

APPENDIX

DESIGN & ENGINEERING Guidelines FOR ARCHITECTS AND ENGINEERS

**KENT STATE UNIVERSITY
OFFICE OF THE
UNIVERSITY ARCHITECT**

DESIGN AND ENGINEERING GUIDE-APPENDIX

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UFM Approved Standardized Restroom Dispensers

Feminine Hygiene Disposal Receptacle RMC Sanisac #33W Part #25033000



RMC25033000 RMC Sanisac Wall Mount No 33W Disposal, EA



Summary

White enamel, opens from bottom Uses RMC Product #77 Liners Specifications 8 1/8W x 10 3/4H x 4 3/8D

GoJo Handsoap Dispenser, 1250 ML ADX-12, White 8884-06

GOJO 1250 ml Gray And White ADX-12 Dispenser

This high capacity 1250 mL GOJO® dispenser is ideal for high traffic areas. Large sight window, skylight and crystal clear refill bottles make it easy to check fill status. Converts to a locking dispenser at any time by simply removing the key from inside the dispenser. Fully ADA compliant. Lifetime guarantee. Patent pending CONTROLLED COLLAPSE refill bottles hold their shape as they empty for a more attractive overall appearance. Removable pump makes recycling easy. SANITARY SEALED refills are made of durable, recyclable PET material, using 30% less plastic than rigid HDPE bottles.

ASSEMBLY

Documents are in PDF format

Product Specifications	
WIDTH INCHES	4-1/2
DEPTH INCHES	4
HEIGHT INCHES	11-3/4
CAPACITY	1250 ml
COLOR FINISH	Gray/White
BRAND	GOJO
CONSTRUCTION	Plastic
DESCRIPTION	ADX Dispenser
MANUFACTURER'S PART NUMBER	8884-06
PACKAGE QUANTITY	1
STYLE	Wall Mount Manual
TYPE	Foam



Push Button Dispensing

- Building Maintenance • Receiving & Distribution • Custodial Services • Electrical • Fleet Services • Grounds • Parking Services Maintenance • Structures • Energy Management •

GoJo Purell Hand Sanitizer Dispenser, 12 00 ML ADX-12, White 8820-06

Purell Hand Sanitizer Dispenser - ADX 1200mL White - 8820-06

High capacity 1200mL dispenser is ideal for high traffic areas. Large sight window, skylight and crystal clear refill bottles make it easy to check fill level. Slim design with high capacity. Easily converts to locked dispenser. For use with Purell Hand Sanitizer Refills (sold separately). Fully ADA compliant. White color finish. Measures 4-1/2"W x 4"D x 11-3/4"H.

ASSEMBLY

Documents are in PDF format

Product Specifications	
WIDTH INCHES	4-1/2
DEPTH INCHES	4
HEIGHT INCHES	11-3/4
CAPACITY	1200 ml
COLOR FINISH	White
BRAND	Purell
CONSTRUCTION	Plastic
DESCRIPTION	ADX Dispenser
MANUFACTURER'S PART NUMBER	8820-06
PACKAGE QUANTITY	1
TYPE	Dispenser



GoJo Shield Floor/Wall Protector 1045-WHT-12

Home > 1045-WHT-12



SHIELD™ Floor & Wall Protector for ADX™ and LTX™ Attachment for Bottom of Dispenser

Protects floors and walls against splashes and drips caused by typical use.

- Helps protect floors, walls and countertops
- Attaches to any ADX™ or LTX™ dispenser
- Easy to install
- Available in black or white



MESSENGER™
Installation

MESSENGER™
Installation



Specifications

SKU



1045-WHT-12

- Building Maintenance • Receiving & Distribution • Custodial Services • Electrical • Fleet Services • Grounds • Parking Services Maintenance • Structures • Energy Management •

Von Drehle Tissue Dispenser, 3 Station Carousel, Smoke/Black 3342

Item #	Description	Depth	Uses Paper
▼ 3342	3 Station Carousel Dispenser	6.08 inches	PR350
<div>  <div> Brand name: Color: Base: Black Polystyrene Cover: Smoke Polycarbonate Case Cube: 0.73 Diameter: Width: 13.11 inches Height: 14.93 inches Shipping Weight: 4.05 </div>  </div>			
<div> <div>SPEC SHEET</div> <div>HIGH RES IMAGE</div> </div>			

Von Drehle Auto-Cut Towel Dispenser, Black/Black 8864

Item #	Description	Depth	Uses Paper
▼ 8864	8" Mechanical Pull Down Dispenser	10.18 inches	813B , 813N , 835-B , 835-N , 860-B , 860-N , 860BS , 860NS , 880-B , 880-N , 88012-B , 88012-N , 88012T , 880BI , 880BS , 880NI , 880NS
<div>  <div> Brand name: Color: Base: Black Impact-Resistant Plastic Cover: Black Impact-Resistant Plastic Case Cube: 1.27 Diameter: Width: 12.05 inches Height: 15.99 inches Shipping Weight: 6.7 </div>  </div>			
<div> <div>SPEC SHEET</div> <div>HIGH RES IMAGE</div> </div>			

- Building Maintenance • Receiving & Distribution • Custodial Services • Electrical • Fleet Services • Grounds • Parking Services Maintenance • Structures • Energy Management •

Residence Services Toilet Accessories

Paper towel dispensers – Scott roll towel (smoke) 46253

Toilet paper dispensers – GP compact Quad – 56744

GP compact two roll veridical – 56790

Soap dispensers – GOJO ADX-12 1250 ml

Hand sanitizer – Purell 7720-01 1200 ml , battery built into refill

Student Center and Rec Center Toilet Accessories

Paper towel dispensers – DV-880012N roll towel 800

Toilet paper dispensers – Staples 9 inch jumbo rolls

Soap dispensers – varies: use liquid pink hand soap

DeWeese Health Center Toilet Accessories

Paper towel dispensers – DV-880012N roll towel 800

Toilet paper dispensers – DV-3109 Jumbo toilet paper, single and double rolls

Soap dispensers – varies



NOTES:

1. IN EXISTING CONDITIONS ROUGH-IN SHALL BE BY GC.
2. NO SPLICING OR T-TAPPING OF ANY CABLES SHALL BE PERMITTED.
3. FOR ANY CABLE LENGTH RUNS GREATER THAN 200' CONSULT KSU FOR REQUIRED CABLE TYPE.
4. REFER TO ARCHITECTURAL DRAWINGS FOR BOLLARD TYPES AND ROUGH-IN REQUIREMENTS.




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[illegible]

PROJECT NO: _____

CAD DWG FILE:

DESIGNED BY:

DRAWN BY:

CHECKED BY: _____

DATE: _____

SHEET TITLE: _____

ACCESS CONTROL DETAILS

A diagram illustrating a decomposition. On the left, there is a triangle with three horizontal lines passing through it, and a circle with three horizontal lines passing through it. These are followed by an equals sign, and then a vertical line with a diagonal slash and three horizontal lines passing through it.

SECURITY DOOR CODED NOTES

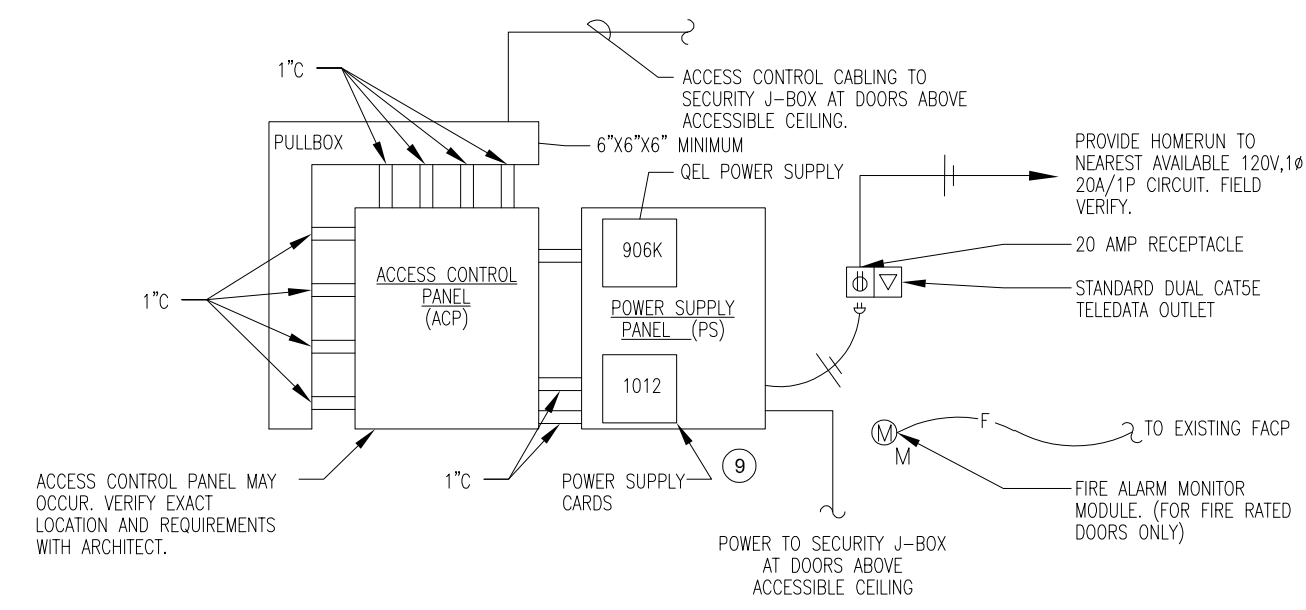
1. SECURITY J-BOX ABOVE ACCESSIBLE CEILING, HOME RUN ALL CABLEING TO ACCESS CONTROL PANEL.
2. DOOR OPERATOR POWER CONNECTION.
3. ELECTRIC POWER TRANSFER HINGE.
4. CARD READER SURFACE MOUNTED OVER STANDARD JUNCTION BOX IF NOT MOUNTED ON BACKPLATE.
5. REQUEST-TO-EXIT BUILT IN HARDWARE.
6. DOOR MONITOR/POSITION SWITCH CONNECTION.
7. ELECTRIC STRIKE.
8. ADA PUSHPLATE
9. ELECTRIFIED PANIC HARDWARE POWER SUPPLY LOCATED AT ACCESS CONTROL PANEL.
10. 6"x6"x4"D SECURITY J-BOX ABOVE ACCESSIBLE CEILING. BOX IS INTENDED FOR GANGING WIRES NOT SPLICING. NO SPLICES PERMITTED.
11. PROXIMITY CARD READER

GENERAL NOTES:

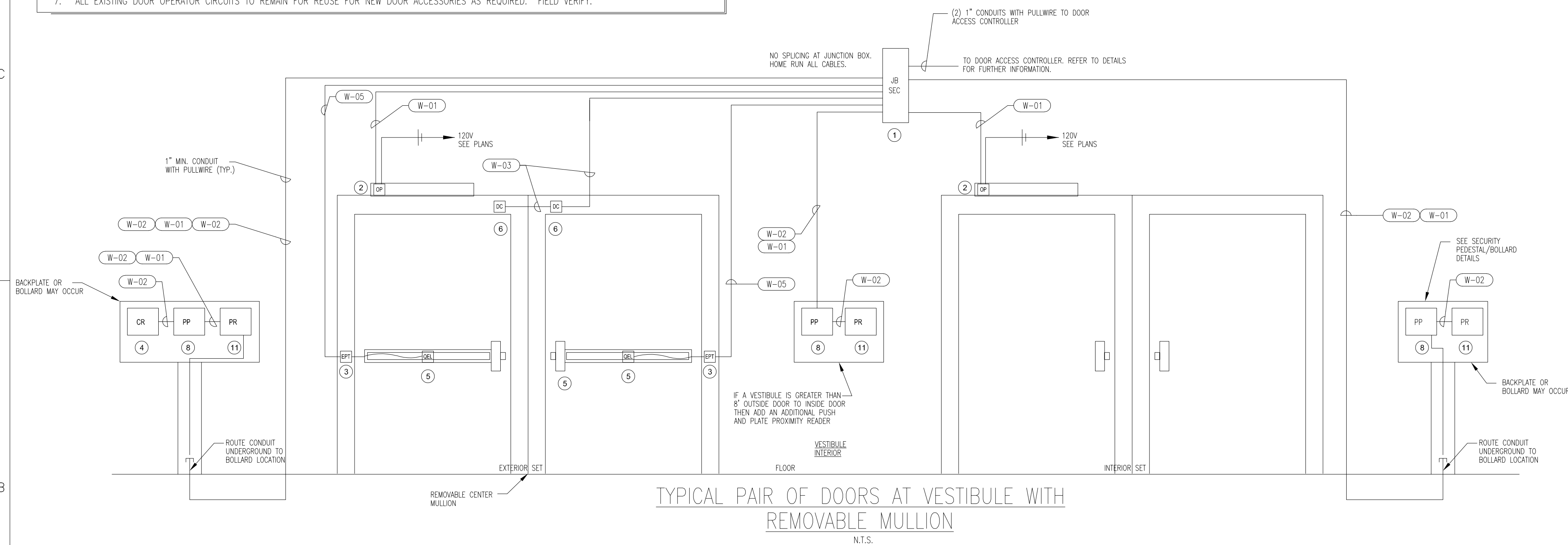
1. AUTO OPERATOR, DOOR HARDWARE, STRIKES AND DOOR POSITION SWITCHES PROVIDED BY DOOR HARDWARE INSTALLER. E.C. SHALL PROVIDE CONNECTIONS TO SAME AS DIRECTED.
2. SECURITY PANEL IS LOCATED IN NEW TELECOM ROOM.
3. PROVIDE FIRE ALARM CONTROL MODULE TO CHANGE STATE WHEN DOOR IS IN ALARM. MULTIPLE POWER SUPPLIES MAY BE REQUIRE ADDITIONAL CONTROL MODULES.
4. ELECTRIC STRIKE, MAGNETIC LOCK TO BE IN DOOR FRAME.
5. ALL CABLES SHALL BE PLENUM RATED.
6. E.C. SHALL PROVIDE CONDUIT TO CABLE TRAY FROM DOOR SECURITY J-BOX AND CABLE TRAY TO DOOR ACCESS CONTROLLER. PROVIDE CONDUIT AS NOTED IN DETAILS FOR EACH SECURITY DOOR HOMERUN.
7. ALL EXISTING DOOR OPERATOR CIRCUITS TO REMAIN FOR REUSE FOR NEW DOOR ACCESSORIES AS REQUIRED. FIELD VERIFY.

WIRING KEY

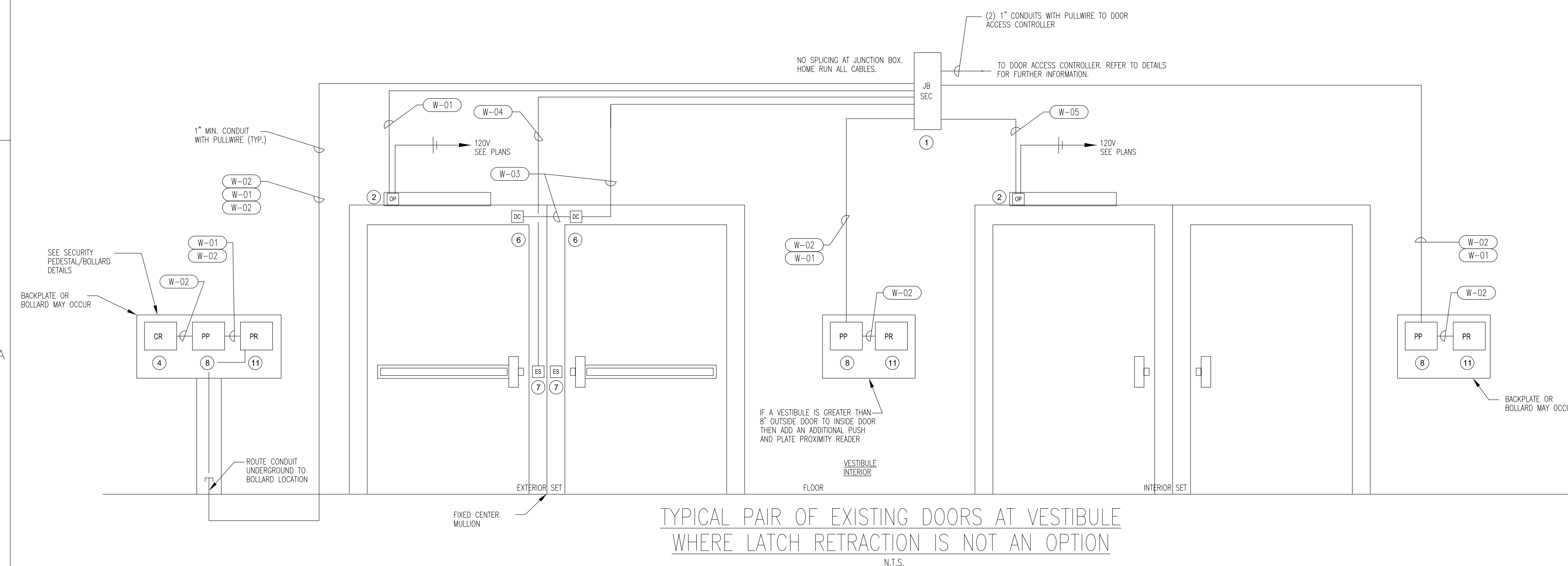
- W-01 (1) 2 COND. #18AWG, 3/4°C
W-02 (1) 6 COND. #18AWG SHIELDED, 3/4°C
W-03 (1) 2 COND. #18AWG, 3/4°C
W-04 (1) 2 COND. #16AWG, 3/4°C
W-05 (1) 4 COND. #16AWG, 3/4°C



ACCESS CONTROL PANEL (ACP)
ELEVATION DETAIL
N.T.S.



TYPICAL PAIR OF DOORS AT VESTIBULE WITH
REMOVABLE MULLION – PLAN VIEW



TYPICAL PAIR OF EXISTING DOORS AT VESTIBULE
WHERE LATCH RETRACTION IS NOT AN OPTION –
PLAN VIEW
N.T.S.

[illegible]

PROJECT NO: _____

CAD DWG FILE:

DESIGNED BY:

DRAWN BY:

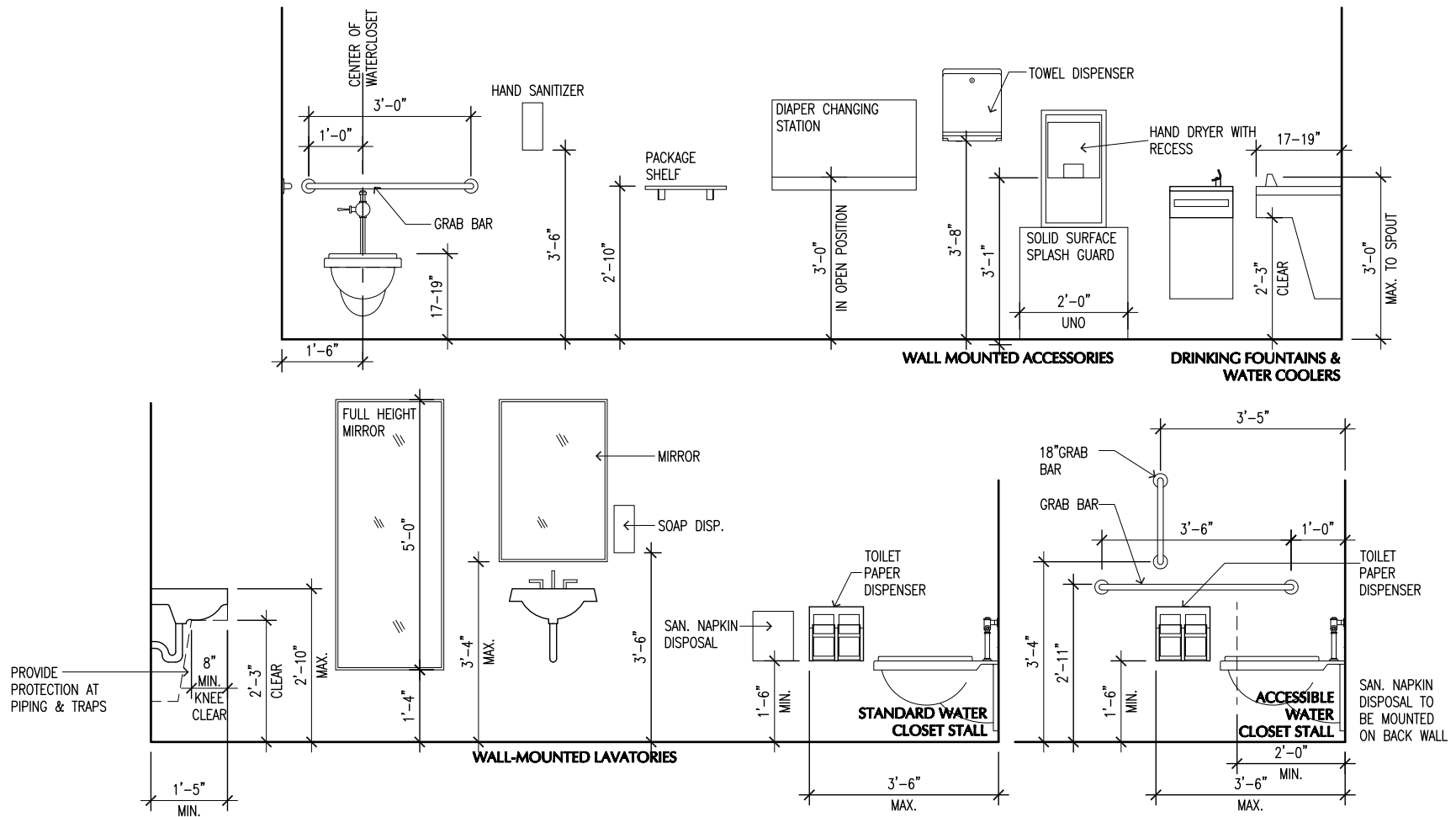
CHECKED BY:

DATE:

SHEET TITLE:

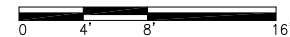
ACCESS CONTROL DETAILS

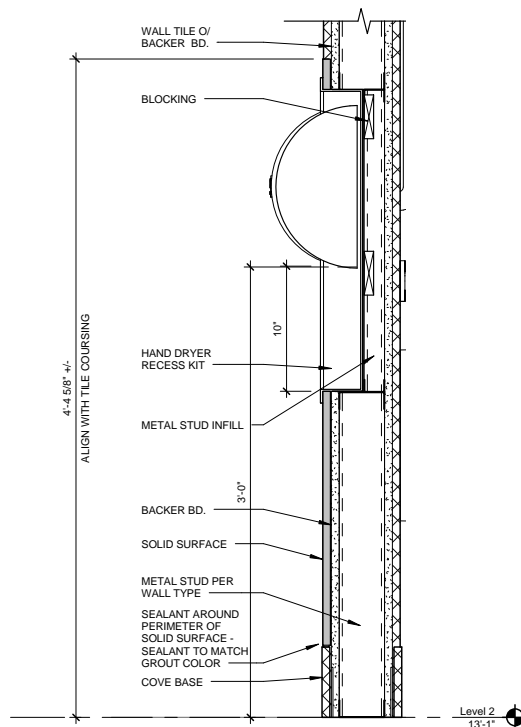
$$\Delta C = 2$$



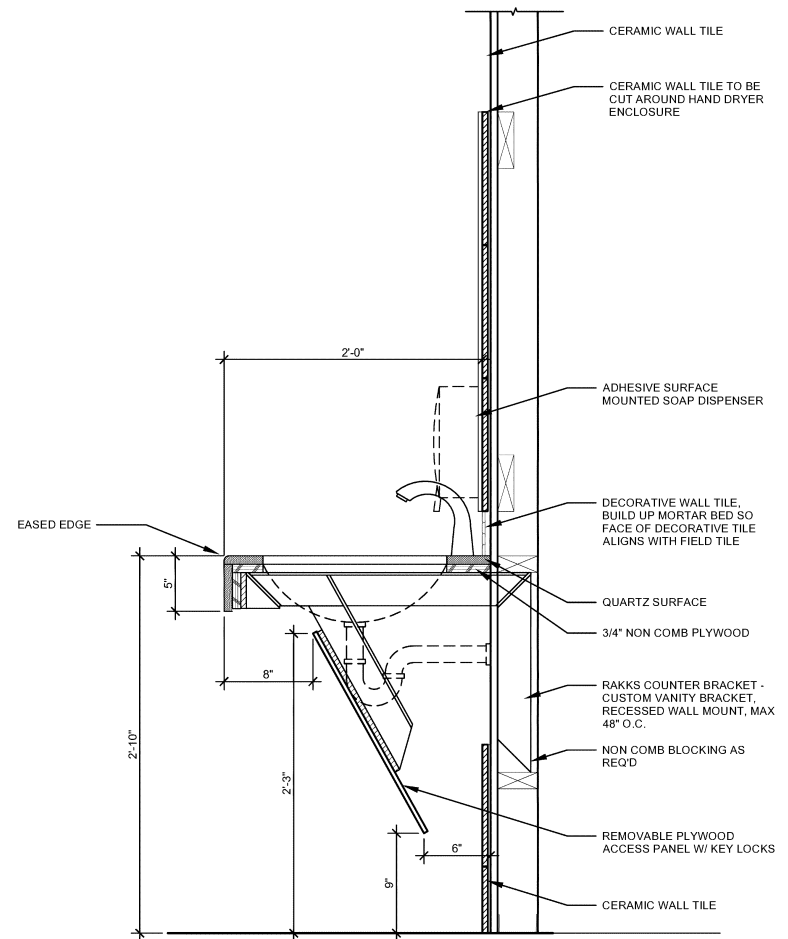
A MOUNTING DETAILS

A300 SCALE

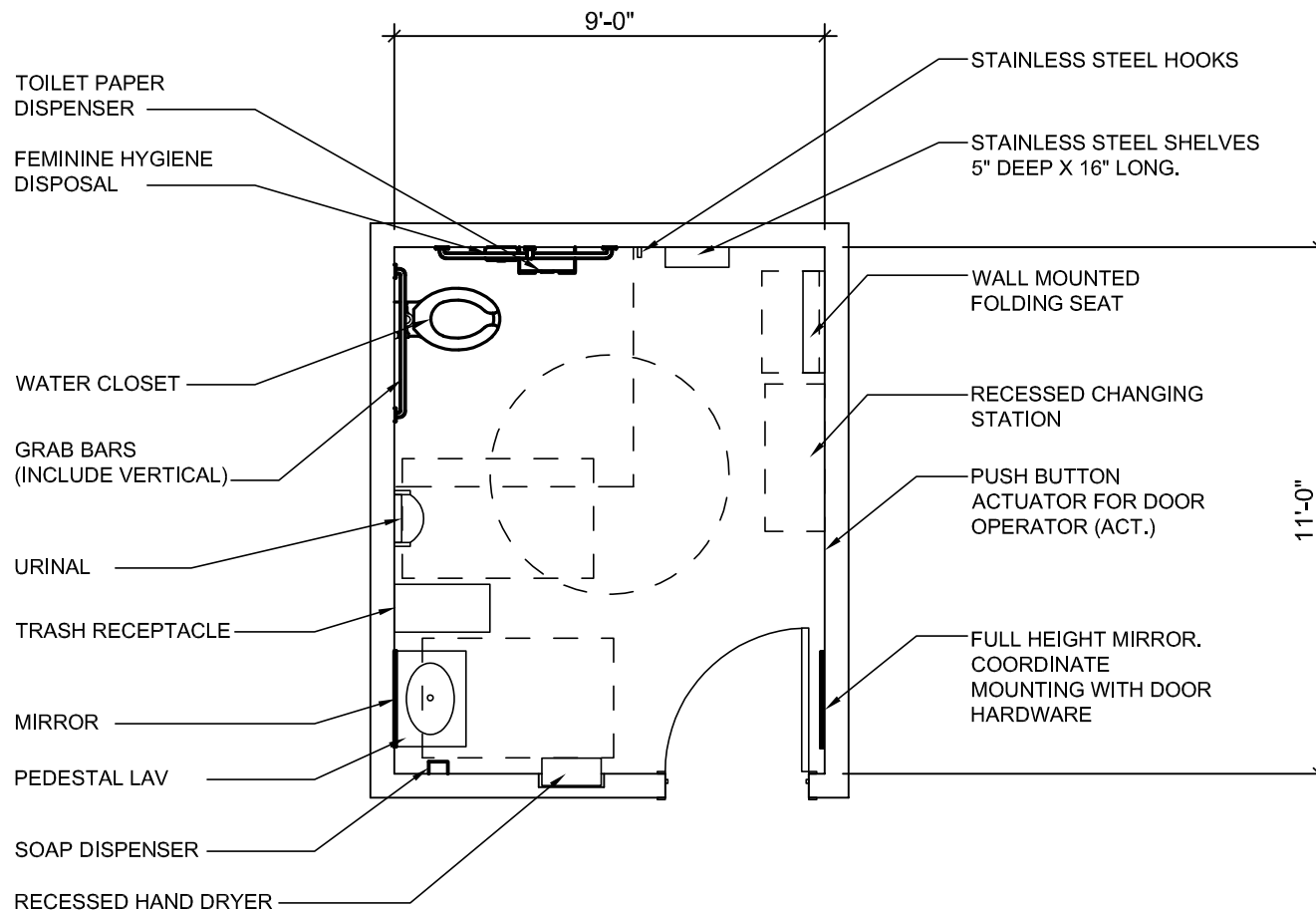


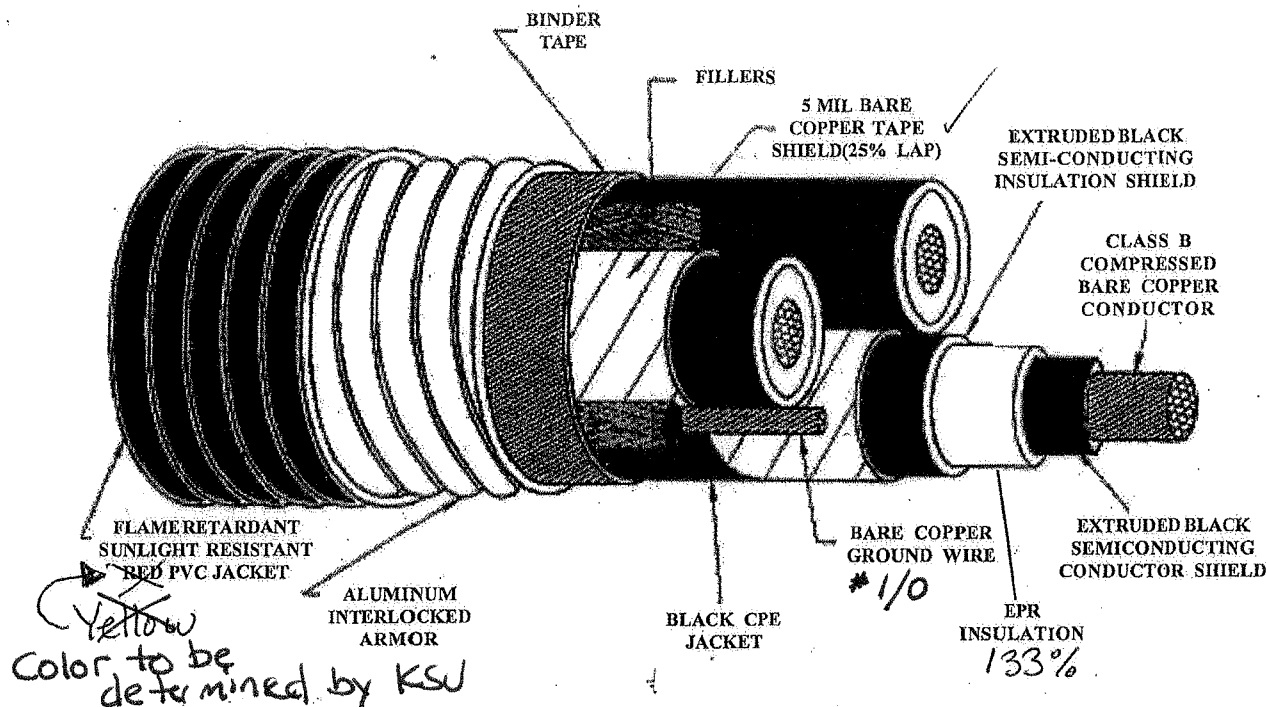


H15
A602 **HAND DRYER RECESS**
SCALE: 1 1/2" = 1'-0"



1
RESTROOM COUNTER SECTION
SCALE= 1 1/2" = 1'-0"





Standards

ASTM- B3 & 8
ICEA- S-93-639
UL- 1072

Specifications

Conductor Size: 350-37 kcmil
Insulation Thickness: .220" EPR
Tape Shield: .005" COPPER
Single Jacket Thickness: .080" CPE
Single O.D: 1387"
Ground Conductor: 1 X #2-7 AWG
Armor Thickness: .030" ALUMINUM
Jacket Thickness: .085" FR-PVC
Approximate O.D.: 3.483"
Approximate Weight: 7265 LBS/MFT

KENT STATE UNIVERSITY UNIVERSITY ARCHITECT'S OFFICE

- ☐ FINAL APPROVAL
☒ APPROVED AS NOTED
☐ REVISE AND RESUBMIT

DATE 4/15/2009 BY C. Ricchetti

CHECKING OF SHOP DRAWINGS BY THIS OFFICE DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS & SPECIFICATIONS OR FOR ERRORS IN SHOP DRAWINGS.



Southwire

SUBJECT: 3/C, BARE COPPER CONDUCTOR, EPR INSULATION, BARE COPPER TAPE SHIELD (25% LAP), BLACK CPE JACKET ON INDIVIDUALS, FILLERS, BARE COPPER GROUND WIRE, BINDER, ALUMINUM INTERLOCKED ARMOR, FLAME RETARDANT RED PVC JACKET OVERALL, 15KV 133%.

DATE: 03/23/08

BY: JPW

SCALE: NONE

DWG. 09-QE000995

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DESIGN GUIDE 260513
MED VOLT CABLE
ARMORED

DATE: 01-14-2010

CA-1

MEDIUM VOLTAGE ONE CONDUCTOR EPR CABLE

CATALOG SPEC: CT1-13ET
CT RATING for Sizes 1/0 and Larger

Southwire Internet Catalog Sec. 36 p. 4

1/C, 15KV, 220 MIL EPR, 133%, SHIELDED, FRPVC JACKET, CT RATED, MV-105

SIZE	INSULATION THICKNESS	STOCK NUMBER	COPPER WEIGHT/MFT	SHIPPING WEIGHT/MFT	OVERALL DIAMETER (in.)
2	220 MILS	95-36-38-89	205	667	.995
1/0	220 MILS	95-59-89-89	326	841	1.07
2/0	220 MILS	95-59-97-89	411	957	1.11
4/0	220 MILS	95-60-11-89	653	1273	1.21
250	220 MILS	95-60-29-89	772	1447	1.27
350	220 MILS	95-60-37-89	1081	1828	1.38
500	220 MILS	95-60-45-89	1544	2382	1.50
750	220 MILS	95-60-52-89	2316	3385	1.76
1000	220 MILS	95-60-60-89	3204	4295	1.90

Need +25% overlap on tape-shield

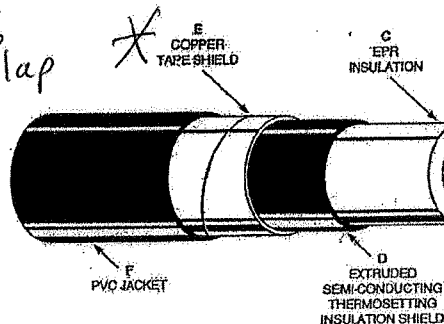
CATALOG SPEC: CT1 - 21ET

Southwire Internet Catalog Sec. 36 p. 8

1C, 35KV, 420 MIL EPR, 133% SHIELDED, FRPVC JACKET, CT-RATED, MV105

SIZE	INSULATION THICKNESS	STOCK NUMBER	COPPER WEIGHT/MFT	SHIPPING WEIGHT/MFT	OVERALL DIAMETER (in.)
1/0	420 MILS	89-00-65-89	326	1311	1.51
4/0	420 MILS	89-00-66-89	653	1886	1.73
350	420 MILS	89-00-67-89	1081	2536	1.92
500	420 MILS	89-00-68-89	1544	3142	2.04

+25% overlap



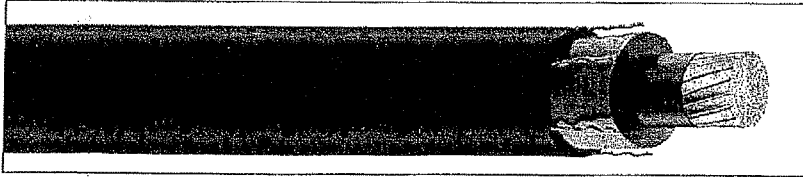
KENT STATE UNIVERSITY
UNIVERSITY ARCHITECT'S OFFICE

☐ FINAL APPROVAL
☒ APPROVED AS NOTED
☐ REVISE AND RESUBMIT

DATE 4/15/2009 BY C. Ricchetti

UniShield®

EPR/Copper Wire Shield/CPE, Medium-Voltage Power, Shielded
15kV, UL Type MV-105, 133% Ins. Level, 220 Mils



Product Construction

Conductor:

- 2 AWG thru 1000 kcmil annealed bare copper compact Class B strand

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conducting stress-control layer over conductor

Insulation:

- Ethylene Propylene Rubber (EPR) insulation colored to contrast with black conducting shield layers

Composite Insulation Shield and Jacket:

- Six corrugated copper drain wires embedded in composite layers of semi-conducting thermoset copolymer and semi-conducting black flame-retardant Chlorinated Polyethylene (CPE)

Print:

- GENERAL CABLE® (DI) (MO/YR OF MANUFACTURE) LIGHTNING BOLT SYMBOL 1/C SIZE (AWG OR KCMIL) COMPACT CU UNISHIELD® (INSULATION THICKNESS) EPR DRTP SEMI-CON CPE JKT TYPE MV-105 (VOLTAGE) KV% INSULATION LEVEL SUN RES FOR CT USE (UL) SEQUENTIAL FOOTAGE MARK

* Sizes smaller than 1/0 AWG do not include "FOR CT USE"

Applications:

- Installed in a broad range of commercial, industrial and utility projects such as pulp and paper mills, petrochemical plants, steel mills, textile mills, water and sewage treatment facilities, environmental protection systems, railroads, mines and fossil fuel utility generating stations
- Suitable for use in wet or dry locations when installed in accordance with NEC
- For use in aerial, conduit, open tray and underground duct installations
- For use in direct burial if installed in a system with a ground conductor that is in close proximity, and conforms with NEC 250.4 (A) (5)

Features:

- Rated at 105°C
- Reduced conductor size and shield system provides the smallest premium medium-voltage shielded power cable with full insulation
- Smaller outside dimensions reduce the size of duct needed or increase the ampacity per duct
- All features contribute to faster and easier installation
- Superior cold bend and cold impact performance
- Stable and constant shield short circuit performance

Features (cont'd.):

- Excellent heat and moisture resistance
- Outstanding corona resistance
- Flexibility for easy handling
- High dielectric strength
- Low dielectric loss
- Low moisture absorption
- Electrical stability under stress
- Chemical-resistant
- Sunlight-resistant
- Meets cold bend test at -55°C

Compliances:

- National Electrical Code (NEC)
- UL 1072
- ICEA S-93-639/NEMA WC74
- ICEA S-97-682
- AEC CS8
- UL listed as Type MV-105 for use in accordance with NEC
- Sizes 1/0 AWG and larger are listed and marked "Sunlight-Resistant FOR CT USE" in accordance with NEC
- IEEE 1202 (70,000 BTU/h)/CSA FT4
- Meets EPA 40 CFR, Part 2671 for leachable lead content per TCLP method
- OSHA acceptable

Optional Flame Tests:

- ICEA T-29-520 (210,000 BTU/h)

Packaging:

- Material cut to length and shipped on non-returnable wood reels. Lengths in excess of 10,000 lbs. are provided on returnable steel reels that require a deposit
- Extra charges apply for cuts less than 1000 ft., lagging, pulling eyes, paralleling and triplexing

CATALOG NUMBER	COND. SIZE (AWG/ kcmil)	NOMINAL CONDUCTOR DIAMETER INCHES	INSULATION DIAMETER INCHES		DRAIN WIRE SIZE (AWG)	NOMINAL CABLE				COPPER WEIGHT		AMPACITY			CONDUIT SIZING (4) (INCHES)
			DIAMETER			WEIGHT		CONDUIT IN AIR (1)	UNDERGROUND DUCT (2)			TRAY (3)			
			MIN.	MAX.		INCHES	mm			LBS/1000 FT	kg/km		LBS/1000 FT	kg/km	
15kV*, UL TYPE MV-105, 133% INS. LEVEL, 220 MILS															
19161.660200	2	0.27	0.710	0.800	19	0.93	23.88	555	835	230	342	165	165	-	3
19161.675100	1/0	0.34	0.780	0.865	18	1.01	25.91	734	1102	358	533	215	215	220	3.5
19161.675200	2/0	0.38	0.820	0.905	18	1.05	27.18	844	1259	443	659	255	245	250	3.5
19161.665300*	3/0	0.43	0.865	0.955	18	1.10	28.45	978	1458	550	818	290	275	290	3.5
19161.675400	4/0	0.48	0.920	1.005	18	1.16	29.72	1151	1716	685	1019	330	315	335	4
19161.686000	250	0.53	0.970	1.060	17	1.23	31.50	1325	1984	813	1210	365	345	370	4
19161.686200	350	0.62	1.070	1.155	17	1.33	33.78	1691	2530	1122	1669	440	415	460	5
19161.686500	500	0.74	1.190	1.275	17	1.46	37.08	2238	3344	1585	2358	535	500	575	5
19161.697000	750	0.91	1.370	1.460	16	1.67	42.42	3174	4739	2368	3523	655	610	745	6
19161.307500*	1000	1.06	1.520	1.610	16	1.86	47.24	4122	6133	3138	4669	755	690	890	6

*Non-stock item, minimum runs apply. Please consult Customer Service for price and delivery.

(1) Ampacities are in accordance with Table 310-73 of the NEC for triplexed or three single conductor copper cable in conduit based on a conductor temperature of 105°C (221°F) and an ambient air temperature of 40°C (104°F).

(2) Ampacities are in accordance with Table 310-77 of the NEC for triplexed or three single conductor copper cable in underground ducts (three conductors per duct), based on a conductor temperature of 105°C (221°F) and an ambient earth temperature of 20°C (68°F), electrical duct arrangement per Figure 310-60 Detail 1, unless otherwise specified.

(3) Ampacities are based on single conductor Type MV-105 sizes 1/0 AWG and larger in an uncooled tray in accordance with Section 392-13(B) of the NEC at an ambient air temperature of 40°C (104°F); the ampacities are based on 75% of the values per Table 310-69. For cable trays with unventilated covers for more than 6 feet, the ampacities shall not exceed 50% of the values shown above.

(4) Based on nominal cable diameters, three single cables in the duct (PVC Schedule 40) with no ground wire and a maximum of 40% fill. Fan rating has been considered, but it should be checked for individual installations.

*100% insulation level is available upon request

Dimensions and weights are nominal; subject to industry tolerances.

Note: a) Sizes smaller than 1/0 AWG do not include "FOR CT USE"

b) The NESC Lightning bolt symbol is on all UniShield® constructions



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☒ FINAL APPROVAL
☐ APPROVED AS NOTED
☐ REVISE AND RESUBMIT

DATE 2/20/08 BY C. Rich

CHECKING OF SHOP DRAWINGS

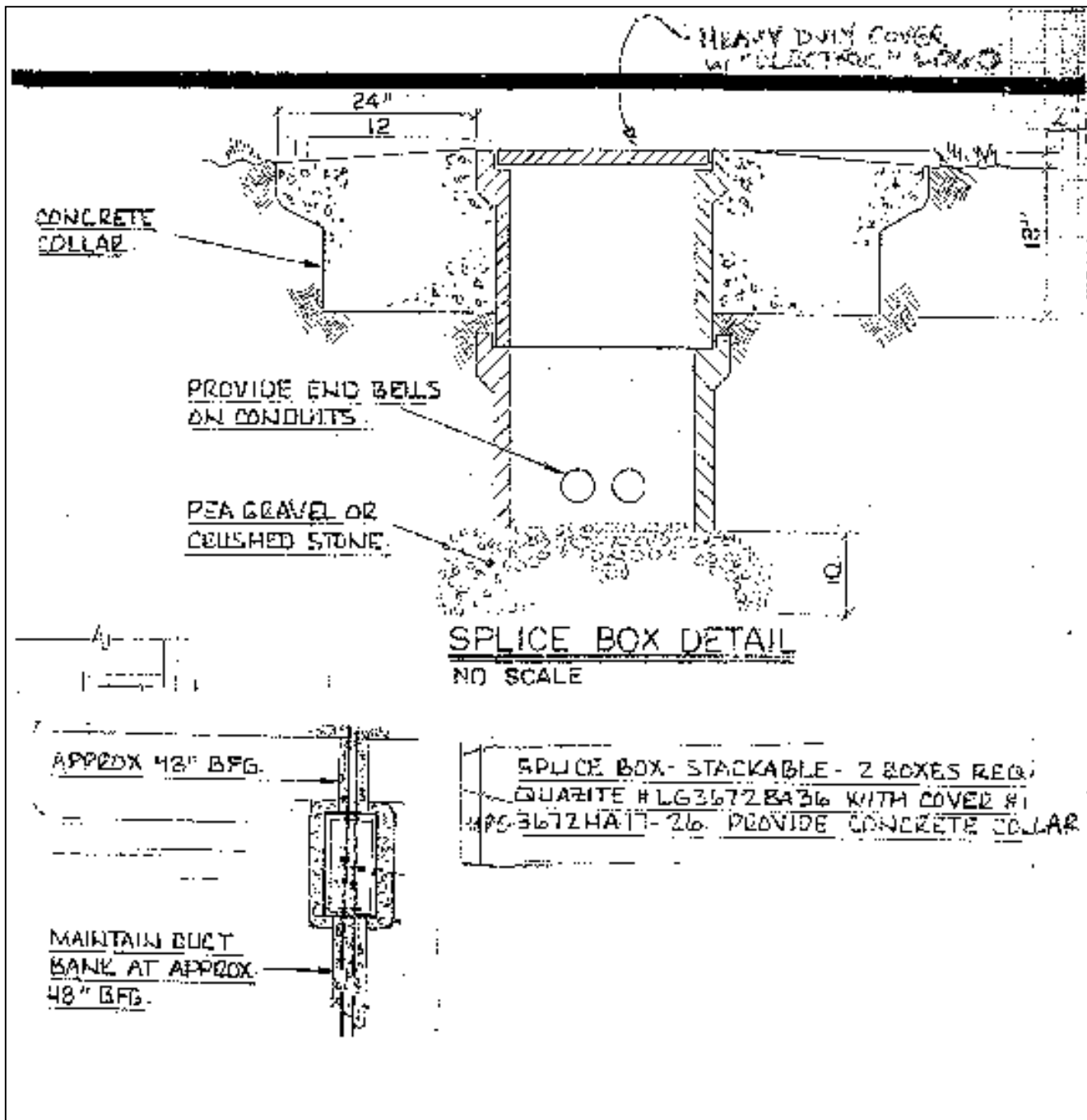
General Cable
Phone: 888-593-3355
www.generalcable.com

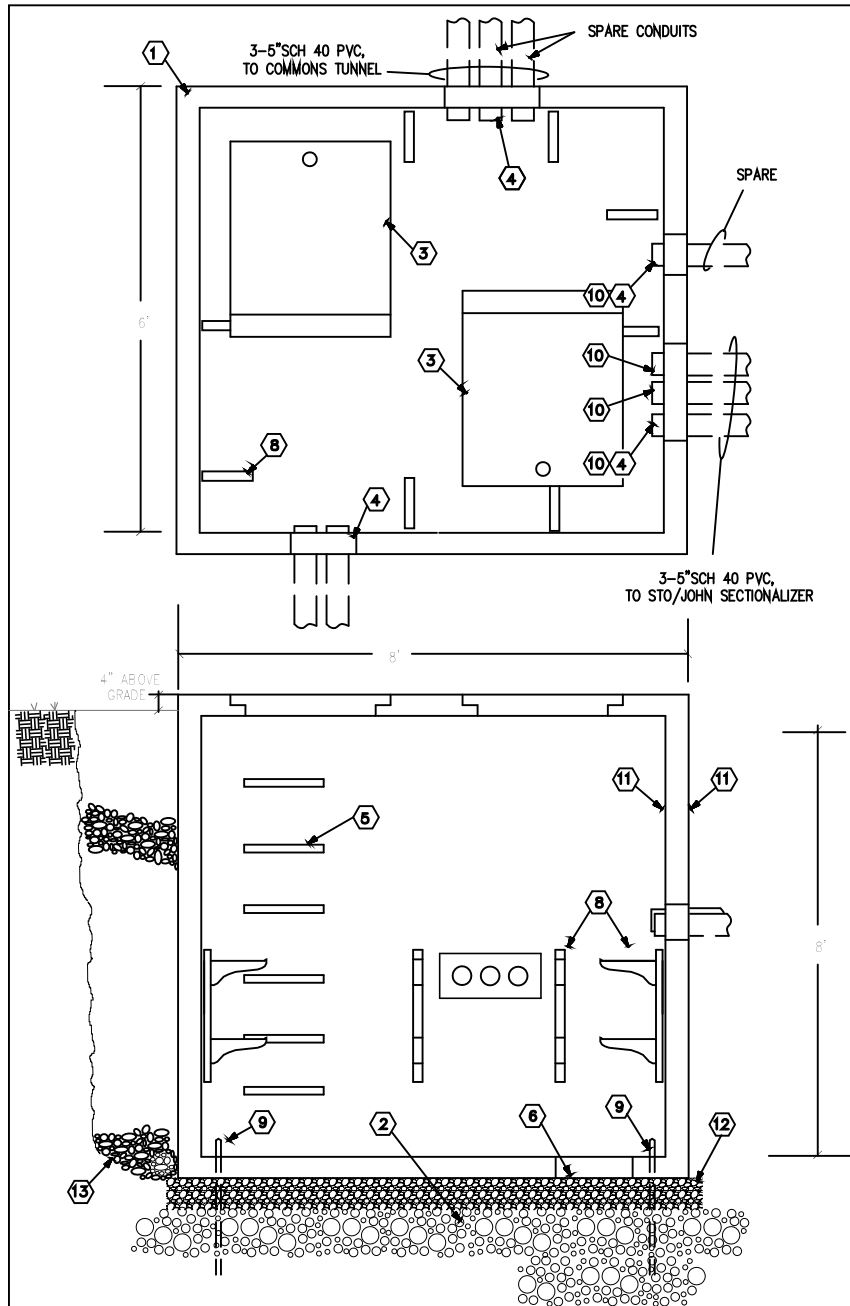
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DESIGN GUIDE 260513
MED VOLT CABLE
SINGLE CONDUCTOR
UNISHIELD- 4" DUCTS

DATE: 01-14-2010

CA-3





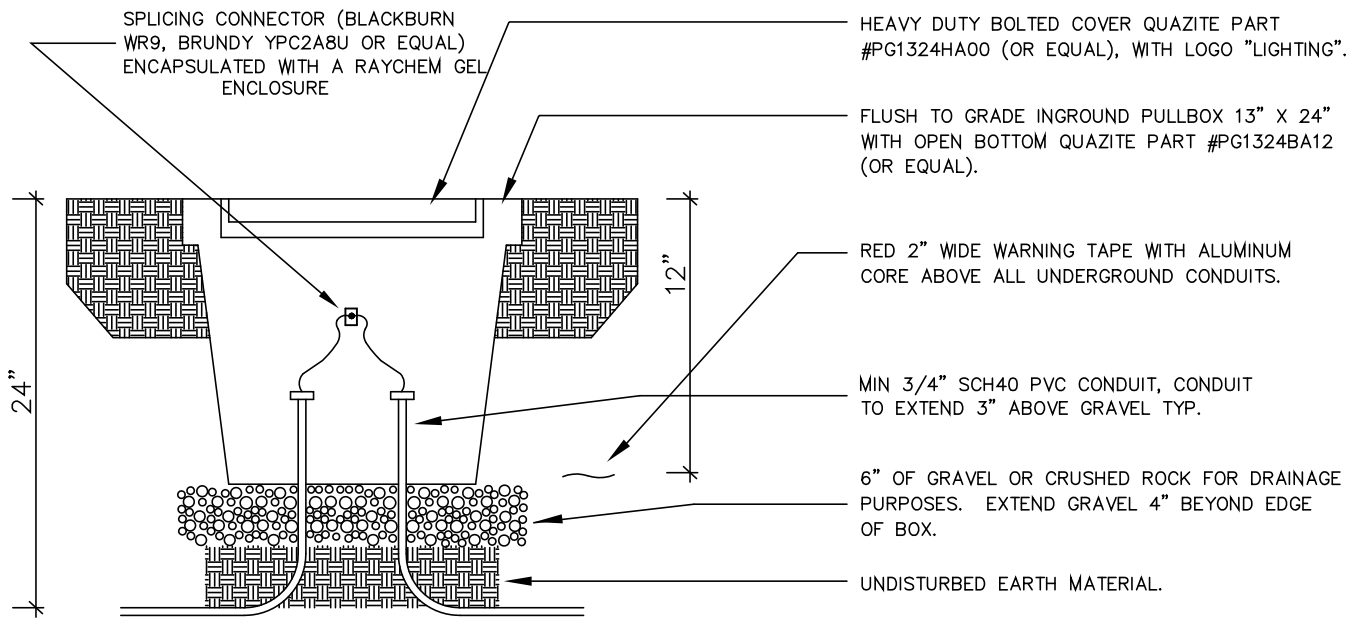
NEW MANHOLE NOTES

- 1 - PROVIDE PRECAST FLUSH TO GRADE 6"W X 8"L X 8"H MANHOLE WITH ACCESSORIES AS INDICATED. MANHOLE TO WITHSTAND H-20 LOADING IN ACCORDANCE WITH AASHTO.
- 2 - PROVIDE 18" BEDDING UNDER VAULT, #57 GRAVEL. GRAVEL SHALL EXTEND OUT 24-36" ON ALL SIDES.
- 3 - BILCO TYPE "PCM" 30" X30" ALUMINUM ACCESS DOOR WITH PANIC HARDWARE, STANDARD REMOVABLE TURN HANDLE, REMOVABLE PLUG LOCKSET. PROVIDE LOCK AND KEYING PER KSU STANDARD (CORBIN RUSSWIN MORTISE CYLINDER, 59A2-6 PIN KEYWAY). DOOR TO BE CAST INTO MANHOLE. DOOR SHALL BE MIN 1/4" AL DIAMOND PLATE. TYPICAL 1 OF 2. DOOR SHALL HAVE "ELECTRIC" LOGO.
- 4 - GROUT (NON SHRINK) ALL JOINTS IN WALLS AND DUCT ENTRANCES TO PROVIDE A WATERPROOF STRUCTURE. INSTALL 12" DOWELS BETWEEN DUCTBANK & MANHOLE. ALL CONDUITS ENTERING MH SHALL HAVE BELL END FITTINGS.
- 5 - 1" DIAMETER STEEL REINFORCED POLYPROPYLENE MANHOLE STEPS 16" WIDE, 12" ON CNTRS. STARTING AT 12" DOWN FROM ACCESS DOOR TO WITHIN 12" OF FLOOR.
- 6 - 12" GRAVEL SUMP, FLR SLOPED TO DRAIN TO SUMP. PROVIDE ROCK SUMP 2'-0" DEEP, 3' DIAMETER CENTERED BENEATH SUMP HOLE.
- 7 - PULLING IRONS
- 8 - HEAVY DUTY NON METALLIC 14"CABLE RACKS. RACK STANCHION SHALL BE SECURED TO WALL WITH CONCRETE ANCHORS. ADJUST RACKS TO ACCOMMODATE THE CABLES FROM THE VARIOUS DUCTS. TYPICAL OF 8. ALL HARDWARE SHALL BE STAINLESS STEEL.
- 10 - 1" OPENINGS IN CONCRETE BASE WITH 3/4" X 10' GROUND ROD. ATTACH TO 600V GND CONDUCTOR WITH 4/0 COPPER.
- 9 - EC SHALL INSTALL THESE 5" SCH 40 PVC CONDUITS OUT FROM MH. AND INTERCEPT EXISTING CONDUITS STUBBED OUT FROM STOPHER/JOHNSON CONSTRUCTION SITE THESE CONDUITS SHALL ALSO BE ENCASE IN CONCRETE.
- 11 - MANHOLE SHALL HAVE TWO COATS OF WATERPROOF SEALER APPLIED INSIDE AND OUT.
- 12 - 6" COMPACTED GRANULAR LEVELING COURSE (ODOT #304 CRUSHED LIMESTONE).
- 13 - INSTALL GRANULAR FILL ON ALL FOUR SIDES TO WITHIN 24" OF TOP.

NEW MANHOLE #1

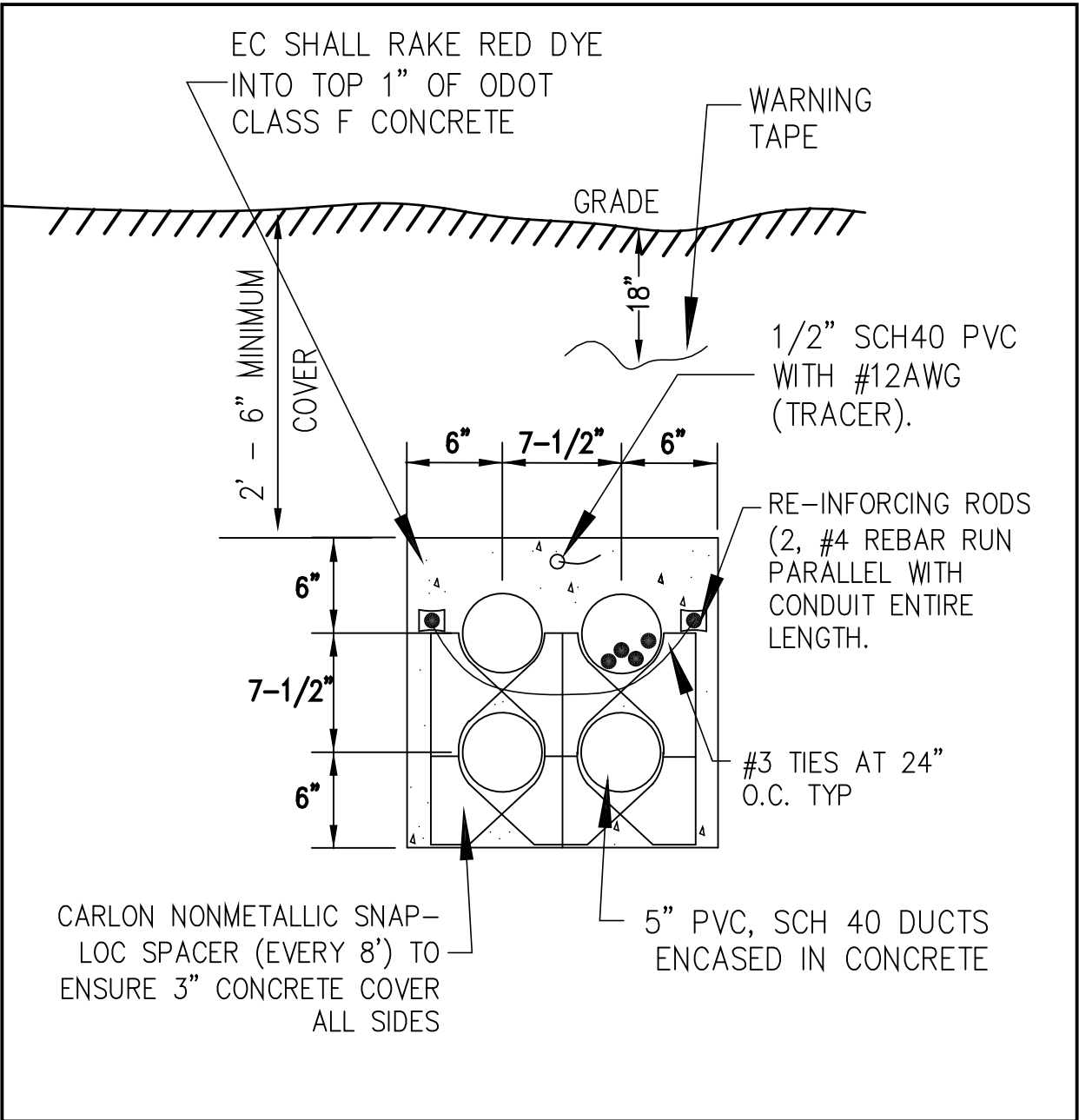
NO SCALE

TYPICAL REQUIRED MAHOLE CONSTRUCTION



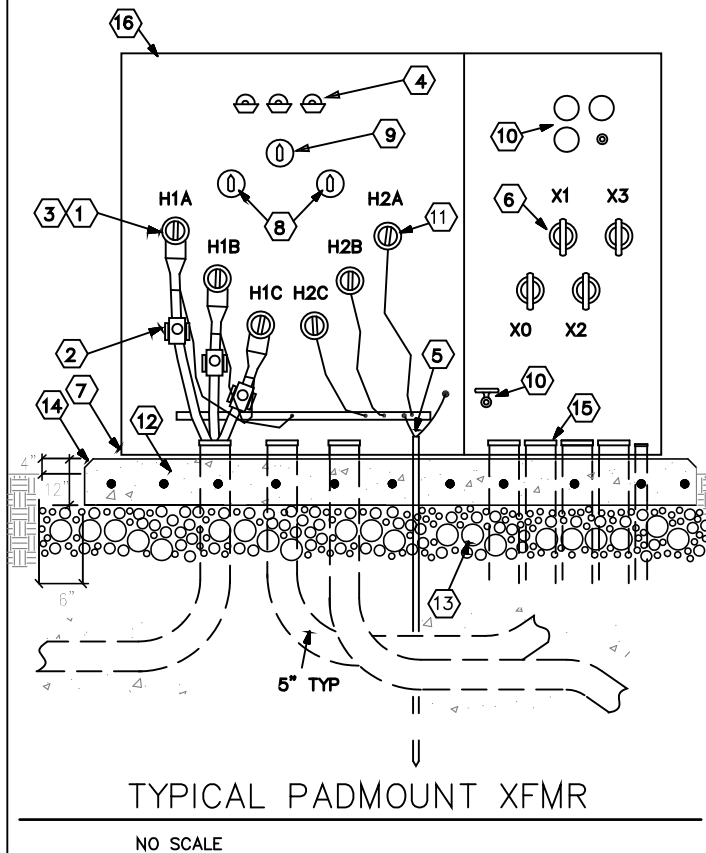
SPLICE BOX INSTALLATION DETAIL

NO SCALE

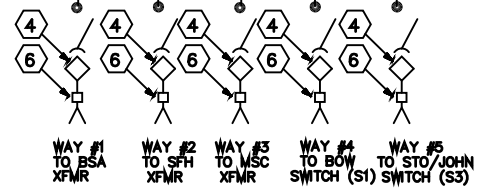
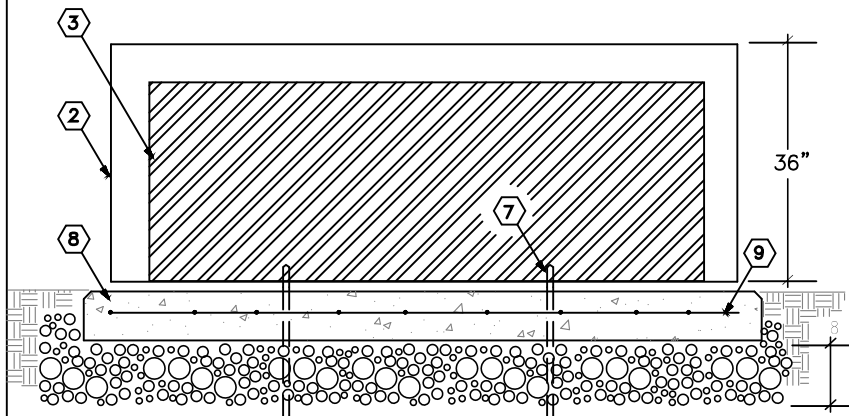


REQUIRED DUCTBANK CONSTRUCTION

PADMOUNT TRANSFORMER NOTES

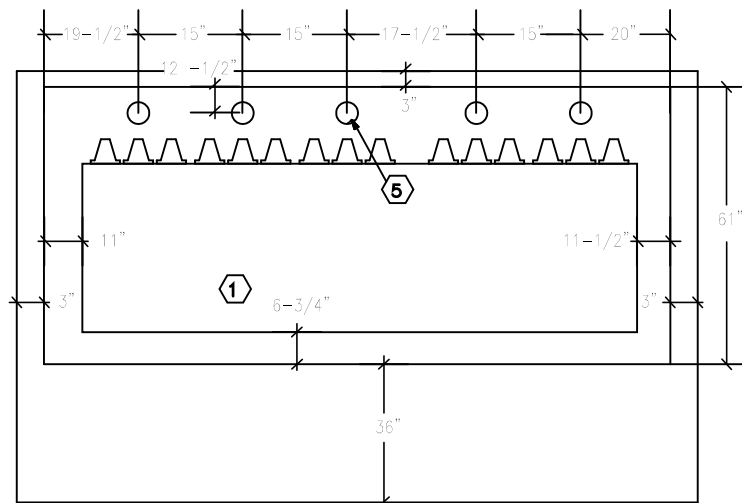


- 1 - PROVIDE AND INSTALL 15KV 600AMP CLASS DEADBREAK ELBOW CONNECTORS WITH TEST POINT, INSULATING PLUG, CAP, STUD AND CABLE ADAPTER HUBBELL (#K655LR-WOX-) OR APPROVED EQUAL. EC SHALL ORDER APPROPRIATE ACCESSORIES SUCH AS LUGS, SHIELD GROUNDING KIT, ETC. BOND CABLE SHIELDING TO GROUND BUSS WITH COMPRESSION CONNECTORS. TYPICAL OF 6.
- 2 - PROVIDE AND INSTALL FAULT INDICATOR ONE PER PHASE. THE INDICATOR SHALL PROVIDE A DISPLAY AFTER THE CABLE HAS FAULTED. THE FAULT INDICATORS SHALL BE SET AT THE HIGH TRIP RATING AND SHALL BE MOISTURE, HEAT AND CORROSION RESISTANT.
- 3 - EC SHALL INSTALL SURGE ARRESTER ONE PER CABLE. EC SHALL USE A 15KV CLASS, 8.4KV MCOV METAL OXIDE VARISTOR ELBOW ARRESTER HUBBELL (#611509) OR APPROVED EQUAL. THE ELBOW ARRESTER SHALL BE INSTALLED ON THE BACK OF THE 600AMP DEADBREAK ELBOW USING A 15KV LOADBREAK REDUCING TAP PLUG HUBBELL (#650ETP) OR APPROVED EQUAL.
- 4 - BAYONET OIL-FUSED CUTOFF, ONE PER PHASE WITH 3, 80A FUSES PLUS 3 SPARE.
- 5 - FOUR (4), 3/4" X 10" GROUND RODS AROUND XFMR PAD CONNECTED WITH #4/0 CU. PROVIDE #4/0 CU GRND FROM GRND RING(CAD WELD TO GRND RING CONDUCTOR OR ROD) TO XFMR. TAKE ALL 15KV TERMINATION ELBOW AND INSULATION CAP DRAIN WIPES, SHIELDS TO GROUND.
- 6 - EC SHALL ENSURE THAT THE TRANSFORMER SECONDARY BUSHINGS ARE CAPABLE OF ACCEPTING 9-600KCMIL CONDUCTORS PER PHASE.
- 7 - EC SHALL ANCHOR THE PADMOUNT TRANSFORMER/SWITCH TO THE CONCRETE PAD AT FOUR CORNERS OF DEVICE.
- 8 - LOOP-FEED SWITCHES CONSISTING OF TWO (2) TWO POSITION, 15KV, 95KVBL, 600A, 10KAD GANG OPERATED INTERNAL OIL SWITCHES.
- 9 - ON-OFF RADIAL SWITCH TO DE-ENERGIZE THE TRANSFORMER WITHOUT OPENING THE LOOP-FEED SWITCHES.
- 10 - THE TRANSFORMER SHALL ALSO HAVE LIQUID LEVEL GAUGE, LIQUID DRAIN VALVE, PRESSURE GAUGE, PRESSURE RELIEF VALVE, NITROGEN TEST/FILL PORT AND A TEMPERATURE GAUGE.
- 11 - EC SHALL INSTALL 3, 15KV INSULATED PROTECTIVE CAPS, CONNECT DRAIN WIRES TO GND.
- 12 - THE TRANSFORMER PAD SHALL BE 12" THICK 3500PSI CONCRETE WITH #5 REINFORCING STEEL 12"O.C. EACH DIRECTION.
- 13 - INSTALL A MINIMUM 8" OF CRUSHED STONE OR GRAVEL BELOW PAD. THE STONE/GRAVEL SHALL EXTEND MINIMUM OF 6" OUT FROM THE SLAB ON ALL SIDES.
- 14 - 1" ROUNDED EDGE ALL SIDES.
- 15 - 9, 3-1/2" PVC SCH 40 CONDUITS WITH 4-600KCMIL CONDUCTORS IN EACH.
- 16 - THE TRANSFORMER SHALL CONTAIN LESS FLAMMABLE LIQUID (R-TEMP).



NEW SWITCH#2 NOTES

- 1 - THE DIMENSION OF EQUIPMENT IS CRITICAL. EQUIPMENT LAYOUT AS SHOWN IS BASED ON THE S&C SWAY VISTA SWITCH. EC SHALL ASSUME RESPONSIBILITY FOR ANY CHANGES OR ADDITIONAL WORK CREATED BY USE OF EQUIPMENT BY MANUFACTURERS OTHER THAN S&C.
- 2 - EC SHALL PROVIDE AND INSTALL MILD STEEL SWITCH ENCLOSURE (61"D X 102"W). ENCLOSURE SHALL BE PAINTED OLIVE GREEN AND ANCHORED TO CONCRETE PAD.
- 3 - 15KV S&C "VISTA" 5WAY PADMOUNT SWITCH. ALL 5 WAYS SHALL BE LOAD INTERRUPTER SWITCH WAYS. ANCHOR SWITCH TO MH. EC SHALL INSTALL 1/4" X 1" COPPER GROUND BAR THE LENGTH OF THE SWITCH.
- 4 - PROVIDE AND INSTALL 15KV 600AMP CLASS DEADBREAK ELBOW CONNECTORS WITH TEST POINT, AND A 15KV REDUCING TAP PLUG (HUBBELL #650ETP) WITH A 8.4KV MCOV METAL OXIDE VARISTOR ELBOW ARRESTER (HUBBELL #611509) OR APPROVED EQUAL (12 TERMINATIONS). EC SHALL BOND ARRESTER GND LEADS TO GROUND BUS. EC SHALL VERIFY POSITIONING OF ENCLOSURE TO ENSURE THAT THERE IS ENOUGH DEPTH TO ACCOMMODATE 600A ELBOW, 200A INSERT & ELBOW ARRESTER.
- 5 - EC SHALL BRING UP 5" SCH 40 PVC CONDUITS OUT OF THE SLAB. CONDUITS SHALL BE 2" ABOVE SLAB. CONDUITS SHALL HAVE BELL END FITTINGS. TYPICAL 1 OF 5 CONDUITS.
- 6 - PROVIDE AND INSTALL COOPER (#SMHI) 15KV MANUAL RESET FAULT INDICATORS ONE PER PHASE (12 TOTAL). EC SHALL ALSO SUPPLY 2 COOPER RESET TOOLS (#SMRT).
- 7 - EC SHALL PROVIDE AND INSTALL 4, COPPER 3/4" X 10' GND RODS IN THE SLAB. EC SHALL USE 4/0 CU CONDUCTORS TO BOND THE RODS AND EXTEND TO THE GND BUS IN THE SWITCH.
- 8 - EC SHALL PROVIDE 12" THICK 3500 PSI MINIMUM COMPRESSION STRENGTH CONCRETE PAD AND 8" AGGREGATE BELOW PAD.
- 9 - #5 REINFORCING STEEL 12" O.C. BOTH DIRECTIONS SECURELY TIED TOGETHER.



NEW SECTIONALIZING SWITCH

NO SCALE

DESIGN GUIDE 265600
STD CUTOFF FIXTURE

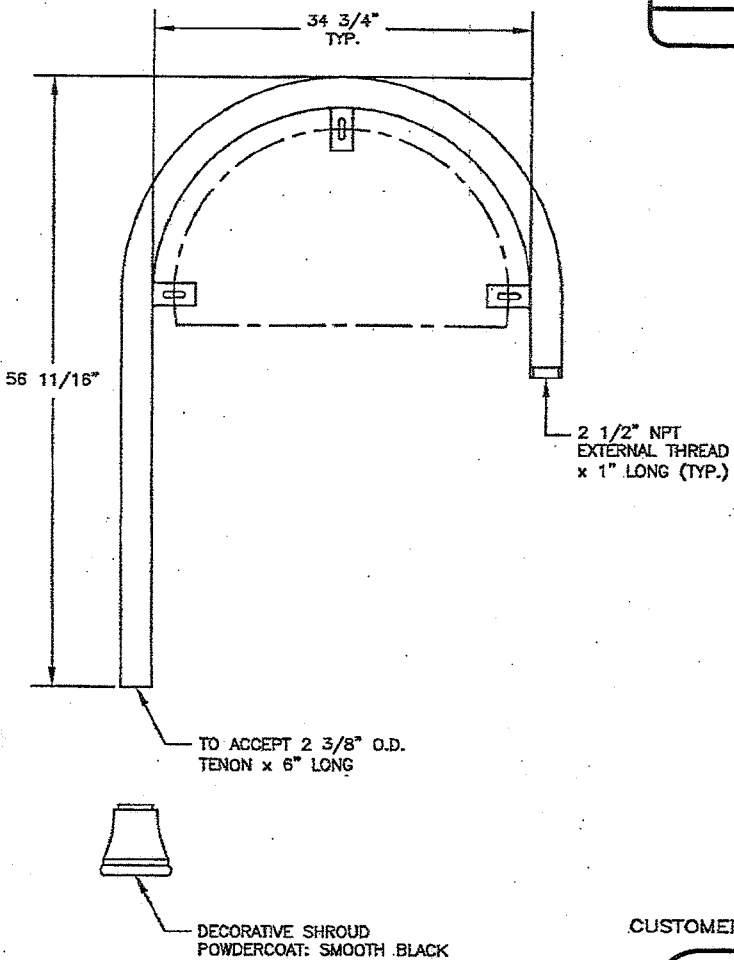
DATE: 01-14-2010

LF-1

<p>REV. _____</p>	<p>ALTERATION _____</p>	<p>DATE _____</p>	<p>BY _____</p>
<p>SPECIFICATIONS</p> <p>CATALOGUE NO.: K829-HCSA-V-150(MED) -MH(PS)-<u>277</u>(MT)-KPL10 ←</p> <p>QUANTITY: <u>7</u></p> <p>OPTICAL SYSTEM: HYDROFORM GLASS SAG LENS IES LTG. CLASS.: TYPE V FLAT</p> <p>WATTAGE: 150W</p> <p>SOCKET SIZE: MEDIUM</p> <p>SOURCE: METAL HALIDE (PULSE START) ← <u>277V</u> (MULTI-TAP) ← SMOOTH BLACK</p>			
<p>NOTE FOR KING OHIO TEFLON TAPE AND ASSEMBLE AT FACTORY PRIOR TO SHIPPING</p>			
<p>KENT STATE UNIVERSITY UNIVERSITY ARCHITECTS OFFICE</p>			
<p><input type="checkbox"/> FINAL APPROVAL</p> <p><input checked="" type="checkbox"/> APPROVED AS NOTED</p> <p><input type="checkbox"/> REVISE AND RESUBMIT</p> <p>DATE <u>1/5/10</u> BY <u>C. Kuchel</u></p>			
<p>TYPE: HX-HPF</p> <p>MANU: ADVANCE</p> <p>NUMBER: 71A5492-500D</p>			
<p>CHECKING OF SHOP DRAWINGS BY THIS OFFICE DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS & SPECIFICATIONS OR FOR ERRORS IN SHOP DRAWINGS.</p>			
<p><input checked="" type="checkbox"/> QUICK DISCONNECT</p> <p><input type="checkbox"/> TERMINAL BLOCK</p> <p>OTHER:</p> <p>FOR WIRING DIAGRAM SEE DRAWING 209B0103</p>			
<p>CUSTOMER APPROVAL & DATE: <u>1/5/10</u> <u>CME</u></p>			
<p>CUSTOMER ORDER No: P0007368</p> <p>STRESSCRETE ORDER No: -</p> <p>KING CANADA ORDER No: K01108</p> <p>KING U.S. ORDER No: A03199</p>		<p>STRESSCRETE GROUP King Luminaires • Stresscrete • Est. 1953</p>	
<p>PROJECT/CUSTOMER: KENT STATE UNIVERSITY</p>		<p>MANUFACTURING LOCATIONS: Burlington, Ontario 1-800-268-7809 Northport, Alabama 1-800-435-6563 Atchison, Kansas 1-800-837-1024 Jefferson, Ohio 1-800-268-7809</p>	
<p>DRAWN BY: A. ALVELA</p> <p>AT: SC1</p> <p>DRAWING TYPE: APPROVAL DRAWING</p>		<p>CHECKED BY DATE: 12/30/09</p> <p>REVISION:</p> <p>DRAWING NUMBER: 206A4649-2</p>	

Labels: BELL REDUCER, 2 1/2" N.P.T. INTERNAL THREAD, 1/4"-20 x 3/4" L ST.LT.SOC.SET SCREW, 2" N.P.T. INTERNAL THREAD, 1/4"-20 x 3/4" L ST.LT.SOC.SET SCREW, PLUMBER ASSEMBLY, 1 1/4" N.P.T. EXTERNAL THREAD, 1 1/4" NPT INTERNAL, 1/4"-20 x 1/2" L ST.LT.SOC.SET SCREW, HINGED TOP C/W LOCKING LATCH FOR BALLAST ACCESS, BALLAST MODULE, HEAVY WALL CAST ALUMINUM BODY, K829 RUGGED ALUMINUM SPINNING, V.L3 HYDROFORM REFLECTOR, (3) ST.LT. LATCHES, SAG GLASS LENS, 26" DIA, HINGE.

NOTE:
1) LAMP BY OTHERS
2) UNDERSIDE OF SPINNING TO BE PAINTED
SAME COLOR AS REST OF LUMINAIRE
3) PIPE SEALER TO BE USED ON ALL
N.P.T. THREADED COMPONENTS





REV.	ALTERATION	DATE	BY

ARM SPECIFICATIONS
 CATALOGUE NO. KA15-T-1 (MOD.)
 QUANTITY: 4
 MATERIAL: ALUMINUM
 POWDERCOAT: SMOOTH BLACK

KENT STATE UNIVERSITY	
UNIVERSITY ARCHITECT'S OFFICE	
<input checked="" type="checkbox"/>	FINAL APPROVAL
<input type="checkbox"/>	APPROVED AS NOTED
<input type="checkbox"/>	REVISE AND RESUBMIT
DATE <u>1/5/10</u> BY <u>C. Ricchetti</u>	
CHECKING OF SHOP DRAWINGS BY THIS OFFICE DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS & SPECIFICATIONS OR FOR ERRORS IN SHOP DRAWINGS.	

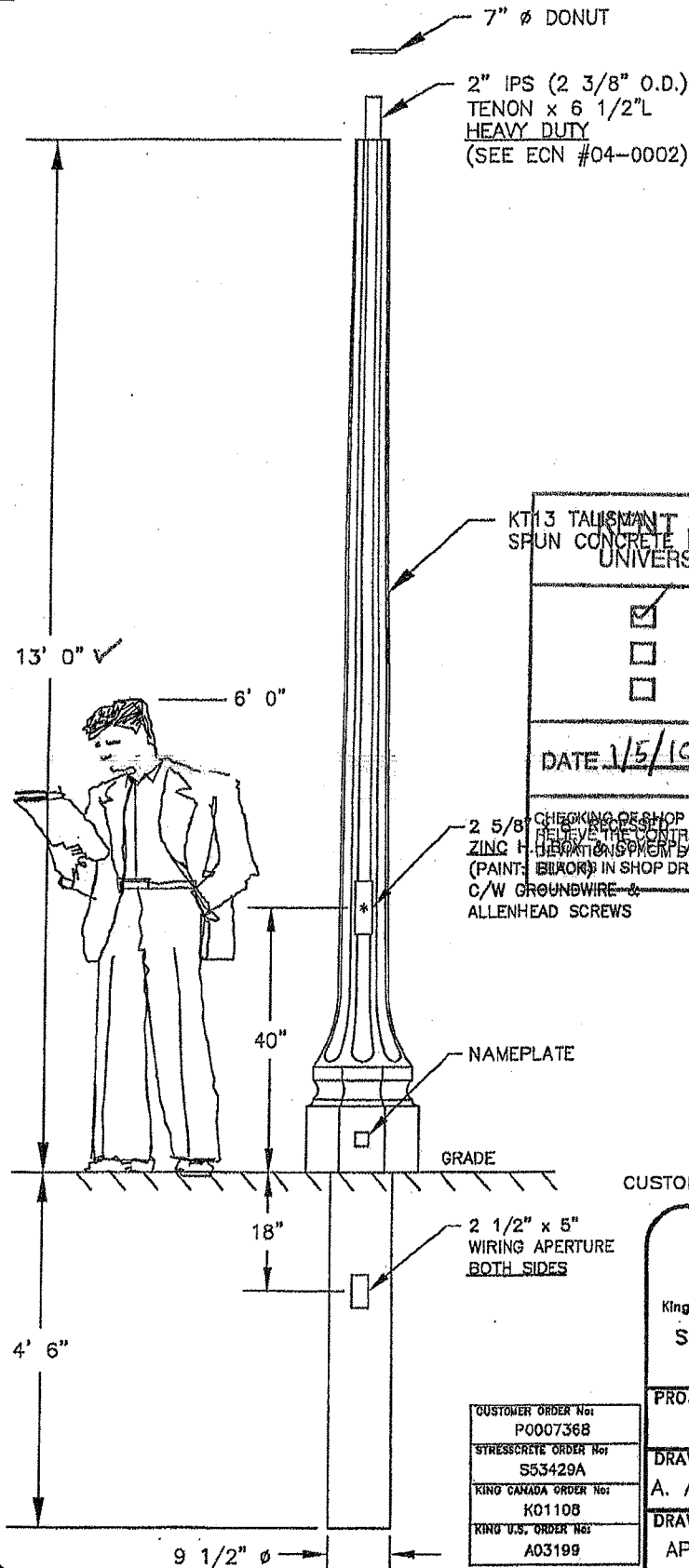
CUSTOMER APPROVAL & DATE:

  King Luminaire • Stresscrete • Est. 1953		Manufacturing Locations: Burlington, Ontario 1-800-268-7809 Northport, Alabama 1-800-435-6563 Atchison, Kansas 1-800-837-1024 Jefferson, Ohio 1-800-268-7809	
CUSTOMER ORDER No: P0007368		STRESSCRETE GROUP	
STRESSCRETE ORDER No: -		PROJECT/CUSTOMER: KENT STATE UNIVERSITY	
KING CANADA ORDER No: K01108	DRAWN BY: A. ALVELA	AT: SC1	CHECKED BY: DATE: 12/30/09
KING U.S. ORDER No: A03199	DRAWING TYPE: APPROVAL DRAWING		DRAWING NUMBER: A03199-4

POLE SPECIFICATIONS

CATALOGUE NO.: KT13-G--E11 C/W
140-25/65 & DONUT

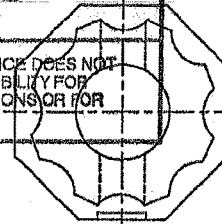
QUANTITY: (4)
SECTION: FLUTED OCTAGONAL
COLOUR: ECLIPSE
FINISH: ETCHED
POLE TOP: 5 1/2" FL/FL
POLE BUTT: 9 1/2" Ø
POLE LENGTH: 17' 6" ✓
APPROX WEIGHT: 1,075 lbs.
MIN. RACEWAY: 1 1/4" Ø
OPTIONS: 7" Ø DONUT (SMOOTH BLACK)



KENT STATE UNIVERSITY
UNIVERSITY ARCHITECT'S OFFICE
KENT, OHIO 44240-3600
PHONE 330-2500 FAX 330-2500
E-MAIL: KENT@KENT.EDU

- ☒ FINAL APPROVAL
☐ APPROVED AS NOTED
☐ REVISE AND RESUBMIT

DATE 1/5/10 BY C. Reddett



H.H. BOX, NAMEPLATE
THRU APERTURE
TOP VIEW

CUSTOMER APPROVAL & DATE: 1/5/10 CMR



King Luminaire • Stresscrete • Est. 1953

STRESSCRETE
GROUP

Manufacturing Locations:

Burlington, Ontario 1-800-268-780
Northport, Alabama 1-800-435-65
Atchison, Kansas 1-800-837-1024
Jefferson, Ohio 1-800-268-7809

PROJECT/CUSTOMER:

KENT STATE UNIVERSITY

DRAWN BY:	AT:	CHECKED BY:	DATE:	REVISION:
A. ALVELA	SC1		12/30/09	
DRAWING TYPE:		DRAWING NUMBER:		
APPROV./MFG. DWG.		A03199-1		

CUSTOMER ORDER NO:
P0007368
STRESSCRETE ORDER NO:
S53429A
KING CANADA ORDER NO:
K01108
KING U.S. ORDER NO:
A03199

KENT STATE
UNIVERSITY
OFFICE OF THE UNIVERSITY ARCHITECT

DESIGN GUIDE 265600
STD WALKWAY POLE

DATE: 01-14-2010

PL-1

LINE TO LINE at bus "1258 KENT ST U.69"

5/06/2009

Substation CENTRAL - Akron Customers		Area 1 C_AK		Zone 69 69 kV Sub Tr	
Bus	1258 KENT ST U.69 RR	Base kV	71.11 Ph-Ph (41.06 @0 deg A-Gnd)	Prefault 1.000 V (p.u.) @ 0.00
	+ seq	- seq	0 seq / 3Io	A phase	B phase C phase
Voltage (kV)	Ph-Gnd > 20.5280 @ 0.0	20.5280 @ 0.0	0.00000 @ 0.0	41.0559 @ 0.0	20.5280 @ 180.0 20.5280 @ 180.0

Thevenin (R, X) (p.u.) > 0.01555, 0.05394 0.01556, 0.05394 0.03682, 0.10518
 Thevenin (R, X) (Ohms) > 0.78639, 2.72753 0.78696, 2.72744 1.86196, 5.31857

→ Fault Currents (Amps) > 7231.45 @ -73.9 7231.45 @ 106.1 0.00000 @ 0.0 | 0.00000 @ 0.0 12525.2 @ -163.9 12525.2 @ 16.1

Line Currents (Amps) total from >

CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
 1698 KSU TAP 69 1 7231.45 @ -73.9 7231.45 @ 106.1 0.00000 @ 0.0 | 0.00000 @ 0.0 12525.2 @ -163.9 12525.2 @ 16.1

Substation CENTRAL - Akron Fic. Buses		Area 1 C_AK		Zone 1036 69kV Sub Tr	
Bus	1698 KSU TAP 69 LT	Base kV	71.11 Ph-Ph (41.06 @0 deg A-Gnd)	Prefault 1.000 V (p.u.) @ 0.00
	+ seq	- seq	0 seq / 3Io	A phase	B phase C phase
Voltage (kV)	Ph-Gnd > 20.6004 @ -0.1	20.4556 @ 0.1	0.00000 @ 0.0	41.0559 @ 0.0	20.5866 @ -179.7 20.4701 @ 179.6

Line Currents (Amps) total from >

KENT (Real bus DARROW 1110 DARROW 69): DARROW_WEST_RAVENNA_69KV
 1264 KENT 69 1 2025.15 @ -72.1 2025.15 @ 107.9 0.00000 @ 0.0 | 0.01672 @ -164.9 3507.66 @ -162.1 3507.67 @ 17.9
 CENTRAL - Akron Customers Line: DARROW_WEST_RAVENNA_69KV
 1258 KENT ST U.69 1 7231.45 @ 106.1 7231.45 @ -73.9 0.00000 @ 0.0 | 0.00000 @ 0.0 12525.2 @ 16.1 12525.2 @ -163.9

CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
 1704 KENT WTR T69 1 5207.75 @ -74.6 5207.75 @ 105.4 0.00000 @ 0.0 | 0.01672 @ 15.1 9020.10 @ -164.6 9020.08 @ 15.4

Immediately below is the fault data requested for the Kent State 69kV substation, which is adjacent to the Power Plant. I have highlighted in RED the relevant data.

5/06/2009

SINGLE LINE GROUND at bus "1258 KENT ST U.69"

Substation CENTRAL - Akron Customers		Area 1 C_AK		Zone 69 69 kV Sub Tr		
Bus	1258 KENT ST U.69 RR	Base kV	71.11 Ph-Ph (41.06 @0 deg A-Gnd)	Prefault 1.000 V (p.u.)	@ 0.00	
		+ seq	- seq	0 seq / 3Io	A phase	
					B phase	
					C phase	
Voltage (kV)	Ph-Gnd > 30.7547 @ -0.5	10.3063 @-178.4	20.4590 @ 178.4	0.00000 @ 0.0	46.3120 @-131.5	47.6143 @ 130.1

→ Thevenin (R, X) (p.u.) > 0.01555, 0.05394 0.01556, 0.05394 0.03682, 0.10518
 Thevenin (R, X) (Ohms) > 0.78639, 2.72753 0.78696, 2.72744 1.86196, 5.31857

→ Fault Currents (Amps) > 3630.65 @ -72.3 3630.65 @ -72.3 10892.0 @ -72.3 | 10892.0 @ -72.3 0.00000 @ 0.0 0.00000 @ 0.0

Line Currents (Amps) total from >

CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
 1698 KSU TAP 69 1 3630.65 @ -72.3 3630.65 @ -72.3 10892.0 @ -72.3 | 10892.0 @ -72.3 0.00006 @-147.6 0.00006 @-147.6

Substation CENTRAL - Akron Fic. Buses		Area 1 C_AK		Zone 1036 69kV Sub Tr		
Bus	1698 KSU TAP 69 LT	Base kV	71.11 Ph-Ph (41.06 @0 deg A-Gnd)	Prefault 1.000 V (p.u.)	@ 0.00	
		+ seq	- seq	0 seq / 3Io	A phase	
					B phase	
					C phase	
Voltage (kV)	Ph-Gnd > 30.7916 @ -0.6	10.2700 @-178.3	20.3633 @ 178.4	0.17596 @ -16.3	46.2746 @-131.4	47.5754 @ 130.1

Line Currents (Amps) total from >

KENT (Real bus DARROW 1110 DARROW 69): DARROW_WEST_RAVENNA_69KV
 1264 KENT 69 1 1016.76 @ -70.5 1016.76 @ -70.5 2729.26 @ -71.0 | 2943.24 @ -70.6 107.375 @ 114.0 107.360 @ 114.0
 CENTRAL - Akron Customers Line: DARROW_WEST_RAVENNA_69KV
 1258 KENT ST U.69 1 3630.65 @ 107.7 3630.65 @ 107.7 10892.0 @ 107.7 | 10892.0 @ 107.7 0.00006 @ 32.4 0.00006 @ 32.4
 CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
 1704 KENT WTR T69 1 2614.62 @ -73.0 2614.62 @ -73.0 8163.65 @ -72.8 | 7950.45 @ -72.9 107.375 @ -66.0 107.360 @ -66.0

THREE_PHASE at bus "1258 KENT ST U.69"

5/06/2009

Substation _CENTRAL - Akron Customers
Bus 1258 KENT ST U.69 RR
Area 1 C_AK Zone 69 69 kV Sub Tr
Base kV 71.11 Ph-Ph (41.06 @0 deg A-Gnd) Prefault 1.000 V (p.u.) @ 0.00
+ seq - seq 0 seq / 3Io A phase B phase C phase
Voltage (kV) Ph-Gnd > 0.00000 @ 0.0 0.00000 @ 0.0 0.00000 @ 0.0 | 0.00000 @ 0.0 0.00000 @ 0.0 0.00000 @ 0.0

Thevenin (R, X) (p.u.) > 0.01555, 0.05394 0.01556, 0.05394 0.03682, 0.10518
Thevenin (R, X) (Ohms) > 0.78639, 2.72753 0.78696, 2.72744 1.86196, 5.31857

Fault Currents (Amps) > 14463.1 @ -73.9 0.00000 @ 0.0 0.00000 @ 0.0 | 14463.1 @ -73.9 14463.1 @ 166.1 14463.1 @ 46.1

Line Currents (Amps) total from >

_CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
1698 KSU TAP 69 1 14463.1 @ -73.9 0.00000 @ 0.0 0.00000 @ 0.0 | 14463.1 @ -73.9 14463.1 @ 166.1 14463.1 @ 46.1

Substation _CENTRAL - Akron Fic. Buses
Bus 1698 KSU TAP 69 LT
Area 1 C_AK Zone 1036 69kV Sub Tr
Base kV 71.11 Ph-Ph (41.06 @0 deg A-Gnd) Prefault 1.000 V (p.u.) @ 0.00
+ seq - seq 0 seq / 3Io A phase B phase C phase
Voltage (kV) Ph-Gnd > 0.15968 @ -24.9 0.00000 @ 0.0 0.00000 @ 0.0 | 0.15968 @ -24.9 0.15968 @ -144.9 0.15968 @ 95.1

Line Currents (Amps) total from >

KENT (Real bus DARROW 1110 DARROW 69): DARROW_WEST_RAVENNA_69KV
1264 KENT 69 1 4050.35 @ -72.1 0.00000 @ 0.0 0.00000 @ 0.0 | 4050.35 @ -72.1 4050.35 @ 167.9 4050.35 @ 47.9
_CENTRAL - Akron Customers Line: DARROW_WEST_RAVENNA_69KV
1258 KENT ST U.69 1 14463.1 @ 106.1 0.00000 @ 0.0 0.00000 @ 0.0 | 14463.1 @ 106.1 14463.1 @ -13.9 14463.1 @ -133.9
_CENTRAL - Akron Fic. Buses (Real bus WEST RAVENNA 1479 W.RAVENNA 69): DARROW_WEST_RAVENNA_69KV
1704 KENT WTR T69 1 10415.6 @ -74.6 0.00000 @ 0.0 0.00000 @ 0.0 | 10415.6 @ -74.6 10415.6 @ 165.4 10415.6 @ 45.4



100' Aerial Platform



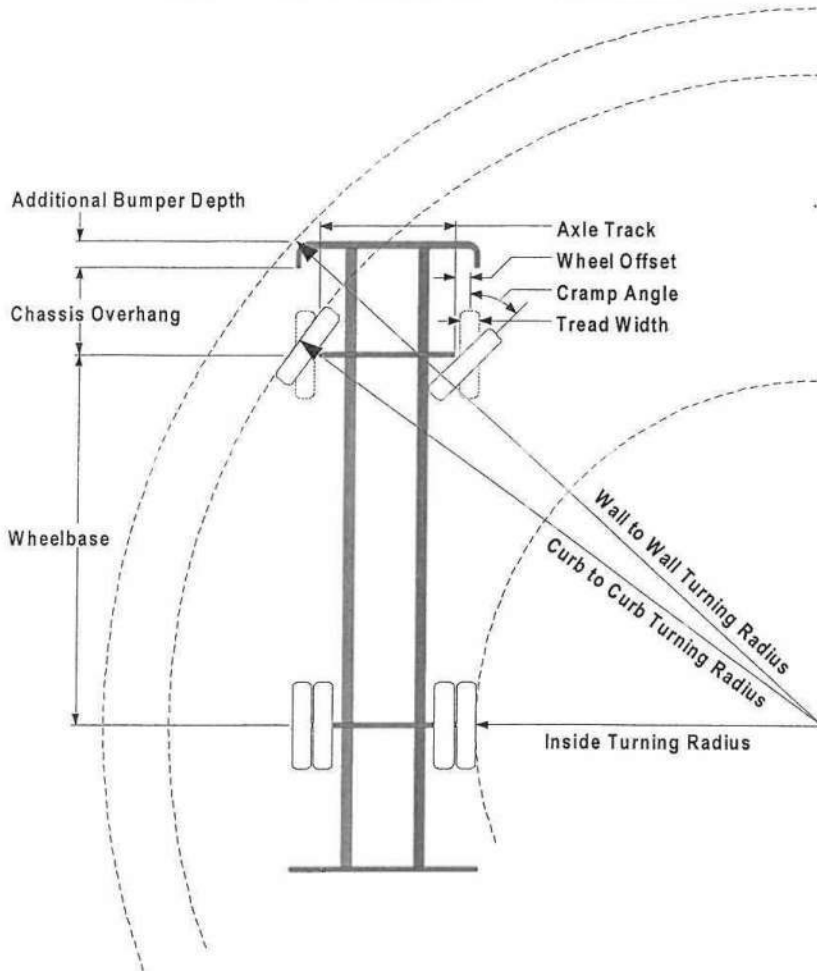
OPERATOR'S MANUAL



1819

Turning Performance Analysis

3/11/02



Parameters:

Inside Cramp Angle:	33.00 °
Axle Track:	83.11 in.
Wheel Offset:	5.25 in.
Tread Width:	17.40 in.
Chassis Overhang:	65.80 in.
Additional Bumper Depth:	22.00 in.
Wheelbase:	256.00 in.

Calculated Turning Radii:

Inside Turn:	31 ft. 8 in.
Curb to Curb:	46 ft. 4 in.
Wall to Wall:	53 ft. 3 in.

Comments:

Aerial Application

BUMPER TO BUMPER - 41'
WIDTH - 8'

FRONT OVERHANG - 5 1/2"

LENGTH INCLUDING BUCKET - 46'

HEIGHT - 11' 4"

weight (USE 40 T)

Components	PRIDE #	Description
Front Axle	0000295	Axle, Front, Meritor FL-941, 21,000#
Front Tires	0001615	Tires, Goodyear, 425/65R22.50 18 ply G286 tread
Chassis	0060010	Pierce Arrow Chassis
Front Bumper	0012246	Bumper, 22" extended - all chassis'
Aerial Device	0022160	Aerial, 100' Pierce Platform

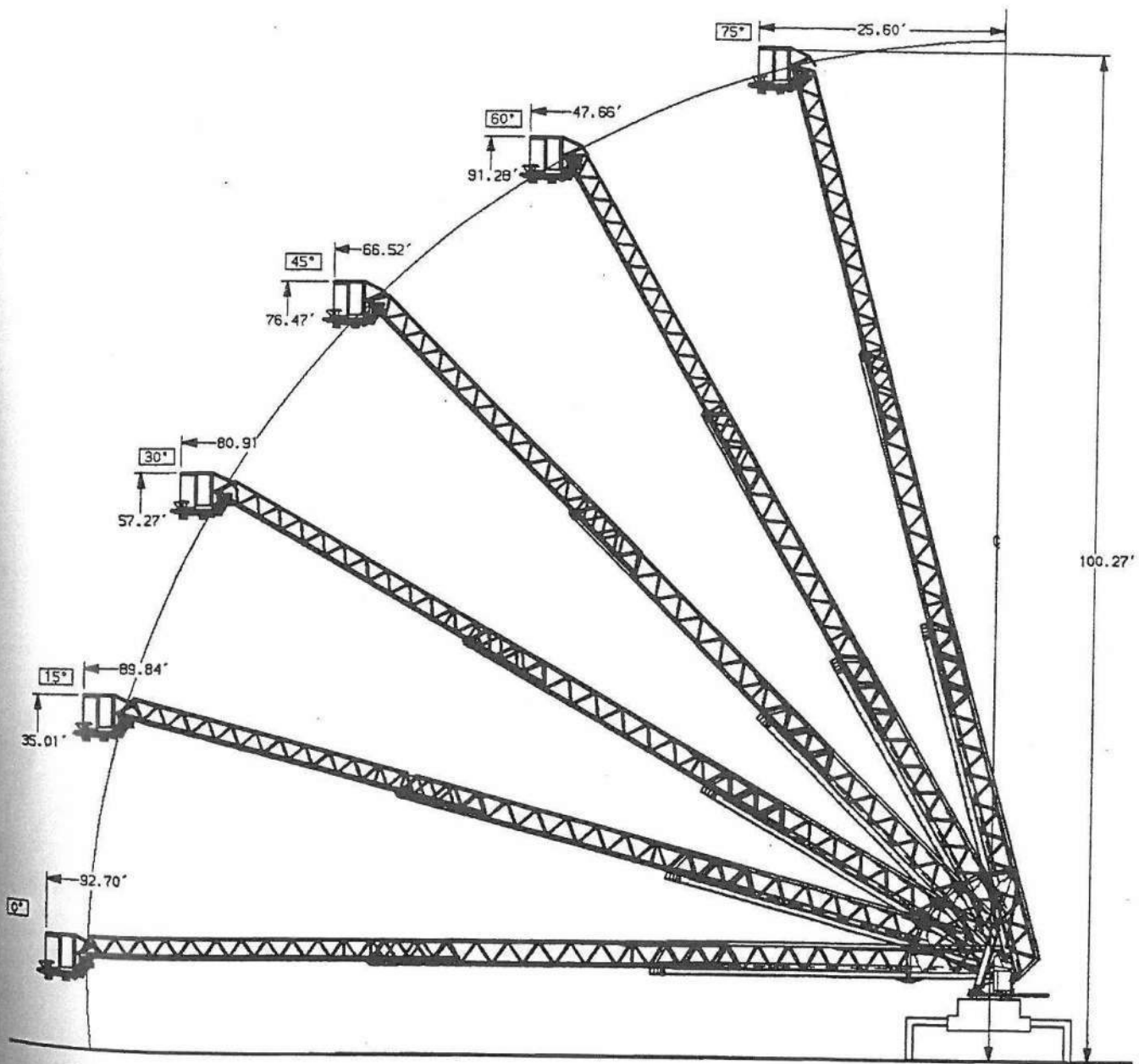
Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Reduce turning radius by 33% if vehicle is equipped with all-wheel steer.

AERIAL FAMILIARIZATION INFORMATION



NOTE: FOR AERIAL REACH MEASURE FROM THE PLATFORM STEP- ADD 10"

Figure 4. 100-Foot Aerial Platform Range Diagram

AERIAL PLATFORM OPERATION PROCEDURE

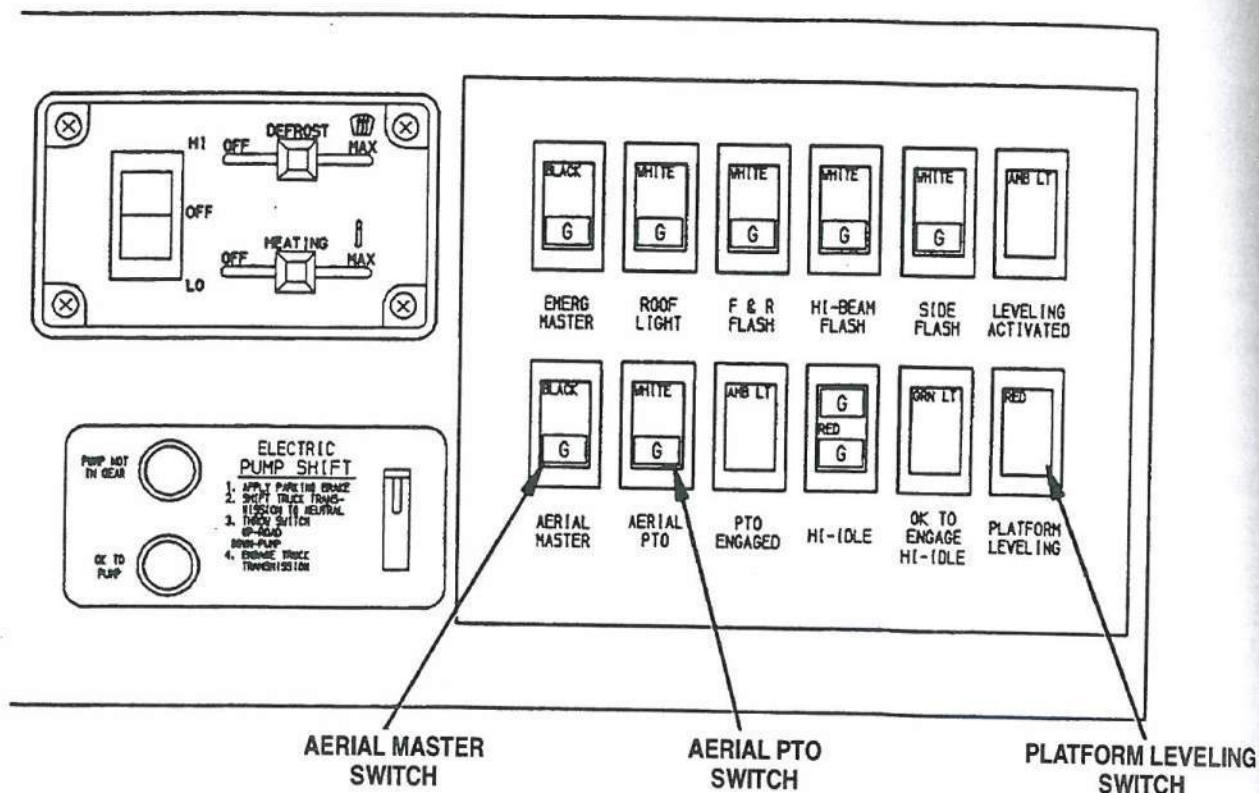


Figure 8. Typical Switch Panel

STABILIZER PRECAUTIONS: SET-UP PROCEDURE

IMPORTANT: SET WHEEL CHOCKS IN PLACE.

Refer to Figure 1 for location of three doors which house the controls for extending beams and jack cylinders to set up the unit.

SAFE OPERATING LIMITS

Safe operating angles at full load when the unit is set up are:

- 0° to 3.5° Side to Side (Slope)
- 0° to 5.5° Front to Rear (Grade)

Angle° indicators are located at the rear of the unit (Figure 1).

NOTE: CHECK AERIAL PTO INDICATOR LIGHT - HYDRAULIC POWER SHOULD BE AVAILABLE AND THE ENGINE SHOULD BE AT LOW IDLE. REVIEW PRECEDING STEP 2. IF YOU DO NOT HAVE HYDRAULIC POWER OR LOW IDLE.

1. Switch hydraulic power to "stabilizer." You now have hydraulic power to function the stabilizer valve controllers, and the warning "beepers" will activate.

They will remain "ON" until the stabilizers are set which will be indicated by green lights. Refer to figure 1.

2. Turn "ON" high idle switch (figure 1). The engine idle RPM is preset for maximum hydraulic power.
3. Extend stabilizer beams and jacks (figure 9).

NOTE: TO AVOID RELEVELING THE UNIT, LEVEL ON SIDE OF APPARATUS BEFORE THE HIGH SIDE.

- a. Push down on the outside control handles (refer to figure 1) to extend beams.
- b. Repeat for the opposite side.
- c. Place ground pads under jack locations. Push down on the center control handles (refer to figure 1) to lower jacks. Pushing on both handles simultaneously with the heel of your hand will lower both jacks at the same rate.
- d. Raise the rear tires off the ground about 1 - 1 1/2 inches.
- e. Raise the front tires just enough to take out the bump. The front tires must contact the ground for stabilization. (Undue stress is placed on the chassis if the front tires are off the ground and the ladder is fully extended from the cab.)

⚠ WARNING:

Horizontal beams must be to full extension for 360° rotation of aerial unit.

1. For operations over one side, the horizontal beams on that side must be fully extended. When the beams are not fully extended on the opposite side, the load is reduced to 850# from 1000# without flowing water and to 500# from 600# flowing water. Ref. page 11 preceding.
2. Do not take aerial over the centerline of chassis if beams on the other side are not at full extension. The unit will become unstable and may upset.

⚠ IMPORTANT:

If any stabilizer beam is not fully extended, the stabilizer override switch will have to be held "ON" momentarily to raise the ladder clear of the cradle.

CAUTION:

BE SURE UNIT IS SET UP WITHIN SAFE OPERATING LIMITS, maximum 3.5° side to side and 5.5° fore and aft.

4. Turn "OFF" high idle. When the unit returns to low idle, select aerial hydraulic power.
5. Close and latch door covering controls and indicators.
6. Install stabilizer safety pins keeping the collar about 1" from jack. If a jack would settle, it must sit on the pin evenly.
7. Close stabilizer control doors.
8. Reposition wheel chocks. Downhill side against tire and the uphill chock approximately 2" from tire. The aerial is ready for operations.

CAUTION:

TAG: Electrocution Hazard - personnel not involved with the aerial operations should "stand clear."

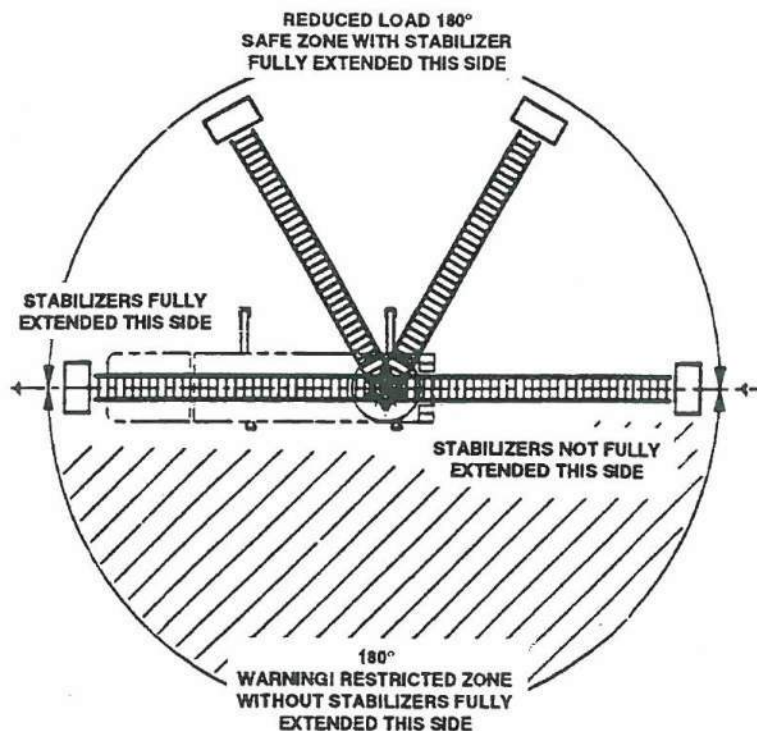


Figure 9. Horizontal Beams Extension

APPENDIX D

FIRE APPARATUS ACCESS ROADS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION D101 GENERAL

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the *International Fire Code*.

SECTION D102 REQUIRED ACCESS

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an *approved* fire apparatus access road with an asphalt, concrete or other *approved* driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34 050 kg).

SECTION D103 MINIMUM SPECIFICATIONS

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

Exception: Grades steeper than 10 percent as *approved* by the fire chief.

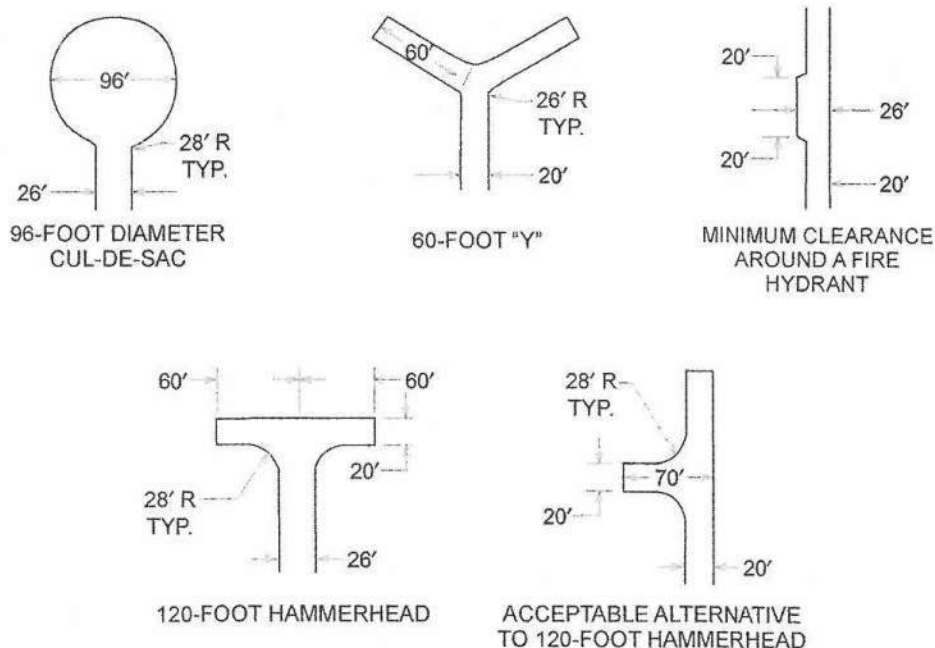
D103.3 Turning radius. The minimum turning radius shall be determined by the *fire code official*.

D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

**TABLE D103.4
REQUIREMENTS FOR DEAD-END
FIRE APPARATUS ACCESS ROADS**

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0-150	20	None required
151-500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501-750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
Over 750		Special approval required

For SI: 1 foot = 304.8 mm.



For SI: 1 foot = 304.8 mm.

**FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND**

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. The minimum gate width shall be 20 feet (6096 mm).
2. Gates shall be of the swinging or sliding type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools or when a key box containing the key(s) to the lock is installed at the gate location.
7. Locking device specifications shall be submitted for approval by the fire code official.
8. Electric gate operators, where provided, shall be listed in accordance with UL 325.
9. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

D103.6 Signs. Where required by the fire code official, fire apparatus access roads shall be marked with permanent NO PARKING—FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.

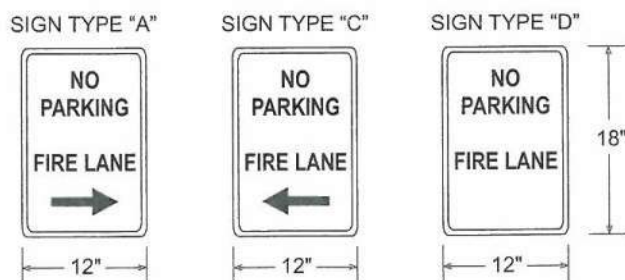


FIGURE D103.6
FIRE LANE SIGNS

D103.6.1 Roads 20 to 26 feet in width. Fire lane signs as specified in Section D103.6 shall be posted on both sides of fire apparatus access roads that are 20 to 26 feet wide (6096 to 7925 mm).

D103.6.2 Roads more than 26 feet in width. Fire lane signs as specified in Section D103.6 shall be posted on one

side of fire apparatus access roads more than 26 feet wide (7925 mm) and less than 32 feet wide (9754 mm).

SECTION D104 COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least two means of fire apparatus access for each structure.

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross building area of more than 62,000 square feet (5760 m²) shall be provided with two separate and approved fire apparatus access roads.

Exception: Projects having a gross building area of up to 124,000 square feet (11 520 m²) that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems.

D104.3 Remoteness. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses.

SECTION D105 AERIAL FIRE APPARATUS ACCESS ROADS

D105.1 Where required. Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet (9144 mm), approved aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

D105.2 Width. Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm), exclusive of shoulders, in the immediate vicinity of the building or portion thereof.

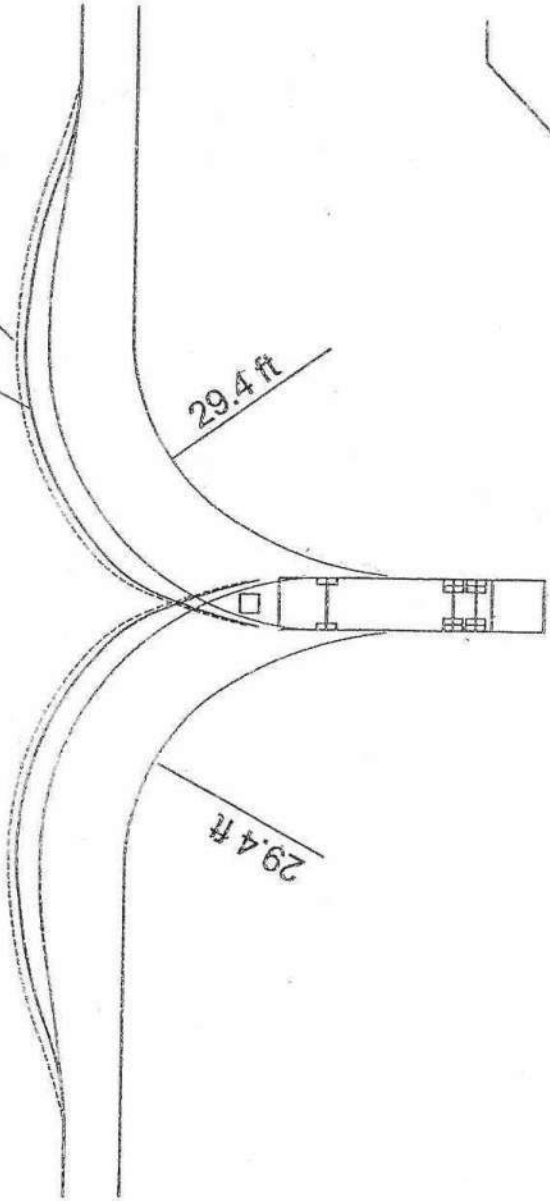
D105.3 Proximity to building. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet (4572 mm) and a maximum of 30 feet (9144 mm) from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.

SECTION D106 MULTIPLE-FAMILY RESIDENTIAL DEVELOPMENTS

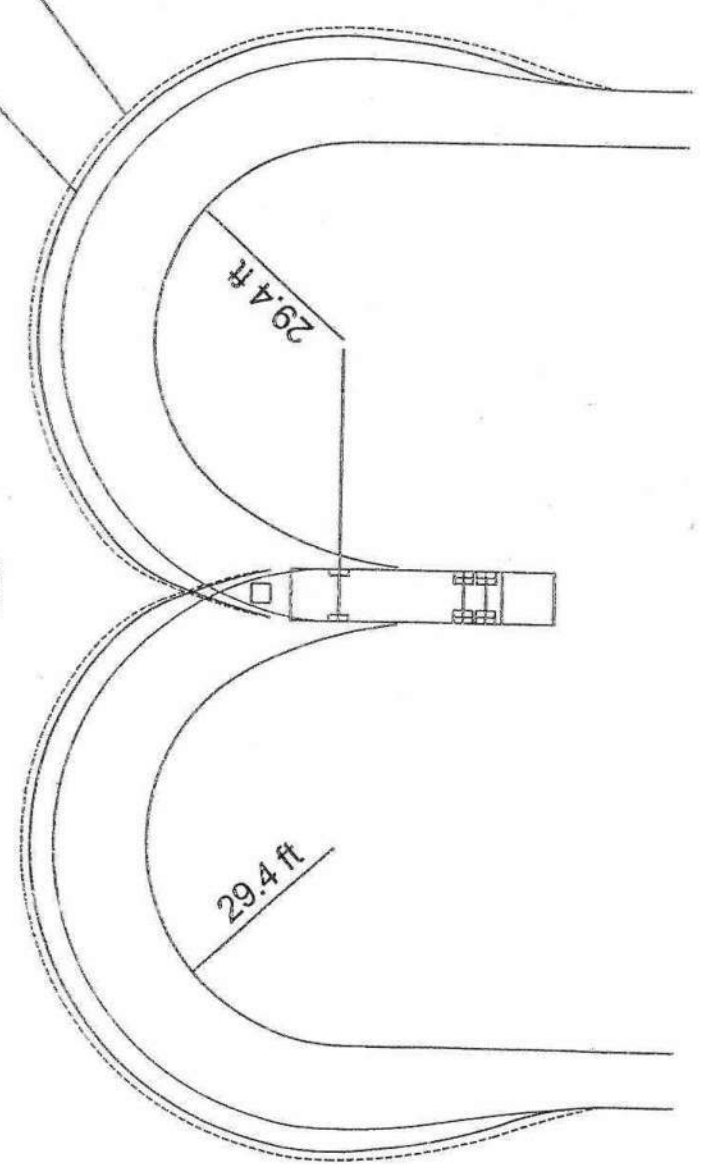
D106.1 Projects having more than 100 dwelling units. Multiple-family residential projects having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads.

Exception: Projects having up to 200 dwelling units may have a single approved fire apparatus access road when all

Wall To Wall (Per Manuf R= 47.2 Ft)
Approximate track of bucket
in front.



Wall To Wall (Per
Manuf R= 47.2 Ft)
Approximate
track of bucket in
front.





Power-PRO™ XT

powered ambulance cot

Length Spec. to accommodate
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Standard Features

- Automatic in-cot fastener shut-off
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- Battery-powered hydraulic lift system
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- Battery pack power level indicator
- Settable load height with jog function
- Color-coded controls
- High visibility powder-coated frame
- Lightweight, rugged aluminum construction
- Scientifically optimized lift bar and control design
- Lower lifting bar
- Lift-capable safety bar
- Integrated bumper system
- Retractable head section
- Floor-mounted safety hook
- One-hand release, fold down side rails
- One-hand release, infinite positioning, pneumatically assisted backrest
- Oversized wheels with sealed caster and wheel bearings
- G-rated bolster mattress
- Shock or flat leg positioning
- G-rated restraint package
- Built-in pull handle
- X-frame guards
- Power washable
- SMRT power system (12V DC, 120V AC and 240V AC options available)

Optional Features

- Heavy duty two- or three-stage IV poles (patient right or left)
- Permanent or removable O₂ bottle holders (head end, foot end or fowler)
- Dual wheel locks
- Head extension
- Pillow
- Equipment hook
- Backrest storage pouch
- Head end storage flat
- Defibrillator platform
- Base storage net
- Knee gatch
- SMRT charger mounting bracket
- Power-LOAD™ compatibility

Specifications

Model Number	6506
Height¹ (infinite height positioning between lowest and highest position)	
Highest Position	41.5 in (105 cm)
Lowest Position	14 in (36 cm)
Length	
Standard	81 in (206 cm) 86" (due to oxygen bottle)
Minimum	63 in (160 cm)
Width	23 in (58 cm)
Weight²	125 lb (57 kg)
Wheels	
Diameter	6 in (15 cm)
Width	2 in (5 cm)
Articulation	
Backrest	0–73°
Shock Position	+15°
Optional Knee Gatch	30°
Maximum Weight Capacity³	700 lb (318 kg)
Minimum Operator Required	
Occupied Cot	2
Unoccupied Cot	1
Recommended Fastener System	
Power-LOAD™	Model 6390
Floor Mount	Model 6370 or 6377
Wall Mount	Model 6371
Recommended Loading Height⁴	Up to 36 in (91 cm)

Warranty

- Two-year parts, labor and travel
- One-year soft goods
- Three-year X-frame components
- Three-year limited powertrain
- Lifetime on all welds*

Extended warranties available.

* 7-year service life.

¹ Height measured from bottom of mattress, at seat section, to ground level.

² Cot is weighed with one battery pack, without mattress and restraints.

³ 700 lb weight capacity with an unassisted lift capacity of 500 lb (Cot loads over 300 lb (136 kg) may require additional assistance to meet the set cot load height).

⁴ Can accommodate load decks up to 36 in. Load height can be set between 26 in and 36 in.

Stryker reserves the right to change specifications without notice.

In-service video included with every order.

The Power-PRO XT is designed to conform to the Federal Specification for the Star-of-Life Ambulance KKK-A-1822.

The Power-PRO XT is designed to be compatible with competitive cot fastener systems.

The yellow and black color scheme is a proprietary trademark of the Stryker Corporation.

Patents pending.

Certifications

CE  IPX6 IEC-60601

SMRT™ Power

Copyright © 2011 Stryker
DDM/RRP 0811
Mkt Lit-152 Rev F

OHIO ADMINISTRATIVE CODE 1301:7-7-05

FIRE SERVICE FEATURES

(A) SECTION 501 GENERAL

(1) **501.1 Scope.** Fire service features for buildings, structures and premises shall comply with this rule.

(2) **501.2 Permits.** A permit shall be required as set forth in rule 1301:7-7-01 of the Administrative Code.

(3) **501.3 Construction documents.** Construction documents for proposed fire apparatus access, location of fire lanes, security gates across fire apparatus access and construction documents and hydraulic calculations for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

(4) **501.4 Timing of installation.** When fire apparatus access roads or a water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles in accordance with paragraph (E)(2)(505.2) of this rule.

(B) SECTION 502 DEFINITIONS

(1) **502.1 Definitions.** The following words and terms shall, for the purposes of this rule and as used elsewhere in this code, have the meanings shown herein.

"Fire apparatus access road." Same as "Fire Lane" as defined in this paragraph.

"Fire command center." The principal attended or unattended location where the status of the detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled.

"Fire department master key." A limited issue key of special or controlled design to be carried by fire department officials in command which will open key boxes on specified properties.

"Fire lane." A road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus. A fire lane shall not be interpreted to mean a residential and/or public street.

"Key box." A secure device with a lock operable only by a fire department master key, and containing building entry keys and other keys that may be required for access in an emergency.

(C) SECTION 503 FIRE APPARATUS ACCESS ROADS

(1) **503.1 Where required.** Fire apparatus access roads shall be provided and maintained in accordance with paragraphs (C)(1)(a)(503.1.1) to (C)(1)(c) (503.1.3) of this rule.

(a) **503.1.1 Buildings and facilities.** Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction which are not readily accessible from a public and/or private street. The fire apparatus access road shall comply with the requirements of this paragraph and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

Exception: The fire code official is authorized to increase the dimension of 150 feet (45 720 mm) where:

1. The building is equipped throughout with an approved automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i) (903.3.1.1), (C)(3)(a)(ii) (903.3.1.2) or (C)(3)(a)(iii) (903.3.1.3) of rule 1301:7-7-09 of the Administrative Code.
2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.
3. There are not more than two Group R-3 or Group U occupancies.

(b) **503.1.2 Additional access.** The fire code official is authorized to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

(c) **503.1.3 High-piled storage.** Fire department vehicle access to buildings used for high-piled combustible storage shall comply with the applicable provisions of rule 1301:7-7-23 of the Administrative Code.

(2) **503.2 Specifications.** Fire apparatus access roads shall be installed and arranged in accordance with paragraphs (C)(2)(a)(503.2.1) to (C)(2)(h)(503.2.8) of this rule.

(a) **503.2.1 Dimensions.** Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, except for approved security gates in accordance with paragraph (C)(6)(503.6) of this rule, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

KFD Requires 25' (width) for operation of truck.

(b) **503.2.2 Authority.** The fire code official shall have the authority to require an increase in the minimum access widths where they are inadequate for fire or rescue operations.

(c) **503.2.3 Surface.** Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.

(d) **503.2.4 Turning radius.** The required turning radius of a fire apparatus access road shall be determined by the fire code official.

(e) **503.2.5 Dead ends.** Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with an approved area for turning around fire apparatus.

(f) **503.2.6 Bridges and elevated surfaces.** Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17 as listed in rule 1301:7-7-47 of the Administrative Code. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the fire code official.

(g) **503.2.7 Grade.** The grade of the fire apparatus access road shall be within the limits established by the fire code official based on the fire department's apparatus.

(h) **503.2.8 Angles of approach and departure.** The angles of approach and departure for fire apparatus access roads shall be within the limits established by the fire code official based on the fire department's apparatus.

(3) **503.3 Marking.** Where required by the fire code official, approved signs or other approved notices or markings that include the words "NO PARKING—FIRE LANE" shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which fire lanes are designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

(4) **503.4 Obstruction of fire apparatus access roads.** Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in paragraph (C)(2)(a)(503.2.1) of this rule shall be maintained at all times.

(5) **503.5 Required gates or barricades.** The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails or other accessways, not including public streets, alleys or highways. Electric gate operators, where provided, shall be listed in accordance with UL 325 as listed in rule 1301:7-7-47 of the Administrative Code. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of

ASTM F 2200 as listed in rule 1301:7-7-47 of the Administrative Code.

(a) **503.5.1 Secured gates and barricades.** When required, gates and barricades shall be secured in an approved manner. Roads, trails and other accessways that have been closed and obstructed in the manner prescribed by paragraph (C)(5)(503.5) of this rule shall not be trespassed on or used unless authorized by the owner and the fire code official.

Exception: The restriction on use shall not apply to public officers acting within the scope of duty.

(6) **503.6 Security gates.** The installation of security gates across a fire apparatus access road shall be approved by the fire chief. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325 as listed in rule 1301:7-7-47 of the Administrative Code. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200 as listed in rule 1301:7-7-47 of the Administrative Code.

(D) SECTION 504

ACCESS TO BUILDING OPENINGS AND ROOFS

(1) **504.1 Required access.** Exterior doors and openings required by this rule or the building code as listed in rule 1301:7-7-47 of the Administrative Code shall be maintained readily accessible for emergency access by the fire department. An approved access walkway leading from fire apparatus access roads to exterior openings shall be provided when required by the fire code official.

(2) **504.2 Maintenance of exterior doors and openings.** Exterior doors and their function shall not be eliminated without prior approval. Exterior doors that have been rendered nonfunctional and that retain a functional door exterior appearance shall have a sign affixed to the exterior side of the door with the words "THIS DOOR BLOCKED." The sign shall consist of letters having a principal stroke of not less than $\frac{3}{4}$ inch (19.1 mm) wide and at least 6 inches (152 mm) high on a contrasting background. Required fire department access doors shall not be obstructed or eliminated. Exit and exit access doors shall comply with rule 1301:7-7-10 of the Administrative Code. Access doors for high-piled combustible storage shall comply with paragraph (F)(6)(a)(2306.6.1) of rule 1301:7-7-23 of the Administrative Code.

(3) **504.3 Stairway access to roof.** New buildings four or more stories in above grade plane, except those with a roof slope greater than four units vertical in 12 units horizontal (33.3-per cent slope), shall be provided with a stairway to the roof. Stairway access to the roof shall be in accordance with paragraph (I)(12)(1009.12) of rule 1301:7-7-10 of the Administrative Code. Such stairway shall be marked at street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such occupancy classification.

(E) SECTION 505 PREMISES IDENTIFICATION

(1) **505.1 Address numbers.** New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure.

(2) **505.2 Street or road signs.** Streets and roads shall be identified with approved signs. Temporary signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles. Signs shall be of an approved size, weather resistant and be maintained until replaced by permanent signs.

(F) SECTION 506 KEY BOXES

(1) **506.1 When required.** Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the fire code official is authorized to require a key box to be installed in an approved location. The key box shall be of an approved type and shall contain keys to gain necessary access as required by the fire code official.

(a) **506.1.1 Locks.** An approved lock shall be installed on gates or similar barriers when required by the fire code official.

(2) **506.2 Key box maintenance.** The operator of the building shall immediately notify the fire code official and provide the new key when a lock is changed or rekeyed. The key to such lock shall be secured in the key box.

(G) SECTION 507 FIRE PROTECTION WATER SUPPLIES

(1) **507.1 Required water supply.** An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction.

(2) **507.2 Type of water supply.** A water supply shall consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of providing the required fire flow.

(a) **507.2.1 Private fire service mains.** Private fire service mains and appurtenances shall be installed in accordance with NFPA 24 as listed in rule 1301:7-7-47 of the Administrative Code.

(b) **507.2.2 Water tanks.** Water tanks for private fire protection shall be installed in accordance with NFPA 22 as listed in rule 1301:7-7-47 of the Administrative Code.

(3) **507.3 Fire flow.** Fire flow requirements for buildings or portions of buildings and facilities shall be determined by an approved method.

(4) **507.4 Water supply test.** The fire code official shall be notified prior to the water supply test. Water supply tests shall be witnessed by the fire code official or approved documentation of the test shall be provided to the fire code official prior to final approval of the water supply system.

(5) **507.5 Fire hydrant issues systems.** Fire hydrant systems shall comply with paragraphs (G)(5)(a)(507.5.1) to (G)(5)(f)(507.5.6) of this rule.

(a) **507.5.1 Where required.** Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code official.

Exceptions:

1. For Group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).
2. For buildings equipped throughout with an approved automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i) (903.3.1.1) or (C)(3)(a)(ii) (903.3.1.2) of rule 1301:7-7-09 of the Administrative Code, the distance requirement shall be 600 feet (183 m).

(b) **507.5.2 Inspection, testing and maintenance.** Fire hydrant systems shall be subject to periodic tests as required by the fire code official. Fire hydrant systems shall be maintained in an operative condition at all times and shall be repaired where defective. Additions, repairs, alterations and servicing shall comply with approved standards.

(c) **507.5.3 Private fire service mains and water tanks.** Private fire service mains and water tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 as listed in rule 1301:7-7-47 of the Administrative Code at the following intervals:

- (i) Private fire hydrants (all types): Inspection annually and after each operation; flow test and maintenance annually.
- (ii) Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
- (iii) Fire service main piping strainers: Inspection and maintenance after each use.

(d) **507.5.4 Obstruction.** Unobstructed access to fire hydrants shall be maintained at all times. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

(e) **507.5.5 Clear space around hydrants.** A 3-foot (914 mm) clear space shall be maintained around the circumfer-

ence of fire hydrants except as otherwise required or approved.

(f) 507.5.6 Physical protection. Where fire hydrants are subject to impact by a motor vehicle, guard posts or other approved means shall comply with *paragraph (L)(312) of rule 1301:7-7-03 of the Administrative Code*.

(H) SECTION 508 FIRE COMMAND CENTER

(1) 508.1 Where required. Where required by other *paragraphs* of this code and in all buildings classified as high-rise buildings by the *building code as listed in rule 1301:7-7-47 of the Administrative Code*, a fire command center for fire department operations shall be provided and shall comply with *paragraphs (H)(1)(a)(508.1.1) to (H)(1)(e)(508.1.5) of this rule*.

(a) 508.1.1 Location and access. The location and accessibility of the fire command center shall be approved by the fire code official.

(b) 508.1.2 Separation. The fire command center shall be separated from the remainder of the building by not less than a 1-hour fire barrier constructed in accordance with section 707 of the *building code as listed in rule 1301:7-7-47 of the Administrative Code* or horizontal assembly constructed in accordance with section 712 of the *building code as listed in rule 1301:7-7-47 of the Administrative Code*, or both.

(c) 508.1.3 Size. The fire command center shall be a minimum of 200 square feet (19 m²) with a minimum dimension of 10 feet (3048 mm).

(d) 508.1.4 Layout approval. A layout of the fire command center and all features required by this *paragraph* to be contained therein shall be submitted for approval prior to installation.

(e) 508.1.5 Required features. The fire command center shall comply with NFPA 72 *as listed in rule 1301:7-7-47 of the Administrative Code* and shall contain the following features:

- (i) The emergency voice/alarm communication system unit.
- (ii) The fire department communications system.
- (iii) Fire-detection and alarm system annunciator.
- (iv) Annunciator unit visually indicating the location of the elevators and whether they are operational.
- (v) Status indicators and controls for air distribution systems.
- (i) The fire-fighter's control panel required by *paragraph (I)(16)(909.16) of rule 1301:7-7-09 of the Administrative Code* for smoke control systems installed in the building.
- (vii) Controls for unlocking stairway doors simultaneously.
- (viii) Sprinkler valve and water-flow detector display panels.

- (ix) Emergency and standby power status indicators.
- (x) A telephone for fire department use with controlled access to the public telephone system.
- (xi) Fire pump status indicators.
- (xii) Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, fire-fighting equipment and fire department access, and the location of fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions.
- (xiii) Work table.
- (xiv) Generator supervision devices, manual start and transfer features.
- (xv) Public address system, where specifically required by other *paragraphs* of this code.
- (xvi) Elevator fire recall switch in accordance with ASME A17.1 *as listed in rule 1301:7-7-47 of the Administrative Code*.
- (xvii) Elevator emergency or standby power selector switch(es), where emergency or standby power is provided.

(I) SECTION 509 FIRE PROTECTION EQUIPMENT IDENTIFICATION AND ACCESS

(1) 509.1 Identification. Fire protection equipment shall be identified in an approved manner. Rooms containing controls for air conditioning systems, sprinkler risers and valves, or other fire detection, suppression or control elements shall be identified for the use of the fire department. Approved signs required to identify fire protection equipment and equipment location shall be constructed of durable materials, permanently installed and readily visible.

(2) 509.2 Equipment access. Approved access shall be provided and maintained for all fire protection equipment to permit immediate safe operation and maintenance of such equipment. Storage, trash and other materials or objects shall not be placed or kept in such a manner that would prevent such equipment from being readily accessible.

(J) SECTION 510 EMERGENCY RESPONDER RADIO COVERAGE

(1) 510.1 Emergency responder radio coverage in buildings. All buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This *paragraph* shall not require improvement of the existing public safety communication systems.

Exceptions:

1. Where approved by the building official and the fire code official, a wired communication system in accordance with *paragraph (G)(2)(m)(ii) (907.2.13.2) of rule 1301:7-7-09 of the Administrative Code*.

tive Code shall be permitted to be installed or maintained in lieu of an approved radio coverage system.

2. Where it is determined by the fire code official that the radio coverage system is not needed.

(2) 510.2 Radio signal strength. The building shall be considered to have acceptable emergency responder radio coverage when signal strength measurements in 95 per cent of all areas on each floor of the building meet the signal strength requirements in *paragraphs (J)(2)(a)(510.2.1) and (J)(2)(b)(510.2.2) of this rule.*

(a) 510.2.1 Minimum signal strength into the building. A minimum signal strength of -95 dBm shall be receivable within the building.

(b) 510.2.2 Minimum signal strength out of the building. A minimum signal strength of -100 dBm shall be received by the agency's radio system when transmitted from within the building.

(3) 510.3 Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building shall be equipped with such coverage according to one of the following:

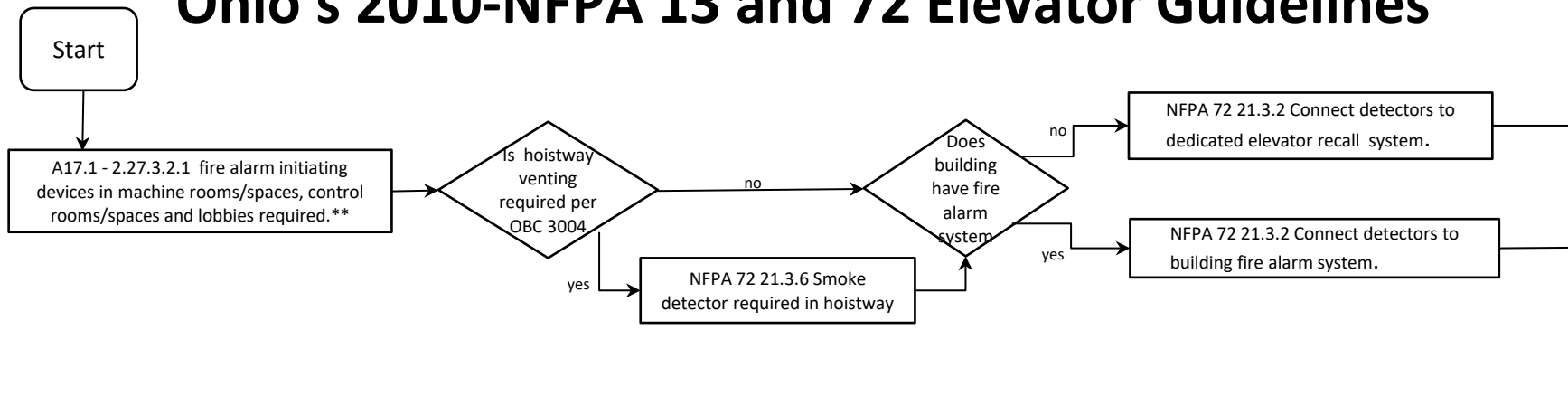
- (a) Wherever existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with *paragraph (J)(1)(510.1), exception 1 of this rule.*
- (b) Within a time frame established by the adopting authority.

Effective Date: November 1, 2011

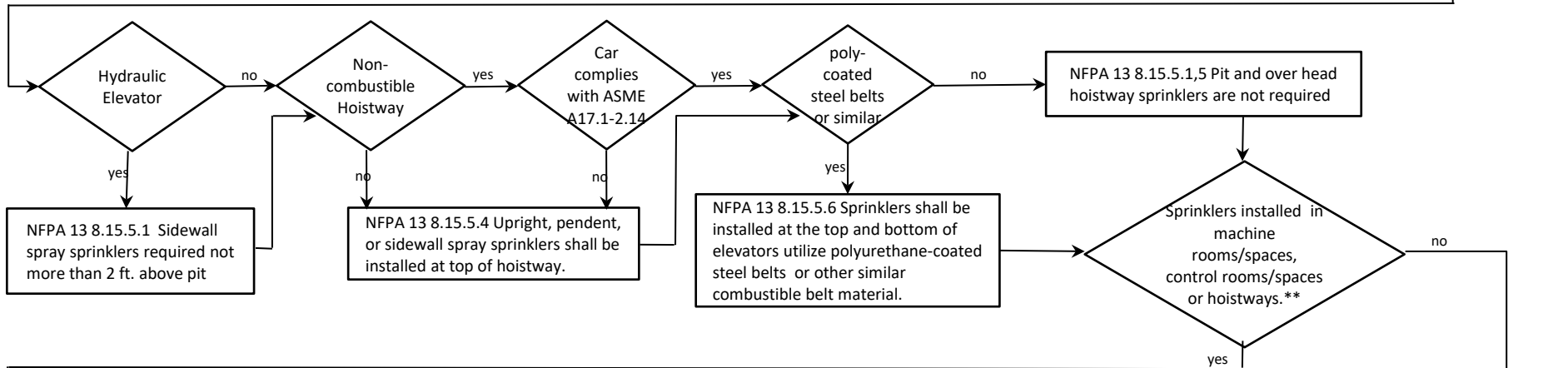
Prior Effective Dates: 7/1/79; 6/1/85; 6/15/92; 7/1/93; 9/1/95; 1/9/98; 3/30/98; 11/20/98; 1/3/00; 9/1/05; 7/1/07

Ohio's 2010-NFPA 13 and 72 Elevator Guidelines

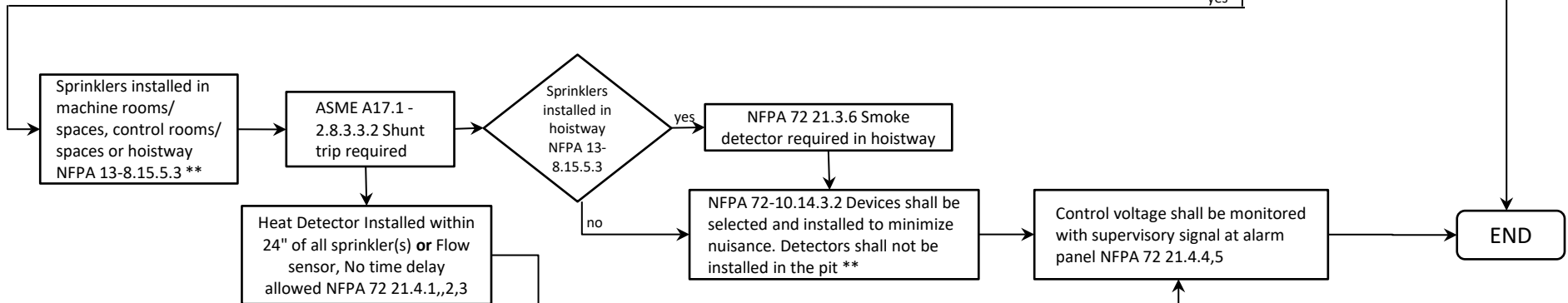
SMOKES



SPRINKLER



Shunt Trip



****It is important to define the space in which the above devices are installed, for example: controls, drives and other equipment that are typically installed in a traditional machine room are now being installed in the pits and top of hoistways and those areas are now defined as machine/control spaces which would require elevator recall devices. NFPA 72 - 21.3.12.1,2**

2010 NFPA 13 & 72 Elevator Guidelines (smokes, heats, sprinklers, fire recall and supervisory panel)

The following are the guidelines that the State of Ohio Elevator Section will follow for sprinklers, heat and smoke detectors installed for Elevator recall and shunt trip operation. It is important to know how other codes interface with the elevator installation and inspectors should be aware of such connections. Even if the following requirements fall under other disciplines and jurisdictions, it is important to understand the big picture and how other codes related to a proper elevator installation.

Sprinkler Installed	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Heat Detector Required	Violation NFPA 13 - 8.15, NFPA 72 - 21.3.3.	Violation NFPA 72 - 21.3.3, 10.14.3.2	Required NFPA 72 21.4.2	Required NFPA 72 21.4.2	NA
Smoke Detector Required	Violation NFPA 13 - 8.15, NFPA 72 - 21.3.3.	Violation NFPA 72 - 21.3.3, 10.14.3.2	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3,7
Sprinkler Not Installed	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Smoke Detector Required	Violation NFPA 72 - 21.3.3, 10.14.3.2	Violation NFPA 72 - 21.3.3, 10.14.3.2	Violation NFPA 72 21.3.6	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3,7
Polyurethane-Coated Steel Belt Suspension	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Sprinklers Required	Violation NFPA 13 - 8.15	Required NFPA 13 8.15.5.6	Required NFPA 13 8.15.5.6	Required NFPA 13 8.15.5.6	NA

It is important to **define the space in which the above devices are installed, for example: controls, drives and other equipment that are typically installed in a traditional machine room are now being installed in the pits and top of hoistways and those areas are now defined as machine/control spaces which would require elevator recall devices. NFPA 72 - 21.3.12.1,2

machinery space, elevator: a space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains elevator mechanical equipment, and could also contain electrical equipment used directly in connection with the elevator. This space could also contain the electric driving machine or the hydraulic machine. ASME A17.1

Sprinklers located in elevator equipment rooms/spaces and hoistways are a requirement of the building code. The elevator code does not mandate the installation of these devices. ASME A17.1 Req. 2.8.3.3 states that **sprinklers are permitted when required by the building code**. The elevator code does set limits on what can be allowed within a hoistway or equipment room/space.

ASME A17.1 2.8.3 All **risers** are to be located outside the hoistway or room/space except where a machine room is located above the roofline of a building the riser is limited to the distance between the top floor and the room/space. Sprinklers located 24" or less above the pit floor, all wiring and electrical components located within 48" from the pit floor must be rated as **NEMA 4** and wiring must be suitable for wet locations. ASME A17.1 triggers the **shunt-trip** requirement when sprinklers are located in such areas related to the elevator. (Note: there are exceptions to the sprinkler requirements for Fire Service Access Elevators and Occupancy Evacuation Elevators: see IBC Sections 3007 and 3008 respectively.)

2013 edition of NFPA 13 (not adopted in OHIO), a new requirement was added to deal with combustible suspension means (i.e. elastomeric-coated steel belts). In such instances, sprinkler heads are required at the top and bottom of the hoistway. There is an exception; if the suspension means is tested and complies with UL 62 and UL 1581, sprinkler heads are not required.

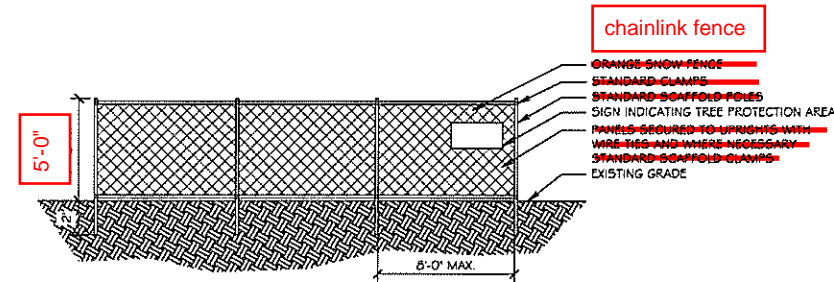
2010 NFPA 13 & 72 Elevator Guidelines Quick Code reference

NFPA 13 (SPRINKLERS)	
8.15.5.1	Sidewall spray sprinklers required not more than 2 ft. above pit floor.
8.15.5.2	Pit sprinklers below 2 ft. are not required for non-combustible elevator hoistway without combustible hydraulic fluids.
8.15.5.3	Automatic sprinklers in machine room and hoistways shall be ordinary or intermediate temp rating.
8.15.5.4	Upright, pendent, or sidewall spray sprinklers shall be installed at top of hoistway.
8.15.5.5	Over head hoistway sprinklers are not required for noncombustible or limited-combustible and cab enclosure meets ASME A17.1 requirements.
8.15.5.6	Sprinklers shall be installed at the top and bottom of elevator hoistways where elevators utilize polyurethane- coated steel belts or other similar combustible belt material.

NFPA 72 (SMOKES AND HEATS)	
10.3.1	Fire alarm system and supporting equipment designed and labeled for intended use.
10.4.1.1	Fire alarm system and supporting equipment designed, constructed and installed in conformance with the code.
10.4.2.1	Installation shall be supervised by persons who are qualified and experienced.
10.5.3.2	Fire alarm system shall be provided with at least two independent and reliable power supplies.
10.14.2.4	Equipment shall not be install in locations exceeding voltage, temp, and humidity of device.
10.14.3.2	Devices shall be selected and installed to minimize nuisance . Detectors shall not be installed in the pit area because they have been determined to be a nuisance alarm due to sweeping, dust and air movement. See also NFPA 72 17.7.1.9
10.17.1	Monitoring Integrity of Installation Conductors and Other Signaling Channels.
21.2.6	Wiring The installation of all wiring, cable, and equipment shall be in accordance with NFPA 70
21.3.2	In facilities without a building fire alarm system, these smoke detectors or other automatic fire detection shall be connected to a dedicated fire alarm system control unit that shall be designated as "elevator recall control and supervisory panel".
21.3.3	Only the elevator lobby, hoistways and machine room/space smoke detectors shall be used to recall elevators.
21.3.5	Lobby smoke detectors shall be with in 21 ft. of the center line of doors with in each bank.
21.3.6	Smoke detectors shall not be installed in unsprinklered hoistways unless for smoke relief equipment . (exception: Hoistway/pit = machine, control space)
21.3.7	If ambient conditions prohibit installation of smoke detectors , other fire detection shall be permitted ie: open areas, parking garages , and industrial applications. Per local AHJ. Pit and hoistway location of these detectors will likely need to be below the lowest level of recall in order to provide an adequate response of early detection of fire. Since there is no real ceiling in the pit to allow installation using the spacing provisions of Chapter 17, the provisions of 17.7.3.1.3 and 17.4.10 should be considered, which allows detectors to be placed closer to the hazard in a position where the detector can intercept the smoke or heat. Also refer to A.21.3.14.2(3)
21.3.8	All fire fighters initiating devices shall annunciate at the building fire alarm control unit.
21.3.9	All fire fighters initiating devices shall cause separate and distinct visible annunciation.
21.3.12.1,2,	Designated, Alternate and Flashing Hat level recall requirements.
21.4.1	Heat detectors used for shunt shall have lower temp rating than sprinkler.
21.4.2	Heat detectors used for shunt shall be with in 24 " of sprinkler head.
21.4.3	Pressure or water flow switches in lieu of heat detectors
21.4.4,5	Control circuits to shutdown elevator power shall be monitored for presence of operating voltage. Loss of voltage to the control circuit for the disconnecting means shall cause a supervisory signal to be indicated at the control unit and required annunciators.
21.5	First Responders use elevators requirements (Fire Service Access Elevator OBC 3007)
21.6	Elevators for Occupant- control Evacuation requirements (OBC 3008)

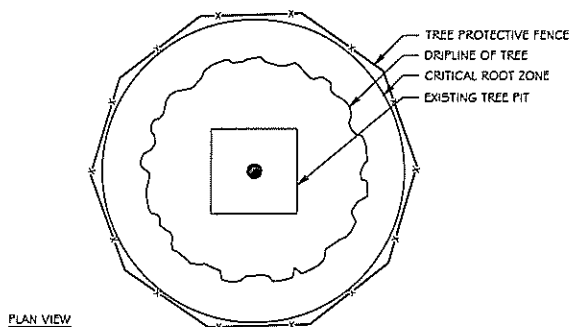
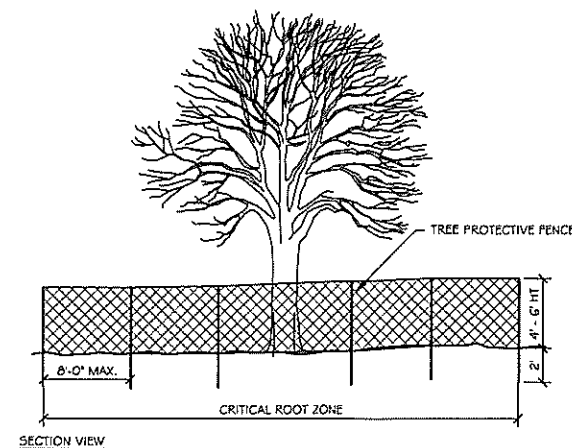
1 TREE PROTECTIVE FENCE

SCALE: 1/4" = 1'-0"



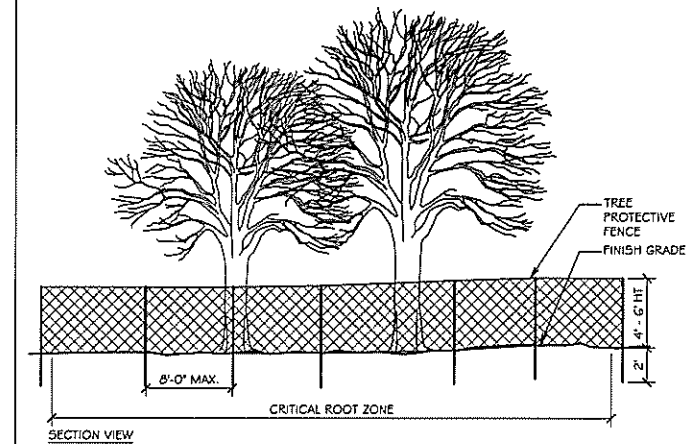
3 TREE PROTECTIVE FENCE AT CRITICAL ROOT ZONE

SCALE: 1/4" = 1'-0"



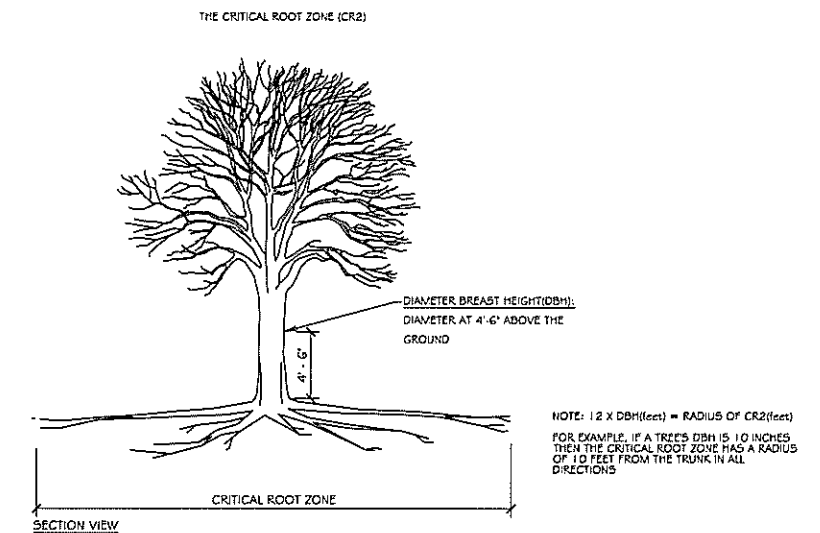
5 TREE PROTECTIVE FENCE FOR GROVES

SCALE: 1/4" = 1'-0"



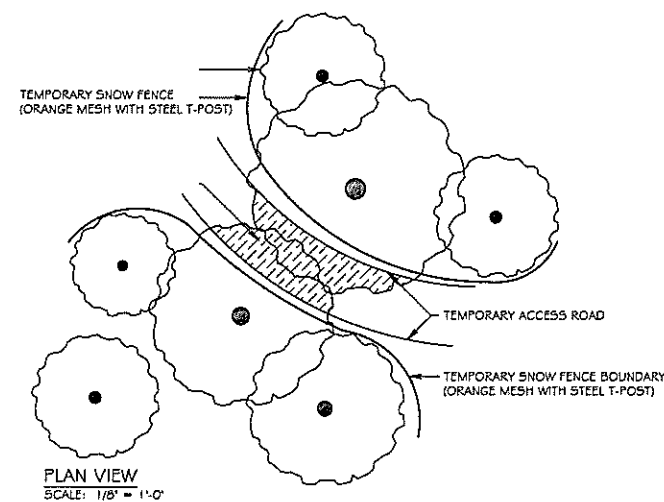
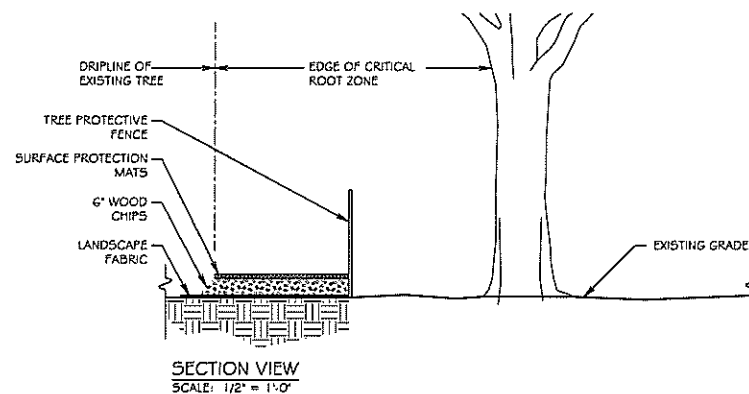
6 CALCULATING CRITICAL ROOT ZONE

SCALE: 1/4" = 1'-0"



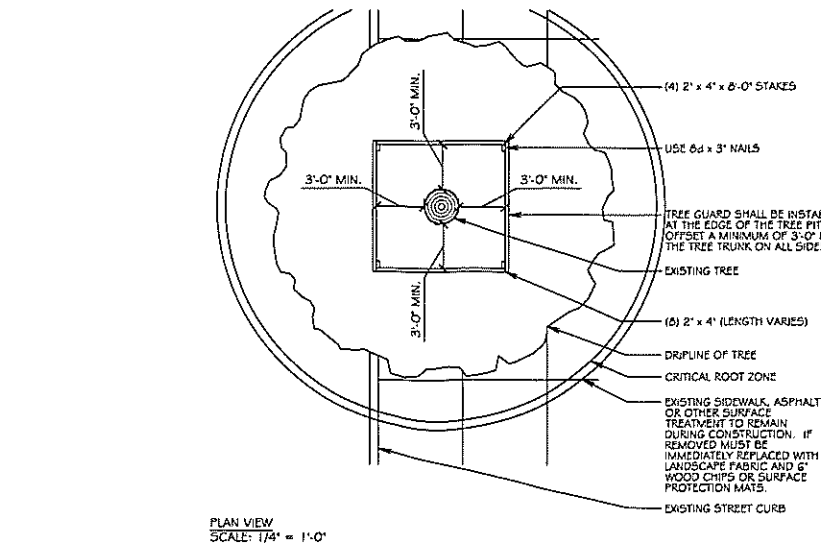
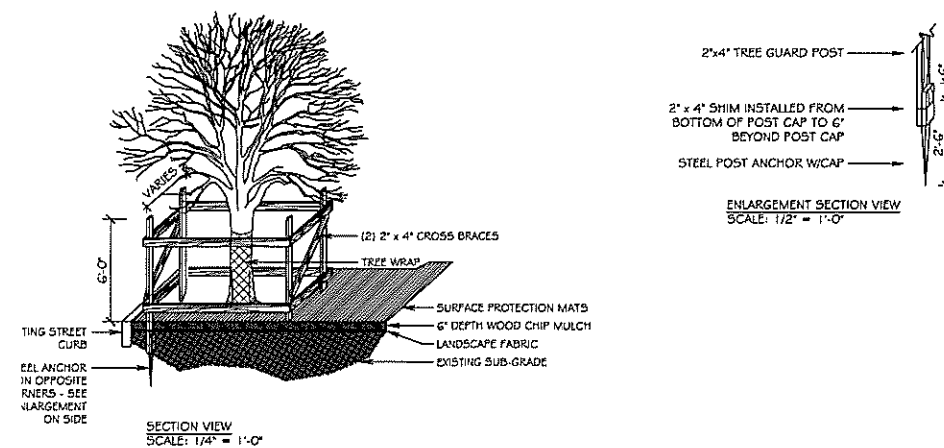
2 TREE PROTECTIVE FENCE WITH GROUND PROTECTION

SCALE: AS SHOWN



4 TREE GUARD WITH CRITICAL ROOT ZONE GROUND PROTECTION

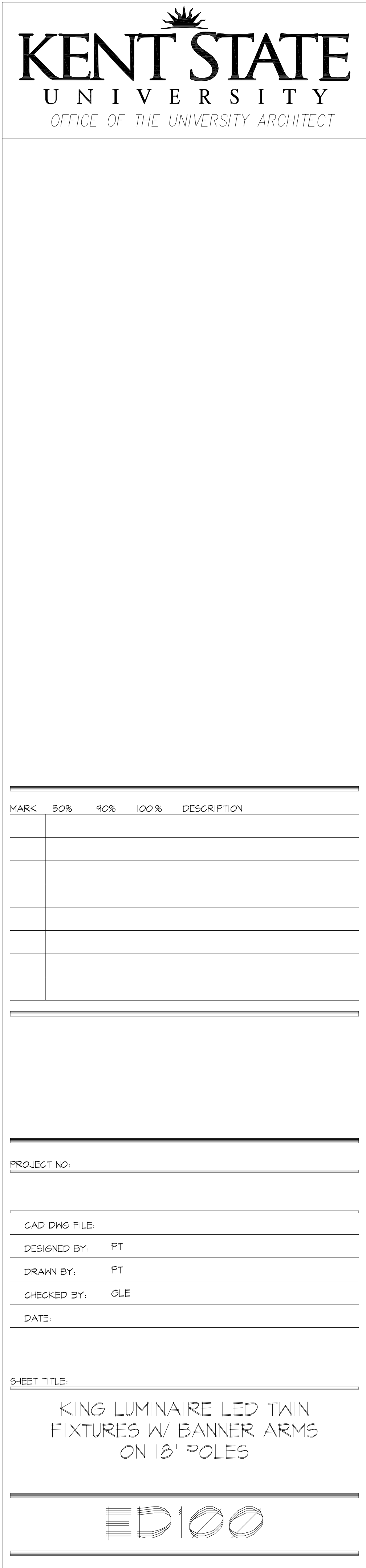
SCALE: AS SHOWN



This sheet is provided as a starting point. Tree protection plans should be developed by project and reviewed by OUA and Kent State grounds for implementation.

1. If there is no existing irrigation system, specify watering requirements during the project.
2. No pruning shall be performed except by a Kent State approved arborist.
3. No equipment shall operate inside the protective fencing including during fence installation and removal.
4. No contractors are permitted within the tree protection without prior authorization.

1		2		3		4		5	
LIGHTING FIXTURE SCHEDULE					GENERAL NOTES		SHEET KEYNOTES		
TYPE		LAMP		WATTAGE PER FIXTURE		DESCRIPTION		CATALOG NUMBER	
POLE A		75W LED		75		(2) KING LUMINAIRE AURORA SERIES PENDANT TYPE LUMINAIRES. BLACK PAINTED HEAVY WALL ALUMINUM BODY 26" DIAMETER WITH LEVELING HARDWARE, HINGED TOP FOR DRIVER ACCESS AND FLAT GLASS LENS (FULL CUTOFF CLASSIFICATION). THE POLE ARM IS BLACK PAINTED ALUMINUM DOUBLE ARCHED 2-1/2" O.D. 57"H X 35"L WITH DECORATIVE SHROUD PIECE. POLE SHALL BE 18'-0"H ONE PIECE ECLIPSE COLOR, ETCHED FINISH, FLUTED OCTAGONAL, CAST CONCRETE POLE WITH RECESSED ACCESS HANDHOLE, ANTI-GRAFFITI COATING AND 6-1/2" H X 2-3/8" DIA TENON AND DIRECT BURIED BASE.		FIXTURE - KING LUMINAIRE K824-FAFL-V-1556L-208V(MT)-KPL10-BLK POLE - STRESSCRETE KT18-G-E11, C/W 140-25/65, B5-SM	
						NOTES			
						1. ALL CONDUIT USED BELOW GRADE SHALL BE 1-1/4" PVC SCHEDULE 40 DIRECT BURIAL 24" BELOW FINISHED GRADE UNLESS NOTED OTHERWISE AND SHALL BE MADE WATER TIGHT.		1. FLUSH TO GRADE IN GROUND FULLBOX 13" X 24" WITH OPEN BOTTOM QUAZITE PART #PG1324BA12 (OR EQUAL).	
						2. ELECTRICAL CONTRACTOR (EC) SHALL BACKFILL AND COMPACT EXCAVATIONS TO 1-1/2" BELOW GRADE. THE GENERAL CONTRACTOR (GC) WILL FILL REMAINDER OF TRENCH WITH TOPSOIL AND SEED. ALL REPAIRS MADE DUE TO CONTRACTORS EXCAVATION SHALL BE DONE TO THE SATISFACTION OF THE UNIVERSITY. E.G. TO COORDINATE WITH THE G.C. FOR CUTTING AND PATCHING OF WALKWAYS.		2. HEAVY DUTY BOLTED COVER QUAZITE PART #PG1324HA00 (OR EQUAL), WITH LOGO "LIGHTING".	
						3. THE E.C. TO EXERCISE EXTREME CAUTION DURING EXCAVATIONS BECAUSE OF THE EXISTING UNDERGROUND UTILITIES. THE EC SHALL VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DIGGING AND SHALL TAKE NECESSARY MEASURES TO PROTECT HIMSELF, HIS PERSONNEL AND THE PUBLIC FROM HARM DUE TO CONTACT WITH UNDERGROUND UTILITIES WHETHER OR NOT SHOWN ON THE DRAWINGS.		3. SPLICING CONNECTOR (BLACKBURN WR9, BRUNDY YPC2A8U OR EQUAL) ENCAPSULATED WITH A RAYCHEM GEL ENCLOSURE PART # GHFC-1-90.	
						4. E.C. TO COORDINATE WITH THE GC FOR THE REMOVE OF ALL EXCESS EXCAVATED MATERIAL FROM THE SITE AS SOON AS POSSIBLE.		4. CONDUITS TO EXTEND 3" ABOVE GRAVEL TYPICAL.	
						5. ALL WIRING TO BE WITH TYPE THWN INSULATION UNLESS NOTED OTHERWISE.		5. RED 3" WIDE WARNING TAPE WITH ALUMINUM CORE ABOVE ALL UNDERGROUND CONDUITS.	
						6. ALL SPLICES IN SPLICE/FULL BOXES (BELOW GRADE) TO BE MADE WATERTIGHT USING RAYCHEM H-FRAME GEL ENCLOSURE TO SEAL SPLICES/TAPS PART# GHFC-1-90.		6. 6" OF GRAVEL OR CRUSHED ROCK FOR DRAINAGE PURPOSES. EXTEND GRAVEL 4" BEYOND EDGE OF BOX.	
						7. E.C. SHALL COORDINATE FIXTURE LOCATIONS WITH REPRESENTATIVE FROM THE OFFICE OF THE UNIVERSITY ARCHITECT PRIOR TO ROUGH-IN AT 216-672-3880.		7. UNDISTURBED EARTH MATERIAL.	
						8. MAINTAIN TRAFFICABILITY (INGRESS AND EGRESS) OF DRIVES AND WALKWAYS AT ALL TIMES. COORDINATE USE OF BARRICADES WITH PARKING SERVICES AT 330-672-4432.		8. #10 AWG, COPPER PHASE CONDUCTOR TO LUMINAIRE. TYPICAL.	
						9. E.C. SHALL CHOOSE ROUTING OF UNDERGROUND CONDUIT WHICH MINIMIZES ROOT DAMAGE TO THE EXISTING LANDSCAPING.		9. #10 AWG, COPPER GROUNDING CONDUCTOR TO LUMINAIRE. TYPICAL.	
						10. E.C. SHALL BE SURE THAT THE EXISTING LIGHTS ARE KEPT OPERATIONAL THROUGHOUT CONSTRUCTION. THE EXISTING LIGHTS MUST BE TURNED ON EVERY EVENING.		10. LEAVE 12" LOOP FOR FUTURE FUSE REPLACEMENT.	
								11. IN-LINE, WATERPROOF, UNFUSED CONNECTOR. TYPICAL FOR TWO.	
								12. IN-LINE, WATERPROOF, FUSED CONNECTOR WITH 5 AMP FUSE AS MANUFACTURED BY BUSSMAN.	
								13. NOT USED.	
								14. NOT USED.	
								15. 30" DECORATIVE ARM BRACKET (TYPICAL). ARM SHALL BE MOUNTED PERPENDICULAR TO THE LIGHT FIXTURE ARM.	
								16. NOT USED.	
								17. NOT USED.	
								18. NOT USED.	
								19. NOT USED.	
								20. EXISTING PHOTOCELL "PG1".	
								21. 208V 1Ø, 2W FROM PANEL 'GA' IN MECHANICAL ROOM.	
								22. EXISTING CONTACTOR LOCATED IN MECHANICAL ROOM.	
								23. TO NEW POLE LIGHTING.	
								24. REPLACE EXISTING (2) 20A/1P (CIRCUITS GA-40,42) WITH NEW 20A/2P CIRCUIT BREAKER IN PANEL 'GA'.	
								25. FLAT TEMPERED GLASS LENS.	
								26. SPECIAL DECORATIVE SHROUD.	
								27. CUSTOM LOGO. PROVIDE SIGN TABS FOR LOGO MOUNT.	
								28. 34.75" INCHES LUMINAIRE BISHOP'S CROOK ARM. REFER TO LIGHT FIXTURE SCHEDULE.	
								29. LEVELING DEVICE.	
								30. KING LUMINAIRE K825 LIGHT FIXTURE 20.5" TALL REFER TO LIGHT FIXTURE SCHEDULE.	
								31. SPUN CONCRETE DECORATIVE POLE WITH 1 COAT ANTI-GRAFFITI FULL LENGTH SEE LIGHT FIXTURE SCHEDULE.	
								32. 2-5/8" x 8" RECESSED POLYMER HAND HOLD BOX AND COVER PLATE COPPER WIRE GROUND AND ALLEN-HEAD SCREWS COLOR: BLACK.	
								33. NAMEPLATE.	
								34. SCOOP OUT SOIL TO A DEPTH JUST BELOW HAND HOLE.	
								35. QUAZITE JUNCTION BOX - SEE ENLARGED DETAIL ON THIS SHEET.	
								36. 2-1/2" x 5" WIRING APERTURE BOTH SIDES.	
								37. UNDISTURBED SOIL - AUGER TO REMAINING DEPTH. TYPICAL.	
								38. (3) #10 IN 1-1/4" PVC CONDUIT.	
								39. GRAVEL.	
								40. GRADE.	
D1 LIGHTING FIXTURE SCHEDULE NOTES NONE					D1 LIGHTING FIXTURE SCHEDULE NOTES NONE				
C3 POLE CROSS-SECTION TOP VIEW NONE					C3 POLE CROSS-SECTION TOP VIEW NONE				
B3 HAND HOLE WIRING ENLARGED DETAIL NONE					B3 HAND HOLE WIRING ENLARGED DETAIL NONE				
A3 QUAZITE POWER BOX DETAIL NONE					A3 QUAZITE POWER BOX DETAIL NONE				
A4 SITE LIGHTING CONTROL WIRING DIAGRAM NONE					A4 SITE LIGHTING CONTROL WIRING DIAGRAM NONE				
A1 KSU CONCRETE POLE, QUAZITE BOX AND LUMINAIRE INSTALLATION DETAIL NONE					A1 KSU CONCRETE POLE, QUAZITE BOX AND LUMINAIRE INSTALLATION DETAIL NONE				



Passport 1000 P2 WiFi Campus Access Control Products

Available through Authorized Channel Partners only.
Contact your local PERSONA or ASSA ABLOY Door
Security Solutions sales consultant for details.

UFM buildings -typical Wi-Fi locksets

•70-P2-82278-BIMPS-LNL-26D ---Mortise Lock

•P2-231-IMPS-EK1-L-32D ---Retro trim: this model is used
on new doors with Von Duprin exit devices

UFM controlled buildings utilize Lenel. Wi-fi locksets must be
purchased through an approved Lenel dealer. Typically
utilize Zenith, contact Larry Lohman

Larry Lohman
Project Manager, Security Integration
Zenith Systems
Office (216) 518-3843
Mobile (216) 287-8767
LLohman@zenithsystems.com

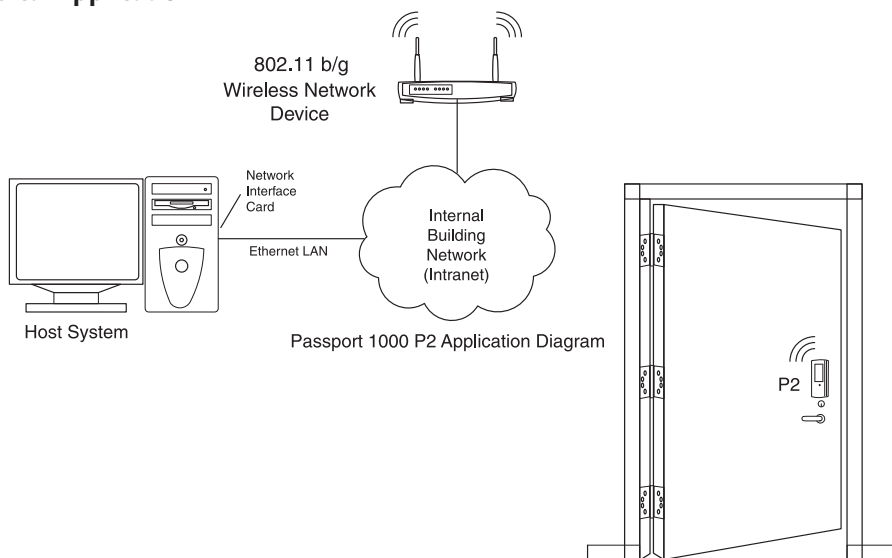
Our Lenel dongle ID is 130623



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Passport 1000 P2 Online Wireless Ethernet Typical Application



MicroShield®

As part of their promise to provide innovative solutions to their customers, certain ASSA ABLOY Group brands offer the MicroShield® technology, a silver-based antimicrobial coating designed to inhibit the growth of bacteria. MicroShield® is a registered trademark of Yale Security Inc., an ASSA ABLOY Group company.

MicroShield® Coating

- Revolutionary finish coating available on all SARGENT product lines, utilizes a silver-based antimicrobial compound from Agion Technologies
- As an integral part of the finish coating, MicroShield lasts for the life of the hardware
- MicroShield coating permanently suppresses the growth of bacteria, algae, fungus, mold and mildew. It is effective against a broad spectrum of bacteria.
- Non-toxic and completely safe. The Agion antimicrobial compound is EPA and NSF approved and FDA listed for use in medical and food preparation equipment.
- Applications: Anywhere there is need for a clean environment (hospitals, laboratories, schools, medical centers, daycare, food processing etc.)

Overview, Features and Electrical Specifications

Passport 1000 P2



SARGENT®
ASSA ABLOY

Overview

An ANSI/BHMA Grade 1 lock using WiFi technology, the Passport 1000 P2 provides a cost-effective, future-proof solution for campuses. Featuring HID® multiCLASS SE® technology, it provides simultaneous support for multiple credentials and offers an easy migration path to higher security credentials and mobile access. With no wiring required, installation is fast, easy and affordable.

About ASSA ABLOY's Authorized Channel Partner and Certified Integrator Programs

The SARGENT Passport 1000 P2 is part of the expanding ASSA ABLOY family of innovative products combining our proven mechanical locking devices with leading-edge technologies to provide integrated electronic access control solutions. As such, these products require training and certification for resellers and integrators to ensure proper product selection, successful deployment and customer satisfaction.

To aid our customers in this area, ASSA ABLOY has created two programs that provide the necessary training to sell, order, install and service our technology products, including Aperio® wireless, Integrated Wiegand, IP-enabled and self-configurable intelligent components:



- The Authorized Channel Partner (ACP) program is open to resellers, who sell ASSA ABLOY's technology products to certified integrators and help with product selection based on the application.



- The Certified Integrator (CI) program provides hands-on training for security systems integrators and network administrators. Not only does this training familiarize certified integrator candidates on product features and applications, it also gives them valuable experience installing, commissioning, and troubleshooting the products in a real-world environment.

For more information on the qualifications for becoming an ACP or CI, contact your local ASSA ABLOY Door Security Solutions sales consultant for details.

Passport 1000 P2 Features

- Intelligent, integrated ANSI/BHMA Grade 1 lockset, available in cylindrical lock, mortise lock, and exit device configurations, offers the highest degree of physical security available in access control locks
- Utilizes 802.11b/g/n WiFi network infrastructure for cost-effective installations; no proprietary equipment required
- Lock holds 2,400/10,000 users* and 10,000 event audit trail
- Available with key override

Access Credentials

Magnetic Stripe:

- Read speed: 4 to 40 in/s
- Card track: Track 2
- Card Coercivity: HiCo (4000 Oersted) or LoCo (300 Oersted)
- Time resolution on card: 1 minute
- Magnetic head lifetime: 300,000 operations

Keypad:

- PIN code: 4-digits with card, or 6-digits PIN only

Credential Reader:

- 2.4 GHz credentials:
 - Secure Identity Object™ (SIO) on Mobile IDs (Bluetooth Smart)
- 13.56 MHz credentials:
 - iCLASS®
 - iCLASS SE® (SIO-enabled)
 - iCLASS® Seos®
 - SIO on MIFARE® Classic
 - SIO on MIFARE DESfire® EV1
 - MIFARE Classic
 - DESfire EV1
 - NFC-enabled mobile phones
- 125 kHz credentials:
 - HID Prox®

* Contact your access control system manufacturer for more information

Software

Compatible with ASSA ABLOY's PERSONA Campus™ software or with approved third party access control software.

PERSONA Campus Software

PERSONA Campus™ Software is an advanced and flexible locking system that supports magstripe and contactless technology to provide seamless database integration and software interface with enterprise, transactional and housing systems. Campus™ software provides customized access by user, by facility, or individual lock.

Power Specifications

- Power supply: 6 AA alkaline batteries
- Auxiliary voltage: 12VDC-24VDC
- Battery life is supervised and gives advanced warnings at low capacity

Environmental Specifications

- Operating temperature: -13°F (-25°C) to 151°F (66°C)
- Humidity: <85% non-condensing
- Storage temperature: -22°F (-30°C) to 176°F (80°C)

Accessories (contact PERSONA)

- Multitrack encoder
- Pocket PC
- Magnetic stripe cards

EAC Regulatory Compliance:

- UL294 6th Edition (not applicable to FM7300)
- CAN/ULC S319 (not applicable to FM7300)
- BHMA A156.25 (not applicable to FM7300)

P2 8200 Series Mortise Locks

Passport 1000 P2



The Passport 1000 motorized 8200 Series Mortise Lock has a clean, crisp design and is available with the SARGENT Studio Collection, Coastal Series and traditional lever designs in a full array of finishes. The mortise locks are available with or without deadbolt and with or without key override. EcoFlex™ technology offers improved battery life.

Mechanical Features

- Certified to ANSI/BHMA A156.13 Series 1000 Grade 1
- Motor driven mortise lock
- 3/4" stainless steel, anti-friction reversible latch
- For 1-3/4" (44mm) thick door standard. Consult factory for other thicknesses
- 8200 Series Levers and Roses are shown on pages 8-10
- Stainless steel non-handed deadlocking latch

- Handed lockbody, easily field reversible without opening lock body
- Lever trim through-bolted for increased security and durability
- UL/ULC Listed for use on fire doors*
- Hurricane-Resistant Certifications listed on page 17
- Batteries included

* Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and Sargent Manufacturing Company makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.

Passport 1000 P2 Mortise Lock Functions

Standard P2-Mortise feature:

- Outside lever rigid except when in "passage" mode or valid user code entered
- Trim inside always retracts latch and/or deadbolt
- Guardbolt deadlocks latch
- Request-to-Exit: monitoring inside lever
- Latchbolt Monitoring: monitors latchbolt position
- Door Position Signaling: monitors door position

Key Override Function Features:

- Key outside retracts latchbolt and retracts & projects deadbolt
- Key override with a #41 (1-1/8") Mortise Cylinder

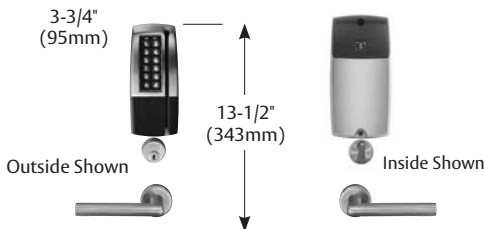
Deadbolt Function Features:

- When deadbolt thrown, outside lever operable only with predetermined code
- Deadbolt Monitoring: monitors deadbolt position
- 1" hardened stainless steel deadbolt

The Passport 1000 P2 mortise lock with deadbolt is required for escape return functionality (a residential requirement in Canada). No other Passport 1000 P2 locks will support this requirement.

Escutcheons

- Key button text is recessed to prevent wear
- Zinc die cast
- A multi-colored LED indicates valid/invalid entries
- Outside Escutcheon Projection is 1-5/8" (41mm)
- Inside Escutcheon Projection is 1-5/8" (41mm)



P2 Mortise Lock Functions

If the lock needs to have:	Then select:			
	Technology	Series	Type	Function
Magnetic Stripe only				
Key override and deadbolt**		P2	82	276
Key override and no deadbolt		P2	82	278
Deadbolt and no key override**		P2	82	277
No deadbolt and no key override		P2	82	279
Magnetic Stripe & Keypad				
Key override and deadbolt**	KP-	P2	82	276
Key override and no deadbolt	KP-	P2	82	278
Deadbolt and no key override**	KP-	P2	82	277
No deadbolt and no key override	KP-	P2	82	279
iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
	Series	Type	Function	Technology
Key override and deadbolt**	P2	82	276	IKMPS*
Key override and no deadbolt	P2	82	278	IKMPS*
Deadbolt and no key override**	P2	82	277	IKMPS*
No deadbolt and no key override	P2	82	279	IKMPS*
iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
Key override and deadbolt**	P2	82	276	IMPS*
Key override and no deadbolt	P2	82	278	IMPS*
Deadbolt and no key override**	P2	82	277	IMPS*
No deadbolt and no key override	P2	82	278	IMPS*
FeliCa, keypad, mag stripe, Prox				
Key override and deadbolt**	P2	82	276	CKMP*
Key override and no deadbolt	P2	82	278	CKMP*
Deadbolt and no key override**	P2	82	277	CKMP*
No deadbolt and no key override	P2	82	278	CKMP*
FeliCa, mag stripe, Prox				
Key override and deadbolt**	P2	82	276	CMP*
Key override and no deadbolt	P2	82	278	CMP*
Deadbolt and no key override**	P2	82	277	CMP*
No deadbolt and no key override	P2	82	278	CMP*

* For Bluetooth Smart support, add "B" to the beginning of the technology code.

** Deadbolt required for escape return functionality (a residential requirement in Canada).

How to Order: Passport 1000 P2 Mortise Locks with Magnetic Stripe Only or Magnetic Stripe and Keypad

Options	Technology	Series	Type	Function	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Mortise Lock Function chart above				Select rose, lever and finish from pages 8-10			RHR, LHR, RH or LH
Example:	KP-P2-82276				LN	MX	26D	RH

How to Order: Passport 1000 P2 Mortise Locks with multiCLASS SE® Reader

Options	Series	Type	Function	Technology	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Mortise Lock Function chart above				Select rose, lever and finish from pages 8-10			RHR, LHR, RH or LH
Example:	P2-82276-1KMP5				LN	MX	26D	RH

P2 10 Line Cylindrical Locks

Passport 1000 P2



SARGENT®
ASSA ABLOY

The PERSONA Passport 1000 P2 10 Line Cylindrical lock is available with a wide selection of lever designs and hardware finishes. Its unique design provides uniformity when used with other SARGENT locks at a facility.

Mechanical Features

- Certified ANSI/BHMA A156.2 Series 4000 - Grade 1
- Motor driven cylindrical lock
- Latch Stainless Steel, 1/2" (13mm) throw
- 2-3/4" (70mm) backset standard; 3-3/4" and 5" backsets also available
- For 1-3/4" (44mm) thick door standard. Consult factory for other thicknesses
- Non-Handed lock body, levers may be handed (Specify RH, RHR, LH or LHR)
- Heavy duty lever spring return
- Adjustable through-bolt positions
- Steel mounting studs
- Not available with 10-UL-, 82-, 83- or 84- options
- UL/ULC Listed for fire doors*
- Hurricane-Resistant Certifications listed on page 17
- Batteries included



52-5373 Door Position Switch (DPS)

- SPDT concealed switch (2 wire)
- Metal Door adapter included
- 3/8" Diameter for wood door
- 3/4" Diameter for metal door



* Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and Sargent Manufacturing Company makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.

P2-10G77 Entry Lock with Cylinder

- Outside lever rigid except when in "passage" mode or valid user code entered
- Lever inside always retracts latch
- Guardbolt deadlocks latch
- Request-to-Exit (REX) signaling standard
- Door Position Switch (DPS, part #52-5373) supplied to allow for full monitoring
- 10 Line Levers are shown on page 8 and Roses are shown on page 10

Key Override Standard Features:

- Key outside retracts latchbolt

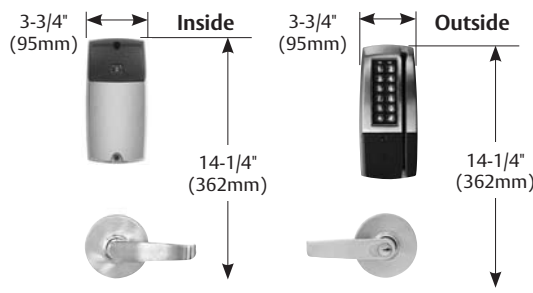
P2 Cylindrical Lock Functions

If the lock needs to have:	Then select:			
	Technology	Series	Type	Function
Magnetic Stripe only				
Key override		P2	10	G77
Magnetic Stripe & Keypad				
Key override	KP-	P2	10	G77
	Series	Type	Function	Technology
iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
Key override	P2	10	G77	IKMPS*
iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
Key override	P2	10	G77	IMPS*
FeliCa, keypad, mag stripe, Prox				
Key override	P2	10	G77	CKMP*
FeliCa, mag stripe, Prox				
Key override	P2	10	G77	CMP*

* For Bluetooth Smart support, add "B" to the beginning of the technology code.

Escutcheons

- Key button text is recessed to prevent wear
- Zinc die cast
- A multi-colored LED indicates valid/invalid entries
- Outside Escutcheon Projection is 1-5/8" (41mm)
- Inside Escutcheon Projection is 1-5/8" (41mm)



How to Order: Passport 1000 P2 Cylindrical Locks with Magnetic Stripe Only or Magnetic Stripe and Keypad

Options	Technology	Series	Type	Function	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Cylindrical Lock Function chart above				Select rose, lever and finish from pages 8 & 10			RHR, LHR, RH or LH
**28-	KP-P2-10G77				L	G	03	RH

How to Order: Passport 1000 P2 Cylindrical Locks with multiCLASS SE® Reader

Options	Series	Type	Function	Technology	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Cylindrical Lock Function chart above				Select rose, lever and finish from pages 8 & 10			RHR, LHR, RH or LH
**28-	P2-10G77-1KMPS				L	G	03	RH

**28- option supplies a 4-7/8" strike, opposed to the 2-3/4" T strike supplied standard

P2 80 Series Exit Devices

Passport 1000 P2



SARGENT®
ASSA ABLOY

The Passport 1000 P2 80 Series Exit Devices offers access control with magnetic stripe only, magnetic stripe/keypad, magnetic stripe/keypad/proximity reader, or magnetic stripe/keypad/iCLASS® reader for campus environments, and particularly in areas where life safety is a primary concern, such as in stairwell areas or tenant-occupied facilities.

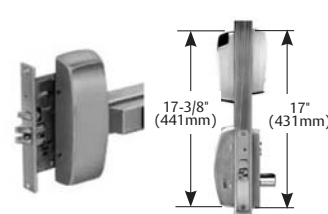
Mechanical Features

- Certified ANSI/BHMA A156.3 Grade 1
- Latch 3/4" (19mm) throw (8800: stainless steel, 8900: anti-friction brass)
- Cylinder requirements: 8800 Series uses a #34 Rim Cylinder; 8900 Series uses a #46 Mortise Cylinder (1-3/4")
- For 1-3/4" (44mm) door standard. Consult factory for other thicknesses
- Batteries included
- EcoFlex™ technology offers improved battery life
- Available with Studio Collection, Coastal Series and all standard levers
- UL/ULC Listed for fire doors*
- Hurricane-Resistant Certifications listed on page 15

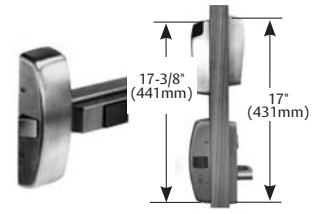
*Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and Sargent Manufacturing Company makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.

All P2 Exit Devices feature:

- Lever outside rigid except when in passage mode or valid user code entered
- Always allows free egress
- Request-to-Exit (REX): monitors rail position
- Door Position Switch (DPS, part #52-3893) supplied; allows for full monitoring (shown on page 5)



P2 8900 Mortise Exit Devices



P2 8800 Rim Exit Devices

P2 Exit Device Functions

Mortise Lock Exit			
If the lock needs to have:	Technology	Series	Type & Function
Magnetic Stripe only			
Key override		P2	8977
No key override		P2	8978
Magnetic Stripe & Keypad			
Key override	KP-	P2	8977
No Key override	KP-	P2	8978
	Series	Type & Function	Technology
iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)			
Key override	P2	8977	IKMPS*
No Key override	P2	8978	IKMPS*
iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)			
Key override	P2	8977	IMPS*
No Key override	P2	8978	IMPS*
FeliCa, keypad, mag stripe, Prox			
Key override	P2	8977	CKMP*
No Key override	P2	8978	CKMP*
FeliCa, mag stripe, Prox			
Key override	P2	8977	CMP*
No Key override	P2	8978	CMP*

*For Bluetooth Smart support, add "B" to the beginning of the technology code.

Rim Exit		
Technology	Series	Type & Function
	P2	8877
	P2	8878
KP-	P2	8877
KP-	P2	8878
	Series	Type & Function
		Technology
P2	8977	IKMPS*
P2	8978	IKMPS*
P2	8977	IMPS*
P2	8978	IMPS*
P2	8977	CKMP*
P2	8978	CKMP*
P2	8977	CMP*
P2	8978	CMP*

Escutcheons

- Key button text is recessed to prevent wear
- Zinc die cast
- A multi-colored LED indicates valid/invalid entries
- Outside Escutcheon Projection is 1-5/8" (41mm)
- Inside Escutcheon Projection is 1-5/8" (41mm)

Outside ET Lever Control

- Cast escutcheon
- Projection 13/16" (21mm)
- Motor-driven trim

How to Order: Passport 1000 P2 Exit Devices with Magnetic Stripe only or Magnetic Stripe and Keypad

Options	Technology	Series	Type	Function	Rail Size	ET Trim/ Lever	Finish	Hand	Door Width
Select from pages 14-16	Select from P2 Exit Device Function chart above				E: 24 - 32"; F: 33 - 36"; J: 37 - 42"; G: 43 - 48"	ET followed by lever designation from pages 8-10	Select from page 8	RHR or LHR	If supplied, rails will be cut to size
Example:		KP-P2-8878			F	ETL	03	RHR	34"

How to Order: Passport 1000 P2 Exit Devices with multiCLASS SE® Reader

Options	Series	Type	Function	Technology	Rail Size	ET Trim/ Lever	Finish	Hand	Door Width
Select from pages 14-16	Select from P2 Exit Device Function chart above				E: 24 - 32"; F: 33 - 36"; J: 37 - 42"; G: 43 - 48"	ET followed by lever designation from pages 8-10	Select from page 8	RHR or LHR	If supplied, rails will be cut to size
Example:		P2-8878-1KMP5			F	ETL	32D	RHR	36"

Exit Device Retrofit Kits

Passport 1000 P2



Add the advanced access control capabilities of Passport 1000 to existing exit devices. Our retrofit kits make it easy to upgrade your campus security without the hassle and expense of replacing the entire exit device.

Retrofit Kits for Von Duprin® 98/99 Series Rim Exit Devices

Features:

- Key override compatible with a variety of rim cylinders. Trim prepped for cylinder (not included).
- Available with all Passport 1000 P2 credential options
- Provides complete coverage of door prep for Von Duprin 996 trim; call 800-810-WIRE for information on door prep coverage for other trims
- Available with Studio Collection, Coastal Series, and all standard levers
- Available in the same finishes as Passport 1000 exit devices with ET trim (see page 8)
- Mechanical trim available for double door applications. Refer to accessories (page 13) for ordering information.

Specifications:

- Meets ANSI/BHMA Grade 1 requirements
- UL/ULC Listed for fire doors*
- Requires Von Duprin RX switch assembly #050251-00 (supplied by others)

Passport 1000 P2

If the retrofit kit needs to have:	Then select:			
	Technology	Series	Function	Outside Trim
Magnetic Stripe only		P2	231	EK1
Magnetic Stripe & Keypad	KP	P2	231	EK1
	Series	Function	Outside Trim	Technology
iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)	P2	231	EK1	IKMPS*
iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)	P2	231	EK1	IMPS*
FeliCa, keypad, mag stripe, Prox	P2	231	EK1	CKMP*
FeliCa, mag stripe, Prox	P2	231	EK1	CMP*

* For Bluetooth Smart support, add "B" to the beginning of the technology code.

How to Order: Passport 1000 P2 Exit Device Retrofit Kits with Magnetic Stripe Only or Magnetic Stripe and Keypad

Technology	Series	Function	Outside Trim	Levers	Finish	Hand
Select from P2 Retrofit Kit Function chart above				Select lever and finish from pages 8-10		RHR or LHR
KP-P2-231 x EK1				G	26D	LHR

How to Order: Passport 1000 P2 Exit Device Retrofit Kits with multiCLASS SE® Reader

Series	Function	Technology	Outside Trim	Levers	Finish	Hand
Select from P2 Retrofit Kit Function chart above				Select lever and finish from pages 8-10		RHR or LHR
P2-231 x IKMPS x EK1				G	26D	LHR

* Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and Sargent Manufacturing Company makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.



P2 FM7300 Series Multi-Point Locks

Passport 1000 P2



SARGENT®
ASSA ABLOY

The Passport 1000 P2 FM7300 Series lock is a multi-point, deadlocking system developed to help protect lives while securing a community shelter and/or safe room entry.

Sturdy heavy-duty steel components firmly secure the door within the frame – at top, bottom, and center latch points – fortifying the opening during a windstorm event. The FM7300 Series is UL-listed for FEMA P361 (2015), FEMA P320 (2014) and ICC 500 2014 capable of withstanding severe wind speeds and flying debris. This device consists of concealed vertical rods with top and bottom latching complemented by an EAC mortise lock with a latchbolt and deadbolt at the center of the door and an optional indicator to show the status of the top and bottom latches.

The lever rotation retracts the top bolt, the bottom bolt, and center bolts simultaneously. When retracted, the bolts are held in position as the door swings. As the door closes, the hold-back feature engages the frame and the top, center, and bottom bolts project simultaneously. With the deadbolt thrown, this system protects room occupants from threatening conditions. The FM7300 Series device can be used on fire-rated doors.

Mechanical Features

- Certified to ANSI/BHMA A156.37 Series 1000 Operational Grade 1 and Security Grade 1
- Motor driven 8200 Series Mortise Lock
- 1-3/4" thick door only; fully integrated – FM7300 is part of a complete ASSA ABLOY windstorm solution utilizing Ceco StormPro® 361 and Curries StormPro® 361 doors and frames and McKinney® StormPro® hinges
- Stainless steel non-handed deadlocking latch
- Not available with SC- or SE- options
- Handed, easily field reversible without disassembling lockbody
- Lever trim through-bolted for increased security and durability
- Concealed vertical assembly (rods, latches and cassette) pre-installed in door
- Concealed vertical assembly (rods, latches and cassette) pre-installed in door
- UL/ULC Listed for fire doors*
- FCC certified
- Windstorm certification information is listed in the Sargent FM7300 Series catalog

* Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and Sargent Manufacturing Company makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.



Passport 1000 P2 Multi-Point Lock Functions

Standard P2 Multi-Point Locks feature:

- Outside lever rigid except when in "passage" mode or valid user code entered
- Trim inside always retracts latch and/or deadbolt
- Guardbolt deadlocks latch
- Latchbolt Monitoring: monitors latchbolt position
- Door Position Signaling: monitors door position

Deadbolt Function Features:

- When deadbolt thrown, outside lever operable only with predetermined code
- Deadbolt Monitoring: monitors deadbolt position
- 1" hardened stainless steel deadbolt
- No key override with deadbolt: Deadbolt projected and retracted by thumbturn or key
- Key Override with deadbolt: Key outside retracts deadbolt. Key outside also retracts latch and unlocks outside when trim is locked electronically
- Top and bottom rods retracted by lever
- Deadbolt projected and retracted by thumbturn or key

Escutcheons

- Key button text is recessed to prevent wear
- Zinc die cast
- A multi-colored LED indicates valid/invalid entries
- Outside Escutcheon Projection is 1-5/8" (41mm)
- Inside Escutcheon Projection is 1-5/8" (41mm)

P2 Multi-Point Lock Functions

If the lock needs to have:	Then select:			
	Technology	Series	Type	Function
Magnetic Stripe only				
Deadbolt and no key override**		P2	FM73	277
Key override with deadbolt		P2	FM73	276
Magnetic Stripe & Keypad				
Deadbolt and no key override**	KP-	P2	FM73	277
Key override with deadbolt	KP-	P2	FM73	276
	Series	Type	Function	Technology
iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
Deadbolt and no key override**	P2	FM73	277	IKMPS*
Key override with deadbolt	P2	FM73	276	IKMPS*
iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)				
Deadbolt and no key override**	P2	FM73	277	IMPS*
Key override with deadbolt	P2	FM73	276	IMPS*
FeliCa, keypad, mag stripe, Prox				
Deadbolt and no key override**	P2	FM73	277	CKMP*
Key override with deadbolt	P2	FM73	276	CKMP*
FeliCa, mag stripe, Prox				
Deadbolt and no key override**	P2	FM73	277	CMP*
Key override with deadbolt	P2	FM73	276	CMP*

* For Bluetooth Smart support, add "B" to the beginning of the technology code.

** Deadbolt required for escape return functionality (a residential requirement in Canada).

How to Order: Passport 1000 P2 Multi-Point Locks with Magnetic Stripe Only or Magnetic Stripe and Keypad

Options	Technology	Series	Type	Function	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Multi-Point Lock Function chart above				Select rose, lever and finish from pages 8-10			RHR, LHR, RH or LH
Example:	KP-P2-FM73277				LN	MX	26D	RH

How to Order: Passport 1000 P2 Multi-Point Locks with multiCLASS SE® Reader

Options	Series	Type	Function	Technology	Roses	Levers	Finish	Hand
Select from pages 14-16	Select from P2 Multi-Point Lock Function chart above				Select rose, lever and finish from pages 8-10			RHR, LHR, RH or LH
Example:	P2-FM73277-1KMPS				LN	MX	26D	RH

Finishes, ET Trim and Handling

Passport 1000 P2



Passport 1000 P2 products are available with the following identified lever designs to provide uniformity throughout a facility. Lever projection from door surface varies with lock type. P2 mortise locks and cylindrical locks are specified by rose design followed by the lever designation (e.g., LNMX). P2 Exit devices are specified by the ET designation followed by the lever designation (e.g., ETMX).

Note: Exit devices are only available with ET Trim

Finishes

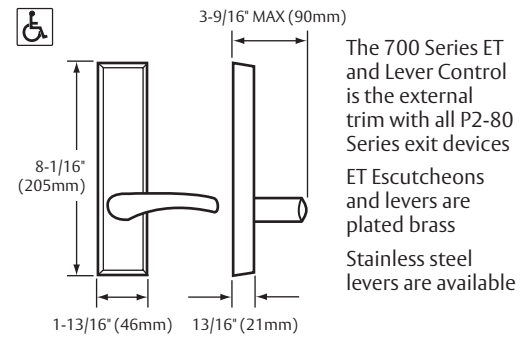
SARGENT offers many different finishes for P2 products. Please reference the chart below for finishes available.

	Finishes	ANSI	Mortise Locks	Cylindrical Locks	Exit Devices
03	Bright brass	605	X	X	X
04	Satin brass	606	X	X	X
09	Bright bronze	611	X	X	X
10	Satin bronze, clear powder	612	X	X	X
10B	Oxidized satin bronze oil rubbed	613	X	X	X
10BE	Dark oxidized satin bronze - equivalent	613E	X	X	X
10BL	Oxidized satin bronze, clear power coat	–	X	X	X
14‡	Bright nickel, clear coated	618	X	X	X
15‡	Satin nickel, clear coated	619	X	X	X
20D	Dark statuary bronze, clear powder coat	–	X	X	X
26‡	Bright chrome	625	X	X	X
26D‡	Satin chrome	626	X	X	X
32∞	Bright stainless steel	629	X	–	X
32D∞	Satin stainless steel	630	X	–	X
BSP	Black suede powder coat	–	X	X	X
WSP	White suede powder coat	–	X	X	X

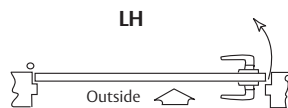
‡ Exit Devices ordered in 32 or 32D will have the ET trims supplied in 26 or 26D; for nickel finished ET trims, specify 14 or 15 finish and the exit will be supplied in 32 or 32D accordingly

∞ Only available with exit devices, the external trim will be supplied in 26 or 26D accordingly

ET Lever Trim for Exit Devices



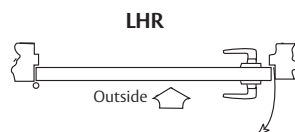
Handling



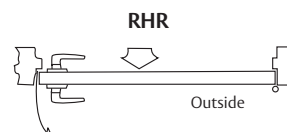
Left Hand Door



Right Hand Door



Left Hand Reverse Door



Right Hand Reverse Door

Standard and Coastal Series Levers, Finishes, ET Trim and Handling

Passport 1000 P2



Passport 1000 P2 products are available with the following identified lever designs to provide uniformity throughout a facility. Lever projection from door surface varies with lock type. P2 mortise locks and cylindrical locks are specified by rose design followed by the lever designation (e.g., LNMX). P2 Exit devices are specified by the ET designation followed by the lever designation (e.g., ETMX).

Levers

Standard Levers					
Lever	Design	Handed	Mortise Locks	Cylindrical Locks	Exit Devices
A		Yes	X		X
B		–	X	X	X
E		–	X		X
F		–	X		X
J		–	X	X	X
L		–	X	X	X
P		–	X	X	X
W		–	X		X

Note: P2-8200 mortise locks with standard levers are available with LN and O roses only (not available with CO, CR, TO & TR roses)

Coastal Levers					
Lever	Design	Handed	Mortise Locks	Cylindrical Locks	Exit Devices
C		–	X		X
G		Yes	X	X	X
R		–	X		X
S		Yes	X		X
Y		Yes	X	X	X

Note: P2-8200 mortise locks with Coastal Series levers are available with CR & TR roses (Not available with LN, O, CO & TO roses)

Roses

Roses	Design	Diameter	Mortise Locks	Cylindrical Locks
LN		2"	X	
CR		2-3/16"	X	
TR		2-3/16"	X	
O		2-3/4"	X	
E2		2-11/16"	X	

Roses	Design	Diameter	Mortise Locks	Cylindrical Locks
E3		2-1/16"	X	
CO		2-3/4"	X	
TO		2-3/4"	X	
L		3-1/2"		X
G		3-1/2"		X

Thumbturns

The thumbturn backplate will match the rose design chosen. The turn designation must be specified as an option before the lock order string.

*The standard thumbturn will be supplied if T1, T2 or T3 are not listed. See page 9 in the 8200 mortise lock catalog for more information.

T1 Turn



T2 Turn



T3 Turn



Standard Turn*



Studio Collection Levers

Passport 1000 P2

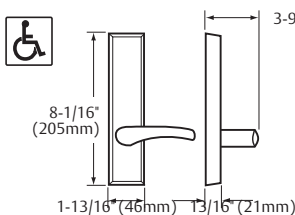


Studio Collection Levers are available with the 8200 Series Mortise Locks. With Exit Device, the Studio Collection is available with the ET trim creating uniformity throughout a facility.

Aventura Series				
Lever	Design	Handed	Mortise Locks	Exit Devices
MB		–	X	X
ME		–	X	X
MF		–	X	X
NF ¹		–	X	X
MG		–	X	X
MI		–	X	X
NI ¹		–	X	X
MW ¹		–	X	X
Odeon Series				
MN ^{2,3}		Yes	X	X
MH ³		Yes	X	X
MS ³		Yes	X	X
MU ³		Yes	X	X
MV ³		Yes	X	X
NS ^{1,3}		Yes	X	X
NU ^{1,3}		Yes	X	X
MX ^{1,3}		Yes	X	X

1. Lever returns within 1/2" (13mm) of door face
2. Gramercy levers are customized. Refer to page 10 for ordering information.
3. Not available in 32D or 32 finish

ET Lever Controls for Exit Devices



The 700 Series ET and Lever Control is the external trim with all Profile 80 Series exit devices
ET Escutcheons and levers are plated brass
Stainless steel levers are available

Notting Hill Series				
Lever	Design	Handed	Mortise Locks	Exit Devices
MQ ³		Yes	X	X
MT ^{2,3}		Yes	X	X
MY ^{1,3}		Yes	X	X
Rialto Series				
MO ³		Yes	X	X
MZ ^{1,3}		Yes	X	X

Centro Levers				
MD		–	X	X
MJ		–	X	X
MP ^{2,3}		–	X	X
ND ¹		–	X	X
NJ ¹		–	X	X

Gramercy Levers**				
RCM ²		–	X	X
RAL ²		–	X	X
REM ²		–	X	X
RAM ²		–	X	X
RAS ²		–	X	X
RAG ²		–	X	X
RGM ²		–	X	X

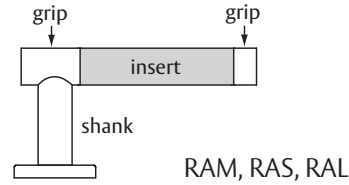
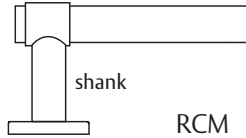
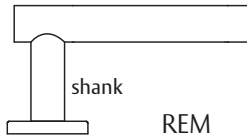
Ordering Gramercy Series Levers and Rose Designs

Passport 1000 P2



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Elements of Gramercy Series Levers



Lever	Part Number	Shank Finish*	Insert	Grip Finish
Plain†	REM	Polish Stainless (629) or Satin Stainless (630)	n/a	Polish Stainless (629) or Satin Stainless (630)
With Raised Band	RCM	Polished Stainless (629)	n/a	Polish Stainless (629) or Satin Stainless (630)
With Metallic Insert	RAM	Polished Stainless (629)	Satin Stainless (630)	Polished Stainless (629)
With Santoprene Insert†	RAS	Polished Stainless (629) or Satin Stainless (630)	Black (BK)	Polish Stainless (629) or Satin Stainless (630)
With Leather Insert†	RAL	Polished Stainless (629) or Satin Stainless (630)	Black (BK) or Brown (BN)	Polish Stainless (629) or Satin Stainless (630)

* Rose finish is designated by shank finish selected, escutcheon finish will be 14 or 15 finish accordingly

† Grip finish must match shank finish

To order Gramercy Series levers with SARGENT products, see the examples below. When specifying finish, use the last two digits of the BHMA standard finish code, i.e. use "29" for polished stainless, BHMA finish 629.

How to Order: P2- Mortise Lock with Gramercy Levers

Options	Series/ Type	Function	Technology	Rose	Lever	Shank Finish*	Insert Finish	Grip Finish	Hand
Select from pages 14-16	P2-82	Select from page 4	Select from page 4	Select from below	Leather insert	Polished or satin stainless	Black or Brown	Polished or satin stainless	RHR, RH, LHR, or LH
10-	P2-82	276	IKMPS	LN	RAL	29	BN	29	RH

How to Order: P2- Exit Device x Gramercy Levers

Options	Series	Type	Function	Technology	Rail Size	Trim	Lever	Shank Finish*	Insert Finish	Grip Finish	Hand	Inside Finish	Door Width
Select from pages 14-16	Select from page 6				E, F, J or G	ET Series	Leather insert	Polished or satin stainless	Select from above	Polished or satin stainless	RHR or LHR	Select from page 8	
10-	P2-	88	77	IKMKPS	F	ET	RAL	29	BN	29	RHR	32D	36"



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Hard Power Option (91-)

The Hard Power option (91-) is recommended for high traffic doors or openings that require online behavior. Hard powering a Passport 1000 P2 allows the lock to operate in an always connected mode. The P2 allows hard powering via an input of 12 to 24V DC and draws 200mA at 12V DC in always connected mode. SARGENT offers a range of power supplies suitable for this application.

12VDC & 24VDC Power Supplies

- UL Class 2 Listed filtered and regulated supply
- Four 12V models and four 24V models available
- Integral battery charging capability keeps sealed lead acid gel/cell at full charge in case of line voltage failure (737-battery sold separately)
- Fused line voltage input with one, four, or eight DC outputs (depending on model)
- Each circuit can be individually turned on and off via a slide switch; the power status of each is shown by an LED
- In the event of a DC short, the problem is confined to the zone of difficulty
- Fire alarm interface standard

Model Description

3521	12V - 1 Amp power supply
3541	12V - 3 Amp power supply
3551	12V - 4.5 Amp power supply
3571	12V - 6 Amp power supply
737	12V - 5 Amp 1 hour backup battery
3520	24V - 1 Amp power supply
3540	24V - 2 Amp power supply
3550	24V - 4 Amp power supply
3570	24V - 6 Amp power supply
738	24V - 5 Amp 1 hour backup battery

ElectroLynx® hinges and harnesses required for hard-powered Passport 1000 P2 applications are available through McKinney.

52-3852 IN120 Adapter Cable

- Included with 91- prefix option units
- Allows for hard powering (91-) of Passport 1000 P2 or IN120 (required for certain monitoring features)
- Compatible with ElectroLynx® system

Weatherseal Gasketing

- Provides sealing between outside escutcheon and door for exterior applications
- Gasketing (included) recommended for non-fire rated exterior applications

52-0782



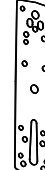
For use with
Passport
Escutcheon

52-0263



For use with
ET Trim

97-0773



For use with
EK1 Exit Trim

52-5373 Door Position Switch (DPS)

- SPST concealed switch (2 wire)
- Metal Door adapter included
- 3/8" Diameter for wood door
- 3/4" Diameter for metal door
- Supplied with P2 Exit Devices and Bored Locks



Replacement Parts

Passport 1000 P2



Electronics	
Part No.	Description
52-3583-[finish]	Outside escutcheon assembly, mag stripe
52-3582-[finish]	Outside escutcheon assembly, mag stripe and keypad
52-4759-[finish]	Outside escutcheon assembly, iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE)
52-4894-[finish]	Outside escutcheon assembly, iCLASS, keypad, mag stripe, Prox, smart card (MIFARE, DESFIRE), Bluetooth Smart-enabled mobile phones
52-4777-[finish]	Outside escutcheon assembly, iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE)
52-4895-[finish]	Outside escutcheon assembly, iCLASS, mag stripe, Prox, smart card (MIFARE, DESFIRE), Bluetooth Smart-enabled mobile phones
52-4787-[finish]	Outside escutcheon assembly, FeliCa, keypad, mag stripe, Prox
52-4796-[finish]	Outside escutcheon assembly, FeliCa, keypad, mag stripe, Prox, Bluetooth Smart-enabled mobile phones
52-4788-[finish]	Outside escutcheon assembly, FeliCa, mag stripe, Prox
52-4797-[finish]	Outside escutcheon assembly, FeliCa, mag stripe, Prox, Bluetooth Smart-enabled mobile phones
52-5409	WiFi controller assembly
52-4779	Mounting plate assembly
52-4776 -[finish]	Inside escutcheon assembly with privacy button
Passport 1000 P2 Mortise Lock Replacement Parts	
P2-82276-[finish]	Lockbody with deadbolt and cylinder
P2-82277-[finish]	Lockbody with deadbolt, without cylinder
P2-82278-[finish]	Lockbody without deadbolt, with cylinder
P2-82279-[finish]	Lockbody without deadbolt, without cylinder
Passport 1000 P2 Cylindrical Lock Replacement Parts	
52-5373	Door position switch kit
10-3407	Lockbody - standard cylinder
10-3412	Lockbody - LFIC
10-3417	Lockbody - SFIC
Passport 1000 P2 Rim Exit Device Replacement Parts	
Part No.	Description
52-5373	Door position switch kit
97-3562-5126	Exit trim (ET) with cylinder
97-3563-5126	Exit trim (ET) without cylinder
52-3891	Motor assembly
Passport 1000 P2 Mortise Exit Device Replacement Parts	
Part No.	Description
52-5373	Door position switch kit
P2-777-8-ETL-[finish]	Exit trim (ET) with cylinder
P2-778-8-ETL-[finish]	Exit trim (ET) without cylinder
52-3891	Motor assembly

Cylinder Options

Passport 1000 P2



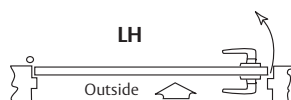
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To order options listed below, list the alpha or numerical code before the product model number

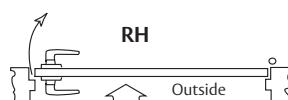
Mechanical Options:

Add Strength	3-	Stainless steel hubs for institutional specifications (mortise locks only)
Fire Rated	12-	UL Fire Label Exit hardware (exit devices only, not available with 16- & HK-)
Cylinder Dogging	16-	Cylinder lockdown (non-fire rated exit devices only)
	LD-	Less hex key dogging (non-fire rated exit devices only)
Less Touch Pad	19-	Pushbar without Lexan touchpad (exit devices only)
10 Line Backsets	23-	3-3/4" Backset x 2-1/4" x 1-1/8" Front (10 Line only)
	25-	5" Backset x 2-1/4" x 1-1/8" Front (10 Line only)
Strike Options	23-	4-7/8" (124mm) ANSI flat lip strike (8900 mortise lock exit device & mortise locks only)
	28-	4-7/8" Strike #808. Lip length 1-1/4 (10 Line only)
	OBS-	Open Back Strike (for 82278 & 82279 only)
	WBS-	Wrought Box Strike (Not available for 80 series)
Security Fasteners	36-	Six lobe security head screws
	37-	Spanner head screws
3/4" Latch Throw	41-	3/4" (19mm) throw latch x 2-3/4" (70mm) backset (10 Line only)
Flush End cap	43-	Flush End Cap (exit devices only)
Tactile Warning Options	75-	Tactile Warning - Milled Inside Lever (Not available with Exit Devices, Studio & Coastal Levers and the A Lever)
	76-	Tactile Warning - Milled Outside Lever (Not available with Studio & Coastal Levers and the A Lever)
	77-	Tactile Warning - Milled Inside & Outside Lever (Not available with Exit Devices, Studio & Coastal Levers and the A Lever)
	85-	Tactile Warning - Abrasive Coating on Inside Lever (or Push Rail for Exits)
	86-	Tactile Warning - Abrasive Coating on Outside Lever
	87-	Tactile Warning - Abrasive Coating on Outside Lever & Inside Lever (or Push Rail for Exits)
Finish Protection	CPC-	Clear Powder Coat (Available for 26, 26D, 32 & 32D Finishes)
	SG-	MicroShield® antimicrobial clear powder coat
SARGuide	PL-	SARGuide™ PL – Photoluminescent Coated Push Rail – (Touchpad eliminated) (Not available 75-, 77 & TL-)
Hurricane-Resistant exit devices	HC-	Hurricane Code (rim exit devices only, see page 14 for details)
	WS-	Windstorm Rated (rim & mortise lock exit devices only, see page 14 for details)
Electrical Options	91-	Power/Remote Unlocking wiring harness

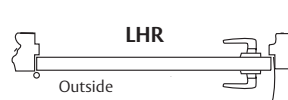
Handing



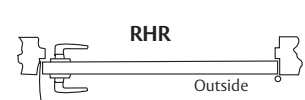
Left Hand Door



Right Hand Door



Left Hand Reverse Door



Right Hand Reverse Door

To order options listed below, list the alpha or numerical code before the product model number

Cylinder Options:

Degree Key System	DG1-	SARGENT Degree Key System Level 1
	DG1-21-	Degree Level 1 Construction Master Keying
	DG1-60-	Degree Level 1 Removable Disposable Construction Core (not available with cylindrical locks)
	DG1-63-	Degree Level 1 Removable Core (not available with cylindrical locks)
	DG1-64-	Degree Level 1 Removable Construction Keyed LFIC (not available with cylindrical locks)
	DG1-65-	Degree Level 1 Unassembled/Uncombined Core
	DG1-78-	Degree Level 1 Exposed Plug (not available with cylindrical locks or exit devices)
	DG2-	SARGENT Degree Key System Level 2
	DG2-21-	Degree Level 2 Construction Master Keying
	DG2-60-	Degree Level 2 Removable Disposable Construction Core (not available with cylindrical locks)
	DG2-63-	Degree Level 2 Removable Core (not available with cylindrical locks)
	DG2-64-	Degree Level 2 Removable Construction Keyed LFIC (not available with cylindrical locks)
	DG2-65-	Degree Level 2 Unassembled/Uncombined Core
	DG2-78-	Degree Level 2 Exposed Plug (not available with cylindrical locks or exit devices)
	DG3-	SARGENT Degree Key System Level 3
	DG3-21-	Degree Level 3 Construction Master Keying
	DG3-60-	Degree Level 3 Removable Disposable Construction Core (not available with cylindrical locks)
	DG3-63-	Degree Level 3 Removable Core (not available with cylindrical locks)
Signature Key System	10-	SARGENT Signature Key System (Not Available with other Key Systems)
	10-21-	SARGENT Signature Construction Key System (Lost Ball)
Signature Large Format Interchangeable Core	10-63-	SARGENT Signature Large Format Interchangeable Core (Removable Core) Cylinder
XC- Key System	11-	XC Key System (not available with 10-, 22-)
	11-21-	XC- Construction Key System (Lost Ball)
XC- Large Format Interchangeable Core	11-60-	Hardware to accept XC- Permanent LFIC (Removable Core), Disposable Plastic Core- provided
	11-63-	Hardware provided with XC- LFIC (Removable Core) Cylinder - (Includes masterkeying, grand masterkeying)
	11-64-	Hardware provided with Keyed construction core to accept XC- LFIC (Removable) Permanent Core (ordered separately)
XC- Interchangeable Cores	11-70-7P-	Hardware to accept XC- SFIC (7-Pin) XC- Permanent Cores, Plastic Disposable Core Provided (10 Line J lever not available)
	11-72-7P-	Hardware to accept XC- SFIC (7-Pin Keyed Construction Core provided) cylinder Permanent Core ordered separately (10 Line J lever not available)
	11-73-7P-	Hardware supplied with XC- Small Format 7-Pin interchangeable core (Includes masterkeying, grand masterkeying) (10 Line J lever not available)
	11-65-73-7P-	Hardware provided to accept XC- Uncombined 7-Pin SFIC (Permanent) Core (10 Line J lever not available)

Note: More Cylinder Options on the following page

Cylinder Options and Shipping Information

Passport 1000 P2



To order options listed below, list the alpha or numerical code before the product model number

Cylinder Options:

Construction Key Systems	21-	SARGENT Lost Ball Construction Keying for Conventional, XC and Signature Series (N/A with 63- or 73-)
	22-	SARGENT Construction Split Key System for Conventional Cylinders (Existing Systems Only) (N/A with 10-, 11-, 63- or 73-)
Old Style Removable Core	51-	Removable Core Cylinder (Old Style) provided (Existing Systems Only)
	52-	Removable Construction Core (Old Style) Permanent core ordered separately (Existing Systems Only)
Large Format Interchangeable Core	60-	Hardware to accept SARGENT Permanent LFIC (Removable Core), Disposable Plastic Core provided (Permanent Cores ordered separately)
	63-	Hardware provided with LFIC (Removable Core) Cylinder - (Includes masterkeying, grand masterkeying)
	64-	Hardware provided with Keyed construction core to accept LFIC (Removable) Permanent Core (ordered separately)
Interchangeable Cores	70-	Hardware to accept 6 or 7-Pin SFIC Permanent Cores, Plastic Disposable Core provided (10 Line J lever not available)
	72-	Hardware to accept 6 or 7-Pin SFIC (Keyed Construction Core provided) Cylinder (10 Line J lever not available) (Permanent Core ordered separately)
	73-	Hardware supplied with 6 pin SFIC (Includes masterkeying, grand masterkeying) (10 Line J lever not available)
	65-73-	Hardware provided to accept Uncombined 6-Pin SFIC (Permanent) Core (10 Line J lever not available)
	65-73-7P-	Hardware provided to accept Uncombined 7-Pin SFIC (Permanent) Core (10 Line J lever not available)
	73-7P-	Hardware supplied with Small Format 7-Pin Interchangeable Core (Includes masterkeying, grand masterkeying) (10 Line J lever not available)
Keso & Keso F1	81-	Hardware provided with housings to accept Keso (83) & Keso F1 (F1-83-) removable cores (Not available with 10 Line) (Permanent Cores ordered separately)
	82-	Hardware provided with SARGENT Keso Security Cylinder
	F1-82-	Hardware provided with SARGENT Keso F1 Security Cylinder (Patented)
	83-	Hardware supplied with SARGENT Keso Security Removable Core cylinder (Not available with 10 Line)
	F1-83-	Hardware supplied with SARGENT Keso F1 Security Removable Core cylinder (Not available with 10 Line) (Patented)
	84-	Hardware provided with SARGENT Keso Construction Cores (Not available with 10 Line) (Permanent Cores ordered separately)
Bump Resistant	BR-	Bump Resistant Cylinder (Available with Conventional & Conventional XC Cylinders Only)
Less Cylinder	LC-	Hardware supplied less cylinder
Accept Schlage Cylinders	30-	Lever to accept Schlage Cylinder-Cylinder is not provided (10 Line only)
	SF-	L Lever to accept Medeco KeyMark Large Format Interchangeable and Schlage Full Size Interchangeable Core (10 Line only)
Schlage Keyways	SC-	Schlage C keyway cylinder, 0 bitted (Not available with 8900 Series Exit devices)
	SE-	Schlage E keyway cylinder, 0 bitted (Not available with 8900 Series Exit devices)

Note: For V-10 Cylinders and information, contact ASSA, Inc. @ 800-235-7482

Hardware	Shipping Weight	Pc. Count/Carton
P2-82276 x lever trim (with cylinder & DB)	11.7 lbs (5.3 kg)	1/carton
P2-82278 x lever trim (with cylinder)	11.2 lbs (5.1 kg)	1/carton
P2-82277 x lever trim (w/o cylinder & w/ DB)	11.2 lbs (5.1 kg)	1/carton
P2-82279 x lever trim (w/o cylinder & DB)	10.7 lbs (4.9 kg)	1/carton
P2-10G77 with lever	10.1 lbs (4.6 kg)	1/carton
P2-8977 with ET	23.0 lbs (10.4 kg)	1/carton
P2-8877 with ET	21.0 lbs (9.5 kg)	1/carton



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SARGENT Manufacturing Company offers a wide variety of products that meet building codes requiring Hurricane-Resistant certification. SARGENT products are independently tested to meet the requirements of the building codes as specified by the Florida Building Code, Miami Dade Code Requirements and in the International Building Code. Listed below are certifications and the test standards met by these products.

Passport 10 Line cylindrical locks are UL Certified and Listed on the Florida Building Code Website for Hurricane-Resistant hardware:

- UL Listed per ANSI/SDI-BHMA A250.13
- ANSI/ASTM E330-2002
- ANSI/ASTM E1886-2005
- ASTM E1996-2009
- Testing Application Standard (TAS) 201*
- Testing Application Standard (TAS) 202*
- Testing Application Standard (TAS) 203*
 - * published in the Florida Building Code for use in the High Velocity Hurricane Zone (HVHZ)
- UL Certification Directory ZHEM.R21744 Latching Hardware
- UL Certification Directory ZHLL.R21744 Windstorm-rated Assemblies
- Listed on Florida Building Code Website for Hurricane-resistance: FL6728-R1
- Listed on Florida Building Code Website for Hurricane-resistance: FL4351-R1

Passport 8200 Series mortise locks are UL Certified and Listed on the Florida Building Code Website for Hurricane-Resistant hardware:

- UL Listed per ANSI/SDI-BHMA A250.13
- ANSI/ASTM E330-2002
- ANSI/ASTM E1886-2005
- ASTM E1996-2009
- Testing Application Standard (TAS) 201*
- Testing Application Standard (TAS) 202*
- Testing Application Standard (TAS) 203*
 - * published in the Florida Building Code for use in the High Velocity Hurricane Zone (HVHZ)
- UL Certification Directory ZHEM.R21744 Latching Hardware
- UL Certification Directory ZHLL.R21744 Windstorm-rated Assemblies
- Listed on Florida Building Code Website for Hurricane-resistance: FL6728-R1
- Listed on Florida Building Code Website for Hurricane-resistance: FL4351-R1

Passport HC-8800 rim exit devices are UL Certified and Listed on the Florida Building Code Website for Hurricane-Resistant hardware:

- Passport HC8800 for single and double door applications;
8-0 max opening
- UL Listed per ANSI/SDI-BHMA A250.13
- ANSI/ASTM E330-2002
- ANSI/ASTM E1886-2005
- Testing Application Standard (TAS) 201*
- Testing Application Standard (TAS) 202*
- Testing Application Standard (TAS) 203*
 - * published in the Florida Building Code for use in the High Velocity Hurricane Zone (HVHZ)
- UL Certification Directory ZHEM.R21744 Latching Hardware
- UL Certification Directory ZHLL.R21744 Windstorm-rated Assemblies
- Listed on Florida Building Code Website for Hurricane-resistance: FL2998-R2

Passport WS-8800 rim exit devices are UL Certified and Listed on the Florida Building Code Website for Hurricane-Resistant hardware:

- Passport WS8800 for Single Hollow Metal 1-3/4" Thick Doors
applications, 3'0" x 7'0" Max. Door with 6" Min Stile
- UL Listed per ANSI/SDI-BHMA A250.13
- ANSI/ASTM E330-2002
- ANSI/ASTM E1886-2005
- ASTM E1996-2009
- Testing Application Standard (TAS) 201*
- Testing Application Standard (TAS) 202*
- Testing Application Standard (TAS) 203*
 - * published in the Florida Building Code for use in the High Velocity Hurricane Zone (HVHZ)
- UL Certification Directory ZHEM.R21744 Latching Hardware
- Listed on Florida Building Code Website for Hurricane-resistance: FL4351-R1

Passport WS-8900 mortise lock exit devices are UL Certified and Listed on the Florida Building Code Website for Hurricane-Resistant hardware:

- Passport WS8900 available for Single Hollow Metals Doors
applications
for 1-3/4" Thick door, 3'0" x 7'0" Max. Door with 6" Min Stile
- UL Listed per ANSI/SDI-BHMA A250.13
- ANSI/ASTM E330-2002
- ANSI/ASTM E1886-2005
- ASTM E1996-2009
- Testing Application Standard (TAS) 201*
- Testing Application Standard (TAS) 202*
- Testing Application Standard (TAS) 203*
 - * published in the Florida Building Code for use in the High Velocity Hurricane Zone (HVHZ)
- UL Certification Directory ZHEM.R21744 Latching Hardware
- Listed on Florida Building Code Website for Hurricane-resistance: FL4351-R1

PRODUCT SPECIFICATIONS

Elkay ezH2O® Bottle Filling Station with Bi-Level ADA Cooler Dual Hands Free Activation, Filtered Refrigerated Light Gray. Chilling Capacity of 8.0 GPH (gallons per hour) of 50° F drinking water, based on 80° F inlet water and 90° F ambient, per ASHRAE 18 testing. Features shall include Antimicrobial, Filtered, Green Ticker™, Hands Free, Laminar Flow, Real Drain, Visual Filter Monitor. Furnished with Flexi-Guard® Safety Bubbler. Electronic Bottle Filler Sensor activation. Product shall be Wall Mount (On Wall), for Indoor applications, serving 2 station(s). Unit shall be certified to UL 399 and CAN/CSA C22.2 No. 120. Unit shall be lead-free design which is certified to NSF/ANSI 61 & 372 (lead free) and meets Federal and State low-lead requirements.

Special Features:	Antimicrobial, Filtered, Green Ticker™, Hands Free, Laminar Flow, Real Drain, Visual Filter Monitor
Finish:	Light Gray Granite
Power:	115V/60Hz
Bubbler Style:	Flexi-Guard® Safety Bubbler
Activation by:	Electronic Bottle Filler Sensor
Mounting Type:	Wall Mount (On Wall)
Chilling Capacity*:	8.0 GPH
Full Load Amps	6
Rated Watts:	370
Dimensions (L x W x H):	36-3/4" x 19" x 39-1/16"
Approx. Shipping Weight:	104 lbs.
Installation Location:	Indoor
No. of Stations Served:	2

*Based on 80° F inlet water & 90° F ambient air temp for 50° F chilled drinking water.

- Visual Filter Monitor: LED Filter Status Indicator for when filter change is necessary.
- Filter is certified to NSF 42 and 53 for lead, particulate, chlorine, taste and odor reduction. 3,000 gal. capacity.
- Green Ticker: Informs user of number of 20 oz. plastic water bottles saved from waste.
- Laminar flow provides clean fill with minimal splash.
- Silver Ion Antimicrobial protection on key plastic components to inhibit the growth of mold and mildew.
- Real Drain System eliminates standing water.

COOLING SYSTEM

- Compressor: Hermetically-sealed, reciprocating type, single phase. Sealed-in lifetime lubrication.
- Condenser: Fan cooled, copper tube with aluminum fins. Fan motor is permanently lubricated.
- Cooling Unit: Combination tube-tank type. Continuous copper tubing with is fully insulated with EPS foam that



Included with Product: Water Cooler (LZOOTL8WSLC), Bottle Filler (LZWSR), Filter

▼ Ships in multiple boxes.

AMERICAN PRIDE. A LIFETIME TRADITION. Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.



PRODUCT COMPLIANCE

ADA & ICC A117.1
ASME A112.19.3/CSA B45.4
Buy American Act
CAN/CSA C22.2 No. 120
GreenSpec®
NSF/ANSI 42, 53, 61, & 372 (lead free)
UL 399



Complies with ADA & ICC A117.1 accessibility requirements when installed according to the requirements outlined in these standards. Installation may require additional components and/or construction features to be fully compliant. Consult the local Authority Having Jurisdiction if necessary.

[Installation Instructions \(PDF\)](#)

5 Year Limited Warranty on the refrigeration system of the unit. Electrical components and water system are warranted for 12 months from date of installation. **Warranty pertains to drinking water applications only. Non-drinking water applications are not covered under warranty.**

[Warranty \(PDF\)](#)

PART: _____ QTY: _____

PROJECT: _____

CONTACT: _____

DATE: _____

NOTES: _____

APPROVAL: _____

In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit elkay.com for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.

meets UL requirements for self-extinguishing material.

- Refrigerant Control: Refrigerant R-134a is controlled by accurately calibrated capillary tube.
- Temperature Control: Easily accessible enclosed adjustable thermostat is factory preset. Requires no adjustment other than for altitude requirements.

Optional Accessories

51300C	Elkay WaterSentry Plus Replacement Filter (Bottle Fillers) Spec Sheet (PDF)	
LKAPREZL	Elkay Cane Apron for EZ Gray Spec Sheet (PDF)	
MLP200	In-wall Carrier for Bi-level On-wall Bottle Fillers, Coolers & Fountains Spec Sheet (PDF)	
98551C	WaterSentry Filter Mounting Cover (Gray Granite) Spec Sheet (PDF)	

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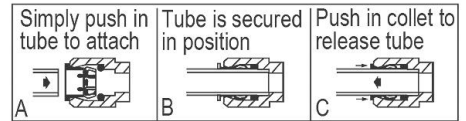
IMPORTANT! INSTALLER PLEASE NOTE :

This water cooler has been designed and built to provide water to the user which has not been altered by materials in the cooler waterways. The grounding of electrical equipment such as telephone, computer, etc. to water lines is a common procedure. The grounding may be in the building but may also occur away from the building. This grounding can cause electrical feedback into a water cooler creating an electrolysis which creates a metallic taste or causes an increase in the metal content of the water. This condition is avoidable by installing the cooler using the proper materials as shown below.

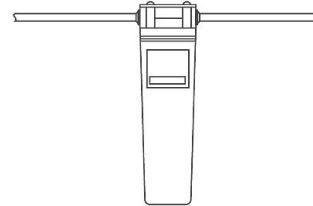
NOTICE

This water cooler must be connected to the water supply using a dielectric coupling. The cooler is furnished with a non-metallic strainer which meets this requirement. The drain trap which is provided by the installer should also be plastic to completely isolate the cooler from the building plumbing system. Bottle filler unit on bracket attached to wall by 6 holes (as shown). Water and electrical will connect through pre-punched hole in basin. These products are designed to operate on 20 psi to 105 psi supply line pressure. Simultaneous operation of both bubblers on a bi-level unit may not be possible depending on water supply pressure. If simultaneous operation is desired, please ensure a minimum of 65 psi supply.

OPERATION OF QUICK CONNECT FITTINGS

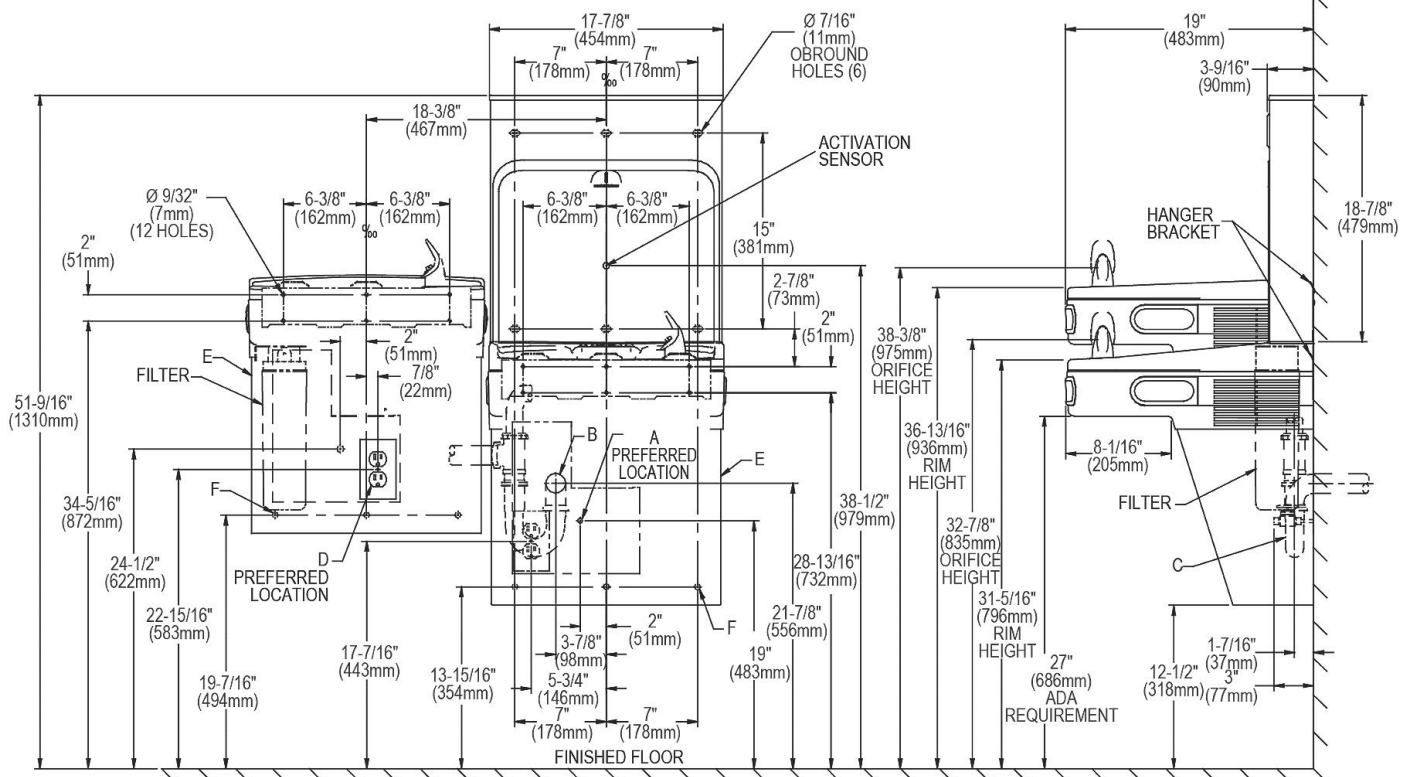


Pushing tube in before pulling it out helps to release tube



WaterSentry® Plus Filter System

ROUGH-IN FOR LEFT-HAND HIGH SIDE MODELS



LEGEND:

REDUCE HEIGHT BY 3 INCHES FOR INSTALLATION OF CHILDRENS ADA COOLER

A = Recommended Water Supply location. Shut-off Valve (not furnished) to accept 3/8" O.D. unplated copper tube. Up to 3" (76mm) maximum out from wall.

B = Recommended Waste Outlet location. To accommodate 1-1/2" nominal drain. Drain stub 2" (51mm) out from wall.

C = 1-1/2" Trap (not furnished).

D = Electrical Supply (3) Wire Recessed Box Duplex Outlet.

E = Insure proper ventilation by maintaining 6" (152mm) minimum clearance from cabinet louvers to wall.

F = 7/16" (11mm) Bolt Holes for fastening to wall.

Note : New Installations Must Use Ground Fault Circuit Interrupter (GFCI). It is highly recommended that the circuit be dedicated and the load protection be sized for 20 amps.

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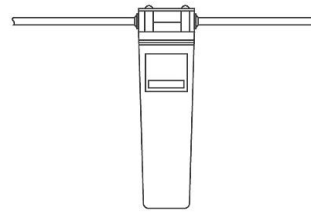
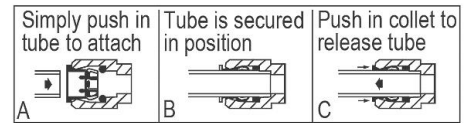
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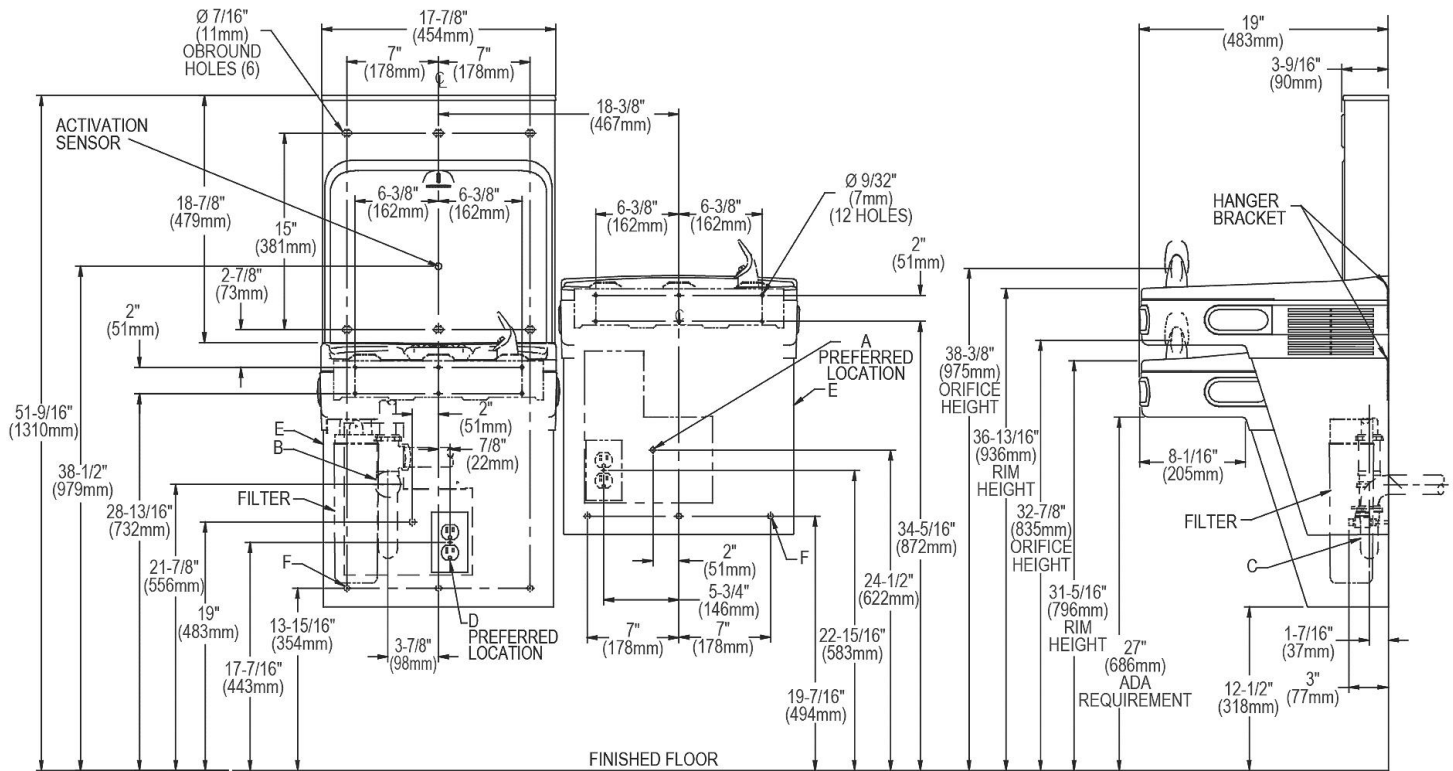
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Pushing tube in before pulling it out helps to release tube

WaterSentry® Plus Filter System

ROUGH-IN FOR RIGHT-HAND HIGH SIDE MODELS



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PM EQUIPMENT LISTING REPORT

Consultant Fills Out		Contractor Fills Out																			
Kent State Fills Out																					
Item #1	Item #2	Item #3	Item #4	Item #5	Item #6	Item #7	Item #8	Item #9	Item #10	Item #11	Item #12	Item #13	Item #14	tem #15	Item #16	Item #17	Item #18	Item #19	Item #20	Item #21	Item #22
Equip. ID	Description	Serves	Manufacturer	Warranty, Exp Date Usage Exp Vendor PO#	Vendor PO	Equip. Type	Model	Serial No.	Filter Size	QTY	Belt Size	QTY	PM Interval	Bldg.	Room #	Floor	Condition	Acc. Index	CxA Y/N	Assessment Date	Acquisition Info Date Acquired Cost PO# Vendor
DIH-CWP-1	Chilled Water Pump	Chilled Water for Building	TACO	1/1/2021	DI HUB	Pump	FI5011	550632/1	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-CWP-2	Chilled Water Pump	Chilled Water for Building	TACO	1/1/2021	DI HUB	Pump	FI5011	550632/2	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-CWP-3	Chilled Water Pump	Chilled Water for Kitchen	TACO	1/1/2021	DI HUB	Pump	1915e	11256	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HWP-1	Heating Water Pump	Heating Water for Building	TACO	1/1/2021	DI HUB	Pump	FI4011C	550631/7/1	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HWP-2	Heating Water Pump	Heating Water for Building	TACO	1/1/2021	DI HUB	Pump	FI4011C	550631/7/2	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HWP-3	Heating Water Pump	RTU-1 PREHEAT	TACO	6/1/2021	DI HUB	Pump	KV3007	560859	-	-	-	-	Semi-annual	DIH	Roof	Roof	Excellent				ALLIED EQUIP
DIH-HWP-4	Heating Water Pump	RTU-2 REHEAT	TACO	6/1/2021	DI HUB	Pump	2430	10912	-	-	-	-	Semi-annual	DIH	Roof	Roof	Excellent				ALLIED EQUIP
DIH-AS-1	Air / Dirt Separator	HEATING WATER	TACO	1/1/2021	DI HUB	AS	4908ADR-125	550631/2	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-EXT-1	Expansion Tank	HEATING WATER	TACO	1/1/2021	DI HUB	Expansion Tank	CA-450	M7317.5C	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-EXT-2	Expansion Tank	CHILLED WATER	TACO	1/1/2021	DI HUB	Expansion Tank	CA-90	550631/1	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HX-1	Steam to Hot Water Heat Exchanger	BUILDING HEATING WATER	TACO	1/1/2021	DI HUB	HX	E16212-S	551355/1	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HX-2	Steam to Hot Water Heat Exchanger	BUILDING HEATING WATER	TACO	1/1/2021	DI HUB	HX	E16212-S	551355/2	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-SRV-1	Steam Safety Relief Valve	Steam Relief - Set to 30 psig	WATSON MCDANIEL	7/1/2021	DI HUB	Relief Valve	SVI-20F-22F-N	293209/1	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HPRV-1	Hydronic Pressure Reducing Valve	BUILDING HEATING WATER	WATTS	8/7/2021	DI HUB	Pressure Reducing Valve	LFUSB	-	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HRV-1	Hydronic Relief Valve	BUILDING CHILLED WATER	WATTS	8/7/2021	DI HUB	Relief Valve	530C	-	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-HRV-2	Hydronic Relief Valve	BUILDING HEATING WATER	WATTS	8/7/2021	DI HUB	Relief Valve	174A	-	-	-	-	-	Annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-SPRV-1	Steam Pressure Reducing Valve	Steam Reducing Valve for Heat Exchangers (Set at 15 psig)	SPENCE	8/7/2021		Reducing Valve	Type E	E-C1G9A1 417697 0719	-	-	-	-	Annual	DIH	134A	1st	Excellent				W.M. WILSON CO
DIH-SPRV-2	Steam Pressure Reducing Valve	Steam Reducing Valve for Heat Exchangers (Set at 12 psig)	SPENCE	8/7/2021		Reducing Valve	Type E	E-C1H9A1 417697 0719	-	-	-	-	Annual	DIH	134A	1st	Excellent				W.M. WILSON CO
DIH-T-1	Steam Trap	High Pressure Drip Trap	ARMSTRONG	8/7/2021		Steam Trap	CD-33	A299913C-1	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-2-1	Steam Trap	HX-1	ARMSTRONG	8/7/2021		Steam Trap	KD	A299913C-2	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-2-2	Steam Trap	HX-1	ARMSTRONG	8/7/2021		Steam Trap	KD	A299913C-3	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-2-3	Steam Trap	HX-2	ARMSTRONG	8/7/2021		Steam Trap	KD	A299913C-4	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-2-4	Steam Trap	HX-2	ARMSTRONG	8/7/2021		Steam Trap	KD	A299913C-5	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-2-5	Steam Trap	SPR Station Drip Trap	ARMSTRONG	8/7/2021		Steam Trap	KD	A299913C-6	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-3	Steam Trap	Snowmelt System	ARMSTRONG	8/7/2021		Steam Trap	B	A299913C-7	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
DIH-T-4	Steam Trap	Drip Trap	ARMSTRONG	8/7/2021		Steam Trap	811	A299913C-8	-	-	-	-	Annual	DIH	134A	1st	Excellent				MERLO ENERGY
CP-1	Steam Condensate Return Pump	Builing Steam Condensate Return to SSPP Boiler System	WATSON MCDANIEL	7/1/2021	DI HUB	Condensate Pump	PMPC	293209/2	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				ALLIED EQUIP
DIH-AHU-1	Air Handling Unit	OA FCU 1st Floor, 2nd Floor North	TRANE	4/9/2022	NJD426	AHU	CSAA030UA	K19G66622	12x24x4 MERV 14 16x20x4 MERV 14 20x24x4 MERV 14 12x24x2 MERV 8 16x20x2 MERV 8 20x24x2 MERV 8	3 2 6 6 4 12	-	-	Quarterly	DIH	134A	1st	Excellent				TRANE
DIH-AHU-2	Air Handling Unit	OA FCU 2nd Floor South, 3rd Floor Sout	TRANE	4/2/2022	NJD426	AHU	CSAA0211UA	K19G66639	16x25x4 MERV 14 20x25x4 MERV 14 16x25x2 MERV 8 20x25x2 MERV 8	4 3 8 6	-	-	Quarterly	DIH	134A	1st	Excellent				TRANE
DIH-AHU-3	Air Handling Unit	Auditorium	TRANE	4/9/2022	NJD426	AHU	CSAA012UA	K19H67180	16x20x4 MERV 14 16x20x2 MERV 8	6 12	-	-	Quarterly	DIH	134A	1st	Excellent				TRANE
DIH-MAU-1	Makeup Air Unit	Second Floor Production Kitchen	TRANE	3/27/2022	NJD426	MAU	CSAA021UA	K19G66606	16x25x4 MERV 13 20x25x4 MERV 13 16x25x2 MERV 8 20x25x2 MERV 8	4 3 4 3	-	-	Quarterly	DIH	134A	1st	Excellent				TRANE
DIH-RTU-1	Rooftop Makeup Air Unit	3rd Floor Kitchen and Dining	TRANE	7/14/2021	NJD426	RTU	PSCA062UBAA0	K19LK86723	24x24x4 MERV13 24x24x2 MERV 8	16 16	-	-	Quarterly	DIH	Roof	Roof	Excellent				TRANE
DIH-RTU-2	Rooftop Makeup Air Unit	DIH Instructional Kitchen	TRANE	6/8/2021	NJD426	RTU	CSAA030UB	H20B09828	12x24x4 MERV 13 16x20x4 MERV 13 20x24x4 MERV 13 12x24x2 MERV 8 16x20x2 MERV 8	3 2 6 3 2	-	-	Quarterly	DIH	Roof	Roof	Excellent				TRANE

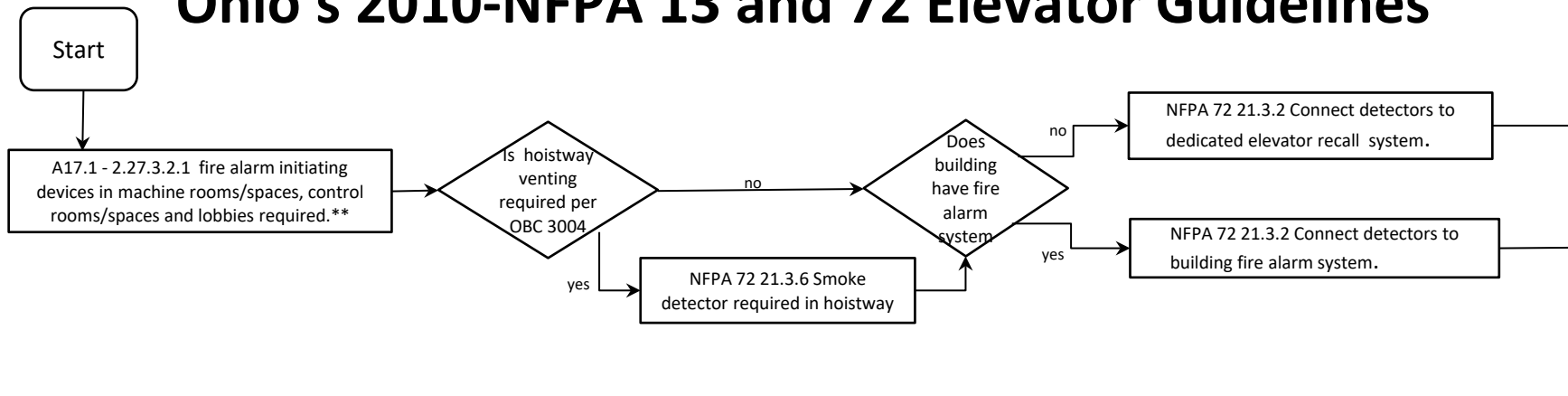
[illegible]

DIH-FCU 2-6	Fan Coil Unit	Rm 260C	IEC	4/17/2021	842041	FCU	CPY04	842041-00-04	10x28x1 MERV 8	1	-	-	Quarterly	DIH	260B	2nd	Excellent				WADSWORTH
DIH-FCU 2-7	Fan Coil Unit	Rm 260	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	260G	2nd	Excellent				WADSWORTH
DIH-FCU 2-8	Fan Coil Unit	Rm 250A, 250B	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	250A	2nd	Excellent				WADSWORTH
DIH-FCU 2-9	Fan Coil Unit	Rm 250	IEC	4/17/2021	842041	FCU	CPY10	842041-00-10	10x54x1 MERV 8	1	-	-	Quarterly	DIH	250L	2nd	Excellent				WADSWORTH
DIH-FCU 2-10	Fan Coil Unit	Rm 250	IEC	4/17/2021	842041	FCU	CPY10	842041-00-10	10x54x1 MERV 8	1	-	-	Quarterly	DIH	250L	2nd	Excellent				WADSWORTH
DIH-FCU 2-11	Fan Coil Unit	Rm 150	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	150	1st	Excellent				WADSWORTH
DIH-FCU 2-11B	Fan Coil Unit	Rm 150	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	150	1st	Excellent				WADSWORTH
DIH-FCU 2-12A	Fan Coil Unit	Rm 150L	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	150L	1st	Excellent				WADSWORTH
DIH-FCU 2-12B	Fan Coil Unit	Rm 150L	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	150L	1st	Excellent				WADSWORTH
DIH-FCU 2-13	Fan Coil Unit	Rm 247	IEC	4/17/2021	842041	FCU	CPY10	842041-120-4	10x54x1 MERV 8	1	-	-	Quarterly	DIH	249	2nd	Excellent				WADSWORTH
DIH-FCU 2-14	Fan Coil Unit	Rm 248	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	244	2nd	Excellent				WADSWORTH
DIH-FCU 2-15	Fan Coil Unit	Rm 249	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	245	2nd	Excellent				WADSWORTH
DIH-FCU 2-16	Fan Coil Unit	Rm 250F	IEC	4/17/2021	842041	FCU	CPY04	842041-00-04	10x28x1 MERV 8	1	-	-	Quarterly	DIH	250G	2nd	Excellent				WADSWORTH
DIH-FCU 2-17	Fan Coil Unit	Corridor 200, 245	IEC	4/17/2021	842041	FCU	CPY06	842041-100-3	10x33x1 MERV 8	1	-	-	Quarterly	DIH	200D	2nd	Excellent				WADSWORTH
DIH-FCU 2-18	Fan Coil Unit	Rm 244, 244A, 244B, 244C	IEC	4/17/2021	842041	FCU	CPY10	842041-00-10	10x54x1 MERV 8	1	-	-	Quarterly	DIH	247	2nd	Excellent				WADSWORTH
DIH-FCU 2-19	Fan Coil Unit	Rm 240	IEC	4/17/2021	842041	FCU	CPY04	842041-00-04	10x28x1 MERV 8	1	-	-	Quarterly	DIH	240	2nd	Excellent				WADSWORTH
DIH-FCU 2-20	Fan Coil Unit	Rm 240	IEC	4/17/2021	842041	FCU	CPY04	842041-30-2	10x28x1 MERV 8	1	-	-	Quarterly	DIH	240	2nd	Excellent				WADSWORTH
DIH-FCU 2-21	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-130-9	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230B	2nd	Excellent				WADSWORTH
DIH-FCU 2-22	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-130-7	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230B	2nd	Excellent				WADSWORTH
DIH-FCU 2-24	Fan Coil Unit	Rm 233	IEC	4/17/2021	842041	FCU	CPY06	842041-00-06	10x33x1 MERV 8	1	-	-	Quarterly	DIH	233	2nd	Excellent				WADSWORTH
DIH-FCU 2-25	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-70-15	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230B	2nd	Excellent				WADSWORTH
DIH-FCU 2-26	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-70-14	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230A	2nd	Excellent				WADSWORTH
DIH-FCU 2-27	Fan Coil Unit	Rm 231, 231A	IEC	4/17/2021	842041	FCU	CPY04	842041-00-04	10x28x1 MERV 8	1	-	-	Quarterly	DIH	231A	2nd	Excellent				WADSWORTH
DIH-FCU 2-28	Fan Coil Unit	Corridor 100K	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	100F	1st	Excellent				WADSWORTH
DIH-FCU 2-29	Fan Coil Unit	Rm 144B	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	134	1st	Excellent				WADSWORTH
DIH-FCU 2-30A	Fan Coil Unit	Rm 146	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	126	1st	Excellent				WADSWORTH
DIH-FCU 2-30B	Fan Coil Unit	Rm 146	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	126	1st	Excellent				WADSWORTH
DIH-FCU 2-31	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-130-6	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230A	2nd	Excellent				WADSWORTH
DIH-FCU 2-32	Fan Coil Unit	Rm 212	IEC	4/17/2021	842041	FCU	CPY08	842041-00-08	10x40x1 MERV 8	1	-	-	Quarterly	DIH	212	2nd	Excellent				WADSWORTH
DIH-FCU 2-33	Fan Coil Unit	Rm 230	IEC	4/17/2021	842041	FCU	CPY12	842041-70-11	10x62x1 MERV 8	1	-	-	Quarterly	DIH	230A	2nd	Excellent				WADSWORTH
DIH-FCU 2-34	Fan Coil Unit	Rm 224, 224B	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	200J	2nd	Excellent				WADSWORTH
DIH-FCU 2-35	Fan Coil Unit	Rm 224E	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	224D	2nd	Excellent				WADSWORTH
DIH-FCU 2-36	Fan Coil Unit	Rm 224	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	200J	2nd	Excellent				WADSWORTH
DIH-FCU 2-37	Fan Coil Unit	Rm 207	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	201	2nd	Excellent				WADSWORTH
DIH-FCU 2-38	Fan Coil Unit	Rm 200K	IEC	4/17/2021	842041	FCU	CPY10	842041-60-4	10x54x1 MERV 8	1	-	-	Quarterly	DIH	224C	2nd	Excellent				WADSWORTH
DIH-FCU 2-39	Fan Coil Unit	Rm 205	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	203	2nd	Excellent				WADSWORTH
DIH-FCU 2-40	Fan Coil Unit	Rm 200K	IEC	4/17/2021	842041	FCU	CPY10	842041-120-5	10x54x1 MERV 8	1	-	-	Quarterly	DIH	200	2nd	Excellent				WADSWORTH
DIH-FCU 2-41	Fan Coil Unit	Rm 201	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	207	2nd	Excellent				WADSWORTH
DIH-FCU 2-42	Fan Coil Unit	Rm 201	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	207	2nd	Excellent				WADSWORTH
DIH-FCU 2-43	Fan Coil Unit	Rm 210, 230	IEC	4/17/2021	842041	FCU	CPY06	842041-100-1	10x33x1 MERV 8	1	-	-	Quarterly	DIH	210	2nd	Excellent				WADSWORTH
DIH-FCU 2-44	Fan Coil Unit	Rm 250	IEC	4/17/2021	842041	FCU	CPY10	842041-00-10	10x54x1 MERV 8	1	-	-	Quarterly	DIH	250L	2nd	Excellent				WADSWORTH
DIH-FCU 2-45	Fan Coil Unit	Rm 260	IEC	4/17/2021	842041	FCU	CPY03	842041-00-03	10x22x1 MERV 8	1	-	-	Quarterly	DIH	260	2nd	Excellent				WADSWORTH
DIH-FCU 2-46A	Fan Coil Unit	Corridor 200C	IEC	4/17/2021	842041	FCU	CPY10	842041-00-10	10x54x1 MERV 8	1	-	-	Quarterly	DIH	250L	2nd	Excellent				WADSWORTH
DIH-FCU 2-46B	Fan Coil Unit	Corridor 200C	IEC	4/17/2021	842041	FCU	CPY10	842041-120-9	10x54x1 MERV 8	1	-	-	Quarterly	DIH	200D	2nd	Excellent				WADSWORTH
DIH-FCU 2-47	Fan Coil Unit	Rm 224J	IEC	4/17/2021	842041	FCU	CPY02	842041-00-02	10x18x1 MERV 8	1	-	-	Quarterly	DIH	224J	2nd	Excellent				WADSWORTH
DIH-FCU 3-1A	Fan Coil Unit	Rm 308	IEC	4/17/2021	842041	FCU	CPY12	842041-70-4	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-1B	Fan Coil Unit	Rm 308	IEC	4/17/2021	842041	FCU	CPY12	842041-130-4	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2A	Fan Coil Unit	Rm 308	IEC	4/17/2021	842041	FCU	CPY12	842041-70-16	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2B	Fan Coil Unit	Rm 308	IEC	4/17/2021	842041	FCU	CPY12	842041-130-3	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2C	Fan Coil Unit	Rm 308	IEC	4/17/2021	842041	FCU	CPY12	842041-70-1	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2D	Fan Coil Unit	Rm 306, 308	IEC	4/17/2021	842041	FCU	CPY12	842041-130-2	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2E	Fan Coil Unit	Rm 314	IEC	4/17/2021	842041	FCU	CPY12	842041-00-12	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2F	Fan Coil Unit	300K	IEC	4/17/2021	842041	FCU	CPY12	842041-70-2	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-2G	Fan Coil Unit	308, Bridge	IEC	4/17/2021	842041	FCU	CPY12	842041-70-3	10x62x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-FCU 3-3	Fan Coil Unit	Rm 300K	IEC	4/17/2021	842041	FCU	CPY06	842041-40-1	10x33x1 MERV 8	1	-	-	Quarterly	DIH	308	3rd	Excellent				WADSWORTH
DIH-RP-1	Hydronic Radiant Heating Panel	Rm 100P, 224C, 201, 203, 207, 212, 308, 340B	AEROTECH		DI HUB	RP								DIH	100P, 224C, 201, 203, 207, 212, 308, 340B	1st, 2nd, 3rd	Excellent				
DIH-AC-1-1	Hydronic Air Curtain	Vestibule 300M	MARS	7/15/2021	318729	AC	LPV260-1V		1054130	-	-	-	Semi-annual	DIH	300M	3rd	Excellent				WADSWORTH
DIH-AC-1-2	Hydronic Air Curtain	Vestibule 300M	MARS	7/15/2021	318729	AC	LPV260-1V		1054131	-	-	-	Semi-annual	DIH	300M	3rd	Excellent				WADSWORTH
DIH-AC-2	Hydronic Air Curtain	Receiving Rm 324	MARS	7/15/2021	318729	AC	LPV242-1V		1054132	-	-	-	Semi-annual	DIH	323	3rd	Excellent				WADSWORTH
DIH-FTR-1	Hydronic Finned Tube Radiation	STAIR/LOBBY F1-100	RITTLING	6/1/2021	DI HUB	FTR	-	H0052985		-	-	-	Annual	DIH	100, 250H	1st, 2nd	Excellent				ALLIED EQUIP
DIH-FTR-2	Hydronic Finned Tube Radiation	Rm 247	RITTLING	6/1/2021	DI HUB	FTR	-	H0052985		-	-	-	Annual	DIH	249	2nd	Excellent				ALLIED EQUIP
DIH-FTR-3	Hydronic Finned Tube Radiation	RTU-1	RITTLING	6/1/2021	DI HUB	FTR	-	H0052985		-	-	-	Annual	DIH	Roof	Roof	Excellent				ALLIED EQUIP
DIH-CUH-1-1	Hydronic Cabinet Heater	Corridor 100K	TRANE	2/5/2022	DI HUB	CUH	FFB0601E	H20A01821					Quarterly	DIH	100K	1st	Excellent				TRANE
DIH-CUH-1-2	Hydronic Cabinet Heater	Stair 200E	TRANE	2/5/2022	DI HUB	CUH	FFB0601E	H20A01822					Quarterly	DIH	200E	2nd	Excellent				TRANE
DIH-CUH-1-3	Hydronic Cabinet Heater	Stair 200G	TRANE	2/5/2022	DI HUB	CUH	FFB0601E	H20A01823					Quarterly	DIH	200G	2nd	Excellent				

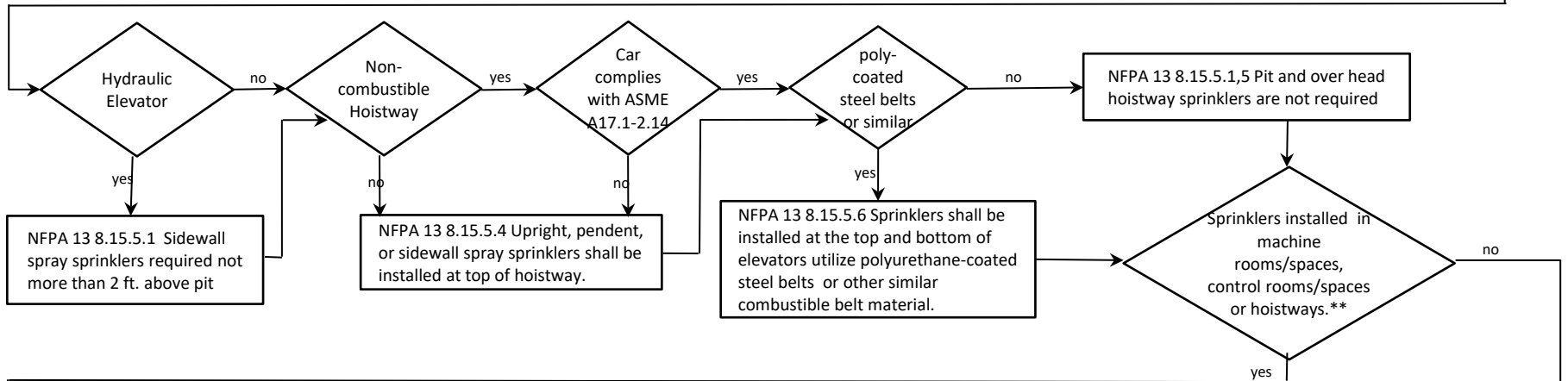
DIH-VFD-AHU-1-RF-1&2	Variable Frequency Drive	AHU-1 Return Fans	DANFOSS	5/12/2023	19-587-045	VFD	VLT-FC-102P15KT4	887504Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-AHU-1-SF-1&2	Variable Frequency Drive	AHU-1 Supply Fans	DANFOSS	5/12/2023	19-1497-048	VFD	VLT-FC-102P30KT4	886904Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-AHU-2-RF-1&2	Variable Frequency Drive	AHU-2 Return Fans	DANFOSS	5/12/2023	19-587-045	VFD	VLT-FC-102P11KT4	887804Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-AHU-2-SF-1&2	Variable Frequency Drive	AHU-2 Supply Fans	DANFOSS	5/12/2023	19-587-045	VFD	VLT-FC-102P18KT4	887304Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-AHU-3-RF-1&2	Variable Frequency Drive	AHU-3 Return Fans	DANFOSS	5/12/2023	19-587-045	VFD	VLT-FC-102P5KST4	886804Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-AHU-3-SF-1&2	Variable Frequency Drive	AHU-3 Supply Fans	DANFOSS	5/12/2023	19-1497-046	VFD	VLT-FC-102P11KT4	887604Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-CWP-1	Variable Frequency Drive	Chilled Water Pump CWP-1	DANFOSS	4/2/2023	19-587-045	VFD	VLT-FC-102P18KT4	885404Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-CWP-2	Variable Frequency Drive	Chilled Water Pump CWP-2	DANFOSS	4/2/2023	19-587-045	VFD	VLT-FC-102P18KT4	885504Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-HWP-1	Variable Frequency Drive	Heating Water Pump HWP-1	DANFOSS	4/2/2023	19-587-045	VFD	VLT-FC-102P15KT4	885704Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-HWP-2	Variable Frequency Drive	Heating Water Pump HWP-2	DANFOSS	4/2/2023	19-587-045	VFD	VLT-FC-102P15KT4	885604Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-KEF-1	Variable Frequency Drive	2nd Floor Hood	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P2K2T4	959504Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-2	Variable Frequency Drive	Kitchen Exhaust Fan KEF-2	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P1K1T4	088904Y090	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-3	Variable Frequency Drive	Kitchen Exhaust Fan KEF-3	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P1K5T4	963104Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-4	Variable Frequency Drive	Kitchen Exhaust Fan KEF-4	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P3K7T4	962904Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-5	Variable Frequency Drive	Kitchen Exhaust Fan KEF-5	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P3K7T4	962604Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-6	Variable Frequency Drive	Kitchen Exhaust Fan KEF-6	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P3K7T4	963004Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-7	Variable Frequency Drive	Kitchen Exhaust Fan KEF-7	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P1K1T4	088804Y090	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-8	Variable Frequency Drive	Kitchen Exhaust Fan KEF-8	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P3K7T4	962804Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-9	Variable Frequency Drive	Kitchen Exhaust Fan KEF-9	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P1K1T4	088704Y090	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				MELINK
DIH-VFD-KEF-10	NOT USED		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIH-VFD-KEF-11	Variable Frequency Drive	Kitchen Exhaust Fan KEF-11	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P3K7T4	962704Y070	-	-	-	-	Quarterly	DIH	324	2nd, 3rd	Excellent				MELINK
DIH-VFD-KEF-12	Variable Frequency Drive	Kitchen Exhaust Fan KEF-12	DANFOSS	7/21/2023	MELINK	VFD	VLT-FC-102P1K1T4	959404Y070	-	-	-	-	Quarterly	DIH	324	3rd	Excellent				MELINK
DIH-VFD-MAU-1-RF-1&2	Variable Frequency Drive	MAU-1 Return Fan	DANFOSS	5/12/2023	19-587-045	VFD	VLT-FC-102P11KT4	887704Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-MAU-1-SF-1&2	Variable Frequency Drive	MAU-2 Supply Fan	DANFOSS	5/12/2023	19-1497-048	VFD	VLT-FC-102P18KT4	887404Y060	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				NORTHTRICH
DIH-VFD-RTU-1-RF-1&2	Variable Frequency Drive	RTU-1 Return Fan	DANFOSS	7/15/2023	19-587-045	VFD	VLT-FC-102P30KT4	887004Y060	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				NORTHTRICH
DIH-VFD-RTU-1-SF-1&2	Variable Frequency Drive	RTU-1 Supply Fan	DANFOSS	7/15/2023	19-587-045	VFD	VLT-FC-102P45KT4	900904Y070	-	-	-	-	Quarterly	DIH	224C	2nd	Excellent				NORTHTRICH
DIH-VFD-RTU-2-SF-1&2	Variable Frequency Drive	RTU-2 Supply Fan	DANFOSS	7/24/2023	20-233-202	VFD	VLT-FC-102P18KT4	223404Y110	-	-	-	-	Quarterly	DIH	324	3rd	Excellent				NORTHTRICH
DIH-VFD-SF-1	Variable Frequency Drive	SF-1	DANFOSS	7/24/2023	19-587-045	VFD	VLT-FC-102P1K5T2	880204Y060	-	-	-	-	Quarterly	DIH	134	1st	Excellent				NORTHTRICH
DIH-CU-1	Air Cooled Condensing Unit	RTU-2	TRANE	9/18/2025	NJD426	CU	RAUIJ6048	C20B00878	-	-	-	-	Semi-annual	DIH	Roof	Roof	Excellent				TRANE
DC-1	Dust Collector	RM 150H	Neederman			DC			-	-	-	-	Semi-annual	DIH	150H	1st	Excellent				iVENT
DIH-ESP-1 (PE-1)	Oil Minder Elevator Sump Pump With Remote Alarm and Basin	Elevator Pit 100B	LIBERTY	8/7/2021	S016511847	Sump Pump	ELV-280		-	-	-	-	Semi-annual	DIH	100B	1st	Excellent				FAMOUS
DIH-ESP-2 (PE-1)	Oil Minder Elevator Sump Pump With Remote Alarm and Basin	Elevator Pit 200H	LIBERTY	8/7/2021	S016511847	Sump Pump	ELV-280		-	-	-	-	Semi-annual	DIH	200H	2nd	Excellent				
DIH-ESP-3 (PE-1)	Oil Minder Elevator Sump Pump With Remote Alarm and Basin	Elevator Pit 200J	LIBERTY	8/7/2021	S016511847	Sump Pump	ELV-280		-	-	-	-	Semi-annual	DIH	200L	2nd	Excellent				
DIH-DHW-1 (PE-2)	Duplex Domestic Water Heater	Building Domestic Hot Water	BRADFORD WHITE	4/20/2025	S016511847	Water Heater	EF-120T-500-3N	146780, 147044	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				FAMOUS
DIH-DHW-2 (PE-2)	Duplex Domestic Water Heater	Building Domestic Hot Water	BRADFORD WHITE	4/20/2025	S016511847	Water Heater	EF-120T-500-3N		-	-	-	-	Quarterly	DIH	134A	1st	Excellent				
DIH-EXT-3 (PE-3)	Domestic Hot Water Expansion Tank	Building Domestic Hot Water	AMTROL	8/7/2021	S016511847	Expansion Tank	ST-30VC	416689, 416688	-	-	-	-	Annual	DIH	134A	1st	Excellent				FAMOUS
DIH-EXT-4 (PE-3)	Domestic Hot Water Expansion Tank	Building Domestic Hot Water	AMTROL	8/7/2021	S016511847	Expansion Tank	ST-30VC	416689, 416688	-	-	-	-	Annual	DIH	134A	1st	Excellent				
DIH-RP-1 (PE-4)	Inline Recirculating Hot Water Pump	Building Domestic Hot Water	TACO	8/7/2021	S016511847	Hot Water Pump	113		-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				FAMOUS
DIH-PE-5	Domestic Hot Water Master Mixing Valve	Building Domestic Hot Water	ACORN	8/7/2021	S016511847	Mixing Valve	MV17-4	4177989	-	-	-	-	Annual	DIH	134A	1st	Excellent				FAMOUS
DIH-PE-6	Plaster Trap		STRIEM	8/7/2021	S016511847	Plaster Trap	USI-1180		-	-	-	-	Monthly	DIH	150, 150L	1st	Excellent				FAMOUS
DIH-PE-7	Air Compressor	Building Compressed Air	CHAMPION	4/1/2021		Air Compressor	HCA53-3	842916	-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				SSECO
DIH-PE-8	Water Treatment System	Waterjet	CULLIGAN	5/1/2021	407676	Water Treatment	HE-Twin		-	-	-	-	Quarterly	DIH	150N	1st	Excellent				CULLIGAN
DIH-PE-9	Domestic Water Duplex Booster Pump	Building Domestic Water	QUANTUMFLO	4/20/2025	S016511847	Booster Pump	Prodigy-Duplex	19083756	-	-	-	-	Quarterly	DIH	160	1st	Excellent				FAMOUS
DIH-PE-10	Domestic Hot Water Softener System	Building Domestic Hot Water	CULLIGAN	5/1/2021	407676	Water Softener	CTM-300-PF	25619111	-	-	-	-	Quarterly	DIH	134A	1st	Excellent				CULLIGAN
DIH-OHR-150H (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	150H	1st	Excellent				SSECO
DIH-OHR-150J (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	150J	1st	Excellent				SSECO
DIH-OHR-146-1 (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	146	1st	Excellent				SSECO
DIH-OHR-146-2 (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	146	1st	Excellent				SSECO
DIH-OHR-150L-1 (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	150L	1st	Excellent				SSECO
DIH-OHR-150L-2 (PE-11)	Overhead Hose Reel	Compressed Air	BALCRANK	8/7/2021		Hose Reel	2251-512		-	-	-	-	Annual	DIH	150L	1st	Excellent				SSECO
DIH-PE-12	Duplex Sewage Sump Pump and Basin	Building Sewage	ZOELLER	8/7/2021	S016511847	Sewage Sump Pump	Model 284		-	-	-	-	Semi-annual	DIH	134A	1st	Excellent				FAMOUS

Ohio's 2010-NFPA 13 and 72 Elevator Guidelines

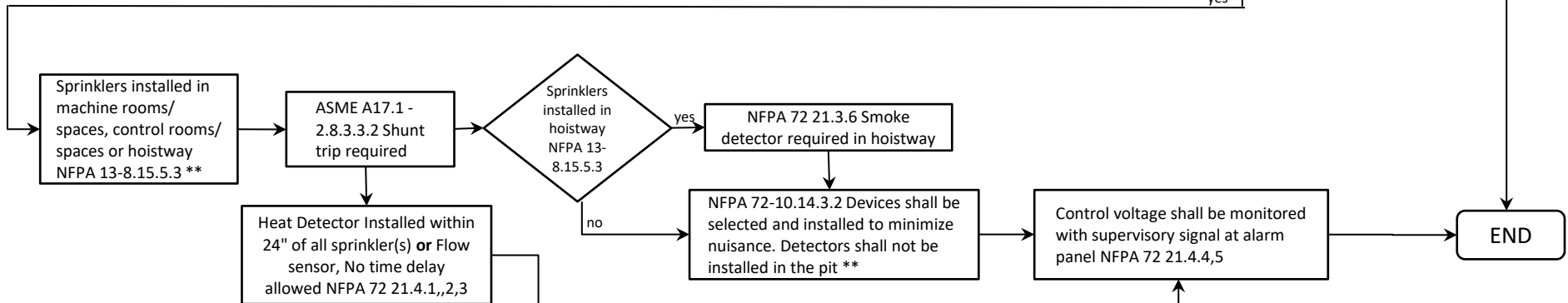
SMOKES



SPRINKLER



Shunt Trip



****It is important to define the space in which the above devices are installed, for example: controls, drives and other equipment that are typically installed in a traditional machine room are now being installed in the pits and top of hoistways and those areas are now defined as machine/control spaces which would require elevator recall devices. NFPA 72 - 21.3.12.1,2**

2010 NFPA 13 & 72 Elevator Guidelines (smokes, heats, sprinklers, fire recall and supervisory panel)

The following are the guidelines that the State of Ohio Elevator Section will follow for sprinklers, heat and smoke detectors installed for Elevator recall and shunt trip operation. It is important to know how other codes interface with the elevator installation and inspectors should be aware of such connections. Even if the following requirements fall under other disciplines and jurisdictions, it is important to understand the big picture and how other codes related to a proper elevator installation.

Sprinkler Installed	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Heat Detector Required	Violation NFPA 13 - 8.15, NFPA 72 - 21.3.3.	Violation NFPA 72 - 21.3.3, 10.14.3.2	Required NFPA 72 21.4.2	Required NFPA 72 21.4.2	NA
Smoke Detector Required	Violation NFPA 13 - 8.15, NFPA 72 - 21.3.3.	Violation NFPA 72 - 21.3.3, 10.14.3.2	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3,7
Sprinkler Not Installed	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Smoke Detector Required	Violation NFPA 72 - 21.3.3, 10.14.3.2	Violation NFPA 72 - 21.3.3, 10.14.3.2	Violation NFPA 72 21.3.6	Required NFPA 72 21.3.3	Required NFPA 72 21.3.3,7
Polyurethane-Coated Steel Belt Suspension	Above 24" - pit area**	Below 24" - pit area **	Top of Hoistway **	Machine Room/Space	Elevator Lobby
Sprinklers Required	Violation NFPA 13 - 8.15	Required NFPA 13 8.15.5.6	Required NFPA 13 8.15.5.6	Required NFPA 13 8.15.5.6	NA

It is important to **define the space in which the above devices are installed, for example: controls, drives and other equipment that are typically installed in a traditional machine room are now being installed in the pits and top of hoistways and those areas are now defined as machine/control spaces which would require elevator recall devices. NFPA 72 - 21.3.12.1,2

machinery space, elevator: a space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains elevator mechanical equipment, and could also contain electrical equipment used directly in connection with the elevator. This space could also contain the electric driving machine or the hydraulic machine. ASME A17.1

Sprinklers located in elevator equipment rooms/spaces and hoistways are a requirement of the building code. The elevator code does not mandate the installation of these devices. ASME A17.1 Req. 2.8.3.3 states that **sprinklers are permitted when required by the building code**. The elevator code does set limits on what can be allowed within a hoistway or equipment room/space.

ASME A17.1 2.8.3 All **risers** are to be located outside the hoistway or room/space except where a machine room is located above the roofline of a building the riser is limited to the distance between the top floor and the room/space. Sprinklers located 24" or less above the pit floor, all wiring and electrical components located within 48" from the pit floor must be rated as **NEMA 4** and wiring must be suitable for wet locations. ASME A17.1 triggers the **shunt-trip** requirement when sprinklers are located in such areas related to the elevator. (Note: there are exceptions to the sprinkler requirements for Fire Service Access Elevators and Occupancy Evacuation Elevators: see IBC Sections 3007 and 3008 respectively.)

2013 edition of NFPA 13 (not adopted in OHIO), a new requirement was added to deal with combustible suspension means (i.e. elastomeric-coated steel belts). In such instances, sprinkler heads are required at the top and bottom of the hoistway. There is an exception; if the suspension means is tested and complies with UL 62 and UL 1581, sprinkler heads are not required.

2010 NFPA 13 & 72 Elevator Guidelines Quick Code reference

NFPA 13 (SPRINKLERS)	
8.15.5.1	Sidewall spray sprinklers required not more than 2 ft. above pit floor.
8.15.5.2	Pit sprinklers below 2 ft. are not required for non-combustible elevator hoistway without combustible hydraulic fluids.
8.15.5.3	Automatic sprinklers in machine room and hoistways shall be ordinary or intermediate temp rating.
8.15.5.4	Upright, pendent, or sidewall spray sprinklers shall be installed at top of hoistway.
8.15.5.5	Over head hoistway sprinklers are not required for noncombustible or limited-combustible and cab enclosure meets ASME A17.1 requirements.
8.15.5.6	Sprinklers shall be installed at the top and bottom of elevator hoistways where elevators utilize polyurethane- coated steel belts or other similar combustible belt material.

NFPA 72 (SMOKES AND HEATS)	
10.3.1	Fire alarm system and supporting equipment designed and labeled for intended use.
10.4.1.1	Fire alarm system and supporting equipment designed, constructed and installed in conformance with the code.
10.4.2.1	Installation shall be supervised by persons who are qualified and experienced.
10.5.3.2	Fire alarm system shall be provided with at least two independent and reliable power supplies.
10.14.2.4	Equipment shall not be install in locations exceeding voltage, temp, and humidity of device.
10.14.3.2	Devices shall be selected and installed to minimize nuisance . Detectors shall not be installed in the pit area because they have been determined to be a nuisance alarm due to sweeping, dust and air movement. See also NFPA 72 17.7.1.9
10.17.1	Monitoring Integrity of Installation Conductors and Other Signaling Channels.
21.2.6	Wiring The installation of all wiring, cable, and equipment shall be in accordance with NFPA 70
21.3.2	In facilities without a building fire alarm system, these smoke detectors or other automatic fire detection shall be connected to a dedicated fire alarm system control unit that shall be designated as "elevator recall control and supervisory panel".
21.3.3	Only the elevator lobby, hoistways and machine room/space smoke detectors shall be used to recall elevators.
21.3.5	Lobby smoke detectors shall be with in 21 ft. of the center line of doors with in each bank.
21.3.6	Smoke detectors shall not be installed in unsprinklered hoistways unless for smoke relief equipment . (exception: Hoistway/pit = machine, control space)
21.3.7	If ambient conditions prohibit installation of smoke detectors , other fire detection shall be permitted ie: open areas, parking garages , and industrial applications. Per local AHJ. Pit and hoistway location of these detectors will likely need to be below the lowest level of recall in order to provide an adequate response of early detection of fire. Since there is no real ceiling in the pit to allow installation using the spacing provisions of Chapter 17, the provisions of 17.7.3.1.3 and 17.4.10 should be considered, which allows detectors to be placed closer to the hazard in a position where the detector can intercept the smoke or heat. Also refer to A.21.3.14.2(3)
21.3.8	All fire fighters initiating devices shall annunciate at the building fire alarm control unit.
21.3.9	All fire fighters initiating devices shall cause separate and distinct visible annunciation.
21.3.12.1,2,	Designated, Alternate and Flashing Hat level recall requirements.
21.4.1	Heat detectors used for shunt shall have lower temp rating than sprinkler.
21.4.2	Heat detectors used for shunt shall be with in 24 " of sprinkler head.
21.4.3	Pressure or water flow switches in lieu of heat detectors
21.4.4,5	Control circuits to shutdown elevator power shall be monitored for presence of operating voltage. Loss of voltage to the control circuit for the disconnecting means shall cause a supervisory signal to be indicated at the control unit and required annunciators.
21.5	First Responders use elevators requirements (Fire Service Access Elevator OBC 3007)
21.6	Elevators for Occupant- control Evacuation requirements (OBC 3008)