP cylinders on critical points of entry is recommended. With it you gain patent protection against unauthorized key duplication to 2029 and Primus administrative and physical security levels. Everest 29 Primus XP cylinders are recommended for new key systems and for upgrading existing Everest legacy key systems.

Modular, Conventional Cylinder System Uses

Schlage Conventional cylinders offer versatility through modular design. These full-size cylinders can be applied to any Schlage key-in-lever (KIL), rim or mortise need. For the locksmith or facility manager inventory costs are reduced while gaining a flexible, easy-to-manage key system solution.

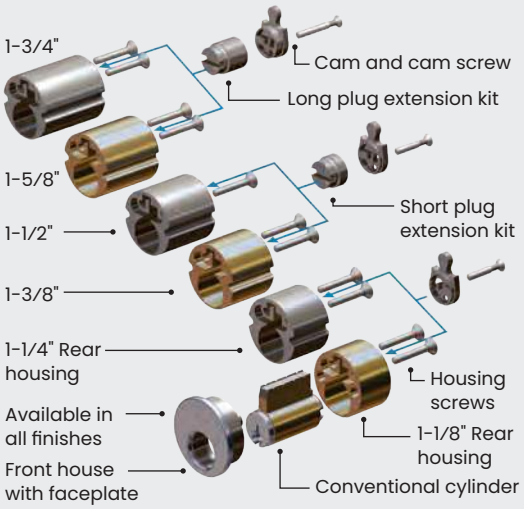
Features:

- Modular system design is compatible with all Schlage conventional cylinders including 7-pin SL options
- Just six mortise housing lengths and one rim housing support a single front housing faceplate design
- Supports all Classic, Everest, and Everest 29 keyway families
- Rear mortise cylinder housing sizes range from 1-1/8" to 1-3/4"
- 12 mortise housing face finishes match all available L Series options



Parts

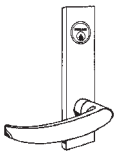
Modular cylinders use fewer parts because the cylinder and a small number of screws, cams and plug extensions can be universally applied. The majority of parts are simply the rear housings in various lengths and finishes.



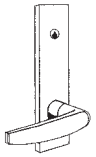
Mortise & Rim Front Housing Finish Options

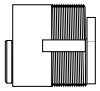
605 Bright Brass	606 Satin Brass	609 Antique Brass	612 Satin Bronze	613 Oil Rubbed Bronze	619 Satin Nickel	622 Matte Black	625 Bright Chrome	626 Satin Chrome	629 Bright Stainless Steel	630 Satin Stainless Steel	643e Aged Bronze

Mortise Cylinders for Schlage L Series

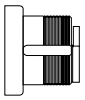

L & N Escutcheons


Cylinder only


L escutcheon


Concealed body cylinder


Sectional trim


Compression ring & spring

L Series Mortise Locksets

Design	Function	Standard pin & tumbler	SL cylinder[1]	Legacy Primus Primus RP Primus XP	Primus XP SL cylinder[1]	UL 437 Legacy Primus Primus RP Primus XP	Primus XP lockout	Primus XP UL 437 lockout
L & N Escutcheons (cylinder only)	All except below	30-021	91-063	20-793 20-793-RP 20-793-XP	91-760-XP	20-593 20-593-RP 20-593-XP	N/A	N/A
	L9060P outside	26-021	91-059	20-701 20-701-RP 20-701-XP	91-754-XP	20-501 20-501-RP 20-501-XP	20-715-XP	20-515-XP
	L9485, L9486 Faculty restroom	30-022[2]	N/A	N/A	N/A	N/A	N/A	N/A
	LM9280, LM/LMV9380 storeroom	30-019	91-130 (1-1/8") Requires Handing	N/A	N/A	N/A	N/A	N/A
L escutcheon with concealed body cylinder	All except below	30-004	N/A	20-789 20-789-RP 20-789-XP	N/A	20-589 20-589-RP 20-589-XP	N/A	N/A
	L9060P outside	26-023	N/A	24-767 24-767-RP 24-767-XP	N/A	24-567 24-567-RP 24-567-XP	N/A	N/A
	L9485, L9486 Faculty restroom	30-005[2]	N/A	N/A	N/A	N/A	N/A	N/A
Sectional trim (cylinder with compression ring & spring)	All except below	30-001	91-062	20-787 20-787-RP 20-787-XP	91-757-XP	20-587 20-587-RP 20-587-XP	20-715-XP	20-515-XP
	L9060P outside	20-001	91-051	20-700 20-700-RP 20-700-XP	91-751-XP	20-500 20-500-RP 20-500-XP	20-715-XP	20-515-XP
	L9485, L9486 Faculty restroom	30-002[2]	N/A	N/A	N/A	N/A	N/A	N/A
	LM9280, LM/LMV9380 storeroom	30-000[4]	91-129 (1-1/8")	N/A	N/A	N/A	N/A	N/A

Notes:

1. For restricted Everest 29 R and Everest B only.
2. Specify door hand for faculty restroom cylinders.
3. Discard compression ring for Lockout cylinders with escutcheon trim.
4. Includes the L/LV9081 Accessible Storeroom function.

Finishes: 605, 606, 611, 612, 613, 619, 622, 625, 626, 629 and 630. Concealed cylinders available in 606, 622, 626 and 643e only. Plug faces available in 606, 622, 626 and 643e only.

6-pin Everest 29 S123 keyway standard for stock cylinders; S145 standard for new masterkeyed systems.

Standard cylinder lengths: sectionals (rose) trim = 1-1/8" (29 mm), escutcheon trim = 1-1/4" (32 mm).

Optional cylinder lengths are in 1/8" (4 mm) increments ranging from 1-1/8" to 1-3/4" (29 mm to 44 mm).

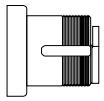
FSIC Mortise Cylinders

Schlage full size interchangeable core (IC) cylinders allow immediate rekeying at the door. Simply use the special control key to replace the core in seconds. Full size IC cylinders can be integrated into any existing 5- or 6-pin Schlage key system with no adverse effects on keying capacity.





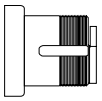
L & N escutcheons (cylinders with compression ring)



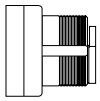
Compression ring & spring



Sectional trim (cylinder with compression ring, spring and 3/8" blocking ring)



Compression ring and spring



With blocking ring

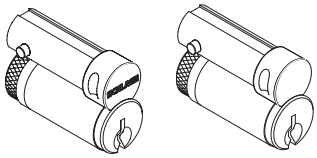
FSIC Cylinders for Schlage L Series Mortise Locks

Design	Function	Core mechanism				
		Standard pin & tumbler	SL cylinder[1]	Legacy Primus / Primus RP / Primus XP	Primus XP SL cylinder[1]	Housing less core
L & N escutcheons (cylinders with compression ring)	All except below	30-008	91-163	20-798 20-798-RP 20-798-XP	91-863-XP	30-007
	L9060 outside	30-030	91-165	20-782 20-782-RP 20-782-XP	91-865-XP	30-032 + 36-083
	L9485, L9486 faculty restroom	30-010[2]	N/A	N/A	N/A	N/A
	L/LV9081, LM9280, LM/LMV9380	26-101[2]	N/A	N/A	N/A	26-102
Sectional trim (cylinder with compression ring, spring and 3/8" blocking ring). L9060 requires 1/2" blocking ring.	All except below	30-138	91-169	20-776 20-776-RP 20-776-XP	91-869-XP	30-137
	L9060 outside	30-030 + 36-082-050[3]	91-165 + 36-082-050[3]	20-783 20-783-RP 20-783-XP	91-865-XP + 36-082-050[3]	30-032 + 36-083 + 36-082-050[3]
	L9485, L9486 faculty restroom	30-140[2]	N/A	N/A	N/A	N/A
	L/LV9081, LM9280, LM/LMV9380	26-101[2] + 36-082-037[4]	N/A	N/A	N/A	26-102 + 36-082-037[4]

1. For restricted Everest 29 R and Everest B only.
2. Specify hand of door.
3. L9060 requires a 1/2" blocking ring (part 36-082-050).
4. LM9280, LM/LMV9380 and L/LV9081 require a 3/8" blocking ring (part 36-082-037).

FSIC, Core Only, Cylinders

Number	Pins	Cylinder mechanism
23-030	6	Standard pin and tumbler (23-031 less logo)
91-161	7	SL cylinder (restricted Everest 29 R and Everest B only) (91-162 less logo)
20-740	6	Legacy Primus (20-741 less logo)
20-740-RP	6	Primus RP (Classic keyways only) (20-741-RP less logo)
20-740-XP	6	Primus XP (20-741-XP less logo)
91-861-XP	7	SL cylinder (restricted Everest 29 R and Everest B only) (91-862-XP less logo)
30-120	6	Faculty restroom standard pin and tumbler (specify hand) (30-121 less logo)



Finishes: 606, 622, 626 and 643e only.

Standard keyway: 6-pin Everest 29 S123 for stock, S145 for new master key systems.

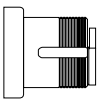
SFIC Mortise Cylinders

The L Series lockset can be ordered to accept small format interchangeable cores (SFIC) compatible with manufacturers such as Falcon, Arrow and Best; cams are easily changeable.





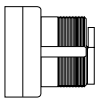
L & N escutcheons (cylinders with compression ring)



Compression ring & spring



Sectional trim (cylinder with compression ring, spring and 1/4" blocking ring)



With blocking ring

SFIC Cylinders for Schlage L Series Mortise Locks

Design	Function	Core mechanism			
		Everest 29R restricted (G7 suffix)	**Keyed construction (H suffix)**	**Disposable construction (BDC suffix)**	**Housing less core (B suffix)**
L & N escutcheons (cylinders with compression ring and spring)	All except L9060 outside	80-308	80-138	80-115	80-108[1]
	L9060 outside	80-304	80-134	80-112	80-104[1]
	LM9280, LM/LMV9380, L/LV9081	26-106	26-107	27-105	26-104[1]
Sectional trim (cylinder with compression ring, spring and 1/4" blocking ring)	All except L9060 outside	80-301	80-131	80-109	80-101[1]
	L9060 outside	80-304 + 36-082-050[1]	80-134 + 36-082-050	80-112 + 36-082-050	80-104 + 36-082-050[1]
	LM9280, LM/LMV9380, L/LV9081	26-104 + 36-082-025[2]	26-107 + 36-082-025[2]	27-105 + 36-082-025[2]	26-104 + 36-082-025[1, 2]

Note: Housings are available in 605, 606, 609, 612, 613, 619, 625, and 626 finish. Cores furnished 606 and 626 only. All cylinders are 1-3/8" long.

1. L9060 requires a 1/2" blocking ring (part 36-082-050).
2. L/LV9081, LM9280, LM/LMV9380 require a 1/4" blocking ring (part 36-082-025).

Small Format Core Only

Number	Mechanism
80-036	7-pin Everest 29 R family restricted keyway core uncombinated
80-037	7-pin Everest 29 R family restricted keyway core combinated (available factory master keyed only)
80-043	6-pin best keyway core, uncombinated
80-033	7-pin best keyway core, uncombinated



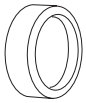
Notes

1. Available in 606, 613, 622, and 626 finish only. 80-043 and 80-033 available in 606 and 626 only.
2. Suffix keyway, e.g. 80-036 B235, 80-043 AB, etc.
3. Proper authorization required for Everest 29 cores. Order control keys separately.
4. 80-043 and 80-033 available in Best A, D, E, F, G, H, J, K, L and M keyways. Suffix "B" to keyway letter, e.g. AB, DB, etc.

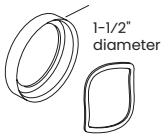
Blocking & Compression Rings



36-079
Blocking ring. Specify finish and dimension. Not to be used with 36-083.



36-082
Blocking ring. Specify finish and dimension. Use with 36-083.



36-083
Compression ring and spring. Specify finish and dimension.



L538-195
Compression spring.

Blocking Ring Dimensions

Ring length	Dimension
1/8"	012
3/16"	018
1/4"	025
5/16"	031
3/8"	037
7/16"	043
1/2"	050

FSIC Core Blocking Ring Requirements

Function	Trim	Door thickness			
		1-3/8"	1-3/4"	2"	2-1/4"
		Dimension			
L9050, L9056, L9070, L9076, L9080, L9092EL/EU, L9453, L9456, L9460 with XL11-886 or XL11-635, L9464 with XL11-886, L9465, L9473, L9480	Rose	050	037	025	025
	Escutcheon	025	012	N/A	N/A
L9485 with XL11-557	Rose	—	037	025	025
	Escutcheon	—	012	N/A	N/A
L9486, L9496	Rose	012	N/A	N/A	N/A
	Escutcheon	025	012	N/A	N/A
L9060, L9071, L9077, L9082, L9457, L9462 with XL11-886, L9466, L9482	Rose	—	050	043	031
	Escutcheon	025	012	N/A	N/A
L460, L464, L496, L9460, L9464	Rose trim	050	037	025	025
L462, L463, L9462, L9463	Rose trim	—	050	043	031

SFIC Blocking Ring Requirements

Function	Trim	Door thickness			
		1-3/8"	1-3/4"	2"	2-1/4"
		Dimension			
L9050, L9056, L9070, L9076, L9080, L9092EL/EU, L9453, L9456, L9460 with XL11-886 or XL11-635, L9464 with XL11-886, L9465, L9473, L9480	Rose	037	025	012	N/A
	Escutcheon	N/A	N/A	N/A	N/A
L9060, L9071, L9077, L9082, L9095EL/EU, L9457, L9462 with XL11-886, L9464, L9466, L9482	Rose	—	050	037	025
	Escutcheon	018	N/A	N/A	N/A
L9496	Rose	025	012	N/A	N/A
	Escutcheon	N/A	N/A	N/A	N/A
L460, L464, L496, L9460, L9464	Rose trim	037	025	012	N/A
L462, L463, L9462, L9463	Rose trim	—	050	037	025

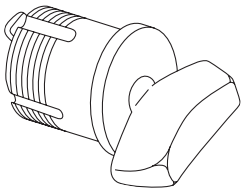
Parts

These cylinders are for L463 and L9463 classroom function deadlocks. They are handed. They have a rotational stop in one direction to prevent locking from the inside, but allow unlocking. Cylinders are field-reversible by changing the position of the rotational stop. All cylinders furnished with L583-254 cam.

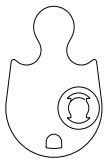
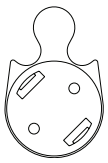
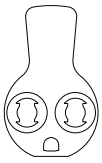
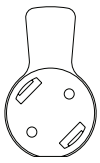
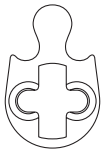
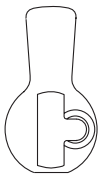
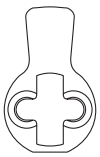
Classroom Thumbturn Cylinders

Number	Collar(s)
09-900	None
09-904	Compression ring and spring
09-905	For 1-3/4" doors: compression ring, spring and 1/8" blocking ring

Specify hand of door and finish. 1-1/8" length standard.
09-900 and 09-905 also available in 1/8" increments up to 1-3/4".



Mortise Cylinder Cams

	Schlage L Series functions (except L9060 outside)			**Von Duprin and other straight cam applications** (including Schlage L9060 outside)		
Current modular cylinder cams	 **L583-474** For cylinder lengths: 1-1/8", 1-3/8", 1-5/8" **L583-475** For cylinder lengths: 1-1/4", 1-1/2", 1-3/4"	 **L583-800** For SL cylinder length: 1-1/8" **L583-801** For SL cylinder length: 1-1/4"	 **L583-255** All IC	 **L583-476** For cylinder lengths: 1-1/8", 1-3/8", 1-5/8" **L583-477** For cylinder lengths: 1-1/4", 1-1/2", 1-3/4"	 **L583-802** For SL cylinder length: 1-1/8" **L583-803** For SL cylinder length: 1-1/4"	 **K510-680** All IC
Legacy cams	 **L583-153** Everest and Primus*	 **L583-254** Classic keyways*		 **B502-948** Everest and Primus*	 **B502-191** Classic keyways*	

* For cylinders made prior to August 2010

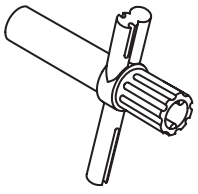
Cam Screws

B502-942	Everest and Primus (non-IC)
B502-468	Classic Conventional (non-IC)
L583-333	All full-size interchangeable core
B520-484	All small format interchangeable core
B520-690	All 1-1/8" and 1-1/4" modular cylinders



IC Installation Tool

This tool is used to install and remove mortise cylinder housings and test mortise cylinder cam action for both small format and full-size interchangeable core cylinders. Its other ends are designed to install the driver and retainer for full-size IC in Schlage key-in-knob/lever locksets.



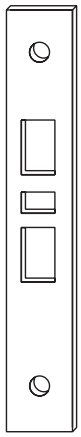
M504-413

Parts

L Series armored fronts are produced from brass or stainless steel material, finished to match lock trim and furnished complete with screws. Numbers for ordering separately or with locks are listed below. Armored fronts are specified in latch column of order form.

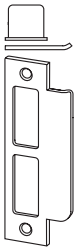
Armored Fronts		
Square corner		For locks with these configurations:
1-1/4" (32mm) width	1-1/16" (27mm) width	
09-662	09-668	Latch only
09-663	09-669	Latch x auxiliary latch
09-664	09-670	Latch x deadbolt
09-665	09-671	Deadbolt only
09-666	09-672	Latch x auxiliary latch x deadbolt
09-661	09-667	Blank (no holes)
09-713	–	Latch x auxiliary latch, non-UL (holdback functions L/LV9076 and L/LV9077)
09-717	–	Deadbolt only, small mortise case

Note: For 1-3/8" (35mm) doors, 1-1/16" (27mm) front should be specified. See price book for complete list.
For L9090, L9091, L9092, L9093, L9095 models with DPS, use armor 09-666 (1-1/4" wide) or 09-670 (1-1/16" wide).

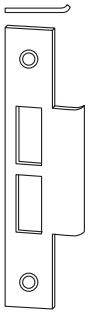


Standard square corner
1-1/4" (32 mm) width

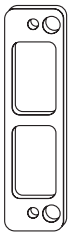
All L Series strikes are produced from brass or stainless steel material, finished to match lock trim, and furnished complete with screws. Numbers for ordering separately or with locks are listed below.



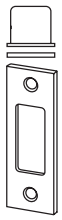
10-072
Standard for L9000
1-1/4" x 4-7/8" x 1-3/16" lip
32 mm x 124 mm x 30 mm



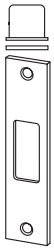
10-091
Armored front strike
1-3/4" x 8" x 1-3/16" lip
32 mm x 203 mm x 30 mm



37-015
Wood frame reinforcer



10-079
Standard for L400
1-1/8" x 3-1/2"
32 mm x 89 mm



10-078
Optional for L400
1-1/4" x 4-7/8"
32 mm x 124 mm

Strikes		
Number	Lip length	Description
10-072	1-3/16" (30mm)	L9000 standard
	7/8" (22mm), 1" (25mm), 1-1/2" (38mm), 1-3/4" (44mm), 2" (51mm)	L9000 optional
10-073	No lip	L9460 Series deadlocks; deadbolt strike, standard
10-075	No lip	1/2" (13mm) rabbeted (use with 1-1/16" (27mm) armor)
10-078	No lip	1-1/4" x 4-7/8" with box, L400 optional
10-079	No lip	1-1/8" x 3-1/2" with box, L400 standard
10-091*	1-3/16" (30mm)	Armored front strike, no box
K510-053	–	Strike box for 10-079
K10-066	–	Strike box, all except 10-079

*Specify hand of inactive leaf.

How to Order

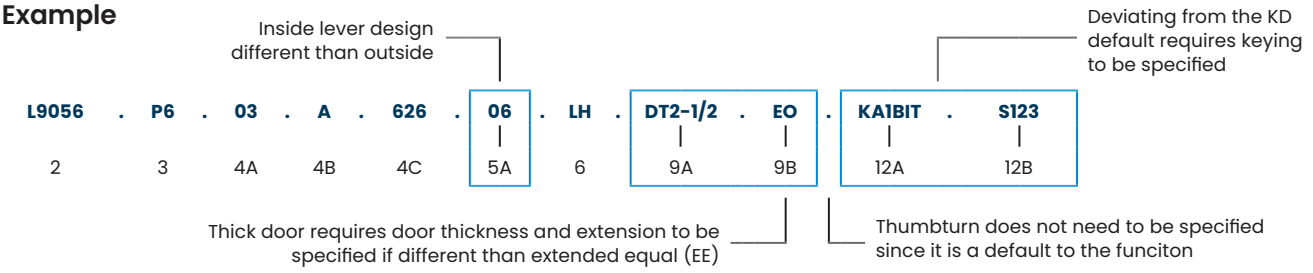
L Series Ordering Instructions

To order Schlage products, descriptive data should be in the same sequence as shown:

	Required for all lock orders																										
			Outside style			Inside style						Door dimensions			Lock monitoring				Options						Keying		
Brand	Series + Function	Cylinder type (keyed funcitons only)	Outside lever/knob design	Outside rose/escutcheon	Outside finish	Inside lever/knob design	Inside rose/escutcheon	Inside finish	Handing	Armor front	Strike	Door thickness	Extended	Strike lip length	Request to Exit (RX)	Latchbolt monitor (LX)	Door position sensor (DPS)	Deadbolt monitor (DM)	Indicator	Basic or large ADA thumbturn	Screw option	Lead lining	Special options (X numbers)	Buy American Act compliant	Keying code	Keyway	Pack keys independently
1	2	3	4A	4B	4C	5A	5B	5C	6	7	8	9A	9B	9C	10A	10B	10C	10D	11A	11B	11C	11D	11E	11F	12A	12B	12C

Detail		
1	Brand	Required only when specifying a product Less (LLL) any attribute.
2	Series + Function	L (default) or LV (Vandlgard if available) + function choice from list
3	Cylinder type	For keyed functions only: **Conventional** **P6** 6-pin cylinder (default) **P** 6-pin cylinder, keyed 5 **Z** Everest SL cylinder, 7-pin **L** Less cylinder **C** Concealed mortise, 6-pin/ keyed 5 **C6** Concealed mortise, 6-pin **W** Less concealed mortise cylinder **FSIC - Full size interchangeable core** **R** FSIC, 6-pin **T** FSIC – Construction Core **M** Everest SL - FSIC, 7-pin **J** Less FSIC **F** FSIC, 6-pin less Schlage logo **T** Refundable Construction FSIC **SFIC - Small format interchangeable core** **G** SFIC 7-pin **H** Refundable Construction SFIC **BDC** Disposable Construction SFIC **B** Less SFIC
4	Outside style	**4A:** input lever or knob code; **4B:** input rose or escutcheon code; **4C:** input ANSI finish code
5	Inside style	Specify only if different than outside style
6	Handing	Add only when handing must be specified (Lever designs: 12, Accent, Asti, Merano, M61, M62, M63, and M85)
7	Armor front	Specify only attributes that deviate from these defaults: L/LV9000: 1-1/4" x 8"; L400: 1-1/4" x 5-9/16"
8	Strike	Specify only attributes that deviate from these defaults: L/LV9000: 1-1/4" x 4-7/8" square corner, 1-3/16" lip, box; or L400: 1-1/8" x 3-5/8" square corner, box
9	Door dimensions	Specify only attributes that deviate from these defaults: **9A:** 1-3/4" thickness; **9B:** Extended equally (EE); **9C:** 1-3/16" lip
10	Lock monitoring	Available only on specific functions. Note that some EL/EU functions are available with one or more monitor options. L9492, 9493, 9494, 9495 come standard with deadbolt monitor (DM).
11	Options	**11A/11B:** input part number; **11C:** specify TORX; **11D:** L/LV9000 specify XL11-515, L400 specify XL12-216; **11E:** special options include unlisted functional options, latchbolt insert and deadbolt only armor front. Specify by part number. **11F:** Specify BAA.
12	Keying	**12A:** specify only if different from default of Keyed Different (KD); **12B:** specify only if different from default of Everest 29 S123 (Conventional and FSIC cylinders) or, if master keyed, Everest 29 S145 (Conventional and FSIC) and R125 (SFIC)

Example



LE Wireless Electronic Lock Ordering Instructions

LEB - MS - GRW - P6 - 07 - 626 - 00A - 17 - 612 - 00A - LH - 10-136 - 134 - S123

				Outside			Inside (optional)							
Series	Chassis/ function	Style	Cylinder Type	Lever Style	Finish	Rose (GRW only)	Lever Style	Finish	Rose (GRW only)	Handing	Strike Lip	Door Thickness	Key System	Additional Options
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Selections correspond with the numbers above. See price book for specific configuration options.

Detail		
1	Series	Specify **LEB** (mobile enabled wireless lock); **LEBSi** (mobile enabled wireless lock with HID® credential support)
2	Chassis	Specify **MS** (mortise with LED indicator); **MB** (mortise with interior push button and LED); **MD** (mortise deadbolt with LED)
3	Style	Specify **GRW** for Greenwich sectional; **ADD** for Addison escutcheon
4	Cylinder type	**Conventional** **P6** 6-pin cylinder (default) **Z** Everest SL cylinder, 7 pin **L** Less cylinder **FSIC - Full size interchangeable core** **R** FSIC, 6-pin **J** Less FSIC **T** FSIC – Construction Core **SFIC - Best® Style, Small format interchangeable core** **G** SFIC 7-pin **B** Less SFIC **H** Refundable Construction SFIC **BDC** Disposable Construction SFIC
5	Outside lever style	Input lever or knob code
6	Outside finish	Input ANSI finish code
7	Outside rose	Specify for Greenwich sectional only; input rose code
8	Inside lever style	Specify only if different than outside style
9	Inside finish	Specify only if different than outside finish
10	Inside rose	Specify only if different than outside rose
11	Handing	Add only when handing must be specified (Lever designs: 12, Accent, Asti, Merano, M61, M62, M63, & M85)
12	Strike plate/lip length	Specify only attributes that deviate from these defaults: 1-1/4" x 4-7/8" Square corner, 1-3/16" lip
13	Door thickness	Specify only attributes that deviate from these defaults: 1-3/4" thickness; Extended equally (EE)
14	Keyway	Specify only if different from these defaults: Keyed Different (KD); Everest 29 S123 (Conventional and FSIC cylinders) or, if master keyed, Everest 29 S145 (Conventional and FSIC) and R125 (SFIC)
15	Additional options	

Mechanical Product Specifications

	L Mechanical & L Wired Electrified	LM9200	LM9300
Chassis			
Case material	Cold Rolled Steel (CRS) with zinc dichromate plating		
Case size	**L9000 Series**: 4-7/16" x 6-1/16" x 1" (113 mm x 154 mm x 25 mm) **L400 Series:** 4-7/16" x 3-5/8" x 1" (113 mm x 92 mm x 25 mm)	4-7/16" x 12-19/32" X 1" (113 mm x 320 mm x 25 mm)	4-7/16" x 6-1/16" x 1" (113 mm x 154 mm x 25 mm)
Spacing	Knob or lever to cylinder: 3-7/8" (98 mm); knob or lever to thumbturn hub: 2-11/16" (68 mm)		
Door thickness	Standard: 1-3/4" (44 mm) Optional: 1-3/8" (35 mm) Over 1-3/4" specify door thickness and position in door EE, EI, EO, ED	Standard: 1-3/4" (44 mm) Over 1-3/4" specify door thickness and position in door EE, EI, EO, ED	Standard: 1-3/4" (44 mm)
Backset	2-3/4" (70 mm) only		
Handing	**L9000 Series:** Field-reversible **L400 Series:** Non-handed	Handed to order, field reversible	Handed to order, not field reversible
Trim			
Levers/knobs	33 lever designs (see pages 10-13): Forged brass and cast stainless steel Two knob designs (see page 13): Heavy-duty wrought brass or stainless steel (not available for LM9200) Tactile warning applied to outside lever; available on 01, 02, 03, 05, 06, 07, 12, 17, 18, M51, M52, M81, ME1, ME2, ME3 lever designs		
Health care trims	Ligature resistant lever (SL1) and knob (SK1) High Security Ligature Resistant (HSLR) trim HL6 hospital latch	—	—
Roses/ escutcheons	**L escutcheons:** 7-15/16" x 1-3/4" x 7/16" (202 mm x 44 mm x 11 mm); cold-forged brass and stainless steel **N escutcheons:** 7-7/8" x 2-1/2" x 7/16" (200 mm x 64 mm x 11 mm); heavy-wrought, reinforced brass and stainless steel **Roses:** A, B, C: wrought brass and stainless steel; AVA and MER: forged brass		
Finishes	14 available: 605, 606, 609, 612, 613, 619, 622, 625, 626, 626AM, 629, 630, 630AM, 643e		
Combinations	Combinations of available levers and/or knobs allowed. Roses cannot be combined with escutcheons.		
Latches, Armors & Strikes			
Armor	**L9000 Series** Standard: 1-1/4" x 8" x 7/32" (32 mm x 203 mm x 6 mm) Optional: 1-1/16" x 8" x 7/32" (27 mm x 203 mm x 6 mm) **L400 Series** 1-1/4" x 5-9/16" x 7/32" (32 mm x 141 mm x 6 mm)	1-1/4" x 15-55/64" x 7/32" (32 mm x 403 mm x 6 mm)	Standard: 1-1/4" x 8" x 7/32" (32 mm x 203 mm x 6 mm) Optional: 1-1/16" x 8" x 7/32" (27 mm x 203 mm x 6 mm)
Latch	3/4" (19 mm) throw stainless steel latch with anti-friction tongue	Top and bottom via concealed vertical cable	3/4" (19 mm) throw stainless steel latches, top and bottom latches via concealed vertical rod
Deadbolt	1" (25 mm) throw stainless steel deadbolt	—	—
Strike	**L9000 Series** Standard: ANSI curved lip strike 1-1/4" x 4-7/8" (32 mm x 124 mm) x 1-3/16" (30 mm) lip length with dust box Optional: Extended lip strike options (7/8", 1", 1-1/2", 1-3/4", 2") **L400 Series** Standard: 1-1/8" x 3-1/2" (29 mm x 89 mm) with dust box Optional: 1-1/4" x 4-7/8" (32 mm x 124 mm) with dust box	Standard strike only	Standard: ANSI curved lip strike 1-1/4" x 4-7/8" (32 mm x 124 mm) x 1-3/16" (30 mm) lip length with dust box Optional: Extended lip strike options (7/8", 1", 1-1/2", 1-3/4", 2")
Cylinders & Key Systems			
Formats	6-pin Conventional mortise cylinder (standard); also available in concealed mortise cylinder, FSIC, SFIC and 7-pin SL cylinder formats plus less cylinder options; two nickel silver cut keys per lock; compatible with competitor cylinders and cams that support the L9000 Series		
Keyways	Patented Everest 29 S123 (standard); also available in open, restricted, and Primus security levels with available master keying and construction keying		
Wired Electrified			
Input voltage	12V or 24V DC (24V DC only on motorized latch retraction functions)	12V or 24V DC	—
Operating mode	Fail Safe or Fail Secure via switch on chassis (except L9510, L9580, and L9582)	Fail Safe or Fail Secure via switch on chassis	—

Mechanical Product Specifications

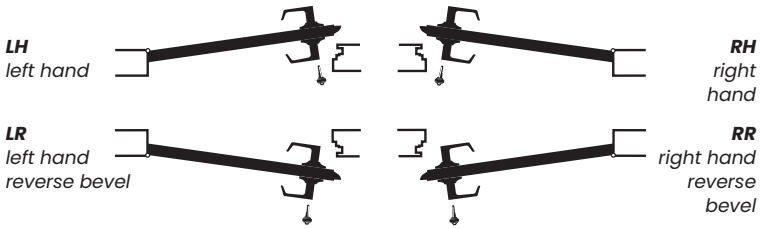
	L Mechanical & L Wired Electrified	LM9200	LM9300
Peak current	12V operating voltage: 1 amp (not applicable to latch retraction functions) 24V operating voltage: 0.4 amp lever control; 1.4 amp latch retraction Holding current: 0.1 amp lever control; 0.1 amp latch retraction		
Request to exit	Modular option on L909X, L949X, L9510, L9580, L9692, and L9695 electrified functions (when ordering or added in field) Available for mechanical functions: L9010/25/26/50/56/70/71/80 and L9453/56/58/65/66/80/85/96 Rating: 3A @ 125V AC/2A @ 30V DC	—	—
Latch bolt monitor	Available on all electrified functions and L9010/25/26/50/56/70/71/80/82 and L9453/56/65/66/80/85/96 mechanical functions	—	—
Door position sensor	Internal available on L909x electrified and L9010/25/26/80/82 mechanical functions; external available on all functions	—	—
Deadbolt monitor	Standard on L949x electrified and available on L9453/56/57/58/80/85/96 mechanical functions	—	—
Warranty			
	10-year limited mechanical and 3-year limited electromechanical	3-year limited mechanical and 1-year limited electromechanical	3-year limited mechanical
Certifications			
ANSI/BHMA	**L/LV9000:** ANSI/BHMA A156.13-2017 Series 1000, Grade 1 Operational and Security With FSIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 2 Security With SFIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 3 Security **L400:** ANSI/BHMA A156.36-2010, Grade 1	ANSI/BHMA A156.37-2014 Grade 1 Operational and Security With FSIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 2 Security With SFIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 3 Security	ANSI/BHMA A156.37-2014 Grade 1 Operational and Security With FSIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 2 Security With SFIC Interchangeable Core Cylinders: Grade 1 Operational, Grade 3 Security
ICC	Complies with ICC A117.1 Accessible and Usable Buildings and Facilities	—	Certified by Intertek and labeled showing compliance to ICC 500-2020, FEMA P-320 (2021), and FEMA P-361 (2021) as required by the International Building Code and Florida Building Code Enhanced Protection Area (EHPA) standard when paired with appropriate Steelcraft doors (all except LM9310 and LM9370 functions)
UL/cUL	**L/LV9000 Series:** UL 10C and CAN/ULC-S104 3-hour fire door (except L9076 and L9077) Electrified functions are UL/ULC listed 3-hour for single-point locking applications UL 437 Listed when using UL 437 Primus cylinder **L400 Series:** L400 UL Listed Auxiliary Lock for 3-hour fire door UL 437 Listed when using UL 437 Primus cylinder	UL 10C and CAN/ULC-S104 90-minute maximum Fire Listing - pairs only UL 437 Listed when using UL 437 Primus cylinder **Hollow metal door applications:** available UL listed for 90-minute fire door with two point latch, one point latch, or double egress with astragal. **Wood door applications:** available UL listed for 60-minute fire door with two point latch or 20-minute fire door with top latch only. (Does not meet Canada UL 20-minute wood door requirement)	UL 10C and CAN/ULC-S104 3-hour fire door UL 437 Listed when using UL 437 Primus cylinder
UL 294	UL 294 Access Control Performance Levels: Destructive Attack - level I; Line Security - level I; Standby Power - level I; Endurance - level IV (with DM or LX, Endurance - level I) ULC-S319 Class III (L909X and L949X functions only)	—	—
CA Fire Code	All levers with a return to door of 1/2" (13 mm) or less comply (Formerly Title 19, California State Fire Marshal Standard)		
Building codes	Miami-Dade NOA and Florida Building Commission Listings Texas Department of Insurance (TDI) for impact and non-impact applications	—	Florida Building Commission Listing for impact rated assemblies
Federal	BAA compliant, all functions		

Wireless Electronic Product Specifications

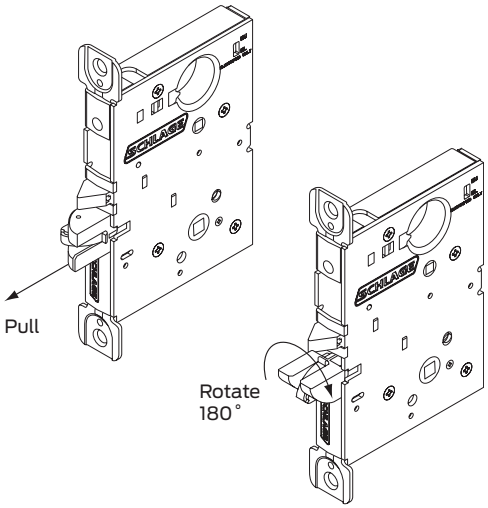
	LE Wireless Electronic	
Chassis		
Case material	CRS with zinc dichromate plating	
Case size	4-7/16" x 6-1/16" x 1" (113 mm x 154 mm x 25 mm)	
Spacing	Knob or lever to cylinder, 3-7/8" (98 mm); knob or lever to thumbturn hub, 2-11/16" (68 mm)	
Door thickness	Standard: 1-3/4" (44 mm) Optional: Up to 2-1/4" (57 mm)	SFIC limited to 2" max
Handing	Handed to order, field reversible	
Trim		
Levers/knobs	31 lever designs (see pages 10-13): Forged brass and cast stainless steel Two knob designs (see page 13): Heavy-duty wrought brass or stainless steel	Tactile warning applied to outside lever; available on 01, 02, 03, 05, 06, 07, 12, 17, 18, M51, M52, M81, ME1, ME2, ME3 lever designs
Roses/escutcheons	Addison escutcheon Greenwich sectional with rose: A, B, C, AVA, MER	Roses: A, B, C can be wrought brass and stainless steel; AVA and MER are forged brass
Finishes	Nine available: 605, 606, 612, 619, 622, 625, 626, 626AM, 643e	
Latches		
Backset	2-3/4" (70 mm) only	
Armor	1-1/4" x 8" x 7/32" (32 mm x 203 mm x 6 mm)	
Bolt	1" (25 mm) throw stainless steel deadbolt	3/4" (19 mm) throw stainless steel latch with anti-friction tongue
Strike	Standard: ANSI curved lip strike 1-1/4" x 4-7/8" (32 mm x 124 mm) x 1-3/16" (30 mm) lip to center with dust box	Optional: Extended lip strike options (1-1/2", 1-3/4")
Cylinders and key systems		
Formats	Standard: Pin and tumbler mechanism in the patented Schlage Everest 29 S123 keyway (6-pin); two nickel silver cut keys per lock	Additional keying options available: Conventional and interchangeable cores; master and grand master keying; compatible with competitor cylinders and cams that support the L9000 Series
Wireless Electronic		
Input voltage	4 AA batteries	
Functions	LEBMS: Storeroom LEBMB (selectable): Office, Privacy, Apartment	LEBMD (selectable): Privacy, Apartment
Communication	2.4 GHz Wi-Fi® (IEEE 802.11b/g/n) WPA2, WPA, WEP, 802.1x Bluetooth® Low Energy (version 4.2)	Transport Layer Security (TLS) version 1.2 Advanced Encryption Standard (AES), 256-bit
Request to Exit	Integrated into chassis	
Door position sensor	Integrated in chassis for LEMS and LEMB, separate from chassis for LEMD	
Tamper sensor	Integrated interior cover tamper	
Operating temperature	Exterior: -31° to 151°F (-35° to 66°C) Exterior: -13° to 151°F (-25° to 66°C) (LEBSi) Interior: 32° to 120°F (0° to 49°C) (battery)	
Operating humidity	0–100% non-condensing	
Warranty		
	1 year wireless electronic	
Certifications		
ANSI/BHMA	ANSI/BHMA A156.25-2013 (indoor/locked outdoor) ANSI/BHMA A156.13-2017 Series 1000, Grade 1 Operational and Security	With FSIC interchangeable core cylinders: Grade 2 Security With SFIC interchangeable core cylinders: Grade 3 Security
ICC	Complies with ICC A117.1 Accessible and Usable Buildings and Facilities, IC RSS-210	
UL/cUL	UL 10C and CAN/ULC-S104 3-hour Fire Listed All locks listed for A label single doors, 4' x 10' and pairs 8' x 10' Letter F and UL symbol on latch front indicate listing	Electrified functions are UL/ULC Listed for single-point locking applications UL 437 Listed when using UL 437 Primus cylinder UL 294 UL ULC 60839
CA Fire Code	All levers with a return to door of 1/2" (13 mm) or less comply	(Formerly Title 19, California State Fire Marshal Standard)
FL Building Code	Florida Building Commission Listings (FL1592, FL3905, FL4613, FL10356, FL12400, FL14482)	

Lock Handing

One of the revolutionary features of the L Series mortise lock is that handing can be done by the distributor or installer quickly and easily without opening the lock case.

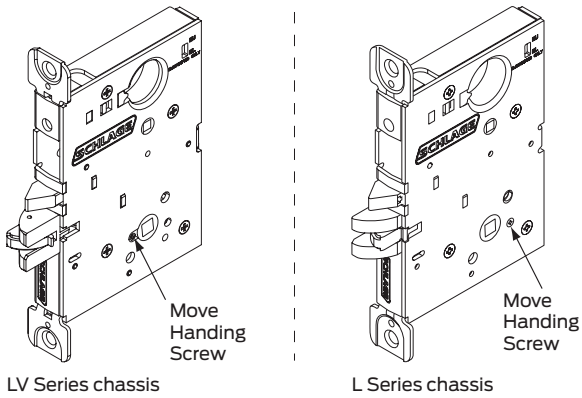


The hand is determined by the direction the door swings when viewed from the exterior or corridor side of the door.



Two simple steps allow you to change the handing of any L Series lock:

1. With the lock case removed from the door, pull the latchbolt away from the lockcase and rotate 180°.
2. Remove the lock handing screw from one side of the chassis and install it on the opposite side. The lock handing screw should always be on the interior side of the door.

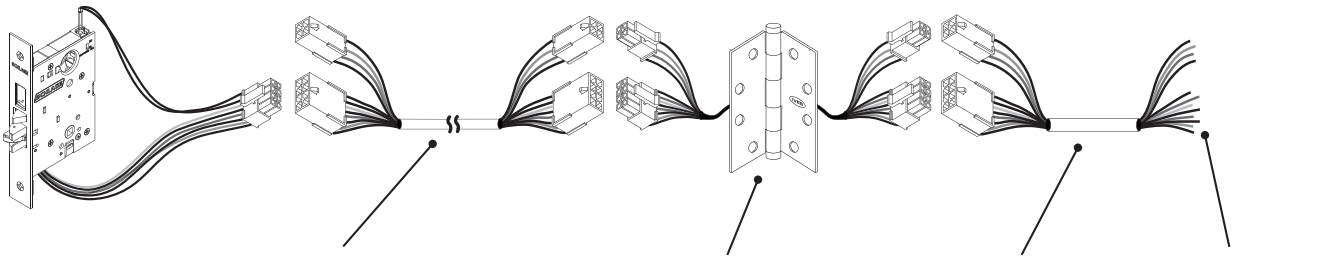


Electrified Lock Installation

The L Series electrified locks are powered by DC power only. All electrified locks are supplied with Allegion Connect Molex style connectors as well as an extended length Molex to traditional terminal wiring harness.

Allegion Connect

This factory-installed Molex connector system utilizes quick-connect harnesses and hinges for a quick and easy way to connect power sources; all the way from your power supply to electrified door hardware. Alternately, the connector can be cut off and the lock installed with traditional wire splicing methods. Note that the Allegion Connect harnesses and hinges are sold separately.



About Allegion

At Allegion (NYSE: ALLE), we design and manufacture innovative security and access solutions that help keep people safe where they live, learn, work and connect. We're pioneering safety with our strong legacy of brands like CISA®, Interflex®, LCN®, Schlage®, SimonsVoss® and Von Duprin®. Our comprehensive portfolio of hardware, software and electronic solutions is sold around the world and spans residential and commercial locks, door closer and exit devices, steel doors and frames, access control and workforce productivity systems.

For more, visit **www.allegion.com**

KRYPTONITE ■ LCN ■ SCHLAGE ■ STEELCRAFT ■ VON DUPRIN

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ALLEGION™

SCHLAGE



ND Series

Grade 1 Cylindrical Locks

Mechanical | Wired Electrified | Wireless Electronic

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How To Videos > www.youtube.com/SchlageSecurity
or us.allegion.com/supportvideos
Code Support > idighardware.com

Master Key Support

Mechanical_Locks_TechProdSupport@allegion.com

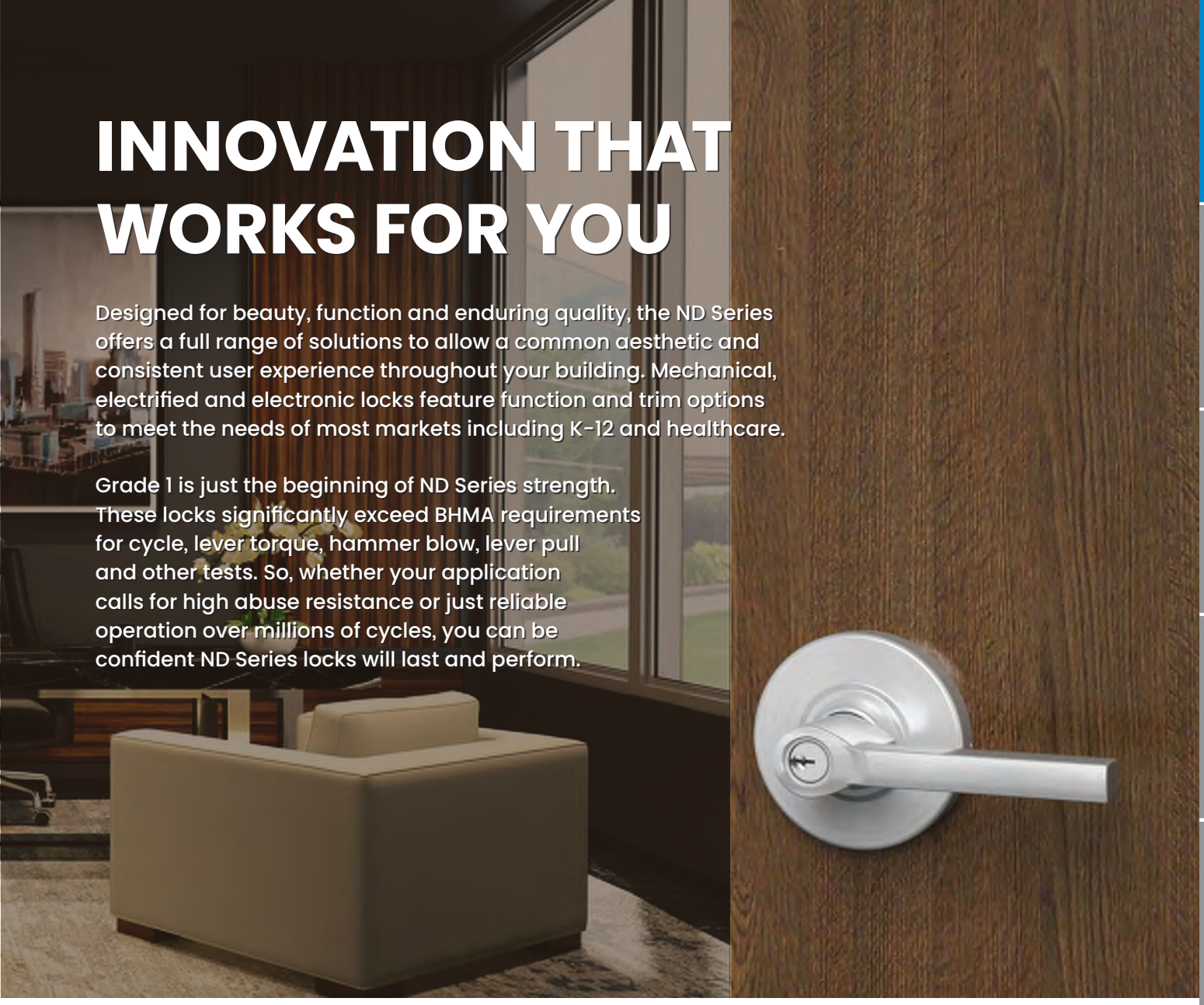
Ordering
U.S. > Customer Service
Canada > Canada.Masterkey@allegion.com
International > Intl.SCH.SS@allegion.com

Restricted Account Support

KeyControlDepartment@allegion.com
Support.restrictedproduct@allegion.com > Sign In

Overtur™ Key System Support

Support.overtur.allegion.com > Submit a ticket



INNOVATION THAT WORKS FOR YOU

Designed for beauty, function and enduring quality, the ND Series offers a full range of solutions to allow a common aesthetic and consistent user experience throughout your building. Mechanical, electrified and electronic locks feature function and trim options to meet the needs of most markets including K-12 and healthcare.

Grade 1 is just the beginning of ND Series strength. These locks significantly exceed BHMA requirements for cycle, lever torque, hammer blow, lever pull and other tests. So, whether your application calls for high abuse resistance or just reliable operation over millions of cycles, you can be confident ND Series locks will last and perform.

A Legacy of Trust

Over a century ago, Walter Schlage invented the cylindrical lock. His was a simple solution to a problem hidden in plain sight, and from it he built a company that has since grown to become one of the most recognizable names in the security industry. Delivering on quality and building on the trust of our customers, Schlage continues a legacy of providing innovative locking hardware and access control solutions to suit all types of commercial, institutional and multifamily spaces. And, everything we do is backed by friendly, knowledgeable service and support.

Beyond the Brand

Schlage is part of the Allegion family of safety and security solutions featuring other pioneering brands like LCN® and Von Duprin®. Focusing on security around the door and in adjacent areas, we strive to be a trusted advisor to our customers, providing seamless access solutions to secure buildings, people and property. We do this by collaborating with our customers and offering valued services that support their day-to-day responsibilities, including architectural and specification consulting, security and safety consulting, technical services, code compliance support, and training.



STRONG

The ND Series is designed to be the strongest cylindrical lock Schlage has ever built.

- Prevents entry and maintains egress against 3,100 in-lb abusive lever torque—the equivalent of over 690 lbs applied to the end of a 4-1/2" lever (2.6x BHMA requirements)
- Restricts entry against 1,600 lbs offset lever pull (8x BHMA requirements)
- Withstands attack against 100 vertical impacts[1] (20x BHMA requirements)
- Near zero droop and wobble after 16M cycles (16x BHMA requirements)
- Latch retraction with 200-lb preload for confident operation in warped and preloaded doors (4x BHMA requirements)

Note: Performance related to cylinder pull testing requirements is dependent on cylinder format and may not meet full Grade 1 requirements when an interchangeable core is used.

1. Vertical impact testing stopped after 100 blows with no sign of failure or stress.

SECURE

A strong lock is only part of the security equation—proper key and card access control is equally important.

- Everest 29™ cylinder with S123 keyway is provided standard which prohibits unauthorized key duplication at local retail stores and is patent protected until 2029
- Dealer and end user restricted, geographically exclusive Primus cylinder options for advanced key control
- Available compatibility with 10 different non-Schlage key systems
- The unique SL cylinder option is designed to accept the same Schlage A2 key system of SFIC cylinders, enabling one key system to span Conventional, FSIC and SFIC cylinder formats for better control
- Wired electrified and wireless electronic locks enable the use of electronic credentials for increased visibility and control over access
- Schlage smart credentials using MIFARE® DESFire® technology utilize encryption, mutual authentication and key diversification to ensure the highest levels of security



SMART

Smart means using innovation to make solutions more efficient, flexible, and easier to install and use.

- One platform, three solutions (mechanical, wired electrified, wireless electronic)—same look and feel throughout the building for a consistent user experience and lower cost of ownership
- Wired electrified lock has autodetecting 12/24V input, selectable fail safe/fail secure operation, and plug-in Request to Exit (RX) for installation and inventory flexibility
- Energy efficient design allows multiple locks on a single power supply with no “hot levers”
- Wireless electronic locks can be managed real-time by a wide variety of access control systems using the ENGAGE™ Gateway
- Wireless electronic locks provide the option to leverage existing network infrastructure to manage access and communicate updates
- Mobile enabled wireless locks are ready for the future with the ability to read Bluetooth® and NFC mobile credentials
- Shared door prep allows upgrade from ND mechanical lock to NDE wireless electronic with minor modifications

SCHLAGE®

More than just locks, Schlage delivers a complete portfolio and an infrastructure of support throughout the entire build and ownership process.

- Order entry, customer service, technical support, engineering and manufacturing are co-located in the same building in Colorado Springs, Colorado
- Comprehensive support from our sales offices includes consultations, masterkey development and training, industry and code training, specification writing, and product service
- Schlage products suite with other Allegion brands including Von Duprin® exit devices, LCN® door closers and Steelcraft® doors and frames
- A custom engineering department that can develop specialized functions, trim and finishes for unique applications
- Trusted brand for over 100 years

ND SERIES OFFERS A GRADE 1 SOLUTION FOR THE ENTIRE PROJECT

ND Mechanical



Suitable for all openings

ND Wired Electrified

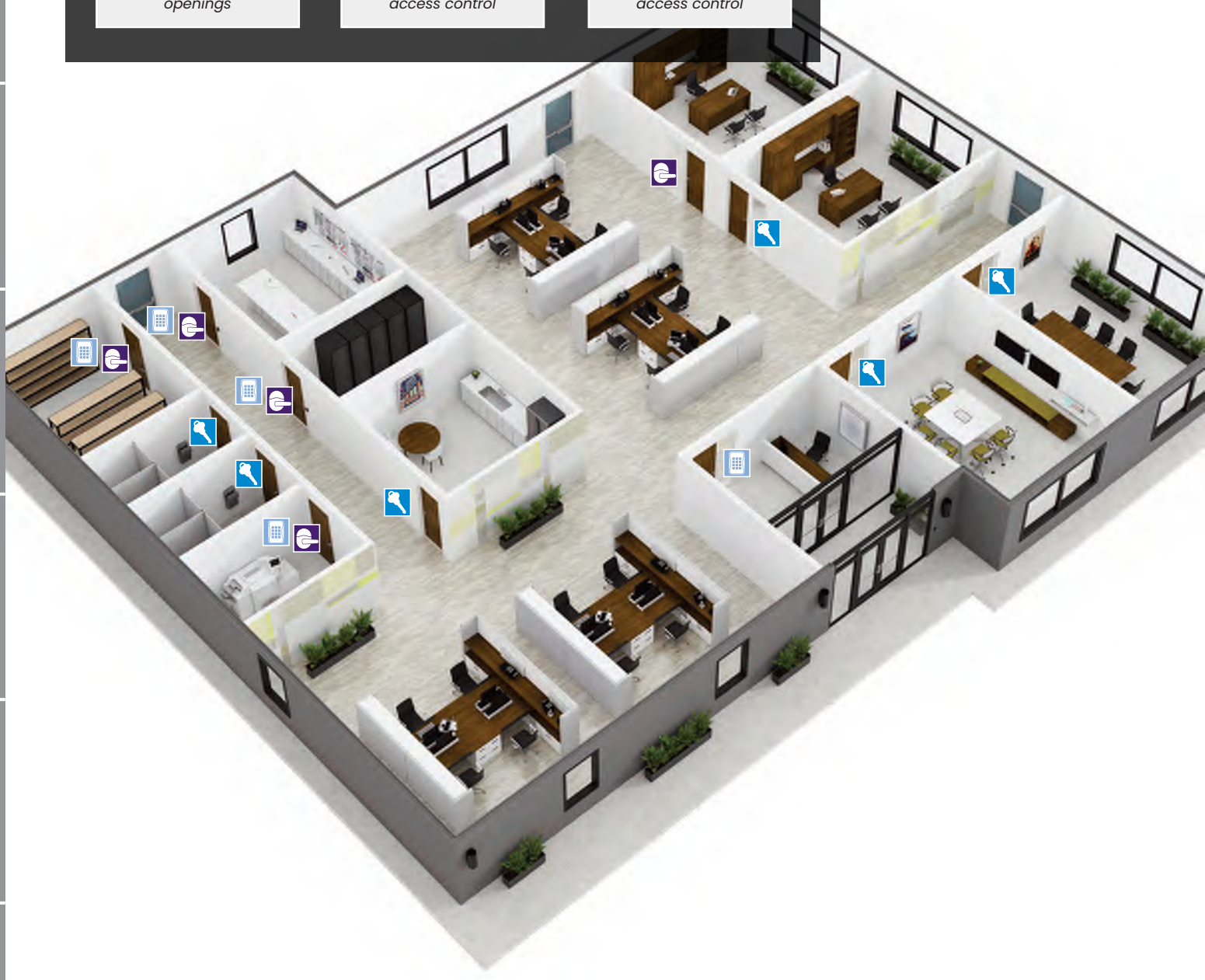


Ideal for high-traffic access control

NDE Wireless Electronic



Ideal for low-traffic access control



ND MECHANICAL



Applications

The ND Series' functional and trim offerings are the most expansive of the Schlage cylindrical lock portfolio. This extremely versatile lock is made to handle the abuses of heavy use in any commercial setting. Options include best-in-class lock status indication ideal for classroom security and ligature-resistant options for the healthcare market.

Because ND uses an ANSI door prep common across cylindrical locks, it is ideal for both new construction and retrofit upgrades.

Key Features

- Significantly exceeds ANSI/ BHMA A156.2 requirements for Grade 1 cylindrical locks
- 27 mechanical functions plus eight that feature Vandlgard® locked lever protection
- Nine lever designs, two rose designs, status indication and ligature-resistant trim options
- Nine standard finishes, plus an antimicrobial coating option
- Supports Conventional, FSIC, SL and SFIC cylinder formats plus high-security UL 437 options
- Multiple key systems available – open, patented, restricted, and geographically exclusive
- Support for 10 non-Schlage cores (see cylinder section)

ND WIRED ELECTRIFIED



Applications

Electrified locks complement mechanical ND Series where wired electronic access control solutions are desired. They can be applied as part of a network or independently with a remote access switch such as may be used for a reception area.

Electrified ND locks are ideal for high-traffic areas where line power ensures continuous operation. They are most easily incorporated into new construction where electrified door prep, conduit hinges, and wiring is planned for the building.

Key Features

All mechanical features plus:

- Combines mechanical strength with the convenience of electronic access control
- Auto-detects 12V or 24V DC
- Selectable EL/EU operation
- Three electrified functions
- Low 0.24 amp max current draw allows multiple locks on a single power supply
- Low 0.01 amp holding current eliminates "hot levers" in electrically locked applications
- Modular Request-to-Exit (RX) can be added at any time

NDE WIRELESS ELECTRONIC



Applications

NDE mobile enabled wireless locks are designed to affordably extend electronic access control deeper into the building beyond traditional perimeter and high security openings.

The NDE is ideal for both commercial new construction and retrofit. Facilities can benefit from the enhanced security, efficiency, and convenience of upgrading to electronic credentials.

Key Features

All mechanical features[1] plus:

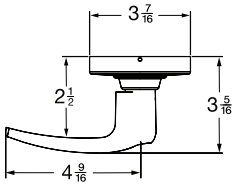
- Interior push button with indication for storeroom, office, privacy and apartment functionality
- Compatible with Bluetooth, NFC, smart, or proximity credentials
- Integrated credential reader, door position sensor, and request-to-exit (RX) switch
- Built-in Bluetooth® enables wireless configuration from smart phones/tablets
- Functions in offline or No-Tour mode or as a networked lock with either periodic check-ins or real-time management
- Up to 2 years of battery life

1. NDE wireless electronic is not available in 613 finish.

Lever Designs & Finishes

Athens (ATH)

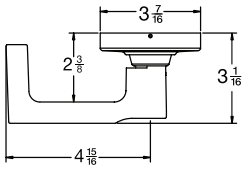




Cores *KIL, FSIC, SFIC, L-CO, L-SA, J-CO6, J-ME, J-SA, J-YA6*

Boardwalk (BRK)[1]

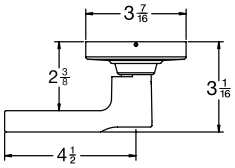




Cores *KIL, FSIC, SFIC*

Broadway (BRW)

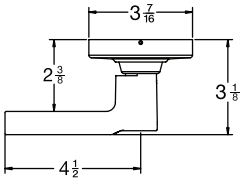




Cores *KIL, FSIC, SFIC*

Latitude (LAT)

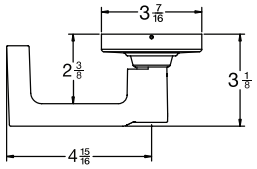




Cores *KIL, FSIC, SFIC*

Longitude (LON)[1]

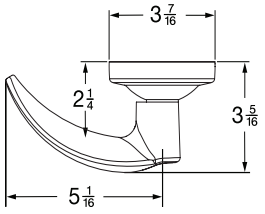




Cores *KIL, FSIC, SFIC*

Omega (OME)[1]

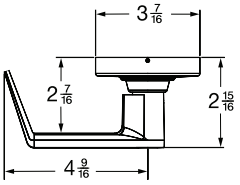




Cores *KIL, FSIC, SFIC*

Rhodes (RHO)[1]

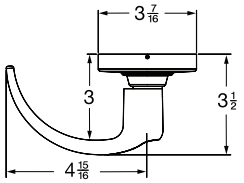




Cores *KIL, FSIC, SFIC, L-CO, L-SA, J-CO6, J-CO7, J-ME, J-SA, J-YA6, J-YA7*

Sparta (SPA)[1]

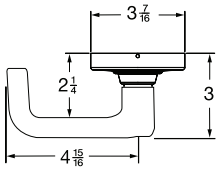




Cores *KIL, FSIC, SFIC, L-CO, L-SA, J-CO6, J-ME, J-SA, J-YA6*

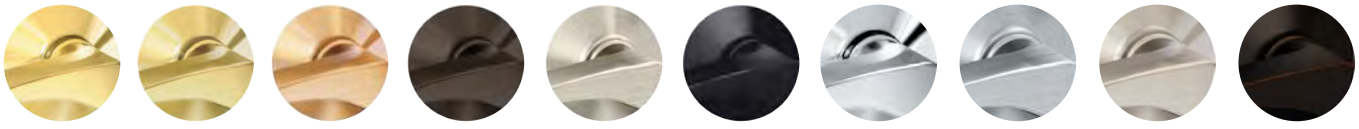
Tubular (TLR)[1]





Cores *KIL, FSIC, SFIC, L-CO, L-SA, J-CO6, J-ME, J-SA, J-YA6*

Finishes



605	606	612	613[2]	619	622	625	626/626AM	630[3]	643e
Bright Brass	Satin Brass	Satin Bronze	Oil Rubbed Bronze	Satin Nickel	Matte Black	Bright Chrome	Satin Chrome/ Antimicrobial	Satin Stainless Steel	Aged Bronze

1. Boardwalk, Longitude, Omega, Rhodes, Sparta, and Tubular levers comply with California state code for return within 1/2" of door face.
2. NDE wireless electronic locks not available in 613 and 630 finishes.
3. Available on HSLR trim only.

Lever & Finish Suiting

ND Series levers suite widely across mechanical and electronic solutions to provide design and finish options that can carry throughout your building, campus or business.

	Schlage Mechanical/ Electrified Locks			Schlage Locks Electronic			Von Duprin Exits	
	Cylindrical			Wireless		Wired	Exterior Trims	
Reference[1]	ND Series	ALX Series	PC Series	NDE[2]	AD Series[3] CO Series[3]	AD Series[3]	98/99[4]	33A/35A[5] 94/95[5]
Athens (07)	●	●	●	●	●	●	●	●
Boardwalk (M81)	●	●	●	●	●	●	●	●
Broadway (M52)	●	●	●	●	●	●	●	●
Latitude	●	●	●	●	●	●	●	●
Longitude	●	●	●	●	●	●	●	●
Omega / VD 16	●	●		●	●	●	●	●
Rhodes / VD 06	●	●	●	●	●	●	●	●
Sparta / VD 17	●	●	●	●	●	●	●	●
Tubular / VD 03	●	●	●	●	●	●	●	●

1. Von Duprin uses numerical references when available.
2. NDE is not available in 613 finish.
3. AD/CO Series are not available in 609, 613, 622, 629, or 630/630AM finishes.
4. 98/99 exit devices are not available in 609 or 629 finishes.
5. 94/95 exit devices are not available in 609, 619, 629, 630/630AM, or 643e finishes.

Perfect Suiting with ALX Series Grade 2 Locks

The ALX Series is nearly indiscernible from the ND Series on the outside. It's made to "perfectly suite" with ND providing a cost saving alternative on projects where Grade 2 locks can be utilized. Function options for ALX Series represent interior doors most appropriate for Grade 2 applications. Please see the reference chart on page 25 for a function availability comparison.



Schlage Locks



PC Series Cylindrical Locks / Grade 1

PC series offers a price sensitive alternative designed to meet grade one standards for use primarily within the multi-family market. These locks are offered in six finishes and eight of the most common functions.



AD & CO Series Electronic Locks / Grade 1

In addition to the NDE wireless electronic locks for entries where credential use is important, the AD and CO Series locks provide additional functional options for networked and standalone use.

Von Duprin Exit Devices



98/99 Exit Devices / Grade 1

The 98/99 Series is engineered, manufactured, and tested for superior performance. Designed for flexibility, these devices are configurable and upgradable to meet customer needs.



33A/35A Exit Devices / Grade 1

Offering the same innovative features as the 98/99 Series, the 33A/35A Series of exit devices is intended for narrow-stile doors.



94/95 Exit Devices / Grade 1

The 94/95 pushbar is recessed into the door to minimize the external profile, allowing more protection from abuse by reducing impact.