

SECTION 08 70 00
DOOR HARDWARE SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule of door hardware sets for swinging, sliding, folding, and other door types as indicated on drawings.

1.02 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Requirements to comply with in coordination with this section.

1.03 REFERENCE STANDARDS

- A. BHMA A156.18 - American National Standard for Materials and Finishes; 2012.
- B. DHI (H&S) - Sequence and Format for the Hardware Schedule; 1996.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Only manufacturers listed in Door Hardware Schedule or Section 08 71 00 are considered acceptable, unless noted otherwise.
- B. Obtain each type of door hardware as indicated from a single manufacturer and single supplier.
- C. Manufacturer's Abbreviations: Coordinate with manufacturers listed in Section 08 71 00.
 - 1. AR - Adams Rite.
 - 2. CR - Corbin Russwin.
 - 3. CRL - C. R. Laurence.
 - 4. DMA - Dorma.
 - 5. HGR - Hager.
 - 6. HIA - Hiawatha.
 - 7. IVE - Ives.
 - 8. LCN - LCN.
 - 9. McK - McKinney.
 - 10. PEM - Pemko.
 - 11. RIX - Rixson.
 - 12. ROC - Rockwood.
 - 13. SA - Sargent.
 - 14. SCH - Schlage.
 - 15. SDC - Stanley Door Closers.
 - 16. SH - Stanley Hinges.
 - 17. STH - Stanley Commercial Hardware.
 - 18. TR - Trimco.
 - 19. VD - Von Duprin.

2.02 DESCRIPTION

- A. Door hardware sets provided represent the design intent, they are only a guideline and should not be considered a detailed or complete hardware schedule.
 - 1. Provide door hardware item(s) as required for similar purposes, even when item is not listed for a door in Door Hardware Schedule.

2. Door hardware supplier is responsible for providing proper size and hand of door for products required in accordance with Door Hardware Schedule and as indicated on drawings.
3. Quantities listed are for each Pair (PR) of doors, or for each Single (SGL) door, as indicated in hardware sets.

2.03 FINISHES

- A. Finishes: Complying with BHMA A156.18.

PART 3 EXECUTION

301 DOOR HARDWARE SCHEDULE

- A. Guide: Door hardware items have been placed in sets which are intended to be a guide of design, grade, quality, function, operation, performance, exposure, and like characteristics of door hardware, and may not be complete. Provide door hardware required to make each set complete and operational.
- B. Hardware schedule does not reflect handing, backset, method of fastening and like characteristics of door hardware and door operation.
- C. Review door hardware sets with door types, frames, sizes and details on drawings. Verify suitability and adaptability of items specified in relation to details and surrounding conditions.

3.01 HARDWARE SCHEDULE

Set #1 Classrooms – Learning Labs Out Swing to wall at 90 degrees

Door Numbers: E101, E102, E104, E106, E112, E113, E114, E115, E116, E117, E118, E119, E146, E151, E201, E202, E203, E204, E205, E206, E208, E210A, E210B, E211, E212, E213, E214, E215, E216, E217, E218, E220, E225, E239, F101, F102, F103, F104, F105, F106, F107, F108, F201, F202, F203, F204, F205, F206, F207, F208
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5” x 4.5” NRP	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Kick Plate	190S 10” x 2” LDW	US32D HAG
1 ea.	Floor Stop/Holder	327W	US26D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #1A Classrooms – Learning Labs Out Swing with OH stop

Door Numbers: E103, E105
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5” x 4.5” NRP	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	O.H. Holder	7017 SRF	US26D HAG
1 ea.	Kick Plate	190S 10” x 2” LDW	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #2 Learning Lab, Offices, In-Swing

Door Numbers: C105A, C105B, C106A, C106B, D109, D111, D113A, D113B, D114, D115, D116, D117, D123, D138, D150, D160, D161, E109A, E109B, E110, E111, E134, E140, E143, E148, E207, E209, E223, E221, E222, E224, E229, E240, E242

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #3 Offices, In-Swing & alcove out-swing with closer

Door Numbers: C105A, C106A, C107A, D103A, D103.1, D103B, D104, D119B, D120A, D120B, D122, D127, D132B

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #3A Band Room

Door Numbers: C112A

Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Surface Bolt	275D	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Closer	4111 CUSH (Active leaf)	ALM LCN
1 ea.	O.H. Holder	7016 SRF (Inactive leaf)	US26D HAG
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door opening width	MIL HAG
1 ea.	Sound Gasket	726 head and jambs	Char HAG
1 ea.	Sound Gasket	722 Meeting stiles at astragal	Char HAG
2 ea.	Concealed Auto. Door Bottoms	730S N door width	MIL HAG
1 ea.	Astragal	835S door height	MIL HAG

Set #3B Choral Room, Music Room

Door Numbers: C110, C111A

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
1 ea.	Threshold	412S door opening width	MIL HAG
1 ea.	Sound Gasket	726 head and jambs	Char HAG
1 ea.	Concealed Auto. Door Bottom	730S N door width	MIL HAG

Set #4 Classroom, Nurses, Faculty & Cafeteria Sgl. Use Toilets

Door Numbers: D125, D126, D128, D129, D131.1, D136, E102.1, F111A, F111B, F211A, F211B

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Privacy Lock, with indicator	L9496 06A	US26D SCH
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
3 ea.	Silencers	307D	Gray HAG

Set #4A Classroom, Nurses, Faculty & Cafeteria Sgl. Use Toilets

Door Numbers: D105, D106

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Privacy Lock, with indicator	L9496 06A	US26D SCH
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
3 ea.	Silencers	307D	Gray HAG

Set #5 Sensory Room (BSAP)

Door Numbers: F112A, F112B, F210A, F210B

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5"	US26D HAG
1 ea.	Passage Latch	L9010 06A	US26D SCH
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Floor Stop	242F	US26D HAG
3 ea.	Silencers	307D	Gray HAG

Set #6 Fire Rated Dry Storage Kitchen

Door Numbers: D133
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5"	US26D HAG
1 ea.	Passage Latch	L9010 06A	US26D SCH
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
3 ea.	Silencers	307D	Gray HAG
1 ea.	Magnetic Holders	380 Series wall mount	ALM HAG

Description of Operation: Doors normally closed and latched. Magnetic holders provided to allow easier access or egress for loading and unloading food storage. Connect magnetic holders to the fire alarm system so they shunt (de-energize) in the event of a fire so door releases to mechanically latch for fire barrier.

Set #7 Storage, Interior Roof Access – Out Swing

Door Numbers: C111.1, C112.1, D119.1, D130, D131.2, E130.1, E132, E234.1, E245, F110, F212
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	O.H. Holder	7016 SRF	US26D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #7A Fire Pump Room, Storage Closet – Out Swing – Fire Rated

Door Numbers: C103A, C104
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #8 Storage, IDF – In Swing

Door Numbers: D108, D110, D112, D120.1, D124, D137, D162, E144, E147, E150, E227, E241
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #9 Exterior Storage

Door Numbers: D154A, D154B
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	O.H. Holder	7016 SRF	US26D HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
1 ea.	Sweep	770S V door width	MIL HAG

Set #10 Exterior Class access

Door Numbers: C103B, C107B, C111B, C112B
Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Closer	4111CUSH	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
1 ea.	Sweep	770S V door width	MIL HAG
1 ea.	Drip Cap	810S door width + 4"	MIL HAG

Set #11 Exterior Utility - Pair

Door Numbers: C101B
 Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Flush Bolt	282D	US26D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	O.H. Holder	7016 SRF (2'0" inactive leaf)	US26D HAG
1 ea.	Closer	4111HCUSH (3'0" active leaf)	ALM LCN
1 ea.	Gasket	726 head and jambs	Char HAG

Set #11A Exterior Utility – Pair with Card Reader

Door Numbers: D132A
 Each opening to receive:

Qty.	Type	Description	Finish
1 ea.	Electrified Hinge	BB1191 4.5" x 4.5" ETW	US32D HAG
5 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Flush Bolt	282D	US26D HAG
1 ea.	Electric Storeroom Lock	L9080REU 06A	US32D SCH
1 ea.	Core	Match Existing System	US26D SCH
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
2 ea.	Closer	4111 HCUSH	ALM LCN
1 ea.	Threshold	412S door opening width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweeps	770S V door width	MIL HAG
1 ea.	Power Supply	2903	- HAG

120VAC power, conduit and wiring by Division 26.

Card Reader by Division 28.

Description of Operation: Door normally closed and locked. Key retracts latch. Removing key leaves door locked. Access upon proper credential validation at the card reader. In the event of a power failure the lock-set remains locked (fail secure). Free egress at all times

Set #12 Interior Utility - Pair

Door Numbers: D163
Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Flush Bolt	282D	US26D HAG
1 ea.	Storeroom Lock	L9080R 06A	US26D HAG
1 ea.	Core	Match Existing System	US26D -
1 ea.	O.H. Holder	7016 SRF (2'0" inactive leaf)	US26D HAG
1 ea.	Closer	4111 HCUSH (3'0" active leaf)	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweep	770S V door opening width	MIL HAG
1 ea.	Drip Cap	810S door opening width + 4"	MIL HAG

Set #12A Interior Utility - Pair

Door Numbers: C101A, D119A
Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Flush Bolt	282D	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	O.H. Holder	7016 SRF (2'0" inactive leaf)	US26D HAG
1 ea.	Closer	4111 HCUSH (3'0" active leaf)	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweep	770S V door opening width	MIL HAG
1 ea.	Drip Cap	810S door opening width + 4"	MIL HAG

Set #13 Interior Stage – Pair – Fire rated

Door Numbers: C119A
Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
1 set	Automatic Flush Bolt	292D	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
2 ea.	Closer	4111 HCUSH (3'0" active leaf)	ALM LCN
1 ea.	Coordinator	297D	USP HAG
2 ea.	Mtg Brackets	297M/N	USP HAG
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
2 ea.	Magnetic Holders	380 Series wall mount	ALM HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweep	770S V door opening width	MIL HAG
1 ea.	Drip Cap	810S door opening width + 4"	MIL HAG

Description of Operation: Doors normally closed and latched. Active leaf lever trim locked or unlocked with key. Magnetic holders provided to allow easier access to the stage area. Connect magnetic holders to the fire alarm system so they shunt (de-energize) in the event of a fire so doors release to mechanically latch for fire barrier.

Set #14 Interior Auditorium Main entrance – Unequal Pair

Door Numbers: C118B, C118C, C118D, C118E, C118F
Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 set	Automatic Flush Bolt	296W (2'0" inactive leaf)	US26D HAG
1 ea.	Mortise Panic Device	9875-L-06 (3'0" active leaf)	US26D HAG
1 ea.	Mortise Cylinder & Core	Match Existing System	US26D -
2 ea.	Closer	4111 HCUSH	ALM HAG
1 ea.	Coordinator	297D	USP HAG
2 ea.	Mtg Brackets	297M/N	USP HAG
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #15A Art Room Access – Unequal Pair – Fire Rated

Door Numbers: C101A

Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 set	Automatic Flush Bolt	292D (2'0" inactive leaf)	US26D HAG
1 ea.	Classroom Intruder Lock	L9071R 06A	US26D SCH
2 ea.	Core	Match Existing System	US26D SCH
1 ea.	Coordinator	297D	USP HAG
2 ea.	Mtg Brackets	297M/N	USP HAG
2 ea.	Closer	4111 CUSH	ALM HAG
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
2 ea.	Magnetic Holders	380 Series wall mount	ALM HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Description of Operation: Doors normally closed and latched. Lock set locked or unlocked with key. Magnetic holders provided to allow easier access or egress with art work. Connect magnetic holders to the fire alarm system so they shunt (de-energize) in the event of a fire so doors release to mechanically latch for fire barrier.

Set #15 Interior Auditorium Access – Unequal Pair – Fire Rated

Door Numbers: C118A, C119D

Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1279 4.5" x 4.5" NRP	US26D HAG
1 set	Automatic Flush Bolt	292D (2'0" inactive leaf)	US26D HAG
1 ea.	Mortise Fire Exit Device	9875F-L (3'0" active leaf)	US26D HAG
1 ea.	Mortise Cylinder & Core	Match Existing System	US26D -
1 ea.	Coordinator	297D	USP HAG
2 ea.	Mtg Brackets	297M/N	USP HAG
2 ea.	Closer	4111 CUSH	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
2 ea.	Magnetic Holders	380 Series wall mount	ALM HAG
1 ea.	Threshold	412S door width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Description of Operation: Doors normally closed and latched. Active leaf lever trim locked or unlocked with key. Magnetic holders provided to allow easier mass access or egress for venue. Connect magnetic holders to the fire alarm system so they shunt (de-energize) in the event of a fire so doors release to mechanically latch for fire barrier.

Set #16 Stairs – Fire Rated

Door Numbers: ST2.1A, ST2.2, ST3.1A, ST3.2

Each opening to receive:

Qty.	Type	Description	Finish
All hardware by Total Door Systems integrated steel doors for 90 degree hold open			

Set #17 Stairs & Cross Corridor - Pair – Fire Rated

Door Numbers: C113A, C117A, D140, ST1.2, ST4.1A, ST4.2
Each opening to receive:

All hardware by Total Door Systems integrated steel doors for 90 degree hold open

Set #17A Stairs & Cross Corridor - Pair – Fire Rated

Door Numbers: ST1.1A
Each opening to receive:

All hardware by Total Door Systems integrated steel doors for 180 degree hold open

Set #18 Lobby from Stairs - Pair – Fire Rated

Door Numbers: ST1.1B
Each opening to receive:

Qty.	Type	Description	Finish
2 ea.	Hinges	BB1279 5" x 4.5" ETW	US26D HAG
4 ea.	Hinges	BB1279 5" x 4.5" NRP	US26D HAG
2 ea.	MLR Fire Exit Device SVR	9827-F-LBR-QEL-LNL-06 w/fire bolt	US26D VD
1 ea.	Rim Cylinder & Core	Match Existing System	US26D -
2 ea.	Closer	4000	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
2 ea.	Wall Stop	236W	US32D HAG
1 ea.	Gasket	726 head and jams	Char HAG
1 ea.	Power Supply	2903	- HAG
1 ea.	Key Switch	29KS 2LED	US32D HAG
1 ea.	Mortise Cylinder & Core	Match Existing System (for key switch)	US26D -

Description of Operation: Key retracts latch. Removing the key leaves the door locked. Key switch can be turned on to electrically dog the fire exit devices for push and pull operation as required. MLR devices must be connected to the fire alarm to shunt (de-energize) in the event of a fire alarm.

Set #19 Stairs – Pair Alum Exterior Non- Rated

Door # C106E, C106F, C106G, C117B, C117C, C117D, D101C, D121B, ST4.1B
Each opening to receive:

Qty	Type	Description	Finish
2 ea.	Continuous Hinge	780-224 HD	Clear HAG
2 ea.	Rim Exit Device	CD35A-EO	US26D VD
2 ea.	Mortise Cylinder & Core	Match Existing System (for CD)	US26D SCH
2 ea.	Off-set Pulls	11J	US32D HAG
1 ea.	Keyed Rem. Mullion	4900T	USP HAG
1 ea.	Rim Cylinder & Core	Match Existing System (for KRM)	US26D -
2 ea.	Closer w/hold open	4111 HCUSH	ALUM LCN
2 ea.	Drop Plate	5110 (as required)	ALUM HAG
2 ea.	Blade Stop Spacer	5113 (as required)	ALUM HAG
1 ea.	Threshold	412S	MIL HAG

Weather-strip and sweeps by door manufacturer.

Set #19A Stairs – Pair Alum Exterior Non- Rated with Card Reader

Door # D101B, D121A, D155, E120, ST2.1B, ST3.1B, ST4.1C

Each opening to receive:

Qty	Type	Description	Finish
2 ea.	Continuous Hinge	780-224 HD	Clear HAG
1 ea.	Rim Exit Device	CD35A-EO (Inactive Leaf)	US26D VD
1 ea.	MLR Rim Exit Device	4601 MLR Night Latch (NL)	US32D HAG
1 ea.	Rim Cylinder & Core	Match Existing System (for NL)	US26D SCH
1 ea.	Mortise Cylinder & Core	Match Existing System (for CD)	US26D SCH
2 ea.	Off-set Pulls	11J	US32D HAG
1 ea.	Keyed Rem. Mullion	4900T	USP HAG
1 ea.	Rim Cylinder & Core	Match Existing System (for KRM)	US26D SCH
2 ea.	Closer w/hold open	4111 HCUSH	ALUM LCN
2 ea.	Drop Plate	(as required)	ALUM LCN
2 ea.	Blade Stop Spacer	(as required)	ALUM LCN
1 ea.	Threshold	412S	MIL HAG
1 ea.	Power Supply	2904	- _ HAG

Weather-strip and sweeps by door manufacturer.

120VAC power, conduit and wiring by Division 26.

Card Reader by Division 28.

Description of Operation: Door normally closed and locked. Key retracts latch. Removing key leaves door locked.

Access upon proper credential validation at the card reader. In the event of a power failure the device remains locked (fail secure). Free egress at all times

Set #20 Stairs – Pair Alum Vestibule Non- Rated

Door # D131D

Each opening to receive:

Qty	Type	Description	Finish
2 ea.	Cont. Hinge	780-224HD	Clear HAG
2 ea.	Push/Pull Bars	157V	US32D HAG
		Center push bar in door stiles	
2 ea.	Closer w/hold open	4111 CUSH	ALUM LCN
2 ea.	Drop Plate	5110 (as required)	ALUM HAG
2 ea.	Blade Stop Spacer	5113 (as required)	ALUM HAG
1 ea.	Threshold	412S door opening width	MIL HAG

Weather-strip and sweeps by door manufacturer.

Set #21 Stairs – SGL. Alum Exterior Non- Rated

Door # D131C

Each opening to receive:

Qty	Type	Description	Finish
1 ea.	Continuous Hinge	780-224 HD	Clear HAG
1 ea.	Rim Exit Device	35A-NL-OP	US32D VD
1 ea.	Rim Cylinder & Core	Match Existing System (for NL)	US26D SCH
1 ea.	Off-set Pull	11J	US32D HAG
1 ea.	Closer	4111 CUSH	ALUM LCN
1 ea.	Drop Plate	(as required)	ALUM LCN
1 ea.	Blade Stop Spacer	(as required)	ALUM LCN
1 ea.	Threshold	412S	MIL HAG

Weather-strip and sweeps by door manufacturer.

Set #22 Media Center & Cafeteria - Interior Pair Alum Non- Rated

Door # D101A, D131A, D131B, E108A

Each opening to receive:

Qty	Type	Description	Finish
2 ea.	Continuous Hinge	780-224 HD	Clear HAG
2 ea.	Rim Exit Device	CD35A-EO	US32D VD
2 ea.	Mortise Cylinder & Core	Match Existing System (for CD)	US26D SCH
2 ea.	Off-set Pulls	11J	US32D HAG
1 ea.	Keyed Rem. Mullion	4900T	USP HAG
1 ea.	Rim Cylinder	Match Existing System (for KRM)	US26D SCH
2 ea.	Closer	4111 CUSH	ALUM LCN
2 ea.	Closer	4111 HCUSH (E106A)	ALUM LCN
2 ea.	Drop Plate	(as required)	ALUM LCN
2 ea.	Blade Stop Spacer	(as required)	ALUM LCN
1 ea.	Threshold	412S	MIL HAG

Weather-strip and sweeps by door manufacturer.

Set #23 Multi-use Toilets

Door Numbers: D152, D153, E124, E125

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5"	US26D HAG
1 ea.	Aux Mortise Classroom Dead-bolt	L463R	US26D SCH
1 ea.	Core	Match Existing System	US26D SCH
1 ea.	Push Plate	30S 4" x 16"	US32D HAG
1 ea.	Pull Plate	33E 4" x 16"	US32D HAG
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
3 ea.	Silencers	307D	Gray HAG

Set #24 Sgl Media Room Exit

Door Numbers: E108B

Each opening to receive:

Qty.	Type	Description	Finish
3 ea.	Hinges	BB1279 4.5" x 4.5"	US26D HAG
1 ea.	Panic Device	CD98L-NL-06	US26D VD
1 ea.	Rim Cylinder & Core	Match Existing System (NL)	US26D SCH
1 ea.	Mortise Cylinder & Core	Match Existing System (CD)	US26D SCH
1 ea.	Closer	4000	ALM LCN
1 ea.	Kick Plate	190S 10" x 2" LDW	US32D HAG
1 ea.	Wall Stop	236W	US32D HAG
1 ea.	Gasket	726 head and jambs	Char HAG

Set #25 Cafeteria Sliding Barn Door Bi-Parting Pair

Door Numbers: D132C

Each opening to receive:

Qty.	Type	Description	Finish
1 ea.	Track & Hardware	2620 Bi-Parting Sliding Dr. Hdw. Kit	P.C. RW
2 ea.	Latching Pull	LLPA60BS less exterior side	US32D CRL
2 ea.	Flush Pull	15C	US32D HAG
4 ea.	Dust Proof Strike	58DKBS	US32D CRL

P.C. = Powder Coat finish for bard doors track and hardware

Set #26 Cafeteria Sliding Barn Door Sgl.

Door Numbers: D132D

Each opening to receive:

Qty.	Type	Description	Finish
1 ea.	Track & Hardware		
1 ea.	Latching Pull	LLPA60BS less exterior side	US32D CRL
1 ea.	Flush Pull	15C	US32D HAG
2 ea.	Dust Proof Strike	58DKBS	US32D CRL

Set #27 Closet Bi-pass

Door Numbers: D107

Each opening to receive:

Qty.	Type	Description	Finish
1 ea.	Bi-Pass Track & Hardware	9673-60	ALM HAG
2 ea.	Flush Pulls	2630	US26D HAG

Set #28 Existing doors

Door Numbers: B101A, B101B, B101C, B101D, B101E, B102, B103, B104, B105, B106A, B106B, B107, B108A, B110, B112, C102, C103A, C108, C109, C119B, C119C, C119.1, E101.1, E103.1, E104.1, E105.1, E106.1, E123.1, E231, E126, E128, E128.1, E233, E233.1, E236, E236.1, E238, E245.1

Each opening to receive:

Qty.	Type	Description	Finish
All existing hardware to remain. Repair or replace any hardware that does not function properly.			

Set #29 Electrical Room Bid doors

Door Numbers: E107A, E107B, ST5.1

Each opening to receive:

Qty.	Type	Description	Finish
These doors addressed under previous project (Electrical Room Renovations)			

Set #30 Pair – Exterior from Corridor

Door Numbers: C113B

Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Rim Panic Device	CD98L-NL-06	US26D VD
1 ea.	Rim Cylinder & Core	Match Existing System (for NL)	US26D SCH
2 ea.	Mortise Cylinder & Core	Match Existing System (for CD)	US26D SCH
1 ea.	Keyed Rem. Mullion	4900T	USP HAG
1 ea.	Rim Cylinder & Core	Match Existing System (for KRM)	US26D SCH
2 ea.	Closer	4111 CUSH	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door opening width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweeps	770S V door width	MIL HAG
1 set	Astragal Weather-strip	872S 2x door height	Clear HAG
1 ea.	Drip Cap	810S door opening width + 4"	Mil HAG

Set #30A Pair – Exterior from Corridor

Door Numbers: C114
 Each opening to receive:

Qty.	Type	Description	Finish
6 ea.	Hinges	BB1191 4.5" x 4.5" NRP	US32D HAG
2 ea.	Rim Panic Device	CD98L-NL-06	US26D VD
1 ea.	Rim Cylinder & Core	Match Existing System (for NL)	US26D SCH
2 ea.	Mortise Cylinder & Core	Match Existing System (for CD)	US26D SCH
1 ea.	Keyed Rem. Mullion	4900T	USP HAG
1 ea.	Rim Cylinder & Core	Match Existing System (for KRM)	US26D SCH
2 ea.	Closer	4111 CUSH	ALM LCN
2 ea.	Kick Plate	190S 10" x 1" LDW	US32D HAG
1 ea.	Threshold	412S door opening width	MIL HAG
1 ea.	Gasket	726 head and jambs	Char HAG
2 ea.	Sweeps	770S V door width	MIL HAG
1 set	Astragal Weather-strip	872S 2x door height	Clear HAG

Set #31 Pair – Sectional O.H. Door

Door Numbers: C107C
 Each opening to receive:

Qty.	Type	Description	Finish
		All hardware by sectional O.H. Door manufacturer	

Set #31A – NANAWALL

Door Numbers: E109A
 Each opening to receive:

Qty.	Type	Description	Finish
		All hardware by NANAWALL	

Set #32 Office - Interior Sgl. Alum with card reader

Door # D102A
 Each opening to receive:

Qty	Type	Description	Finish	
1 ea.	Electrified Continuous Hinge	780-224 HD RETW	Clear	HAG
1 ea.	Electrified Lock	L9080REU 06A	US26D	SCH
1 ea.	Core	Match Existing System	US26D	SCH
1 ea.	Closer	4111 CUSH	ALUM	LCN
1 ea.	Under Desk Push Switch	2-679-0708	White	HAG
1 ea.	Power Supply	2903	-	HAG

Weather-strip by door manufacturer.

120VAC power, conduit and wiring by Division 26.

Card Reader by Division 28.

Description of Operation: Door normally closed and locked. Key retracts latch. Removing key leaves door locked. Access upon proper credential validation at the card reader or by remote switch at desk. In the event of a power failure the lockset remains locked (fail secure). Free egress at all times.

Set #32A Office - Interior Sgl. Alum with card reader

Door # D102B
 Each opening to receive:

Qty	Type	Description	Finish	
1 ea.	Electrified Continuous Hinge	780-224 HD RETW	Clear	HAG
1 ea.	Electrified Lock	L9080REU 06A	US26D	SCH
1 ea.	Core	Match Existing System	US26D	SCH
1 ea.	Closer	4000	ALUM	LCN
1 ea.	Wall Stop	236W	US32D	HAG
1 ea.	Under Desk Push Switch	2-679-0708	White	HAG
1 ea.	Power Supply	2903	-	HAG

Weather-strip by door manufacturer.

120VAC power, conduit and wiring by Division 26.

Description of Operation: Door normally closed and locked. Key retracts latch. Removing key leaves door locked. Access to corridor by remote switch at desk. In the event of a power failure the lockset remains locked (fail secure). Free egress at all times.

END OF SECTION

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SECTION 14 24 00
HYDRAULIC ELEVATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Complete hydraulic elevator systems.
 - 1. Passenger type.
- B. Elevator Maintenance Contract.

1.02 RELATED REQUIREMENTS

- A. Section 04 20 00 - Unit Masonry: Masonry hoistway enclosure; building-in and grouting hoistway door frames.
- B. Section 05 50 00 - Metal Fabrications: Includes elevator pit ladder, sill supports, and overhead hoist beams.
- C. Section 09 65 00 - Resilient Flooring: Floor finish in car.
- D. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Sprinkler heads in hoistway.
- E. Section 26 05 33.13 - Conduit for Electrical Systems:
- F. Section 26 05 83 - Wiring Connections:
 - 1. Emergency power transfer cabinet.
 - 2. Electrical service for convenience outlets and elevator pit.
 - 3. Lighting in elevator pit.
- G. Section 28 46 00 - Fire Detection and Alarm:
 - 1. Fire and smoke detectors and interconnecting devices.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- D. ASME A17.1 - Safety Code for Elevators and Escalators; 2013.
- E. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks; 2014.
- F. ASME QEI-1 - Standard for the Qualification of Elevator Inspectors; 2013.
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- H. ASTM A139/A139M - Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over); 2016.
- I. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2016a.
- J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- K. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

- L. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
- M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- N. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- O. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
- Q. ITS (DIR) - Directory of Listed Products; current edition.
- R. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2016.
- S. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- T. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- U. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.04 SUBMITTALS

- A. See Section 01 31 00 - Project Management and Coordination, for submittal procedures.
- B. Product Data: Submit data on following items:
 - 1. Signal and operating fixtures, operating panels, and indicators.
 - 2. Car design, dimensions, layout, and components.
 - 3. Car and hoistway door and frame details.
 - 4. Electrical characteristics and connection requirements.
- C. Shop Drawings: Submit drawings and details on following items:
 - 1. Elevator Equipment and Machines: Size and location of driving machines, power units, controllers, governors, and other components.
 - 2. Hoistway Components: Size and location of car guide rails, buffers, jack unit and other components.
 - 3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
 - 4. Clearances and over-travel of car.
 - 5. Location and sizes of hoistway and car doors and frames.
 - 6. Electrical characteristics and connection requirements.
 - 7. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
 - 8. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
- D. Samples: Submit samples illustrating car interior finishes and car and hoistway door and frame finishes in the form of finish color selection brochures.
- E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- F. Initial Maintenance Contract.

- G. Maintenance Contract: Submit proposal to Owner for standard one year continuing maintenance contract agreement in accordance with ASME A17.1 and requirements as indicated, starting on date initial maintenance contract is scheduled to expire.
 - 1. Indicate in proposal the services, obligations, conditions, and terms for agreement period and for renewal options.
- H. Operation and Maintenance Data:
 - 1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
 - 2. Operation and maintenance manual.
 - 3. Schematic drawings of equipment, and wiring diagrams of installed electrical equipment with list of corresponding symbols to identify markings on hoistway apparatus.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a licensed Professional Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and approved by elevator equipment manufacturer.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- E. Products Requiring Fire Resistance Rating: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
- F. Products Requiring Electrical Connection: Listed and classified by UL (DIR) or testing agency acceptable to authorities having jurisdiction as suitable for the purpose indicated in construction documents.

1.06 WARRANTY

- A. See Section 01 77 00 - Closeout Procedures, for additional warranty requirements.
- B. Provide manufacturer's warranty for elevator operating equipment and devices for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design - Hydraulic Elevators: ThyssenKrupp Elevator; enduraMRL 3500; www.thyssenkruppelevator.com.
- B. Other Acceptable Manufacturers - Hydraulic Elevators:
 - 1. Otis Elevator Company: www.otis.com/#sle.
 - 2. Schindler Elevator Corporation: www.schindler.com/#sle.
- C. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Products other than Basis of Design are subject to compliance with specified requirements and prior approval of Architect. By using products other than Basis of Design, the Contractor

accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.

- E. Source Limitations: Provide elevator and associated equipment and components produced by a single manufacturer and obtained from a single supplier .
 - 1. Where required to meet non-proprietary maintenance requirements, alternative manufacturers will be considered provided the basis-of-design manufacturer requirements are met.
- F. Other Approved Manufacturers:
 - 1. Delaware Elevator

2.02 HYDRAULIC ELEVATORS

- A. Elevator No.2
 - 1. Elevator Model: enduraMRL Above-Ground (1-stage)
 - 2. Elevator Type: Hydraulic Machine Room-Less, Passenger
 - 3. Rated Capacity: 3500 lbs.
 - 4. Rated Speed: 110 ft./min.
 - 5. Operation System: TAC32H
 - 6. Travel: 12 feet 0 inches (verify in field)
 - 7. Landings: 2 total
 - 8. Openings:
 - a. Front: 1
 - b. Rear: 0
 - 9. Clear Car Inside: 6 feet 8 inches wide x 5 feet 5 inches deep
 - 10. Cab Height: 8 feet standard
 - 11. Hoistway Entrance Size: 3 feet 6 inches wide x 7 feet high
 - 12. Door Type: Single Speed
 - 13. Power Characteristics: 460 volts, 3 Phase, 60 Hz.
 - 14. Seismic Requirements: Zone 1
 - 15. Hoistway Dimensions: 8 feet 4 inches wide x 6 feet 11 inches deep
 - 16. Pit Depth: 4 feet
 - 17. Button & Fixture Style: Signa4 Signal
- B. Operating Features - Standard
 - 1. Full Collective Operation
 - 2. Anti-nuisance.
 - 3. Fan and Light Protection.
 - 4. Load Weighing Bypass.
 - 5. Firefighters' Service Phase I and Phase II.
 - 6. Top of Car Inspection.
 - 7. Car to Lobby Operation.

2.03 HOISTWAY EQUIPMENT

- A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.
- B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

- C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.
- D. Guides: Slide guides shall be mounted on top and bottom of the car.
- E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.
- F. Jack: A jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Provide the following jack type: Twin post holeless. Two jacks piped together, mounted one on each side of the car with a polished steel hydraulic plunger housed in a sealed steel casing having sufficient clearance space to allow for alignment during installation. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. Each Jack Assembly shall have a check valve built into the assembly to allow for automatically re-syncing the two plunger sections by moving the jack to its fully contracted position. The jack shall be designed to be mounted on the pit floor or in a recess in the pit floor. Each jack section shall have a bleeder valve to discharge any air trapped in the section..
- G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.
- H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. theoiltype
- I. Pit moisture/water sensor located approximately 1 foot above the pit floor to be provided. Once activated, elevator will perform “flooded pit operation”, which will run the car up to the designated floor, cycle the doors and shut down and trip the circuit breaker shunt to remove 3 phase power from all equipment, including pit equipment.
- J. Motorized oil line shut-off valve shall be provided that can be remotely operated from the controller landing service panel. Also a means for manual operation at the valve in the pit is required.

2.04 POWER UNIT

- A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit located in the elevator pit consisting of the following items:
 - 1. NEMA 4/Sealed Oil reservoir with tank cover including vapor removing tank breather
 - 2. An oil hydraulic pump.
 - 3. An electric motor.
 - 4. Electronic oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.
- B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

- C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating - motors shall be capable of 80 starts per hour with a 30% motor run time during each start.
- D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
 - 1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
 - 2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
 - 3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
 - 4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.
 - 5. Provided with constant speed regulation in both up and down direction. Feature to compensate for load changes, oil temperature, and viscosity changes.
 - 6. Solid State Starting: Provide an electronic starter featuring adjustable starting currents.
 - 7. A secondary hydraulic power source (powered by 110VAC single phase) must be provided. This is required to be able to raise (reposition) the elevator in the event of a system component failure (i.e. pump motor, starter, etc.)
 - 8. Oil Type: Provide a zinc free, inherently biodegradable lubricant formulated with premium base stocks to provide outstanding protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

2.05 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).
- B. Accessibility Requirements: Comply with ADA Standards.
- C. Perform structural steel design, fabrication, and installation in accordance with AISC 360.
- D. Perform welding of steel in accordance with AWS D1.1/D1.1M.
- E. Fabricate and install door and frame assemblies in accordance with NFPA 80 and in compliance with requirements of authorities having jurisdiction.
- F. Perform electrical work in accordance with NFPA 70.
- G. Comply with fire protection sprinkler system of the hoistway design in accordance with NFPA 13 requirements and authorities having jurisdiction. Refer to Section 21 13 00.

2.06 EMERGENCY POWER

- A. Set-up elevator operation to run with building emergency power supply when the normal building power supply fails, and in compliance with ASME A17.1 requirements.
- B. Building Emergency Power Supply: Supplied by backup generator; provide elevator system components as required for emergency power characteristics with phase rotation the same as for normal power.

1. Provide transfer switches and auxiliary contacts.
 2. Install connections to power feeders.
- C. Emergency Lighting: Comply with ASME A17.1 elevator lighting requirements.
- D. Provide operational control circuitry for adapting the change from normal to emergency power.
- E. Upon transfer to emergency power, advance one elevator at a time to a pre-selected landing, stop car, open doors, disable operating circuits, and hold in standby condition.

2.07 MATERIALS

- A. Steel Cylinder Casing: ASTM A139/A139M, Grade A steel.
- B. Rolled Steel Sections, Shapes, Rods: ASTM A36/A36M.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel), with matte finish.
- D. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Stainless Steel Sheet: ASTM A666, Type 304; No. 4 Brushed finish unless otherwise indicated.
- F. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.
- G. Extruded Aluminum: ASTM B221 (ASTM B221M), natural anodized finish unless otherwise indicated.
- H. Tempered Glass: 3/8 inch minimum thickness, fully tempered in compliance with ASME A17.1, 16 CFR 1201, ANSI Z97.1, and ASTM C1048 tempered glass requirements.
- I. Resilient Flooring: Resilient base and Resilient flooring, as specified in Section 09 65 00.

2.08 CAR AND HOISTWAY ENTRANCES

- A. Elevator, No. 2:
1. Car and Hoistway Entrances, Main Elevator Lobby:
 - a. Hoistway Fire Rating: 2 Hours.
 - b. Elevator Door Fire Rating: 1-1/2 Hours.
 - c. Framed Opening Finish and Material: Brushed stainless steel.
 - d. Car Door Material: Stainless steel, with rigid sandwich panel construction.
 - e. Hoistway Door Material: Stainless steel, with rigid sandwich panel construction.
 - f. Door Type: Double leaf.
 - g. Door Operation: Side opening, two speed.
 - h. Door Width: 36 inch.
 - i. Door Height: 84 inch.
 - j. Sills: Extruded aluminum.
- B. Integrated Control System: the elevator controller to be mounted to hoistway entrance above 1st landing. The entrance at this level, shall be designed to accommodate the control system and provide a means of access to critical electrical components and troubleshooting features. See section 2.09 Control System for additional requirements.
- C. At the controller landing, the hoistway entrance frame shall have space to accommodate and provide a lockable means of access (group 2 security) to a 3 phase circuit breaker. See section 2.11 Miscellaneous Elevator Components for further details
- D. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

- E. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
 - 1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
 - 2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
 - 3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.
- F. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.
- G. Gasketing: Provide acoustic type gasketing at hoistway doors and frames to eliminate audible noise due to car activities in the hoistway, and air pressure differential between hoistway and landing floors.

2.09 PASSENGER ELEVATOR CAR ENCLOSURE

- A. Car Enclosure:
 - 1. Walls: Cab type a laminate wall design, durable wood core finished on both sides with high pressure plastic laminate.
 - 2. Reveals and frieze: Not applicable
 - 3. Canopy: Cold-rolled steel with hinged exit.
 - 4. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.
 - 5. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with No. 4 brushed stainless steel
 - 6. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
 - a. Door Finish: Stainless steel panels: No. 4 brushed finish.
 - b. Cab Sills: Extruded aluminum, mill finish.
 - 7. Handrail: Provide 4" flat metal bar on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, No. 4 brushed finish.
 - 8. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
 - 9. Protection pads and buttons: Not required
- B. Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.10 DOOR OPERATION

- A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be digital closed loop and the closed loop circuit shall give constant feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed based on its position and load. All adjustments and setup shall be through the computer based service tool. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an

adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable.

1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
 2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
 3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call.
 4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed.
 5. Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close.
 6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault.
 7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault.
 8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.
- B. Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.11 CAR OPERATING STATION

- A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Wrap return shall have a No. 4 brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.
- B. Emergency Communications System: Integral phone system provided.
- C. Auxiliary Operating Panel: Not Required
- D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction

of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

E. Special Equipment: Not Applicable

2.12 CONTROL SYSTEMS

A. Controller: Shall be integrated in a hoistway entrance jamb. Should be microprocessor based, software oriented and protected from environmental extremes and excessive vibrations in a NEMA 1 enclosure. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

B. Service Panel - to be located outside the hoistway in the controller entrance jamb and shall provide the following functionality/features:

1. Access to main control board and CPU
2. Main controller diagnostics
3. Main controller fuses
4. Universal Interface Tool (UIT)
5. Remote valve adjustment
6. Electronic motor starter adjustment and diagnostics
7. Operation of pit motorized shut-off valve with LED feedback to the state of the valve in the pit
8. Operation of auxiliary pump/motor (secondary hydraulic power source)
9. Operation of electrical assisted manual lowering
10. Provide male plug to supply 110VAC into the controller
11. Run/Stop button

C. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

D. Emergency Power Operation: Full automatic operation (Simplex 10-D4A) Upon loss of the normal power supply, building-supplied standby power is available to the elevator on the same wires as the normal power. Once the loss of normal power has been detected and standby power is available, the elevator is lowered to a pre-designated landing and will open the doors. After passengers have exited the elevator, the doors are closed. At this time the elevator is automatically allowed to continue service using the building-supplied standby power.

E. Special Operation: Not Applicable

2.13 HALL STATIONS

A. Hall Stations, General: Provide buttons with white-illuminating or blue-illuminating LED halos to indicate that a call has been registered at that floor for the indicated direction. Provide 1 set of pushbutton risers.

1. Provide one pushbutton riser with faceplates having a No. 4 brushed stainless steel finish.
 - a. Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable

- D. Hall lanterns: Not Applicable
- E. Special Equipment: Not Applicable

2.14 MISCELLANEOUS ELEVATOR COMPONENTS

- A. Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing.
- B. Lockable three phase circuit breaker with auxiliary contact with shunt trip capability to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb and should be sized according to the National Electrical Code.
- C. Lockable single phase 110V circuit breaker for cab light and fan to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb should be sized according to the National Electrical Code

2.15 CAR EQUIPMENT AND MATERIALS

- A. Elevator Car, No. 2:
 - 1. Car Operating Panel: Provide main; flush-mounted applied face plate, with illuminated call buttons corresponding to floors served with "Door Open/Door Close" buttons and alarm button.
 - a. Panel Material: Integral with front return; one per car.
 - b. Car Floor Position Indicator: Above door with illuminating position indicators.
 - c. Locate alarm button where it is unlikely to be accidentally actuated; not more than 54 inch above car finished floor.
 - d. Provide following within service cabinet as part of car operating panel:
 - 1) Switch for each auxiliary operational control, keyed.
 - 2) Switches for fan, light, and inspection control.
 - 3) Emergency light.
 - 2. Flooring: Resilient Flooring.
 - 3. Front Return Panel: Match material of car door.
 - 4. Door Wall: Stainless steel.
 - 5. Side Walls: Plastic laminate on plywood.
 - 6. Rear Wall: Plastic laminate on plywood.
 - 7. Hand Rail: Stainless steel, at all three sides. Provide open clearance space 1-1/2 inch (38 mm) wide to face of wall.
 - a. Stainless Steel Finish: No. 4 Brushed.
 - 8. Ceiling:
 - a. Canopy Ceiling: Stainless steel.
 - b. Lighting: LED downlights.
 - 9. Provide emergency access panel for egress from car at ceiling.
- B. Car Accessories:
 - 1. Certificate Frame: Stainless steel frame glazed with tempered glass, and attached with tamper-proof screws.

2.16 FINISHES

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting this work.
- B. Verify that hoistway, pit, machine room, and _____ are ready for work of this section.
- C. Verify hoistway shaft and openings are of correct size and within tolerance.
- D. Verify that electrical power is available and of correct characteristics.

3.02 PREPARATION

- A. Arrange for temporary electrical power for installation work and testing of elevator components. Comply with requirements of Section 01 50 00 - Temporary Facilities and Controls.
- B. Maintain elevator pit excavation free of water.

3.03 INSTALLATION

- A. Coordinate this work with installation of hoistway wall construction.
- B. Install system components, and connect equipment to building utilities.
- C. Provide conduit, electrical boxes, wiring, and accessories. Refer to Sections 26 05 33.13 and 26 05 83.
- D. Install hydraulic piping between cylinder and pump unit.
- E. Mount machines, motors, and pumps on vibration and acoustic isolators.
 - 1. Place on structural supports and bearing plates.
 - 2. Securely fasten to building supports.
 - 3. Prevent lateral displacement.
- F. Install hoistway, elevator equipment, and components in accordance with approved shop drawings.
- G. Install guide rails to allow for thermal expansion and contraction movement of guide rails.
- H. Accurately machine and align guide rails, forming smooth joints with machined splice plates.
- I. Bolt or weld brackets directly to structural steel hoistway framing.
- J. Field Welds: Chip and clean away oxidation and residue with wire brush; spot prime surface with two coats.
- K. Install hoistway door sills, frames, and headers in hoistway walls; grout sills in place, set hoistway floor entrances in alignment with car openings, and align plumb with hoistway.
- L. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
- M. Adjust equipment for smooth and quiet operation.

3.04 TOLERANCES

- A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1 and ASME A17.2.
- B. Car Movement on Aligned Guide Rails: Smooth movement, without any objectionable lateral or oscillating movement or vibration.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Perform testing and inspection in accordance with requirements.
 - 1. Inspectors shall be certified in accordance with ASME QEI-1.
 - 2. Perform tests as required by ASME A17.2.
 - 3. Provide at least two weeks written notice of date and time of tests and inspections.

3.06 ADJUSTING

- A. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.
- B. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch maximum from flush with sill.

3.07 CLEANING

- A. Remove protective coverings from finished surfaces.
- B. Clean surfaces and components in accordance with manufacturers written instructions.

3.08 CLOSEOUT ACTIVITIES

- A. See Section 01 77 00 - Closeout Procedures, for closeout submittals.
- B. Demonstrate proper operation of equipment to Owner's designated representative.
- C. Demonstration: Demonstrate operation of system to Owner's personnel.
 - 1. Use operation and maintenance data as reference during demonstration.
 - 2. Briefly describe function, operation, cleaning and maintenance of each component.
- D. Training: Train Owner's personnel on cleaning and operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Manufacturer's training personnel.
 - 4. Location: At project site, unless noted otherwise.

3.09 PROTECTION

- A. Do not permit construction traffic within car after cleaning.
- B. Protect installed products until Date of Substantial Completion.
- C. Touch-up, repair, or replace damaged products and materials prior to Date of Substantial Completion.

3.10 MAINTENANCE

- A. Provide Initial Maintenance Contract of elevator system and components in accordance with ASME A17.1 and requirements as indicated for 3 months from Date of Substantial Completion.
- B. Perform maintenance contract services using competent and qualified personnel under the supervision and direct employ of the elevator manufacturer or original installer.
- C. Maintenance contract services shall not be assigned or transferred to any agent or other entity without prior written consent of Owner.
- D. Examine system components monthly.

- E. Include systematic examination, adjustment, and lubrication of elevator equipment.
- F. Maintain and repair or replace parts, whenever required, using parts produced by original equipment manufacturer.
- G. Perform work without removing cars from use during peak traffic periods.
- H. Provide emergency call back service during regular working hours throughout period of this maintenance contract.
- I. Maintain an adequate stock of parts for replacement or emergency purposes, and have personnel available to ensure the fulfillment of this maintenance contract without unreasonable loss of time.

END OF SECTION

SECTION 32 14 13
PRECAST CONCRETE UNIT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete paver units.
- B. Sand setting bed.
- C. Sand joint filler.
- D. Polymeric sand joint filler.
- E. Edge restraints.

1.02 REFERENCE STANDARDS

- A. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- B. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- C. ASTM C936/C936M - Standard Specification for Solid Concrete Interlocking Paving Units; 2016.

1.03 SUBMITTALS

- A. See Section 01 31 00 - Project Management and Coordination, for submittal procedures.
- B. Product Data: Provide characteristics of paver unit, dimensions, and special shapes.
- C. Product Data: Provide characteristics of polymeric sand, including base material, additive(s), compressive strength, and color.
- D. Samples: Submit two samples of each paver type, illustrating style, size, color range and surface texture of units being provided.
- E. Manufacturer's Installation Instructions: Indicate substrate requirements and installation methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Tectura Designs, a division of Wausau Tile Inc; Granitex and Ultraface: www.tecturadesigns.com/#sle.
- B. Concrete Pavers:
 - 1. Capitol Ornamental Concrete Specialties, Inc: www.capitolconcreteproducts.com/#sle.
 - 2. Hanover Architectural Products, Inc: www.hanoverpavers.com/#sle.
 - 3. Oldcastle: www.oldcastle.com/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Concrete Pavers: Hydraulically pressed concrete, configured for interlocking with adjacent units and complying with ASTM C936/C936M.
 - 1. Compressive Strength: 8000 pounds per square inch average, with minimum of 7200 pounds per square inch.
 - 2. Size: As indicated on drawings.

3. Thickness: Greater than or equal to 3-1/8 inches.
 4. Type: Rectangular.
 5. Color: Selected from manufacturer's full range.
- B. Sand for Setting Bed: Clean washed natural sand or crushed stone complying with gradation requirements of ASTM C33/C33M for fine aggregates.
 - C. Sand for Joints: Fine washed sand with 100 percent passing No. 16 sieve and not more than 10 percent passing No. 200 sieve.
 - D. Polymeric Sand: Fine sand conforming to ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.
 - E. Edging: Formed aluminum, as detailed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate is level or to correct gradient, smooth, capable of supporting pavers and imposed loads, and ready to receive work of this Section.
- B. Verify gradients and elevations of substrate are correct.

3.02 PREPARATION

- A. Treat soil with herbicide to retard plant growth.

3.03 INSTALLATION OF SOLID PAVER UNITS

- A. Spread sand bedding evenly over prepared substrate surface to a maximum thickness of 1-1/2 inch.
- B. Dampen and roller compact sand to level and even surface.
- C. Screed and scarify top 1 inch to 1 1/2 inch of sand.
- D. Place paver units in perpendicular running bond pattern creating staggered joints, from straight reference edge.
- E. Cut paver units at edges with masonry saw.
- F. Place half units at edge and interruptions. Maintain tight joints.
- G. Tamp and level paver units with mechanical vibrator until units are firmly bedded, level, and to correct elevation and gradients. Do not tamp unrestrained edges.

3.04 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Broom clean paving surfaces. Dispose of excess sand.

3.05 PROTECTION

- A. Do not permit traffic over unprotected paver surface.

END OF SECTION